Weston & Sampson SM

85 Devonshire Street, 3rd Floor, Boston, MA 02109
Tel: 617.412.4480

LETTER OF TRANSMITTAL

TO
City of Portsmouth New Hampshire Planning Department 1Junkins Avenue, 3rd Floor City of Portsmouth

DATE	JOB NO.
January 23, 2023	Eng22-0627
ATTENTION	Mr. Peter Stith, Principal Planner
RE	City of Portsmouth Rt 33 Skate Park
Technical Advisory Committee – Site Plan Review Submission	

WE ARE SENDING YOU:

☐ Shop Drawing ☐ Attached ☑ Plans ☐ Samples
☐ Change Order ☑ Prints ☐ Copy of Letter ☐ Specifications
☐ Other ☐ Under Separate Cover Via: _____

COPIES	DATE	NO.	DESCRIPTION
1	01.23.2023	1	Site Plan Application Checklist
1	01.23.2023	1	Letter of Authorization
1	01.23.2023	1	Stormwater Management Report
1	01.23.2023	1	Traffic Memorandum
1	01.23.2023	1	Site Plans

THESE ARE TRANSMITTED AS CHECKED BELOW:

☐ For Approval ☐ Approved as Submitted ☐ Resubmit Copies for Approval
☐ For Your Use ☐ Approved as Noted ☐ Submit Copies for Distribution
☐ For Review and Comment ☑ As Requested ☐ Return Corrected Prints
☐ FOR BIDS DUE ☐ Prints Returned After Loan to Us ☐ Returned for Corrections
☐ Other

REMARKS:

COPY TO:	SIGNED: Brandon Kunkel

If enclosures are not as noted, kindly notify us at once.

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: Brandon Kunkel Date Submitted: January 23, 2023

Application # (in City's online permitting): TBD

Site Address: January 23, 2023 Map: 241 Lot: 18

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**		N/A
☒	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**	N/A	
☐	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	N/A	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	Sheet Sheet L000- Cover Page	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Sheet L000- Cover Page	N/A
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	Sheet L000- Cover Page	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Sheet L001- General Notes Page	N/A
☒	List of reference plans. **(2.5.3.1H)**	Sheet L000- Cover Page	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Sheet L001 - General Notes Page; Grading, utility and Drainage Note #14	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Sheet L100 - Existing Conditions Plan, Notes #6 and #7	N/A
☒	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	Wetland Delineation Memo	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	All applicable plan sheets	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Today's date, first submission in the title block on all sheets.	N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**	All applicable plan sheets	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Sheet L100 - Existing Conditions Plan	
☒	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Add Alternate: Pre Engineered Steel 800 s.f., 20' x 40' open air barrel vault shade pavilion. Sheet L120 - Materials Plan	
☒	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Sheet L130 - Layout Plan	
☒	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Sheet L130 - Layout Plan	
☐	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	N/A	
☐	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	N/A	

☒	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Sheet L140 - Grading, Drainage, and Utility Plan	
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	N/A	
☒	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Sheet L140 - Grading, Drainage, and Utility Plan	
☐	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	N/A	
☐	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	N/A	
☒	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	Sheet L120 - Materials Plan	
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Sheet L140 - Grading, Drainage, and Utility Plan	
☒	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	Sheet L120 - Materials Plan	
☐	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	N/A	
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	N/A	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	N/A	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	Traffic Memorandum	
☐	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	N/A	
☒	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	Stormwater Report	
☒	Stormwater Management and Erosion Control Plan. **(7.4)**	Sheet L110 - Site Preparation and Demolition Plan	
☒	Inspection and Maintenance Plan **(7.6.5)**	Stormwater Report	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	N/A	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Stormwater Report	
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	N/A	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	State of NHDES Alternaton of Terrain Permit	
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Sheet L001- General Notes Page, Special Notes #1	N/A
☐	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**	N/A	
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Sheet L001- General Notes Page Special Notes #2 and #3	N/A

Applicant's Signature: _____ **Date:** January 23, 2023

PUBLIC WORKS DEPARTMENT

CITY OF PORTSMOUTH
680 Peverly Hill Road
Portsmouth N.H. 03801
(603) 427-1530 FAX (603) 427-1539

Letter of Authorization

I, Peter Rice, do herby authorize Weston & Sampson Engineers to act on the City of Portsmouth's behalf concerning the Portsmouth New Hampshire Skate Park Project submission to the Technical Advisory Committee. The property is located at 305 Greenland Road Portsmouth, NH and is owned by the city of Portsmouth.

X _____

Peter Rice
Director of Public Works

1/23/23

Stormwater Management Report

Portsmouth, New Hampshire

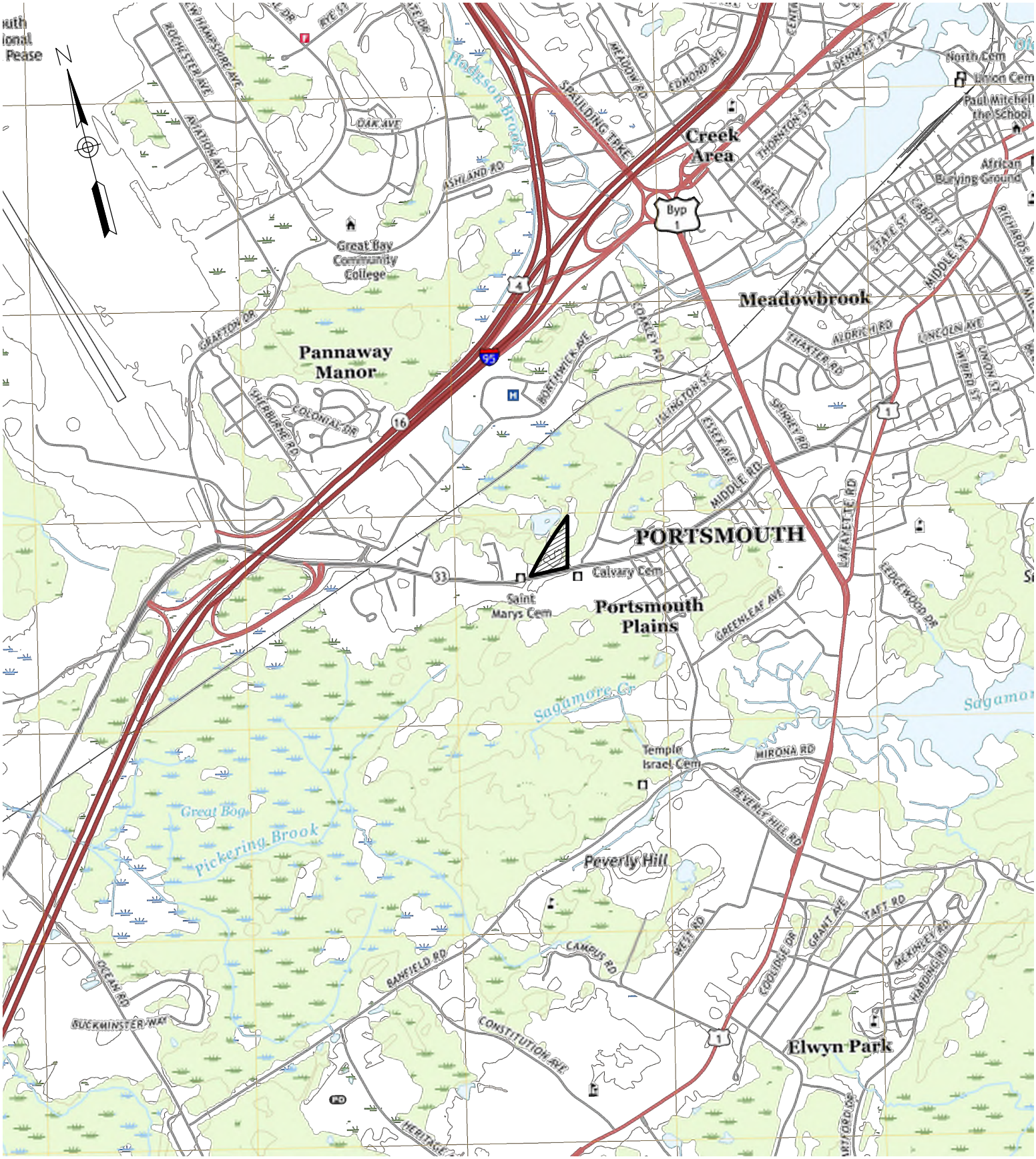
Route 33 Skate Park Project

December 22, 2022

JOB NO: ENG22-0627

Weston & Sampson
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
www.westonandsampson.com
Tel: 978-532-1900 Fax: 978-977-0100

Index



2000 1000 0 2000

SCALE 1"= 2000

FIG-1 - USGS MAP

Weston & Sampson℠

Weston & Sampson Engineers, Inc.

55 Walkers Brook Drive, Suite 100, Reading MA 01867

Project Narrative

Stormwater Report

December 22, 2022

Applicant/Project Name: City of Portsmouth
Route 33 Skate Park

Project Address: 305 Greenland Road, Portsmouth, NH

Application Prepared by:
Firm: Weston & Sampson, Inc.
Registered PE: James Pearson

Project Description and General Site History:

The project applicant, the City of Portsmouth, proposes to develop a parcel of land located at 305 Greenland Road (Map 24 / Lot 18) into a recreational facility consisting of a skateboarding park with a gravel parking lot, and sidewalks providing access through the site. Total site disturbance associated with this project is 90,618-SF, although the total proposed site disturbance is below 100,000-SF, the project applicant would like the ability to further develop the site in the future if they choose.

The site had historically been used as a gravel pit followed by a disposal location for stumps and excess soil generated from municipal construction projects. The site is known locally as “the stump dump”. The site at one time was also previously owned by the Portsmouth Gun Club and functioned as a shooting range. More recently, the site has been used as a construction staging/stockpile area for municipal infrastructure projects. In 2013, the City was approved for an Alteration of Terrain permit to develop the parcel into a soccer field and recreational facility. Work began in 2014, and the site was partially completed. Improvements to drainage infrastructure were made, and the site was roughly graded. Construction was not completed however, and afterwards, the site once again became used as a construction staging/stockpile area for municipal projects.

Existing Site Conditions

The subject parcel is 216,556-SF (4.97-AC) in size. It is located at 305 Greenland Road near the intersection of Islington Street and adjacent to the NH Seacoast Greenway Rail Trail. Grading of the site is generally very flat, with elevations predominantly ranging from 55 to 56-FT±, and a low point of 46-FT± at the bottom of a drainage swale in the southwestern most corner of the site. The ground cover of the site is in relatively poor condition, with 3.96-AC± of the site consisting of a gravel/bare earth surface in poor shape. Several large stockpiles of soil and construction debris are located throughout the site with areas of brush and woods surrounding the outer boundary of the parcel.

No environmental resource areas are present on site, and the site is not located within the 100-year floodplain. According to the Onestop data mapper, the parcel is listed as a remediation site related to previous use as a landfill and a shooting range. Soil borings were conducted by Weston & Sampson in September of 2016 and show varying amounts of sandy fill containing debris throughout the site. The debris generally consists of concrete, brick, asphalt, ash, wood, and leaves. Soil samples were collected while performing the geotechnical borings and subsequently analyzed. Results of the soil samples indicated elevated levels of compounds exceeding soil standards set forth in ENV-OR 606.19, Table 600-2.

According to NRCS soil mapping, the site is comprised of a mix of Udorthents and Hoosic gravelly fine sandy loam (HSG-A), which is supported by the boring data collected. Underlying native soil beneath the fill is consistently composed of sand and gravel with trace amounts of silt. Due to the predominant soil classification of Udorthents, the historic site use as a gravel pit and landfill, and data obtained from geotechnical borings, a site specific soil survey (SSS) was not completed and Natural Resources Conservation Service (NRCS) soil classifications were used to analyze the site. Boring logs and soil testing summary tables can be found in Attachments A & B following this narrative. Full lab testing results can be found in Appendix A following this report.

Drainage Analysis

Pre-Development

Pre-development conditions consist of four sub-catchments contributing to one point of analysis (POI-A), located at City Pond, a small surface water (<3-AC) that receives municipal stormwater run-off. Sub-catchment A1 consists of run-off captured in a series of catch basins in Greenland Road which is routed onto the site via a manhole and several pipe runs, it discharges to a stormwater conveyance swale located on the southwestern corner of the site where it enters into another series of conveyance pipes before discharging out of an existing flared end structure with a rip-rap apron and entering City Pond. Sub-catchment A2 is comprised of an area which flows overland into the stormwater conveyance swale. Sub-catchment A3 is comprised of an area which is captured by the stormwater management system on site. Run-off from this sub-catchment is captured via an underdrain system or from one of five catch basins installed in 2014 and then enters the stormwater conveyance system via the same manhole on-site as sub-catchment A1. Sub-catchment A4 is an area which drains overland in a westerly direction, across the NH Seacoast Greenway Rail Trail and eventually to City Pond.

Post-Development

The proposed project will include the construction of a gravel parking lot, pedestrian walkways, and a skateboarding park. Existing stormwater infrastructure installed in 2014 will be utilized for this project with additional treatment features added to improve water quality. Due to the levels of contaminants shown in lab testing which exceed allowable concentrations set forth in ENV-OR 606.19, our interpretation of ENV-WQ 1507.02(c)(1)b leads us to believe that stormwater infiltration is not allowed on this site. In lieu of an infiltration practice, we have proposed the use of a Contech CDS hydrodynamic separator to treat stormwater run-off from the proposed gravel and asphalt parking lot. Additionally, we propose to retrofit two existing catch basins which will receive parking lot run-off with hooded outlets to minimize the transport of hydrocarbons and trash into the stormwater management system.

The proposed design results in five sub-catchments contributing to POI-A. Sub-catchments A1, A2, and A4 remain largely unchanged in their land cover and drainage patterns. Sub-catchment A3 has now been broken up into two sub-catchments, creating a smaller A3 and area A5. The proposed site improvements to these two sub-catchments result in substantially lower CN values even with the addition of 23,550-SF of impervious area. Significant areas of gravel and bare soil (47,362-SF) will be loamed and seeded, resulting in much better hydrologic conditions on this portion of the site. These improvements in ground cover alone, produce a decrease in peak discharge values during the 2-year, 10-year, and 50-year storm events as shown on the following table.

		Peak Discharge (CFS)	
Analysis Point	**24-Hr Storm Event**	**Pre-Development**	**Post-Development**
A	2-YR	5.17	5.15
	10-YR	10.87	9.68
	50-YR	20.40	17.23

Methodology

Drainage calculations were performed using HydroCAD computer software, version 10.20-2d, which is based upon Technical Release 20 (TR-20), developed by NRCS. Calculations were prepared for the 2-year, 10-year, and 50-year Type III 24-hour storm events and rainfall data was obtained from the Northeast Regional Climate Center.

Additional Information Regarding Nutrients

Stormwater discharges from this project will indirectly enter City Pond. No fertilizers will be utilized and this project will not cause an increase in phosphorus levels to any receiving water body.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including any relevant soil evaluations, computations, Operations and Maintenance Plan, and plans showing erosion control and the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the New Hampshire Department of Environmental Services. I have also determined that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

12/21/2022

Signature and Date

Attachment A - Boring Logs

Weston & Sampson	PROJECT Rt. 33 Recreation Field Portsmouth, NH	REPORT OF BORING No. B-1 SHEET 1 OF 1 Project No. 2160648.A CHKD BY Thomas J. Strike, PE	

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	55 ft. +/-	DATUM	NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/27/16	DATE END	9/27/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	18/24	0-2	5-21-30-35	0.2	Very dense, brown, gravelly, fine to coarse SAND FILL, some silt, trace debris (brick, asphalt); moist. Bottom 12" grades to little silt.	1,2	**SAND FILL WITH DEBRIS**
5		S-2	8/24	5-7	5-6-9-6	0.1	Medium dense, dark brown, fine to medium SAND FILL, some silt, litte gravel; moist.		
10		S-3	14/24	10-12	17-27-21-22	0.1	Dense, brown, fine to medium SAND, little gravel, trace to little silt; moist.		**SAND**
15		S-4	15/24	15-17	13-27-36-59	0.1	Very dense, brown, fine to medium SAND, little gravel, trace silt; moist.		
20		S-5	10/10	20-20.8	88-100/4"		Very dense, brown, fine to medium SAND, some gravel, trace silt; moist.		
25		S-6	13/24	25-27	38-15-18-19		Dense, brown, fine to medium SAND, trace silt; moist.		
							Boring terminated at 27 ft.		
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Grab sample submitted for environmental analysis.
2. Periodic auger grinding from about 0 to 25 ft. (possible cobbles, boulders, and/or debris).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-1

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-2
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	55 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START 9/28/16	DATE END 9/28/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

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GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	15/24	0-2	10-19-10-9	0.2	Medium dense, dark brown, fine to medium SILTY SAND FILL, little gravel, little debris (wood, brick); moist.	1	**SAND FILL WITH DEBRIS**
5		S-2	9/19	5-6.6	4-3-7-50/1"	2.4	Medium dense, dark brown, fine to medium SILTY SAND FILL, little gravel, trace debris (wood); moist.	2 3 4	
10		S-3	0/24	10-12	7-8-9-8	N/A	No recovery.		
		S-4	8/24	12-14	56-17-19-14	3.3	Dense, dark brown, fine to medium SAND FILL, some debris (wood, concrete, brick, paper), little silt, little gravel; moist.		
15		S-5	7/24	15-17	9-7-9-5	5.4	Medium dense, dark brown, fine to medium SAND FILL, some wood fragments, little to some silt, trace gravel; moist.		
20		S-6	18/24	20-22	12-17-19-16	2.6	Dense, brown, fine to coarse SAND, trace gravel, trace silt; moist.		**SAND**
25		S-7	18/24	25-27	17-18-11-14	0.1	Medium dense, brown, fine to coarse SAND, some gravel, trace to little silt; moist.		
30		S-8	18/24	30-32	16-19-19-20		Dense, dark gray, fine to coarse SAND, some silt, some gravel; moist.		
							Boring terminated at 32 ft.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

1. Periodic auger grinding from about 0 to 5 ft.
2. Grab sample submitted for environmental analysis.
3. Auger refusal at 6.5 ft. Moved east 5 ft. Auger refusal at 5 ft. Moved south 8 ft. Auger grinding 0 to 3 ft. and 4.5 to 6.5 ft. with concrete fragments observed in cuttings.
4. Periodic auger grinding from about 7 to 12.5 ft. with wood fragments observed in cuttings. (possible cobbles, boulders, and/or debris)

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-2

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-3
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	55 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START 9/27/16	DATE END 9/27/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	15/24	0-2	5-5-4-4	0.0	Stiff, brown, CLAYEY SILT FILL, little fine sand, little gravel, trace debris (asphalt, brick); very moist.		
5		S-2	9/24	5-7	5-8-5-5	0.1	Medium dense, brown, fine to medium SILTY SAND FILL, some gravel; very moist. Bottom 3": pulverized asphalt debris.		**SAND/CLAYEY SILT FILL WITH DEBRIS**
10		S-3	5/24	10-12	4-6-8-11	0.2	Stiff, brown, CLAYEY SILT FILL, little fine sand, little gravel; wet.	1	
15		S-4	13/24	15-17	55-25-29-30	0.4	Very dense, gray-brown fine to coarse SAND FILL, some debris (concrete), some gravel, little silt; moist. Bottom 4": brown, fine to medium SAND, trace gravel, trace silt; moist.	2	
20		S-5	13/24	20-22	28-31-28-25	0.2	Very dense, brown, fine to coarse SAND, little gravel, little silt; moist.		**SAND**
25		S-6	13/24	25-27	27-32-26-31		Very dense, brown, gravelly, fine to coarse SAND, trace silt; moist.		
30		S-7	14/24	30-32	35-29-18-10		Dense, brown, fine to coarse SAND, little gravel, trace silt; moist.		
							Boring terminated at 32 ft.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Auger grinding from about 13.5 to 15.5 ft. (possible cobbles, boulders, and/or debris)
2. Grab sample submitted for environmental analysis.
3. Periodic auger grinding from about 18 to 30 ft. (possible cobbles)

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-3

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-4
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/27/16 DATE END 9/27/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	15/24	0-2	17-24-20-11	0.1	Dense, brown, fine to coarse SAND FILL, some gravel, some silt, trace debris (brick, asphalt); moist.	1	**SAND FILL WITH DEBRIS**
5		S-2	12/24	5-7	6-8-9-10	0.5	Medium dense, dark brown, SILTY SAND FILL, little gravel; very moist.		
10		S-3	13/24	10-12	5-6-4-7	0.8	Medium dense, dark brown, fine to medium SAND FILL, some silt, little debris (asphalt), trace gravel, trace organics (roots); moist.	2	
15		S-4	17/24	15-17	25-31-78-71	2.4	Very dense, dark brown, fine to medium SAND FILL, some silt, little debris (wood, asphalt), trace gravel; moist. Bottom 6": brown, fine to coase SAND, some gravel, trace silt; moist.		
20		S-5	3/9	20-20.8	68-100/3"	1.5	Very dense, brown, gravelly, fine to coarse SAND, trace to little silt; moist.		**SAND**
25		S-6	12/24	25-27	73-43-27-37		Very dense, brown, gravelly, fine to coarse SAND, trace silt; moist.		
							Boring terminated at 27 ft.		
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

1. Periodic auger grinding from about 1 to 25 ft. (possible cobbles, boulders, and/or debris). Wood fragments observed in cuttings to about 18 ft.
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-4

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-5
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	57 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/28/16 DATE END 9/28/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	12/23	0-1.9	7-8-40-100/5"	0.0	Dense, brown, gravelly, fine to coarse SAND FILL, little silt, trace debris (wood); moist.	1	**SAND FILL WITH DEBRIS**
5		S-2	18/24	5-7	10-79-60-38	0.2	Very dense, dark brown, fine to coarse SAND FILL, some gravel, little silt; moist.		
10		S-3	5/24	10-12	6-7-6-8	0.1	Medium dense, brown, fine to coarse SAND FILL, little gravel, trace silt; moist.		
15		S-4	14/24	15-17	10-28-33-13	0.6	Very dense, brown, gravelly, fine to coarse SAND FILL, some silt, trace debris (asphalt); moist.	2	
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 0 to 13 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-5

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-6
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/28/16 DATE END 9/28/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	15/24	0-2	10-19-26-20	0.0	Dense, brown, fine to coarse SAND FILL, little to some gravel, little silt, trace debris (brick, asphalt); moist.	1	**SAND FILL WITH DEBRIS**
5		S-2	4/8	5-5.6	14-100/2"	0.5	Very dense, dark brown, gravelly fine to coarse SAND FILL, little to some silt, little debris (wood fragments); moist.		
10		S-3	13/24	10-12	18-15-12-12	0.0	Medium dense, dark brown, fine to coarse SAND FILL, some silt, little debris (brick, ash, asphalt), trace gravel; moist. Bottom 4": grades to brown, silty.	2	
15		S-4	6/24	15-17	17-15-13-14	0.3	Medium dense, dark brown, fine to medium SAND FILL, some silt, little debris (wood fragments, asphalt), little gravel; moist.		
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 3 to 6 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-6

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-7
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/28/16 DATE END 9/28/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	19/24	0-2	9-14-29-23	0.0	Dense, dark brown, fine to coarse SAND FILL, some gravel, little debris (concrete, asphalt), little silt; moist.		**SAND FILL WITH DEBRIS**
5		S-2	8/24	5-7	25-61-16-13	0.3	Very dense, dark brown, fine to coarse SAND FILL, some gravel, some silt, little debris (brick, wood); moist.		
10		S-3	3/24	10-12	10-1/12"-1	1.0	Very loose, dark brown, fine to medium SAND FILL, some silt, some debris (wood, ash), trace gravel; moist.		
15		S-4	12/24	15-17	11-14-13-26	4.1	Medium dense, dark brown, fine to medium SAND FILL with debris (wood, fabric, ash), some silt, little gravel; moist.	1	
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-7

Weston & Sampson	PROJECT Rt. 33 Recreation Field Portsmouth, NH	REPORT OF BORING No. B-8 SHEET 1 OF 1 Project No. 2160648.A CHKD BY Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START 9/28/16	DATE END 9/28/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	12/24	0-2	5-8-18-42	0.2	Medium dense, brown, sandy GRAVEL FILL, little silt; moist.	1	**SAND FILL WITH DEBRIS**
5		S-2	6/24	5-7	13-14-12-10	9.5	Medium dense, dark brown, fine to coarse SAND FILL, trace gravel, trace to little silt, trace debris (wood fragments, brick, asphalt); moist.	2	
10		S-3	6/24	10-12	6-7-4-29	1.6	Medium dense, dark brown, fine to medium SILTY SAND FILL with debris (wood fragments, ash, asphalt), trace gravel; moist.		
15		S-4	5/24	15-17	14-25-15-12	2.6	Dense, dark brown, fine to medium SILTY SAND FILL with wood fragments; very moist.		
20							Boring terminated at 17 ft.		
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 0 to 14 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-8

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-9
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	57 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START 9/27/16	DATE END 9/27/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	13/24	0-2	12-22-27-14	0.0	Very dense, dark brown, gravelly, fine to coarse SAND FILL, little to some silt; moist.	1	**SAND/CLAYEY SILT FILL WITH DEBRIS**
5		S-2	15/24	5-7	3-32-27-6	0.0	Hard, gray, CLAYEY SILT FILL, little gravel, little fine sand; moist.		
10		S-3	7/24	10-12	3-2-3-6	0.7	Medium stiff, gray-brown, ORGANIC CLAYEY SILT FILL, little to some fine sand, trace gravel, trace debris (asphalt); moist.	2	
15		S-4	4/5	15-15.4	100/5"	3.2	Brown WOOD DEBRIS, little fine to medium sand, trace silt, trace gravel; moist.		
20		S-5	12/24	20-22	27-36-30-29	9.6	Very dense, brown, gravelly, fine to coarse SAND, little silt; moist.	3	**SAND**
25		S-6	11/24	25-27	14-21-28-41	1.2	Very dense, brown, gravelly, fine to coarse SAND, litlte silt; moist. Bottom 4": grades to fine to medium SAND, trace silt; moist.		
30		S-7	9/24	30-32	37-41-45-40	2.7	Very dense, brown, gravelly, fine to coarse SAND, trace silt; moist.		
							Boring terminated at 32 ft.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

1. Periodic auger grinding from about 0 to 30 ft. with heavy auger grinding from about 15 to 16.5 ft. (over 10 minutes to advance). Wood fragments observed in auger cuttings.
2. Grab sample submitted for environmental analysis.
3. Slow auger advancement from about 20 to 30 ft.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-9

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-10
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/29/16 DATE END 9/29/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	16/24	0-2	8-12-12-12	0.1	Medium dense, brown, fine to medium SAND FILL, little gravel, little silt, trace debris (fabric); moist.	1	**SAND/CLAYEY SILT FILL WITH DEBRIS**
5		S-2	12/24	5-7	4-4-3-4	0.2	Medium stiff, dark brown, CLAYEY SILT FILL, some fine sand, little gravel, trace debris (wood, ash); very moist.		
10		S-3	12/24	10-12	4-3-8-8	0.5	Stiff, brown, CLAYEY SILT FILL, little fine sand, little gravel, trace debris (brick, wood); very moist.	2	
15		S-4	10/24	15-17	15-8-4-3	0.1	Medium dense, brown, fine to medium SAND FILL, little to some silt, little gravel, trace debris (asphalt, ash, wood); moist.		
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic Auger grinding from about 2 to 13ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-10

Weston & Sampson	PROJECT Rt. 33 Recreation Field Portsmouth, NH	REPORT OF BORING No. B-11 SHEET 1 OF 1 Project No. 2160648.A CHKD BY Thomas J. Strike, PE	

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START 9/29/16	DATE END 9/29/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	14/24	0-2	17-46-33-24	0.0	Very dense, brown, gravelly, fine to coarse SAND FILL, some silt; moist.	1	
5		S-2	11/24	5-7	8-8-6-7	0.0	Stiff, brown, CLAYEY SILT FILL, some fine sand, some debris (concrete, brick, asphalt), little gravel; moist.	2	**SAND/CLAYEY SILT FILL WITH DEBRIS**
10		S-3	12/24	10-12	22-8-9-9	0.5	Stiff, brown, sandy SILT FILL, little gravel, little clay, trace debris (asphalt); moist. Bottom 6": grades to little organics (fine roots).	3	
15		S-4	13/24	15-17	8-15-17-19		Dense, light brown, fine to medium SAND, trace gravel, trace silt; moist.		**SAND**
20							Boring terminated at 17 ft.		
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 0 to 10 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.
3. Possible buried topsoil layer.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-11

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-12
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	57 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/29/16 DATE END 9/29/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	11/24	0-2	14-35-32-69	0.1	Very dense, brown, gravelly, fine to coarse SAND FILL, trace silt; moist.	1, 2	
5		S-2	11/24	5-7	8-9-8-2	0.0	Medium dense, dark brown, SILTY SAND FILL, little gravel, trace debris (wood, asphalt); moist.		**SAND FILL WITH DEBRIS**
10		S-3	7/24	10-12	5-14-15-33	0.2	Very dense, brown, gravelly, fine to coarse SAND FILL, trace silt; moist. Bottom 3": Very dense, brown, gravelly, fine to coarse SAND, trace silt; moist.		
15		S-4	13/24	15-17	18-22-35-24		Very dense, brown, gravelly, fine to coarse SAND, little silt; moist.		**SAND**
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 0 to 15 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-12

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-13
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/28/16 DATE END 9/28/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	14/24	0-2	12-21-22-17	0.1	Dense, brown, gravelly, fine to coarse SAND FILL, little silt, trace debris (asphalt, brick); moist.	1	
5		S-2	9/24	5-7	8-11-7-6	0.7	Medium dense, dark brown, fine to coarse SAND FILL, some silt, trace debris (asphalt), trace gravel; moist.		**SAND FILL WITH DEBRIS**
10		S-3	11/24	10-12	7-15-9-12	2.2	Medium dense, dark brown, fine to coarse SAND FILL, some gravel, little silt, trace debris (brick, asphalt); moist.	2	
15		S-4	14/24	15-17	14-23-43-49		Very dense, brown, fine to coarse SAND, some gravel, trace silt; moist.		**SAND**
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 0 to 10 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-13

Weston & Sampson

PROJECT	REPORT OF BORING No.	B-14
Rt. 33 Recreation Field Portsmouth, NH	SHEET	1 OF 1
	Project No.	2160648.A
	CHKD BY	Thomas J. Strike, PE

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/29/16 DATE END 9/29/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	11/12	0-1	23-100/6"	0.0	Very dense, brown, fine to coarse SAND FILL, little gravel, little silt; moist. Bottom 3": grades to gravelly.	1	**SAND FILL WITH DEBRIS**
5		S-2	13/24	5-7	30-31-23-18	0.5	Very dense, dark brown, fine to coarse SAND FILL, some debris (asphalt, brick), little gravel, little silt; moist.		
10		S-3	4/14	10-11.1	3-7-100/2"	1.8	Very dense, dark brown, fine to medium SAND FILL with debris (brick, wood), some silt, trace gravel; very moist.	2	
15		S-4	6/24	15-17	11-10-12-10	32.8	Medium dense, dark brown, fine to medium SANDY DEBRIS FILL (wood, asphalt), some silt, little gravel; very moist.	3	
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:

1. Periodic auger grinding from about 1 to 9 ft. (possible cobbles, boulders, and/or debris).
2. Heavy auger grinding from about 9 to 9.5 ft. and 11.5 to 15 ft. (possible cobbles, boulders, and/or debris)
3. Grab sample submitted for environmental analysis.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-14

Weston & Sampson	PROJECT Rt. 33 Recreation Field Portsmouth, NH	REPORT OF BORING No. B-15 SHEET 1 OF 1 Project No. 2160648.A CHKD BY Thomas J. Strike, PE	

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan		
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/-	DATUM	NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START	9/29/16	DATE END	9/29/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
Groundwater not observed.				

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	16/24	0-2	6-14-20-21	0.1	Dense, brown, fine to coarse SAND FILL, little gravel, little silt; moist. Bottom 4": grades to some debris (asphalt).	1	**SAND/CLAYEY SILT FILL WITH DEBRIS**
5		S-2	17/24	5-7	15-15-6-8	0.4	Top 7": Medium dense, brown fine to medium SAND FILL, some silt, litlte gravel, trace debris (brick, asphalt); moist. Very stiff, dark gray, CLAYEY SILT FILL, some fine sand, trace debris (asphalt, brick); moist.		
10		S-3	17/24	10-12	8-7-5-4	14.0	Medium dense, dark brown, SILTY SAND FILL with debris (brick, ash, wood, leaves), trace gravel; very moist.	2	
15		S-4	2/24	15-17	5-5-2/12"	0.5	Dark brown, WOOD DEBRIS, some fine sand, some silt; very moist.	3	
							Boring terminated at 17 ft.		
20									
25									
30									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
1. Periodic auger grinding from about 0 to 5 ft. (possible cobbles, boulders, and/or debris).
2. Grab sample submitted for environmental analysis.
3. Organic odor emitting from borehole.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-15

Weston & Sampson	PROJECT Rt. 33 Recreation Field Portsmouth, NH	REPORT OF BORING No. B-16 SHEET 1 OF 1 Project No. 2160648.A CHKD BY Thomas J. Strike, PE	

BORING Co.	New England Boring Contractors	BORING LOCATION	See attached plan
FOREMAN	Sam Shaw	GROUND SURFACE ELEV.	56 ft. +/- DATUM NAVD88
WSE ENGINEER:	Julie A. Eaton, EIT	DATE START 9/29/16	DATE END 9/29/16

SAMPLER: 2 IN. OD SPLIT SPOON SAMPLER (SPT) DRIVEN 24 INCHES USING A 140 lb. CATHEAD OPERATED HAMMER.

CASING: HOLLOW STEM AUGER DRILLING METHODS TRUCK RIG

CASING SIZE: 2 1/4 IN. INSIDE DIAMETER. OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
9/29/2016		25 ft. +/-	based on wet sample.	

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		S-1	7/12	0-1	12-32-50/0"	0.0	Dense, dark brown, fine to medium SAND FILL, little to some silt, trace gravel, trace debris (asphalt); moist.	1	**SAND FILL WITH DEBRIS**
5		S-2	8/24	5-7	11-29-20-10	0.2	Dense, dark brown, fine to coarse SAND FILL, little to some silt, trace gravel, trace debris (asphalt, ash, concrete); moist.	2 3	
10		S-3	12/24	10-12	17-49-13-17	2.2	Dark brown, WOOD FRAGMENTS, trace fine sand; moist. Bottom 6": grades to yellow foam debris.		
15		S-4	11/24	15-17	11-7-5-6	0.2	Medium dense, dark brown, SILTY SAND FILL, some wood fragments, little gravel; moist.		
20		S-5	9/24	20-22	29-10-9-7	1.2	Same as above.	4	
25		S-6	11/24	25-27	16-51-4-2	0.8	Dark brown, SILTY SAND FILL with WOOD FRAGMENTS; wet.		
30		S-7	18/24	30-32	8-7-7-6	0.6	Medium dense, brown, fine to coarse SAND, trace gravel, trace silt; wet.		**SAND**
		S-8	5/24	32-34	10-15-47-48		Very dense, brown, fine to coarse SAND, some gravel, trace silt; wet.		
							Boring terminated at 34 ft.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

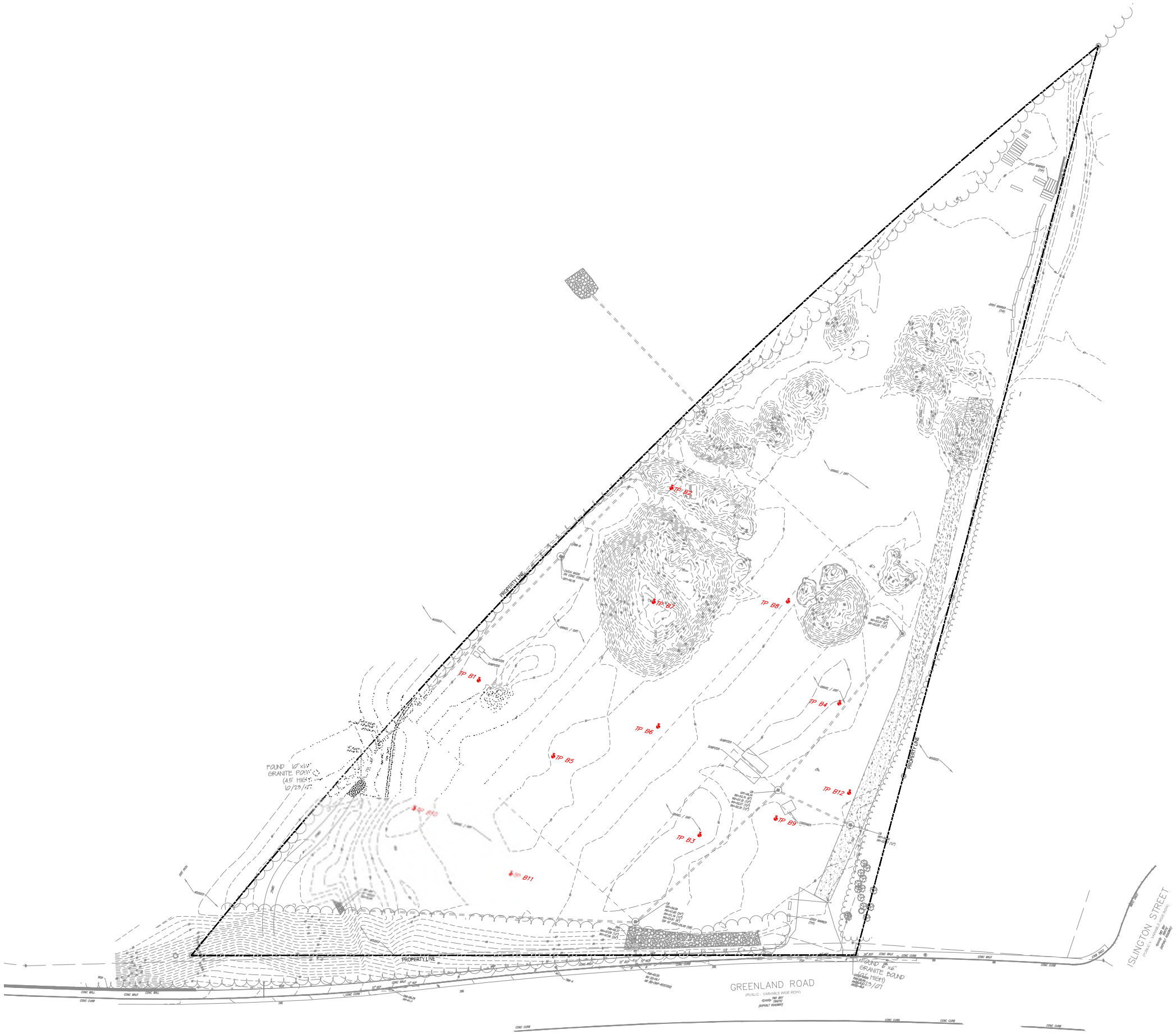
NOTES:

1. Spoon was bouncing and tilting. Auger refusal at 1 ft. Moved ~5 ft. south, auger refusal at 1 ft., moved ~8 ft. south, auger grinding from about 0 to 4 ft. and heavy auger grinding from about 4 to 5 ft. (possible boulders and/or debris)
2. Grab sample submitted for environmental analysis.
3. Heavy auger grinding 7 to 7.5 ft. (possible cobbles and/or debris).
4. Periodic auger grinding from about 20 to 27.5 ft. (possible cobbles, boulders, and/or debris).

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-16



LEGEND

	LIMIT OF WORK
	PROPERTY LINE
	GUARDRAIL
	EDGE OF WOODS
	OVERHEAD UTILITIES
65	EXISTING CONTOUR
	EXISTING DRAIN
	CATCH BASIN
	UTILITY POLE
	DRAIN MANHOLE
	RIPRAP
	GRAVEL

BK.2562/PG.2783	BOOK NO./PAGE NO.
CB	CATCH BASIN
CPP	CORRUGATED PLASTIC PIPE
DMH	DRAINAGE MANHOLE
EP	EDGE OF PAVEMENT
FES	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
INV.	INVERT
L	LENGTH OF CURVE
N/F	NOW OR FORMERLY
PSNH	PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCP	REINFORCED CONCRETE PIPE
S.F.	SQUARE FEET
TP	TEST PIT

NOTES

1. THE PARCEL IS LOCATED IN THE MUNICIPAL DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 241 AS LOT 18.
3. THE PARCEL IS LOCATED IN FLOOD ZONE X AS SHOWN ON FLOOD INSURANCE RATE MAP, ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 270 OF 681, MAP NUMBER 33015C0270E, EFFECTIVE DATE: MAY 17, 2005.
4. OWNER OF RECORD:
   CITY OF PORTSMOUTH
   C/O WATER DEPARTMENT
   DEPARTMENT OF PUBLIC WORKS
   PO BOX 628
   PORTSMOUTH, NH 03802
5. ZONING REQUIREMENTS:
   LOTS AND BUILDINGS IN THE MUNICIPAL DISTRICT ARE EXEMPT FROM ALL DIMENSIONAL AND INTENSITY REGULATIONS.
   SEE SECTION 10.560 OF THE CITY OF PORTSMOUTH ZONING ORDINANCE.
6. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88); CONTOUR INTERVAL IS 1'.
7. HORIZONTAL DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83).
8. THE UNDERGROUND SYSTEM SHOWN HEREON WAS NOT FIELD LOCATED. LOCATION TAKEN FROM "GRADING PLAN ROUTE 33 RECREATION AREA" BY UNDERWOOD ENGINEERS DATED 12/17/2013. THIS LOCATION SHOWN HEREON IS APPROXIMATE ONLY.
9. EXISTING CONDITIONS SURVEY PERFORMED BY _____
   DATED _____

PLAN REFERENCES:

1. "LOT LINE ADJUSTMENT ISLINGTON STREET & GREENLAND ROAD, PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH" BY JAMES VERRA AND ASSOCIATES, INC. DATED 1-30-2002. PLAN NOT RECORDED.
2. "RIGHT OF WAY EASEMENT PLAN FOR THE CITY OF PORTSMOUTH, GREENLAND ROAD/MIDDLE ROAD, PORTSMOUTH, NEW HAMPSHIRE" PREPARED BY VANASSE HANGEN BRUSTLIN, INC., DATED SEPTEMBER 28, 2007, REVISED APRIL 28, 2008. RCRD PLAN #D-35481.
3. "AS BUILT PLAN OF A PORTION OF NH ROUTE 33, PORTSMOUTH, NEW HAMPSHIRE" BY AMBIT ENGINEERING, INC. DATED AUGUST 2010, REVISED 9/21/10, PLAN NOT RECORDED.
4. "EXISTING FEATURES PLAN TAX MAP 241 LOT 18 PROPERTY OF CITY OF PORTSMOUTH 305 GREENLAND ROAD PORTSMOUTH, NEW HAMPSHIRE COUNTY OF ROCKINGHAM" BY MSC CIVIL ENGINEERS & LAND SURVEYORS, DATED NOVEMBER 2, 2012 WITH REVISION 1 DATED 11/05/2012. PLAN IS NOT RECORDED.

TFM MSC A division of TFMoran, Inc.
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.mscengineers.com
CONTROL POINT ASSOCIATES, INC.

SCALE: 1" = 40' - 0"
0 40 80 120

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www.westonandsampson.com

DRAWN BY: LC
REVIEWED BY: EB
APPROVED BY:
DATE: 11/2022

PROJECT:
PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:
BORING KEY SHEET
90% CONSTRUCTION DOCUMENTS

SHEET:
L100
SKATE PARK

Attachment B - Summary of Soil Analytical Data

Table 1
Summary of Soil Analytical Data
Portsmouth, New Hampshire
Stump Dump
September 2016

Parameter	Units	Soil Remediation Standards (Table-600-2)	Sampling Location							
			B-1 S-1 9/27/2016	B-2 S-2 9/28/2016	B-3 S-4 9/27/2016	B-4 S-3 9/27/2016	B-5 S-4 9/28/2016	B-6 S-3 9/28/2016	B-7 S-4 9/28/2016	B-8 S-2 9/28/2016
VOCs										
1,2,4-Trimethylbenzene	mg/kg	130	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
1,3,5-Trimethylbenzene	mg/kg	96	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
4-Isopropyltoluene	mg/kg	330	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	**0.0312**	**8.86**
Acetone	mg/kg	75	<0.0313	**0.166**	**0.0826**	**0.303**	<0.0379	**0.102**	**0.176**	**0.237**
Ethylbenzene	mg/kg	120	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
Isopropylbenzene	mg/kg	330	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
Naphthalene	mg/kg	5	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	**0.0255**	**0.0047**
n-Butylbenzene	mg/kg	110	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
n-Propylbenzene	mg/kg	85	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
sec-Butylbenzene	mg/kg	130	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
Toluene	mg/kg	100	<0.0031	<0.0036	<0.0038	<0.004	<0.0038	<0.0031	<0.0038	<0.0035
Xylenes (Total)	mg/kg	500	<0.0056	<0.006	<0.0069	<0.0068	<0.007	<0.0053	<0.0065	<0.0063
Total VOCs	mg/kg	NS	<0.0313	**0.166**	**0.0862**	**0.303**	<0.0379	**0.102**	**0.2327**	**9.1017**
SVOCs										
Acenaphthene	mg/kg	340	<0.359	<0.385	<0.358	<0.416	<0.361	<0.42	**1.14**	<0.703
Anthracene	mg/kg	1,000	<0.359	**0.415**	<0.358	<0.416	<0.361	<0.42	**1.71**	<0.703
Benzo(a)anthracene	mg/kg	1	**0.548**	**1.44**	<0.358	**0.993**	<0.361	<0.42	**2.8**	**0.802**
Benzo(a)pyrene	mg/kg	0.7	**0.616**	**1.24**	<0.18	**1.01**	**0.295**	<0.211	**2.38**	**0.83**
Benzo(b)fluoranthene	mg/kg	1	**0.768**	**2.24**	<0.358	**1.54**	**0.466**	<0.42	**3.98**	**1.62**
Benzo(g,h,i)perylene	mg/kg	NS	<0.359	**0.608**	<0.358	**0.602**	<0.361	<0.42	**0.819**	<0.703
Benzo(k)fluoranthene	mg/kg	12	<0.359	**0.921**	<0.358	**0.653**	<0.361	<0.42	**1.15**	<0.703
Carbazole	mg/kg	NS	<0.359	**0.445**	<0.358	<0.416	<0.361	<0.42	**1.29**	<0.703
Chrysene	mg/kg	120	**0.519**	**1.62**	<0.18	**1.03**	**0.289**	<0.211	**2.81**	**0.951**
Dibenzo(a,h)Anthracene	mg/kg	0.7	<0.18	**0.286**	<0.18	**0.235**	<0.181	<0.211	<0.397	<0.352
Dibenzofuran	mg/kg	NS	<0.359	<0.385	<0.358	<0.416	<0.361	<0.42	**1.76**	<0.703
Fluoranthene	mg/kg	960	**1.34**	**4.58**	<0.358	**2.53**	**0.549**	**0.424**	**8.26**	**2.15**
Indeno(1,2,3-cd)Pyrene	mg/kg	1	<0.359	**0.567**	<0.358	**0.495**	<0.361	<0.42	<0.792	<0.703
Phenanthrene	mg/kg	NS	**0.807**	**1.73**	<0.358	**0.847**	<0.361	<0.42	**9.88**	**0.953**
Phenol	mg/kg	56	<0.359	<0.385	<0.358	<0.416	<0.361	<0.42	<0.792	<0.703
Pyrene	mg/kg	720	**1.14**	**3.36**	<0.358	**2.35**	**0.394**	<0.42	**5.32**	**1.46**
Pyridine	mg/kg	NS	<1.8	<1.93	<1.8	<2.08	<1.81	<2.11	<3.97	<3.52
Total SVOCs	mg/kg	NS	**5.738**	**19.452**	<0.358	**12.285**	**1.993**	**0.424**	**46.916**	**8.766**
TPH-ETPH										
Total Petroleum Hydrocarbons	mg/kg	10,000	**158**	**73.5**	**65.8**	**186**	**79.3**	<42.2	**354**	**168**
Total Metals										
Arsenic	mg/kg	11	**8.83**	**8.66**	**10.4**	**4.9**	**10.6**	**11.5**	**7.43**	**6.42**
Barium	mg/kg	1,000	**41.5**	**58.3**	**23.8**	**24.8**	**28.7**	**91.4**	**43.2**	**22.6**
Cadmium	mg/kg	33	<0.44	<0.38	<0.53	<0.45	<0.48	<0.58	<0.55	**0.58**
Chromium	mg/kg	130	**39.3**	**26.9**	**18.7**	**17.6**	**51**	**35.8**	**29**	**28.4**
Lead	mg/kg	400	**24.5**	**132**	**14.6**	**50**	**19.2**	**216**	**307**	**72**
Mercury	mg/kg	7	**0.058**	**2.12**	**0.048**	**0.085**	**0.035**	**0.523**	**0.105**	**0.038**
Selenium	mg/kg	180	<0.44	<0.38	<0.53	<0.45	<0.48	**1.91**	<0.55	<0.52
Silver	mg/kg	89	<0.44	<0.38	<0.53	<0.45	<0.48	<0.58	<0.55	<0.52
PCBs										
Total PCBs	mg/kg	1	<0.0545	<0.0616	<0.0572	<0.0606	<0.0535	<0.0571	<0.0569	<0.0575

Abbreviations:
TPH = Total Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls
VOC = Volatile Organic Compound
SVOCs = Semivolatile Organic Compounds
ETPH = Excractable Total Petroleum Hydrocarbons
PAC = Physiologically Available Cyanid
NS = No Standard
ND = Not Detected
mg/kg = milligrams per kilogram
NT = Not Tested

Notes:
< = parameter not detected above laboratory method reporting limit

Total Concentrations represent the sum of detected analytes

BOLD:
Parameter detected above laboratory detection limit

BOLD:
Represents an exceedence of the Soil Standards

Table 1
Summary of Soil Analytical Data
Portsmouth, New Hampshire
Stump Dump
September 2016

Parameter	Units	Soil Remediation Standards (Table-600-2)	Sampling Location							
			B-9 S-3 9/27/2016	B-10 S-3 9/29/2016	B-11 S-2 9/29/2016	B-12 S-1 9/29/2016	B-13 S-3 9/28/2016	B-14 S-4 9/29/2016	B-15 S-3 9/29/2016	B-16 S-2 9/29/2016
VOCs										
1,2,4-Trimethylbenzene	mg/kg	130	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.146**	<0.0047
1,3,5-Trimethylbenzene	mg/kg	96	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.0534**	<0.0047
4-Isopropyltoluene	mg/kg	330	**0.044**	<0.0036	<0.0034	<0.0037	<0.0034	**0.138**	**0.0074**	<0.0047
Acetone	mg/kg	75	**0.235**	<0.0364	<0.0339	**0.0525**	<0.0336	<0.0446	**0.208**	**0.0867**
Ethylbenzene	mg/kg	120	**0.0045**	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.0156**	<0.0047
Isopropylbenzene	mg/kg	330	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.0065**	<0.0047
Naphthalene	mg/kg	5	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.0097**	<0.0047
n-Butylbenzene	mg/kg	110	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.0097**	<0.0047
n-Propylbenzene	mg/kg	85	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.009**	<0.0047
sec-Butylbenzene	mg/kg	130	<0.0045	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	**0.005**	<0.0047
Toluene	mg/kg	100	**0.0105**	<0.0036	<0.0034	<0.0037	<0.0034	<0.0045	<0.0042	<0.0047
Xylenes (Total)	mg/kg	500	<0.0075	<0.0062	<0.006	<0.0068	<0.0062	<0.0075	**0.0441**	<0.0083
Total VOCs	mg/kg	NS	**0.294**	<0.0364	<0.0339	0.0525	<0.0336	**0.138**	**0.5144**	**0.0867**
SVOCs										
Acenaphthene	mg/kg	340	<0.389	<0.395	<1.58	<0.35	<0.388	**1.44**	<0.423	<0.376
Anthracene	mg/kg	1,000	**0.526**	<0.395	<1.58	<0.35	<0.388	<0.421	<0.423	<0.376
Benzo(a)anthracene	mg/kg	1	**1.09**	**0.982**	<1.58	<0.35	**0.723**	<0.421	<0.423	<0.376
Benzo(a)pyrene	mg/kg	0.7	**0.803**	**1.06**	<0.793	**0.199**	**0.856**	<0.211	<0.212	**0.313**
Benzo(b)fluoranthene	mg/kg	1	**1.19**	**1.67**	<1.58	<0.35	**1.36**	<0.421	<0.423	**0.483**
Benzo(g,h,i)perylene	mg/kg	NS	<0.389	**0.49**	<1.58	<0.35	**0.552**	<0.421	<0.423	<0.376
Benzo(k)fluoranthene	mg/kg	12	**0.395**	**0.523**	<1.58	<0.35	**0.531**	<0.421	<0.423	<0.376
Carbazole	mg/kg	NS	<0.389	<0.395	<1.58	<0.35	<0.388	<0.421	<0.423	<0.376
Chrysene	mg/kg	120	**0.89**	**0.953**	**0.853**	<0.176	**0.922**	<0.211	<0.212	**0.34**
Dibenzo(a,h)Anthracene	mg/kg	0.7	<0.195	**0.205**	<0.793	<0.176	<0.195	<0.211	<0.212	<0.189
Dibenzofuran	mg/kg	NS	<0.389	<0.395	<1.58	<0.35	<0.388	**1.1**	<0.423	<0.376
Fluoranthene	mg/kg	960	**2.88**	**2.26**	<1.58	<0.35	**2.2**	**0.429**	**0.49**	**0.737**
Indeno(1,2,3-cd)Pyrene	mg/kg	1	<0.389	**0.428**	<1.58	<0.35	**0.422**	<0.421	<0.423	<0.376
Phenanthrene	mg/kg	NS	**2.26**	**1.26**	<1.58	<0.35	**0.871**	**1.4**	<0.423	**0.456**
Phenol	mg/kg	56	<0.389	<0.395	<1.58	<0.35	<0.388	<0.421	<0.423	<0.376
Pyrene	mg/kg	720	**3.17**	**1.86**	<1.58	<0.35	**2.21**	<0.421	**0.478**	**0.72**
Pyridine	mg/kg	NS	<1.95	<1.98	7.93	<1.76	<1.95	<2.11	<2.12	<1.89
Total SVOCs	mg/kg	NS	**13.204**	**11.691**	**0.853**	**0.199**	**10.647**	**7.781**	**0.968**	**3.049**
TPH-ETPH										
Total Petroleum Hydrocarbons	mg/kg	10,000	**136**	**64.2**	**209**	**48.3**	**222**	**163**	**319**	**136**
Total Metals										
Arsenic	mg/kg	11	**13.7**	**12.4**	**6.57**	**13.9**	**15.8**	**11.8**	**9.64**	**10.5**
Barium	mg/kg	1,000	**58.4**	**50.4**	**45**	**50.5**	**30.1**	**71.4**	**95.7**	**110**
Cadmium	mg/kg	33	<0.55	<0.47	<0.48	<0.38	<0.51	<0.46	<0.55	**0.49**
Chromium	mg/kg	130	**32.7**	**34.3**	**24.8**	**53**	**27.3**	**57.2**	**31**	**34.4**
Lead	mg/kg	400	**30.9**	**34.1**	**35.3**	**12.5**	**277**	**318**	**221**	**416**
Mercury	mg/kg	7	**0.046**	**0.053**	**0.098**	**0.032**	**0.094**	**0.043**	**0.441**	**0.971**
Selenium	mg/kg	180	<0.55	<0.47	<0.48	<0.38	<0.51	<0.46	<0.55	**0.49**
Silver	mg/kg	89	<0.55	<0.47	**0.78**	<0.38	<0.51	<0.46	<0.55	<0.42
PCBs										
Total PCBs	mg/kg	1	<0.0593	<0.0586	<0.055	<0.056	<0.0536	<0.0601	<0.0654	<0.0551

Abbreviations:
TPH = Total Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls
VOC = Volatile Organic Compound
SVOCs = Semivolatile Organic Compounds
ETPH = Excractable Total Petroleum Hydrocarbons
PAC = Physiologically Available Cyanid
NS = No Standard
ND = Not Detected
mg/kg = milligrams per kilogram
NT = Not Tested

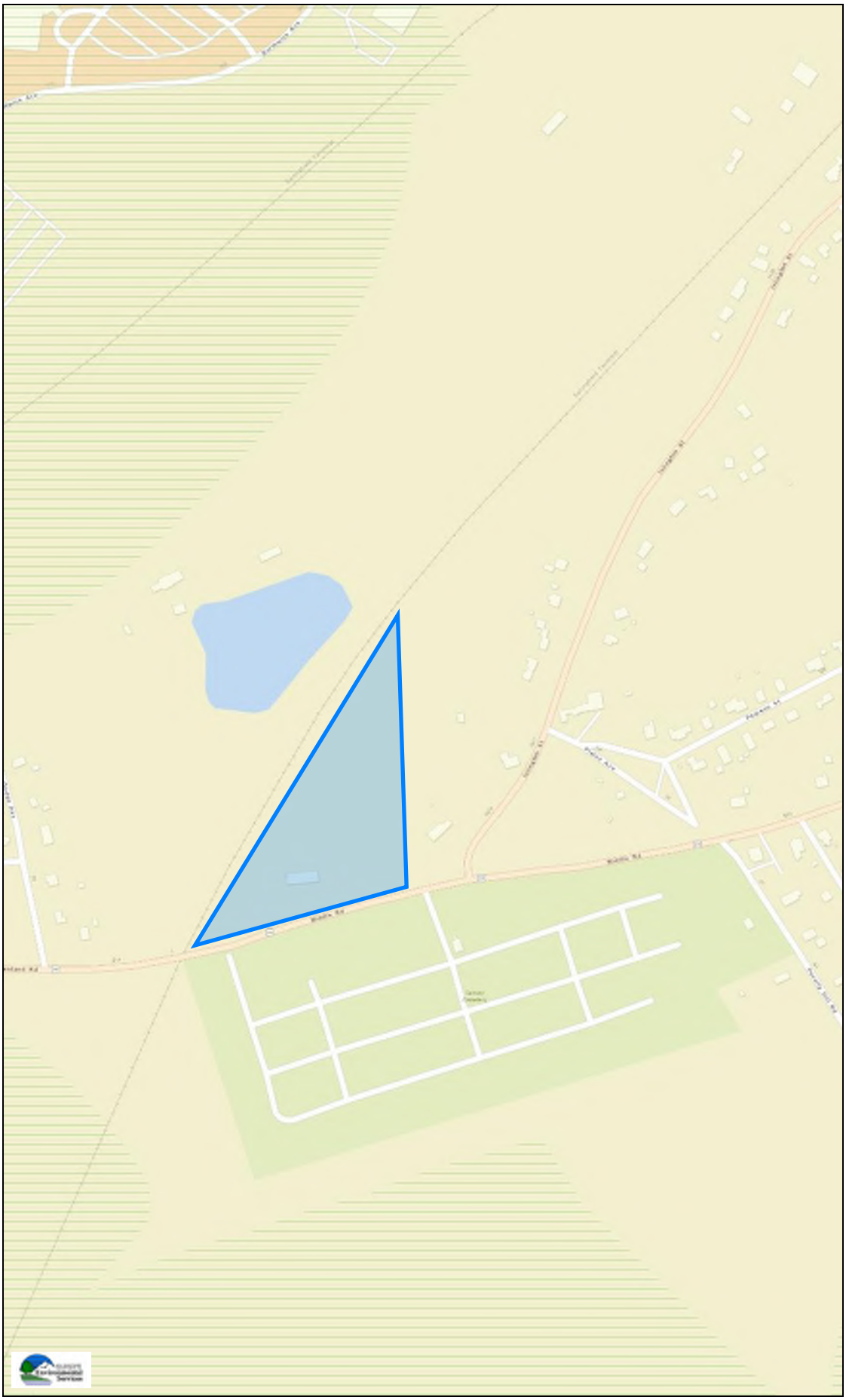
Notes:
< = parameter not detected above laboratory method reporting limit

Total Concentrations represent the sum of detected analytes

BOLD:
Parameter detected above laboratory detection limit

BOLD:
Represents an exceedence of the Soil Standards

Surface Water Impairments



Legend

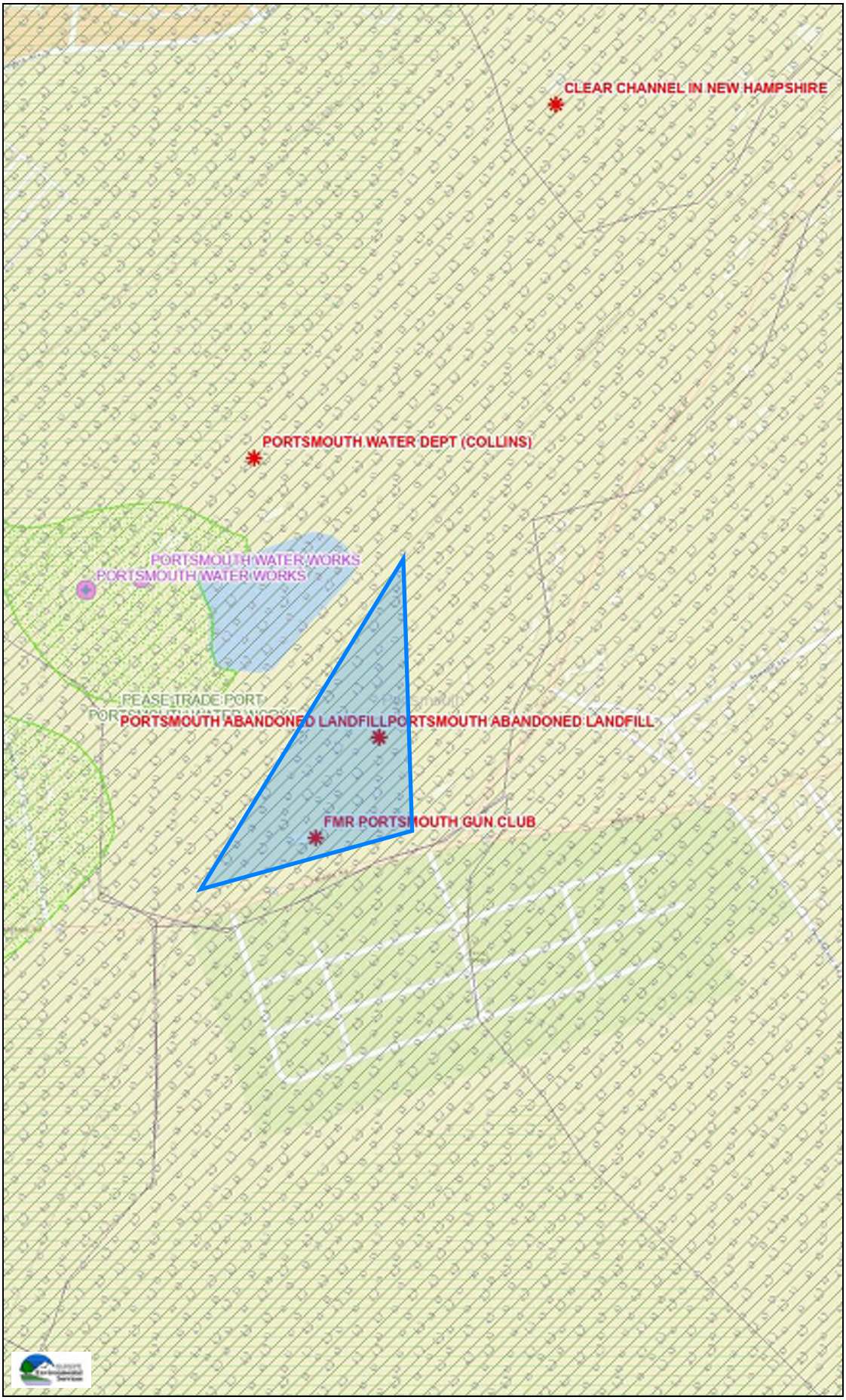
Surface Waters with Impairn
2022 with Quarter Mile Buffe

Map Scale
1: 5,000

Map Generated: 12/15/2022

Notes

AOT Screening Layers



Legend

- Surface Waters with Impairn 2022 with Quarter Mile Buffe
- Remediation Sites
- Coastal and Great Bay Regi Communities
- Designated Rivers Quarterm Buffer
- Public Water Supply Wells
- Groundwater Classification / GA1
- Groundwater Classification / GA2
- Water Supply Intake Protect Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarte Buffer
- Class A - All Features
- All Lakes, with a Quarter Mil Buffer
- Outstanding Resource Wate Watersheds
- Watersheds with Chloride Impairments 2022

Map Scale

1: 5,000

Map Generated: 12/15/2022

Notes

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Devin Batchelder, Weston & Sampson Engineering
55 Walkers Brook Drive
Reading, MA 01857

From: NHB Review, NH Natural Heritage Bureau
Date: 9/14/2022 (valid until 09/14/2023)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Alteration of Terrain Permit

NHB ID: **NHB22-2841** Town: Portsmouth Location: 305 GREENLAND RD
Description: The City is proposing to create a skate park on a previously disturbed property which is currently used for construction storage.
cc: NHFG Review

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: No comments at this time.**
F&G: Please refer to NHFG consultation requirements below.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section below.

Disclaimer: A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

IMPORTANT: NHFG Consultation

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

If this NHB Datacheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB Datacheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://wildlife.state.nh.us/wildlife/environmental-review.html. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB Datacheck results letter number and "Fis 1004 consultation request" in the subject line.**

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule)*, coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email: Kim Tuttle *kim.tuttle@wildlife.nh.gov* with a copy to NHFGreview@wildlife.nh.gov, and include the NHB Datacheck results letter number and "review request" in the email subject line.

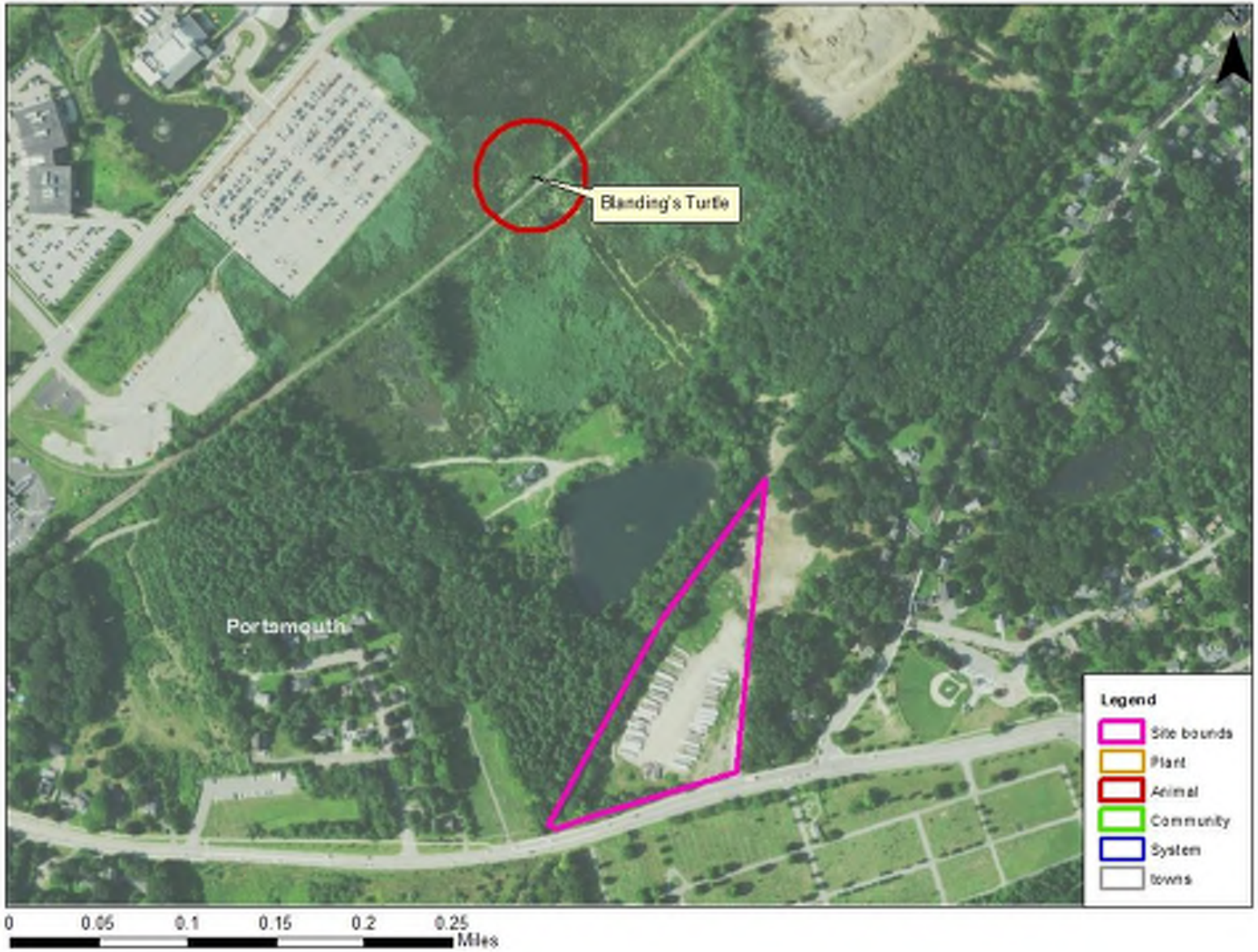
Contact NH Fish & Game at (603) 271-0467 with questions.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB22-2841



New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2011: Area 12906: 1 adult observed.
General Area: 2011: Area 12906: Marsh along railroad tracks.
General Comments: --
Management Comments: --

Location

Survey Site Name: Meadowbrook
Managed By: Hospital Corporation of America

County: Rockingham
Town(s): Portsmouth
Size: 1.9 acres
Elevation:

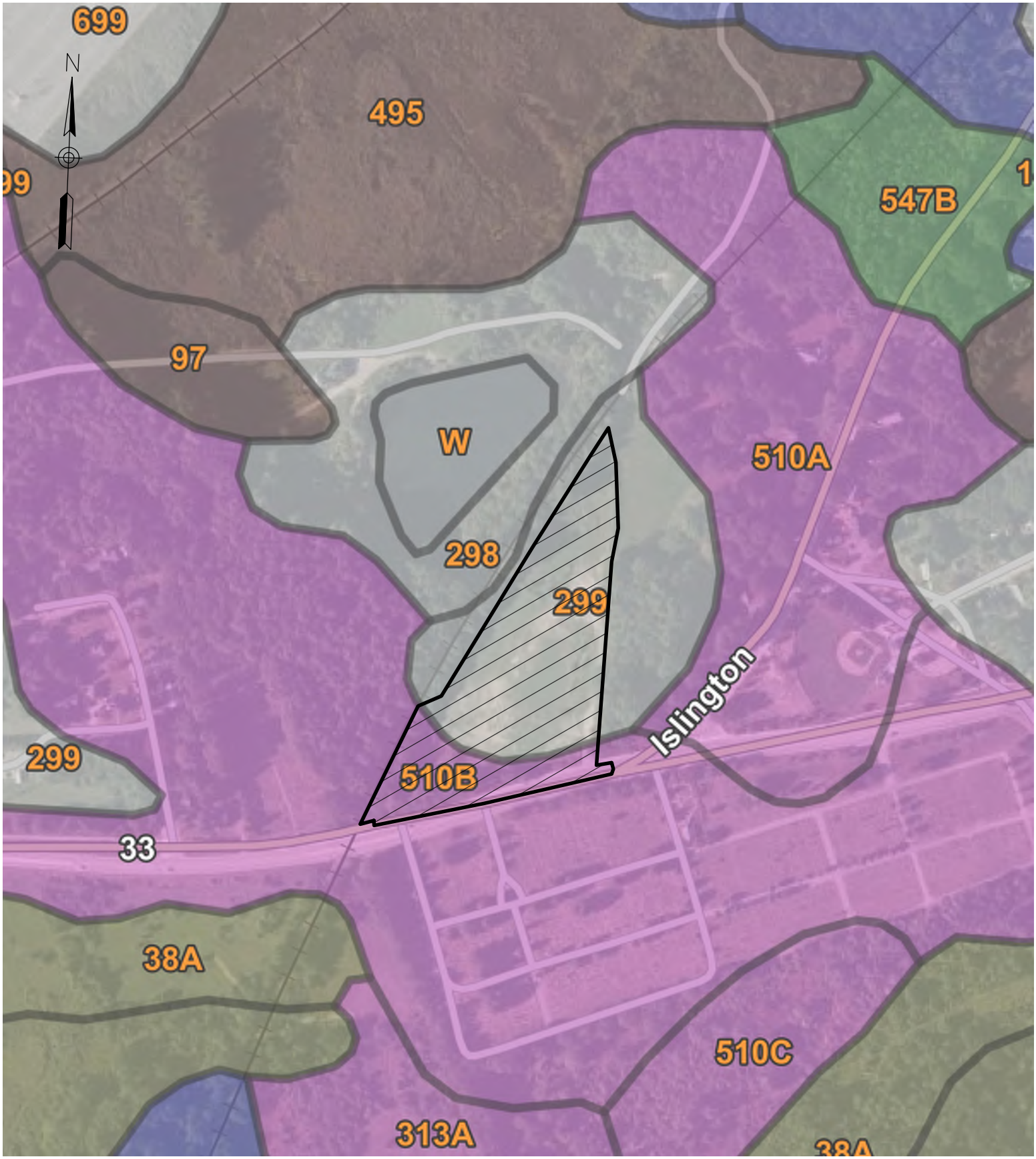
Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2011: Area 12906: Marsh adjacent to 333 Borthwick Avenue, behind Portsmouth Regional Hospital.

Dates documented

First reported:	2011-05-07	Last reported:	2011-05-07

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.



300 150 0 300

SCALE 1"= 300

FIG-2 - NRCS MAP

Weston & Sampson℠

Weston & Sampson Engineers, Inc.

55 Walkers Brook Drive, Suite 100, Reading MA 01867

2000 1000 0 2000

SCALE 1"= 2000

FIG-3 - AERIAL

Weston & Sampson℠

Weston & Sampson Engineers, Inc.

55 Walkers Brook Drive, Suite 100, Reading MA 01867

Site Photographs

Site Photos

December 15, 2022

Photo 1: Looking north at the existing site entrance on Greenland Road

Photo 2: Looking west along the frontage of the property at Greenland Road

Photo 3: Looking north from southern edge of property near Greenland Road

Photo 4: Looking southwest into the swale near Greenland Road

Photo 5: Looking southeast towards Greenland Road

Photo 6: Looking northeast towards northern corner of property

Photo 7: Looking southeast towards eastern boundary of property

Photo 8: Looking southwest towards Greenland Road

Photo 9: Looking north towards rail trail along western boundary of property

Photo 10: Looking southwest towards Greenland Road

SHEET:

L100

PROJECT:

PORTSMOUTH SKATEPARK

PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE:

EXISTING CONDITIONS PLAN

90% CONSTRUCTION DOCUMENTS

SKATE PARK

DRAWN BY:

REVIEWED BY:

APPROVED BY:

DATE: 7/20/22

Weston & Sampson
Engineers, Inc.
85 Devonshire Street,
3rd Floor, Boston, MA 02109
617.912.4400 800.SAMPSON
www.westonandsampson.com

SCALE: 1" = 40'-0"

0 40 80 120

CONTROL POINT ASSOCIATES INC
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.mseengineers.com

MSC
A division of TTM Tech, Inc.

TTM

PLAN REFERENCES:

1. "LOT LINE ADJUSTMENT ISLINGTON STREET & GREENLAND ROAD, PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH" BY JAMES VERRA AND ASSOCIATES, PLC DATED 1-30-2002. PLAN NOT RECORDED.
2. "RIGHT OF WAY EASEMENT PLAN FOR THE CITY OF PORTSMOUTH, GREENLAND ROAD/ANGLE ROAD, PORTSMOUTH, NEW HAMPSHIRE" PREPARED BY VANASSE HANGEN BRUSTLIN, INC. DATED SEPTEMBER 28, 2007, REVISED APRIL 28, 2008, ROCKINGHAM COUNTY REGISTRY OF DEEDS PLAN #D-35181.
3. "AS BUILT PLAN OF A PORTION OF NH ROUTE 33, PORTSMOUTH, NEW HAMPSHIRE" BY ALBERT ENGINEERING, INC. DATED AUGUST 2010, REVISED 9/21/10, PLAN NOT RECORDED.
4. "EXISTING FEATURES PLAN TAX MAP 241 LOT 18 PROPERTY OF CITY OF PORTSMOUTH 356 GREENLAND ROAD PORTSMOUTH, NEW HAMPSHIRE COUNTY OF ROCKINGHAM" BY MSC CIVIL ENGINEERS & LAND SURVEYORS, DATED NOVEMBER 2, 2012 WITH REVISION 1 DATED 11/6/2012 PLAN IS NOT RECORDED.

NOTES

1. THE PARCEL IS LOCATED IN THE MUNICIPAL DISTRICT
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 241 AS LOT 18.
3. THE PARCEL IS LOCATED IN FLOOD ZONE X AS SHOWN ON FLOOD INSURANCE RATE MAP ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 270 OF 681, MAP NUMBER 33015C0270E. EFFECTIVE DATE: MAY 17, 2005.
4. OWNER OF RECORD:
   CITY OF PORTSMOUTH
   C/O WATER DEPARTMENT
   DEPARTMENT OF PUBLIC WORKS
   PO BOX 628
   PORTSMOUTH, NH 03802
5. ZONING REQUIREMENTS:
   LOTS AND BUILDINGS IN THE MUNICIPAL DISTRICT ARE EXEMPT FROM ALL DIMENSIONAL AND INTENSITY REGULATIONS.
   SEE SECTION 10.560 OF THE CITY OF PORTSMOUTH ZONING ORDINANCE.
6. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). CONTOUR INTERVAL IS 1'.
7. HORIZONTAL DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83).
8. THE UNDERGROUND SYSTEM SHOWN HEREON WAS NOT FIELD LOCATED. LOCATION TAKEN FROM GRADING PLAN ROUTE 33 RECREATION AREA BY GINGERWOOD ENGINEERS, DATED 12/17/2013. THIS LOCATION SHOWN HEREON IS APPROXIMATE ONLY.
9. EXISTING CONDITIONS SURVEY PERFORMED BY _____ DATED _____

LEGEND

LIMIT OF WORK	
PROPERTY LINE	
GUARDRAIL	
EDGE OF WOODS	
OVERHEAD UTILITIES	
EXISTING CONTOUR	65
EXISTING DRAIN	
CATCH BASIN	
UTILITY POLE	
DRAIN MANHOLE	
RIPRAP	
GRAVEL	
BK.2562/PG.2783	BOOK NO./PAGE NO.
CB	CATCH BASIN
CPP	CORRUGATED PLASTIC PIPE
DMH	DRAINAGE MANHOLE
EP	EDGE OF PAVEMENT
FES	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
INV.	INVERT
L	LENGTH OF CURVE
N/F	NOW OR FORMERLY
PSNH	PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCP	REINFORCED CONCRETE PIPE
S.F.	SQUARE FEET
TP	TEST PIT

BMP Worksheets

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.54	ac	A = Area draining to the practice
0.29	ac	A_I = Impervious area draining to the practice
0.54	decimal	I = Percent impervious area draining to the practice, in decimal form
0.53	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.29	ac-in	WQV= 1" x Rv x A
1,045	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

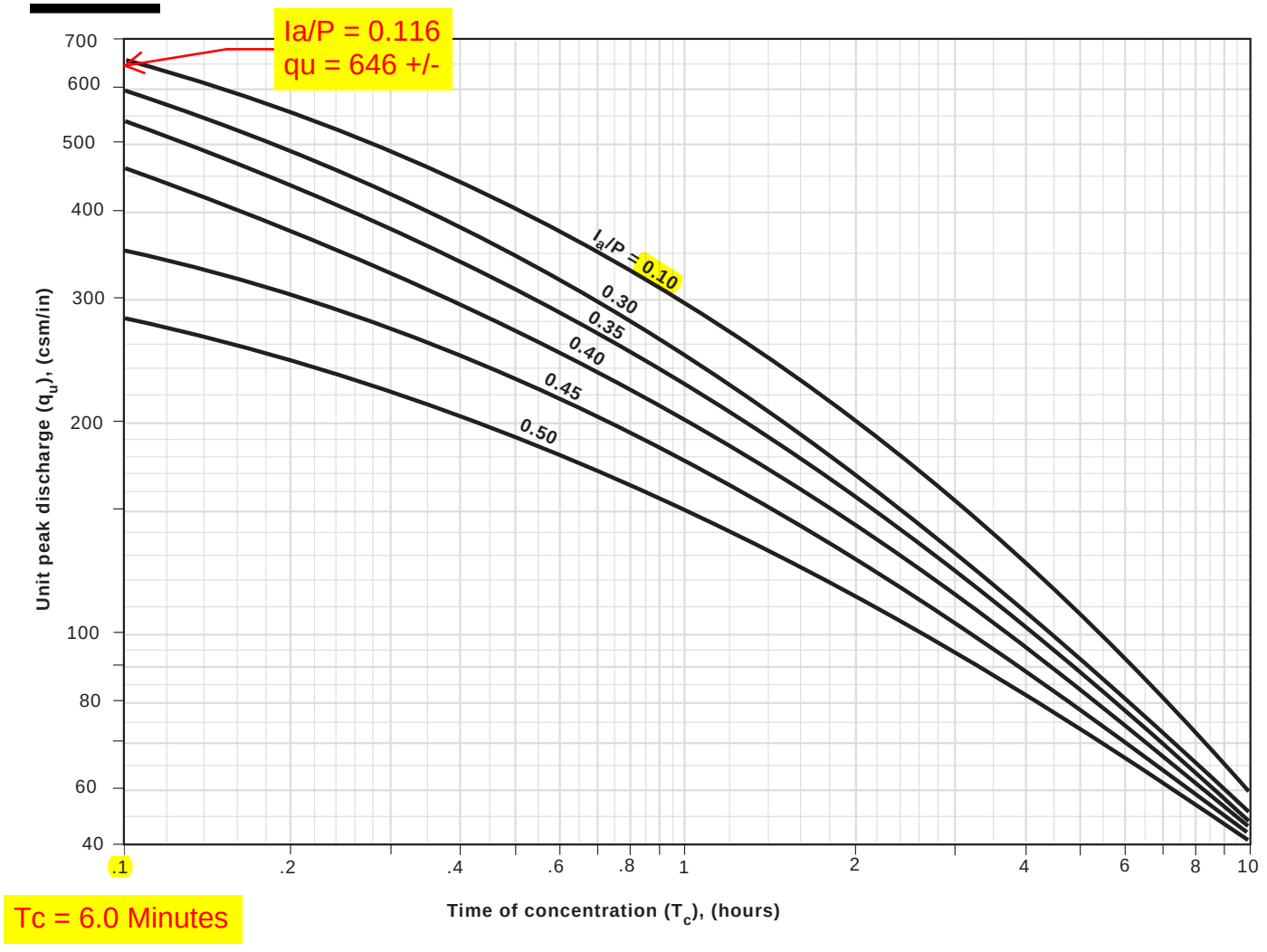
Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.53	inches	Q = Water quality depth. Q = WQV/A
95	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.6	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.116	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
646.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.291	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:

These calculations are included to support the design of a Contech CDS water quality treatment unit

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

ROUTE 33 SKATE PARK
PORTSMOUTH, NH

Area	0.54 ac	Unit Site Designation	CDS
Weighted C	0.63	Rainfall Station #	104
t_c	6 min		
CDS Model	2015-4	CDS Treatment Capacity	**0.7 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	13.0%	13.0%	0.01	0.01	12.6
0.04	12.2%	25.2%	0.01	0.01	11.8
0.06	11.2%	36.4%	0.02	0.02	10.8
0.08	10.0%	46.4%	0.03	0.03	9.6
0.10	8.2%	54.6%	0.03	0.03	7.9
0.12	5.8%	60.4%	0.04	0.04	5.5
0.14	6.5%	66.9%	0.05	0.05	6.2
0.16	4.6%	71.5%	0.05	0.05	4.4
0.18	3.7%	75.2%	0.06	0.06	3.5
0.20	3.3%	78.5%	0.07	0.07	3.1
0.25	6.7%	85.2%	0.09	0.09	6.2
0.30	3.7%	88.9%	0.10	0.10	3.4
0.35	2.4%	91.3%	0.12	0.12	2.2
0.40	1.8%	93.1%	0.14	0.14	1.7
0.45	1.9%	95.0%	0.15	0.15	1.7
0.50	1.1%	96.1%	0.17	0.17	0.9
0.75	2.6%	98.7%	0.26	0.26	2.2
1.00	0.9%	99.6%	0.34	0.34	0.7
1.50	0.4%	100.0%	0.51	0.51	0.3
2.00	0.0%	100.0%	0.68	0.68	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					94.6
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.5%
				Predicted Net Annual Load Removal Efficiency =	**88.1%**

1 - Based on 10 years of hourly precipitation data from NCDC 1683, Concord WSO Airport, Merrimack County, NH
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Drainage Analysis

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.787 degrees West
Latitude	43.058 degrees North
Elevation	0 feet
Date/Time	Mon, 19 Dec 2022 12:41:39 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.04	2.67	2.93	**1yr**	2.36	2.82	3.23	3.95	4.57	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.34	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.15	4.08	4.60	**5yr**	3.62	4.42	5.06	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.73	2.23	2.90	3.76	4.89	5.55	**10yr**	4.33	5.34	6.11	7.14	8.01	**10yr**
25yr	0.48	0.76	0.97	1.34	1.77	2.34	**25yr**	1.53	2.14	2.78	3.64	4.75	6.20	7.13	**25yr**	5.49	6.86	7.84	9.07	10.10	**25yr**
50yr	0.54	0.86	1.10	1.54	2.07	2.76	**50yr**	1.79	2.53	3.29	4.33	5.68	7.43	8.62	**50yr**	6.57	8.29	9.47	10.87	12.04	**50yr**
100yr	0.59	0.96	1.24	1.77	2.42	3.26	**100yr**	2.08	2.98	3.91	5.17	6.79	8.90	10.43	**100yr**	7.88	10.03	11.45	13.04	14.36	**100yr**
200yr	0.67	1.10	1.42	2.04	2.82	3.83	**200yr**	2.44	3.51	4.62	6.14	8.11	10.67	12.62	**200yr**	9.44	12.13	13.84	15.64	17.12	**200yr**
500yr	0.80	1.31	1.71	2.48	3.47	4.76	**500yr**	3.00	4.38	5.77	7.72	10.26	13.56	16.23	**500yr**	12.00	15.61	17.79	19.91	21.63	**500yr**

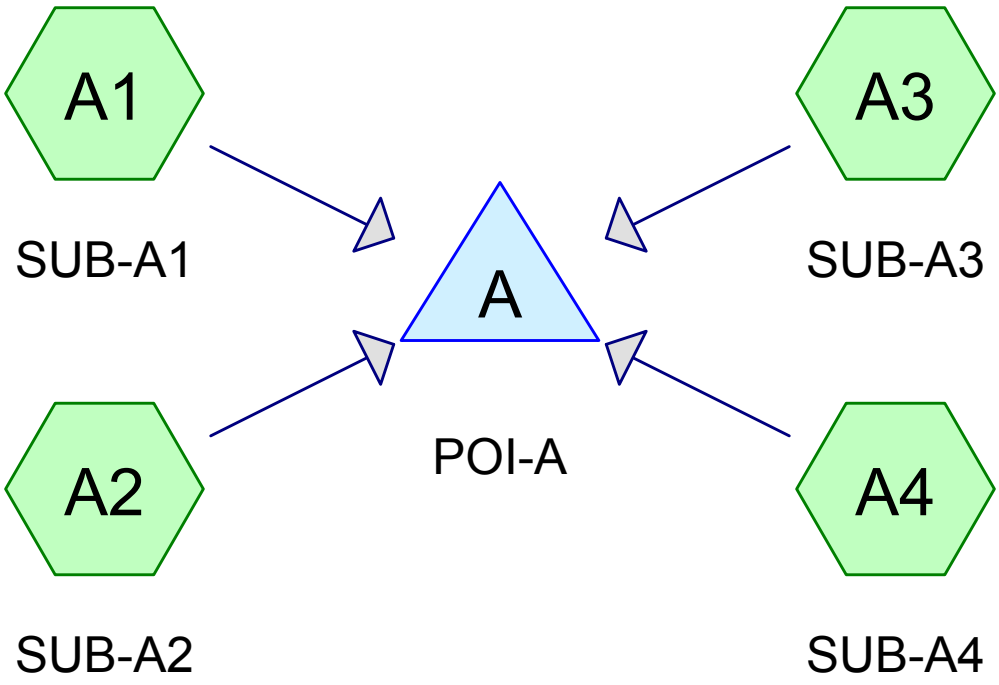
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	**1yr**	0.63	0.87	0.92	1.32	1.67	2.24	2.54	**1yr**	1.98	2.44	2.87	3.16	3.90	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.07	3.47	**2yr**	2.72	3.34	3.84	4.57	5.09	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.81	4.23	**5yr**	3.37	4.06	4.74	5.57	6.29	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.39	3.06	4.40	4.91	**10yr**	3.90	4.73	5.50	6.47	7.26	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.73	5.97	**25yr**	4.18	5.74	6.74	7.89	8.77	**25yr**
50yr	0.48	0.74	0.92	1.32	1.78	2.17	**50yr**	1.53	2.12	2.35	3.08	3.94	5.34	6.91	**50yr**	4.73	6.65	7.86	9.17	10.13	**50yr**
100yr	0.54	0.82	1.02	1.48	2.03	2.48	**100yr**	1.75	2.42	2.63	3.42	4.37	6.01	8.00	**100yr**	5.32	7.69	9.17	10.68	11.71	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.82	**200yr**	1.98	2.76	2.94	3.79	4.82	6.73	9.26	**200yr**	5.96	8.90	10.70	12.45	13.55	**200yr**
500yr	0.69	1.03	1.33	1.93	2.75	3.38	**500yr**	2.37	3.30	3.42	4.33	5.49	7.83	11.22	**500yr**	6.93	10.79	13.13	15.27	16.41	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	3.00	3.16	**1yr**	2.66	3.04	3.60	4.39	5.07	**1yr**
2yr	0.34	0.52	0.64	0.86	1.06	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.44	3.71	**2yr**	3.05	3.56	4.09	4.85	5.66	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.24	4.35	4.96	**5yr**	3.85	4.77	5.39	6.37	7.16	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.10	3.94	5.36	6.19	**10yr**	4.74	5.95	6.79	7.84	8.75	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.57	**25yr**	1.76	2.51	2.95	4.06	5.12	7.83	8.31	**25yr**	6.93	7.99	9.09	10.32	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.45	3.12	**50yr**	2.12	3.05	3.59	4.98	6.28	9.81	10.39	**50yr**	8.68	10.00	11.33	12.70	13.94	**50yr**
100yr	0.79	1.19	1.49	2.15	2.95	3.80	**100yr**	2.55	3.72	4.36	6.13	7.70	12.28	13.01	**100yr**	10.87	12.51	14.13	15.65	17.05	**100yr**
200yr	0.92	1.38	1.75	2.54	3.54	4.64	**200yr**	3.06	4.53	5.32	7.55	9.45	15.41	16.29	**200yr**	13.64	15.67	17.64	19.27	20.87	**200yr**
500yr	1.14	1.70	2.18	3.17	4.51	6.02	**500yr**	3.89	5.88	6.90	9.97	12.42	20.83	21.95	**500yr**	18.44	21.10	23.67	25.38	27.26	**500yr**

Powered by ACIS Northeast Regional Climate Center



Subcat Reach Pond Link

Routing Diagram for HydroCAD-EX

Prepared by Weston & Sampson Engineers, Inc, Printed 12/20/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	Type III 24-hr		Default	24.00	1	2.85	2
2	10 YR	Type III 24-hr		Default	24.00	1	4.33	2
3	50 YR	Type III 24-hr		Default	24.00	1	6.57	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
28,589	30	Brush, Good, HSG A (A2, A3, A4)
30,623	77	Fallow, bare soil, HSG A (A3, A4)
141,895	76	Gravel, HSG A (A2, A3, A4)
1,384	98	Impervious, HSG A (A3)
18,606	98	Paved roads w/curbs & sewers, HSG A (A1)
38,124	30	Woods, Good, HSG A (A2, A3, A4)
259,221	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
259,221	HSG A	A1, A2, A3, A4
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
259,221		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
28,589	0	0	0	0	28,589	Brush, Good
30,623	0	0	0	0	30,623	Fallow, bare soil
141,895	0	0	0	0	141,895	Gravel
1,384	0	0	0	0	1,384	Impervious
18,606	0	0	0	0	18,606	Paved roads w/curbs & sewers
38,124	0	0	0	0	38,124	Woods, Good
259,221	**0**	**0**	**0**	**0**	**259,221**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	A2	0.00	0.00	539.0	0.0200	0.013	0.0	30.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: SUB-A1 Runoff Area=18,606 sf 100.00% Impervious Runoff Depth=2.62"
Tc=6.0 min CN=98 Runoff=1.18 cfs 4,061 cf

SubcatchmentA2: SUB-A2 Runoff Area=57,852 sf 0.00% Impervious Runoff Depth=0.23"
Flow Length=854' Tc=13.6 min CN=WQ Runoff=0.26 cfs 1,088 cf

SubcatchmentA3: SUB-A3 Runoff Area=132,727 sf 1.04% Impervious Runoff Depth=0.86"
Tc=6.0 min CN=WQ Runoff=2.92 cfs 9,548 cf

SubcatchmentA4: SUB-A4 Runoff Area=50,036 sf 0.00% Impervious Runoff Depth=0.71"
Tc=6.0 min CN=WQ Runoff=0.91 cfs 2,961 cf

Pond A: POI-A Inflow=5.17 cfs 17,658 cf
Primary=5.17 cfs 17,658 cf

Total Runoff Area = 259,221 sf Runoff Volume = 17,658 cf Average Runoff Depth = 0.82"
92.29% Pervious = 239,231 sf 7.71% Impervious = 19,990 sf

Summary for Subcatchment A1: SUB-A1

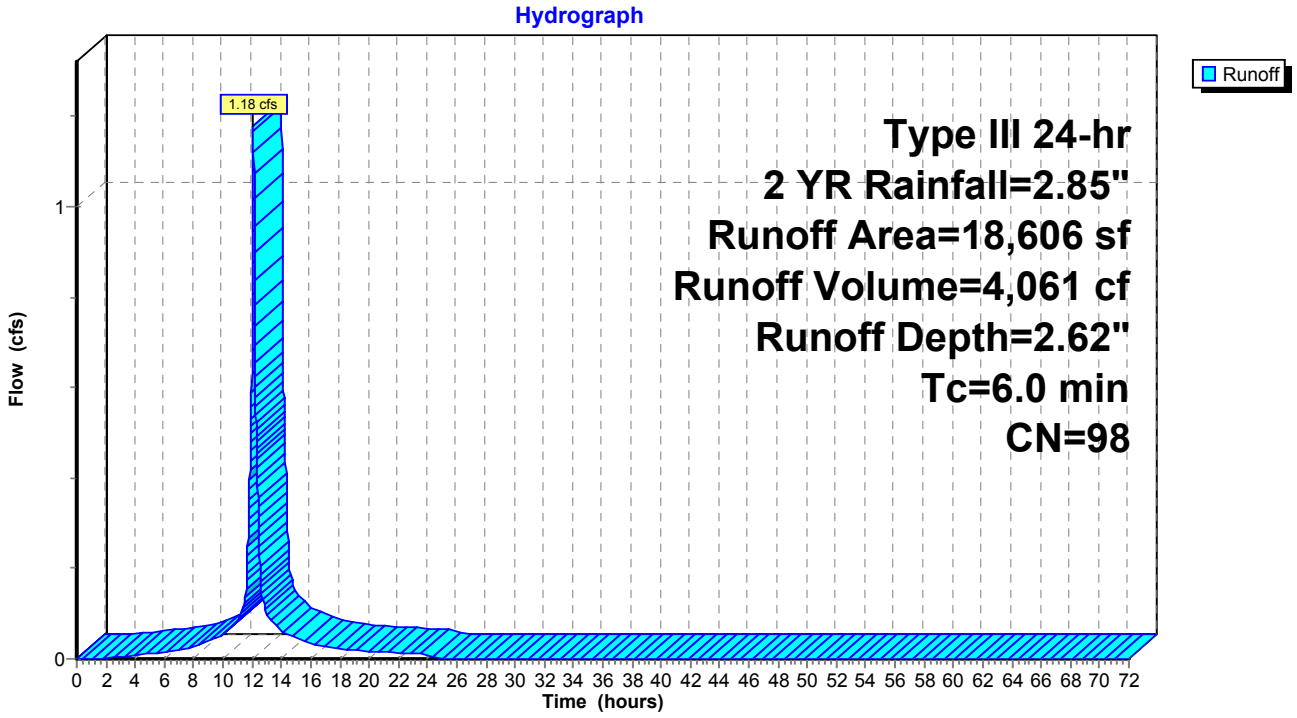
Runoff = 1.18 cfs @ 12.08 hrs, Volume= 4,061 cf, Depth= 2.62"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A1: SUB-A1



Summary for Subcatchment A2: SUB-A2

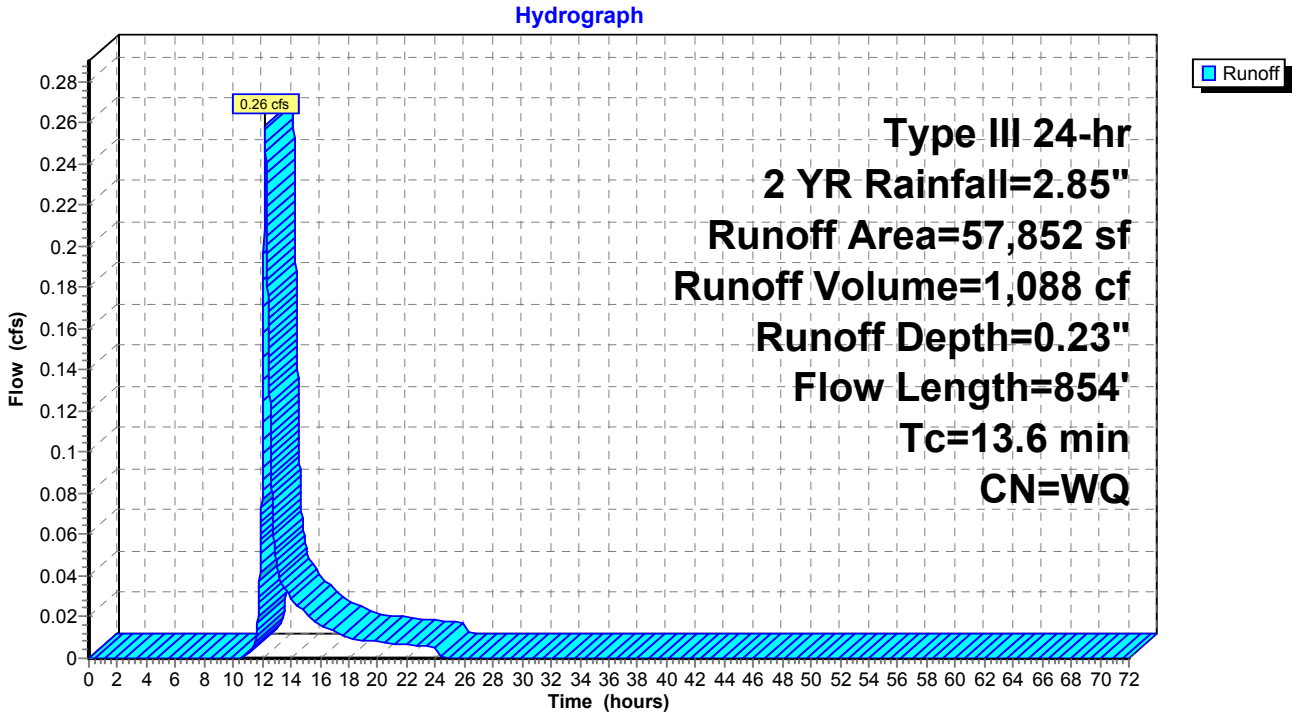
Runoff = 0.26 cfs @ 12.20 hrs, Volume= 1,088 cf, Depth= 0.23"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

	Area (sf)	CN	Description
	28,219	30	Woods, Good, HSG A
	15,368	30	Brush, Good, HSG A
*	14,265	76	Gravel, HSG A
	57,852		Weighted Average
	57,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.24"
1.5	25	0.0150	0.28		**Sheet Flow,** Fallow n= 0.050 P2= 3.24"
0.6	83	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	182	0.0030	0.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	539	0.0200	11.82	58.01	**Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Corrugated PE, smooth interior
13.6	854	Total			

Subcatchment A2: SUB-A2



Summary for Subcatchment A3: SUB-A3

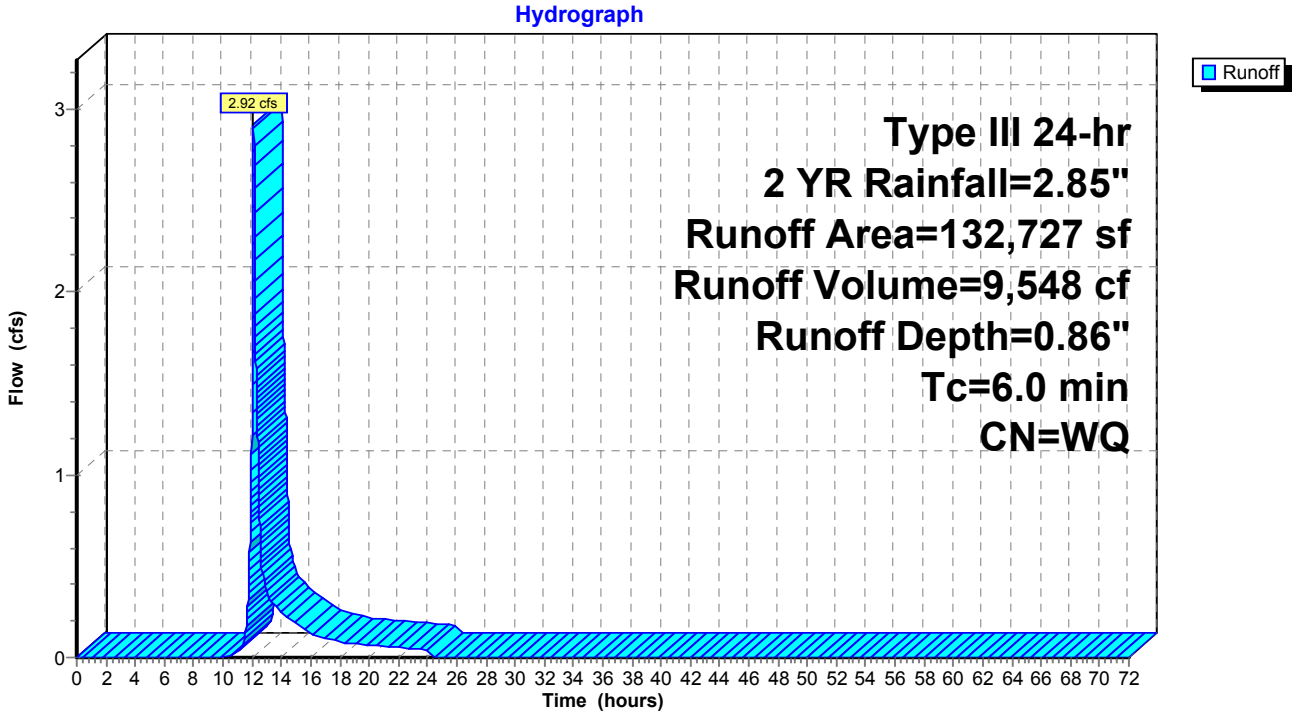
Runoff = 2.92 cfs @ 12.10 hrs, Volume= 9,548 cf, Depth= 0.86"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

	Area (sf)	CN	Description
*	97,147	76	Gravel, HSG A
	22,748	77	Fallow, bare soil, HSG A
	5,871	30	Woods, Good, HSG A
	5,577	30	Brush, Good, HSG A
*	1,384	98	Impervious, HSG A
	132,727		Weighted Average
	131,343		98.96% Pervious Area
	1,384		1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A3: SUB-A3



Summary for Subcatchment A4: SUB-A4

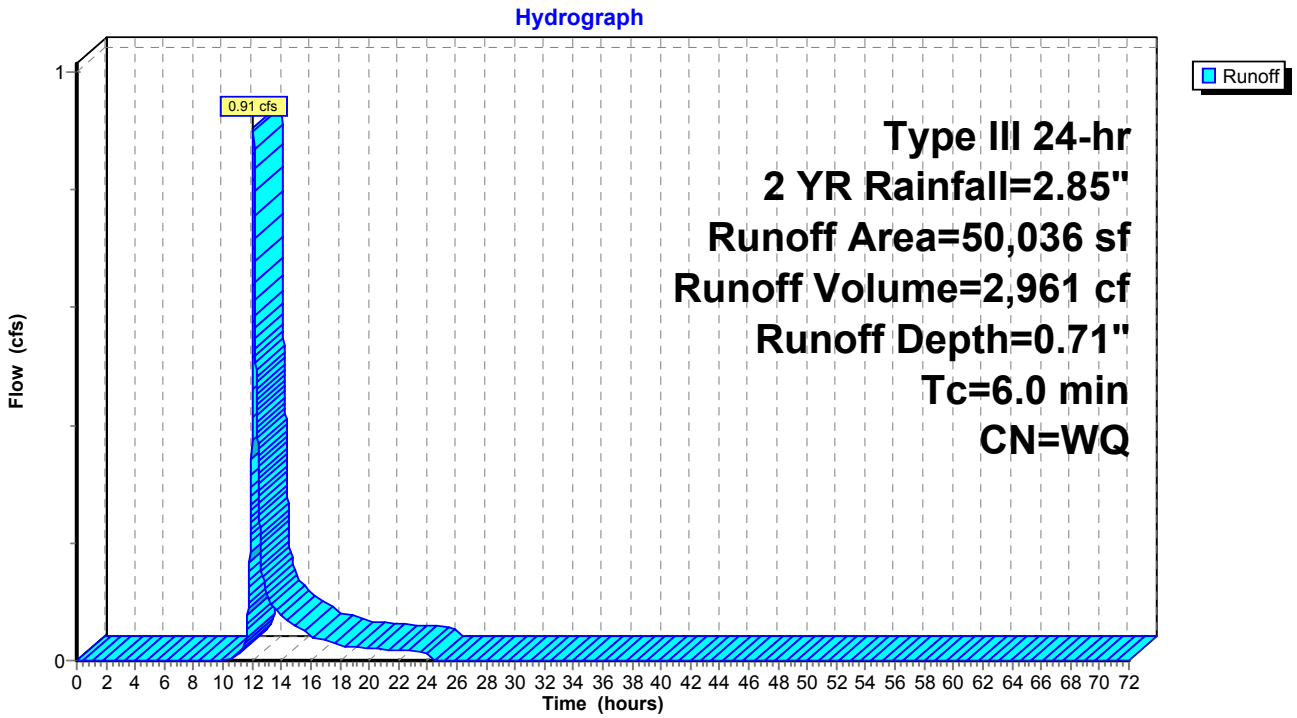
Runoff = 0.91 cfs @ 12.10 hrs, Volume= 2,961 cf, Depth= 0.71"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

	Area (sf)	CN	Description
*	30,483	76	Gravel, HSG A
	7,875	77	Fallow, bare soil, HSG A
	7,644	30	Brush, Good, HSG A
	4,034	30	Woods, Good, HSG A
	50,036		Weighted Average
	50,036		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A4: SUB-A4

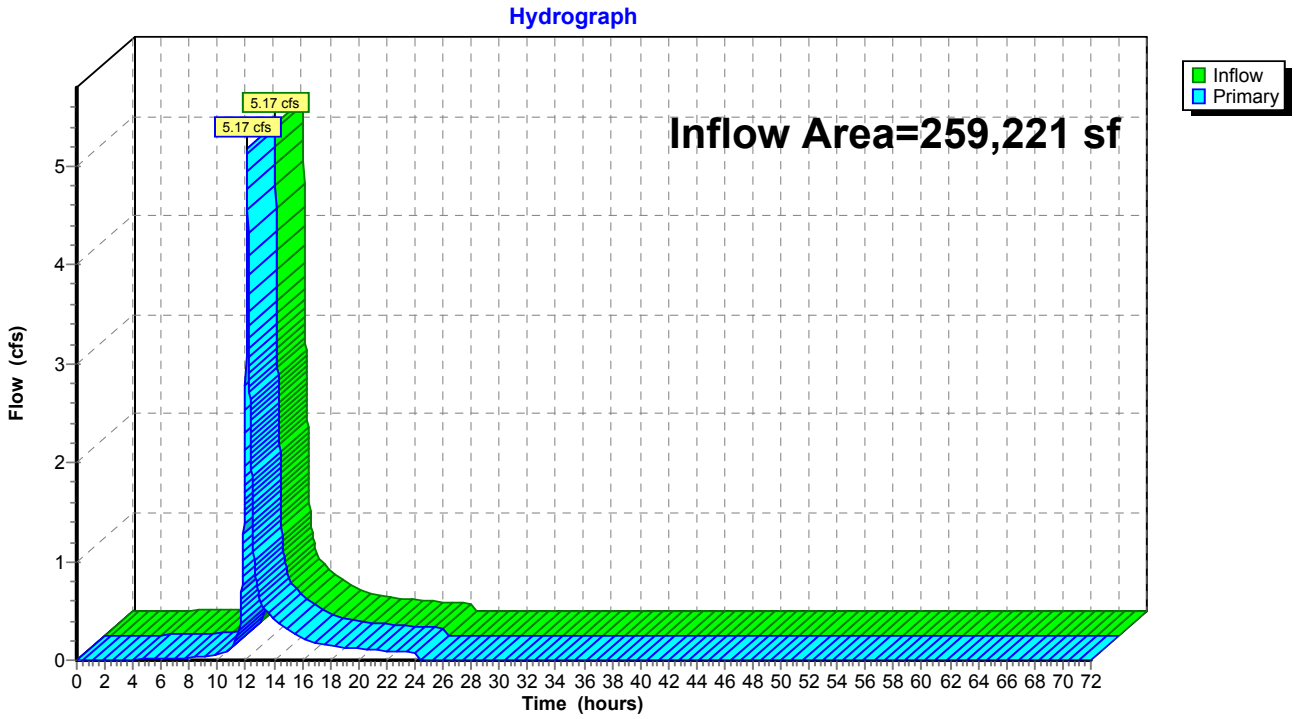


Summary for Pond A: POI-A

Inflow Area = 259,221 sf, 7.71% Impervious, Inflow Depth = 0.82" for 2 YR event
Inflow = 5.17 cfs @ 12.09 hrs, Volume= 17,658 cf
Primary = 5.17 cfs @ 12.09 hrs, Volume= 17,658 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond A: POI-A



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: SUB-A1 Runoff Area=18,606 sf 100.00% Impervious Runoff Depth=4.09"
Tc=6.0 min CN=98 Runoff=1.81 cfs 6,348 cf

SubcatchmentA2: SUB-A2 Runoff Area=57,852 sf 0.00% Impervious Runoff Depth=0.49"
Flow Length=854' Tc=13.6 min CN=WQ Runoff=0.60 cfs 2,372 cf

SubcatchmentA3: SUB-A3 Runoff Area=132,727 sf 1.04% Impervious Runoff Depth=1.86"
Tc=6.0 min CN=WQ Runoff=6.58 cfs 20,553 cf

SubcatchmentA4: SUB-A4 Runoff Area=50,036 sf 0.00% Impervious Runoff Depth=1.54"
Tc=6.0 min CN=WQ Runoff=2.06 cfs 6,428 cf

Pond A: POI-A Inflow=10.87 cfs 35,702 cf
Primary=10.87 cfs 35,702 cf

Total Runoff Area = 259,221 sf Runoff Volume = 35,702 cf Average Runoff Depth = 1.65"
92.29% Pervious = 239,231 sf 7.71% Impervious = 19,990 sf

Summary for Subcatchment A1: SUB-A1

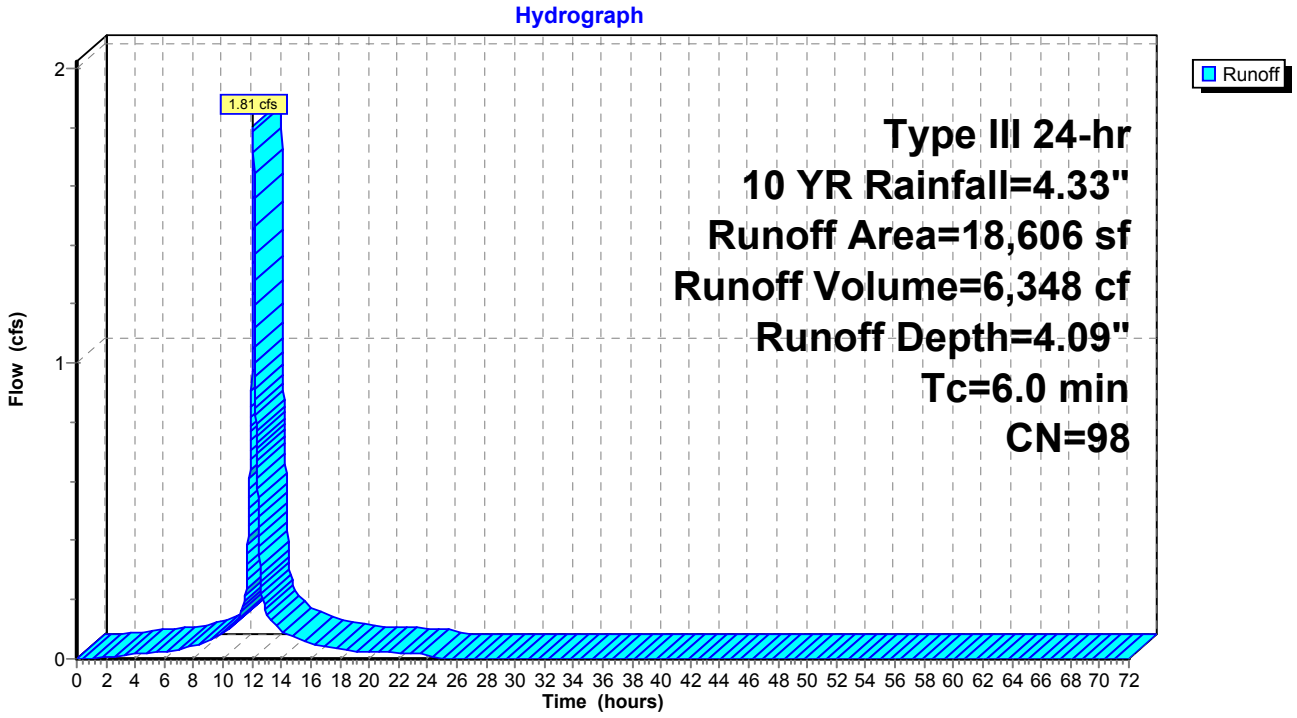
Runoff = 1.81 cfs @ 12.08 hrs, Volume= 6,348 cf, Depth= 4.09"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A1: SUB-A1



Summary for Subcatchment A2: SUB-A2

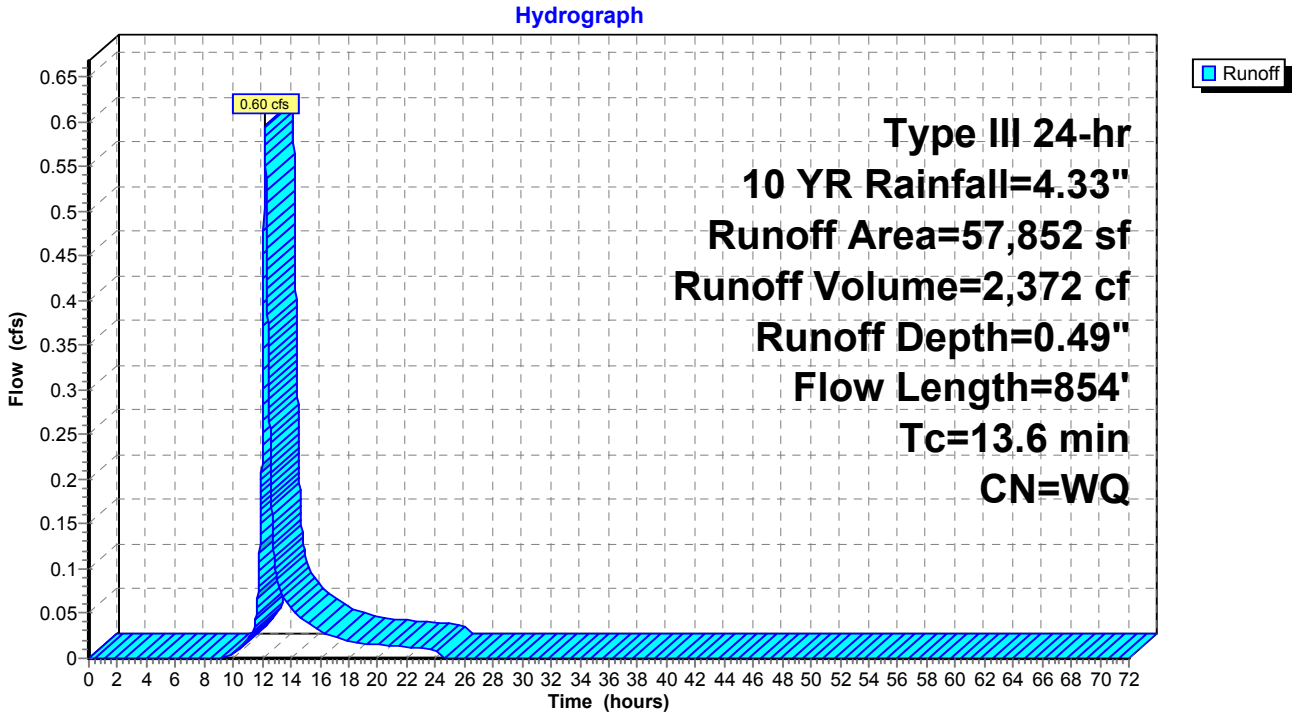
Runoff = 0.60 cfs @ 12.19 hrs, Volume= 2,372 cf, Depth= 0.49"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
	28,219	30	Woods, Good, HSG A
	15,368	30	Brush, Good, HSG A
*	14,265	76	Gravel, HSG A
	57,852		Weighted Average
	57,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.24"
1.5	25	0.0150	0.28		**Sheet Flow,** Fallow n= 0.050 P2= 3.24"
0.6	83	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	182	0.0030	0.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	539	0.0200	11.82	58.01	**Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Corrugated PE, smooth interior
13.6	854	Total			

Subcatchment A2: SUB-A2



Summary for Subcatchment A3: SUB-A3

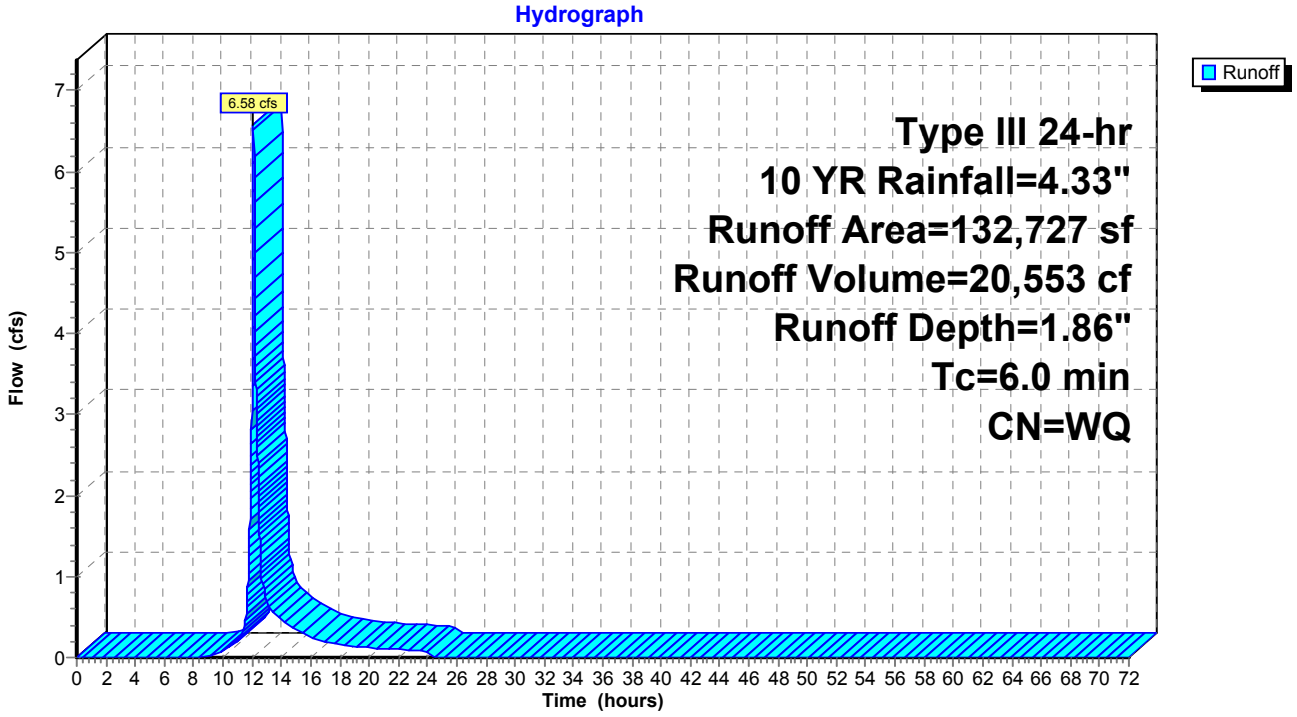
Runoff = 6.58 cfs @ 12.09 hrs, Volume= 20,553 cf, Depth= 1.86"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
*	97,147	76	Gravel, HSG A
	22,748	77	Fallow, bare soil, HSG A
	5,871	30	Woods, Good, HSG A
	5,577	30	Brush, Good, HSG A
*	1,384	98	Impervious, HSG A
	132,727		Weighted Average
	131,343		98.96% Pervious Area
	1,384		1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A3: SUB-A3



Summary for Subcatchment A4: SUB-A4

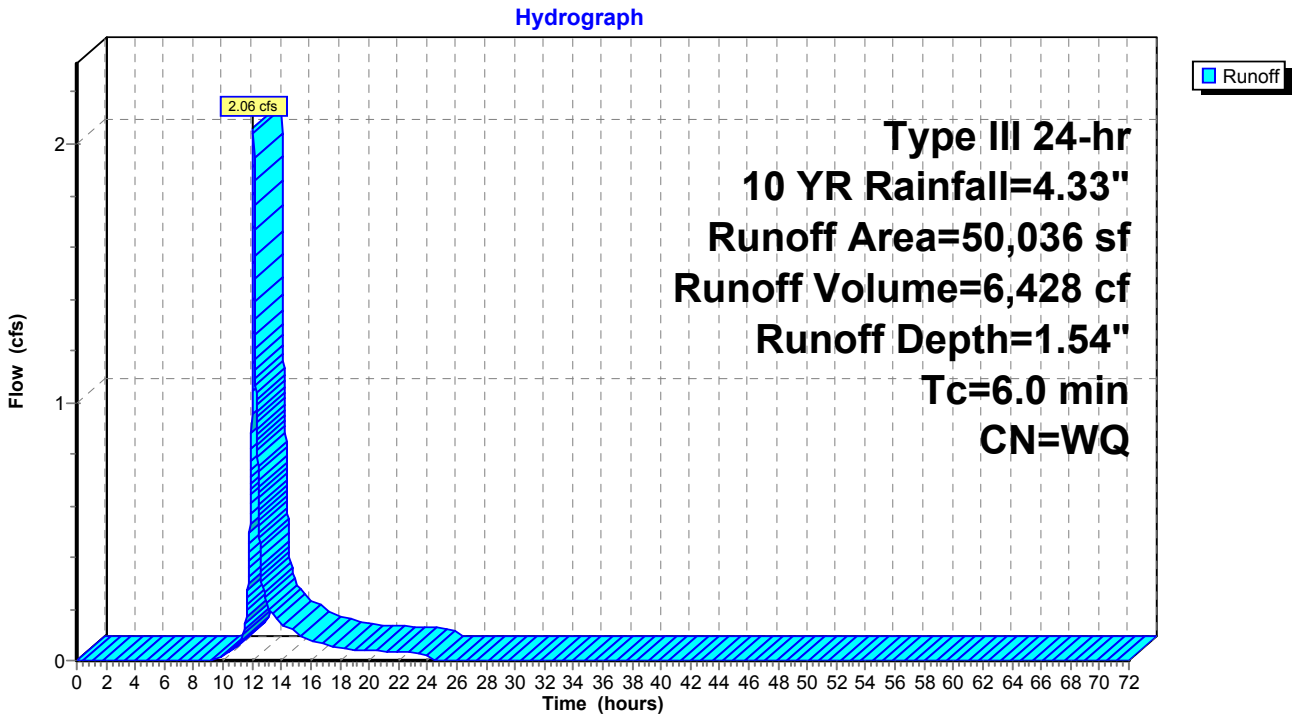
Runoff = 2.06 cfs @ 12.09 hrs, Volume= 6,428 cf, Depth= 1.54"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
*	30,483	76	Gravel, HSG A
	7,875	77	Fallow, bare soil, HSG A
	7,644	30	Brush, Good, HSG A
	4,034	30	Woods, Good, HSG A
	50,036		Weighted Average
	50,036		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A4: SUB-A4

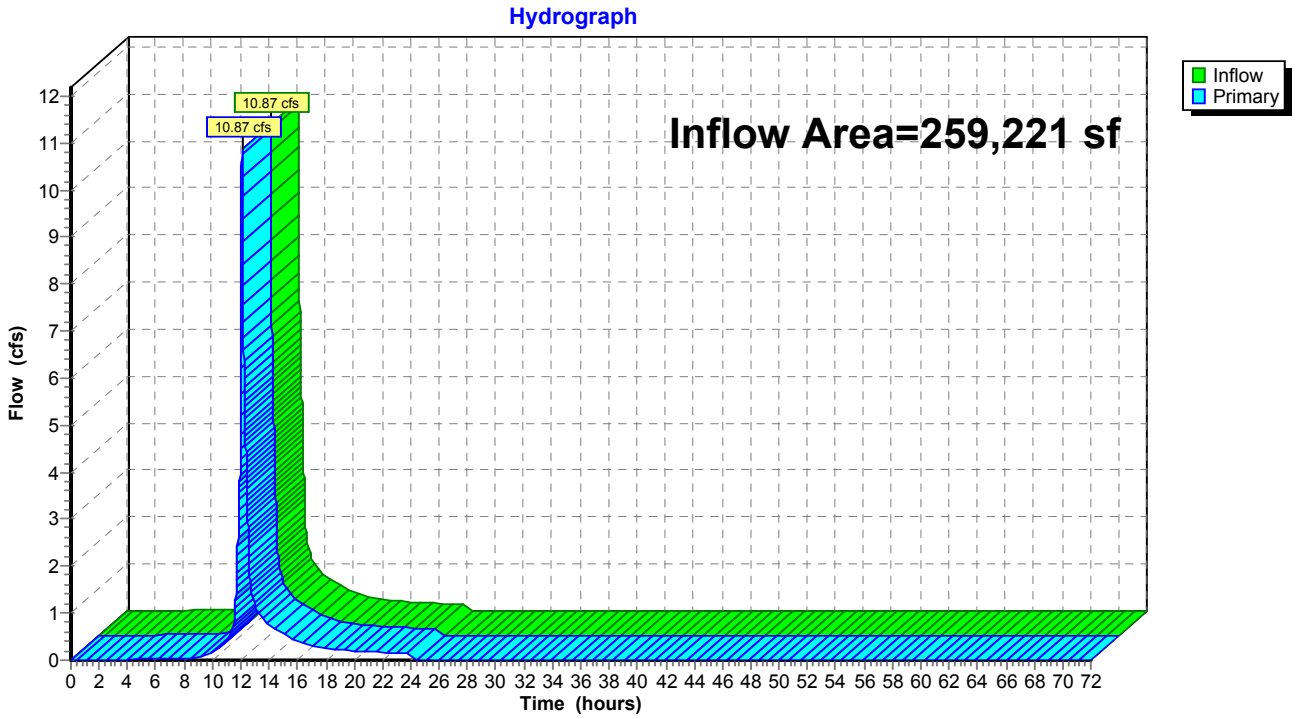


Summary for Pond A: POI-A

Inflow Area = 259,221 sf, 7.71% Impervious, Inflow Depth = 1.65" for 10 YR event
Inflow = 10.87 cfs @ 12.09 hrs, Volume= 35,702 cf
Primary = 10.87 cfs @ 12.09 hrs, Volume= 35,702 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond A: POI-A



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: SUB-A1 Runoff Area=18,606 sf 100.00% Impervious Runoff Depth=6.33"
Tc=6.0 min CN=98 Runoff=2.75 cfs 9,817 cf

SubcatchmentA2: SUB-A2 Runoff Area=57,852 sf 0.00% Impervious Runoff Depth=1.06"
Flow Length=854' Tc=13.6 min CN=WQ Runoff=1.17 cfs 5,130 cf

SubcatchmentA3: SUB-A3 Runoff Area=132,727 sf 1.04% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=WQ Runoff=12.77 cfs 39,800 cf

SubcatchmentA4: SUB-A4 Runoff Area=50,036 sf 0.00% Impervious Runoff Depth=3.02"
Tc=6.0 min CN=WQ Runoff=4.02 cfs 12,601 cf

Pond A: POI-A Inflow=20.40 cfs 67,347 cf
Primary=20.40 cfs 67,347 cf

Total Runoff Area = 259,221 sf Runoff Volume = 67,347 cf Average Runoff Depth = 3.12"
92.29% Pervious = 239,231 sf 7.71% Impervious = 19,990 sf

Summary for Subcatchment A1: SUB-A1

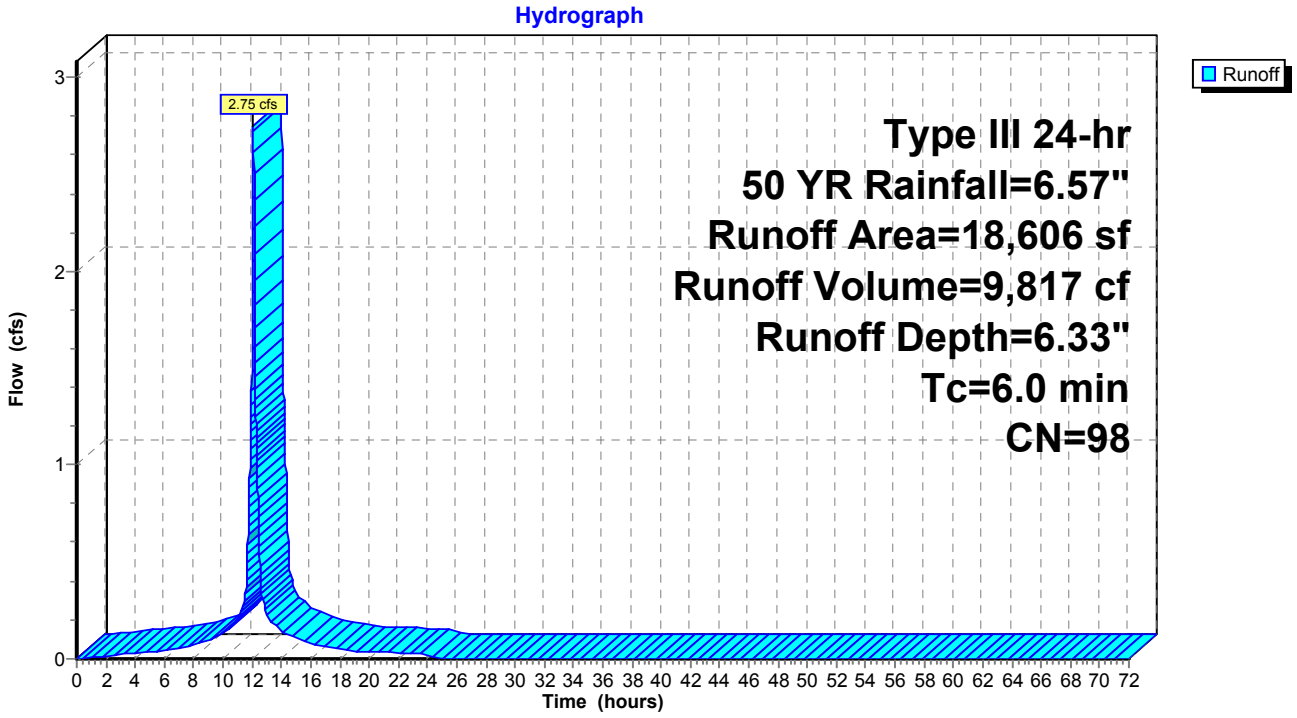
Runoff = 2.75 cfs @ 12.08 hrs, Volume= 9,817 cf, Depth= 6.33"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A1: SUB-A1



Summary for Subcatchment A2: SUB-A2

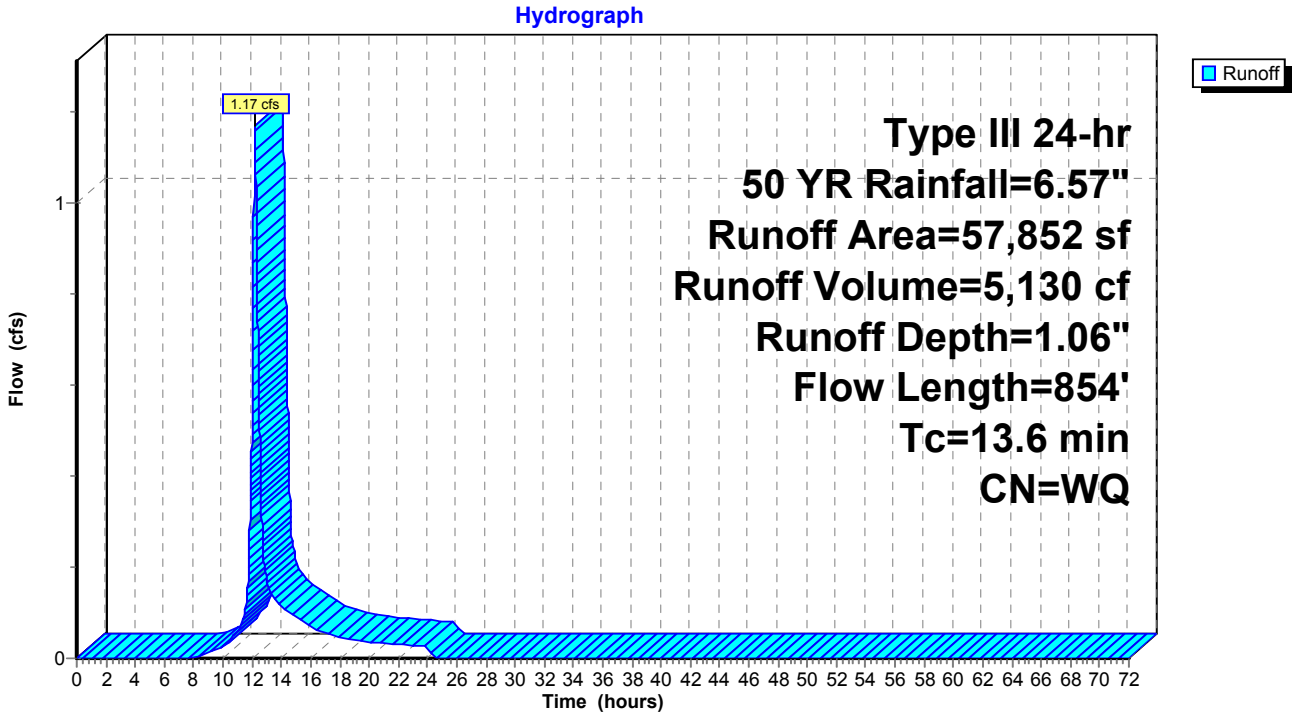
Runoff = 1.17 cfs @ 12.19 hrs, Volume= 5,130 cf, Depth= 1.06"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

	Area (sf)	CN	Description
	28,219	30	Woods, Good, HSG A
	15,368	30	Brush, Good, HSG A
*	14,265	76	Gravel, HSG A
	57,852		Weighted Average
	57,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.24"
1.5	25	0.0150	0.28		**Sheet Flow,** Fallow n= 0.050 P2= 3.24"
0.6	83	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	182	0.0030	0.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	539	0.0200	11.82	58.01	**Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Corrugated PE, smooth interior
13.6	854	Total			

Subcatchment A2: SUB-A2



Summary for Subcatchment A3: SUB-A3

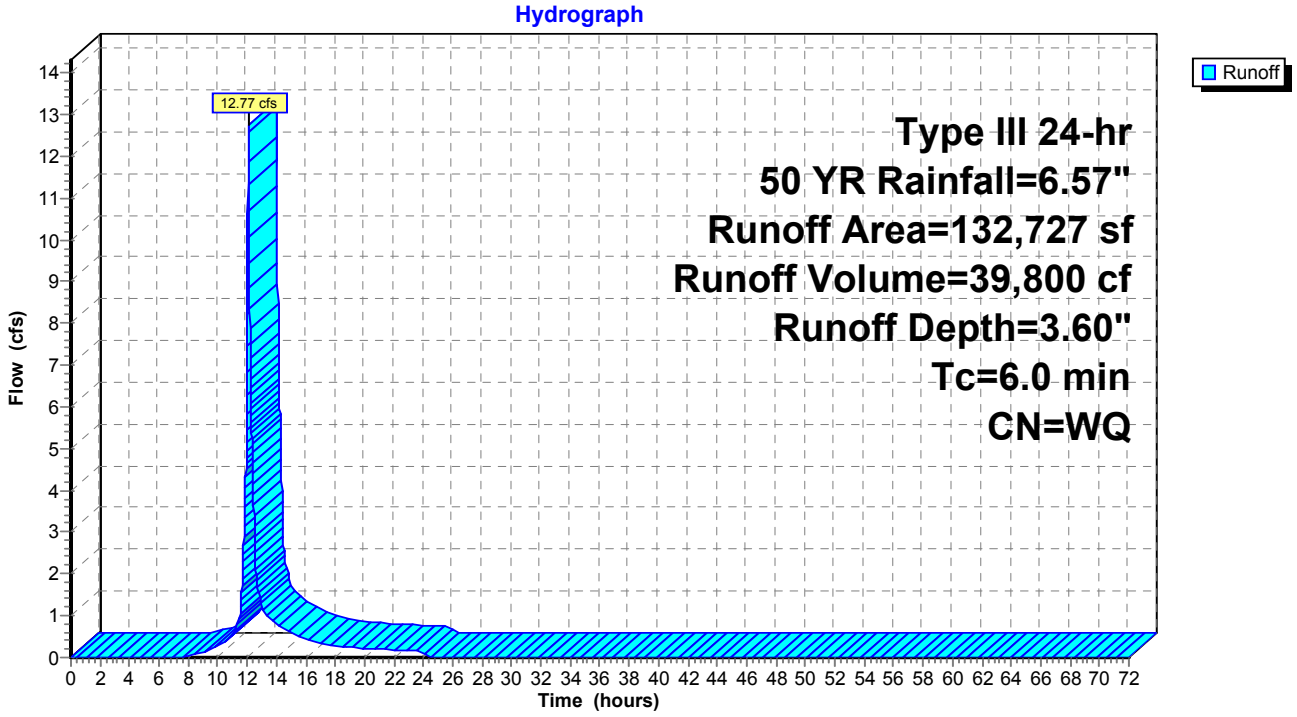
Runoff = 12.77 cfs @ 12.09 hrs, Volume= 39,800 cf, Depth= 3.60"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

	Area (sf)	CN	Description
*	97,147	76	Gravel, HSG A
	22,748	77	Fallow, bare soil, HSG A
	5,871	30	Woods, Good, HSG A
	5,577	30	Brush, Good, HSG A
*	1,384	98	Impervious, HSG A
	132,727		Weighted Average
	131,343		98.96% Pervious Area
	1,384		1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A3: SUB-A3



Summary for Subcatchment A4: SUB-A4

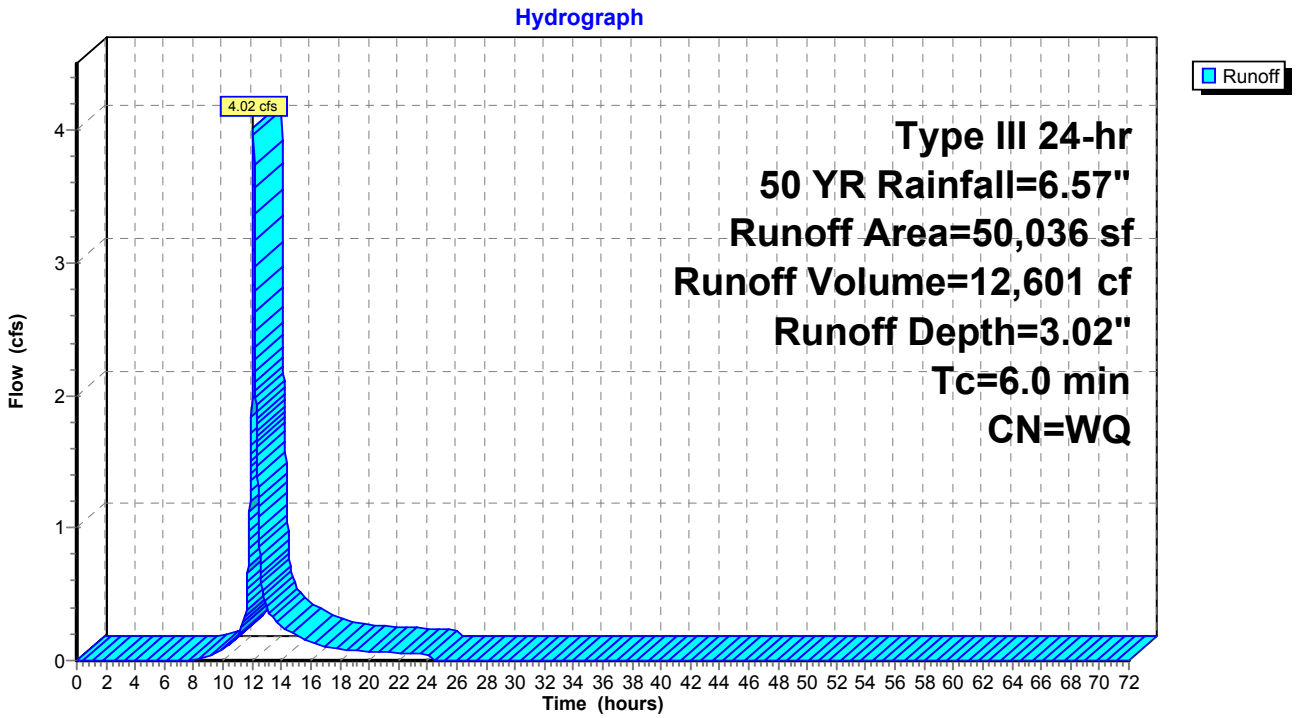
Runoff = 4.02 cfs @ 12.09 hrs, Volume= 12,601 cf, Depth= 3.02"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

	Area (sf)	CN	Description
*	30,483	76	Gravel, HSG A
	7,875	77	Fallow, bare soil, HSG A
	7,644	30	Brush, Good, HSG A
	4,034	30	Woods, Good, HSG A
	50,036		Weighted Average
	50,036		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A4: SUB-A4

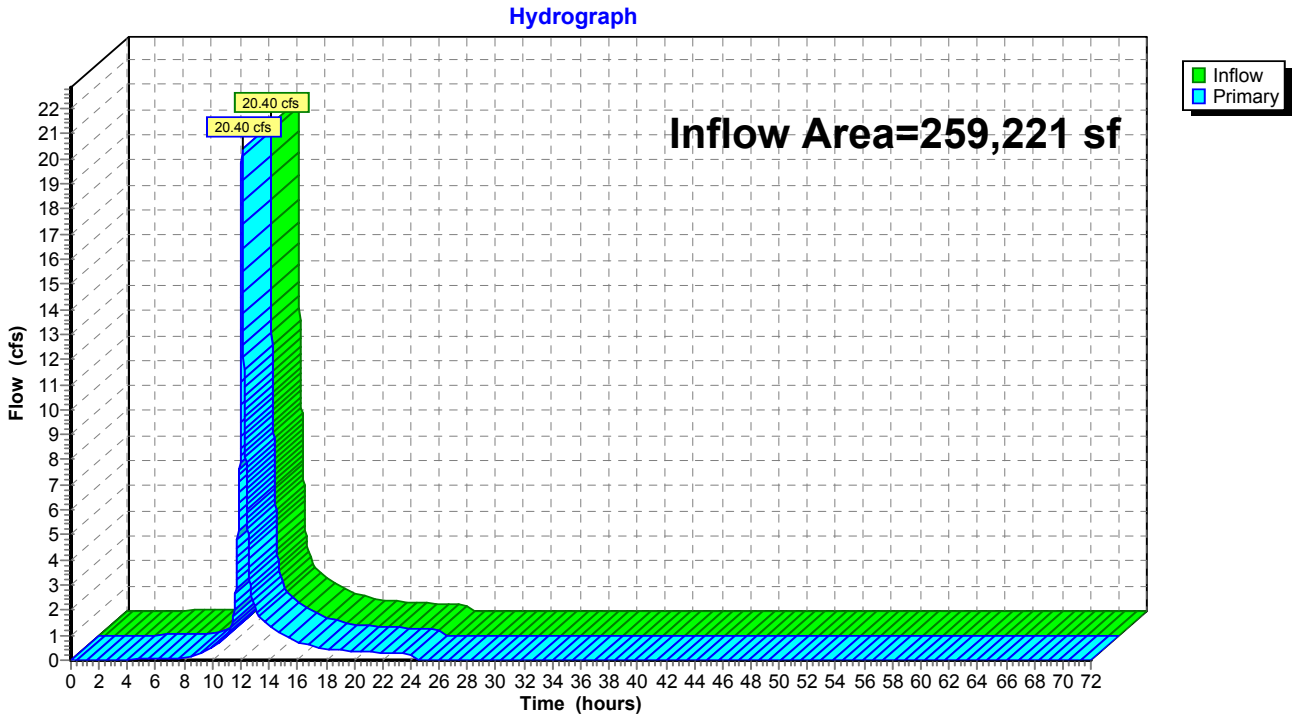


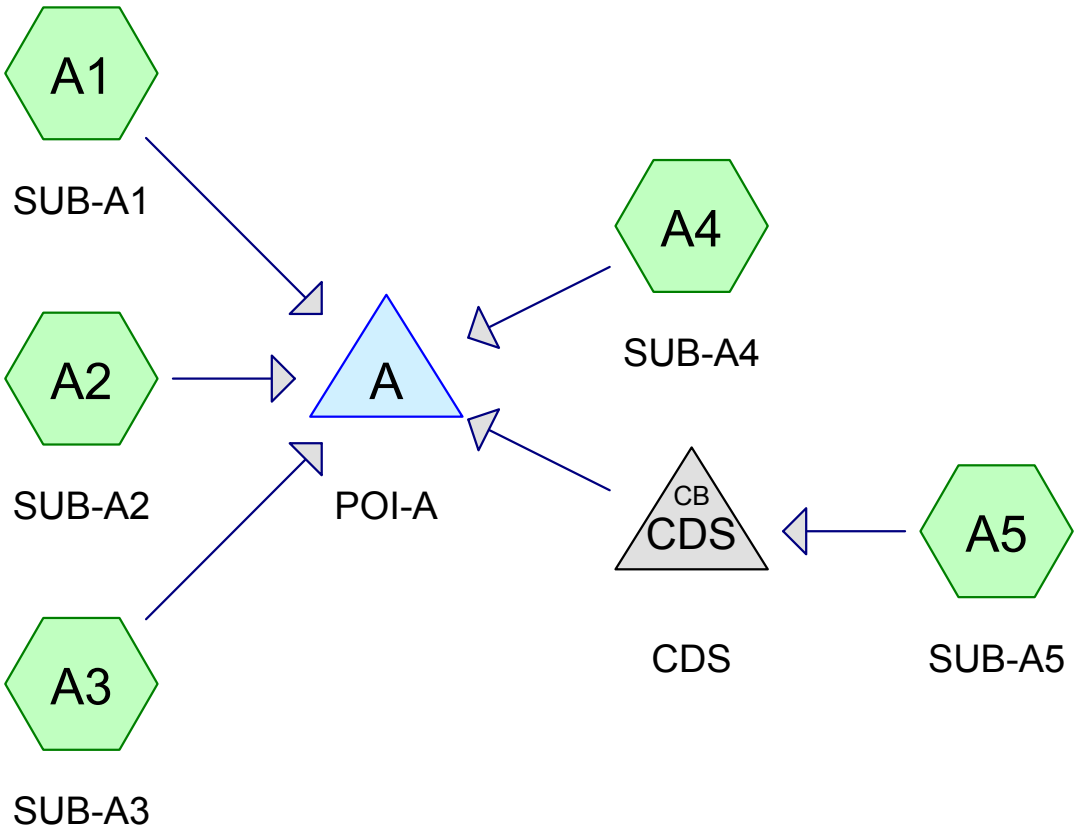
Summary for Pond A: POI-A

Inflow Area = 259,221 sf, 7.71% Impervious, Inflow Depth = 3.12" for 50 YR event
Inflow = 20.40 cfs @ 12.09 hrs, Volume= 67,347 cf
Primary = 20.40 cfs @ 12.09 hrs, Volume= 67,347 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond A: POI-A





Subcat Reach Pond Link

Routing Diagram for HydroCAD-PR
Prepared by Weston & Sampson Engineers, Inc, Printed 12/20/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	Type III 24-hr		Default	24.00	1	2.85	2
2	10 YR	Type III 24-hr		Default	24.00	1	4.33	2
3	50 YR	Type III 24-hr		Default	24.00	1	6.57	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
57,503	39	>75% Grass cover, Good, HSG A (A2, A3, A5)
23,197	30	Brush, Good, HSG A (A2, A3, A4)
30,074	77	Fallow, bare soil, HSG A (A3, A4)
70,983	76	Gravel, HSG A (A3, A4, A5)
24,934	98	Impervious, HSG A (A3, A5)
18,606	98	Paved roads w/curbs & sewers, HSG A (A1)
33,924	30	Woods, Good, HSG A (A2, A3, A4, A5)
259,221	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
259,221	HSG A	A1, A2, A3, A4, A5
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
259,221		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
57,503	0	0	0	0	57,503	>75% Grass cover, Good
23,197	0	0	0	0	23,197	Brush, Good
30,074	0	0	0	0	30,074	Fallow, bare soil
70,983	0	0	0	0	70,983	Gravel
24,934	0	0	0	0	24,934	Impervious
18,606	0	0	0	0	18,606	Paved roads w/curbs & sewers
33,924	0	0	0	0	33,924	Woods, Good
259,221	**0**	**0**	**0**	**0**	**259,221**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	A2	0.00	0.00	539.0	0.0200	0.013	0.0	30.0	0.0
2	CDS	52.27	51.19	151.5	0.0071	0.013	0.0	12.0	0.0

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: SUB-A1 Runoff Area=18,606 sf 100.00% Impervious Runoff Depth=2.62"
Tc=6.0 min CN=98 Runoff=1.18 cfs 4,061 cf

SubcatchmentA2: SUB-A2 Runoff Area=49,161 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=858' Tc=11.3 min CN=WQ Runoff=0.00 cfs 0 cf

SubcatchmentA3: SUB-A3 Runoff Area=117,921 sf 18.47% Impervious Runoff Depth=0.91"
Tc=6.0 min CN=WQ Runoff=2.65 cfs 8,916 cf

SubcatchmentA4: SUB-A4 Runoff Area=50,036 sf 0.00% Impervious Runoff Depth=0.71"
Tc=6.0 min CN=WQ Runoff=0.91 cfs 2,961 cf

SubcatchmentA5: SUB-A5 Runoff Area=23,497 sf 13.44% Impervious Runoff Depth=0.72"
Tc=6.0 min CN=WQ Runoff=0.42 cfs 1,406 cf

Pond A: POI-A Inflow=5.15 cfs 17,344 cf
Primary=5.15 cfs 17,344 cf

Pond CDS: CDS Peak Elev=52.63' Inflow=0.42 cfs 1,406 cf
12.0" Round Culvert n=0.013 L=151.5' S=0.0071 '/' Outflow=0.42 cfs 1,406 cf

Total Runoff Area = 259,221 sf Runoff Volume = 17,344 cf Average Runoff Depth = 0.80"
83.20% Pervious = 215,681 sf 16.80% Impervious = 43,540 sf

Summary for Subcatchment A1: SUB-A1

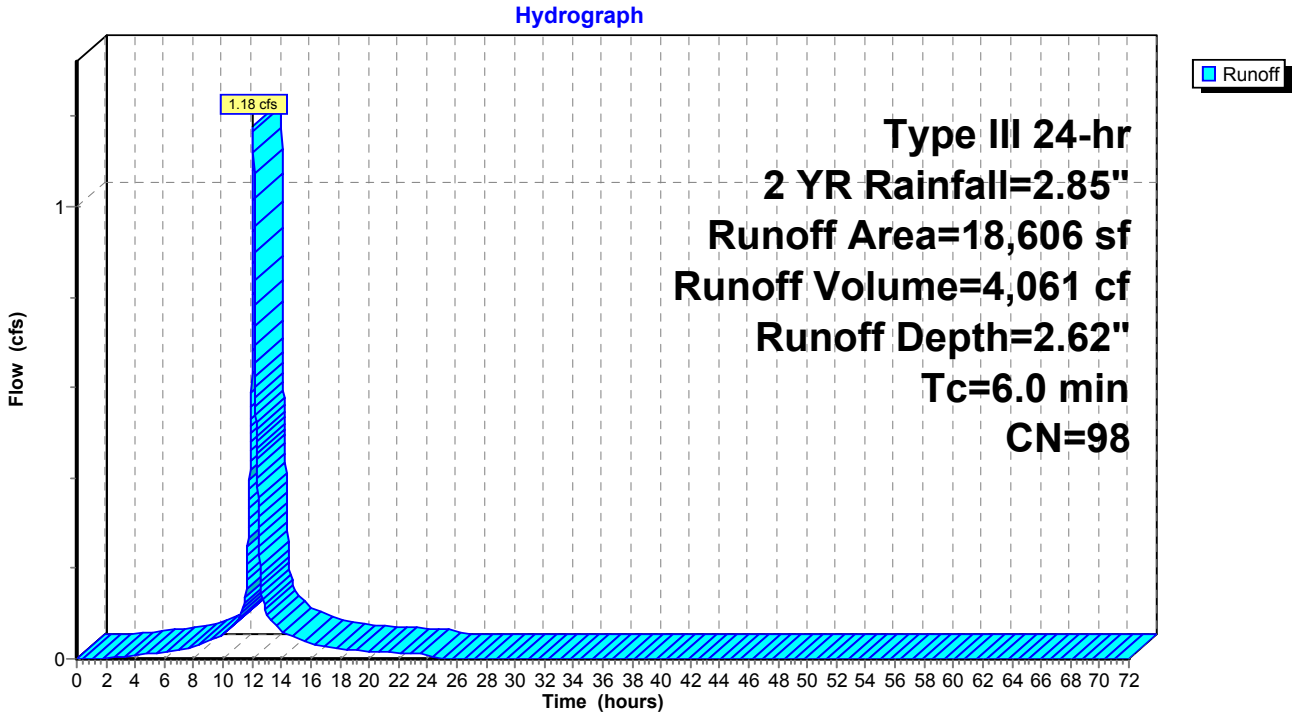
Runoff = 1.18 cfs @ 12.08 hrs, Volume= 4,061 cf, Depth= 2.62"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A1: SUB-A1



Summary for Subcatchment A2: SUB-A2

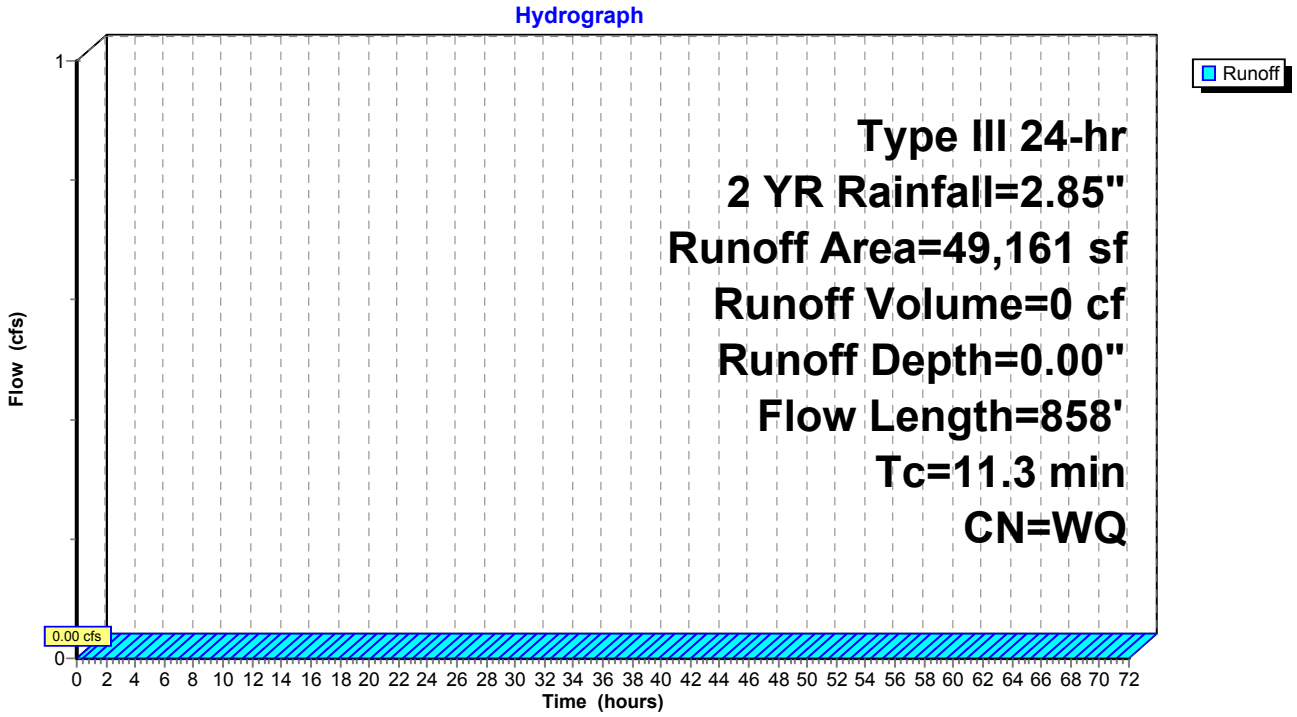
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

Area (sf)	CN	Description
25,149	30	Woods, Good, HSG A
13,489	30	Brush, Good, HSG A
10,523	39	>75% Grass cover, Good, HSG A
49,161		Weighted Average
49,161		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.24"
0.6	87	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	182	0.0030	0.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	539	0.0200	11.82	58.01	**Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Corrugated PE, smooth interior
11.3	858	Total			

Subcatchment A2: SUB-A2



Summary for Subcatchment A3: SUB-A3

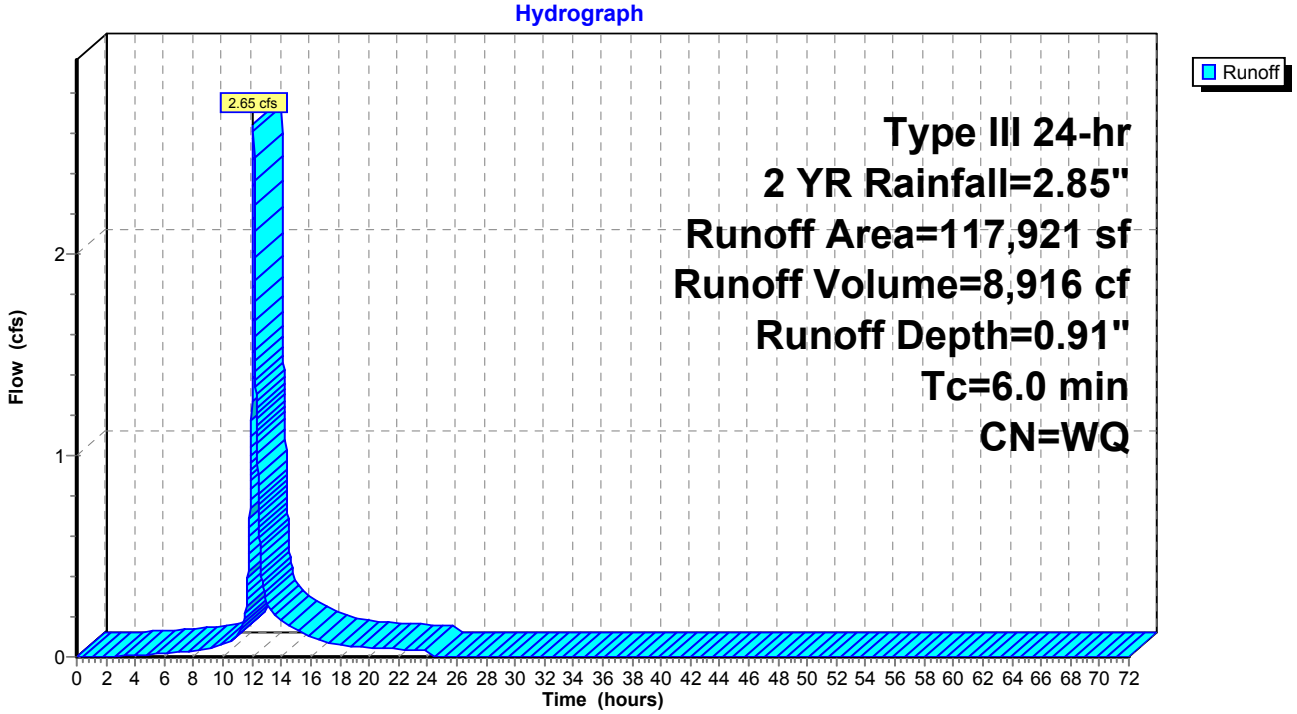
Runoff = 2.65 cfs @ 12.09 hrs, Volume= 8,916 cf, Depth= 0.91"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

	Area (sf)	CN	Description
	38,646	39	>75% Grass cover, Good, HSG A
*	31,098	76	Gravel, HSG A
	22,199	77	Fallow, bare soil, HSG A
*	21,776	98	Impervious, HSG A
	2,138	30	Woods, Good, HSG A
	2,064	30	Brush, Good, HSG A
	117,921		Weighted Average
	96,145		81.53% Pervious Area
	21,776		18.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A3: SUB-A3



Summary for Subcatchment A4: SUB-A4

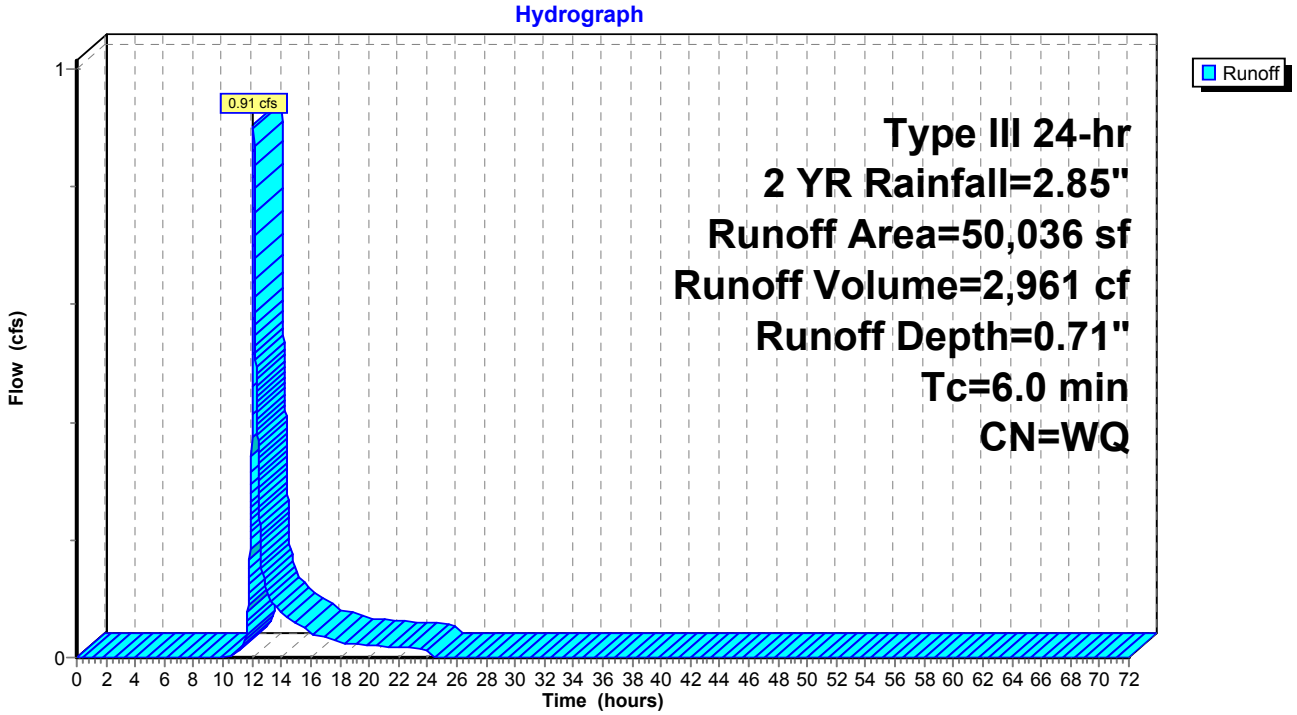
Runoff = 0.91 cfs @ 12.10 hrs, Volume= 2,961 cf, Depth= 0.71"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

	Area (sf)	CN	Description
*	30,483	76	Gravel, HSG A
	7,875	77	Fallow, bare soil, HSG A
	7,644	30	Brush, Good, HSG A
	4,034	30	Woods, Good, HSG A
	50,036		Weighted Average
	50,036		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A4: SUB-A4



Summary for Subcatchment A5: SUB-A5

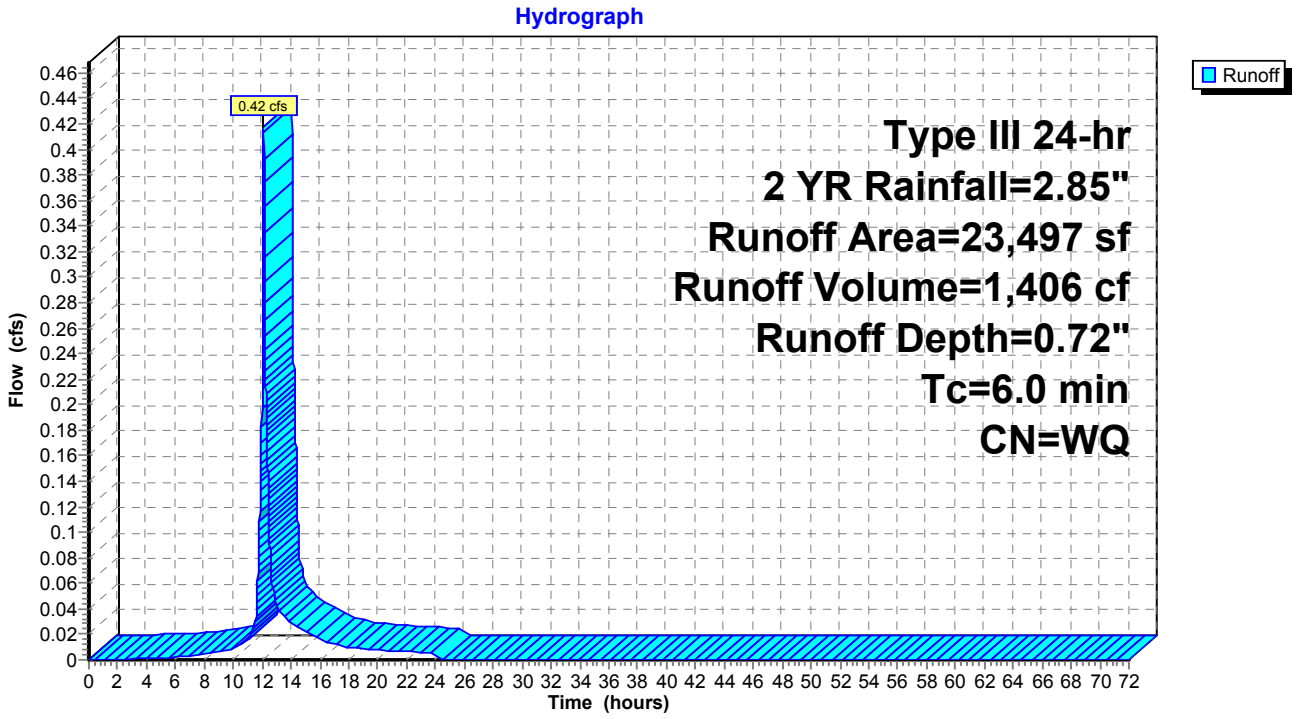
Runoff = 0.42 cfs @ 12.09 hrs, Volume= 1,406 cf, Depth= 0.72"
Routed to Pond CDS : CDS

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=2.85"

	Area (sf)	CN	Description
*	9,402	76	Gravel, HSG A
	8,334	39	>75% Grass cover, Good, HSG A
*	3,158	98	Impervious, HSG A
	2,603	30	Woods, Good, HSG A
	23,497		Weighted Average
	20,339		86.56% Pervious Area
	3,158		13.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A5: SUB-A5

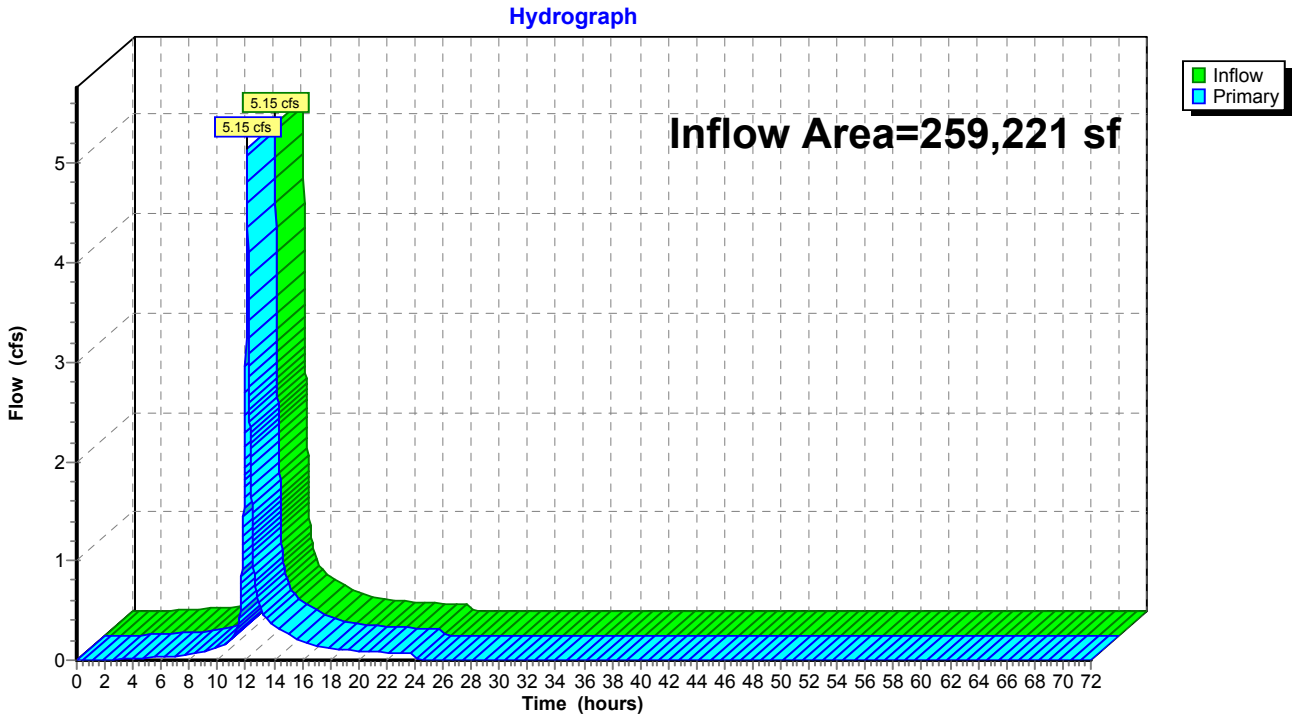


Summary for Pond A: POI-A

Inflow Area = 259,221 sf, 16.80% Impervious, Inflow Depth = 0.80" for 2 YR event
Inflow = 5.15 cfs @ 12.09 hrs, Volume= 17,344 cf
Primary = 5.15 cfs @ 12.09 hrs, Volume= 17,344 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond A: POI-A



Summary for Pond CDS: CDS

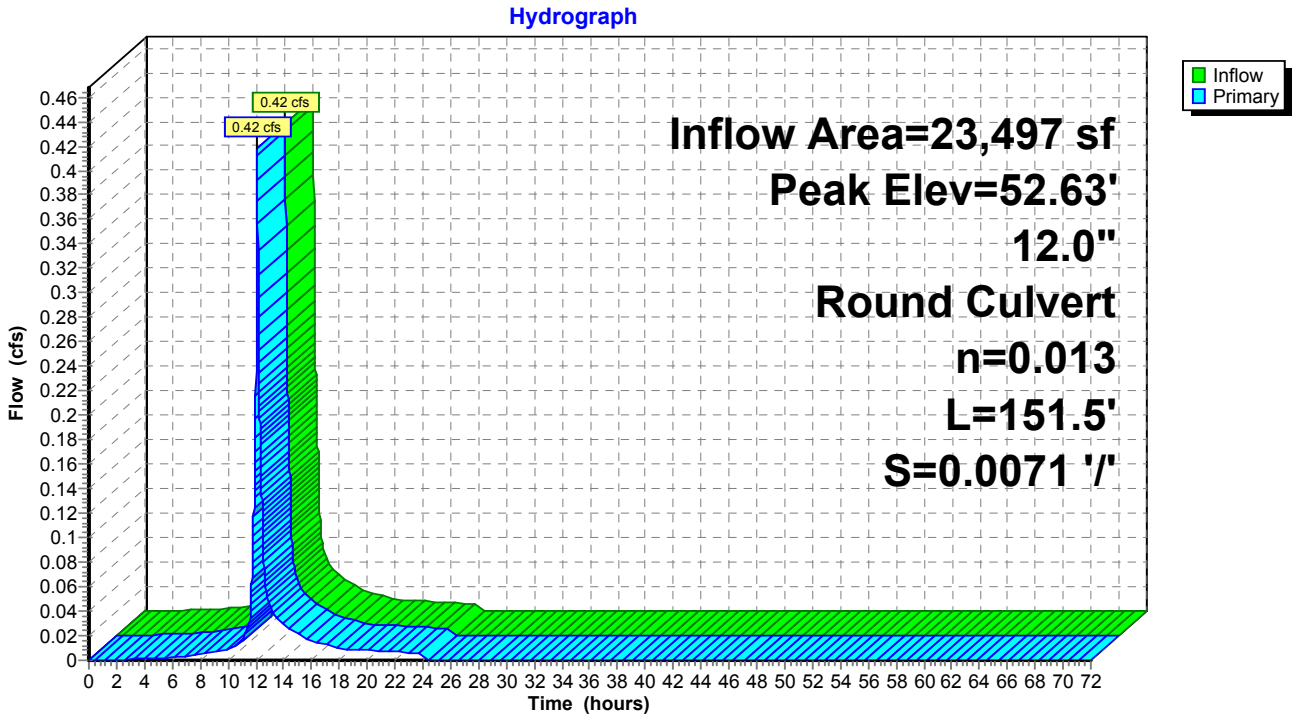
Inflow Area = 23,497 sf, 13.44% Impervious, Inflow Depth = 0.72" for 2 YR event
Inflow = 0.42 cfs @ 12.09 hrs, Volume= 1,406 cf
Outflow = 0.42 cfs @ 12.09 hrs, Volume= 1,406 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.09 hrs, Volume= 1,406 cf
Routed to Pond A : POI-A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.63' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	52.27'	**12.0" Round Culvert** L= 151.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.27' / 51.19' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.42 cfs @ 12.09 hrs HW=52.63' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.42 cfs @ 1.62 fps)

Pond CDS: CDS



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: SUB-A1 Runoff Area=18,606 sf 100.00% Impervious Runoff Depth=4.09"
Tc=6.0 min CN=98 Runoff=1.81 cfs 6,348 cf

SubcatchmentA2: SUB-A2 Runoff Area=49,161 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=858' Tc=11.3 min CN=WQ Runoff=0.00 cfs 75 cf

SubcatchmentA3: SUB-A3 Runoff Area=117,921 sf 18.47% Impervious Runoff Depth=1.70"
Tc=6.0 min CN=WQ Runoff=5.00 cfs 16,712 cf

SubcatchmentA4: SUB-A4 Runoff Area=50,036 sf 0.00% Impervious Runoff Depth=1.54"
Tc=6.0 min CN=WQ Runoff=2.06 cfs 6,428 cf

SubcatchmentA5: SUB-A5 Runoff Area=23,497 sf 13.44% Impervious Runoff Depth=1.38"
Tc=6.0 min CN=WQ Runoff=0.81 cfs 2,700 cf

Pond A: POI-A Inflow=9.68 cfs 32,264 cf
Primary=9.68 cfs 32,264 cf

Pond CDS: CDS Peak Elev=52.79' Inflow=0.81 cfs 2,700 cf
12.0" Round Culvert n=0.013 L=151.5' S=0.0071 '/' Outflow=0.81 cfs 2,700 cf

Total Runoff Area = 259,221 sf Runoff Volume = 32,264 cf Average Runoff Depth = 1.49"
83.20% Pervious = 215,681 sf 16.80% Impervious = 43,540 sf

Summary for Subcatchment A1: SUB-A1

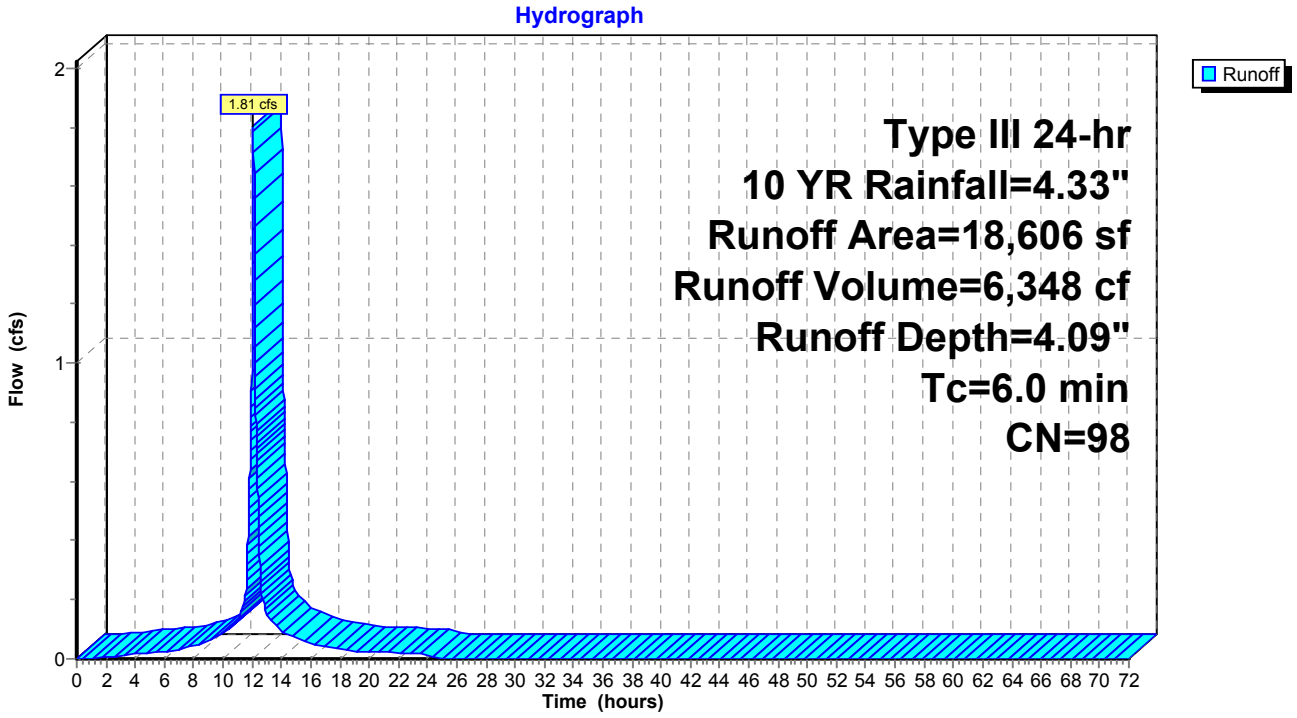
Runoff = 1.81 cfs @ 12.08 hrs, Volume= 6,348 cf, Depth= 4.09"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A1: SUB-A1



Summary for Subcatchment A2: SUB-A2

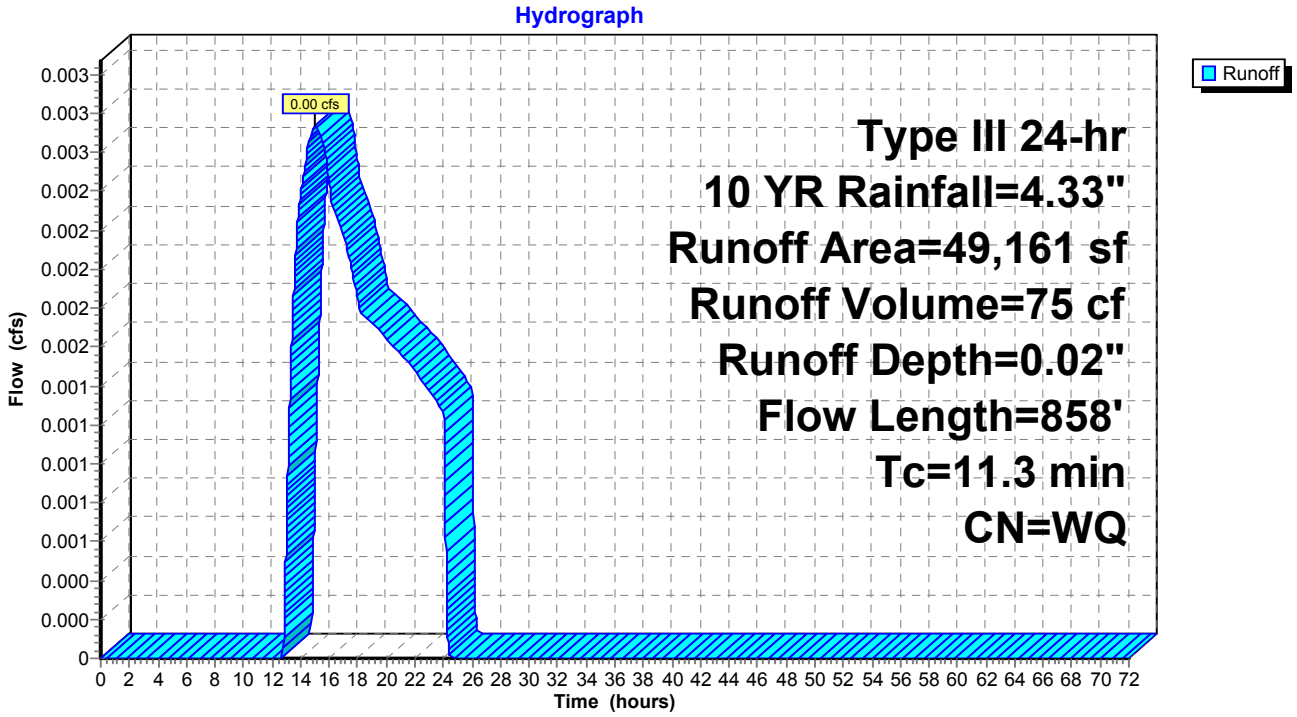
Runoff = 0.00 cfs @ 15.03 hrs, Volume= 75 cf, Depth= 0.02"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

Area (sf)	CN	Description
25,149	30	Woods, Good, HSG A
13,489	30	Brush, Good, HSG A
10,523	39	>75% Grass cover, Good, HSG A
49,161		Weighted Average
49,161		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.24"
0.6	87	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	182	0.0030	0.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	539	0.0200	11.82	58.01	**Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Corrugated PE, smooth interior
11.3	858	Total			

Subcatchment A2: SUB-A2



Summary for Subcatchment A3: SUB-A3

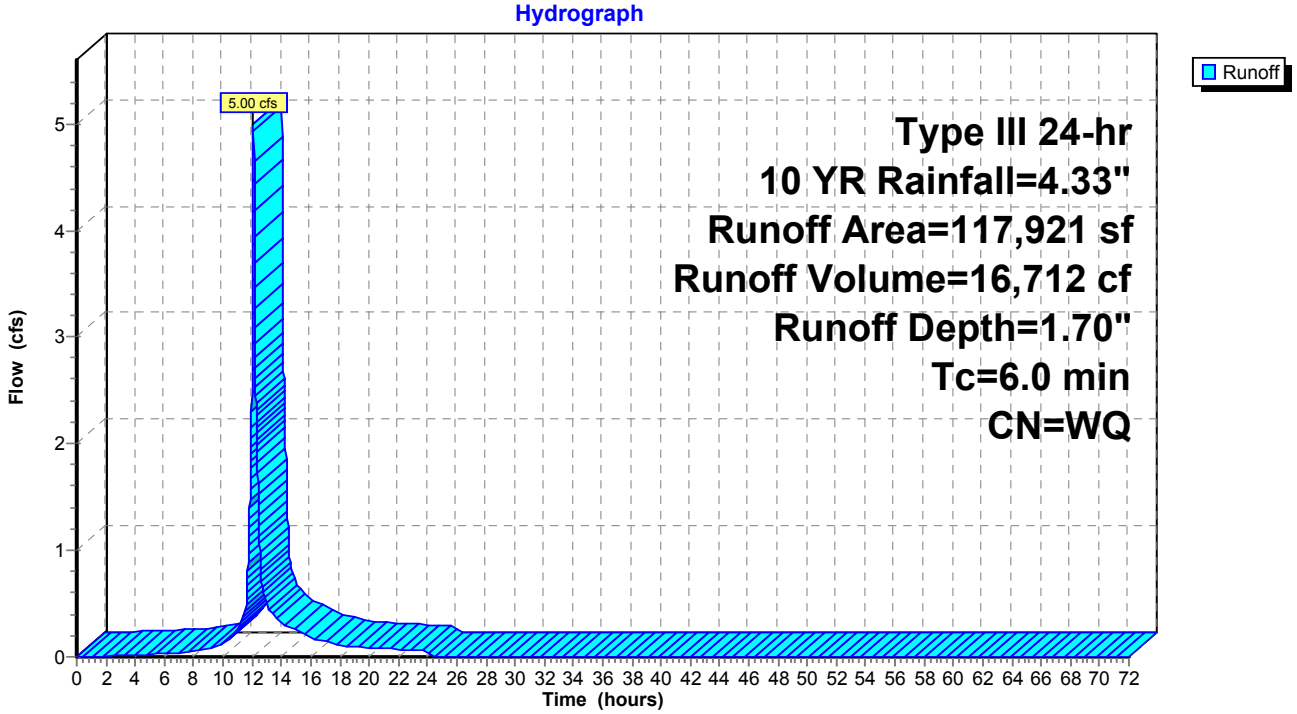
Runoff = 5.00 cfs @ 12.09 hrs, Volume= 16,712 cf, Depth= 1.70"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
	38,646	39	>75% Grass cover, Good, HSG A
*	31,098	76	Gravel, HSG A
	22,199	77	Fallow, bare soil, HSG A
*	21,776	98	Impervious, HSG A
	2,138	30	Woods, Good, HSG A
	2,064	30	Brush, Good, HSG A
	117,921		Weighted Average
	96,145		81.53% Pervious Area
	21,776		18.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A3: SUB-A3



Summary for Subcatchment A4: SUB-A4

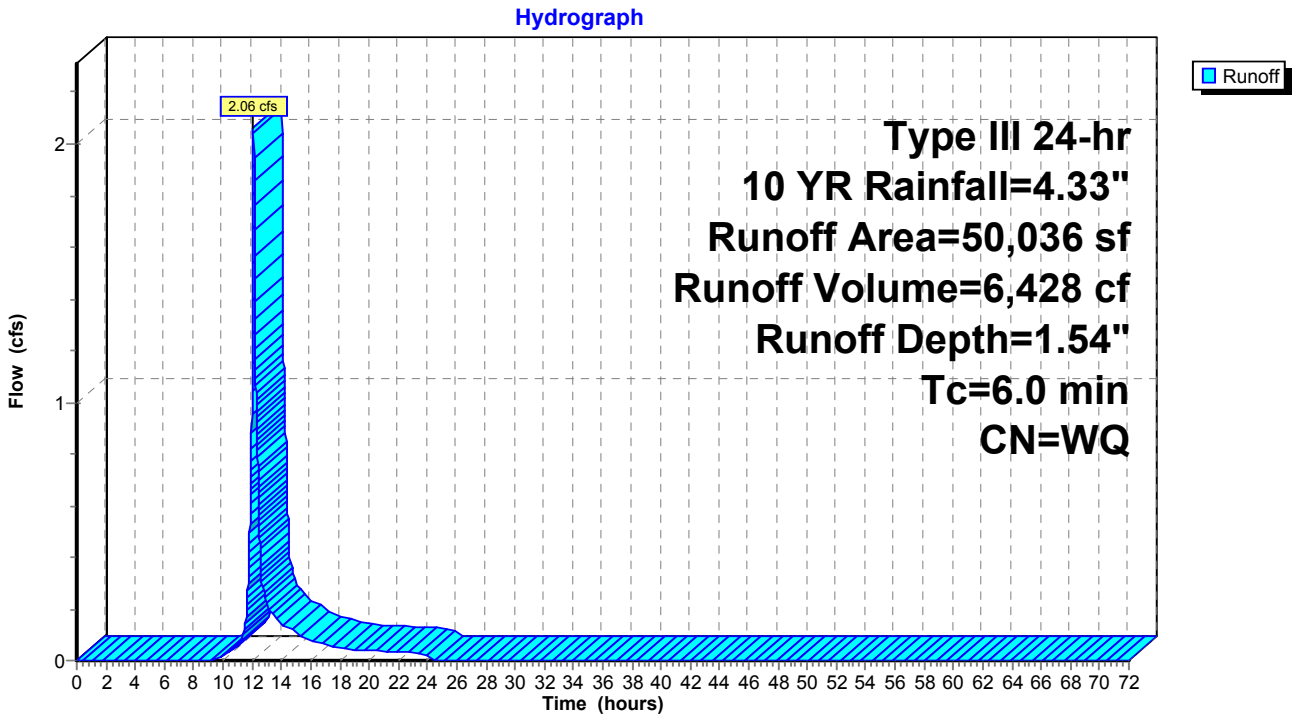
Runoff = 2.06 cfs @ 12.09 hrs, Volume= 6,428 cf, Depth= 1.54"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
*	30,483	76	Gravel, HSG A
	7,875	77	Fallow, bare soil, HSG A
	7,644	30	Brush, Good, HSG A
	4,034	30	Woods, Good, HSG A
	50,036		Weighted Average
	50,036		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A4: SUB-A4



Summary for Subcatchment A5: SUB-A5

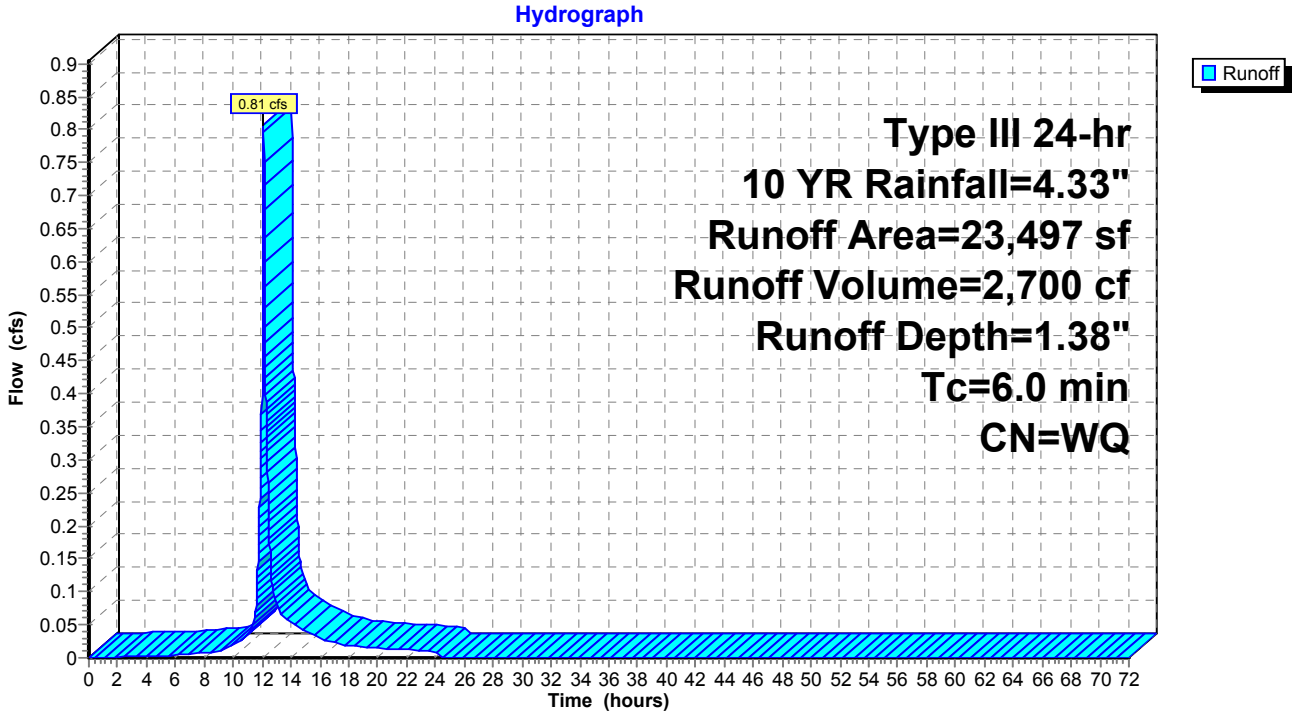
Runoff = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf, Depth= 1.38"
Routed to Pond CDS : CDS

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
*	9,402	76	Gravel, HSG A
	8,334	39	>75% Grass cover, Good, HSG A
*	3,158	98	Impervious, HSG A
	2,603	30	Woods, Good, HSG A
	23,497		Weighted Average
	20,339		86.56% Pervious Area
	3,158		13.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A5: SUB-A5

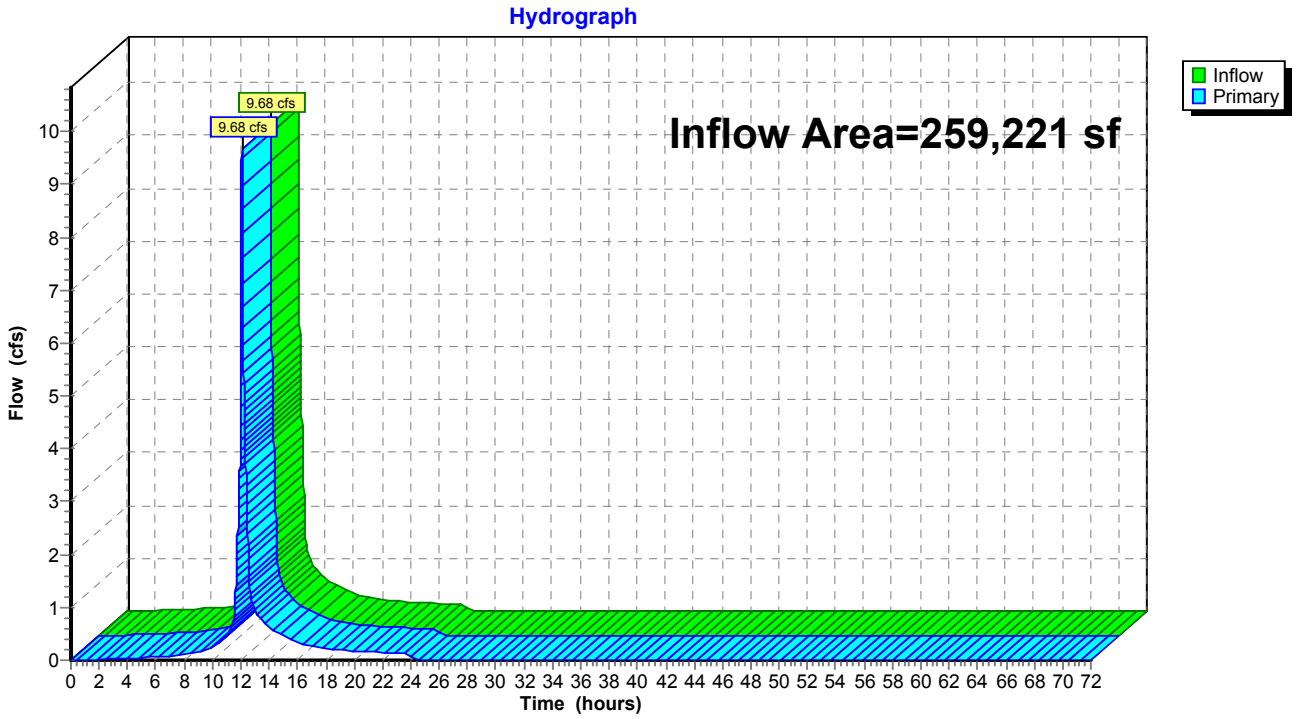


Summary for Pond A: POI-A

Inflow Area = 259,221 sf, 16.80% Impervious, Inflow Depth = 1.49" for 10 YR event
Inflow = 9.68 cfs @ 12.09 hrs, Volume= 32,264 cf
Primary = 9.68 cfs @ 12.09 hrs, Volume= 32,264 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond A: POI-A



Summary for Pond CDS: CDS

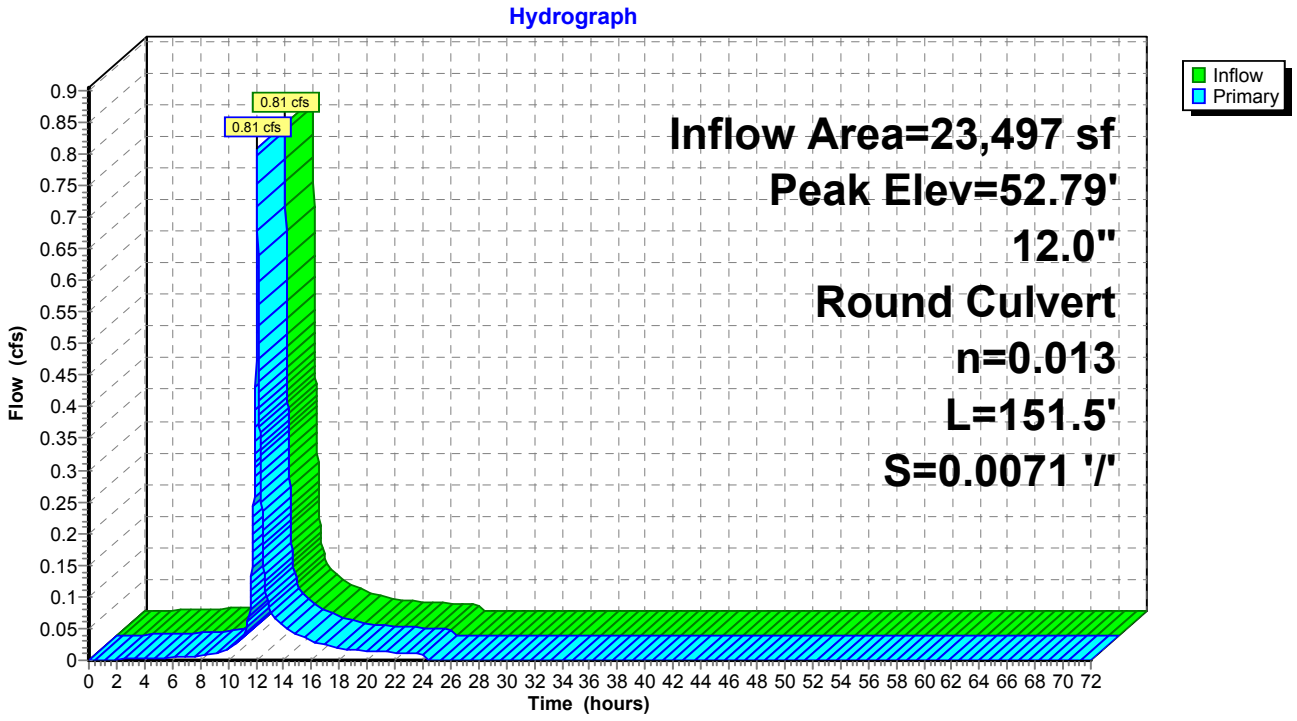
Inflow Area = 23,497 sf, 13.44% Impervious, Inflow Depth = 1.38" for 10 YR event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf
Routed to Pond A : POI-A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.79' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	52.27'	**12.0" Round Culvert** L= 151.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.27' / 51.19' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.09 hrs HW=52.79' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.81 cfs @ 1.94 fps)

Pond CDS: CDS



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: SUB-A1 Runoff Area=18,606 sf 100.00% Impervious Runoff Depth=6.33"
Tc=6.0 min CN=98 Runoff=2.75 cfs 9,817 cf

SubcatchmentA2: SUB-A2 Runoff Area=49,161 sf 0.00% Impervious Runoff Depth=0.25"
Flow Length=858' Tc=11.3 min CN=WQ Runoff=0.07 cfs 1,007 cf

SubcatchmentA3: SUB-A3 Runoff Area=117,921 sf 18.47% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=WQ Runoff=8.98 cfs 30,951 cf

SubcatchmentA4: SUB-A4 Runoff Area=50,036 sf 0.00% Impervious Runoff Depth=3.02"
Tc=6.0 min CN=WQ Runoff=4.02 cfs 12,601 cf

SubcatchmentA5: SUB-A5 Runoff Area=23,497 sf 13.44% Impervious Runoff Depth=2.64"
Tc=6.0 min CN=WQ Runoff=1.48 cfs 5,166 cf

Pond A: POI-A Inflow=17.23 cfs 59,540 cf
Primary=17.23 cfs 59,540 cf

Pond CDS: CDS Peak Elev=53.02' Inflow=1.48 cfs 5,166 cf
12.0" Round Culvert n=0.013 L=151.5' S=0.0071 '/' Outflow=1.48 cfs 5,166 cf

Total Runoff Area = 259,221 sf Runoff Volume = 59,540 cf Average Runoff Depth = 2.76"
83.20% Pervious = 215,681 sf 16.80% Impervious = 43,540 sf

Summary for Subcatchment A1: SUB-A1

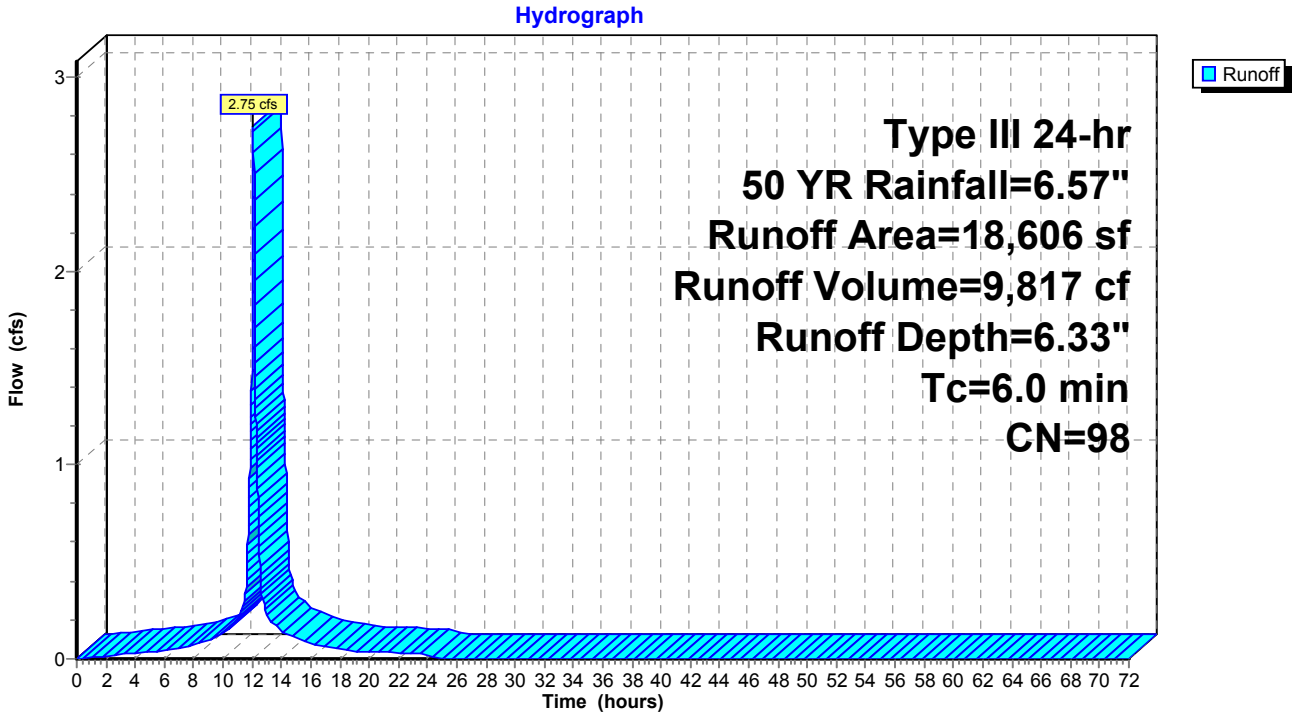
Runoff = 2.75 cfs @ 12.08 hrs, Volume= 9,817 cf, Depth= 6.33"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A1: SUB-A1



Summary for Subcatchment A2: SUB-A2

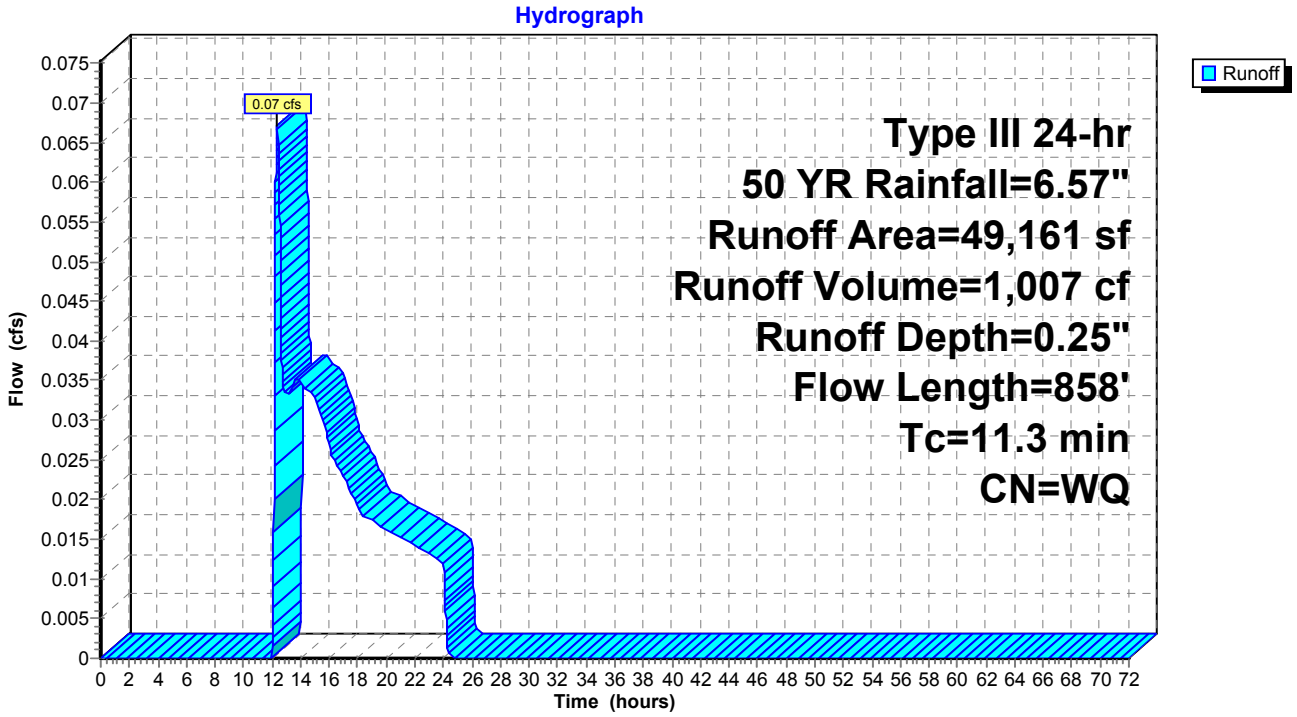
Runoff = 0.07 cfs @ 12.37 hrs, Volume= 1,007 cf, Depth= 0.25"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

Area (sf)	CN	Description
25,149	30	Woods, Good, HSG A
13,489	30	Brush, Good, HSG A
10,523	39	>75% Grass cover, Good, HSG A
49,161		Weighted Average
49,161		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.24"
0.6	87	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	182	0.0030	0.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.8	539	0.0200	11.82	58.01	**Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Corrugated PE, smooth interior
11.3	858	Total			

Subcatchment A2: SUB-A2



Summary for Subcatchment A3: SUB-A3

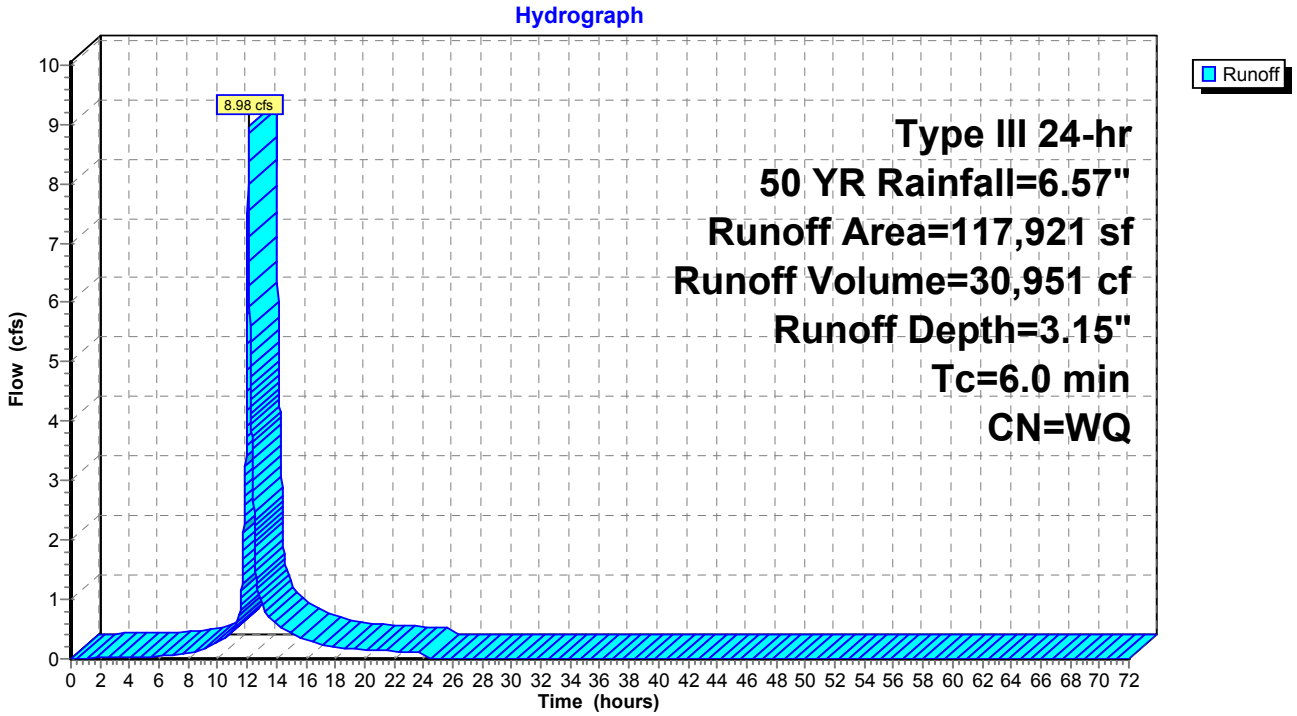
Runoff = 8.98 cfs @ 12.09 hrs, Volume= 30,951 cf, Depth= 3.15"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

	Area (sf)	CN	Description
	38,646	39	>75% Grass cover, Good, HSG A
*	31,098	76	Gravel, HSG A
	22,199	77	Fallow, bare soil, HSG A
*	21,776	98	Impervious, HSG A
	2,138	30	Woods, Good, HSG A
	2,064	30	Brush, Good, HSG A
	117,921		Weighted Average
	96,145		81.53% Pervious Area
	21,776		18.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A3: SUB-A3



Summary for Subcatchment A4: SUB-A4

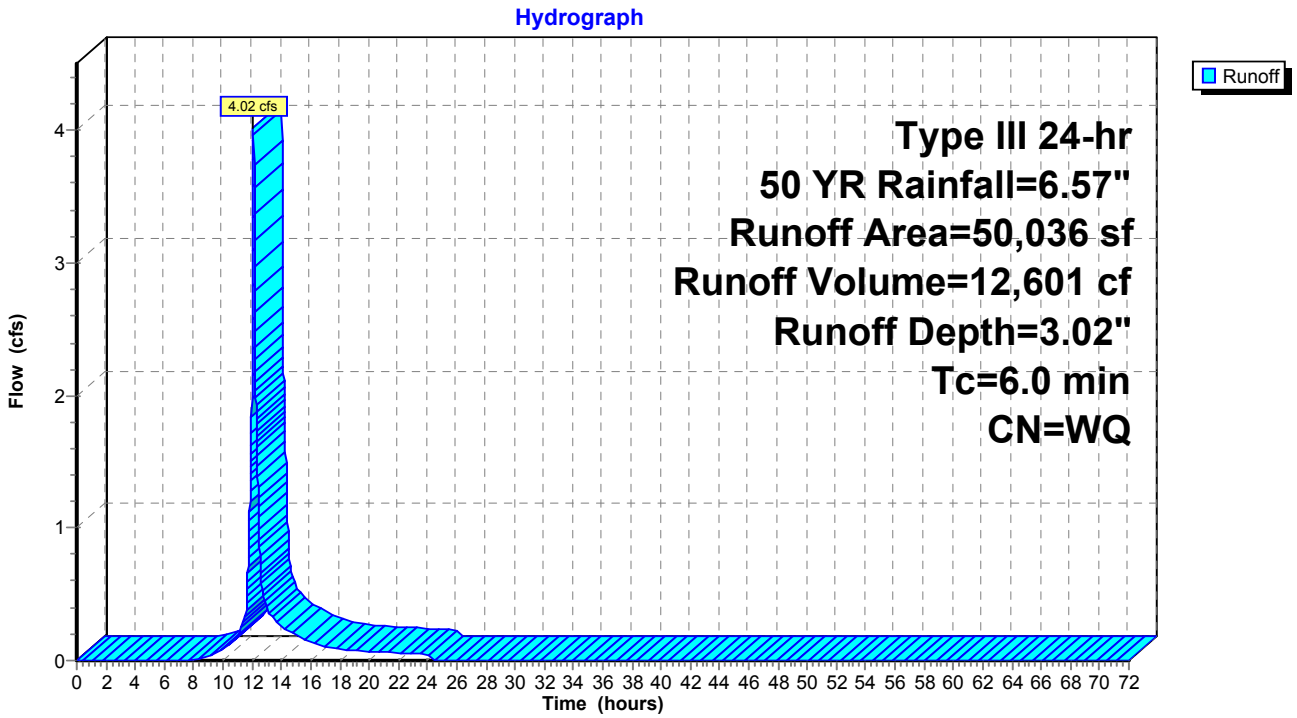
Runoff = 4.02 cfs @ 12.09 hrs, Volume= 12,601 cf, Depth= 3.02"
Routed to Pond A : POI-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

	Area (sf)	CN	Description
*	30,483	76	Gravel, HSG A
	7,875	77	Fallow, bare soil, HSG A
	7,644	30	Brush, Good, HSG A
	4,034	30	Woods, Good, HSG A
	50,036		Weighted Average
	50,036		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A4: SUB-A4



Summary for Subcatchment A5: SUB-A5

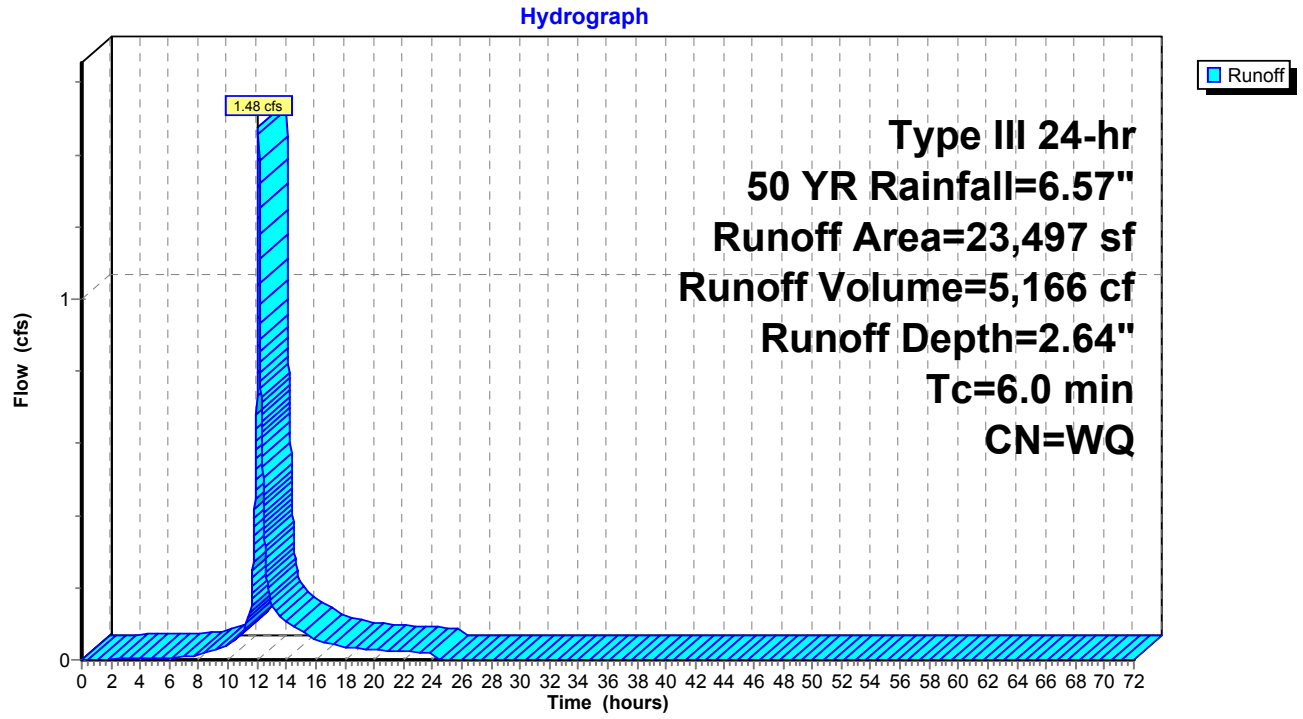
Runoff = 1.48 cfs @ 12.09 hrs, Volume= 5,166 cf, Depth= 2.64"
Routed to Pond CDS : CDS

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 YR Rainfall=6.57"

	Area (sf)	CN	Description
*	9,402	76	Gravel, HSG A
	8,334	39	>75% Grass cover, Good, HSG A
*	3,158	98	Impervious, HSG A
	2,603	30	Woods, Good, HSG A
	23,497		Weighted Average
	20,339		86.56% Pervious Area
	3,158		13.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment A5: SUB-A5

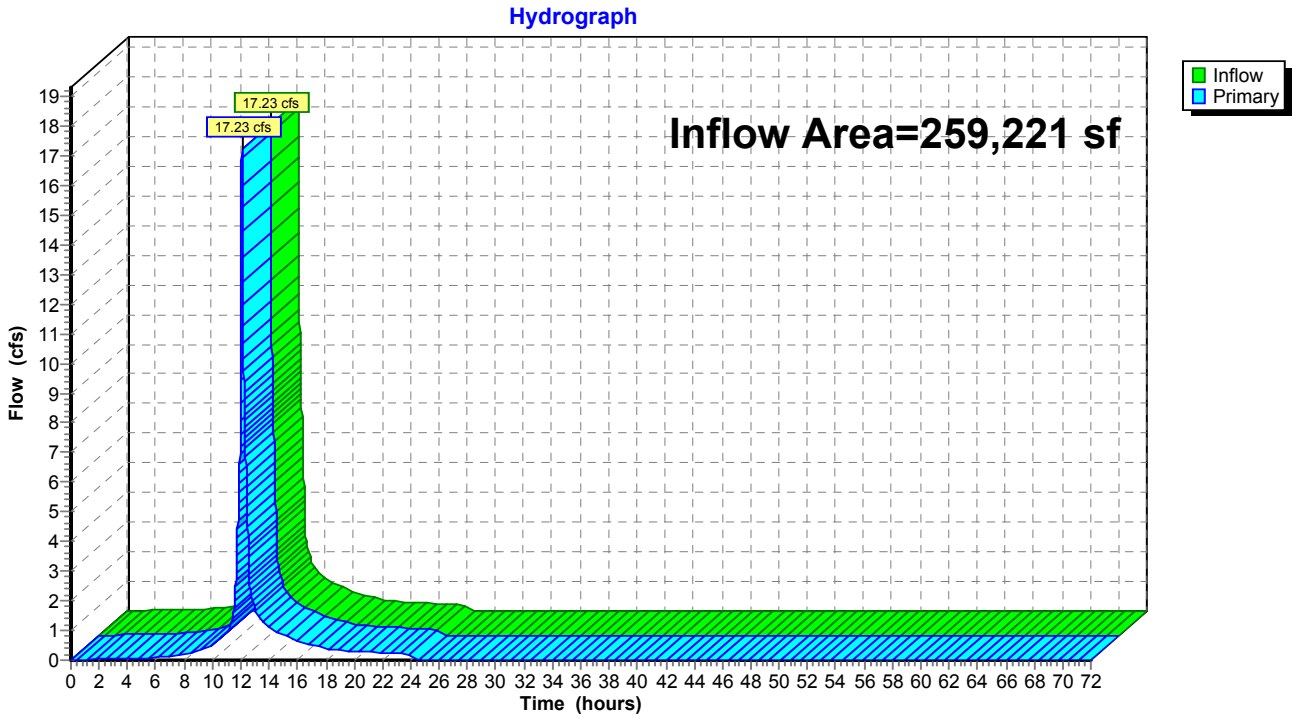


Summary for Pond A: POI-A

Inflow Area = 259,221 sf, 16.80% Impervious, Inflow Depth = 2.76" for 50 YR event
Inflow = 17.23 cfs @ 12.09 hrs, Volume= 59,540 cf
Primary = 17.23 cfs @ 12.09 hrs, Volume= 59,540 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond A: POI-A



Summary for Pond CDS: CDS

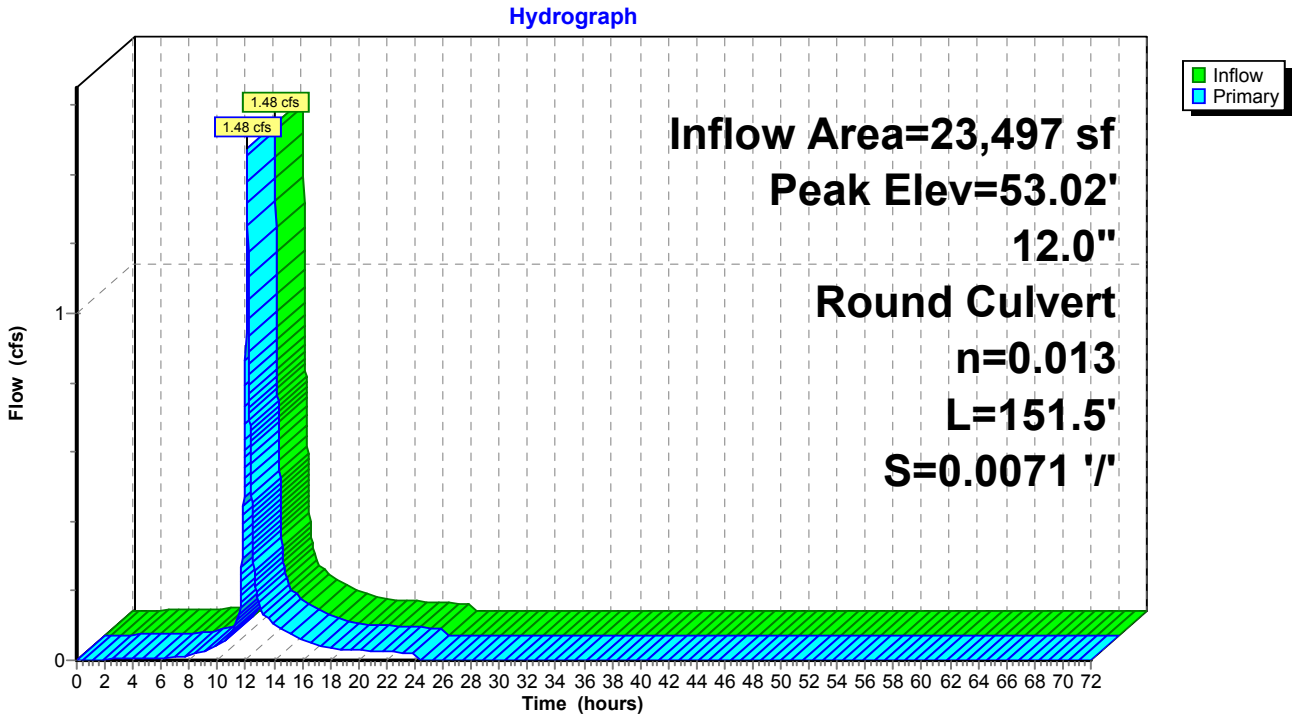
Inflow Area = 23,497 sf, 13.44% Impervious, Inflow Depth = 2.64" for 50 YR event
Inflow = 1.48 cfs @ 12.09 hrs, Volume= 5,166 cf
Outflow = 1.48 cfs @ 12.09 hrs, Volume= 5,166 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.09 hrs, Volume= 5,166 cf
Routed to Pond A : POI-A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 53.02' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	52.27'	**12.0" Round Culvert** L= 151.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.27' / 51.19' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.48 cfs @ 12.09 hrs HW=53.02' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.48 cfs @ 2.33 fps)

Pond CDS: CDS



Outlet Protection Calculations

Project: Route 33 Skate Park
Portsmouth, NH

Prepared By: AKG
Checked By: JIP
Date: 12/22/22

OUTLET PROTECTION SIZING CALCULATION SHEET

Design Criteria

$$L_A = \frac{1.8Q}{Do^{1.5}} + 7Do$$

$$W_1 = 3Do$$

$$W_2 = 3Do + L_A$$

$$d_{50} = \frac{0.02}{Tw} \times \frac{Q^{1.33}}{Do}$$

Where,

L_A = the length of the apron (FT)
W_1 = the width of apron at outlet of the pipe or width of channel (FT)
W_2 = the width of the downstream end of the apron (FT)
d_{50} = the median stone diameter (FT)
Q = the discharge from the pipe during the 10-year storm event (CFS)
Do = the diameter of the pipe of width of the box culvert (FT)
Tw = the tailwater depth above the invert of the pipe (FT)

Outlet	Q (10 Yr) (CFS)	Do (Ft.)	Barrels	Min. L_A (Ft.)	Min. W_1 (Ft.)	Min. W_2 (Ft.)	Tw (Ft.)	Min.d_{50} (Ft.)	Velocity (FPS)	Req'd V>2.5 fps
EXISTING	**8.34**	**2.0**	**1**	19.3	6.0	25.3	**0.60**	0.28	2.65	Yes
PROP	**7.58**	**2.0**	**1**	18.8	6.0	24.8	**0.60**	0.25	2.41	No

Notes:

1 The 10 Year flow for each outlet was generated using HydroCAD
2 This analysis compares existing conditions to proposed conditions at the existing pipe outlet and demonstrates a decrease in outlet velocity. No improvement to the existing rip-rap outlet is necessary.

Summary for Subcatchment A1: SUB-A1

Runoff = 1.81 cfs @ 12.08 hrs, Volume= 6,348 cf, Depth= 4.09"
Routed to Reach 24" PIPE : EXISTING OUTLET

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment A3: SUB-A3

Runoff = 6.58 cfs @ 12.09 hrs, Volume= 20,553 cf, Depth= 1.86"
Routed to Reach 24" PIPE : EXISTING OUTLET

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
*	97,147	76	Gravel, HSG A
	22,748	77	Fallow, bare soil, HSG A
	5,871	30	Woods, Good, HSG A
	5,577	30	Brush, Good, HSG A
*	1,384	98	Impervious, HSG A
	132,727		Weighted Average
	131,343		98.96% Pervious Area
	1,384		1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

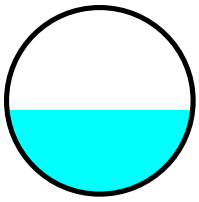
Summary for Reach 24" PIPE: EXISTING OUTLET

Inflow Area = 151,333 sf, 13.21% Impervious, Inflow Depth = 2.13" for 10 YR event
Inflow = 8.38 cfs @ 12.09 hrs, Volume= 26,902 cf
Outflow = 8.34 cfs @ 12.10 hrs, Volume= 26,902 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.07 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.83 fps, Avg. Travel Time= 2.1 min

Peak Storage= 324 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.90' , Surface Width= 1.99'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.99 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 235.7' Slope= 0.0078 '/'
Inlet Invert= 47.50', Outlet Invert= 45.66'



THE REACH IS REPRESENTATIVE OF THE EXISTING 24" OUTLET AND EXISTING RIP-RAP APRON WHICH RECEIVES STORMWATER FLOW FROM PORTIONS OF GREENLAND ROAD & THE EXISTING STORMWATER INFRASTRUCTURE ON SITE. UNDER EXISTING CONDITIONS, PEAK DISCHARGE RATE DURING THE 10 YEAR STORM EVENT AT THE PIPE OUTLET IS 8.34-CFS

Summary for Subcatchment A1: SUB-A1

Runoff = 1.81 cfs @ 12.08 hrs, Volume= 6,348 cf, Depth= 4.09"
Routed to Reach 24" PIPE : EXISTING OUTLET

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

Area (sf)	CN	Description
18,606	98	Paved roads w/curbs & sewers, HSG A
18,606		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment A3: SUB-A3

Runoff = 5.00 cfs @ 12.09 hrs, Volume= 16,712 cf, Depth= 1.70"
Routed to Reach 24" PIPE : EXISTING OUTLET

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
	38,646	39	>75% Grass cover, Good, HSG A
*	31,098	76	Gravel, HSG A
	22,199	77	Fallow, bare soil, HSG A
*	21,776	98	Impervious, HSG A
	2,138	30	Woods, Good, HSG A
	2,064	30	Brush, Good, HSG A
	117,921		Weighted Average
	96,145		81.53% Pervious Area
	21,776		18.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment A5: SUB-A5

Runoff = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf, Depth= 1.38"
Routed to Pond CDS : CDS

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.33"

	Area (sf)	CN	Description
*	9,402	76	Gravel, HSG A
	8,334	39	>75% Grass cover, Good, HSG A
*	3,158	98	Impervious, HSG A
	2,603	30	Woods, Good, HSG A
	23,497		Weighted Average
	20,339		86.56% Pervious Area
	3,158		13.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

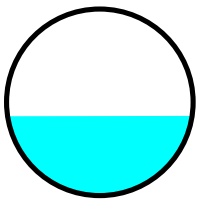
Summary for Reach 24" PIPE: EXISTING OUTLET

Inflow Area = 160,024 sf, 27.21% Impervious, Inflow Depth = 1.93" for 10 YR event
Inflow = 7.61 cfs @ 12.09 hrs, Volume= 25,760 cf
Outflow = 7.58 cfs @ 12.09 hrs, Volume= 25,760 cf, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.92 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 2.1 min

Peak Storage= 301 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.85' , Surface Width= 1.98'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.99 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 235.7' Slope= 0.0078 '/'
Inlet Invert= 47.50', Outlet Invert= 45.66'



Summary for Pond CDS: CDS

Inflow Area = 23,497 sf, 13.44% Impervious, Inflow Depth = 1.38" for 10 YR event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.09 hrs, Volume= 2,700 cf
Routed to Reach 24" PIPE : EXISTING OUTLET

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.79' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	52.27'	**12.0" Round Culvert** L= 151.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.27' / 51.19' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.09 hrs HW=52.79' TW=48.35' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.81 cfs @ 1.94 fps)

THE REACH IS REPRESENTATIVE OF THE EXISTING 24" OUTLET AND EXISTING RIP-RAP APRON WHICH RECEIVES STORMWATER FLOW FROM PORTIONS OF GREENLAND ROAD & THE EXISTING STORMWATER INFRASTRUCTURE ON SITE. UNDER PROPOSED CONDITIONS, PEAK DISCHARGE RATE DURING THE 10 YEAR STORM EVENT IS 7.58-CFS AT THE PIPE OUTLET

Operations & Maintenance Plan

1.0 Introduction

This Operations and Maintenance plan has been prepared in accordance with the Stormwater Management Policy issued by the New Hampshire Department of Environmental Services (NHDES). Upon completion of construction activities, all structural BMPs shall be inspected per the frequencies listed in this document. All inspection and maintenance activities shall be recorded in the provided maintenance logs, with photographs taken of the BMP at each inspection, and records provided to NHDES upon request.

2.0 Purpose

This Operation and Maintenance Plan (O&M Plan) is intended to provide a mechanism for the consistent inspection and maintenance of each BMP installed on the project site. Included in this O&M Plan is a description of the BMP type and an inspection form for the BMP. The City of Portsmouth Department of Public Works is the owner and operator of the system and is responsible for its upkeep and maintenance. This work will be funded on an annual basis through the owner's operating budget.

In the event the Owner sells the property, it is the Owner's responsibility to transfer this plan as well as the past operation and maintenance records to the new property owner.

3.0 BMP Description and Locations

3.1 Deep Sump Hooded Catch Basins

There are three catch basins on site that will receive stormwater run-off from the proposed development. The deep sump hooded catch basins provide pre-treatment to remove sediment and hydrocarbons from stormwater run-off.

3.2 CDS Hydrodynamic Separator

There is one CDS unit on site that will receive stormwater run-off from the proposed development. The CDS unit is a hydrodynamic separator design to remove sediments, hydrocarbons, and trash from stormwater run-off to improve water quality.

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4.0 Inspection, Maintenance Checklist and Schedule

4.1 Snow Storage & Removal

Snow removed from the proposed parking lot and pedestrian areas on site will be placed or disposed of in designated areas. Under no circumstances

shall snow be placed within wetland resource areas. If conditions arise where snow storage areas are at capacity, the Owner shall remove and dispose of snow off-site according to all local, state, and federal regulations.

4.2 Deep Sump Hooded Catch Basins

Deep sump hooded catch basins shall be inspected and/or cleaned at least four times per year, and at the end of foliage and snow removal seasons. Sediment shall be removed at least four times per year or when the depth of sediment is greater than or equal to one half the depth measured from the sump to the invert of the lowest outlet. When cleaning is necessary, use a vacuum truck to clean and remove pollutants. All pollutants shall be disposed of according to all local, state, and federal regulations.

4.3 CDS Hydrodynamic Separator

The CDS unit shall be inspected every three months for the first year, then twice a year at a minimum thereafter. The maintenance cycle shall be determined by the depth of sediment and hydrocarbon buildup witnessed in previous inspections. See the CDS operations and maintenance guide following this O&M plan for additional information regarding maintenance intervals and procedures.

The interior of the CDS unit shall be visually inspected upon opening. Use a sediment probe and oil dipstick to check respected levels of accumulation. When cleaning is necessary, use a vacuum truck to clean and remove pollutants. All pollutants shall be disposed of according to all local, state, and federal regulations.

4.4 Invasive Species Control

Care must be taken to not allow invasive species to take hold. Monitor frequently for invasive species. When invasive species are discovered, remove by hand pulling, mechanical harvesting, hydro-raking, chemical treatment, or biological controls. If invasive species are discovered, the Owner shall also report the discovery to the Exotic Species Program at NHDES. See additional documentation following this O&M plan for guidance.

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4.5 Inspections and Record Keeping

- An inspection form should be filled out each, and every time maintenance work is performed.
- Photographs of the BMP shall be taken each time it is inspected.

- A binder should be kept that contains all of the completed inspection forms and any other related materials.
- A review of Operations & Maintenance actions should take place annually such that the Stormwater BMPs are being taken care of in the manner illustrated in this Operations & Maintenance Plan.
- Operations & Maintenance log forms for the last three years, at a minimum, shall be kept.
- The inspection and maintenance schedule may be refined in the future based on the findings and results of this Operations & Maintenance program or policy.

5 Public Safety Features

No public safety features will be necessary.

6 Stormwater Management System Owner/Responsible Party

The stormwater management system shall be owned and maintained by the following party or its future designee/assigns:

City of Portsmouth, Department of Public Works
680 Peverly Hill Road,
Portsmouth, NH 03801

This operation and Maintenance Plan will be recorded with the registry of deeds so that current and future owners are aware of the requirement for proper operation and maintenance of the onsite stormwater system

7 General Good Housekeeping Practices

All non-hazardous waste shall be stored in designated trash or recycling containers onsite for periodic collection by the local trash collector. The owner shall have maintenance staff who monitor the site for the accumulation of trash. Any trash that is seen onsite shall immediately be collected and placed into designated trash or recycling containers. The owner's maintenance staff shall make an inspection of the site once per week at minimum.

8 Estimated Operations and Maintenance Budget

The estimated budget for annual operations and maintenance of this stormwater system is $1,000 per year.

Deep Sump Hooded Catch Basins

Frequency: The catch basins shall be inspected and/or cleaned at least four times per year, and at the end of foliage and snow seasons.

Structure No.: _____

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Sediment shall be removed at least four times per year or when the depth of sediment is greater than or equal to one half the depth measured from the sump to the invert of the lowest outlet. When cleaning is necessary, use a vacuum truck to clean and remove pollutants. All pollutants shall be disposed of according to all local, state, and federal regulations.

CDS Hydrodynamic Separator

Frequency: Inspect and clean the CDS unit every three months for the first year and at a minimum, at least twice a year or as necessary thereafter.

Structure No.: _____

Inspected By: _____ Date: _____

Observations: _____
_____
_____

Actions Taken: _____
_____
_____

Instructions: Clean the system whenever the depth of the deposits is equal to 50% of the maximum storage volume. Visually inspect unit via manhole. Use vacuum truck to remove sediment, trash and hydrocarbons. See CDS maintenance guide for additional information. All pollutants shall be disposed of according to all local, state, and federal regulations.

CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

DE-ICING LOG		
DATE	NOTES	INITIALS

CONTECH®
ENGINEERED SOLUTIONS

CDS Guide
Operation, Design, Performance and Maintenance

CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

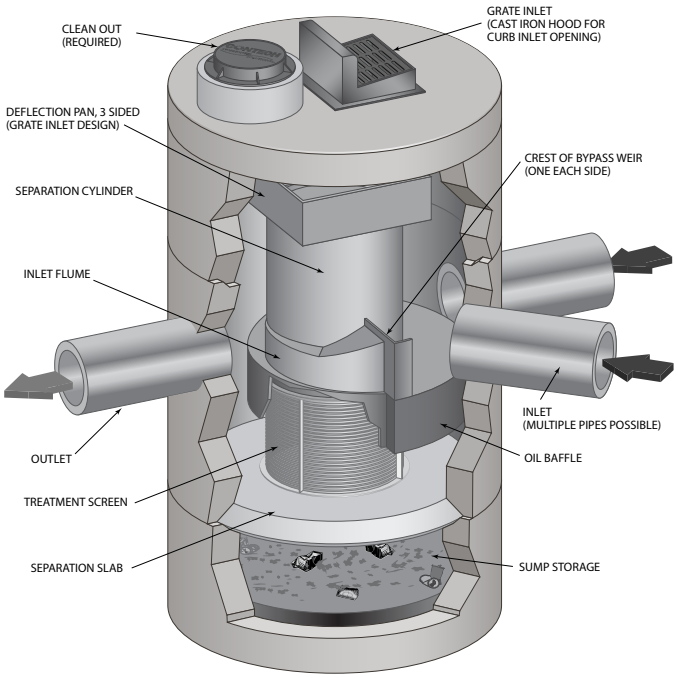
Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the and Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the Unites States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns (μm). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns (μm) or 50 microns (μm).

Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are

determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

Performance

Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation (d50 = 20 to 30 μm) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer d50 (d50 for NJDEP is approximately 50 μm) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size (d50) of 106 microns. The PSDs for the test material are shown in Figure 1.

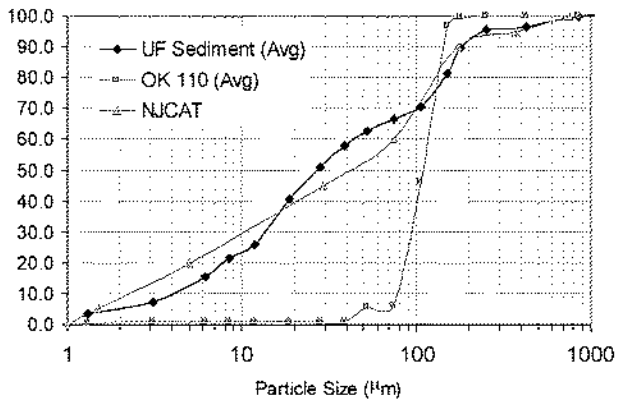


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect

to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

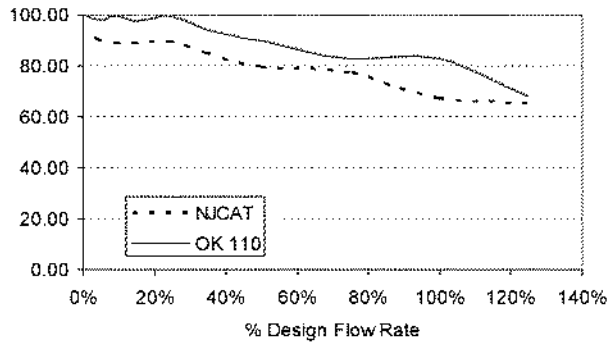


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size (d50) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution (d50 = 125 μm).

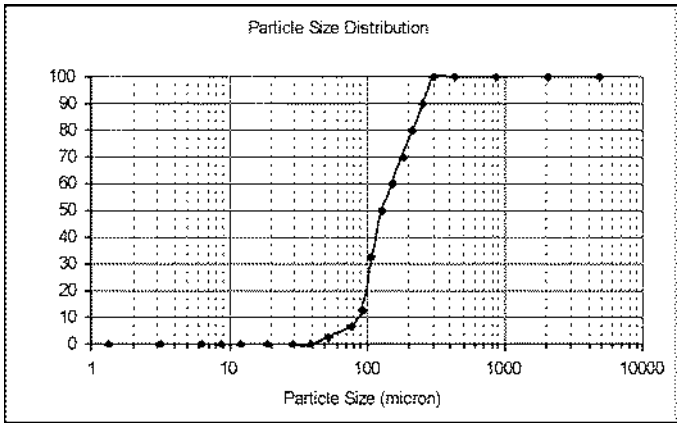


Figure 3. WASDOE PSD

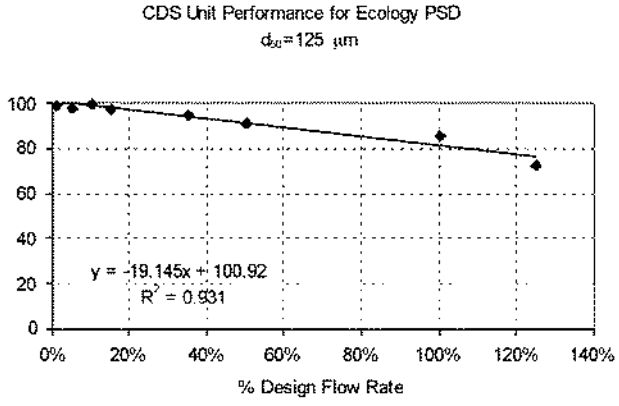


Figure 4. Modeled performance for WASDOE PSD.

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified

during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

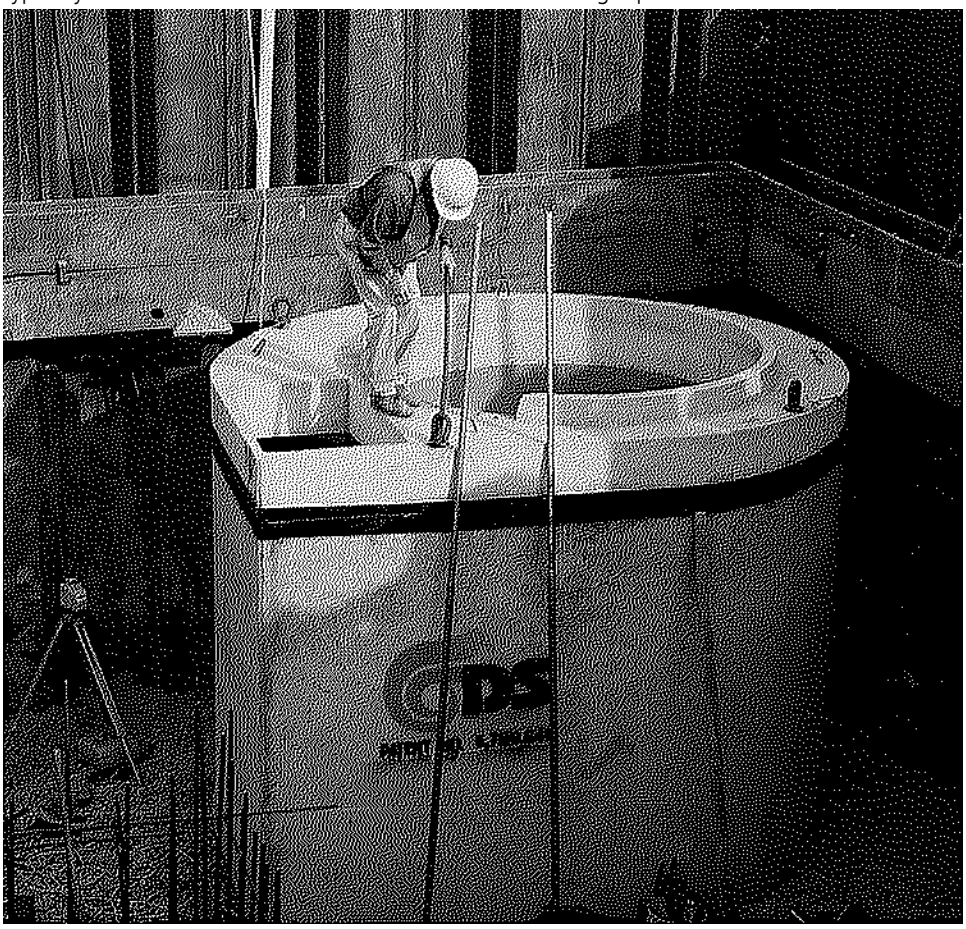
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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Contech Engineered Solutions provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, earth stabilization and stormwater treatment products. For information on other Contech division offerings, visit www.ContechES.com or call 800.338.1122

The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; related foreign patents or other patents pending.

CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

Background:

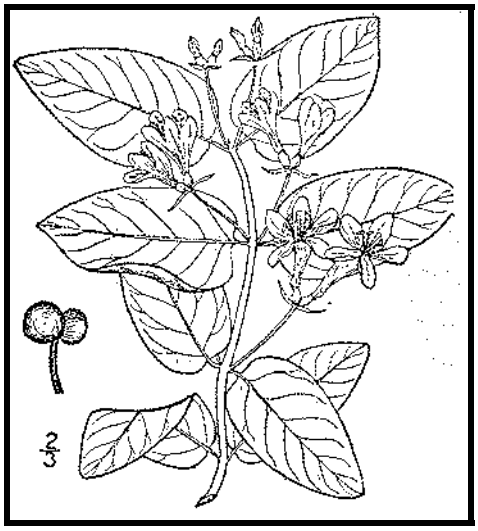
Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

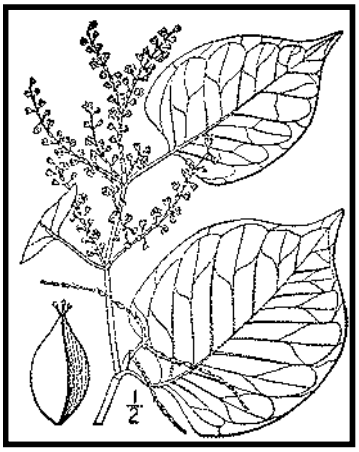
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
  </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

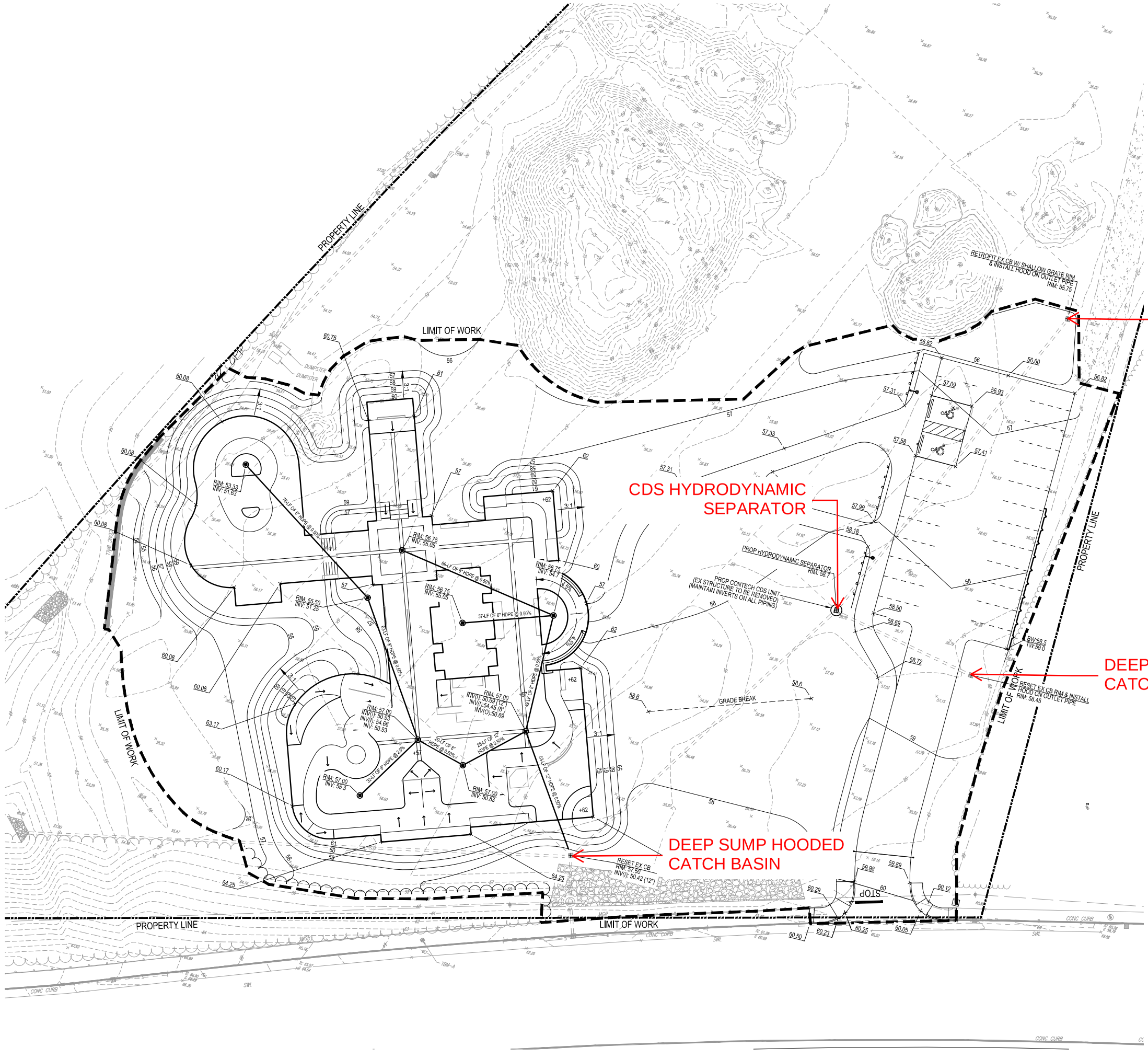
Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010



LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- EXISTING DRAINAGE STRUCTURE, SEE UTILITIES PLAN
- 12 — EXISTING CONTOURS
- 14 — PROPOSED CONTOURS
- 95.10 + EXISTING SPOT ELEVATION
- CATCH BASIN OR PVC AREA DRAIN, REFER TO PLANS
- HDPE OR PVC SOLID DRAIN PIPE, DIAMETER VARIES
- GRADE BREAK
- HP HIGH POINT
- LP LOW POINT
- TW TOP OF WALL
- BW BOTTOM OF WALL

SCALE: 1" = 20' - 0"
0 20 40 60

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DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 12/09/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: SOURCE CONTROL PLAN
90% CONSTRUCTION DOCUMENTS

SHEET:: L140 SKATE PARK

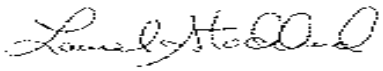
Appendix A – Soil Lab Testing Reports

CERTIFICATE OF ANALYSIS

Ken Gendron
Weston & Sampson Engineers, Inc.
427 Main St
Worcester, MA 01608

RE: RTE 33 Portsmouth (N/A)
ESS Laboratory Work Order Number: 1610112

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 4:02 pm, Oct 14, 2016

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 NELAC Standards, A2LA 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: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

SAMPLE RECEIPT

The following samples were received on October 06, 2016 for the analyses specified on the enclosed Chain of Custody Record.

Low Level VOA vials were frozen by Weston and Sampson on day of sampling.

Lab Number	Sample Name	Matrix	Analysis
1610112-01	B-1 S-1	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-02	B-2 S-2	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-03	B-3 S-4	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-04	B-4 S-3	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-05	B-5 S-4	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-06	B-6 S-3	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-07	B-7 S-4	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-08	B-8 S-2	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B, 8260B Low, 8270D
1610112-09	B-9 S-3	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-10	B-10 S-3	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-11	B-11 S-2	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-12	B-12 S-1	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-13	B-13 S-3	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-14	B-14 S-4	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-15	B-15 S-3	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D
1610112-16	B-16 S-2	Soil	6010C, 6020A, 7471B, 8082A, 8100M, 8260B Low, 8270D

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth ESS Laboratory Work Order: 1610112

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

1610112-08 **Reported above the quantitation limit; Estimated value (E).**
4-Isopropyltoluene

CJ61137-BS1 **Blank Spike recovery is above upper control limit (B+).**
Methylene Chloride (131% @ 70-130%)

8270D Semi-Volatile Organic Compounds

1610112-01 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (29% @ 50-200%)

1610112-02 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (45% @ 50-200%)

1610112-03 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (48% @ 50-200%)

1610112-03 **Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
2,4,6-Tribromophenol (5% @ 30-130%), 2-Fluorophenol (19% @ 30-130%)

1610112-04 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (31% @ 50-200%)

1610112-09 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (40% @ 50-200%)

1610112-13 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (49% @ 50-200%)

1610112-15 **Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).**
Perylene-d12 (49% @ 50-200%)

CJ61112-BS1 **Blank Spike recovery is below lower control limit (B-).**
Aniline (39% @ 40-140%), Benzidine (% @ 40-140%), Hexachlorocyclopentadiene (11% @ 40-140%)

CJ61112-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Benzidine (% @ 40-140%), Hexachlorocyclopentadiene (11% @ 40-140%)

CJ61112-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
Benzoic Acid (36% @ 30%)

CZJ0067-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (106% @ 80-120%)

CZJ0067-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
Benzidine (21% @ %)

CZJ0094-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (95% @ 80-120%)

CZJ0113-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (84% @ 80-120%)

CZJ0113-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
4-Nitrophenol (36% @ 20%), Benzo(g,h,i)perylene (21% @ 20%), Pentachlorophenol (21% @ 20%)

CZJ0125-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (84% @ 80-120%), Benzoic Acid (77% @ 80-120%), Pentachlorophenol (86% @ 80-120%)

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth ESS Laboratory Work Order: 1610112

CZJ0125-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
Benzoic Acid (23% @ 20%)

CZJ0132-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (74% @ 80-120%)

CZJ0132-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
2,4-Dinitrophenol (26% @ 20%), 4,6-Dinitro-2-Methylphenol (22% @ 20%), 4-Nitroaniline (24% @ 20%), 4-Nitrophenol (45% @ 20%), Benzoic Acid (31% @ 20%), Pentachlorophenol (24% @ 20%)

CZJ0162-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (84% @ 80-120%), Pentachlorophenol (88% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - 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
8260B - VOA
8270D - SVOA
8270D 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 04-1.1 - EPH / 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
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - 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: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**8.83** (2.21)		6010C		1	KJK	10/12/16 20:00	2.52	100	CJ61103
Barium	**41.5** (2.21)		6010C		1	KJK	10/12/16 20:00	2.52	100	CJ61103
Cadmium	ND (0.44)		6020A		20	NAR	10/13/16 14:57	2.52	100	CJ61103
Chromium	**39.3** (0.88)		6010C		1	KJK	10/12/16 20:00	2.52	100	CJ61103
Lead	**24.5** (4.42)		6010C		1	KJK	10/12/16 20:00	2.52	100	CJ61103
Mercury	**0.058** (0.036)		7471B		1	BJV	10/11/16 12:55	0.62	40	CJ61104
Selenium	ND (0.44)		6020A		20	NAR	10/13/16 14:57	2.52	100	CJ61103
Silver	ND (0.44)		6010C		1	KJK	10/12/16 20:00	2.52	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 8.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0028)		8260B Low		0	10/07/16 17:24		[CALC]
1,4-Dichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0625)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
2-Butanone	ND (0.0313)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
2-Hexanone	ND (0.0313)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
4-Isopropyltoluene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0313)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Acetone	ND (0.0313)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Acrylonitrile	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Allyl Chloride	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 8.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Bromobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Bromochloromethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Bromoform	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Bromomethane	ND (0.0063)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Chlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Chloroethane	ND (0.0063)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Chloroform	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Chloromethane	ND (0.0063)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Dibromomethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0063)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Diethyl Ether	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Ethylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Methylene Chloride	ND (0.0156)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Naphthalene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Styrene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0313)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 8.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Toluene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Trichloroethene	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0031)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0063)		8260B Low		1	10/07/16 17:24	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0056)		8260B Low		1	10/07/16 17:24		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*118 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*102 %*		*70-130*
Surrogate: Dibromofluoromethane	*107 %*		*70-130*
Surrogate: Toluene-d8	*105 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 20.4
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1221	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1232	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1242	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1248	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1254	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1260	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1262	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604
Aroclor 1268	ND (0.0545)		8082A		1	10/11/16 15:01		CJ60604

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*64 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*72 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*77 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 20.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**158** (40.3)		8100M		1	10/07/16 15:39	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	73 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
1,2,4-Trichlorobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
1,2-Dichlorobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
1,3-Dichlorobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
1,4-Dichlorobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,4,5-Trichlorophenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,4,6-Trichlorophenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,4-Dichlorophenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,4-Dimethylphenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,4-Dinitrophenol	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,4-Dinitrotoluene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2,6-Dinitrotoluene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2-Chloronaphthalene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2-Chlorophenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2-Methylnaphthalene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2-Methylphenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2-Nitroaniline	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
2-Nitrophenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
3,3´-Dichlorobenzidine	ND (0.718)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
3+4-Methylphenol	ND (0.718)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
3-Nitroaniline	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4-Bromophenyl-phenylether	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4-Chloro-3-Methylphenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4-Chloroaniline	ND (0.718)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4-Nitroaniline	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
4-Nitrophenol	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Acenaphthene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Acenaphthylene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.718)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Aniline	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Anthracene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Azobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzidine	ND (0.718)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzo(a)anthracene	**0.548** (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzo(a)pyrene	**0.616** (0.180)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzo(b)fluoranthene	**0.768** (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzo(g,h,i)perylene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzo(k)fluoranthene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzoic Acid	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Benzyl Alcohol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
bis(2-Chloroethoxy)methane	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
bis(2-Chloroethyl)ether	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Butylbenzylphthalate	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Carbazole	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Chrysene	**0.519** (0.180)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Dibenzo(a,h)Anthracene	ND (0.180)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Dibenzofuran	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Diethylphthalate	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Dimethylphthalate	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Di-n-butylphthalate	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Di-n-octylphthalate	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Fluoranthene	**1.34** (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Fluorene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Hexachlorobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Hexachlorobutadiene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Hexachlorocyclopentadiene	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Hexachloroethane	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-1 S-1
Date Sampled: 09/27/16 12:00
Percent Solids: 90
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Naphthalene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Nitrobenzene	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
N-Nitrosodimethylamine	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
N-nitrosodiphenylamine	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Pentachlorophenol	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Phenanthrene	**0.807** (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Phenol	ND (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Pyrene	**1.14** (0.359)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609
Pyridine	ND (1.80)		8270D		1	10/08/16 3:30	CZJ0094	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*51 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*75 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*55 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*57 %*		*30-130*
Surrogate: 2-Fluorophenol	*52 %*		*30-130*
Surrogate: Nitrobenzene-d5	*52 %*		*30-130*
Surrogate: Phenol-d6	*56 %*		*30-130*
Surrogate: p-Terphenyl-d14	*87 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**8.66** (1.88)		6010C		1	KJK	10/12/16 20:03	3.18	100	CJ61103
Barium	**58.3** (1.88)		6010C		1	KJK	10/12/16 20:03	3.18	100	CJ61103
Cadmium	ND (0.38)		6020A		20	NAR	10/13/16 15:15	3.18	100	CJ61103
Chromium	**26.9** (0.75)		6010C		1	KJK	10/12/16 20:03	3.18	100	CJ61103
Lead	**132** (3.76)		6010C		1	KJK	10/12/16 20:03	3.18	100	CJ61103
Mercury	**2.12** (0.394)		7471B		10	BJV	10/11/16 15:39	0.6	40	CJ61104
Selenium	ND (0.38)		6020A		20	NAR	10/13/16 15:15	3.18	100	CJ61103
Silver	ND (0.38)		6010C		1	KJK	10/12/16 20:03	3.18	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0030)		8260B Low		0	10/07/16 17:50		[CALC]
1,4-Dichlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0711)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
2-Butanone	ND (0.0355)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
2-Hexanone	ND (0.0355)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
4-Isopropyltoluene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0355)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Acetone	**0.166** (0.0355)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Acrylonitrile	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Allyl Chloride	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Bromobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Bromochloromethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Bromoform	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Bromomethane	ND (0.0071)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Chlorobenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Chloroethane	ND (0.0071)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Chloroform	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Chloromethane	ND (0.0071)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Dibromomethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0071)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Diethyl Ether	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Ethylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Methylene Chloride	ND (0.0178)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Naphthalene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Styrene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0355)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Toluene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Trichloroethene	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0036)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0071)		8260B Low		1	10/07/16 17:50	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0060)		8260B Low		1	10/07/16 17:50		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*118 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*99 %*		*70-130*
Surrogate: Dibromofluoromethane	*108 %*		*70-130*
Surrogate: Toluene-d8	*108 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 19.4
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1221	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1232	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1242	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1248	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1254	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1260	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1262	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604
Aroclor 1268	ND (0.0616)		8082A		1	10/11/16 16:23		CJ60604

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*61 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*67 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*61 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*64 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 20.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**73.5** (43.7)		8100M		1	10/07/16 16:19	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*75 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
1,2,4-Trichlorobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
1,2-Dichlorobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
1,3-Dichlorobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
1,4-Dichlorobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,4,5-Trichlorophenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,4,6-Trichlorophenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,4-Dichlorophenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,4-Dimethylphenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,4-Dinitrophenol	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,4-Dinitrotoluene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2,6-Dinitrotoluene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2-Chloronaphthalene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2-Chlorophenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2-Methylnaphthalene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2-Methylphenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2-Nitroaniline	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
2-Nitrophenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
3,3´-Dichlorobenzidine	ND (0.771)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
3+4-Methylphenol	ND (0.771)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
3-Nitroaniline	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4-Bromophenyl-phenylether	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4-Chloro-3-Methylphenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4-Chloroaniline	ND (0.771)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4-Nitroaniline	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
4-Nitrophenol	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Acenaphthene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Acenaphthylene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.771)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Aniline	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Anthracene	**0.415** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Azobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzidine	ND (0.771)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzo(a)anthracene	**1.44** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzo(a)pyrene	**1.24** (0.193)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzo(b)fluoranthene	**2.24** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzo(g,h,i)perylene	**0.608** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzo(k)fluoranthene	**0.921** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzoic Acid	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Benzyl Alcohol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
bis(2-Chloroethoxy)methane	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
bis(2-Chloroethyl)ether	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Butylbenzylphthalate	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Carbazole	**0.445** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Chrysene	**1.62** (0.193)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Dibenzo(a,h)Anthracene	**0.286** (0.193)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Dibenzofuran	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Diethylphthalate	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Dimethylphthalate	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Di-n-butylphthalate	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Di-n-octylphthalate	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Fluoranthene	**4.58** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Fluorene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Hexachlorobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Hexachlorobutadiene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Hexachlorocyclopentadiene	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Hexachloroethane	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Indeno(1,2,3-cd)Pyrene	**0.567** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-2 S-2
Date Sampled: 09/28/16 08:10
Percent Solids: 84
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Naphthalene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Nitrobenzene	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
N-Nitrosodimethylamine	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
N-nitrosodiphenylamine	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Pentachlorophenol	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Phenanthrene	**1.73** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Phenol	ND (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Pyrene	**3.36** (0.385)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609
Pyridine	ND (1.93)		8270D		1	10/08/16 4:07	CZJ0094	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*75 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*89 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*81 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*75 %*		*30-130*
Surrogate: 2-Fluorophenol	*76 %*		*30-130*
Surrogate: Nitrobenzene-d5	*74 %*		*30-130*
Surrogate: Phenol-d6	*82 %*		*30-130*
Surrogate: p-Terphenyl-d14	*110 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**10.4** (2.64)		6010C		1	KJK	10/12/16 20:20	2.08	100	CJ61103
Barium	**23.8** (2.64)		6010C		1	KJK	10/12/16 20:20	2.08	100	CJ61103
Cadmium	ND (0.53)		6020A		20	NAR	10/13/16 15:20	2.08	100	CJ61103
Chromium	**18.7** (1.06)		6010C		1	KJK	10/12/16 20:20	2.08	100	CJ61103
Lead	**14.6** (5.28)		6010C		1	KJK	10/12/16 20:20	2.08	100	CJ61103
Mercury	**0.048** (0.034)		7471B		1	BJV	10/11/16 12:59	0.64	40	CJ61104
Selenium	ND (0.53)		6020A		20	NAR	10/13/16 15:20	2.08	100	CJ61103
Silver	ND (0.53)		6010C		1	KJK	10/12/16 20:20	2.08	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0035)		8260B Low		0	10/07/16 18:16		[CALC]
1,4-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0762)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
2-Butanone	ND (0.0381)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
2-Hexanone	ND (0.0381)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
4-Isopropyltoluene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0381)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Acetone	**0.0826** (0.0381)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Acrylonitrile	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Allyl Chloride	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Bromobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Bromochloromethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Bromoform	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Bromomethane	ND (0.0076)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Chlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Chloroethane	ND (0.0076)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Chloroform	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Chloromethane	ND (0.0076)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Dibromomethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0076)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Diethyl Ether	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Ethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Methylene Chloride	ND (0.0191)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Naphthalene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Styrene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0381)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Toluene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Trichloroethene	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0038)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0076)		8260B Low		1	10/07/16 18:16	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0069)		8260B Low		1	10/07/16 18:16		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*118 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*103 %*		*70-130*
Surrogate: Dibromofluoromethane	*76 %*		*70-130*
Surrogate: Toluene-d8	*106 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 19.2
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1221	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1232	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1242	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1248	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1254	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1260	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1262	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604
Aroclor 1268	ND (0.0572)		8082A		1	10/11/16 16:41		CJ60604

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*70 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*78 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*77 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*79 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**65.8** (41.6)		8100M		1	10/07/16 16:58	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*79 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 15.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
1,2,4-Trichlorobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
1,2-Dichlorobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
1,3-Dichlorobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
1,4-Dichlorobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,4,5-Trichlorophenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,4,6-Trichlorophenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,4-Dichlorophenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,4-Dimethylphenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,4-Dinitrophenol	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,4-Dinitrotoluene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2,6-Dinitrotoluene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2-Chloronaphthalene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2-Chlorophenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2-Methylnaphthalene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2-Methylphenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2-Nitroaniline	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
2-Nitrophenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
3,3´-Dichlorobenzidine	ND (0.718)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
3+4-Methylphenol	ND (0.718)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
3-Nitroaniline	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4-Bromophenyl-phenylether	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4-Chloro-3-Methylphenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4-Chloroaniline	ND (0.718)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4-Nitroaniline	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
4-Nitrophenol	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Acenaphthene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Acenaphthylene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 15.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.718)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Aniline	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Anthracene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Azobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzidine	ND (0.718)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzo(a)anthracene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzo(a)pyrene	ND (0.180)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzo(b)fluoranthene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzo(g,h,i)perylene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzo(k)fluoranthene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzoic Acid	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Benzyl Alcohol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
bis(2-Chloroethoxy)methane	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
bis(2-Chloroethyl)ether	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Butylbenzylphthalate	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Carbazole	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Chrysene	ND (0.180)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Dibenzo(a,h)Anthracene	ND (0.180)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Dibenzofuran	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Diethylphthalate	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Dimethylphthalate	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Di-n-butylphthalate	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Di-n-octylphthalate	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Fluoranthene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Fluorene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Hexachlorobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Hexachlorobutadiene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Hexachlorocyclopentadiene	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Hexachloroethane	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-3 S-4
Date Sampled: 09/27/16 13:25
Percent Solids: 91
Initial Volume: 15.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Naphthalene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Nitrobenzene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
N-Nitrosodimethylamine	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
N-nitrosodiphenylamine	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Pentachlorophenol	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Phenanthrene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Phenol	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Pyrene	ND (0.358)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609
Pyridine	ND (1.80)		8270D		1	10/08/16 4:45	CZJ0094	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*68 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*5 %*	*SM*	*30-130*
Surrogate: 2-Chlorophenol-d4	*34 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*70 %*		*30-130*
Surrogate: 2-Fluorophenol	*19 %*	*SM*	*30-130*
Surrogate: Nitrobenzene-d5	*68 %*		*30-130*
Surrogate: Phenol-d6	*49 %*		*30-130*
Surrogate: p-Terphenyl-d14	*117 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**4.90** (2.27)		6010C		1	KJK	10/12/16 20:26	2.6	100	CJ61103
Barium	**24.8** (2.27)		6010C		1	KJK	10/12/16 20:26	2.6	100	CJ61103
Cadmium	ND (0.45)		6020A		20	NAR	10/13/16 15:26	2.6	100	CJ61103
Chromium	**17.6** (0.91)		6010C		1	KJK	10/12/16 20:26	2.6	100	CJ61103
Lead	**50.0** (4.54)		6010C		1	KJK	10/12/16 20:26	2.6	100	CJ61103
Mercury	**0.085** (0.033)		7471B		1	BJV	10/11/16 13:01	0.71	40	CJ61104
Selenium	ND (0.45)		6020A		20	NAR	10/13/16 15:26	2.6	100	CJ61103
Silver	ND (0.45)		6010C		1	KJK	10/12/16 20:26	2.6	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 7.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0034)		8260B Low		0	10/07/16 18:42		[CALC]
1,4-Dichlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0809)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
2-Butanone	ND (0.0405)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
2-Hexanone	ND (0.0405)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
4-Isopropyltoluene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0405)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Acetone	**0.303** (0.0405)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Acrylonitrile	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Allyl Chloride	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 7.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Bromobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Bromochloromethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Bromoform	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Bromomethane	ND (0.0081)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Chlorobenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Chloroethane	ND (0.0081)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Chloroform	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Chloromethane	ND (0.0081)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Dibromomethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0081)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Diethyl Ether	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Ethylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Methylene Chloride	ND (0.0202)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Naphthalene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Styrene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0405)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 7.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Toluene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Trichloroethene	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0040)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0081)		8260B Low		1	10/07/16 18:42	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0068)		8260B Low		1	10/07/16 18:42		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*120 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*99 %*		*70-130*
Surrogate: Dibromofluoromethane	*108 %*		*70-130*
Surrogate: Toluene-d8	*110 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 19.5
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1221	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1232	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1242	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1248	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1254	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1260	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1262	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327
Aroclor 1268	ND (0.0606)		8082A		1	10/12/16 19:12		CJ61327

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*67 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*75 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 20.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**186** (43.9)		8100M		1	10/07/16 17:38	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*85 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
1,2,4-Trichlorobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
1,2-Dichlorobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
1,3-Dichlorobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
1,4-Dichlorobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,3,4,6-Tetrachlorophenol	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,4,5-Trichlorophenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,4,6-Trichlorophenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,4-Dichlorophenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,4-Dimethylphenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,4-Dinitrophenol	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,4-Dinitrotoluene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2,6-Dinitrotoluene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2-Chloronaphthalene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2-Chlorophenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2-Methylnaphthalene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2-Methylphenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2-Nitroaniline	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
2-Nitrophenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
3,3´-Dichlorobenzidine	ND (0.832)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
3+4-Methylphenol	ND (0.832)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
3-Nitroaniline	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4,6-Dinitro-2-Methylphenol	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4-Bromophenyl-phenylether	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4-Chloro-3-Methylphenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4-Chloroaniline	ND (0.832)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4-Nitroaniline	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
4-Nitrophenol	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Acenaphthene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Acenaphthylene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.832)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Aniline	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Anthracene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Azobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzidine	ND (0.832)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzo(a)anthracene	**0.993** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzo(a)pyrene	**1.01** (0.208)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzo(b)fluoranthene	**1.54** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzo(g,h,i)perylene	**0.602** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzo(k)fluoranthene	**0.653** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzoic Acid	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Benzyl Alcohol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
bis(2-Chloroethoxy)methane	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
bis(2-Chloroethyl)ether	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Butylbenzylphthalate	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Carbazole	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Chrysene	**1.03** (0.208)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Dibenzo(a,h)Anthracene	**0.235** (0.208)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Dibenzofuran	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Diethylphthalate	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Dimethylphthalate	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Di-n-butylphthalate	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Di-n-octylphthalate	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Fluoranthene	**2.53** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Fluorene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Hexachlorobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Hexachlorobutadiene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Hexachlorocyclopentadiene	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Hexachloroethane	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Indeno(1,2,3-cd)Pyrene	**0.495** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-4 S-3
Date Sampled: 09/27/16 15:25
Percent Solids: 85
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Naphthalene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Nitrobenzene	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
N-Nitrosodimethylamine	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
N-nitrosodiphenylamine	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Pentachlorophenol	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Phenanthrene	**0.847** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Phenol	ND (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Pyrene	**2.35** (0.416)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609
Pyridine	ND (2.08)		8270D		1	10/08/16 5:22	CZJ0094	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*67 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*83 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*69 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*73 %*		*30-130*
Surrogate: 2-Fluorophenol	*66 %*		*30-130*
Surrogate: Nitrobenzene-d5	*67 %*		*30-130*
Surrogate: Phenol-d6	*69 %*		*30-130*
Surrogate: p-Terphenyl-d14	*118 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**10.6** (2.38)		6010C		1	KJK	10/12/16 20:30	2.26	100	CJ61103
Barium	**28.7** (2.38)		6010C		1	KJK	10/12/16 20:30	2.26	100	CJ61103
Cadmium	ND (0.48)		6020A		20	NAR	10/13/16 15:32	2.26	100	CJ61103
Chromium	**51.0** (0.95)		6010C		1	KJK	10/12/16 20:30	2.26	100	CJ61103
Lead	**19.2** (4.76)		6010C		1	KJK	10/12/16 20:30	2.26	100	CJ61103
Mercury	**0.035** (0.032)		7471B		1	BJV	10/11/16 13:03	0.67	40	CJ61104
Selenium	ND (0.48)		6020A		20	NAR	10/13/16 15:32	2.26	100	CJ61103
Silver	ND (0.48)		6010C		1	KJK	10/12/16 20:30	2.26	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 7.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0035)		8260B Low		0	10/07/16 19:08		[CALC]
1,4-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0758)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
2-Butanone	ND (0.0379)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
2-Hexanone	ND (0.0379)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
4-Isopropyltoluene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0379)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Acetone	ND (0.0379)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Acrylonitrile	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Allyl Chloride	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 7.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Bromobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Bromochloromethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Bromoform	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Bromomethane	ND (0.0076)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Chlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Chloroethane	ND (0.0076)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Chloroform	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Chloromethane	ND (0.0076)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Dibromomethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0076)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Diethyl Ether	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Ethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Methylene Chloride	ND (0.0189)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Naphthalene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Styrene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0379)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 7.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Toluene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Trichloroethene	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0038)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0076)		8260B Low		1	10/07/16 19:08	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0070)		8260B Low		1	10/07/16 19:08		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*116 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*99 %*		*70-130*
Surrogate: Dibromofluoromethane	*107 %*		*70-130*
Surrogate: Toluene-d8	*107 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 20.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1221	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1232	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1242	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1248	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1254	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1260	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1262	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604
Aroclor 1268	ND (0.0535)		8082A		1	10/11/16 19:12		CJ60604

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*75 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 20.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**79.3** (38.6)		8100M		1	10/07/16 18:18	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	72 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2-Chlorophenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2-Methylphenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2-Nitroaniline	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
2-Nitrophenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (0.723)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
3+4-Methylphenol	ND (0.723)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
3-Nitroaniline	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4-Chloroaniline	ND (0.723)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4-Nitroaniline	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
4-Nitrophenol	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Acenaphthene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Acenaphthylene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.723)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Aniline	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Anthracene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Azobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzidine	ND (0.723)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzo(a)anthracene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzo(a)pyrene	**0.295** (0.181)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzo(b)fluoranthene	**0.466** (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzo(g,h,i)perylene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzo(k)fluoranthene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzoic Acid	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Carbazole	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Chrysene	**0.289** (0.181)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.181)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Dibenzofuran	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Diethylphthalate	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Dimethylphthalate	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Fluoranthene	**0.549** (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Fluorene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Hexachloroethane	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-5 S-4
Date Sampled: 09/28/16 14:15
Percent Solids: 93
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Naphthalene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Nitrobenzene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Pentachlorophenol	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Phenanthrene	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Phenol	ND (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Pyrene	**0.394** (0.361)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609
Pyridine	ND (1.81)		8270D		1	10/11/16 15:14	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*80 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*92 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*87 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*80 %*		*30-130*
Surrogate: 2-Fluorophenol	*84 %*		*30-130*
Surrogate: Nitrobenzene-d5	*81 %*		*30-130*
Surrogate: Phenol-d6	*92 %*		*30-130*
Surrogate: p-Terphenyl-d14	*82 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**11.5** (2.90)		6010C		1	KJK	10/12/16 20:34	2.03	100	CJ61103
Barium	**91.4** (2.90)		6010C		1	KJK	10/12/16 20:34	2.03	100	CJ61103
Cadmium	ND (0.58)		6020A		20	NAR	10/13/16 15:38	2.03	100	CJ61103
Chromium	**35.8** (1.16)		6010C		1	KJK	10/12/16 20:34	2.03	100	CJ61103
Lead	**216** (5.80)		6010C		1	KJK	10/12/16 20:34	2.03	100	CJ61103
Mercury	**0.523** (0.033)		7471B		1	BJV	10/11/16 13:05	0.7	40	CJ61104
Selenium	**1.91** (0.58)		6020A		20	NAR	10/13/16 15:38	2.03	100	CJ61103
Silver	ND (0.58)		6010C		1	KJK	10/12/16 20:34	2.03	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 9.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0027)		8260B Low		0	10/07/16 19:34		[CALC]
1,4-Dichlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0626)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
2-Butanone	ND (0.0313)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
2-Hexanone	ND (0.0313)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
4-Isopropyltoluene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0313)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Acetone	**0.102** (0.0313)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Acrylonitrile	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Allyl Chloride	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 9.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Bromobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Bromochloromethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Bromoform	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Bromomethane	ND (0.0063)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Chlorobenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Chloroethane	ND (0.0063)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Chloroform	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Chloromethane	ND (0.0063)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Dibromomethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0063)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Diethyl Ether	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Ethylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Methylene Chloride	ND (0.0156)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Naphthalene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Styrene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0313)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 9.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Toluene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Trichloroethene	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0031)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0063)		8260B Low		1	10/07/16 19:34	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0053)		8260B Low		1	10/07/16 19:34		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*125 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*94 %*		*70-130*
Surrogate: Dibromofluoromethane	*110 %*		*70-130*
Surrogate: Toluene-d8	*112 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 20.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1221	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1232	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1242	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1248	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1254	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1260	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1262	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604
Aroclor 1268	ND (0.0571)		8082A		1	10/11/16 19:31		CJ60604

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*86 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*95 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*84 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*90 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 20.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (42.2)		8100M		1	10/07/16 18:58	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	66 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 14
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
1,2,4-Trichlorobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
1,2-Dichlorobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
1,3-Dichlorobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
1,4-Dichlorobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,3,4,6-Tetrachlorophenol	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,4,5-Trichlorophenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,4,6-Trichlorophenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,4-Dichlorophenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,4-Dimethylphenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,4-Dinitrophenol	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,4-Dinitrotoluene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2,6-Dinitrotoluene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2-Chloronaphthalene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2-Chlorophenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2-Methylnaphthalene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2-Methylphenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2-Nitroaniline	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
2-Nitrophenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
3,3´-Dichlorobenzidine	ND (0.841)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
3+4-Methylphenol	ND (0.841)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
3-Nitroaniline	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4,6-Dinitro-2-Methylphenol	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4-Bromophenyl-phenylether	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4-Chloro-3-Methylphenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4-Chloroaniline	ND (0.841)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4-Nitroaniline	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
4-Nitrophenol	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Acenaphthene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Acenaphthylene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 14
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.841)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Aniline	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Anthracene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Azobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzidine	ND (0.841)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzo(a)anthracene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzo(a)pyrene	ND (0.211)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzo(b)fluoranthene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzo(g,h,i)perylene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzo(k)fluoranthene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzoic Acid	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Benzyl Alcohol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
bis(2-Chloroethoxy)methane	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
bis(2-Chloroethyl)ether	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Butylbenzylphthalate	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Carbazole	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Chrysene	ND (0.211)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Dibenzo(a,h)Anthracene	ND (0.211)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Dibenzofuran	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Diethylphthalate	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Dimethylphthalate	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Di-n-butylphthalate	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Di-n-octylphthalate	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Fluoranthene	**0.424** (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Fluorene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Hexachlorobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Hexachlorobutadiene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Hexachlorocyclopentadiene	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Hexachloroethane	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-6 S-3
Date Sampled: 09/28/16 12:20
Percent Solids: 85
Initial Volume: 14
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Naphthalene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Nitrobenzene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
N-Nitrosodimethylamine	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
N-nitrosodiphenylamine	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Pentachlorophenol	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Phenanthrene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Phenol	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Pyrene	ND (0.420)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609
Pyridine	ND (2.11)		8270D		1	10/08/16 6:37	CZJ0094	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*73 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*83 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*76 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*74 %*		*30-130*
Surrogate: 2-Fluorophenol	*75 %*		*30-130*
Surrogate: Nitrobenzene-d5	*74 %*		*30-130*
Surrogate: Phenol-d6	*77 %*		*30-130*
Surrogate: p-Terphenyl-d14	*105 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**7.43** (2.77)		6010C		1	KJK	10/12/16 20:38	2.12	100	CJ61103
Barium	**43.2** (2.77)		6010C		1	KJK	10/12/16 20:38	2.12	100	CJ61103
Cadmium	ND (0.55)		6020A		20	NAR	10/13/16 15:44	2.12	100	CJ61103
Chromium	**29.0** (1.11)		6010C		1	KJK	10/12/16 20:38	2.12	100	CJ61103
Lead	**307** (5.53)		6010C		1	KJK	10/12/16 20:38	2.12	100	CJ61103
Mercury	**0.105** (0.037)		7471B		1	BJV	10/11/16 13:07	0.62	40	CJ61104
Selenium	ND (0.55)		6020A		20	NAR	10/13/16 15:44	2.12	100	CJ61103
Silver	ND (0.55)		6010C		1	KJK	10/12/16 20:38	2.12	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 7.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0032)		8260B Low		0	10/07/16 20:00		[CALC]
1,4-Dichlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0762)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
2-Butanone	ND (0.0381)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
2-Hexanone	ND (0.0381)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
4-Isopropyltoluene	**0.0312** (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0381)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Acetone	**0.176** (0.0381)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Acrylonitrile	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Allyl Chloride	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 7.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Bromobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Bromochloromethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Bromoform	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Bromomethane	ND (0.0076)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Chlorobenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Chloroethane	ND (0.0076)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Chloroform	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Chloromethane	ND (0.0076)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Dibromomethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0076)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Diethyl Ether	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Ethylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Methylene Chloride	ND (0.0190)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Naphthalene	**0.0255** (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Styrene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0381)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 7.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Toluene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Trichloroethene	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0038)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0076)		8260B Low		1	10/07/16 20:00	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0065)		8260B Low		1	10/07/16 20:00		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*124 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*102 %*		*70-130*
Surrogate: Dibromofluoromethane	*110 %*		*70-130*
Surrogate: Toluene-d8	*106 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 20.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1221	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1232	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1242	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1248	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1254	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1260	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1262	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327
Aroclor 1268	ND (0.0569)		8082A		1	10/12/16 19:31		CJ61327

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*93 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*105 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*63 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*57 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 19.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**354** (45.8)		8100M		1	10/07/16 19:39	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*72 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 14.8
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2-Chlorophenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2-Methylphenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2-Nitroaniline	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
2-Nitrophenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (1.59)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
3+4-Methylphenol	ND (1.59)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
3-Nitroaniline	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4-Chloroaniline	ND (1.59)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4-Nitroaniline	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
4-Nitrophenol	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Acenaphthene	**1.14** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Acenaphthylene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 14.8
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (1.59)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Aniline	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Anthracene	**1.71** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Azobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzidine	ND (1.59)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzo(a)anthracene	**2.80** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzo(a)pyrene	**2.38** (0.397)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzo(b)fluoranthene	**3.98** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzo(g,h,i)perylene	**0.819** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzo(k)fluoranthene	**1.15** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzoic Acid	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Carbazole	**1.29** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Chrysene	**2.81** (0.397)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.397)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Dibenzofuran	**1.76** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Diethylphthalate	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Dimethylphthalate	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Fluoranthene	**8.26** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Fluorene	**2.72** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Hexachloroethane	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-7 S-4
Date Sampled: 09/28/16 12:00
Percent Solids: 85
Initial Volume: 14.8
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Naphthalene	**0.897** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Nitrobenzene	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Pentachlorophenol	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Phenanthrene	**9.88** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Phenol	ND (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Pyrene	**5.32** (0.792)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609
Pyridine	ND (3.97)		8270D		2	10/11/16 15:52	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*67 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*88 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*72 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*70 %*		*30-130*
Surrogate: 2-Fluorophenol	*68 %*		*30-130*
Surrogate: Nitrobenzene-d5	*65 %*		*30-130*
Surrogate: Phenol-d6	*75 %*		*30-130*
Surrogate: p-Terphenyl-d14	*84 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**6.42** (2.60)		6010C		1	KJK	10/12/16 20:42	2.11	100	CJ61103
Barium	**22.6** (2.60)		6010C		1	KJK	10/12/16 20:42	2.11	100	CJ61103
Cadmium	**0.58** (0.52)		6020A		20	NAR	10/13/16 15:50	2.11	100	CJ61103
Chromium	**28.4** (1.04)		6010C		1	KJK	10/12/16 20:42	2.11	100	CJ61103
Lead	**72.0** (5.20)		6010C		1	KJK	10/12/16 20:42	2.11	100	CJ61103
Mercury	**0.038** (0.031)		7471B		1	BJV	10/11/16 13:13	0.7	40	CJ61104
Selenium	ND (0.52)		6020A		20	NAR	10/13/16 15:50	2.11	100	CJ61103
Silver	ND (0.52)		6010C		1	KJK	10/12/16 20:42	2.11	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 7.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0032)		8260B Low		0	10/07/16 20:26		[CALC]
1,4-Dichlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0695)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
2-Butanone	ND (0.0347)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
2-Hexanone	ND (0.0347)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
4-Isopropyltoluene	**E 0.337** (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0347)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Acetone	**0.237** (0.0347)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Acrylonitrile	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Allyl Chloride	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 7.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Bromobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Bromochloromethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Bromoform	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Bromomethane	ND (0.0069)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Chlorobenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Chloroethane	ND (0.0069)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Chloroform	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Chloromethane	ND (0.0069)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Dibromomethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0069)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Diethyl Ether	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Ethylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Methylene Chloride	ND (0.0174)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Naphthalene	**0.0047** (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Styrene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0347)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 7.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Toluene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Trichloroethene	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0035)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0069)		8260B Low		1	10/07/16 20:26	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0063)		8260B Low		1	10/07/16 20:26		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*119 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*103 %*		*70-130*
Surrogate: Dibromofluoromethane	*106 %*		*70-130*
Surrogate: Toluene-d8	*108 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 26.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,1,1-Trichloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,1,2,2-Tetrachloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,1,2-Trichloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,1-Dichloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,1-Dichloroethene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,1-Dichloropropene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2,3-Trichlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2,3-Trichloropropane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2,4-Trichlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2,4-Trimethylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2-Dibromo-3-Chloropropane	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2-Dibromoethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2-Dichlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2-Dichloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,2-Dichloropropane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,3 Dichloropropene (Total)	ND (0.145)		8260B		1	10/11/16 15:59		[CALC]
1,3,5-Trichlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,3,5-Trimethylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,3-Dichlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,4-Dichlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
1,4-Dioxane - Screen	ND (28.9)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
2,2-Dichloropropane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
2-Butanone	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
2-Chlorotoluene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
2-Hexanone	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
4-Chlorotoluene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
4-Isopropyltoluene	**8.86** (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
4-Methyl-2-Pentanone	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Acetone	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Acrylonitrile	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Allyl Chloride	ND (0.289)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 26.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Bromobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Bromochloromethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Bromodichloromethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Bromoform	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Bromomethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Carbon Disulfide	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Carbon Tetrachloride	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Chlorobenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Chloroethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Chloroform	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Chloromethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
cis-1,2-Dichloroethene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Dibromochloromethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Dibromomethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Dichlorodifluoromethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Diethyl Ether	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Di-isopropyl ether	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Ethyl tertiary-butyl ether	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Ethylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Hexachlorobutadiene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Isopropylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Methyl tert-Butyl Ether	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Methylene Chloride	ND (0.289)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Naphthalene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
n-Butylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
n-Propylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
sec-Butylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Styrene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
tert-Butylbenzene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Tertiary-amyl methyl ether	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Tetrachloroethene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 26.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.723)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Toluene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
trans-1,2-Dichloroethene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Trichloroethene	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Trichlorofluoromethane	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Vinyl Chloride	ND (0.145)		8260B		1	10/11/16 15:59	CZJ0121	CJ61136
Xylenes (Total)	ND (0.289)		8260B		1	10/11/16 15:59		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*94 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*90 %*		*70-130*
Surrogate: Dibromofluoromethane	*101 %*		*70-130*
Surrogate: Toluene-d8	*93 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 19.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1221	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1232	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1242	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1248	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1254	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1260	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1262	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327
Aroclor 1268	ND (0.0575)		8082A		1	10/12/16 19:50		CJ61327

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*65 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*73 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*73 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**168** (42.4)		8100M		1	10/07/16 20:19	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	68 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2-Chlorophenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2-Methylphenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2-Nitroaniline	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
2-Nitrophenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (1.41)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
3+4-Methylphenol	ND (1.41)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
3-Nitroaniline	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4-Chloroaniline	ND (1.41)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4-Nitroaniline	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
4-Nitrophenol	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Acenaphthene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Acenaphthylene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (1.41)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Aniline	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Anthracene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Azobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzidine	ND (1.41)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzo(a)anthracene	**0.802** (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzo(a)pyrene	**0.830** (0.352)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzo(b)fluoranthene	**1.62** (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzo(g,h,i)perylene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzo(k)fluoranthene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzoic Acid	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Carbazole	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Chrysene	**0.951** (0.352)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.352)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Dibenzofuran	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Diethylphthalate	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Dimethylphthalate	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Fluoranthene	**2.15** (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Fluorene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Hexachloroethane	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-8 S-2
Date Sampled: 09/28/16 14:40
Percent Solids: 91
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Naphthalene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Nitrobenzene	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Pentachlorophenol	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Phenanthrene	**0.953** (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Phenol	ND (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Pyrene	**1.46** (0.703)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609
Pyridine	ND (3.52)		8270D		2	10/11/16 16:29	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*68 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*93 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*76 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*74 %*		*30-130*
Surrogate: 2-Fluorophenol	*71 %*		*30-130*
Surrogate: Nitrobenzene-d5	*68 %*		*30-130*
Surrogate: Phenol-d6	*81 %*		*30-130*
Surrogate: p-Terphenyl-d14	*96 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**13.7** (2.75)		6010C		1	KJK	10/12/16 20:46	2.21	100	CJ61103
Barium	**58.4** (2.75)		6010C		1	KJK	10/12/16 20:46	2.21	100	CJ61103
Cadmium	ND (0.55)		6020A		20	NAR	10/13/16 15:56	2.21	100	CJ61103
Chromium	**32.7** (1.10)		6010C		1	KJK	10/12/16 20:46	2.21	100	CJ61103
Lead	**30.9** (5.50)		6010C		1	KJK	10/12/16 20:46	2.21	100	CJ61103
Mercury	**0.046** (0.033)		7471B		1	BJV	10/11/16 13:15	0.73	40	CJ61104
Selenium	ND (0.55)		6020A		20	NAR	10/13/16 15:56	2.21	100	CJ61103
Silver	ND (0.55)		6010C		1	KJK	10/12/16 20:46	2.21	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 6.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,1,1-Trichloroethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,1,2,2-Tetrachloroethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,1,2-Trichloroethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,1-Dichloroethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,1-Dichloroethene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,1-Dichloropropene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2,3-Trichlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2,3-Trichloropropane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2,4-Trichlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2,4-Trimethylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2-Dibromo-3-Chloropropane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2-Dibromoethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2-Dichlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2-Dichloroethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,2-Dichloropropane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,3,5-Trichlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,3,5-Trimethylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,3-Dichlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,3-Dichloropropene (Total)	ND (0.0037)		8260B Low		0	10/07/16 20:52		[CALC]
1,4-Dichlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
1,4-Dioxane	ND (0.0907)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
2,2-Dichloropropane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
2-Butanone	ND (0.0453)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
2-Chlorotoluene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
2-Hexanone	ND (0.0453)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
4-Chlorotoluene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
4-Isopropyltoluene	**0.0440** (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
4-Methyl-2-Pentanone	ND (0.0453)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Acetone	**0.235** (0.0453)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Acrylonitrile	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Allyl Chloride	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 6.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Bromobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Bromochloromethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Bromodichloromethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Bromoform	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Bromomethane	ND (0.0091)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Carbon Disulfide	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Carbon Tetrachloride	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Chlorobenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Chloroethane	ND (0.0091)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Chloroform	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Chloromethane	ND (0.0091)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
cis-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Dibromochloromethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Dibromomethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Dichlorodifluoromethane	ND (0.0091)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Diethyl Ether	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Di-isopropyl ether	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Ethyl tertiary-butyl ether	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Ethylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Hexachlorobutadiene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Isopropylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Methyl tert-Butyl Ether	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Methylene Chloride	ND (0.0227)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Naphthalene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
n-Butylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
n-Propylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
sec-Butylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Styrene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
tert-Butylbenzene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Tertiary-amyl methyl ether	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Tertiary-butyl Alcohol	ND (0.0453)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 6.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Tetrahydrofuran	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Toluene	**0.0105** (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
trans-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Trichloroethene	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Trichlorofluoromethane	ND (0.0045)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Vinyl Chloride	ND (0.0091)		8260B Low		1	10/07/16 20:52	CZJ0093	CJ60724
Xylenes (Total)	ND (0.0075)		8260B Low		1	10/07/16 20:52		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*112 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*103 %*		*70-130*
Surrogate: Dibromofluoromethane	*104 %*		*70-130*
Surrogate: Toluene-d8	*106 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 20.5
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 11:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1221	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1232	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1242	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1248	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1254	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1260	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1262	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604
Aroclor 1268	ND (0.0593)		8082A		1	10/11/16 20:27		CJ60604

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*72 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*77 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*82 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*87 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 19
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**136** (48.0)		8100M		1	10/07/16 21:01	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	67 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
1,2,4-Trichlorobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
1,2-Dichlorobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
1,3-Dichlorobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
1,4-Dichlorobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,4,5-Trichlorophenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,4,6-Trichlorophenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,4-Dichlorophenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,4-Dimethylphenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,4-Dinitrophenol	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,4-Dinitrotoluene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2,6-Dinitrotoluene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2-Chloronaphthalene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2-Chlorophenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2-Methylnaphthalene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2-Methylphenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2-Nitroaniline	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
2-Nitrophenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
3,3´-Dichlorobenzidine	ND (0.779)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
3+4-Methylphenol	ND (0.779)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
3-Nitroaniline	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4-Bromophenyl-phenylether	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4-Chloro-3-Methylphenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4-Chloroaniline	ND (0.779)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4-Nitroaniline	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
4-Nitrophenol	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Acenaphthene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Acenaphthylene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.779)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Aniline	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Anthracene	**0.526** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Azobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzidine	ND (0.779)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzo(a)anthracene	**1.09** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzo(a)pyrene	**0.803** (0.195)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzo(b)fluoranthene	**1.19** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzo(g,h,i)perylene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzo(k)fluoranthene	**0.395** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzoic Acid	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Benzyl Alcohol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
bis(2-Chloroethoxy)methane	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
bis(2-Chloroethyl)ether	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Butylbenzylphthalate	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Carbazole	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Chrysene	**0.890** (0.195)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Dibenzo(a,h)Anthracene	ND (0.195)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Dibenzofuran	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Diethylphthalate	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Dimethylphthalate	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Di-n-butylphthalate	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Di-n-octylphthalate	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Fluoranthene	**2.88** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Fluorene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Hexachlorobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Hexachlorobutadiene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Hexachlorocyclopentadiene	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Hexachloroethane	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-9 S-3
Date Sampled: 09/27/16 11:20
Percent Solids: 82
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Naphthalene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Nitrobenzene	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
N-Nitrosodimethylamine	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
N-nitrosodiphenylamine	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Pentachlorophenol	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Phenanthrene	**2.26** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Phenol	ND (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Pyrene	**3.17** (0.389)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609
Pyridine	ND (1.95)		8270D		1	10/08/16 8:29	CZJ0094	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*65 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*75 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*72 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*60 %*		*30-130*
Surrogate: 2-Fluorophenol	*71 %*		*30-130*
Surrogate: Nitrobenzene-d5	*59 %*		*30-130*
Surrogate: Phenol-d6	*75 %*		*30-130*
Surrogate: p-Terphenyl-d14	*129 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**12.4** (2.37)		6010C		1	KJK	10/12/16 20:50	2.49	100	CJ61103
Barium	**50.4** (2.37)		6010C		1	KJK	10/12/16 20:50	2.49	100	CJ61103
Cadmium	ND (0.47)		6020A		20	NAR	10/13/16 16:01	2.49	100	CJ61103
Chromium	**34.3** (0.95)		6010C		1	KJK	10/12/16 20:50	2.49	100	CJ61103
Lead	**34.1** (4.73)		6010C		1	KJK	10/12/16 20:50	2.49	100	CJ61103
Mercury	**0.053** (0.034)		7471B		1	BJV	10/11/16 13:17	0.69	40	CJ61104
Selenium	ND (0.47)		6020A		20	NAR	10/13/16 16:01	2.49	100	CJ61103
Silver	ND (0.47)		6010C		1	KJK	10/12/16 20:50	2.49	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0031)		8260B Low		0	10/11/16 17:12		[CALC]
1,4-Dichlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0727)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
2-Butanone	ND (0.0364)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
2-Hexanone	ND (0.0364)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
4-Isopropyltoluene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0364)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Acetone	ND (0.0364)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Acrylonitrile	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Allyl Chloride	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Bromobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Bromochloromethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Bromoform	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Bromomethane	ND (0.0073)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Chlorobenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Chloroethane	ND (0.0073)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Chloroform	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Chloromethane	ND (0.0073)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Dibromomethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0073)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Diethyl Ether	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Ethylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Isopropylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Methylene Chloride	ND (0.0182)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Naphthalene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
n-Butylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
n-Propylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
sec-Butylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Styrene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0364)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Toluene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Trichloroethene	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0036)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0073)		8260B Low		1	10/11/16 17:12	CZJ0122	CJ61137
Xylenes (Total)	ND (0.0062)		8260B Low		1	10/11/16 17:12		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*122 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*103 %*		*70-130*
Surrogate: Dibromofluoromethane	*115 %*		*70-130*
Surrogate: Toluene-d8	*108 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 20.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1221	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1232	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1242	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1248	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1254	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1260	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1262	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709
Aroclor 1268	ND (0.0586)		8082A		1	10/11/16 20:46		CJ60709

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*65 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*72 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 19.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 10/7/16 9:45

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**64.2** (44.9)		8100M		1	10/07/16 21:39	CZJ0081	CJ60608

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*74 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2-Chlorophenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2-Methylphenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2-Nitroaniline	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
2-Nitrophenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (0.791)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
3+4-Methylphenol	ND (0.791)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
3-Nitroaniline	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4-Chloroaniline	ND (0.791)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4-Nitroaniline	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
4-Nitrophenol	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Acenaphthene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Acenaphthylene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.791)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Aniline	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Anthracene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Azobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzidine	ND (0.791)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzo(a)anthracene	**0.982** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzo(a)pyrene	**1.06** (0.198)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzo(b)fluoranthene	**1.67** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzo(g,h,i)perylene	**0.490** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzo(k)fluoranthene	**0.523** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzoic Acid	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Carbazole	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Chrysene	**0.953** (0.198)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	**0.205** (0.198)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Dibenzofuran	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Diethylphthalate	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Dimethylphthalate	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Fluoranthene	**2.26** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Fluorene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Hexachloroethane	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	**0.428** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-10 S-3
Date Sampled: 09/29/16 14:10
Percent Solids: 85
Initial Volume: 14.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Naphthalene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Nitrobenzene	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Pentachlorophenol	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Phenanthrene	**1.26** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Phenol	ND (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Pyrene	**1.86** (0.395)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609
Pyridine	ND (1.98)		8270D		1	10/11/16 17:06	CZJ0113	CJ60609

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*54 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*90 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*63 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*59 %*		*30-130*
Surrogate: 2-Fluorophenol	*59 %*		*30-130*
Surrogate: Nitrobenzene-d5	*55 %*		*30-130*
Surrogate: Phenol-d6	*66 %*		*30-130*
Surrogate: p-Terphenyl-d14	*109 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**6.57** (2.39)		6010C		1	KJK	10/12/16 20:54	2.38	100	CJ61103
Barium	**45.0** (2.39)		6010C		1	KJK	10/12/16 20:54	2.38	100	CJ61103
Cadmium	ND (0.48)		6020A		20	NAR	10/13/16 16:07	2.38	100	CJ61103
Chromium	**24.8** (0.96)		6010C		1	KJK	10/12/16 20:54	2.38	100	CJ61103
Lead	**35.3** (4.79)		6010C		1	KJK	10/12/16 20:54	2.38	100	CJ61103
Mercury	**0.098** (0.033)		7471B		1	BJV	10/11/16 13:19	0.69	40	CJ61104
Selenium	ND (0.48)		6020A		20	NAR	10/13/16 16:07	2.38	100	CJ61103
Silver	**0.78** (0.48)		6010C		1	KJK	10/12/16 20:54	2.38	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0030)		8260B Low		0	10/11/16 17:38		[CALC]
1,4-Dichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0678)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
2-Butanone	ND (0.0339)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
2-Hexanone	ND (0.0339)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
4-Isopropyltoluene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0339)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Acetone	ND (0.0339)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Acrylonitrile	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Allyl Chloride	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Bromobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Bromochloromethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Bromoform	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Bromomethane	ND (0.0068)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Chlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Chloroethane	ND (0.0068)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Chloroform	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Chloromethane	ND (0.0068)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Dibromomethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0068)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Diethyl Ether	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Ethylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Isopropylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Methylene Chloride	ND (0.0170)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Naphthalene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
n-Butylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
n-Propylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
sec-Butylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Styrene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0339)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Toluene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Trichloroethene	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0034)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0068)		8260B Low		1	10/11/16 17:38	CZJ0122	CJ61137
Xylenes (Total)	ND (0.0060)		8260B Low		1	10/11/16 17:38		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*125 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*105 %*		*70-130*
Surrogate: Dibromofluoromethane	*116 %*		*70-130*
Surrogate: Toluene-d8	*105 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 20.7
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1221	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1232	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1242	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1248	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1254	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1260	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1262	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709
Aroclor 1268	ND (0.0550)		8082A		1	10/11/16 21:04		CJ60709

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*61 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*68 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*72 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*72 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ZLC
Prepared: 10/7/16 10:00

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**209** (43.2)		8100M		1	10/07/16 15:39	CZJ0090	CJ60712

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	62 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
1,2,4-Trichlorobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
1,2-Dichlorobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
1,3-Dichlorobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
1,4-Dichlorobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,3,4,6-Tetrachlorophenol	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,4,5-Trichlorophenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,4,6-Trichlorophenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,4-Dichlorophenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,4-Dimethylphenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,4-Dinitrophenol	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,4-Dinitrotoluene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2,6-Dinitrotoluene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2-Chloronaphthalene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2-Chlorophenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2-Methylnaphthalene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2-Methylphenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2-Nitroaniline	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
2-Nitrophenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
3,3´-Dichlorobenzidine	ND (3.17)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
3+4-Methylphenol	ND (3.17)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
3-Nitroaniline	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4,6-Dinitro-2-Methylphenol	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4-Bromophenyl-phenylether	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4-Chloro-3-Methylphenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4-Chloroaniline	ND (3.17)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4-Chloro-phenyl-phenyl ether	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4-Nitroaniline	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
4-Nitrophenol	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Acenaphthene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Acenaphthylene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (3.17)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Aniline	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Anthracene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Azobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzidine	ND (3.17)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzo(a)anthracene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzo(a)pyrene	ND (0.793)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzo(b)fluoranthene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzo(g,h,i)perylene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzo(k)fluoranthene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzoic Acid	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Benzyl Alcohol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
bis(2-Chloroethoxy)methane	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
bis(2-Chloroethyl)ether	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
bis(2-chloroisopropyl)Ether	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
bis(2-Ethylhexyl)phthalate	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Butylbenzylphthalate	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Carbazole	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Chrysene	**0.853** (0.793)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Dibenzo(a,h)Anthracene	ND (0.793)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Dibenzofuran	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Diethylphthalate	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Dimethylphthalate	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Di-n-butylphthalate	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Di-n-octylphthalate	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Fluoranthene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Fluorene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Hexachlorobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Hexachlorobutadiene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Hexachlorocyclopentadiene	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Hexachloroethane	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-11 S-2
Date Sampled: 09/29/16 14:45
Percent Solids: 88
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Naphthalene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Nitrobenzene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
N-Nitrosodimethylamine	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
N-Nitroso-Di-n-Propylamine	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
N-nitrosodiphenylamine	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Pentachlorophenol	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Phenanthrene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Phenol	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Pyrene	ND (1.58)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609
Pyridine	ND (7.93)		8270D		4	10/13/16 19:03	CZJ0162	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*56 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*73 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*64 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*72 %*		*30-130*
Surrogate: 2-Fluorophenol	*64 %*		*30-130*
Surrogate: Nitrobenzene-d5	*59 %*		*30-130*
Surrogate: Phenol-d6	*65 %*		*30-130*
Surrogate: p-Terphenyl-d14	*84 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**13.9** (1.92)		6010C		1	KJK	10/12/16 20:59	2.83	100	CJ61103
Barium	**50.5** (1.92)		6010C		1	KJK	10/12/16 20:59	2.83	100	CJ61103
Cadmium	ND (0.38)		6020A		20	NAR	10/13/16 16:25	2.83	100	CJ61103
Chromium	**53.0** (0.77)		6010C		1	KJK	10/12/16 20:59	2.83	100	CJ61103
Lead	**12.5** (3.84)		6010C		1	KJK	10/12/16 20:59	2.83	100	CJ61103
Mercury	ND (0.032)		7471B		1	BJV	10/11/16 13:21	0.67	40	CJ61104
Selenium	ND (0.38)		6020A		20	NAR	10/13/16 16:25	2.83	100	CJ61103
Silver	ND (0.38)		6010C		1	KJK	10/12/16 20:59	2.83	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 7.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0034)		8260B Low		0	10/11/16 18:04		[CALC]
1,4-Dichlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0744)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
2-Butanone	ND (0.0372)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
2-Hexanone	ND (0.0372)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
4-Isopropyltoluene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0372)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Acetone	**0.0525** (0.0372)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Acrylonitrile	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Allyl Chloride	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 7.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Bromobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Bromochloromethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Bromoform	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Bromomethane	ND (0.0074)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Chlorobenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Chloroethane	ND (0.0074)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Chloroform	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Chloromethane	ND (0.0074)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Dibromomethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0074)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Diethyl Ether	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Ethylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Isopropylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Methylene Chloride	ND (0.0186)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Naphthalene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
n-Butylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
n-Propylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
sec-Butylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Styrene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0372)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 7.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Toluene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Trichloroethene	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0037)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0074)		8260B Low		1	10/11/16 18:04	CZJ0122	CJ61137
Xylenes (Total)	ND (0.0068)		8260B Low		1	10/11/16 18:04		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*124 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*104 %*		*70-130*
Surrogate: Dibromofluoromethane	*117 %*		*70-130*
Surrogate: Toluene-d8	*106 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 19.4
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1221	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1232	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1242	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1248	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1254	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1260	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1262	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709
Aroclor 1268	ND (0.0560)		8082A		1	10/11/16 21:23		CJ60709

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*71 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*78 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*77 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*78 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ZLC
Prepared: 10/7/16 10:00

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**48.3** (42.0)		8100M		1	10/07/16 16:18	CZJ0090	CJ60712

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	60 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2-Chlorophenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2-Methylphenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2-Nitroaniline	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
2-Nitrophenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (0.701)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
3+4-Methylphenol	ND (0.701)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
3-Nitroaniline	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4-Chloroaniline	ND (0.701)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4-Nitroaniline	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
4-Nitrophenol	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Acenaphthene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Acenaphthylene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.701)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Aniline	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Anthracene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Azobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzidine	ND (0.701)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzo(a)anthracene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzo(a)pyrene	**0.199** (0.176)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzo(b)fluoranthene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzo(g,h,i)perylene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzo(k)fluoranthene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzoic Acid	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Carbazole	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Chrysene	ND (0.176)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.176)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Dibenzofuran	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Diethylphthalate	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Dimethylphthalate	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Fluoranthene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Fluorene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Hexachloroethane	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-12 S-1
Date Sampled: 09/29/16 15:05
Percent Solids: 92
Initial Volume: 15.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Naphthalene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Nitrobenzene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Pentachlorophenol	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Phenanthrene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Phenol	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Pyrene	ND (0.350)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609
Pyridine	ND (1.76)		8270D		1	10/11/16 18:21	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*79 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*89 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*85 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*78 %*		*30-130*
Surrogate: 2-Fluorophenol	*80 %*		*30-130*
Surrogate: Nitrobenzene-d5	*80 %*		*30-130*
Surrogate: Phenol-d6	*87 %*		*30-130*
Surrogate: p-Terphenyl-d14	*102 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**15.8** (2.55)		6010C		1	KJK	10/12/16 21:18	2.13	100	CJ61103
Barium	**30.1** (2.55)		6010C		1	KJK	10/12/16 21:18	2.13	100	CJ61103
Cadmium	ND (0.51)		6020A		20	NAR	10/13/16 16:31	2.13	100	CJ61103
Chromium	**27.3** (1.02)		6010C		1	KJK	10/12/16 21:18	2.13	100	CJ61103
Lead	**277** (5.11)		6010C		1	KJK	10/12/16 21:18	2.13	100	CJ61103
Mercury	**0.094** (0.030)		7471B		1	BJV	10/11/16 13:23	0.71	40	CJ61104
Selenium	ND (0.51)		6020A		20	NAR	10/13/16 16:31	2.13	100	CJ61103
Silver	ND (0.51)		6010C		1	KJK	10/12/16 21:18	2.13	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0031)		8260B Low		0	10/11/16 18:30		[CALC]
1,4-Dichlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0671)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
2-Butanone	ND (0.0336)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
2-Hexanone	ND (0.0336)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
4-Isopropyltoluene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0336)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Acetone	ND (0.0336)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Acrylonitrile	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Allyl Chloride	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Bromobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Bromochloromethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Bromoform	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Bromomethane	ND (0.0067)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Chlorobenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Chloroethane	ND (0.0067)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Chloroform	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Chloromethane	ND (0.0067)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Dibromomethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0067)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Diethyl Ether	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Ethylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Isopropylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Methylene Chloride	ND (0.0168)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Naphthalene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
n-Butylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
n-Propylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
sec-Butylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Styrene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0336)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Toluene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Trichloroethene	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0034)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0067)		8260B Low		1	10/11/16 18:30	CZJ0122	CJ61137
Xylenes (Total)	ND (0.0062)		8260B Low		1	10/11/16 18:30		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*123 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*100 %*		*70-130*
Surrogate: Dibromofluoromethane	*115 %*		*70-130*
Surrogate: Toluene-d8	*109 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 20.3
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1221	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1232	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1242	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1248	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1254	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1260	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1262	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709
Aroclor 1268	ND (0.0536)		8082A		1	10/11/16 22:20		CJ60709

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*79 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*91 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*77 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*96 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 19.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ZLC
Prepared: 10/7/16 10:00

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**222** (41.0)		8100M		1	10/07/16 18:14	CZJ0090	CJ60712

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*76 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 14
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2-Chlorophenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2-Methylphenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2-Nitroaniline	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
2-Nitrophenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (0.777)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
3+4-Methylphenol	ND (0.777)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
3-Nitroaniline	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4-Chloroaniline	ND (0.777)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4-Nitroaniline	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
4-Nitrophenol	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Acenaphthene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Acenaphthylene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 14
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.777)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Aniline	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Anthracene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Azobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzidine	ND (0.777)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzo(a)anthracene	**0.723** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzo(a)pyrene	**0.856** (0.195)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzo(b)fluoranthene	**1.36** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzo(g,h,i)perylene	**0.552** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzo(k)fluoranthene	**0.531** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzoic Acid	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Carbazole	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Chrysene	**0.922** (0.195)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.195)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Dibenzofuran	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Diethylphthalate	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Dimethylphthalate	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Fluoranthene	**2.20** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Fluorene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Hexachloroethane	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	**0.422** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-13 S-3
Date Sampled: 09/28/16 14:50
Percent Solids: 92
Initial Volume: 14
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Naphthalene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Nitrobenzene	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Pentachlorophenol	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Phenanthrene	**0.871** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Phenol	ND (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Pyrene	**2.21** (0.388)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609
Pyridine	ND (1.95)		8270D		1	10/11/16 18:59	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*61 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*87 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*73 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*70 %*		*30-130*
Surrogate: 2-Fluorophenol	*68 %*		*30-130*
Surrogate: Nitrobenzene-d5	*65 %*		*30-130*
Surrogate: Phenol-d6	*76 %*		*30-130*
Surrogate: p-Terphenyl-d14	*120 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**11.8** (2.28)		6010C		1	KJK	10/12/16 21:22	2.62	100	CJ61103
Barium	**71.4** (2.28)		6010C		1	KJK	10/12/16 21:22	2.62	100	CJ61103
Cadmium	ND (0.46)		6020A		20	NAR	10/13/16 16:37	2.62	100	CJ61103
Chromium	**57.2** (0.91)		6010C		1	KJK	10/12/16 21:22	2.62	100	CJ61103
Lead	**318** (4.56)		6010C		1	KJK	10/12/16 21:22	2.62	100	CJ61103
Mercury	**0.043** (0.039)		7471B		1	BJV	10/11/16 13:25	0.6	40	CJ61104
Selenium	ND (0.46)		6020A		20	NAR	10/13/16 16:37	2.62	100	CJ61103
Silver	ND (0.46)		6010C		1	KJK	10/12/16 21:22	2.62	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 6.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0037)		8260B Low		0	10/11/16 18:56		[CALC]
1,4-Dichlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0892)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
2-Butanone	ND (0.0446)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
2-Hexanone	ND (0.0446)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
4-Isopropyltoluene	**0.138** (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0446)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Acetone	ND (0.0446)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Acrylonitrile	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Allyl Chloride	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 6.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Bromobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Bromochloromethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Bromoform	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Bromomethane	ND (0.0089)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Chlorobenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Chloroethane	ND (0.0089)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Chloroform	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Chloromethane	ND (0.0089)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Dibromomethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0089)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Diethyl Ether	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Ethylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Isopropylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Methylene Chloride	ND (0.0223)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Naphthalene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
n-Butylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
n-Propylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
sec-Butylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Styrene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0446)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 6.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Toluene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Trichloroethene	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0045)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0089)		8260B Low		1	10/11/16 18:56	CZJ0122	CJ61137
Xylenes (Total)	ND (0.0075)		8260B Low		1	10/11/16 18:56		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*117 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*107 %*		*70-130*
Surrogate: Dibromofluoromethane	*111 %*		*70-130*
Surrogate: Toluene-d8	*109 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 19.9
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1221	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1232	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1242	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1248	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1254	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1260	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1262	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709
Aroclor 1268	ND (0.0601)		8082A		1	10/11/16 22:39		CJ60709

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*70 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*83 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*78 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*74 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ZLC
Prepared: 10/7/16 10:00

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**163** (46.2)		8100M		1	10/07/16 18:53	CZJ0090	CJ60712

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	69 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2-Chlorophenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2-Methylnaphthalene	**1.67** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2-Methylphenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2-Nitroaniline	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
2-Nitrophenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (0.843)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
3+4-Methylphenol	ND (0.843)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
3-Nitroaniline	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4-Chloroaniline	ND (0.843)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4-Nitroaniline	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
4-Nitrophenol	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Acenaphthene	**1.44** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Acenaphthylene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.843)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Aniline	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Anthracene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Azobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzidine	ND (0.843)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzo(a)anthracene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzo(a)pyrene	ND (0.211)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzo(b)fluoranthene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzo(g,h,i)perylene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzo(k)fluoranthene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzoic Acid	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Carbazole	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Chrysene	ND (0.211)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.211)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Dibenzofuran	**1.10** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Diethylphthalate	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Dimethylphthalate	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Fluoranthene	**0.429** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Fluorene	**0.992** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Hexachloroethane	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-14 S-4
Date Sampled: 09/29/16 12:25
Percent Solids: 84
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Naphthalene	**2.42** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Nitrobenzene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Pentachlorophenol	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Phenanthrene	**1.40** (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Phenol	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Pyrene	ND (0.421)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609
Pyridine	ND (2.11)		8270D		1	10/11/16 19:36	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*77 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*90 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*82 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*77 %*		*30-130*
Surrogate: 2-Fluorophenol	*78 %*		*30-130*
Surrogate: Nitrobenzene-d5	*77 %*		*30-130*
Surrogate: Phenol-d6	*83 %*		*30-130*
Surrogate: p-Terphenyl-d14	*116 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**9.64** (2.77)		6010C		1	KJK	10/12/16 21:31	2.43	100	CJ61103
Barium	**95.7** (2.77)		6010C		1	KJK	10/12/16 21:31	2.43	100	CJ61103
Cadmium	ND (0.55)		6020A		20	NAR	10/13/16 16:42	2.43	100	CJ61103
Chromium	**31.0** (1.11)		6010C		1	KJK	10/12/16 21:31	2.43	100	CJ61103
Lead	**221** (5.54)		6010C		1	KJK	10/12/16 21:31	2.43	100	CJ61103
Mercury	**0.441** (0.044)		7471B		1	BJV	10/11/16 13:27	0.61	40	CJ61104
Selenium	ND (0.55)		6020A		20	NAR	10/13/16 16:42	2.43	100	CJ61103
Silver	ND (0.55)		6010C		1	KJK	10/12/16 21:31	2.43	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	**0.146** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	**0.0534** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0031)		8260B Low		0	10/11/16 19:48		[CALC]
1,4-Dichlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0842)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
2-Butanone	ND (0.0421)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
2-Hexanone	ND (0.0421)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
4-Isopropyltoluene	**0.0074** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0421)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Acetone	**0.208** (0.0421)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Acrylonitrile	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Allyl Chloride	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Bromobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Bromochloromethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Bromoform	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Bromomethane	ND (0.0084)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Chlorobenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Chloroethane	ND (0.0084)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Chloroform	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Chloromethane	ND (0.0084)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Dibromomethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0084)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Diethyl Ether	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Ethylbenzene	**0.0156** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Isopropylbenzene	**0.0065** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Methylene Chloride	ND (0.0211)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Naphthalene	**0.0097** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
n-Butylbenzene	**0.0097** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
n-Propylbenzene	**0.0090** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
sec-Butylbenzene	**0.0050** (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Styrene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0421)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Toluene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Trichloroethene	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0042)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0084)		8260B Low		1	10/11/16 19:48	CZJ0122	CJ61137
Xylenes (Total)	**0.0441** (0.0062)		8260B Low		1	10/11/16 19:48		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*122 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*99 %*		*70-130*
Surrogate: Dibromofluoromethane	*113 %*		*70-130*
Surrogate: Toluene-d8	*107 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 20.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1221	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1232	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1242	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1248	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1254	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1260	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1262	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328
Aroclor 1268	ND (0.0654)		8082A		1	10/12/16 19:11		CJ61328

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*83 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*82 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*66 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*74 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 20.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ZLC
Prepared: 10/7/16 10:00

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**319** (48.3)		8100M		1	10/07/16 19:31	CZJ0090	CJ60712

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	63 %		40-140

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 15.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
1,2,4-Trichlorobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
1,2-Dichlorobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
1,2-Diphenylhydrazine as Azobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
1,3-Dichlorobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
1,4-Dichlorobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,3,4,6-Tetrachlorophenol	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,4,5-Trichlorophenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,4,6-Trichlorophenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,4-Dichlorophenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,4-Dimethylphenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,4-Dinitrophenol	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,4-Dinitrotoluene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2,6-Dinitrotoluene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2-Chloronaphthalene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2-Chlorophenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2-Methylnaphthalene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2-Methylphenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2-Nitroaniline	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
2-Nitrophenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
3,3´-Dichlorobenzidine	ND (0.848)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
3+4-Methylphenol	ND (0.848)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
3-Nitroaniline	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4,6-Dinitro-2-Methylphenol	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4-Bromophenyl-phenylether	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4-Chloro-3-Methylphenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4-Chloroaniline	ND (0.848)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4-Chloro-phenyl-phenyl ether	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4-Nitroaniline	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
4-Nitrophenol	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Acenaphthene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Acenaphthylene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 15.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.848)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Aniline	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Anthracene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Azobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzidine	ND (0.848)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzo(a)anthracene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzo(a)pyrene	ND (0.212)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzo(b)fluoranthene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzo(g,h,i)perylene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzo(k)fluoranthene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzoic Acid	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Benzyl Alcohol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
bis(2-Chloroethoxy)methane	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
bis(2-Chloroethyl)ether	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
bis(2-chloroisopropyl)Ether	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
bis(2-Ethylhexyl)phthalate	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Butylbenzylphthalate	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Carbazole	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Chrysene	ND (0.212)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Dibenzo(a,h)Anthracene	ND (0.212)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Dibenzofuran	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Diethylphthalate	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Dimethylphthalate	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Di-n-butylphthalate	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Di-n-octylphthalate	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Fluoranthene	**0.490** (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Fluorene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Hexachlorobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Hexachlorobutadiene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Hexachlorocyclopentadiene	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Hexachloroethane	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Indeno(1,2,3-cd)Pyrene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-15 S-3
Date Sampled: 09/29/16 10:05
Percent Solids: 74
Initial Volume: 15.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/7/16 10:05

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Naphthalene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Nitrobenzene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
N-Nitrosodimethylamine	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
N-Nitroso-Di-n-Propylamine	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
N-nitrosodiphenylamine	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Pentachlorophenol	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Phenanthrene	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Phenol	ND (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Pyrene	**0.478** (0.423)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609
Pyridine	ND (2.12)		8270D		1	10/11/16 20:13	CZJ0113	CJ60609

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*56 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*84 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*67 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*62 %*		*30-130*
Surrogate: 2-Fluorophenol	*63 %*		*30-130*
Surrogate: Nitrobenzene-d5	*57 %*		*30-130*
Surrogate: Phenol-d6	*71 %*		*30-130*
Surrogate: p-Terphenyl-d14	*122 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**10.5** (2.10)		6010C		1	KJK	10/12/16 21:35	2.69	100	CJ61103
Barium	**110** (2.10)		6010C		1	KJK	10/12/16 21:35	2.69	100	CJ61103
Cadmium	**0.49** (0.42)		6020A		20	NAR	10/13/16 16:48	2.69	100	CJ61103
Chromium	**34.4** (0.84)		6010C		1	KJK	10/12/16 21:35	2.69	100	CJ61103
Lead	**416** (4.20)		6010C		1	KJK	10/12/16 21:35	2.69	100	CJ61103
Mercury	**0.971** (0.170)		7471B		5	BJV	10/11/16 15:41	0.66	40	CJ61104
Selenium	**0.49** (0.42)		6020A		20	NAR	10/13/16 16:48	2.69	100	CJ61103
Silver	ND (0.42)		6010C		1	KJK	10/12/16 21:35	2.69	100	CJ61103

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,1,1-Trichloroethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,1,2,2-Tetrachloroethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,1,2-Trichloroethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,1-Dichloroethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,1-Dichloroethene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,1-Dichloropropene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2,3-Trichlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2,3-Trichloropropane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2,4-Trichlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2,4-Trimethylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2-Dibromo-3-Chloropropane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2-Dibromoethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2-Dichlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2-Dichloroethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,2-Dichloropropane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,3,5-Trichlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,3,5-Trimethylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,3-Dichlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,3-Dichloropropene (Total)	ND (0.0042)		8260B Low		0	10/11/16 19:22		[CALC]
1,4-Dichlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
1,4-Dioxane	ND (0.0942)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
2,2-Dichloropropane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
2-Butanone	ND (0.0471)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
2-Chlorotoluene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
2-Hexanone	ND (0.0471)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
4-Chlorotoluene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
4-Isopropyltoluene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
4-Methyl-2-Pentanone	ND (0.0471)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Acetone	**0.0867** (0.0471)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Acrylonitrile	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Allyl Chloride	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Benzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Bromobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Bromochloromethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Bromodichloromethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Bromoform	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Bromomethane	ND (0.0094)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Carbon Disulfide	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Carbon Tetrachloride	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Chlorobenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Chloroethane	ND (0.0094)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Chloroform	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Chloromethane	ND (0.0094)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
cis-1,2-Dichloroethene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Dibromochloromethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Dibromomethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Dichlorodifluoromethane	ND (0.0094)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Diethyl Ether	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Di-isopropyl ether	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Ethyl tertiary-butyl ether	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Ethylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Hexachlorobutadiene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Isopropylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Methyl tert-Butyl Ether	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Methylene Chloride	ND (0.0236)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Naphthalene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
n-Butylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
n-Propylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
sec-Butylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Styrene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
tert-Butylbenzene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Tertiary-amyl methyl ether	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Tertiary-butyl Alcohol	ND (0.0471)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrachloroethene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Tetrahydrofuran	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Toluene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
trans-1,2-Dichloroethene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Trichloroethene	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Trichlorofluoromethane	ND (0.0047)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Vinyl Chloride	ND (0.0094)		8260B Low		1	10/11/16 19:22	CZJ0122	CJ61137
Xylenes (Total)	ND (0.0083)		8260B Low		1	10/11/16 19:22		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*117 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*103 %*		*70-130*
Surrogate: Dibromofluoromethane	*112 %*		*70-130*
Surrogate: Toluene-d8	*109 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 20.5
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 10/7/16 16:53

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1221	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1232	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1242	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1248	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1254	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1260	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1262	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328
Aroclor 1268	ND (0.0551)		8082A		1	10/12/16 19:29		CJ61328

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*86 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*91 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*79 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 19.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ZLC
Prepared: 10/7/16 10:00

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**136** (43.3)		8100M		1	10/07/16 20:10	CZJ0090	CJ60712

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*78 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/11/16 17:24

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
1,2,4-Trichlorobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
1,2-Dichlorobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
1,2-Diphenylhydrazine as Azobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
1,3-Dichlorobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
1,4-Dichlorobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,3,4,6-Tetrachlorophenol	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,4,5-Trichlorophenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,4,6-Trichlorophenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,4-Dichlorophenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,4-Dimethylphenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,4-Dinitrophenol	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,4-Dinitrotoluene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2,6-Dinitrotoluene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2-Chloronaphthalene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2-Chlorophenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2-Methylnaphthalene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2-Methylphenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2-Nitroaniline	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
2-Nitrophenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
3,3´-Dichlorobenzidine	ND (0.754)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
3+4-Methylphenol	ND (0.754)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
3-Nitroaniline	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4,6-Dinitro-2-Methylphenol	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4-Bromophenyl-phenylether	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4-Chloro-3-Methylphenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4-Chloroaniline	ND (0.754)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4-Chloro-phenyl-phenyl ether	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4-Nitroaniline	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
4-Nitrophenol	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Acenaphthene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Acenaphthylene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/11/16 17:24

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acetophenone	ND (0.754)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Aniline	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Anthracene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Azobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzidine	ND (0.754)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzo(a)anthracene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzo(a)pyrene	**0.313** (0.189)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzo(b)fluoranthene	**0.483** (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzo(g,h,i)perylene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzo(k)fluoranthene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzoic Acid	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Benzyl Alcohol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
bis(2-Chloroethoxy)methane	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
bis(2-Chloroethyl)ether	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
bis(2-chloroisopropyl)Ether	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
bis(2-Ethylhexyl)phthalate	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Butylbenzylphthalate	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Carbazole	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Chrysene	**0.340** (0.189)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Dibenzo(a,h)Anthracene	ND (0.189)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Dibenzofuran	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Diethylphthalate	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Dimethylphthalate	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Di-n-butylphthalate	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Di-n-octylphthalate	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Fluoranthene	**0.737** (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Fluorene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Hexachlorobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Hexachlorobutadiene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Hexachlorocyclopentadiene	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Hexachloroethane	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Indeno(1,2,3-cd)Pyrene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth
Client Sample ID: B-16 S-2
Date Sampled: 09/29/16 09:20
Percent Solids: 88
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1610112
ESS Laboratory Sample ID: 1610112-16
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 10/11/16 17:24

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Isophorone	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Naphthalene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Nitrobenzene	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
N-Nitrosodimethylamine	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
N-Nitroso-Di-n-Propylamine	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
N-nitrosodiphenylamine	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Pentachlorophenol	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Phenanthrene	**0.456** (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Phenol	ND (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Pyrene	**0.720** (0.376)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112
Pyridine	ND (1.89)		8270D		1	10/13/16 3:49	CZJ0132	CJ61112

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*41 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*51 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*42 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*42 %*		*30-130*
Surrogate: 2-Fluorophenol	*41 %*		*30-130*
Surrogate: Nitrobenzene-d5	*41 %*		*30-130*
Surrogate: Phenol-d6	*43 %*		*30-130*
Surrogate: p-Terphenyl-d14	*65 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CJ61103 - 3050B										
Blank										
Arsenic	ND	2.50	mg/kg wet							
Barium	ND	2.50	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Selenium	ND	0.50	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
LCS										
Arsenic	151	9.26	mg/kg wet	161.0		94	80-120			
Barium	333	9.26	mg/kg wet	351.0		95	80-120			
Cadmium	190	23.1	mg/kg wet	190.0		100	80-120			
Chromium	85.1	3.70	mg/kg wet	87.90		97	80-120			
Lead	134	18.5	mg/kg wet	138.0		97	80-120			
Selenium	310	23.1	mg/kg wet	305.0		101	80-120			
Silver	56.7	1.85	mg/kg wet	58.00		98	80-120			
LCS Dup										
Arsenic	145	9.62	mg/kg wet	161.0		90	80-120	4	20	
Barium	323	9.62	mg/kg wet	351.0		92	80-120	3	20	
Cadmium	190	24.0	mg/kg wet	190.0		100	80-120	0.01	30	
Chromium	82.5	3.85	mg/kg wet	87.90		94	80-120	3	20	
Lead	131	19.2	mg/kg wet	138.0		95	80-120	3	20	
Selenium	306	24.0	mg/kg wet	305.0		100	80-120	1	30	
Silver	55.0	1.92	mg/kg wet	58.00		95	80-120	3	20	
Batch CJ61104 - 7471B										
Blank										
Mercury	ND	0.033	mg/kg wet							
LCS										
Mercury	16.2	1.65	mg/kg wet	15.90		102	80-120			
LCS Dup										
Mercury	16.1	1.83	mg/kg wet	15.90		101	80-120	1	20	
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ60724 - 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							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ60724 - 5035										
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-Trichlorobenzene	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-Dichloropropene (Total)	ND	0.0050	mg/kg							
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							
Acrylonitrile	ND	0.0050	mg/kg wet							
Allyl Chloride	ND	0.0050	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							
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							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ60724 - 5035										
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							
Tertiary-butyl Alcohol	ND	0.0500	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	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							
Xylenes (Total)	ND	0.0100	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	*0.0544*		mg/kg wet	*0.05000*		*109*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0507*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0522*		mg/kg wet	*0.05000*		*104*	*70-130*			
Surrogate: Toluene-d8	*0.0534*		mg/kg wet	*0.05000*		*107*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0549	0.0050	mg/kg wet	0.05000		110	70-130			
1,1,1-Trichloroethane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
1,1,2,2-Tetrachloroethane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
1,1,2-Trichloroethane	0.0461	0.0050	mg/kg wet	0.05000		92	70-130			
1,1-Dichloroethane	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
1,1-Dichloroethene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
1,1-Dichloropropene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichlorobenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,2,3-Trichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,4-Trichlorobenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
1,2,4-Trimethylbenzene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130			
1,2-Dibromo-3-Chloropropane	0.0431	0.0050	mg/kg wet	0.05000		86	70-130			
1,2-Dibromoethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
1,2-Dichlorobenzene	0.0460	0.0050	mg/kg wet	0.05000		92	70-130			
1,2-Dichloroethane	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
1,2-Dichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,3,5-Trichlorobenzene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130			
1,3,5-Trimethylbenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
1,3-Dichlorobenzene	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
1,3-Dichloropropene (Total)	0.0881	0.0050	mg/kg							
1,4-Dichlorobenzene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ60724 - 5035										
1,4-Dioxane	1.01	0.100	mg/kg wet	1.000		101	70-130			
2,2-Dichloropropane	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
2-Butanone	0.238	0.0500	mg/kg wet	0.2500		95	70-130			
2-Chlorotoluene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
2-Hexanone	0.233	0.0500	mg/kg wet	0.2500		93	70-130			
4-Chlorotoluene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
4-Isopropyltoluene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
4-Methyl-2-Pentanone	0.214	0.0500	mg/kg wet	0.2500		86	70-130			
Acetone	0.238	0.0500	mg/kg wet	0.2500		95	70-130			
Acrylonitrile	0.0477	0.0050	mg/kg wet	0.05000		95	70-130			
Allyl Chloride	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
Benzene	0.0461	0.0050	mg/kg wet	0.05000		92	70-130			
Bromobenzene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
Bromochloromethane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
Bromodichloromethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130			
Bromoform	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Bromomethane	0.0496	0.0100	mg/kg wet	0.05000		99	70-130			
Carbon Disulfide	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Carbon Tetrachloride	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Chlorobenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
Chloroethane	0.0435	0.0100	mg/kg wet	0.05000		87	70-130			
Chloroform	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Chloromethane	0.0545	0.0100	mg/kg wet	0.05000		109	70-130			
cis-1,2-Dichloroethene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
Dibromochloromethane	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
Dibromomethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
Dichlorodifluoromethane	0.0468	0.0100	mg/kg wet	0.05000		94	70-130			
Diethyl Ether	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
Di-isopropyl ether	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
Ethyl tertiary-butyl ether	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
Ethylbenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Hexachlorobutadiene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Isopropylbenzene	0.0413	0.0050	mg/kg wet	0.05000		83	70-130			
Methyl tert-Butyl Ether	0.0468	0.0050	mg/kg wet	0.05000		94	70-130			
Methylene Chloride	0.0434	0.0250	mg/kg wet	0.05000		87	70-130			
Naphthalene	0.0420	0.0050	mg/kg wet	0.05000		84	70-130			
n-Butylbenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
n-Propylbenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
sec-Butylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Styrene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
tert-Butylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
Tertiary-amyl methyl ether	0.0415	0.0050	mg/kg wet	0.05000		83	70-130			
Tertiary-butyl Alcohol	0.212	0.0500	mg/kg wet	0.2500		85	70-130			
Tetrachloroethene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
Tetrahydrofuran	0.0382	0.0050	mg/kg wet	0.05000		76	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ60724 - 5035										
Toluene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
trans-1,2-Dichloroethene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Trichloroethene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Trichlorofluoromethane	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
Vinyl Chloride	0.0552	0.0100	mg/kg wet	0.05000		110	70-130			
Xylenes (Total)	0.152	0.0100	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	*0.0578*		mg/kg wet	*0.05000*		*116*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0562*		mg/kg wet	*0.05000*		*112*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0549*		mg/kg wet	*0.05000*		*110*	*70-130*			
Surrogate: Toluene-d8	*0.0547*		mg/kg wet	*0.05000*		*109*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0537	0.0050	mg/kg wet	0.05000		107	70-130	2	25	
1,1,1-Trichloroethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	4	25	
1,1,2,2-Tetrachloroethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	8	25	
1,1,2-Trichloroethane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	6	25	
1,1-Dichloroethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	5	25	
1,1-Dichloroethene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	6	25	
1,1-Dichloropropene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	4	25	
1,2,3-Trichlorobenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	7	25	
1,2,3-Trichloropropane	0.0492	0.0050	mg/kg wet	0.05000		98	70-130	7	25	
1,2,4-Trichlorobenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	6	25	
1,2,4-Trimethylbenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	3	25	
1,2-Dibromo-3-Chloropropane	0.0462	0.0050	mg/kg wet	0.05000		92	70-130	7	25	
1,2-Dibromoethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	0.5	25	
1,2-Dichlorobenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	5	25	
1,2-Dichloroethane	0.0543	0.0050	mg/kg wet	0.05000		109	70-130	4	25	
1,2-Dichloropropane	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	5	25	
1,3,5-Trichlorobenzene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	4	25	
1,3,5-Trimethylbenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130	3	25	
1,3-Dichlorobenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	3	25	
1,3-Dichloropropene (Total)	0.0934	0.0050	mg/kg							
1,4-Dichlorobenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	4	25	
1,4-Dioxane	1.05	0.100	mg/kg wet	1.000		105	70-130	4	20	
2,2-Dichloropropane	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	4	25	
2-Butanone	0.253	0.0500	mg/kg wet	0.2500		101	70-130	6	25	
2-Chlorotoluene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	4	25	
2-Hexanone	0.239	0.0500	mg/kg wet	0.2500		96	70-130	2	25	
4-Chlorotoluene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	3	25	
4-Isopropyltoluene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	3	25	
4-Methyl-2-Pentanone	0.233	0.0500	mg/kg wet	0.2500		93	70-130	9	25	
Acetone	0.255	0.0500	mg/kg wet	0.2500		102	70-130	7	25	
Acrylonitrile	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	7	25	
Allyl Chloride	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	7	25	
Benzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130	5	25	
Bromobenzene	0.0492	0.0050	mg/kg wet	0.05000		98	70-130	5	25	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ60724 - 5035										
Bromochloromethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	7	25	
Bromodichloromethane	0.0575	0.0050	mg/kg wet	0.05000		115	70-130	5	25	
Bromoform	0.0460	0.0050	mg/kg wet	0.05000		92	70-130	1	25	
Bromomethane	0.0512	0.0100	mg/kg wet	0.05000		102	70-130	3	25	
Carbon Disulfide	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	5	25	
Carbon Tetrachloride	0.0566	0.0050	mg/kg wet	0.05000		113	70-130	3	25	
Chlorobenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	2	25	
Chloroethane	0.0448	0.0100	mg/kg wet	0.05000		90	70-130	3	25	
Chloroform	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	4	25	
Chloromethane	0.0576	0.0100	mg/kg wet	0.05000		115	70-130	6	25	
cis-1,2-Dichloroethene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	6	25	
Dibromochloromethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-130	2	25	
Dibromomethane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	6	25	
Dichlorodifluoromethane	0.0483	0.0100	mg/kg wet	0.05000		97	70-130	3	25	
Diethyl Ether	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	7	25	
Di-isopropyl ether	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	6	25	
Ethyl tertiary-butyl ether	0.0470	0.0050	mg/kg wet	0.05000		94	70-130	7	25	
Ethylbenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	2	25	
Hexachlorobutadiene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	4	25	
Isopropylbenzene	0.0426	0.0050	mg/kg wet	0.05000		85	70-130	3	25	
Methyl tert-Butyl Ether	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	7	25	
Methylene Chloride	0.0456	0.0250	mg/kg wet	0.05000		91	70-130	5	25	
Naphthalene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	10	25	
n-Butylbenzene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	4	25	
n-Propylbenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	4	25	
sec-Butylbenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	4	25	
Styrene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	3	25	
tert-Butylbenzene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	4	25	
Tertiary-amyl methyl ether	0.0443	0.0050	mg/kg wet	0.05000		89	70-130	7	25	
Tertiary-butyl Alcohol	0.233	0.0500	mg/kg wet	0.2500		93	70-130	9	20	
Tetrachloroethene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	3	25	
Tetrahydrofuran	0.0407	0.0050	mg/kg wet	0.05000		81	70-130	6	25	
Toluene	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	5	25	
trans-1,2-Dichloroethene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	6	25	
Trichloroethene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	3	25	
Trichlorofluoromethane	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	3	25	
Vinyl Chloride	0.0576	0.0100	mg/kg wet	0.05000		115	70-130	4	25	
Xylenes (Total)	0.149	0.0100	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	*0.0574*		mg/kg wet	*0.05000*		*115*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0527*		mg/kg wet	*0.05000*		*105*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0546*		mg/kg wet	*0.05000*		*109*	*70-130*			
Surrogate: Toluene-d8	*0.0517*		mg/kg wet	*0.05000*		*103*	*70-130*			
Batch CJ61137 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
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ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ61137 - 5035										
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-Trichlorobenzene	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-Dichloropropene (Total)	ND	0.0050	mg/kg							
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							
Acrylonitrile	ND	0.0050	mg/kg wet							
Allyl Chloride	ND	0.0050	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							
Dibromochloromethane	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ61137 - 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							
Tertiary-butyl Alcohol	ND	0.0500	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	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							
Xylenes (Total)	ND	0.0100	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	*0.0539*		mg/kg wet	*0.05000*		*108*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0517*		mg/kg wet	*0.05000*		*103*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0545*		mg/kg wet	*0.05000*		*109*	*70-130*			
Surrogate: Toluene-d8	*0.0542*		mg/kg wet	*0.05000*		*108*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0543	0.0050	mg/kg wet	0.05000		109	70-130			
1,1,1-Trichloroethane	0.0585	0.0050	mg/kg wet	0.05000		117	70-130			
1,1,2,2-Tetrachloroethane	0.0570	0.0050	mg/kg wet	0.05000		114	70-130			
1,1,2-Trichloroethane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130			
1,1-Dichloroethane	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
1,1-Dichloroethene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
1,1-Dichloropropene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130			
1,2,3-Trichlorobenzene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130			
1,2,3-Trichloropropane	0.0566	0.0050	mg/kg wet	0.05000		113	70-130			
1,2,4-Trichlorobenzene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
1,2,4-Trimethylbenzene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
1,2-Dibromo-3-Chloropropane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130			
1,2-Dibromoethane	0.0518	0.0050	mg/kg wet	0.05000		104	70-130			
1,2-Dichlorobenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ61137 - 5035										
1,2-Dichloroethane	0.0577	0.0050	mg/kg wet	0.05000		115	70-130			
1,2-Dichloropropane	0.0556	0.0050	mg/kg wet	0.05000		111	70-130			
1,3,5-Trichlorobenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
1,3,5-Trimethylbenzene	0.0565	0.0050	mg/kg wet	0.05000		113	70-130			
1,3-Dichlorobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
1,3-Dichloropropene (Total)	0.107	0.0050	mg/kg							
1,4-Dichlorobenzene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130			
1,4-Dioxane	1.08	0.100	mg/kg wet	1.000		108	70-130			
2,2-Dichloropropane	0.0589	0.0050	mg/kg wet	0.05000		118	70-130			
2-Butanone	0.275	0.0500	mg/kg wet	0.2500		110	70-130			
2-Chlorotoluene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130			
2-Hexanone	0.242	0.0500	mg/kg wet	0.2500		97	70-130			
4-Chlorotoluene	0.0556	0.0050	mg/kg wet	0.05000		111	70-130			
4-Isopropyltoluene	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
4-Methyl-2-Pentanone	0.254	0.0500	mg/kg wet	0.2500		101	70-130			
Acetone	0.279	0.0500	mg/kg wet	0.2500		112	70-130			
Acrylonitrile	0.0564	0.0050	mg/kg wet	0.05000		113	70-130			
Allyl Chloride	0.0584	0.0050	mg/kg wet	0.05000		117	70-130			
Benzene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130			
Bromobenzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Bromochloromethane	0.0529	0.0050	mg/kg wet	0.05000		106	70-130			
Bromodichloromethane	0.0633	0.0050	mg/kg wet	0.05000		127	70-130			
Bromoform	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Bromomethane	0.0576	0.0100	mg/kg wet	0.05000		115	70-130			
Carbon Disulfide	0.0568	0.0050	mg/kg wet	0.05000		114	70-130			
Carbon Tetrachloride	0.0584	0.0050	mg/kg wet	0.05000		117	70-130			
Chlorobenzene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
Chloroethane	0.0520	0.0100	mg/kg wet	0.05000		104	70-130			
Chloroform	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
Chloromethane	0.0613	0.0100	mg/kg wet	0.05000		123	70-130			
cis-1,2-Dichloroethene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
Dibromochloromethane	0.0497	0.0050	mg/kg wet	0.05000		99	70-130			
Dibromomethane	0.0558	0.0050	mg/kg wet	0.05000		112	70-130			
Dichlorodifluoromethane	0.0488	0.0100	mg/kg wet	0.05000		98	70-130			
Diethyl Ether	0.0570	0.0050	mg/kg wet	0.05000		114	70-130			
Di-isopropyl ether	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
Ethyl tertiary-butyl ether	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Ethylbenzene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130			
Hexachlorobutadiene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Isopropylbenzene	0.0468	0.0050	mg/kg wet	0.05000		94	70-130			
Methyl tert-Butyl Ether	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
Methylene Chloride	0.0655	0.0250	mg/kg wet	0.05000		131	70-130			B+
Naphthalene	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
n-Butylbenzene	0.0594	0.0050	mg/kg wet	0.05000		119	70-130			
n-Propylbenzene	0.0557	0.0050	mg/kg wet	0.05000		111	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ61137 - 5035										
sec-Butylbenzene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
Styrene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
tert-Butylbenzene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
Tertiary-amyl methyl ether	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Tertiary-butyl Alcohol	0.256	0.0500	mg/kg wet	0.2500		102	70-130			
Tetrachloroethene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
Tetrahydrofuran	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
Toluene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
trans-1,2-Dichloroethene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130			
Trichloroethene	0.0534	0.0050	mg/kg wet	0.05000		107	70-130			
Trichlorofluoromethane	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
Vinyl Chloride	0.0616	0.0100	mg/kg wet	0.05000		123	70-130			
Xylenes (Total)	0.145	0.0100	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	*0.0583*		mg/kg wet	*0.05000*		*117*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0518*		mg/kg wet	*0.05000*		*104*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0574*		mg/kg wet	*0.05000*		*115*	*70-130*			
Surrogate: Toluene-d8	*0.0511*		mg/kg wet	*0.05000*		*102*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	5	25	
1,1,1-Trichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	6	25	
1,1,2,2-Tetrachloroethane	0.0548	0.0050	mg/kg wet	0.05000		110	70-130	4	25	
1,1,2-Trichloroethane	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	3	25	
1,1-Dichloroethane	0.0533	0.0050	mg/kg wet	0.05000		107	70-130	5	25	
1,1-Dichloroethene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	5	25	
1,1-Dichloropropene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	5	25	
1,2,3-Trichlorobenzene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	7	25	
1,2,3-Trichloropropane	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	5	25	
1,2,4-Trichlorobenzene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130	6	25	
1,2,4-Trimethylbenzene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	4	25	
1,2-Dibromo-3-Chloropropane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	7	25	
1,2-Dibromoethane	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	7	25	
1,2-Dichlorobenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	5	25	
1,2-Dichloroethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	5	25	
1,2-Dichloropropane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	4	25	
1,3,5-Trichlorobenzene	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	6	25	
1,3,5-Trimethylbenzene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	4	25	
1,3-Dichlorobenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	3	25	
1,3-Dichloropropene (Total)	0.102	0.0050	mg/kg							
1,4-Dichlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	7	25	
1,4-Dioxane	1.09	0.100	mg/kg wet	1.000		109	70-130	0.7	20	
2,2-Dichloropropane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	7	25	
2-Butanone	0.262	0.0500	mg/kg wet	0.2500		105	70-130	5	25	
2-Chlorotoluene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	5	25	
2-Hexanone	0.225	0.0500	mg/kg wet	0.2500		90	70-130	7	25	
4-Chlorotoluene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	5	25	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ61137 - 5035										
4-Isopropyltoluene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	5	25	
4-Methyl-2-Pentanone	0.242	0.0500	mg/kg wet	0.2500		97	70-130	5	25	
Acetone	0.264	0.0500	mg/kg wet	0.2500		106	70-130	5	25	
Acrylonitrile	0.0548	0.0050	mg/kg wet	0.05000		110	70-130	3	25	
Allyl Chloride	0.0565	0.0050	mg/kg wet	0.05000		113	70-130	3	25	
Benzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	4	25	
Bromobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	4	25	
Bromochloromethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	5	25	
Bromodichloromethane	0.0597	0.0050	mg/kg wet	0.05000		119	70-130	6	25	
Bromoform	0.0450	0.0050	mg/kg wet	0.05000		90	70-130	6	25	
Bromomethane	0.0548	0.0100	mg/kg wet	0.05000		110	70-130	5	25	
Carbon Disulfide	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	5	25	
Carbon Tetrachloride	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	6	25	
Chlorobenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130	5	25	
Chloroethane	0.0481	0.0100	mg/kg wet	0.05000		96	70-130	8	25	
Chloroform	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	4	25	
Chloromethane	0.0593	0.0100	mg/kg wet	0.05000		119	70-130	3	25	
cis-1,2-Dichloroethene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	4	25	
Dibromochloromethane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130	5	25	
Dibromomethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	5	25	
Dichlorodifluoromethane	0.0449	0.0100	mg/kg wet	0.05000		90	70-130	8	25	
Diethyl Ether	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	5	25	
Di-isopropyl ether	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	4	25	
Ethyl tertiary-butyl ether	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	4	25	
Ethylbenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	6	25	
Hexachlorobutadiene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	7	25	
Isopropylbenzene	0.0446	0.0050	mg/kg wet	0.05000		89	70-130	5	25	
Methyl tert-Butyl Ether	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	5	25	
Methylene Chloride	0.0626	0.0250	mg/kg wet	0.05000		125	70-130	4	25	
Naphthalene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130	5	25	
n-Butylbenzene	0.0555	0.0050	mg/kg wet	0.05000		111	70-130	7	25	
n-Propylbenzene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	5	25	
sec-Butylbenzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	5	25	
Styrene	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	5	25	
tert-Butylbenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	5	25	
Tertiary-amyl methyl ether	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	2	25	
Tertiary-butyl Alcohol	0.248	0.0500	mg/kg wet	0.2500		99	70-130	3	20	
Tetrachloroethene	0.0426	0.0050	mg/kg wet	0.05000		85	70-130	7	25	
Tetrahydrofuran	0.0444	0.0050	mg/kg wet	0.05000		89	70-130	3	25	
Toluene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	6	25	
trans-1,2-Dichloroethene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	6	25	
Trichloroethene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	5	25	
Trichlorofluoromethane	0.0460	0.0050	mg/kg wet	0.05000		92	70-130	7	25	
Vinyl Chloride	0.0583	0.0100	mg/kg wet	0.05000		117	70-130	6	25	
Xylenes (Total)	0.137	0.0100	mg/kg							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CJ61137 - 5035										
Surrogate: 1,2-Dichloroethane-d4	*0.0585*		mg/kg wet	*0.05000*		*117*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0511*		mg/kg wet	*0.05000*		*102*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0573*		mg/kg wet	*0.05000*		*115*	*70-130*			
Surrogate: Toluene-d8	*0.0514*		mg/kg wet	*0.05000*		*103*	*70-130*			
5035/8260B Volatile Organic Compounds / Methanol										
Batch CJ61136 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,1-Trichloroethane	ND	0.200	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,2-Trichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethene	ND	0.200	mg/kg wet							
1,1-Dichloropropene	ND	0.200	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,3-Trichloropropane	ND	0.200	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.200	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	1.00	mg/kg wet							
1,2-Dibromoethane	ND	0.200	mg/kg wet							
1,2-Dichlorobenzene	ND	0.200	mg/kg wet							
1,2-Dichloroethane	ND	0.200	mg/kg wet							
1,2-Dichloropropane	ND	0.200	mg/kg wet							
1,3 Dichloropropene (Total)	ND	0.200	mg/kg wet							
1,3,5-Trichlorobenzene	ND	0.200	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.200	mg/kg wet							
1,3-Dichlorobenzene	ND	0.200	mg/kg wet							
1,4-Dichlorobenzene	ND	0.200	mg/kg wet							
1,4-Dioxane - Screen	ND	40.0	mg/kg wet							
2,2-Dichloropropane	ND	0.200	mg/kg wet							
2-Butanone	ND	1.00	mg/kg wet							
2-Chlorotoluene	ND	0.200	mg/kg wet							
2-Hexanone	ND	1.00	mg/kg wet							
4-Chlorotoluene	ND	0.200	mg/kg wet							
4-Isopropyltoluene	ND	0.200	mg/kg wet							
4-Methyl-2-Pentanone	ND	1.00	mg/kg wet							
Acetone	ND	1.00	mg/kg wet							
Acrylonitrile	ND	1.00	mg/kg wet							
Allyl Chloride	ND	0.400	mg/kg wet							
Benzene	ND	0.200	mg/kg wet							
Bromobenzene	ND	0.200	mg/kg wet							
Bromochloromethane	ND	0.200	mg/kg wet							
Bromodichloromethane	ND	0.200	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
5035/8260B Volatile Organic Compounds / Methanol										
Batch CJ61136 - 5035										
Bromoform	ND	0.200	mg/kg wet							
Bromomethane	ND	0.200	mg/kg wet							
Carbon Disulfide	ND	0.200	mg/kg wet							
Carbon Tetrachloride	ND	0.200	mg/kg wet							
Chlorobenzene	ND	0.200	mg/kg wet							
Chloroethane	ND	0.200	mg/kg wet							
Chloroform	ND	0.200	mg/kg wet							
Chloromethane	ND	0.200	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.200	mg/kg wet							
Dibromochloromethane	ND	0.200	mg/kg wet							
Dibromomethane	ND	0.200	mg/kg wet							
Dichlorodifluoromethane	ND	0.200	mg/kg wet							
Diethyl Ether	ND	0.200	mg/kg wet							
Di-isopropyl ether	ND	0.200	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.200	mg/kg wet							
Ethylbenzene	ND	0.200	mg/kg wet							
Hexachlorobutadiene	ND	0.200	mg/kg wet							
Isopropylbenzene	ND	0.200	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.200	mg/kg wet							
Methylene Chloride	ND	0.400	mg/kg wet							
Naphthalene	ND	0.200	mg/kg wet							
n-Butylbenzene	ND	0.200	mg/kg wet							
n-Propylbenzene	ND	0.200	mg/kg wet							
sec-Butylbenzene	ND	0.200	mg/kg wet							
Styrene	ND	0.200	mg/kg wet							
tert-Butylbenzene	ND	0.200	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.200	mg/kg wet							
Tetrachloroethene	ND	0.200	mg/kg wet							
Tetrahydrofuran	ND	1.00	mg/kg wet							
Toluene	ND	0.200	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.200	mg/kg wet							
Trichloroethene	ND	0.200	mg/kg wet							
Trichlorofluoromethane	ND	0.200	mg/kg wet							
Vinyl Chloride	ND	0.200	mg/kg wet							
Xylenes (Total)	ND	0.400	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*4.70*		mg/kg wet	*5.000*		*94*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*5.04*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*5.12*		mg/kg wet	*5.000*		*102*	*70-130*			
Surrogate: Toluene-d8	*4.90*		mg/kg wet	*5.000*		*98*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	2.08	0.200	mg/kg wet	2.000		104	70-130			
1,1,1-Trichloroethane	1.97	0.200	mg/kg wet	2.000		99	70-130			
1,1,2,2-Tetrachloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,1,2-Trichloroethane	1.89	0.200	mg/kg wet	2.000		95	70-130			
1,1-Dichloroethane	1.90	0.200	mg/kg wet	2.000		95	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CJ61136 - 5035										
1,1-Dichloroethene	1.99	0.200	mg/kg wet	2.000		100	70-130			
1,1-Dichloropropene	2.00	0.200	mg/kg wet	2.000		100	70-130			
1,2,3-Trichlorobenzene	2.01	0.200	mg/kg wet	2.000		100	70-130			
1,2,3-Trichloropropane	2.00	0.200	mg/kg wet	2.000		100	70-130			
1,2,4-Trichlorobenzene	1.94	0.200	mg/kg wet	2.000		97	70-130			
1,2,4-Trimethylbenzene	1.90	0.200	mg/kg wet	2.000		95	70-130			
1,2-Dibromo-3-Chloropropane	1.92	1.00	mg/kg wet	2.000		96	70-130			
1,2-Dibromoethane	1.93	0.200	mg/kg wet	2.000		96	70-130			
1,2-Dichlorobenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
1,2-Dichloroethane	1.87	0.200	mg/kg wet	2.000		94	70-130			
1,2-Dichloropropane	1.93	0.200	mg/kg wet	2.000		97	70-130			
1,3 Dichloropropene (Total)	3.88	0.200	mg/kg wet							
1,3,5-Trichlorobenzene	2.14	0.200	mg/kg wet	2.000		107	70-130			
1,3,5-Trimethylbenzene	1.96	0.200	mg/kg wet	2.000		98	70-130			
1,3-Dichlorobenzene	1.93	0.200	mg/kg wet	2.000		96	70-130			
1,4-Dichlorobenzene	1.89	0.200	mg/kg wet	2.000		95	70-130			
1,4-Dioxane - Screen	50.0	40.0	mg/kg wet	40.00		125	44-241			
2,2-Dichloropropane	1.97	0.200	mg/kg wet	2.000		99	70-130			
2-Butanone	9.55	1.00	mg/kg wet	10.00		95	70-130			
2-Chlorotoluene	1.96	0.200	mg/kg wet	2.000		98	70-130			
2-Hexanone	9.95	1.00	mg/kg wet	10.00		99	70-130			
4-Chlorotoluene	1.94	0.200	mg/kg wet	2.000		97	70-130			
4-Isopropyltoluene	2.01	0.200	mg/kg wet	2.000		100	70-130			
4-Methyl-2-Pentanone	10.1	1.00	mg/kg wet	10.00		101	70-130			
Acetone	9.92	1.00	mg/kg wet	10.00		99	70-130			
Acrylonitrile	1.66	1.00	mg/kg wet	2.000		83	70-130			
Allyl Chloride	1.94	0.400	mg/kg wet	2.000		97	70-130			
Benzene	2.03	0.200	mg/kg wet	2.000		101	70-130			
Bromobenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
Bromochloromethane	1.92	0.200	mg/kg wet	2.000		96	70-130			
Bromodichloromethane	2.05	0.200	mg/kg wet	2.000		102	70-130			
Bromoform	2.15	0.200	mg/kg wet	2.000		108	70-130			
Bromomethane	1.97	0.200	mg/kg wet	2.000		98	70-130			
Carbon Disulfide	1.94	0.200	mg/kg wet	2.000		97	70-130			
Carbon Tetrachloride	2.04	0.200	mg/kg wet	2.000		102	70-130			
Chlorobenzene	1.93	0.200	mg/kg wet	2.000		97	70-130			
Chloroethane	1.80	0.200	mg/kg wet	2.000		90	70-130			
Chloroform	1.95	0.200	mg/kg wet	2.000		97	70-130			
Chloromethane	1.98	0.200	mg/kg wet	2.000		99	70-130			
cis-1,2-Dichloroethene	1.94	0.200	mg/kg wet	2.000		97	70-130			
Dibromochloromethane	2.20	0.200	mg/kg wet	2.000		110	70-130			
Dibromomethane	1.82	0.200	mg/kg wet	2.000		91	70-130			
Dichlorodifluoromethane	1.83	0.200	mg/kg wet	2.000		92	70-130			
Diethyl Ether	1.96	0.200	mg/kg wet	2.000		98	70-130			
Di-isopropyl ether	1.94	0.200	mg/kg wet	2.000		97	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CJ61136 - 5035										
Ethyl tertiary-butyl ether	2.03	0.200	mg/kg wet	2.000		102	70-130			
Ethylbenzene	1.97	0.200	mg/kg wet	2.000		99	70-130			
Hexachlorobutadiene	1.99	0.200	mg/kg wet	2.000		100	70-130			
Isopropylbenzene	1.64	0.200	mg/kg wet	2.000		82	70-130			
Methyl tert-Butyl Ether	1.89	0.200	mg/kg wet	2.000		95	70-130			
Methylene Chloride	1.87	0.400	mg/kg wet	2.000		93	70-130			
Naphthalene	2.04	0.200	mg/kg wet	2.000		102	70-130			
n-Butylbenzene	1.99	0.200	mg/kg wet	2.000		100	70-130			
n-Propylbenzene	1.92	0.200	mg/kg wet	2.000		96	70-130			
sec-Butylbenzene	1.91	0.200	mg/kg wet	2.000		95	70-130			
Styrene	2.06	0.200	mg/kg wet	2.000		103	70-130			
tert-Butylbenzene	2.00	0.200	mg/kg wet	2.000		100	70-130			
Tertiary-amyl methyl ether	1.95	0.200	mg/kg wet	2.000		98	70-130			
Tetrachloroethene	1.98	0.200	mg/kg wet	2.000		99	70-130			
Tetrahydrofuran	1.73	1.00	mg/kg wet	2.000		87	70-130			
Toluene	1.91	0.200	mg/kg wet	2.000		96	70-130			
trans-1,2-Dichloroethene	1.94	0.200	mg/kg wet	2.000		97	70-130			
Trichloroethene	1.95	0.200	mg/kg wet	2.000		98	70-130			
Trichlorofluoromethane	1.67	0.200	mg/kg wet	2.000		83	70-130			
Vinyl Chloride	1.91	0.200	mg/kg wet	2.000		95	70-130			
Xylenes (Total)	5.88	0.400	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*4.81*		mg/kg wet	*5.000*		*96*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*5.07*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*5.27*		mg/kg wet	*5.000*		*105*	*70-130*			
Surrogate: Toluene-d8	*4.99*		mg/kg wet	*5.000*		*100*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	2.06	0.200	mg/kg wet	2.000		103	70-130	1	25	
1,1,1-Trichloroethane	1.92	0.200	mg/kg wet	2.000		96	70-130	3	25	
1,1,2,2-Tetrachloroethane	1.87	0.200	mg/kg wet	2.000		93	70-130	0.9	25	
1,1,2-Trichloroethane	1.92	0.200	mg/kg wet	2.000		96	70-130	1	25	
1,1-Dichloroethane	1.81	0.200	mg/kg wet	2.000		91	70-130	5	25	
1,1-Dichloroethene	1.83	0.200	mg/kg wet	2.000		92	70-130	8	25	
1,1-Dichloropropene	2.04	0.200	mg/kg wet	2.000		102	70-130	2	25	
1,2,3-Trichlorobenzene	1.99	0.200	mg/kg wet	2.000		99	70-130	1	25	
1,2,3-Trichloropropane	1.98	0.200	mg/kg wet	2.000		99	70-130	0.8	25	
1,2,4-Trichlorobenzene	1.95	0.200	mg/kg wet	2.000		97	70-130	0.2	25	
1,2,4-Trimethylbenzene	1.95	0.200	mg/kg wet	2.000		98	70-130	3	25	
1,2-Dibromo-3-Chloropropane	2.03	1.00	mg/kg wet	2.000		102	70-130	5	25	
1,2-Dibromoethane	1.90	0.200	mg/kg wet	2.000		95	70-130	2	25	
1,2-Dichlorobenzene	1.95	0.200	mg/kg wet	2.000		98	70-130	1	25	
1,2-Dichloroethane	1.78	0.200	mg/kg wet	2.000		89	70-130	5	25	
1,2-Dichloropropane	2.03	0.200	mg/kg wet	2.000		102	70-130	5	25	
1,3 Dichloropropene (Total)	3.59	0.200	mg/kg wet							
1,3,5-Trichlorobenzene	2.07	0.200	mg/kg wet	2.000		104	70-130	3	25	
1,3,5-Trimethylbenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	2	25	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CJ61136 - 5035										
1,3-Dichlorobenzene	1.95	0.200	mg/kg wet	2.000		97	70-130	1	25	
1,4-Dichlorobenzene	1.93	0.200	mg/kg wet	2.000		96	70-130	2	25	
1,4-Dioxane - Screen	48.7	40.0	mg/kg wet	40.00		122	44-241	3	200	
2,2-Dichloropropane	1.88	0.200	mg/kg wet	2.000		94	70-130	5	25	
2-Butanone	8.90	1.00	mg/kg wet	10.00		89	70-130	7	25	
2-Chlorotoluene	1.97	0.200	mg/kg wet	2.000		98	70-130	0.3	25	
2-Hexanone	10.1	1.00	mg/kg wet	10.00		101	70-130	1	25	
4-Chlorotoluene	1.92	0.200	mg/kg wet	2.000		96	70-130	0.9	25	
4-Isopropyltoluene	2.05	0.200	mg/kg wet	2.000		103	70-130	2	25	
4-Methyl-2-Pentanone	9.17	1.00	mg/kg wet	10.00		92	70-130	10	25	
Acetone	8.98	1.00	mg/kg wet	10.00		90	70-130	10	25	
Acrylonitrile	1.86	1.00	mg/kg wet	2.000		93	70-130	12	25	
Allyl Chloride	1.90	0.400	mg/kg wet	2.000		95	70-130	2	25	
Benzene	2.03	0.200	mg/kg wet	2.000		102	70-130	0.4	25	
Bromobenzene	1.97	0.200	mg/kg wet	2.000		98	70-130	0.5	25	
Bromochloromethane	1.86	0.200	mg/kg wet	2.000		93	70-130	3	25	
Bromodichloromethane	1.98	0.200	mg/kg wet	2.000		99	70-130	3	25	
Bromoform	2.11	0.200	mg/kg wet	2.000		106	70-130	2	25	
Bromomethane	1.97	0.200	mg/kg wet	2.000		99	70-130	0.2	25	
Carbon Disulfide	1.96	0.200	mg/kg wet	2.000		98	70-130	0.8	25	
Carbon Tetrachloride	2.00	0.200	mg/kg wet	2.000		100	70-130	2	25	
Chlorobenzene	1.93	0.200	mg/kg wet	2.000		97	70-130	0.1	25	
Chloroethane	1.77	0.200	mg/kg wet	2.000		88	70-130	2	25	
Chloroform	1.80	0.200	mg/kg wet	2.000		90	70-130	8	25	
Chloromethane	1.96	0.200	mg/kg wet	2.000		98	70-130	1	25	
cis-1,2-Dichloroethene	1.79	0.200	mg/kg wet	2.000		89	70-130	8	25	
Dibromochloromethane	2.07	0.200	mg/kg wet	2.000		103	70-130	6	25	
Dibromomethane	1.79	0.200	mg/kg wet	2.000		90	70-130	1	25	
Dichlorodifluoromethane	1.76	0.200	mg/kg wet	2.000		88	70-130	4	25	
Diethyl Ether	1.79	0.200	mg/kg wet	2.000		90	70-130	9	25	
Di-isopropyl ether	1.93	0.200	mg/kg wet	2.000		96	70-130	0.6	25	
Ethyl tertiary-butyl ether	1.93	0.200	mg/kg wet	2.000		97	70-130	5	25	
Ethylbenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	1	25	
Hexachlorobutadiene	1.93	0.200	mg/kg wet	2.000		96	70-130	3	25	
Isopropylbenzene	1.68	0.200	mg/kg wet	2.000		84	70-130	2	25	
Methyl tert-Butyl Ether	1.75	0.200	mg/kg wet	2.000		87	70-130	8	25	
Methylene Chloride	1.91	0.400	mg/kg wet	2.000		96	70-130	2	25	
Naphthalene	2.02	0.200	mg/kg wet	2.000		101	70-130	1	25	
n-Butylbenzene	1.97	0.200	mg/kg wet	2.000		99	70-130	0.8	25	
n-Propylbenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	4	25	
sec-Butylbenzene	1.89	0.200	mg/kg wet	2.000		95	70-130	0.6	25	
Styrene	2.03	0.200	mg/kg wet	2.000		102	70-130	1	25	
tert-Butylbenzene	2.04	0.200	mg/kg wet	2.000		102	70-130	2	25	
Tertiary-amyl methyl ether	1.92	0.200	mg/kg wet	2.000		96	70-130	2	25	
Tetrachloroethene	2.02	0.200	mg/kg wet	2.000		101	70-130	2	25	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CJ61136 - 5035										
Tetrahydrofuran	1.69	1.00	mg/kg wet	2.000		84	70-130	3	25	
Toluene	1.92	0.200	mg/kg wet	2.000		96	70-130	0.3	25	
trans-1,2-Dichloroethene	1.81	0.200	mg/kg wet	2.000		90	70-130	7	25	
Trichloroethene	1.92	0.200	mg/kg wet	2.000		96	70-130	2	25	
Trichlorofluoromethane	1.54	0.200	mg/kg wet	2.000		77	70-130	8	25	
Vinyl Chloride	1.97	0.200	mg/kg wet	2.000		98	70-130	3	25	
Xylenes (Total)	5.89	0.400	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*4.49*		mg/kg wet	*5.000*		*90*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*5.05*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*4.90*		mg/kg wet	*5.000*		*98*	*70-130*			
Surrogate: Toluene-d8	*5.04*		mg/kg wet	*5.000*		*101*	*70-130*			
8082A Polychlorinated Biphenyls (PCB)										
Batch CJ60604 - 3540C										
Blank										
Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0222*		mg/kg wet	*0.02500*		*89*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0229*		mg/kg wet	*0.02500*		*92*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0188*		mg/kg wet	*0.02500*		*75*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0185*		mg/kg wet	*0.02500*		*74*	*30-150*			
LCS										
Aroclor 1016	0.444	0.0500	mg/kg wet	0.5000		89	40-140			
Aroclor 1260	0.455	0.0500	mg/kg wet	0.5000		91	40-140			
Surrogate: Decachlorobiphenyl	*0.0233*		mg/kg wet	*0.02500*		*93*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0249*		mg/kg wet	*0.02500*		*100*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0211*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0192*		mg/kg wet	*0.02500*		*77*	*30-150*			
LCS Dup										
Aroclor 1016	0.449	0.0500	mg/kg wet	0.5000		90	40-140	1	30	
Aroclor 1260	0.461	0.0500	mg/kg wet	0.5000		92	40-140	1	30	
Surrogate: Decachlorobiphenyl	*0.0231*		mg/kg wet	*0.02500*		*92*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0246*		mg/kg wet	*0.02500*		*98*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0210*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0193*		mg/kg wet	*0.02500*		*77*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch CJ60709 - 3540C										
Blank										
Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0200*		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	*0.0183*		mg/kg wet	*0.02500*		*73*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0183*		mg/kg wet	*0.02500*		*73*	*30-150*			
LCS										
Aroclor 1016	0.447	0.0500	mg/kg wet	0.5000		89	40-140			
Aroclor 1260	0.452	0.0500	mg/kg wet	0.5000		90	40-140			
Surrogate: Decachlorobiphenyl	*0.0216*		mg/kg wet	*0.02500*		*87*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0225*		mg/kg wet	*0.02500*		*90*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0207*		mg/kg wet	*0.02500*		*83*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0193*		mg/kg wet	*0.02500*		*77*	*30-150*			
LCS Dup										
Aroclor 1016	0.430	0.0500	mg/kg wet	0.5000		86	40-140	4	30	
Aroclor 1260	0.441	0.0500	mg/kg wet	0.5000		88	40-140	3	30	
Surrogate: Decachlorobiphenyl	*0.0214*		mg/kg wet	*0.02500*		*85*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0223*		mg/kg wet	*0.02500*		*89*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0200*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0184*		mg/kg wet	*0.02500*		*74*	*30-150*			
Batch CJ61327 - 3540C										
Blank										
Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0212*		mg/kg wet	*0.02500*		*85*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0226*		mg/kg wet	*0.02500*		*90*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

8082A Polychlorinated Biphenyls (PCB)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CJ61327 - 3540C										
Surrogate: Tetrachloro-m-xylene	*0.0195*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0193*		mg/kg wet	*0.02500*		*77*	*30-150*			
LCS										
Aroclor 1016	0.462	0.0500	mg/kg wet	0.5000		92	40-140			
Aroclor 1260	0.460	0.0500	mg/kg wet	0.5000		92	40-140			
Surrogate: Decachlorobiphenyl	*0.0226*		mg/kg wet	*0.02500*		*90*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0245*		mg/kg wet	*0.02500*		*98*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0221*		mg/kg wet	*0.02500*		*89*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0204*		mg/kg wet	*0.02500*		*82*	*30-150*			
LCS Dup										
Aroclor 1016	0.450	0.0500	mg/kg wet	0.5000		90	40-140	3	30	
Aroclor 1260	0.446	0.0500	mg/kg wet	0.5000		89	40-140	3	30	
Surrogate: Decachlorobiphenyl	*0.0214*		mg/kg wet	*0.02500*		*86*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0231*		mg/kg wet	*0.02500*		*92*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0211*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0196*		mg/kg wet	*0.02500*		*78*	*30-150*			
Batch CJ61328 - 3540C										
Blank										
Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0193*		mg/kg wet	*0.02500*		*77*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0201*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0168*		mg/kg wet	*0.02500*		*67*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0189*		mg/kg wet	*0.02500*		*76*	*30-150*			
LCS										
Aroclor 1016	0.486	0.0500	mg/kg wet	0.5000		97	40-140			
Aroclor 1260	0.444	0.0500	mg/kg wet	0.5000		89	40-140			
Surrogate: Decachlorobiphenyl	*0.0233*		mg/kg wet	*0.02500*		*93*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0248*		mg/kg wet	*0.02500*		*99*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0196*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0206*		mg/kg wet	*0.02500*		*83*	*30-150*			
LCS Dup										
Aroclor 1016	0.489	0.0500	mg/kg wet	0.5000		98	40-140	0.7	30	
Aroclor 1260	0.466	0.0500	mg/kg wet	0.5000		93	40-140	5	30	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch CJ61328 - 3540C										
Surrogate: Decachlorobiphenyl	*0.0245*		mg/kg wet	*0.02500*		*98*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0258*		mg/kg wet	*0.02500*		*103*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0198*		mg/kg wet	*0.02500*		*79*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0208*		mg/kg wet	*0.02500*		*83*	*30-150*			
8100M Total Petroleum Hydrocarbons										
Batch CJ60608 - 3546										
Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	37.5	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							
Surrogate: O-Terphenyl	*4.68*		mg/kg wet	*5.000*		*94*	*40-140*			
LCS										
Decane (C10)	1.9	0.2	mg/kg wet	2.500		78	40-140			
Docosane (C22)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Dodecane (C12)	2.1	0.2	mg/kg wet	2.500		84	40-140			
Eicosane (C20)	2.5	0.2	mg/kg wet	2.500		99	40-140			
Hexacosane (C26)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Hexadecane (C16)	2.4	0.2	mg/kg wet	2.500		95	40-140			
Nonadecane (C19)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Nonane (C9)	1.7	0.2	mg/kg wet	2.500		69	30-140			
Octacosane (C28)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Octadecane (C18)	2.4	0.2	mg/kg wet	2.500		95	40-140			
Tetracosane (C24)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		86	40-140			
Total Petroleum Hydrocarbons	32.8	37.5	mg/kg wet	35.00		94	40-140			
Triacontane (C30)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Surrogate: O-Terphenyl	*4.89*		mg/kg wet	*5.000*		*98*	*40-140*			
LCS Dup										
Decane (C10)	2.2	0.2	mg/kg wet	2.500		87	40-140	11	50	
Docosane (C22)	2.5	0.2	mg/kg wet	2.500		101	40-140	4	50	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch CJ60608 - 3546										
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		89	40-140	5	50	
Eicosane (C20)	2.6	0.2	mg/kg wet	2.500		103	40-140	4	50	
Hexacosane (C26)	2.5	0.2	mg/kg wet	2.500		101	40-140	4	50	
Hexadecane (C16)	2.5	0.2	mg/kg wet	2.500		102	40-140	7	50	
Nonadecane (C19)	2.3	0.2	mg/kg wet	2.500		92	40-140	5	50	
Nonane (C9)	1.9	0.2	mg/kg wet	2.500		77	30-140	11	50	
Octacosane (C28)	2.5	0.2	mg/kg wet	2.500		101	40-140	5	50	
Octadecane (C18)	2.5	0.2	mg/kg wet	2.500		99	40-140	5	50	
Tetracosane (C24)	2.5	0.2	mg/kg wet	2.500		101	40-140	4	50	
Tetradecane (C14)	2.3	0.2	mg/kg wet	2.500		92	40-140	7	50	
Total Petroleum Hydrocarbons	34.1	37.5	mg/kg wet	35.00		97	40-140	4	50	
Triacontane (C30)	2.5	0.2	mg/kg wet	2.500		101	40-140	4	50	
Surrogate: O-Terphenyl	*5.02*		mg/kg wet	*5.000*		*100*	*40-140*			
Batch CJ60712 - 3546										
Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	37.5	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							
Surrogate: O-Terphenyl	*4.60*		mg/kg wet	*5.000*		*92*	*40-140*			
LCS										
Decane (C10)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Docosane (C22)	2.5	0.2	mg/kg wet	2.500		100	40-140			
Dodecane (C12)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Eicosane (C20)	2.5	0.2	mg/kg wet	2.500		100	40-140			
Hexacosane (C26)	2.4	0.2	mg/kg wet	2.500		97	40-140			
Hexadecane (C16)	2.5	0.2	mg/kg wet	2.500		101	40-140			
Nonadecane (C19)	2.5	0.2	mg/kg wet	2.500		101	40-140			
Nonane (C9)	1.9	0.2	mg/kg wet	2.500		76	30-140			
Octacosane (C28)	2.4	0.2	mg/kg wet	2.500		96	40-140			
Octadecane (C18)	2.5	0.2	mg/kg wet	2.500		99	40-140			
Tetracosane (C24)	2.5	0.2	mg/kg wet	2.500		99	40-140			
Tetradecane (C14)	2.4	0.2	mg/kg wet	2.500		94	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch CJ60712 - 3546										
Total Petroleum Hydrocarbons	33.4	37.5	mg/kg wet	35.00		95	40-140			
Triacontane (C30)	2.4	0.2	mg/kg wet	2.500		95	40-140			
Surrogate: O-Terphenyl	*4.52*		mg/kg wet	*5.000*		*90*	*40-140*			
LCS Dup										
Decane (C10)	2.1	0.2	mg/kg wet	2.500		84	40-140	4	50	
Docosane (C22)	2.4	0.2	mg/kg wet	2.500		96	40-140	4	50	
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		88	40-140	4	50	
Eicosane (C20)	2.4	0.2	mg/kg wet	2.500		97	40-140	4	50	
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		94	40-140	3	50	
Hexadecane (C16)	2.5	0.2	mg/kg wet	2.500		99	40-140	2	50	
Nonadecane (C19)	2.4	0.2	mg/kg wet	2.500		97	40-140	4	50	
Nonane (C9)	1.8	0.2	mg/kg wet	2.500		73	30-140	5	50	
Octacosane (C28)	2.3	0.2	mg/kg wet	2.500		92	40-140	4	50	
Octadecane (C18)	2.4	0.2	mg/kg wet	2.500		95	40-140	4	50	
Tetracosane (C24)	2.4	0.2	mg/kg wet	2.500		95	40-140	4	50	
Tetradecane (C14)	2.4	0.2	mg/kg wet	2.500		95	40-140	0.3	50	
Total Petroleum Hydrocarbons	32.3	37.5	mg/kg wet	35.00		92	40-140	3	50	
Triacontane (C30)	2.3	0.2	mg/kg wet	2.500		92	40-140	3	50	
Surrogate: O-Terphenyl	*4.30*		mg/kg wet	*5.000*		*86*	*40-140*			
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
Blank										
1,1-Biphenyl	ND	0.333	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							
1,2-Diphenylhydrazine as Azobenzene	ND	0.333	mg/kg wet							
1,3-Dichlorobenzene	ND	0.333	mg/kg wet							
1,4-Dichlorobenzene	ND	0.333	mg/kg wet							
2,3,4,6-Tetrachlorophenol	ND	1.67	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet							
2,4-Dichlorophenol	ND	0.333	mg/kg wet							
2,4-Dimethylphenol	ND	0.333	mg/kg wet							
2,4-Dinitrophenol	ND	1.67	mg/kg wet							
2,4-Dinitrotoluene	ND	0.333	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.333	mg/kg wet							
2-Methylnaphthalene	ND	0.333	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitroaniline	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
3,3´-Dichlorobenzidine	ND	0.667	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
3-Nitroaniline	ND	0.333	mg/kg wet							
4,6-Dinitro-2-Methylphenol	ND	1.67	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							
4-Chloro-3-Methylphenol	ND	0.333	mg/kg wet							
4-Chloroaniline	ND	0.667	mg/kg wet							
4-Chloro-phenyl-phenyl ether	ND	0.333	mg/kg wet							
4-Nitroaniline	ND	0.333	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							
Acenaphthene	ND	0.333	mg/kg wet							
Acenaphthylene	ND	0.333	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	1.67	mg/kg wet							
Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							
Benzidine	ND	0.667	mg/kg wet							
Benzo(a)anthracene	ND	0.333	mg/kg wet							
Benzo(a)pyrene	ND	0.167	mg/kg wet							
Benzo(b)fluoranthene	ND	0.333	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
Benzoic Acid	ND	1.67	mg/kg wet							
Benzyl Alcohol	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Carbazole	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.333	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachlorocyclopentadiene	ND	1.67	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
N-Nitroso-Di-n-Propylamine	ND	0.333	mg/kg wet							
N-nitrosodiphenylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.63*		mg/kg wet	*3.333*		*79*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.46*		mg/kg wet	*5.000*		*89*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.99*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.75*		mg/kg wet	*3.333*		*82*	*30-130*			
Surrogate: 2-Fluorophenol	*3.92*		mg/kg wet	*5.000*		*78*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.68*		mg/kg wet	*3.333*		*80*	*30-130*			
Surrogate: Phenol-d6	*4.01*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.07*		mg/kg wet	*3.333*		*92*	*30-130*			
LCS										
1,1-Biphenyl	2.46	0.333	mg/kg wet	3.333		74	40-140			
1,2,4-Trichlorobenzene	2.29	0.333	mg/kg wet	3.333		69	40-140			
1,2-Dichlorobenzene	2.19	0.333	mg/kg wet	3.333		66	40-140			
1,2-Diphenylhydrazine as Azobenzene	2.59	0.333	mg/kg wet	3.333		78	40-140			
1,3-Dichlorobenzene	2.20	0.333	mg/kg wet	3.333		66	40-140			
1,4-Dichlorobenzene	2.15	0.333	mg/kg wet	3.333		65	40-140			
2,3,4,6-Tetrachlorophenol	2.77	1.67	mg/kg wet	3.333		83	30-130			
2,4,5-Trichlorophenol	2.99	0.333	mg/kg wet	3.333		90	30-130			
2,4,6-Trichlorophenol	2.81	0.333	mg/kg wet	3.333		84	30-130			
2,4-Dichlorophenol	2.57	0.333	mg/kg wet	3.333		77	30-130			
2,4-Dimethylphenol	2.59	0.333	mg/kg wet	3.333		78	30-130			
2,4-Dinitrophenol	2.74	1.67	mg/kg wet	3.333		82	30-130			
2,4-Dinitrotoluene	3.11	0.333	mg/kg wet	3.333		93	40-140			
2,6-Dinitrotoluene	2.77	0.333	mg/kg wet	3.333		83	40-140			
2-Chloronaphthalene	2.20	0.333	mg/kg wet	3.333		66	40-140			
2-Chlorophenol	2.29	0.333	mg/kg wet	3.333		69	30-130			
2-Methylnaphthalene	2.40	0.333	mg/kg wet	3.333		72	40-140			
2-Methylphenol	2.39	0.333	mg/kg wet	3.333		72	30-130			
2-Nitroaniline	2.58	0.333	mg/kg wet	3.333		77	40-140			
2-Nitrophenol	2.48	0.333	mg/kg wet	3.333		74	30-130			
3,3´-Dichlorobenzidine	2.73	0.667	mg/kg wet	3.333		82	40-140			
3+4-Methylphenol	4.74	0.667	mg/kg wet	6.667		71	30-130			
3-Nitroaniline	2.72	0.333	mg/kg wet	3.333		82	40-140			
4,6-Dinitro-2-Methylphenol	2.96	1.67	mg/kg wet	3.333		89	30-130			
4-Bromophenyl-phenylether	2.70	0.333	mg/kg wet	3.333		81	40-140			
4-Chloro-3-Methylphenol	2.80	0.333	mg/kg wet	3.333		84	30-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
4-Chloroaniline	2.28	0.667	mg/kg wet	3.333		68	40-140			
4-Chloro-phenyl-phenyl ether	2.65	0.333	mg/kg wet	3.333		79	40-140			
4-Nitroaniline	2.77	0.333	mg/kg wet	3.333		83	40-140			
4-Nitrophenol	2.80	1.67	mg/kg wet	3.333		84	30-130			
Acenaphthene	2.61	0.333	mg/kg wet	3.333		78	40-140			
Acenaphthylene	2.72	0.333	mg/kg wet	3.333		82	40-140			
Acetophenone	2.32	0.667	mg/kg wet	3.333		70	40-140			
Aniline	1.76	1.67	mg/kg wet	3.333		53	40-140			
Anthracene	2.86	0.333	mg/kg wet	3.333		86	40-140			
Azobenzene	2.59	0.333	mg/kg wet	3.333		78	40-140			
Benzidine	1.58	0.667	mg/kg wet	3.333		47	40-140			
Benzo(a)anthracene	2.99	0.333	mg/kg wet	3.333		90	40-140			
Benzo(a)pyrene	3.10	0.167	mg/kg wet	3.333		93	40-140			
Benzo(b)fluoranthene	3.00	0.333	mg/kg wet	3.333		90	40-140			
Benzo(g,h,i)perylene	3.06	0.333	mg/kg wet	3.333		92	40-140			
Benzo(k)fluoranthene	2.86	0.333	mg/kg wet	3.333		86	40-140			
Benzoic Acid	2.82	1.67	mg/kg wet	3.333		84	40-140			
Benzyl Alcohol	2.36	0.333	mg/kg wet	3.333		71	40-140			
bis(2-Chloroethoxy)methane	2.37	0.333	mg/kg wet	3.333		71	40-140			
bis(2-Chloroethyl)ether	2.12	0.333	mg/kg wet	3.333		64	40-140			
bis(2-chloroisopropyl)Ether	2.24	0.333	mg/kg wet	3.333		67	40-140			
bis(2-Ethylhexyl)phthalate	3.04	0.333	mg/kg wet	3.333		91	40-140			
Butylbenzylphthalate	2.97	0.333	mg/kg wet	3.333		89	40-140			
Carbazole	2.97	0.333	mg/kg wet	3.333		89	40-140			
Chrysene	2.90	0.167	mg/kg wet	3.333		87	40-140			
Dibenzo(a,h)Anthracene	3.11	0.167	mg/kg wet	3.333		93	40-140			
Dibenzofuran	2.61	0.333	mg/kg wet	3.333		78	40-140			
Diethylphthalate	2.89	0.333	mg/kg wet	3.333		87	40-140			
Dimethylphthalate	2.77	0.333	mg/kg wet	3.333		83	40-140			
Di-n-butylphthalate	3.17	0.333	mg/kg wet	3.333		95	40-140			
Di-n-octylphthalate	2.90	0.333	mg/kg wet	3.333		87	40-140			
Fluoranthene	3.04	0.333	mg/kg wet	3.333		91	40-140			
Fluorene	2.76	0.333	mg/kg wet	3.333		83	40-140			
Hexachlorobenzene	2.77	0.333	mg/kg wet	3.333		83	40-140			
Hexachlorobutadiene	2.32	0.333	mg/kg wet	3.333		70	40-140			
Hexachlorocyclopentadiene	2.22	1.67	mg/kg wet	3.333		67	40-140			
Hexachloroethane	2.12	0.333	mg/kg wet	3.333		64	40-140			
Indeno(1,2,3-cd)Pyrene	3.11	0.333	mg/kg wet	3.333		93	40-140			
Isophorone	2.57	0.333	mg/kg wet	3.333		77	40-140			
Naphthalene	2.26	0.333	mg/kg wet	3.333		68	40-140			
Nitrobenzene	2.32	0.333	mg/kg wet	3.333		70	40-140			
N-Nitrosodimethylamine	2.30	0.333	mg/kg wet	3.333		69	40-140			
N-Nitroso-Di-n-Propylamine	2.46	0.333	mg/kg wet	3.333		74	40-140			
N-nitrosodiphenylamine	2.94	0.333	mg/kg wet	3.333		88	40-140			
Pentachlorophenol	3.16	1.67	mg/kg wet	3.333		95	30-130			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
Phenanthrene	2.76	0.333	mg/kg wet	3.333		83	40-140			
Phenol	2.36	0.333	mg/kg wet	3.333		71	30-130			
Pyrene	2.99	0.333	mg/kg wet	3.333		90	40-140			
Pyridine	1.85	1.67	mg/kg wet	3.333		55	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.40*		mg/kg wet	*3.333*		*72*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.78*		mg/kg wet	*5.000*		*96*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.81*		mg/kg wet	*5.000*		*76*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.71*		mg/kg wet	*3.333*		*81*	*30-130*			
Surrogate: 2-Fluorophenol	*3.70*		mg/kg wet	*5.000*		*74*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.59*		mg/kg wet	*3.333*		*78*	*30-130*			
Surrogate: Phenol-d6	*3.98*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.42*		mg/kg wet	*3.333*		*102*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.21	0.333	mg/kg wet	3.333		66	40-140	11	30	
1,2,4-Trichlorobenzene	2.04	0.333	mg/kg wet	3.333		61	40-140	11	30	
1,2-Dichlorobenzene	1.99	0.333	mg/kg wet	3.333		60	40-140	10	30	
1,2-Diphenylhydrazine as Azobenzene	2.42	0.333	mg/kg wet	3.333		72	40-140	7	30	
1,3-Dichlorobenzene	1.99	0.333	mg/kg wet	3.333		60	40-140	10	30	
1,4-Dichlorobenzene	1.95	0.333	mg/kg wet	3.333		59	40-140	10	30	
2,3,4,6-Tetrachlorophenol	2.61	1.67	mg/kg wet	3.333		78	30-130	6	30	
2,4,5-Trichlorophenol	2.76	0.333	mg/kg wet	3.333		83	30-130	8	30	
2,4,6-Trichlorophenol	2.59	0.333	mg/kg wet	3.333		78	30-130	8	30	
2,4-Dichlorophenol	2.30	0.333	mg/kg wet	3.333		69	30-130	11	30	
2,4-Dimethylphenol	2.30	0.333	mg/kg wet	3.333		69	30-130	12	30	
2,4-Dinitrophenol	2.66	1.67	mg/kg wet	3.333		80	30-130	3	30	
2,4-Dinitrotoluene	2.92	0.333	mg/kg wet	3.333		88	40-140	6	30	
2,6-Dinitrotoluene	2.60	0.333	mg/kg wet	3.333		78	40-140	7	30	
2-Chloronaphthalene	1.95	0.333	mg/kg wet	3.333		59	40-140	12	30	
2-Chlorophenol	2.08	0.333	mg/kg wet	3.333		62	30-130	10	30	
2-Methylnaphthalene	2.12	0.333	mg/kg wet	3.333		64	40-140	12	30	
2-Methylphenol	2.19	0.333	mg/kg wet	3.333		66	30-130	9	30	
2-Nitroaniline	2.41	0.333	mg/kg wet	3.333		72	40-140	7	30	
2-Nitrophenol	2.19	0.333	mg/kg wet	3.333		66	30-130	13	30	
3,3´-Dichlorobenzidine	2.64	0.667	mg/kg wet	3.333		79	40-140	3	30	
3+4-Methylphenol	4.41	0.667	mg/kg wet	6.667		66	30-130	7	30	
3-Nitroaniline	2.57	0.333	mg/kg wet	3.333		77	40-140	6	30	
4,6-Dinitro-2-Methylphenol	2.85	1.67	mg/kg wet	3.333		85	30-130	4	30	
4-Bromophenyl-phenylether	2.57	0.333	mg/kg wet	3.333		77	40-140	5	30	
4-Chloro-3-Methylphenol	2.53	0.333	mg/kg wet	3.333		76	30-130	10	30	
4-Chloroaniline	2.05	0.667	mg/kg wet	3.333		61	40-140	11	30	
4-Chloro-phenyl-phenyl ether	2.43	0.333	mg/kg wet	3.333		73	40-140	9	30	
4-Nitroaniline	2.70	0.333	mg/kg wet	3.333		81	40-140	3	30	
4-Nitrophenol	2.64	1.67	mg/kg wet	3.333		79	30-130	6	30	
Acenaphthene	2.37	0.333	mg/kg wet	3.333		71	40-140	10	30	
Acenaphthylene	2.45	0.333	mg/kg wet	3.333		74	40-140	10	30	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
Acetophenone	2.12	0.667	mg/kg wet	3.333		64	40-140	9	30	
Aniline	1.58	1.67	mg/kg wet	3.333		47	40-140	11	30	
Anthracene	2.73	0.333	mg/kg wet	3.333		82	40-140	5	30	
Azobenzene	2.42	0.333	mg/kg wet	3.333		72	40-140	7	30	
Benzidine	1.72	0.667	mg/kg wet	3.333		52	40-140	8	30	
Benzo(a)anthracene	2.81	0.333	mg/kg wet	3.333		84	40-140	6	30	
Benzo(a)pyrene	2.98	0.167	mg/kg wet	3.333		89	40-140	4	30	
Benzo(b)fluoranthene	2.78	0.333	mg/kg wet	3.333		83	40-140	8	30	
Benzo(g,h,i)perylene	2.96	0.333	mg/kg wet	3.333		89	40-140	3	30	
Benzo(k)fluoranthene	2.88	0.333	mg/kg wet	3.333		86	40-140	0.8	30	
Benzoic Acid	2.74	1.67	mg/kg wet	3.333		82	40-140	3	30	
Benzyl Alcohol	2.12	0.333	mg/kg wet	3.333		64	40-140	10	30	
bis(2-Chloroethoxy)methane	2.07	0.333	mg/kg wet	3.333		62	40-140	13	30	
bis(2-Chloroethyl)ether	1.96	0.333	mg/kg wet	3.333		59	40-140	8	30	
bis(2-chloroisopropyl)Ether	2.02	0.333	mg/kg wet	3.333		60	40-140	10	30	
bis(2-Ethylhexyl)phthalate	2.86	0.333	mg/kg wet	3.333		86	40-140	6	30	
Butylbenzylphthalate	2.81	0.333	mg/kg wet	3.333		84	40-140	6	30	
Carbazole	2.84	0.333	mg/kg wet	3.333		85	40-140	4	30	
Chrysene	2.78	0.167	mg/kg wet	3.333		83	40-140	4	30	
Dibenzo(a,h)Anthracene	3.00	0.167	mg/kg wet	3.333		90	40-140	3	30	
Dibenzofuran	2.37	0.333	mg/kg wet	3.333		71	40-140	10	30	
Diethylphthalate	2.72	0.333	mg/kg wet	3.333		82	40-140	6	30	
Dimethylphthalate	2.59	0.333	mg/kg wet	3.333		78	40-140	7	30	
Di-n-butylphthalate	3.03	0.333	mg/kg wet	3.333		91	40-140	5	30	
Di-n-octylphthalate	2.74	0.333	mg/kg wet	3.333		82	40-140	5	30	
Fluoranthene	2.93	0.333	mg/kg wet	3.333		88	40-140	4	30	
Fluorene	2.54	0.333	mg/kg wet	3.333		76	40-140	8	30	
Hexachlorobenzene	2.64	0.333	mg/kg wet	3.333		79	40-140	5	30	
Hexachlorobutadiene	1.98	0.333	mg/kg wet	3.333		60	40-140	16	30	
Hexachlorocyclopentadiene	1.66	1.67	mg/kg wet	3.333		50	40-140	29	30	
Hexachloroethane	1.96	0.333	mg/kg wet	3.333		59	40-140	8	30	
Indeno(1,2,3-cd)Pyrene	2.99	0.333	mg/kg wet	3.333		90	40-140	4	30	
Isophorone	2.26	0.333	mg/kg wet	3.333		68	40-140	13	30	
Naphthalene	2.00	0.333	mg/kg wet	3.333		60	40-140	12	30	
Nitrobenzene	2.07	0.333	mg/kg wet	3.333		62	40-140	12	30	
N-Nitrosodimethylamine	2.04	0.333	mg/kg wet	3.333		61	40-140	12	30	
N-Nitroso-Di-n-Propylamine	2.21	0.333	mg/kg wet	3.333		66	40-140	11	30	
N-nitrosodiphenylamine	2.80	0.333	mg/kg wet	3.333		84	40-140	5	30	
Pentachlorophenol	3.01	1.67	mg/kg wet	3.333		90	30-130	5	30	
Phenanthrene	2.67	0.333	mg/kg wet	3.333		80	40-140	3	30	
Phenol	2.13	0.333	mg/kg wet	3.333		64	30-130	10	30	
Pyrene	2.82	0.333	mg/kg wet	3.333		84	40-140	6	30	
Pyridine	1.66	1.67	mg/kg wet	3.333		50	40-140	11	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.12*		mg/kg wet	*3.333*		*64*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.50*		mg/kg wet	*5.000*		*90*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ60609 - 3546										
Surrogate: 2-Chlorophenol-d4	*3.33*		mg/kg wet	*5.000*		*67*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.30*		mg/kg wet	*3.333*		*69*	*30-130*			
Surrogate: 2-Fluorophenol	*3.21*		mg/kg wet	*5.000*		*64*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.22*		mg/kg wet	*3.333*		*67*	*30-130*			
Surrogate: Phenol-d6	*3.44*		mg/kg wet	*5.000*		*69*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.09*		mg/kg wet	*3.333*		*93*	*30-130*			
Batch CJ61112 - 3546										
Blank										
1,1-Biphenyl	ND	0.333	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							
1,2-Diphenylhydrazine as Azobenzene	ND	0.333	mg/kg wet							
1,3-Dichlorobenzene	ND	0.333	mg/kg wet							
1,4-Dichlorobenzene	ND	0.333	mg/kg wet							
2,3,4,6-Tetrachlorophenol	ND	1.67	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet							
2,4-Dichlorophenol	ND	0.333	mg/kg wet							
2,4-Dimethylphenol	ND	0.333	mg/kg wet							
2,4-Dinitrophenol	ND	1.67	mg/kg wet							
2,4-Dinitrotoluene	ND	0.333	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.333	mg/kg wet							
2-Methylnaphthalene	ND	0.333	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitroaniline	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.667	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
3-Nitroaniline	ND	0.333	mg/kg wet							
4,6-Dinitro-2-Methylphenol	ND	1.67	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							
4-Chloro-3-Methylphenol	ND	0.333	mg/kg wet							
4-Chloroaniline	ND	0.667	mg/kg wet							
4-Chloro-phenyl-phenyl ether	ND	0.333	mg/kg wet							
4-Nitroaniline	ND	0.333	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							
Acenaphthene	ND	0.333	mg/kg wet							
Acenaphthylene	ND	0.333	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	1.67	mg/kg wet							
Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ61112 - 3546										
Benzidine	ND	0.667	mg/kg wet							
Benzo(a)anthracene	ND	0.333	mg/kg wet							
Benzo(a)pyrene	ND	0.167	mg/kg wet							
Benzo(b)fluoranthene	ND	0.333	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
Benzoic Acid	ND	1.67	mg/kg wet							
Benzyl Alcohol	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Carbazole	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.333	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachlorocyclopentadiene	ND	1.67	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
N-Nitroso-Di-n-Propylamine	ND	0.333	mg/kg wet							
N-nitrosodiphenylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.34*		mg/kg wet	*3.333*		*70*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.02*		mg/kg wet	*5.000*		*60*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.60*		mg/kg wet	*5.000*		*72*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.37*		mg/kg wet	*3.333*		*71*	*30-130*			
Surrogate: 2-Fluorophenol	*3.61*		mg/kg wet	*5.000*		*72*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.34*		mg/kg wet	*3.333*		*70*	*30-130*			
Surrogate: Phenol-d6	*3.72*		mg/kg wet	*5.000*		*74*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ61112 - 3546										
Surrogate: p-Terphenyl-d14	*3.53*		mg/kg wet	*3.333*		*106*	*30-130*			
LCS										
1,1-Biphenyl	2.35	0.333	mg/kg wet	3.333		70	40-140			
1,2,4-Trichlorobenzene	2.18	0.333	mg/kg wet	3.333		65	40-140			
1,2-Dichlorobenzene	2.10	0.333	mg/kg wet	3.333		63	40-140			
1,2-Diphenylhydrazine as Azobenzene	2.41	0.333	mg/kg wet	3.333		72	40-140			
1,3-Dichlorobenzene	2.14	0.333	mg/kg wet	3.333		64	40-140			
1,4-Dichlorobenzene	2.12	0.333	mg/kg wet	3.333		64	40-140			
2,3,4,6-Tetrachlorophenol	2.23	1.67	mg/kg wet	3.333		67	30-130			
2,4,5-Trichlorophenol	2.72	0.333	mg/kg wet	3.333		81	30-130			
2,4,6-Trichlorophenol	2.50	0.333	mg/kg wet	3.333		75	30-130			
2,4-Dichlorophenol	2.41	0.333	mg/kg wet	3.333		72	30-130			
2,4-Dimethylphenol	2.28	0.333	mg/kg wet	3.333		69	30-130			
2,4-Dinitrophenol	2.23	1.67	mg/kg wet	3.333		67	30-130			
2,4-Dinitrotoluene	2.91	0.333	mg/kg wet	3.333		87	40-140			
2,6-Dinitrotoluene	2.54	0.333	mg/kg wet	3.333		76	40-140			
2-Chloronaphthalene	2.14	0.333	mg/kg wet	3.333		64	40-140			
2-Chlorophenol	2.25	0.333	mg/kg wet	3.333		68	30-130			
2-Methylnaphthalene	2.22	0.333	mg/kg wet	3.333		67	40-140			
2-Methylphenol	2.27	0.333	mg/kg wet	3.333		68	30-130			
2-Nitroaniline	2.37	0.333	mg/kg wet	3.333		71	40-140			
2-Nitrophenol	2.31	0.333	mg/kg wet	3.333		69	30-130			
3,3´-Dichlorobenzidine	1.67	0.667	mg/kg wet	3.333		50	40-140			
3+4-Methylphenol	4.65	0.667	mg/kg wet	6.667		70	30-130			
3-Nitroaniline	2.40	0.333	mg/kg wet	3.333		72	40-140			
4,6-Dinitro-2-Methylphenol	2.46	1.67	mg/kg wet	3.333		74	30-130			
4-Bromophenyl-phenylether	2.39	0.333	mg/kg wet	3.333		72	40-140			
4-Chloro-3-Methylphenol	2.41	0.333	mg/kg wet	3.333		72	30-130			
4-Chloroaniline	1.93	0.667	mg/kg wet	3.333		58	40-140			
4-Chloro-phenyl-phenyl ether	2.43	0.333	mg/kg wet	3.333		73	40-140			
4-Nitroaniline	2.91	0.333	mg/kg wet	3.333		87	40-140			
4-Nitrophenol	2.66	1.67	mg/kg wet	3.333		80	30-130			
Acenaphthene	2.41	0.333	mg/kg wet	3.333		72	40-140			
Acenaphthylene	2.39	0.333	mg/kg wet	3.333		72	40-140			
Acetophenone	2.24	0.667	mg/kg wet	3.333		67	40-140			
Aniline	1.30	1.67	mg/kg wet	3.333		39	40-140			B-
Anthracene	2.65	0.333	mg/kg wet	3.333		79	40-140			
Azobenzene	2.41	0.333	mg/kg wet	3.333		72	40-140			
Benzidine	ND	0.667	mg/kg wet	3.333			40-140			B-
Benzo(a)anthracene	2.68	0.333	mg/kg wet	3.333		80	40-140			
Benzo(a)pyrene	2.92	0.167	mg/kg wet	3.333		88	40-140			
Benzo(b)fluoranthene	2.96	0.333	mg/kg wet	3.333		89	40-140			
Benzo(g,h,i)perylene	2.90	0.333	mg/kg wet	3.333		87	40-140			
Benzo(k)fluoranthene	2.95	0.333	mg/kg wet	3.333		88	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ61112 - 3546										
Benzoic Acid	2.18	1.67	mg/kg wet	3.333		66	40-140			
Benzyl Alcohol	2.24	0.333	mg/kg wet	3.333		67	40-140			
bis(2-Chloroethoxy)methane	2.23	0.333	mg/kg wet	3.333		67	40-140			
bis(2-Chloroethyl)ether	2.53	0.333	mg/kg wet	3.333		76	40-140			
bis(2-chloroisopropyl)Ether	2.21	0.333	mg/kg wet	3.333		66	40-140			
bis(2-Ethylhexyl)phthalate	3.05	0.333	mg/kg wet	3.333		91	40-140			
Butylbenzylphthalate	2.90	0.333	mg/kg wet	3.333		87	40-140			
Carbazole	2.79	0.333	mg/kg wet	3.333		84	40-140			
Chrysene	2.73	0.167	mg/kg wet	3.333		82	40-140			
Dibenzo(a,h)Anthracene	2.91	0.167	mg/kg wet	3.333		87	40-140			
Dibenzofuran	2.38	0.333	mg/kg wet	3.333		72	40-140			
Diethylphthalate	2.62	0.333	mg/kg wet	3.333		79	40-140			
Dimethylphthalate	2.48	0.333	mg/kg wet	3.333		74	40-140			
Di-n-butylphthalate	2.97	0.333	mg/kg wet	3.333		89	40-140			
Di-n-octylphthalate	2.72	0.333	mg/kg wet	3.333		82	40-140			
Fluoranthene	2.79	0.333	mg/kg wet	3.333		84	40-140			
Fluorene	2.51	0.333	mg/kg wet	3.333		75	40-140			
Hexachlorobenzene	2.50	0.333	mg/kg wet	3.333		75	40-140			
Hexachlorobutadiene	2.18	0.333	mg/kg wet	3.333		65	40-140			
Hexachlorocyclopentadiene	0.361	1.67	mg/kg wet	3.333		11	40-140			B-
Hexachloroethane	2.13	0.333	mg/kg wet	3.333		64	40-140			
Indeno(1,2,3-cd)Pyrene	2.90	0.333	mg/kg wet	3.333		87	40-140			
Isophorone	2.34	0.333	mg/kg wet	3.333		70	40-140			
Naphthalene	2.21	0.333	mg/kg wet	3.333		66	40-140			
Nitrobenzene	2.26	0.333	mg/kg wet	3.333		68	40-140			
N-Nitrosodimethylamine	2.13	0.333	mg/kg wet	3.333		64	40-140			
N-Nitroso-Di-n-Propylamine	2.34	0.333	mg/kg wet	3.333		70	40-140			
N-nitrosodiphenylamine	2.66	0.333	mg/kg wet	3.333		80	40-140			
Pentachlorophenol	2.77	1.67	mg/kg wet	3.333		83	30-130			
Phenanthrene	2.60	0.333	mg/kg wet	3.333		78	40-140			
Phenol	2.23	0.333	mg/kg wet	3.333		67	30-130			
Pyrene	2.79	0.333	mg/kg wet	3.333		84	40-140			
Pyridine	1.81	1.67	mg/kg wet	3.333		54	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.47*		mg/kg wet	*3.333*		*74*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.00*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.87*		mg/kg wet	*5.000*		*77*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.64*		mg/kg wet	*3.333*		*79*	*30-130*			
Surrogate: 2-Fluorophenol	*3.88*		mg/kg wet	*5.000*		*78*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.60*		mg/kg wet	*3.333*		*78*	*30-130*			
Surrogate: Phenol-d6	*4.04*		mg/kg wet	*5.000*		*81*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.34*		mg/kg wet	*3.333*		*100*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.52	0.333	mg/kg wet	3.333		76	40-140	7	30	
1,2,4-Trichlorobenzene	2.32	0.333	mg/kg wet	3.333		70	40-140	6	30	
1,2-Dichlorobenzene	2.24	0.333	mg/kg wet	3.333		67	40-140	6	30	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ61112 - 3546										
1,2-Diphenylhydrazine as Azobenzene	2.60	0.333	mg/kg wet	3.333		78	40-140	7	30	
1,3-Dichlorobenzene	2.31	0.333	mg/kg wet	3.333		69	40-140	7	30	
1,4-Dichlorobenzene	2.22	0.333	mg/kg wet	3.333		67	40-140	5	30	
2,3,4,6-Tetrachlorophenol	2.45	1.67	mg/kg wet	3.333		73	30-130	9	30	
2,4,5-Trichlorophenol	2.92	0.333	mg/kg wet	3.333		88	30-130	7	30	
2,4,6-Trichlorophenol	2.72	0.333	mg/kg wet	3.333		81	30-130	8	30	
2,4-Dichlorophenol	2.59	0.333	mg/kg wet	3.333		78	30-130	7	30	
2,4-Dimethylphenol	2.48	0.333	mg/kg wet	3.333		75	30-130	8	30	
2,4-Dinitrophenol	2.55	1.67	mg/kg wet	3.333		76	30-130	13	30	
2,4-Dinitrotoluene	3.04	0.333	mg/kg wet	3.333		91	40-140	4	30	
2,6-Dinitrotoluene	2.66	0.333	mg/kg wet	3.333		80	40-140	5	30	
2-Chloronaphthalene	2.30	0.333	mg/kg wet	3.333		69	40-140	7	30	
2-Chlorophenol	2.45	0.333	mg/kg wet	3.333		74	30-130	9	30	
2-Methylnaphthalene	2.37	0.333	mg/kg wet	3.333		71	40-140	6	30	
2-Methylphenol	2.50	0.333	mg/kg wet	3.333		75	30-130	10	30	
2-Nitroaniline	2.49	0.333	mg/kg wet	3.333		75	40-140	5	30	
2-Nitrophenol	2.55	0.333	mg/kg wet	3.333		76	30-130	10	30	
3,3´-Dichlorobenzidine	1.42	0.667	mg/kg wet	3.333		43	40-140	16	30	
3+4-Methylphenol	5.08	0.667	mg/kg wet	6.667		76	30-130	9	30	
3-Nitroaniline	2.44	0.333	mg/kg wet	3.333		73	40-140	2	30	
4,6-Dinitro-2-Methylphenol	2.78	1.67	mg/kg wet	3.333		83	30-130	12	30	
4-Bromophenyl-phenylether	2.59	0.333	mg/kg wet	3.333		78	40-140	8	30	
4-Chloro-3-Methylphenol	2.56	0.333	mg/kg wet	3.333		77	30-130	6	30	
4-Chloroaniline	2.11	0.667	mg/kg wet	3.333		63	40-140	9	30	
4-Chloro-phenyl-phenyl ether	2.56	0.333	mg/kg wet	3.333		77	40-140	5	30	
4-Nitroaniline	3.12	0.333	mg/kg wet	3.333		94	40-140	7	30	
4-Nitrophenol	2.82	1.67	mg/kg wet	3.333		84	30-130	6	30	
Acenaphthene	2.56	0.333	mg/kg wet	3.333		77	40-140	6	30	
Acenaphthylene	2.55	0.333	mg/kg wet	3.333		77	40-140	7	30	
Acetophenone	2.43	0.667	mg/kg wet	3.333		73	40-140	8	30	
Aniline	1.53	1.67	mg/kg wet	3.333		46	40-140	17	30	
Anthracene	2.82	0.333	mg/kg wet	3.333		85	40-140	6	30	
Azobenzene	2.60	0.333	mg/kg wet	3.333		78	40-140	7	30	
Benzidine	ND	0.667	mg/kg wet	3.333			40-140		30	B-
Benzo(a)anthracene	2.90	0.333	mg/kg wet	3.333		87	40-140	8	30	
Benzo(a)pyrene	3.13	0.167	mg/kg wet	3.333		94	40-140	7	30	
Benzo(b)fluoranthene	3.09	0.333	mg/kg wet	3.333		93	40-140	4	30	
Benzo(g,h,i)perylene	3.08	0.333	mg/kg wet	3.333		92	40-140	6	30	
Benzo(k)fluoranthene	3.17	0.333	mg/kg wet	3.333		95	40-140	7	30	
Benzoic Acid	3.14	1.67	mg/kg wet	3.333		94	40-140	36	30	D+
Benzyl Alcohol	2.47	0.333	mg/kg wet	3.333		74	40-140	10	30	
bis(2-Chloroethoxy)methane	2.39	0.333	mg/kg wet	3.333		72	40-140	7	30	
bis(2-Chloroethyl)ether	2.71	0.333	mg/kg wet	3.333		81	40-140	7	30	
bis(2-chloroisopropyl)Ether	2.36	0.333	mg/kg wet	3.333		71	40-140	7	30	
bis(2-Ethylhexyl)phthalate	3.24	0.333	mg/kg wet	3.333		97	40-140	6	30	

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CJ61112 - 3546										
Butylbenzylphthalate	3.09	0.333	mg/kg wet	3.333		93	40-140	6	30	
Carbazole	2.96	0.333	mg/kg wet	3.333		89	40-140	6	30	
Chrysene	2.85	0.167	mg/kg wet	3.333		85	40-140	4	30	
Dibenzo(a,h)Anthracene	3.14	0.167	mg/kg wet	3.333		94	40-140	7	30	
Dibenzofuran	2.51	0.333	mg/kg wet	3.333		75	40-140	5	30	
Diethylphthalate	2.72	0.333	mg/kg wet	3.333		82	40-140	4	30	
Dimethylphthalate	2.57	0.333	mg/kg wet	3.333		77	40-140	4	30	
Di-n-butylphthalate	3.17	0.333	mg/kg wet	3.333		95	40-140	6	30	
Di-n-octylphthalate	2.88	0.333	mg/kg wet	3.333		86	40-140	6	30	
Fluoranthene	3.05	0.333	mg/kg wet	3.333		92	40-140	9	30	
Fluorene	2.62	0.333	mg/kg wet	3.333		79	40-140	4	30	
Hexachlorobenzene	2.71	0.333	mg/kg wet	3.333		81	40-140	8	30	
Hexachlorobutadiene	2.31	0.333	mg/kg wet	3.333		69	40-140	6	30	
Hexachlorocyclopentadiene	0.359	1.67	mg/kg wet	3.333		11	40-140	0.6	30	B-
Hexachloroethane	2.25	0.333	mg/kg wet	3.333		67	40-140	5	30	
Indeno(1,2,3-cd)Pyrene	3.12	0.333	mg/kg wet	3.333		94	40-140	7	30	
Isophorone	2.48	0.333	mg/kg wet	3.333		74	40-140	6	30	
Naphthalene	2.34	0.333	mg/kg wet	3.333		70	40-140	5	30	
Nitrobenzene	2.40	0.333	mg/kg wet	3.333		72	40-140	6	30	
N-Nitrosodimethylamine	2.33	0.333	mg/kg wet	3.333		70	40-140	9	30	
N-Nitroso-Di-n-Propylamine	2.53	0.333	mg/kg wet	3.333		76	40-140	8	30	
N-nitrosodiphenylamine	2.82	0.333	mg/kg wet	3.333		84	40-140	6	30	
Pentachlorophenol	3.14	1.67	mg/kg wet	3.333		94	30-130	13	30	
Phenanthrene	2.77	0.333	mg/kg wet	3.333		83	40-140	6	30	
Phenol	2.39	0.333	mg/kg wet	3.333		72	30-130	7	30	
Pyrene	2.94	0.333	mg/kg wet	3.333		88	40-140	5	30	
Pyridine	1.93	1.67	mg/kg wet	3.333		58	40-140	6	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.51*		mg/kg wet	*3.333*		*75*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.26*		mg/kg wet	*5.000*		*85*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*4.02*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.73*		mg/kg wet	*3.333*		*82*	*30-130*			
Surrogate: 2-Fluorophenol	*4.00*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.65*		mg/kg wet	*3.333*		*80*	*30-130*			
Surrogate: Phenol-d6	*4.25*		mg/kg wet	*5.000*		*85*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.38*		mg/kg wet	*3.333*		*102*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth ESS Laboratory Work Order: 1610112

Notes and Definitions

U	Analyte included in the analysis, but not detected
SM	Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).
Q	Calibration required quadratic regression (Q).
IM	Internal Standard(s) outside of criteria due to matrix (UCM/coelution is present) (IM).
E	Reported above the quantitation limit; Estimated value (E).
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
B+	Blank Spike recovery is above upper control limit (B+).
B-	Blank Spike recovery is below lower control limit (B-).
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

CERTIFICATE OF ANALYSIS

Client Name: Weston & Sampson Engineers, Inc.
Client Project ID: RTE 33 Portsmouth

ESS Laboratory Work Order: 1610112

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/water/dwp-services/labcert/documents/AllLabs.xls

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

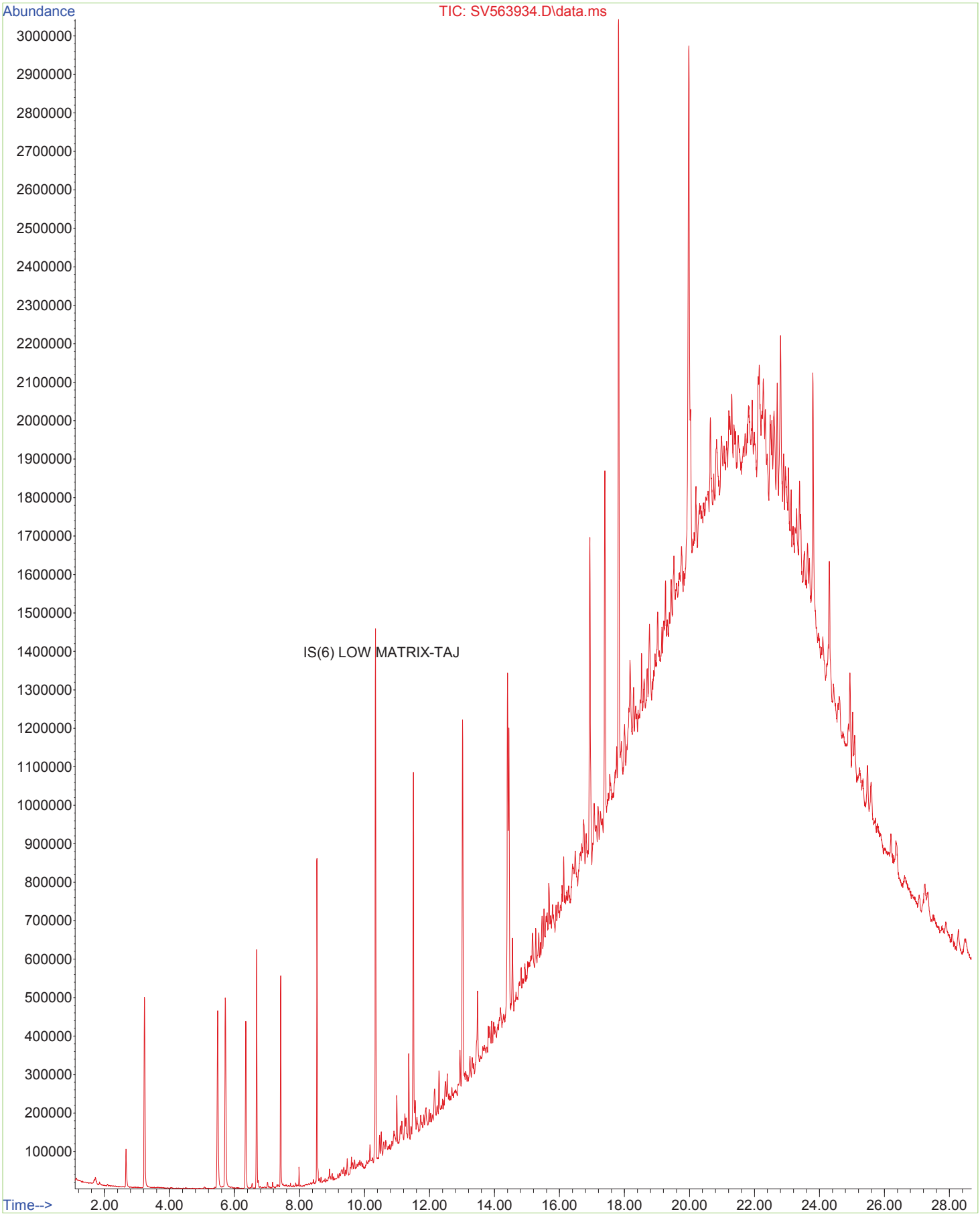
New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

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

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

File :Q:\SVOA\MS5\MS5-1016\100716\SV563934.D
Operator : TJ
Acquired : 8 Oct 2016 3:30 am using AcqMethod SV5A.M
Instrument : SVOAMS5
Sample Name: 1610112-01
Misc Info :
Vial Number: 12



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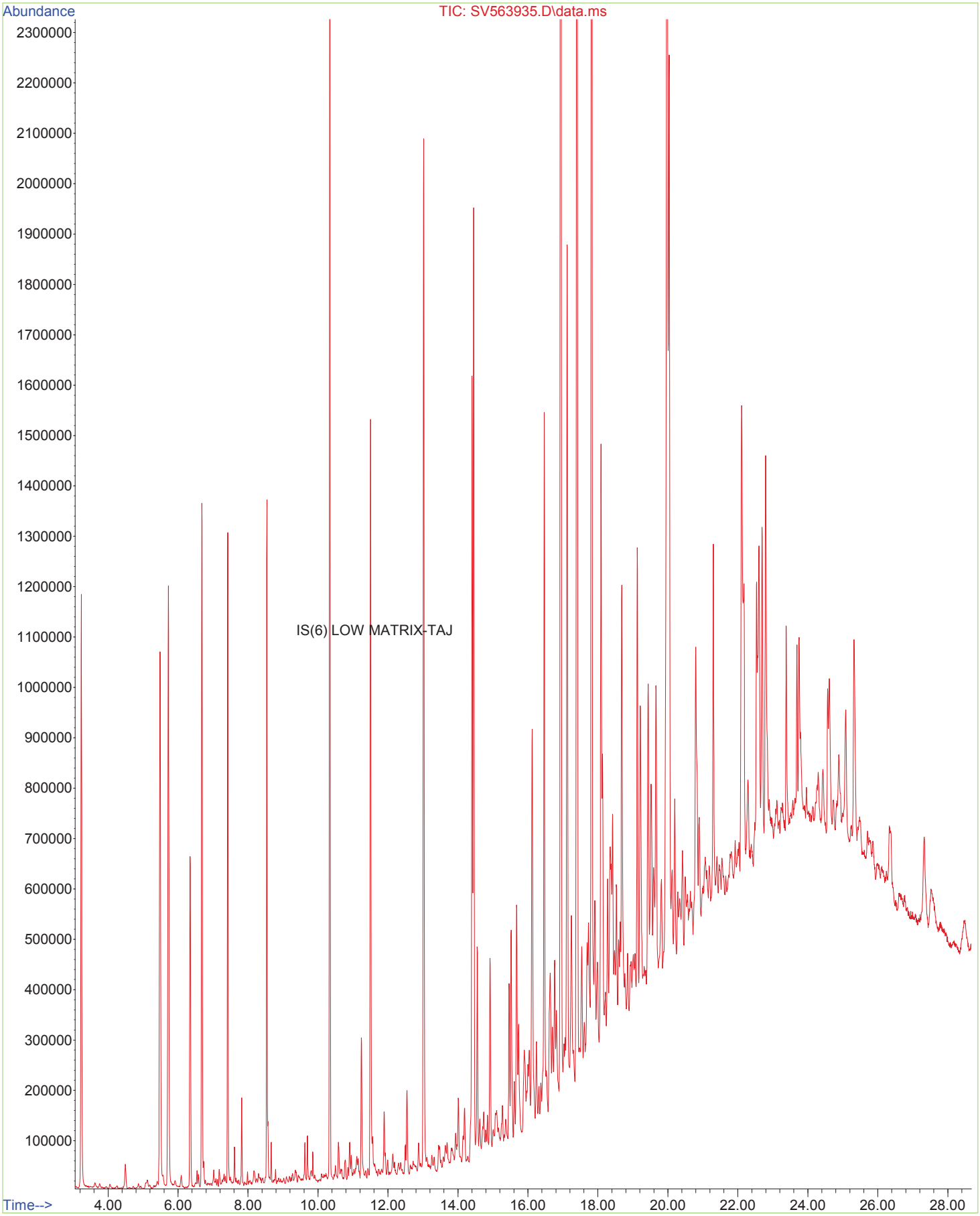
Acquired : 8 Oct 2016 4:07 am using AcqMethod SV5A.M
Instrument : SVOAMS5
Sample Name: 1610112-02
Misc Info :
Vial Number: 13



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Operator : TJ
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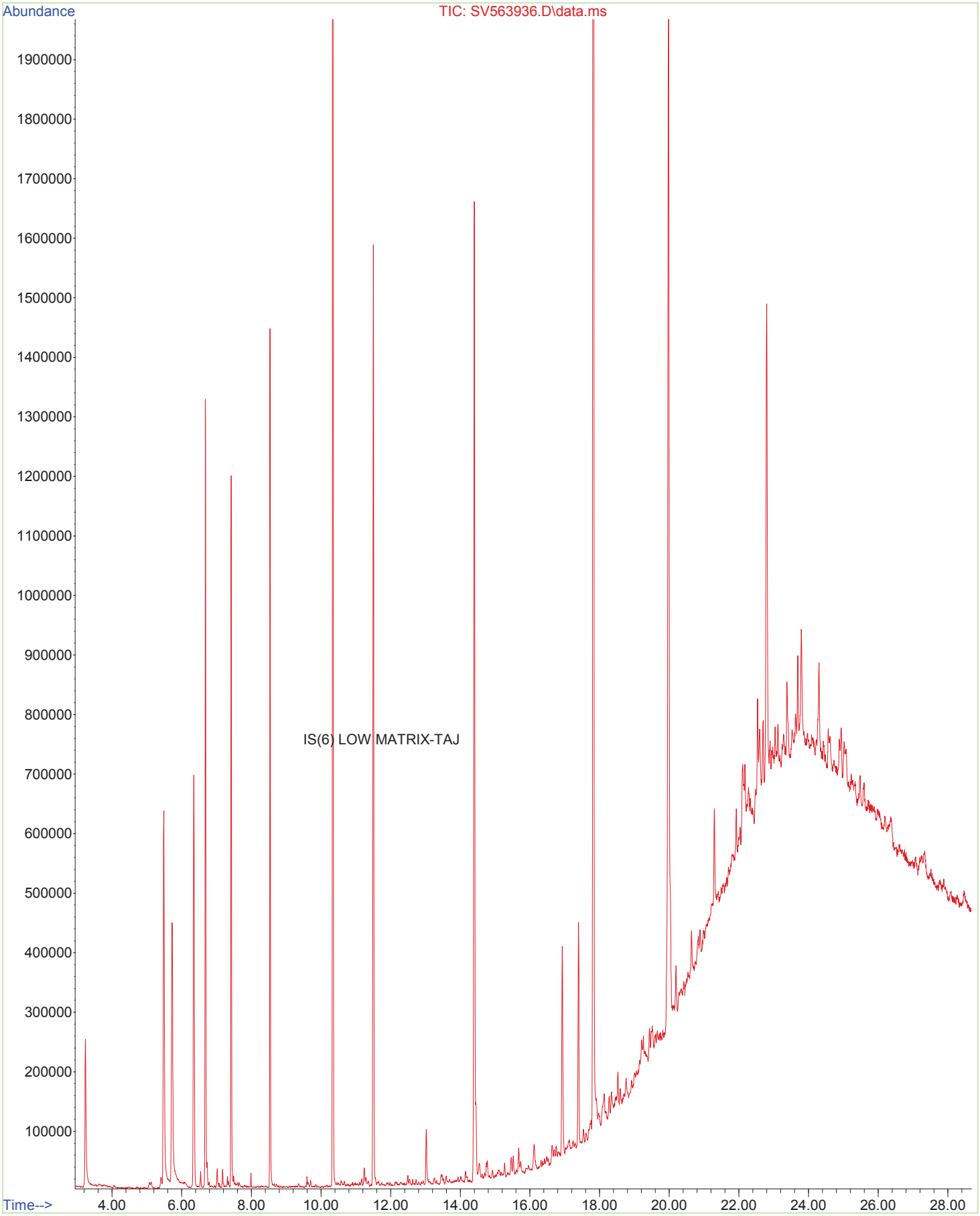
Instrument : SVOAMS5
Sample Name: 1610112-03
Misc Info :
Vial Number: 14



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Operator : TJ
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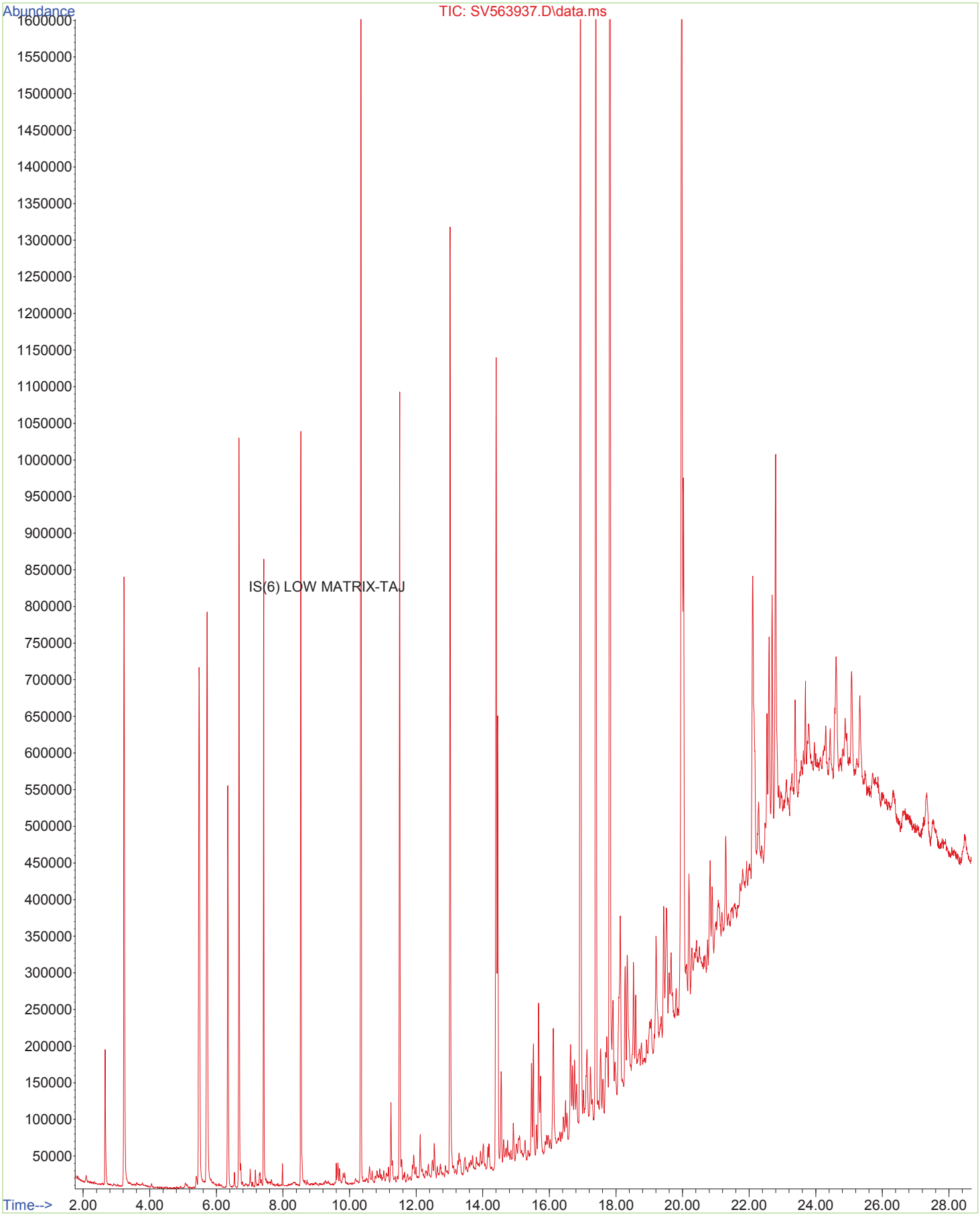
Instrument : SVOAMS5
Sample Name: 1610112-04
Misc Info :
Vial Number: 15



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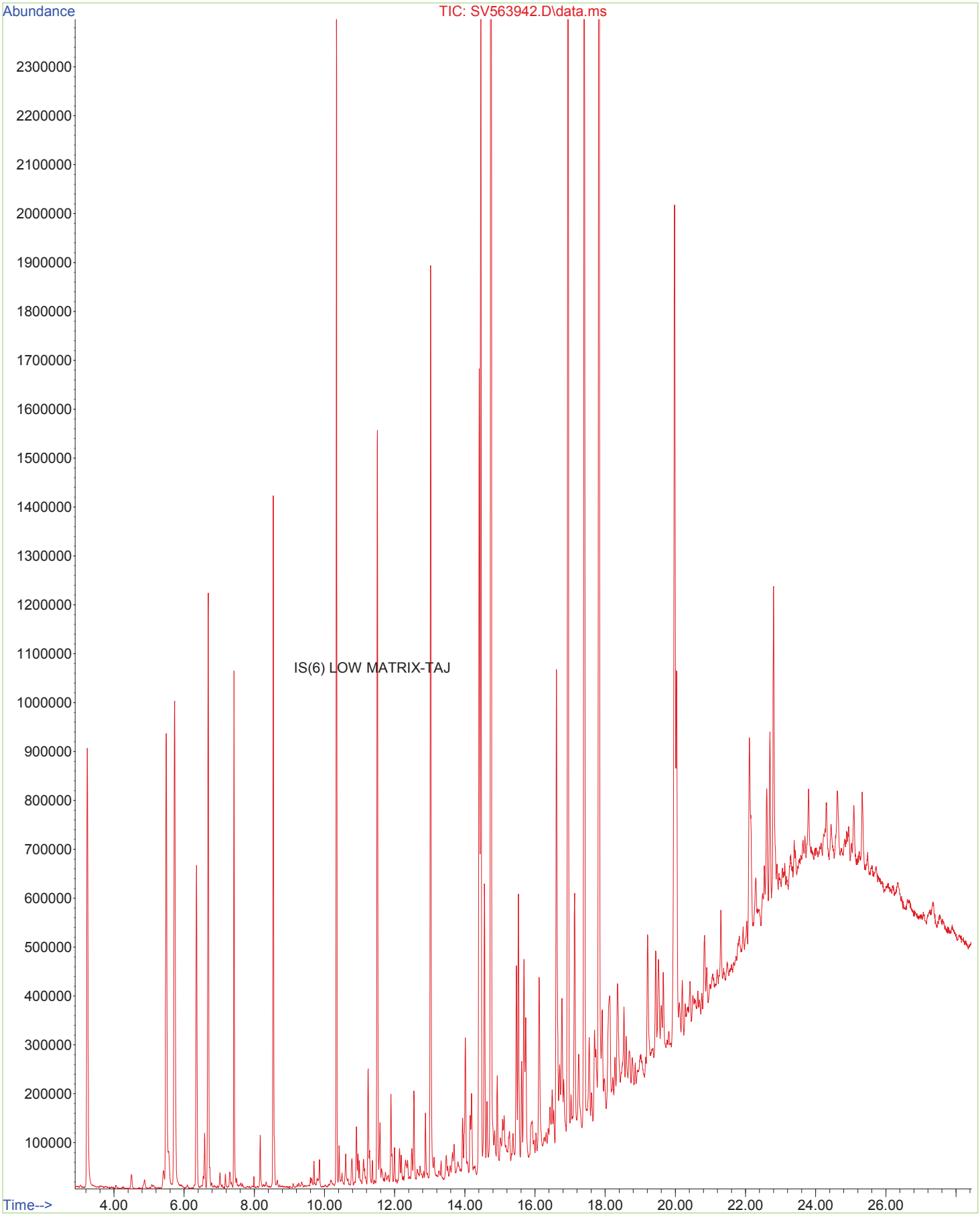
Instrument : SVOAMS5
Sample Name: 1610112-09
Misc Info :
Vial Number: 20



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Operator : TJ
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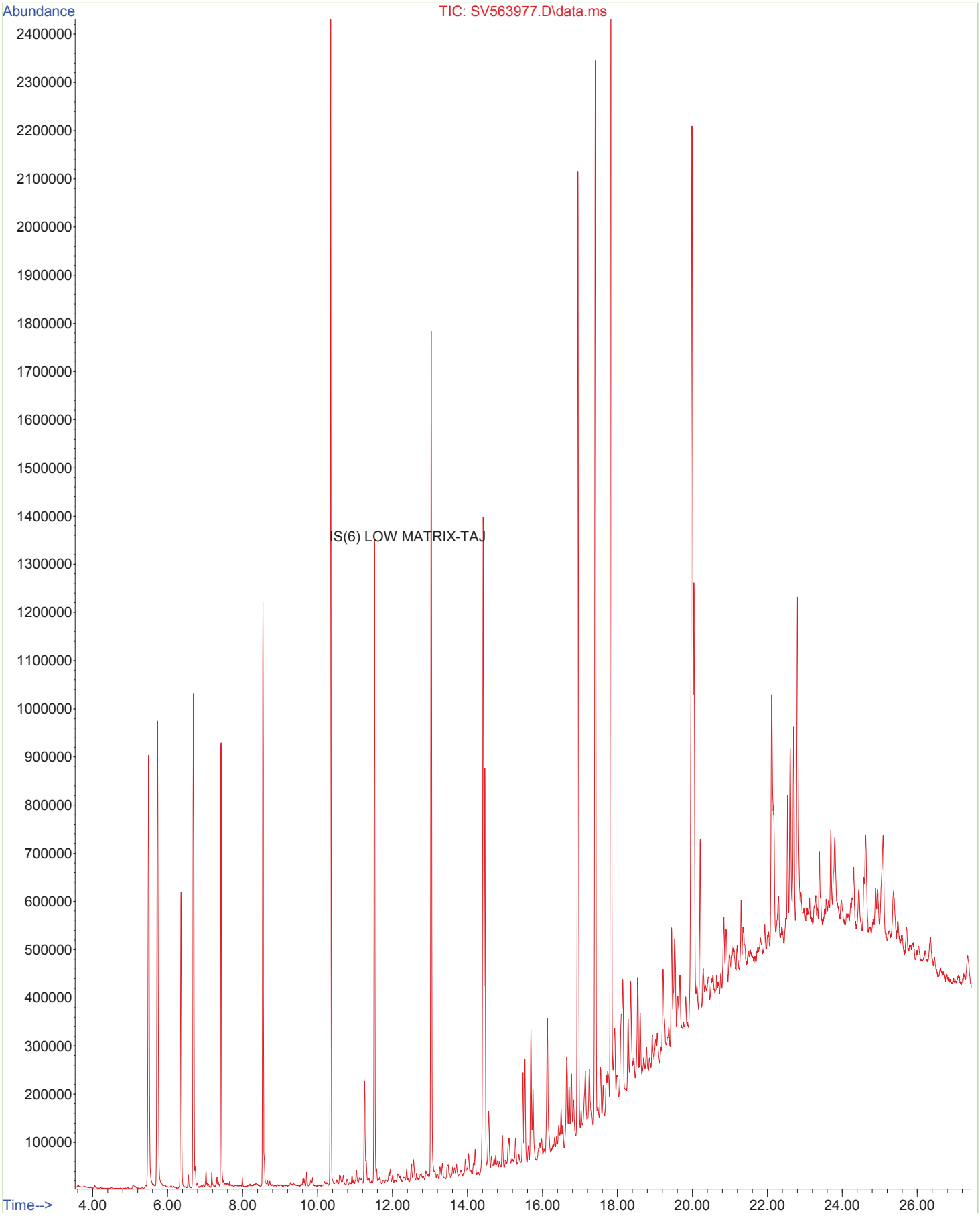
Instrument : SVOAMS5
Sample Name: 1610112-13
Misc Info :
Vial Number: 12



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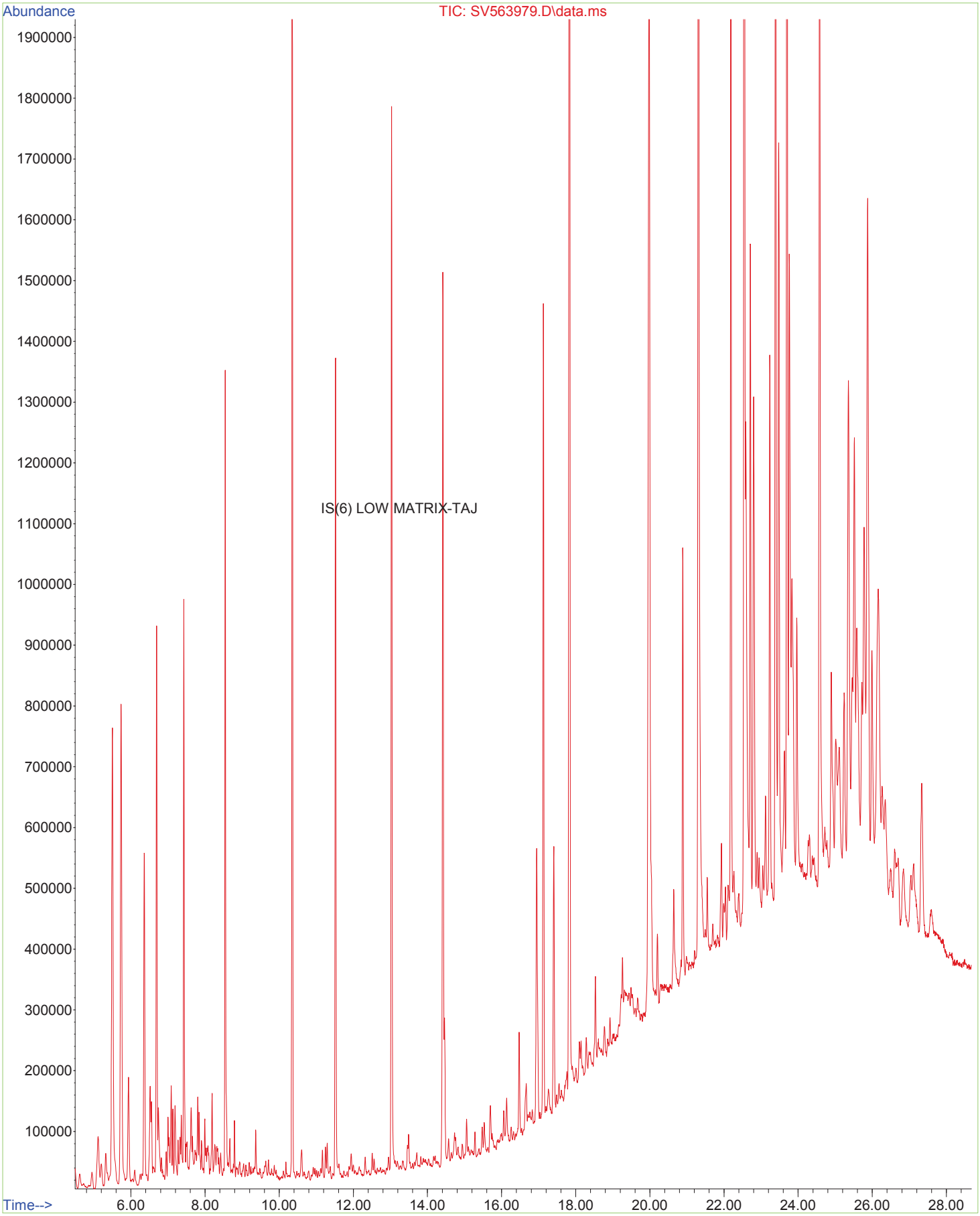
Operator : TJ
Acquired : 11 Oct 2016 8:13 pm using AcqMethod SV5A.M
Instrument : SVOAMS5
Sample Name: 1610112-15
Misc Info :
Vial Number: 14



ESS Laboratory Sample and Cooler Receipt Checklist

Client: Weston & Sampson Engineers, Inc - TB/CMT

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1610112
Date Received: 10/6/2016
Project Due Date: 10/14/2016
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: 1.2 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:
    b. Low Level VOA vials frozen: Date: 10/6/16 Time: 1945 By: JC 10/7/16

Sample Receiving Notes:

(1) Rec'd one DI water vial for B-9, S-3 ; B-13, S-3 ; B-14 S-4

(2) B-12 S-1 preserved with NaHSO4 not DI water WS 10/6/16

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:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	72115	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
01	72131	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
01	72162	Yes	NA	Yes	VOA Vial - Other	Other	
01	72163	Yes	NA	Yes	VOA Vial - Other	Other	
02	72114	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
02	72130	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
02	72160	Yes	NA	Yes	VOA Vial - Other	Other	
02	72161	Yes	NA	Yes	VOA Vial - Other	Other	
03	72113	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
03	72129	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
03	72158	Yes	NA	Yes	VOA Vial - Other	Other	
03	72159	Yes	NA	Yes	VOA Vial - Other	Other	
04	72112	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
04	72128	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
04	72156	Yes	NA	Yes	VOA Vial - Other	Other	
04	72157	Yes	NA	Yes	VOA Vial - Other	Other	
05	72111	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
05	72127	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
05	72154	Yes	NA	Yes	VOA Vial - Other	Other	
05	72155	Yes	NA	Yes	VOA Vial - Other	Other	
06	72110	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
06	72126	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
06	72152	Yes	NA	Yes	VOA Vial - Other	Other	
06	72153	Yes	NA	Yes	VOA Vial - Other	Other	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Weston & Sampson Engineers, Inc - TB/CMT

ESS Project ID: 1610112

Date Received: 10/6/2016

07	72109	Yes	NA	Yes	8 oz. Jar - Unpres	NP
07	72125	Yes	NA	Yes	VOA Vial - Methanol	MeOH
07	72150	Yes	NA	Yes	VOA Vial - Other	Other
07	72151	Yes	NA	Yes	VOA Vial - Other	Other
08	72108	Yes	NA	Yes	8 oz. Jar - Unpres	NP
08	72124	Yes	NA	Yes	VOA Vial - Methanol	MeOH
08	72148	Yes	NA	Yes	VOA Vial - Other	Other
08	72149	Yes	NA	Yes	VOA Vial - Other	Other
09	72107	Yes	NA	Yes	8 oz. Jar - Unpres	NP
09	72123	Yes	NA	Yes	VOA Vial - Methanol	MeOH
09	72147	Yes	NA	Yes	VOA Vial - Other	Other
10	72106	Yes	NA	Yes	8 oz. Jar - Unpres	NP
10	72122	Yes	NA	Yes	VOA Vial - Methanol	MeOH
10	72144	Yes	NA	Yes	VOA Vial - Other	Other
10	72145	Yes	NA	Yes	VOA Vial - Other	Other
11	72105	Yes	NA	Yes	8 oz. Jar - Unpres	NP
11	72121	Yes	NA	Yes	VOA Vial - Methanol	MeOH
11	72142	Yes	NA	Yes	VOA Vial - Other	Other
11	72143	Yes	NA	Yes	VOA Vial - Other	Other
12	72104	Yes	NA	Yes	8 oz. Jar - Unpres	NP
12	72120	Yes	NA	Yes	VOA Vial - Methanol	MeOH
12	72140	Yes	NA	Yes	VOA Vial - NaHSO4	NaHSO4
12	72141	Yes	NA	Yes	VOA Vial - NaHSO4	NaHSO4
13	72103	Yes	NA	Yes	8 oz. Jar - Unpres	NP
13	72119	Yes	NA	Yes	VOA Vial - Methanol	MeOH
13	72138	Yes	NA	Yes	VOA Vial - Other	Other
14	72102	Yes	NA	Yes	8 oz. Jar - Unpres	NP
14	72118	Yes	NA	Yes	VOA Vial - Methanol	MeOH
14	72136	Yes	NA	Yes	VOA Vial - Other	Other
15	72101	Yes	NA	Yes	8 oz. Jar - Unpres	NP
15	72117	Yes	NA	Yes	VOA Vial - Methanol	MeOH
15	72134	Yes	NA	Yes	VOA Vial - Other	Other
15	72135	Yes	NA	Yes	VOA Vial - Other	Other
16	72100	Yes	NA	Yes	8 oz. Jar - Unpres	NP
16	72116	Yes	NA	Yes	VOA Vial - Methanol	MeOH
16	72132	Yes	NA	Yes	VOA Vial - Other	Other
16	72133	Yes	NA	Yes	VOA Vial - Other	Other

2nd Review

Are barcode labels on correct containers? (Yes) No

Completed By: _____ Date & Time: 10/6/16 1930

Reviewed By: _____ Date & Time: 10/6/16 1945

Delivered By: _____ 10/6/16 1945

ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 161012

Turn Time ✓ Standard Other

Regulatory State: MA RI CT (NH) NJ NY ME Other

Is this project for any of the following:(please circle)
MA-MCP Navy USACE CT DEP Other

Reporting Limits -

Electonic Deliverables Excel Access PDF

Co. Name	Project #	Project Name
WESTON + SAMPSON ENG.		RTE 33 PORTSMOUTH

Contact Person	Address
KEN GENDRON	5 CENTENNIAL DRIVE

City	State	Zip	PO #
PEABODY	MA	01960	

Tel.	Fax	email:
978 532 1900		gendronk@wseinc.com

ESS Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis: TPH	8270	8260	PCB	PCB48
1	9/27/16	1200	G	S	B-1 S-1	9 6 5	1 1 2	A V		X	X	X	X	X
2	9/28/16	8:10			B-2 S-2		1 1 2							
3	9/27/16	13:25			B-3 S-4		1 1 2							
4	9/27/16	15:25			B-4 S-3		1 1 2							
5	9/28/16	14:15			B-5 S-1		1 1 2							
6	9/28/16	12:20			B-6 S-3		1 1 2							
7	9/28/16	12:00			B-7 S-4		1 1 2							
8	9/28/16	14:40			B-8 S-2		1 1 2							
9	9/27/16	11:20			B-9 S-3		1 1 1							
10	9/29/16	14:10	↓	↓	B-10 S-3	↓	1 1 2	↓		↓	↓	↓	↓	↓

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present ✓ Yes ___ No

Seals Intact ___ Yes ___ No NA: ✓

Cooler Temperature: 1.2 Icey

Internal Use Only

[ ] Pickup

[ ] Technician

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Ascorbic Acid, 8-ZnAct, 9-ICE

Sampled by: Julie A. Eaton

Comments:

Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)
10/5/16 1400	10/6/16 1335	10/6/16 1834	10/6/16 1839
Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)

* By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VIIA

Please fax to the laboratory all changes to Chain of Custody

1 (White) Lab Copy
2 (Yellow) Client Receipt

ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.essiaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1610112

Turn Time ✓ Standard Other

Regulatory State: MA RI CT (NH) NJ NY ME Other

Reporting Limits -

is this project for any of the following:(please circle)
MA-MCP Navy USACE CT DEP Other

Electonic Deliverables Excel Access PDF

Co. Name: WESTON + SAMPSON ENG	Project #:	Project Name: RT 33 PORTSMOUTH	
Contact Person: KEN GENDRON	Address: 5 CENTENNIAL DRIVE		
City: PEABODY	State: MA	Zip: 01960	PO #:
Tel. 1 978 532 1900	Fax:	email: gendronk@wseng.com	

ESS Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis: TPH	8270	8260	PCB	RCRA8
11	9/29/16	1445	G	S	B-11 S-2	A	1	1+2	9	6+5		X	X	X	X	X
12	9/29/16	1505			B-12 S-1		1	1+2								
13	9/28/16	1450			B-13 S-3		1	1+1								
14	9/29/16	1225			B-14 S-4		1	1+1								
15	9/29/16	1005			B-15 S-3		1	1+2								
16	9/29/16	9:20	↓	↓	B-16 S-2	↓	1	1+2	↓		↓	↓	↓	↓	↓	

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present ✓ Yes No

Seals Intact Yes No NA:

Cooler Temperature: 1.2

Internal Use Only

M Pickup

[ ] Technician

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-ICE
3-Sodium bisulfate

Sampled by: Julie A Eaton

Comments:

Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)
10/5/16 1400	10/6/16 13:36	10/6/16 18:34	10/6/16 1839
Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)

* By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VIIA

Please fax to the laboratory all changes to Chain of Custody

1 (White) Lab Copy
2 (Yellow) Client Receipt

100 International Drive, Suite 152, Portsmouth, NH 03801
Tel: 603.431.3937

MEMORANDUM

TO:	Brandon Kunkel, RLA
FROM:	Jeffrey Santacruce, PE PTOE
DATE:	1/23/2023
SUBJECT:	Skate Park – 305 Greenland Road, Portsmouth, New Hampshire

---

Introduction

This project consists of the construction of a new skate park on a vacant parcel of land at 305 Greenland Road in Portsmouth, NH. Site improvements include the skate park, walkways, and a 25-space parking lot.

Existing Conditions

Site

This existing site is located at 305 Greenland Road and is approximately five acres in size. The lot is bounded by Greenland Road to the south, residential lots to the east and north, and the old railroad Right-of-Way to the west. The site is currently vacant lot and consist mainly of a large gravel that was once used as a contractor lay down area. The lot does contain some existing stormwater basins and pipes but does not contain any existing structures. The lot has an existing driveway curb cut onto Greenland Road. See Figure 1.

Roadway

Greenland Road is classified as an urban minor arterial under the jurisdiction of the City of Portsmouth. The roadway consists of two 12-foot-wide travel lanes in the westbound direction that merge into one lane west of the existing site and there is one 12-foot-wide exclusive left-turn lane and one 12-foot-wide travel lane in the eastbound direction. There are shoulders on both sides of the roadway that are approximately 3 feet wide. There is a sidewalk along the north side of the roadway that extends along Greenland Road east to the intersection of Peverly Hill Road and west to the intersection of Griffin Road. There are no existing striped bicycle lanes along Greenland Road. The posted speed along Greenland Road is 30 mph and the average observed speed (via following car method) is approximately 40 mph. There is an existing bus stop at the intersection of Greenland Road and Peverly Hill Road less than ¼ mile from the existing site.

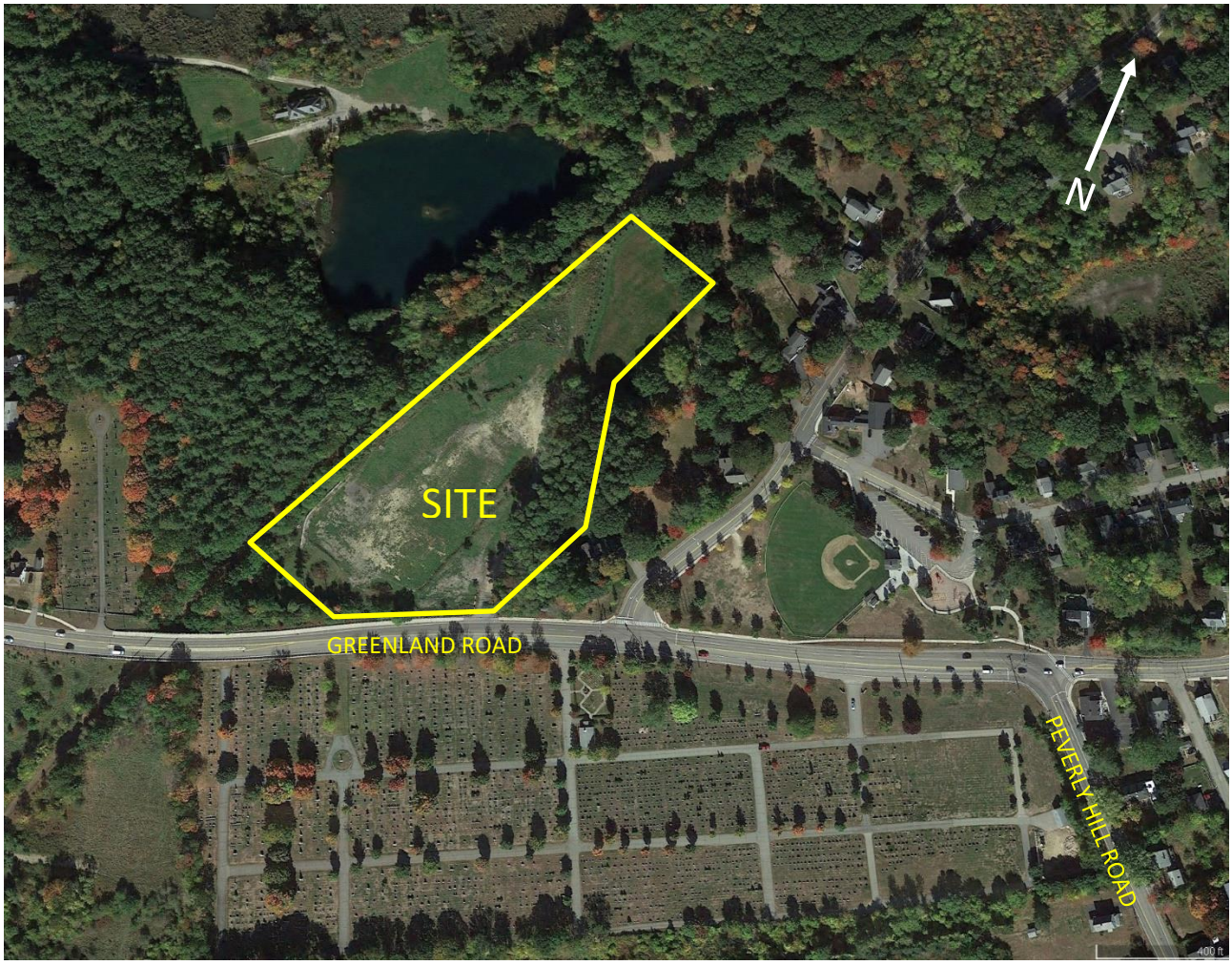


Figure 1 – Location Map

Proposed Conditions

The proposed development consists of the construction of a 0.45 acres (19,500 sq ft) skate park with walkways and a 25-space parking lot which includes two ADA Accessible spaces. The proposed development proposes to utilize the existing curb cut on Greenland Road. A new connection from the existing sidewalk along Greenland Road into the site will be provided. The existing ramps at the driveway will be reconstructed to meet current ADA Accessible standards.

Sight Distance

To identify potential safety concerns associated with site egress, sight distances have been evaluated at the site driveway location to determine if the available sight distances for vehicles entering/exiting the site meet or exceed the minimum distances required for approaching vehicles along Water Street to safely stop. The available sight distances were compared with minimum requirements, as

established by the American Association of State Highway and Transportation Officials (AASHTO)[1].

Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in the road. The values are based on a driver perception and reaction time of 2.5 seconds and a braking distance calculated for wet, level pavements. When the roadway is either on an upgrade or downgrade, grade correction factors are applied. Stopping sight distance is measured from a driver's eye height of 3.5 feet to an object height of 2 feet above street level.

Intersection sight distance (ISD) is the minimum distance required for a motorist exiting a minor street to turn onto the major street, without being overtaken by an approaching vehicle reducing its speed from the design speed to 70 percent of the design speed. Intersection sight distance is measured from a driver's eye height of 3.5 feet to an object height of 3.5 feet above street level.

SSD is generally more important as it represents the minimum distance required for safe stopping while ISD is based only upon acceptable speed reductions to the approaching traffic stream. However, the ISD must be equal to or greater than the minimum required SSD in order to provide safe operations at the intersection. The available SSD and ISD at the proposed site drive location was measured and compared to minimum requirements as established by AASHTO as shown in Table 3.

As indicated in Table 1, the available sight distance at the existing site driveway currently meets the minimum required SSD and ISD requirements.

Table 1 – Sight Distance

	Stopping Sight Distance (feet)			Intersection Sight Distance (feet)			
Location/Direction	Measured	Minimum Required[a]	Desirable[b]	Measured	Minimum Required[c]	Desirable (Posted)[a]	Desirable[b]
Existing							
West of driveway	>400	250	305	450	250	335	445
East of driveway	>400	250	305	450	250	335	445

[a] Values based on AASHTO requirements for posted speed limit of 30 mph on Greenland Road
[b] Values based on AASHTO requirements for observed speeds of 40 mph on Greenland Road.
[c] Values based on minimum SSD requirements.

Trip Generation

Traffic to be generated by a proposed project is typically generated by rates provided in the Institute of Transportation Engineers *Trip Generation*[2] manual. Research of the ITE Trip Generation Manual determined that there are no land use codes for this specific type of development. Since there are no existing skate parks within the area that are stand alone are a stand along use and usually part of a larger public park, it was determined that the closest land use code LUC411 Public Park was the most appropriate. Since the majority of the uses of the proposed skate park would be adolescents and teenagers the trip generation during the AM and PM peak hours were determined based on the peal hour of the generator and not the adjacent street traffic. In addition, it should be noted that the majority of the users of this type of facility will most likely get to/from the existing site utilizing non-vehicular means (walking or biking) or by utilizing the existing bus stop on Borthwick Ave approximately one mile west of

[1] "*A Policy on the Geometric Design of Highways and Street*" American Association of State Highway Officials (AASHTO), Washington, DC 2018

[2] "Trip Generation Manual, 11th edition, Institute of Transportation Engineers, Washington, SC 2022.

the site. Since LUC 411 Public Park only contains data for vehicular trips it is consider conservative (worse case). Since LUC411 utilizes acres as the independent variable in the calculation of trip generation the size of the entire parcel was utilized since it is all public land. The trip generation data are summarized in Table 2 below. Trip Generation data are included at the end of the memorandum.

Therefore, it is anticipated that the proposed site would generate approximately 13 trips (8 trips entering and 5 exiting) during the AM peak hour of the generator, 16 trips (10 trips entering and 6 trips exiting) during the PM peak hour of the generator, and 27 trips (15 trips entering and 12 trips exiting) during the Saturday peak hour of the generator. The results of the trip generation for the proposed facility are shown below in Table 2.

Table 2 - Trip Generation

Site Driveway	Proposed Trips LUC 411 – Public Park
AM Peak Hour	
In	8
Out	5
Total	13
PM Peak Hour	
In	10
Out	6
Total	16
SAT Peak Hour	
In	15
Out	12
Total	27

Trip Distribution

The distribution of the proposed new site traffic on the area roadways and intersections is based on the existing travel patterns observed and location of the site in relation to population density. This site is located on the western side of the city. It is easily accessible by car to the downtown area by either Middle Road or Islington Street both of which are located to the east of the site. Therefore, it is anticipated that approximately 70% of all vehicle traffic will be destined to/from the east along Greenland Road.

Parking Generation

Parking needs by a proposed project are typically determined based on local regulations. The City of Portsmouth Zoning Ordinance Section 10.1112.321 states that for *Municipally owned and operated park and related activities* that there is no parking requirement. Therefore, the ITE Parking Generation Manual[3], was researched to determine the parking generation for the site. Similar to the Trip Generation information, there are no land use codes for this specific type of development. Since there are no existing skate parks within the area that are stand alone are a stand along use and usually part of a larger public park, it was determined that the closest land use code LUC411 Public Park was the most

[3] Parking Generation Manual, 5th edition, Institute of Transportation Engineers, Washington, DC 2019

appropriate. Unfortunately the data provided is limited and only contains information for a Saturday. Since this lines up with the highest trip generation information it appeared this would be reasonable to use. Based on the overall size of the site, 5 acres, the parking requirements for this site would be five (5 vehicles). Since this number seemed quite low we also considered the trip generation estimates for a Saturday and assumed that if up to 75% of the cars entering/exiting the site during the Saturday peak hour would need to park on site, there would be a need for approximately 21 spaces. Since the proposed lot will contain 25 spaces it is believed that the site will have adequate parking to meet the need.

Conclusion

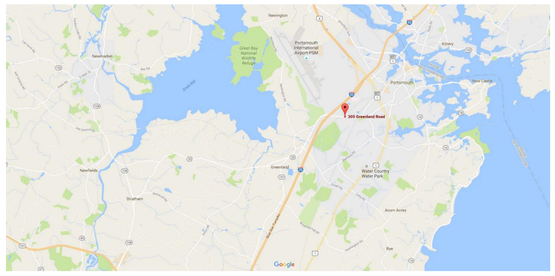
The proposed skate park will mostly be utilized by adolescents and teenagers who will use non-vehicular means to get to the site. If the users come by car, the trip generation estimated provided in this memorandum are small and are oriented mostly to/from the east along Greenland Road. Therefore, the majority of the entering traffic will be right turns into the site which should not impede traffic flow and left turns out where any queues are contained on site while vehicles wait for a gap in the traffic flow. For the traffic turning left into the site there is an existing left-turn lane along Greenland Road where vehicles can safely wait for a gap in the westbound traffic to enter the site. Therefore, it is anticipated that the proposed use will not significantly impact the existing traffic operations along Greenland Road.

CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH. 03801

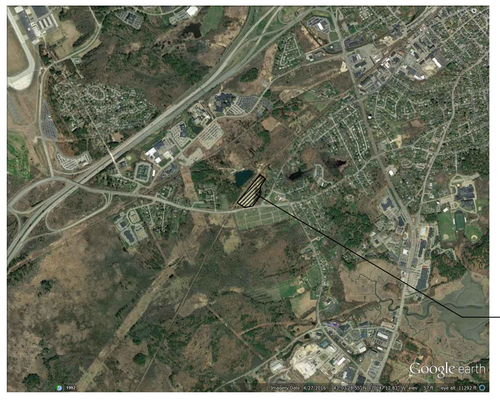
(603) 766-1755
ATTN: CHRISTINE SPROVIERO

WESTON & SAMPSON ENGINEERS, INC.
85 DEVONSHIRE STREET, 3RD FLOOR
BOSTON, MA 02109
(617)412-4480
ATTN: BRANDON KUNKEL

Locus Map



Aerial Map

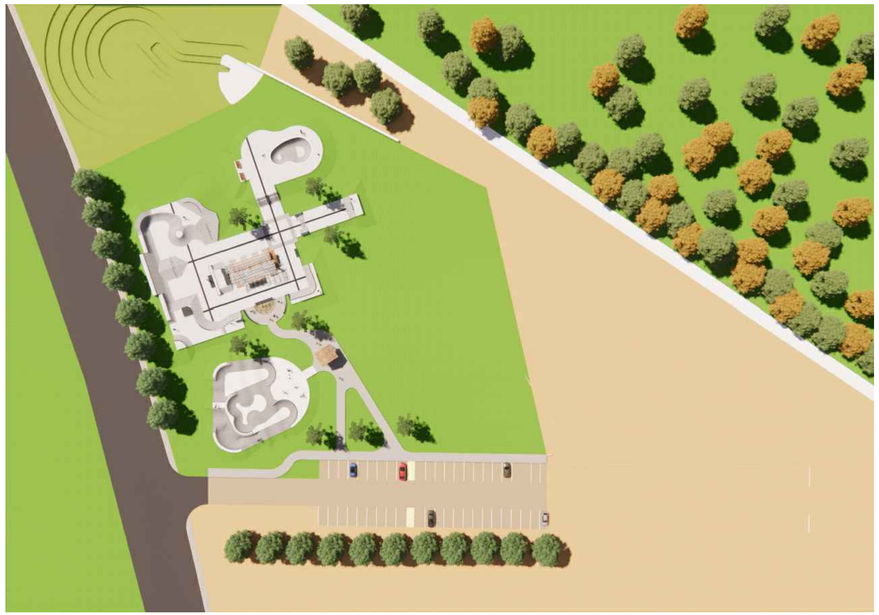


ROUTE 33

SKATE PARK

305 GREENLAND RD
PORTSMOUTH, NH.

WSE PROJECT ENG22-0627



January 2023

Prepared By

85 Devonshire Street, 3rd Floor, Boston, MA 02109
www.westonandsampson.com

STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
LICENSED PROFESSIONAL ENGINEER
1/23/2023

SHEET INDEX

SITE PERMIT APPLICATION,
NOT FOR CONSTRUCTION

ADD ALTERNATE | SKATEPARK SHADE STRUCTURE
UNDER ADD ALTERNATE THE CONTRACTOR SHALL PURCHASE AND INSTALL SHADE STRUCTURE IN ACCORDANCE WITH THE SPECIFICATIONS, PLANS AND DETAILS.

ZONING INFORMATION:

OWNER: CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH. 03801

ZONE: M

TAX MAP: 241, LOT 18

ZONING REQUIREMENTS: LOTS AND BUILDINGS IN THE MUNICIPAL DISTRICT ARE EXEMPT FROM ALL DIMENSIONAL AND INTENSITY REGULATIONS.SEE SECTION 10.560 OF THE CITY OF PORTSMOUTH ZONING ORDINANCE.

ABUTTER INFORMATION:

MAP 165 LOT 14
N/F
BOSTON AND MAINE CORPORATION
IRON HORSE PARK
HIGH STREET
NORTH BILLERICA, MA 01862

MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF MANCHESTER
CHURCH OF IMMAC CONCEPTION
98 SUMMER STREET
PORTSMOUTH, NH 03801

MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE
FISH AND GAME DEPARTMENT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#739

MAP 241 LOT 20
N/F
ANDREW H. SHERBURNE REVOCABLE TRUST
24 TONGA DRIVE
BOW, NH 03304
RCRD BK.#5289 PG.#138

SURVEY PREPARED BY:

TFM
MSC
A division of TFMoran, Inc.
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.mscengineers.com

CONTROL POINT ASSOCIATES INC.

ENG22-0627 | Portsmouth, NH | ROUTE 33. SKATE PARK | PERMIT DOCUMENTS

L000

P:\NH\Portsmouth, NH\RTE 33. Recreation_Field\Cad_Arch\Cx-Current_Work\dwg\Site\SHEETS\COVER.dwg

GENERAL NOTES

1. PROPERTY LINES, SITE SURVEY AND TOPOGRAPHICAL INFORMATION BASED ON THE GROUND SURVEY PERFORMED BY TFM/ MSC, 170 COMMERCE WAY, SUITE 102, PORTSMOUTH, NH, 03801, (603) 431-2222 ON OCTOBER 16, 2016 AND SUPPLEMENTED BY CONTROL POINT ASSOCIATES, 352 TURNPIKE RD., SUITE 320, SOUTHBOROUGH, MA 01772, 508-948-3000 ON AUGUST 22.2022.

2. ALL BIDDERS ARE REQUIRED TO INSPECT THE PROJECT SITE IN ITS ENTIRETY PRIOR TO SUBMITTING THEIR BID, AND BECOME FAMILIAR WITH ALL CONDITIONS AS THEY MAY AFFECT THEIR BID. CONTRACTOR AND SUB-CONTRACTOR SHALL BE FAMILIAR WITH ALL DRAWINGS AND SPECIFICATIONS PRIOR TO COMMENCING THE CONSTRUCTION.

3. LOCATIONS OF ANY UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF SUCH UTILITIES, PROTECTING ALL EXISTING UTILITIES AND REPAIRING ANY DAMAGE DONE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE COORDINATION WITH UTILITY COMPANIES AND PUBLIC AGENCIES AND FOR OBTAINING ALL REQUIRED PERMITS AND PAYING ALL REQUIRED FEES. IN ACCORDANCE WITH THE CITY OF PORTSMOUTH AND THE STATE OF NEW HAMPSHIRE, INCLUDING AMENDMENTS, CONTRACTORS SHALL NOTIFY ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING PRIOR TO EXCAVATION. CONTRACTOR SHALL ALSO CALL "DIG SAFE" AT (888) 344-7233 NO LESS THAN 72 HOURS, (EXCLUSIVE OF WEEKENDS AND HOLIDAYS), PRIOR TO SUCH EXCAVATION. DOCUMENTATION OF REQUESTS SHALL BE PROVIDED TO PROJECT REPRESENTATIVE PRIOR TO EXCAVATION WORK.

4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.

5. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ELECTRIC AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER AT NO ADDITIONAL COST TO THE CITY OF PORTSMOUTH.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ALL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE EXTENT OF EXCAVATION AND DEMOLITION REQUIRED TO RECEIVE SITE IMPROVEMENTS.

7. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE DRAWINGS AND EXISTING CONDITIONS, EXISTING CONDITIONS TO REMAIN, TEMPORARY CONSTRUCTION, PERMANENT CONSTRUCTION AND WORK OF ADJACENT CONTRACTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER BEFORE PROCEEDING. ITEMS ENCOUNTERED IN AREAS OF EXCAVATION THAT ARE NOT INDICATED ON THE DRAWINGS, BUT ARE VISIBLE ON SURFACE, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER.

8. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE GENERAL CONTRACTOR ON THE "AS-BUILT" DRAWINGS.

9. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS OUTSIDE THE PROJECT LIMITS, SHALL BE RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.

10. ALL WORK SHOWN ON THE PLANS AS BOLD SHALL REPRESENT PROPOSED WORK. THE TERM "PROPOSED (PROP)" INDICATES WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND SALVAGE (R&S)", OR REMOVE, RELOCATE, SALVAGE, (R,R&S).

11. ALL KNOWN EXISTING STATE, COUNTY AND CITY LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND ARE INDICATED ON THE PLANS.

12. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT HIS EMPLOYEES, AS WELL AS PUBLIC USERS FROM INJURY DURING THE ENTIRE CONSTRUCTION PERIOD USING ALL NECESSARY SAFEGUARDS, INCLUDING BUT NOT LIMITED TO, THE ERECTION OF TEMPORARY WALKS, STRUCTURES, PROTECTIVE BARRIERS, COVERING, OR FENCES AS NEEDED.

13. THE CONTRACTOR SHALL SUPPLY THE OWNER WITH THE NAME OF THE OSHA "COMPETENT PERSON" PRIOR TO CONSTRUCTION.

14. FILLING OF EXCAVATED AREAS SHALL NOT TAKE PLACE WITHOUT THE PRESENCE OR PERMISSION OF THE OWNER.

15. EXISTING TREES TO REMAIN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES. NO STOCKPILING OF MATERIAL, EQUIPMENT OR VEHICULAR TRAFFIC SHALL BE ALLOWED WITHIN THE DRIP LINE OF TREES TO REMAIN. NO GUYS SHALL BE ATTACHED TO ANY TREE TO REMAIN. WHEN NECESSARY OR AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL ERECT TEMPORARY BARRIERS FOR THE PROTECTION OF EXISTING TREES DURING CONSTRUCTION.

16. TREES AND SHRUBS WITHIN THE LIMITS OF WORK SHALL BE REMOVED ONLY UPON THE APPROVAL OF THE LANDSCAPE ARCHITECT OR AS NOTED ON THE PLANS.

17. NO FILLING SHALL OCCUR AROUND EXISTING TREES TO REMAIN WITHOUT THE APPROVAL OF THE OWNER OR OWNER REPRESENTATIVE.

18. THE CONTRACTOR SHALL REMOVE ALL SURFACE VEGETATION PRIOR TO GRADING THE SITE. TREES AND STUMPS SHALL BE REMOVED AND DISPOSED COMPLETE BY CONTRACTOR. TEMPORARY EROSION CONTROL MEASURES SHOWN ON THE DRAWINGS (INCLUDING SILT FENCE, STRAW WATTLES, OR SILT SOCKS) SHALL BE INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THESE TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE PROJECT WHICH COST SHALL BE INCIDENTAL TO THE PROJECT.

19.

20. ALL UNSUITABLE UNCONTAMINATED EXCESS SOIL FROM CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY. REMOVAL ACTIVITIES SHALL BE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS AT NO ADDITIONAL COST TO THE CITY. SUITABLE SOIL EXCAVATION AS PART OF THE PROJECT MUST MEET ONE OR MORE OF THE MATERIAL REQUIREMENTS SPECIFIED. ON-SITE FILL MATERIALS, WHICH DO NOT CONFORM TO THE SPECIFICATIONS, SHALL NOT BE USED BELOW ANY STRUCTURES. IF THE CONTRACTOR PROPOSES TO USE THE EXISTING FILL ON SITE BELOW PAVEMENT AREAS, HE MUST DEMONSTRATE THAT THE FILL MEETS THE REQUIREMENTS PER THE SPECIFICATIONS. ALL EXCAVATED FILL MATERIAL WHICH DOES NOT MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT NO ADDITIONAL COST.

21. CONTRACTOR IS RESPONSIBLE FOR STAKING CONSTRUCTION BASELINES IN FIELD WITH A NEW HAMPSHIRE REGISTERED PROFESSIONAL LAND SURVEYOR. NO CONSTRUCTION WILL BE PERFORMED WITHOUT THE PROPOSED BASELINES AND LAYOUTS APPROVED BY THE ENGINEER.

22. NO FILL SHALL CONTAIN HAZARDOUS MATERIALS.

23. CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AROUND PERIMETER OF WORK AREA (LIMIT OF WORK). FENCE SHALL NOT IMPEDE TRAVEL WAYS.

24. ANY QUANTITIES SHOWN ON PLANS ARE FOR COMPARATIVE BIDDING PURPOSES ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE PROJECT SITE TO VERIFY ALL QUANTITIES AND CONDITIONS PRIOR TO SUBMITTING BID.

25. ALL EXISTING DRAINAGE FACILITIES TO REMAIN SHALL BE MAINTAINED FREE OF DEBRIS, SOIL, SEDIMENT, AND FOREIGN MATERIAL AND OPERATIONAL THROUGHOUT THE LIFE OF THE CONTRACT. REMOVE ALL SOIL, SEDIMENT, DEBRIS AND FOREIGN MATERIAL FROM ALL DRAINAGE STRUCTURES, INCLUDING BUT NOT LIMITED TO, DRAINAGE INLETS, MANHOLES AND CATCH BASINS WITHIN THE LIMIT OF WORK AND DRAINAGE STRUCTURES OUTSIDE THE LIMIT OF WORK THAT ARE IMPACTED BY THE WORK FOR THE ENTIRE DURATION OF CONSTRUCTION.

26. CONTRACTOR'S STAGING AREA MUST BE WITHIN THE CONTRACT LIMIT LINE AND IN AREAS APPROVED BY OWNER. ANY OTHER AREAS THAT THE CONTRACTOR MAY WISH TO USE FOR STAGING MUST BE COORDINATED WITH THE OWNER.

27. THE CONTRACTOR SHALL KEEP ALL STREETS, PARKING LOTS AND WALKS THAT ARE NOT RESTRICTED FROM PUBLIC USE DURING CONSTRUCTION BROOM CLEAN AT ALL TIMES. THE CONTRACTOR SHALL USE ACCEPTABLE METHODS AND MATERIALS TO MAINTAIN ADEQUATE DUST CONTROL THROUGHOUT CONSTRUCTION.

28. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER.

29. CONTRACTOR SHALL DEWATER AS NECESSARY TO PERFORM THE PROPOSED WORK. CONTRACTOR SHALL BE AWARE OF ANY PERCHED GROUNDWATER.

30. THE LIMIT OF WORK SHALL BE DELINEATED IN THE FIELD PRIOR TO THE START OF SITE CLEARING OR CONSTRUCTION AND AGREED UPON WITH THE OWNER.

31. DEEP SUMP CATCH BASINS AND STORMWATER BASIN SHALL BE CLEANED FOLLOWING CONSTRUCTION AND SHALL FOLLOW THE OPERATION AND MAINTENANCE PLAN THEREAFTER.

32. HAULING OF EARTH MATERIALS TO AND FROM THE SITE SHALL BE RESTRICTED TO THE HOURS OF 7 AM TO 5 PM.

33.

34. ANY BOULDERS 3 CU. YDS. OR SMALLER SHALL BE CONSIDERED UNDOCUMENTED FILL AND SHALL BE DISPOSED OF AT NO ADDITIONAL COST TO THE CITY.

35. WORK ON SATURDAYS SHALL ONLY BE CONDUCTED IF PRIOR WRITTEN PERMISSION IS PROVIDED BY THE CITY.

36. NO TRUCKS LEFT IDLING ON CITY STREETS DURING CONSTRUCTION. CONSTRUCTION TRAFFIC AT NO TIME SHALL IMPEDE FLOW OF RESIDENT TRAFFIC.

EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE PUT INTO PLACE PRIOR TO BEGINNING ANY CONSTRUCTION OR DEMOLITION. REFER TO PLANS FOR APPROXIMATE LOCATION OF EROSION AND SEDIMENT CONTROL. REFER TO SPECS AND DETAILS FOR TYPE OF EROSION AND SEDIMENT CONTROL.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUAL MAINTENANCE OF ALL CONTROL DEVICES THROUGHOUT THE DURATION OF THE PROJECT.

3. CONTRACTOR SHALL MEET ALL OF THE STATE OF NEW HAMPSHIRE D.E.P. AND THE CITY OF PORTSMOUTH REGULATIONS FOR SEDIMENT AND EROSION CONTROL.

4. EXCAVATED MATERIAL STOCKPILED ON THE SITE SHALL BE SURROUNDED BY A RING OF UNBROKEN SEDIMENT AND EROSION CONTROL FENCE. THE LIMITS OF ALL GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE APPROVED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THE LIMIT OF CONTRACT SHALL REMAIN TOTALLY UNDISTURBED UNLESS OTHERWISE APPROVED BY OWNER'S REPRESENTATIVE.

5. ALL CATCH BASINS AND DRAIN GRATES WITHIN LIMIT OF CONTRACT SHALL BE PROTECTED WITH SILT SACKS DURING THE ENTIRE DURATION OF CONSTRUCTION.

6. EROSION CONTROL BARRIERS TO BE INSTALLED AT THE TOE OF SLOPES. SEE GRADING & DRAINAGE PLANS, NOTES, DETAILS AND SPECIFICATIONS.

7. THE CONTRACTOR SHALL PROVIDE DUST CONTROL FOR CONSTRUCTION OPERATIONS AS APPROVED BY OWNER.

8. ALL POINTS OF CONSTRUCTION EGRESS OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ON TO PUBLIC/PRIVATE ROADS.

DEMOLITION & SITE PREPARATION NOTES

1. REMOVING ANY EXISTING SITE FEATURES AND APPURTENANCES NECESSARY TO ACCOMPLISH THE CONSTRUCTION OF THE PROPOSED SITE IMPROVEMENTS. THE CONTRACTOR SHALL ALSO INCLUDE IN THE BID THE COST NECESSARY TO RESTORE SUCH ITEMS IF THEY ARE SCHEDULED TO REMAIN AS PART OF THE FINAL SITE IMPROVEMENTS. REFER TO PLANS TO DETERMINE EXCAVATION, DEMOLITION AND TO DETERMINE THE LOCATION OF THE PROPOSED SITE IMPROVEMENTS.

2. THE OWNER RESERVES THE RIGHT TO REVIEW ALL MATERIALS DESIGNATED FOR REMOVAL AND TO RETAIN OWNERSHIP OF SUCH MATERIALS. IF THE OWNER RETAINS ANY MATERIAL THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OWNER TO HAVE THOSE MATERIALS REMOVED OFF SITE AT NO ADDITIONAL COST.

3. UNLESS SPECIFICALLY NOTED TO BE REMOVED / SALVAGED (R&S), ALL SITE FEATURES CALLED FOR REMOVAL (REM) SHALL BE REMOVED WITH THEIR FOOTINGS, ATTACHMENTS, BASE MATERIAL, ETC, TRANSPORTED FROM THE SITE TO BE DISPOSED OF IN A LAWFUL MANNER AT AN ACCEPTABLE DISPOSAL SITE AND AT NO ADDITIONAL COST TO THE OWNER.

4. ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.

5. DURING EARTHWORK OPERATIONS, CONTRACTOR SHALL TAKE CARE TO NOT DISTURB EXISTING MATERIALS TO REMAIN, OUTSIDE THE LIMITS OF EXCAVATION AND BACKFILL AND SHALL TAKE WHATEVER MEASURES NECESSARY, AT THE CONTRACTOR'S EXPENSE, TO PREVENT ANY EXCAVATED MATERIAL FROM COLLAPSING. ALL BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED AS SPECIFIED TO THE SUBGRADE REQUIRED FOR THE INSTALLATION OF THE REMAINDER OF THE CONTRACT WORK.

6. IT SHALL BE THE CONTRACTOR'S OPTION, WITH CONCURRENCE OF THE OWNER, TO REUSE EXISTING GRAVEL IF IT MEETS THE REQUIREMENTS OF THE SPECIFICATIONS FOR GRAVEL BORROW.

7. 'CLEAR AND GRUB VEGETATION' SHALL INCLUDE REMOVAL OF GRASS, SHRUBS, UNDERBRUSH, AND ALL VEGETATION, REMOVAL OF ROOTS, ROUGH GRADING, INSTALLATION OF LOAM (IF APPLICABLE), FINE GRADING, SEEDING AND TURF ESTABLISHMENT BY THE CONTRACTOR.

8. TREES DESIGNATED FOR REMOVAL SHALL BE TAGGED BY CONTRACTOR AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

9. THE STORAGE OF MATERIALS AND EQUIPMENT WILL BE PERMITTED AT LOCATIONS DESIGNATED BY OWNER OR OWNER'S REPRESENTATIVE. PROTECTION OF STORED MATERIALS AND EQUIPMENT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

10. LOAM / TOP SOIL DESIGNATED FOR REUSE AS GENERAL FILL SHALL BE BLENDED WITH SUITABLE BORROW MATERIAL AS SPECIFIED.

11. THE CONTRACTOR SHALL PROTECT EXISTING TREES TO REMAIN, CONTRACTOR SHALL INSTALL TREE PROTECTION BARRIERS AFTER CLEARING UNDERBRUSH AND TAKE DUE CARE TO PREVENT INJURY TO TREES DURING CLEARING OPERATIONS.

Project Team:

Weston & Sampson Engineers, Inc:
85 Devonshire Street, 3rd Floor
Boston, MA 02109
(617) 412-4480

Project Manager: Brandon Kunkel, RLA
Site Designer: Kelly Clifford

Civil Engineer: James Pearson, PE
Project Engineer: Aaron Guazzaloca

Geotechnical Engineer: Daniel Dwyer, PE

Licensed Site Professional: Todd Bridgeo, PE, LSP

Environmental Scientist / Permitting: Devin Herrick, CWS

Pillar Design Studios / Pillar Skateparks
1960 W. Hawk Court
Chandler, AZ 85286
888.880.5112

Brad Siedlecki, President

SPECIAL NOTE:
1. ALL CONDITIONS ON THESE PLANS SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
2. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
3. ALL IMPROVEMENTS SHOW ON THIS SITE PLANS SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLANS BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS.
NO CHANGES SHALL BE MADE TO THIS PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

LAYOUT & MATERIALS NOTES

1. REFER TO EXISTING CONDITIONS PLANS FOR SURVEY INFORMATION (SHEET L1.00).

2. COORDINATE ALL LAYOUT ACTIVITIES WITH THE SCOPE OF WORK CALLED FOR BY DEMOLITION, GRADING AND UTILITIES OPERATIONS ENCOMPASSED BY THIS CONTRACT. SET, PROTECT AND REPLACE REFERENCE STAKES AS NECESSARY OR AS REQUIRED BY THE OWNER'S REPRESENTATIVE.

3. ALL WORK SHALL BE PERFORMED BY CONTRACTOR UNLESS SPECIFICALLY INDICATED THAT THE WORK WILL BE PERFORMED "BY OTHERS" OR "UNDER SEPARATE CONTRACT".

4. TO FACILITATE LAYOUT OF PROPOSED SITE FEATURES AND FACILITIES, LAYOUT INFORMATION FOR CERTAIN FUTURE WORK, WHICH IS NOT INCLUDED WITHIN THE SCOPE OF THIS CONTRACT HAS BEEN PROVIDED ON THE LAYOUT AND MATERIALS PLAN FOR INFORMATION ONLY. SOME ITEMS ARE "NOT IN CONTRACT" (NIC) AND SHOWN FOR REFERENCE ONLY.

5. THE LAYOUT OF SITE AMENITIES AND FENCES MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

6. THE LAYOUT OF ALL NEW PATHWAYS / WALKWAYS AND THE GRADING OF ALL SLOPES AND CROSS SLOPES SHALL CONFORM TO THE NEW HAMPSHIRE RULES AND REGULATIONS FOR HANDICAP ACCESS CMR 521, AND THE AMERICANS WITH DISABILITIES ACT (ADA), TITLE 3. THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE REQUIRED.

7. ALL LAYOUT LINES, OFFSETS, OR REFERENCES TO LOCATING OBJECTS ARE EITHER PARALLEL OR PERPENDICULAR UNLESS OTHERWISE DESIGNATED WITH ANGLE OFFSETS NOTED.

8. ALL PROPOSED SITE FEATURES SHALL BE LAID OUT AND STAKED FOR REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF INSTALLATION. ANY REQUIRED ADJUSTMENTS TO THE LAYOUT SHALL BE UNDERTAKEN AS DIRECTED, AT NO ADDITIONAL COST TO THE OWNER. ALL LAYOUT SHALL BE PERFORMED BY A NH. REGISTERED PROFESSIONAL LAND SURVEYOR.

9. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES. ALL BITUMINOUS CONCRETE SHALL BE TREATED WITH AN RS-1 TACK COAT AT POINT OF CONNECTION. ALL PATHWAY WIDTHS SHALL BE AS NOTED ON THE LAYOUT AND MATERIALS PLAN.

10. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASUREMENT OF ALL PROPOSED FENCES AND GATES.

12. THE DEPTH OF LOAM BORROW FOR ALL PROPOSED LAWN AREAS SHALL BE 6" MINIMUM. ALL DISTURBED AREAS SHALL BE RESTORED WITH LOAM AND SEED UNLESS OTHERWISE NOTED

13. REFER TO DETAIL DRAWINGS FOR CONSTRUCTION DETAILS.

14. SURVEY CONTROL POINTS AND COORDINATES ARE INDICATED ON THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT OR CREATE HIS OWN PROTECTED CONTROL POINTS FROM THIS INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL LAYOUT POINTS ARE CONSISTENT WITH CONTROL INFORMATION. RESETTING OF DAMAGED OR MISSING LAYOUT MARKERS AS NECESSARY IS AT NO ADDITIONAL COST TO THE OWNER.

GRADING, UTILITIES & DRAINAGE NOTES

1. ALL WORK RELATING TO INSTALLATION, RENOVATION OR MODIFICATION OF WATER, DRAINAGE AND/OR SEWER SERVICES SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS OF THE CITY OF PORTSMOUTH DPW AND SHALL BE INSPECTED BY DPW PRIOR TO BACKFILL.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.

3. ALL GRADING IS TO BE SMOOTH AND CONTINUOUS WHERE PROPOSED SURFACES MEET EXISTING SURFACES, ELIMINATE ROUGH SPOTS AND ABRUPT GRADE CHANGES AND MEET LINE AND GRADE OF EXISTING CONDITIONS WITH NEW IMPROVEMENTS.

4. CONTRACTOR SHALL ENSURE ALL AREAS ARE PROPERLY PITCHED TO DRAIN, WITH NO SURFACE WATER PONDING OR PUDDLING.

5. MINIMUM CROSS SLOPE ON ALL WALKWAYS WILL BE 1:100 OR A MAXIMUM OF 1.5% TO PROVIDE POSITIVE DRAINAGE. ANY DISCREPANCIES NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE OWNER PRIOR TO CONTINUING WORK.

6. ALL UTILITY GRATES, COVERS OR OTHER SURFACE ELEMENTS INTENDED TO BE EXPOSED AT GRADE SHALL BE FLUSH WITH THE ADJACENT FINISHED GRADE AND ADJUSTED TO PROVIDE A SMOOTH TRANSITION AT ALL EDGES. ALL UTILITY GRATES WITHIN PLAYING FIELDS OR INDICATED TO BE "BURIED" SHALL BE 4" BELOW FINISH GRADE AND COVERED WITH FINISH MATERIAL INDICATED ON PLANS.

7. THE CONTRACTOR SHALL SET SUBGRADE ELEVATIONS TO ALLOW FOR POSITIVE DRAINAGE AND PROVIDE EROSION CONTROL DEVICES, STRUCTURES, MATERIALS AND CONSTRUCTION METHODS TO DIRECT SILT MIGRATION AWAY FROM DRAINAGE AND OTHER UTILITY SYSTEMS, PUBLIC/PRIVATE STREETS AND WORK AREAS. CLEAN BASINS REGULARLY AS NEEDED AND AT THE END OF THE PROJECT.

8. EXCAVATION REQUIRED WITHIN PROXIMITY OF KNOWN EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.

9. WHERE NEW EARTHWORK MEETS EXISTING GRADE, CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING, PROVIDING VERTICAL CURVES OR ROUNDS AT ALL TOP AND BOTTOM OF SLOPES.

10. WHERE A SPECIFIC LIMIT OF WORK LINE IS NOT OBVIOUS OR IMPLIED, BLEND GRADES TO EXISTING CONDITIONS WITHIN 5 FEET OF PROPOSED CONTOURS.

11. RESTORE ALL DISTURBED AREAS AND LIMITS OF ALL REMOVALS TO LOAM AND SEED (L&S) UNLESS OTHERWISE NOTED.

12. SEE EARTHWORK SECTION OF SPECIFICATIONS FOR SPECIFIC EXCAVATION AND FILLING PROCEDURES.

13. FOR STRUCTURE REMODELING (REMOD), CONSTRUCTION METHODS SHALL FOLLOW NEW HAMPSHIRE DOT STANDARD SPEC. LATEST EDITION.

14. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL UTILITY SERVICE CONNECTIONS WITH EVERSOURCE ENERGY, PORTSMOUTH, NH, EASTERN DIVISION (603) 519-0924

DIG SAFE
MA ME NH RI VT
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CALL 811 TOLL FREE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
LICENSED PROFESSIONAL ENGINEER
1/23/2023

PROP	PROPOSED
ADJ	ADJUST
BIT. CONC.	BITUMINOUS CONCRETE
CEM. CONC.	CEMENT CONCRETE
B	BASELINE
N.T.S.	NOT TO SCALE
BVCL	BLACK VINYL CHAIN LINK
B.M.	BENCH MARK
ABAN	ABANDON
MB	MAIL BOX
GRAN. CURB	GRANITE CURB
EXIST. (OR EX.)	EXISTING
FDN	FOUNDATION
F.L. (OR F)	FLOW LINE
P	PROPERTY LINE
PVMT	PAVEMENT
P.W.W.	PAVED WATERWAY
RC	REINFORCED CONCRETE
M.H.B.	NEW HAMPSHIRE HIGHWAY BOUND
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
R.O.W.	RIGHT-OF-WAY
R&S	REMOVE AND SALVAGE
R,R&S	REMOVE, RELOCATED AND SALVAGE
R&S	REMOVE AND STACK
R&D	REMOVE AND DISPOSE
SB	STONE BOUND
NIC	NOT IN CONTRACT
H.C.	HANDICAP
WCR	WHEELCHAIR RAMP
FF	FINISHED FLOOR
HMA	HOT MIX ASPHALT
G.C.	GENERAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
SWEL	SOLID WHITE EDGE LINE
BWLL	BROKEN WHITE LANE LINE
SYEL	SOLID YELLOW EDGE LINE
SB/DH	STONE BOUND/ DRILL HOLE
CLF	CHAIN LINK FENCE
TEMP.	TEMPORARY
TYP.	TYPICAL
EQ	EQUIPMENT
H.C.	HANDICAP
EOP	EDGE OF PAVEMENT
PROT	PROTECT
CTE	CONNECT TO EXISTING
RL	ROOF LEADER
L.O.W.	LIMIT OF WORK
VIF	VERIFY IN FIELD
BVW	BORDERING VEGETATED WETLAND

UTILITIES

GICI	GUTTER INLET W/ CURB INLET
CBCI	CATCH BASIN W/ CURB INLET
CB	CATCH BASIN
C.I.T.	CHANGE IN TYPE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
CI	CURB INLET
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
DI	DRAIN INLET
GI	GUTTER INLET
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
HYD	HYDRANT
INV. ELEV.	INVERT ELEVATION
UP	UTILITY POLE
SMH	SEWER MANHOLE
WG	WATER GATE
DS	DOWN SPOUT
HDPE	HIGH DENSITY POLYETHYLENE PIPE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
DMH	DRAIN MANHOLE
LB	LEACHING BASIN
LG	LEACHING GALLEY
CI	CAST IRON
OCS	OUTLET CONTROL STRUCTURE
OGT	OIL AND GRIT TRAP
VC	VITRIFIED CLAY PIPE
LP	LIGHT POLE
OHW	OVERHEAD WIRE
UPLP	UTILITY POLE WITH LIGHT
SWTU	STORM WATER TREATMENT UNIT
HH	HANDHOLE
GW	GARAGE WASTE
CO	CLEANOUT
LC	LEACHING CHAMBER
GV	GATE VALVE
CU	CONNECTION UNKNOWN

ALIGNMENT/GRADING

BW	BOTTOM OF WALL
BC	BOTTOM OF CURB
PI	POINT OF INTERSECTION
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVC	POINT OF VERTICAL CURVATURE
PVT	POINT OF VERTICAL TANGENCY
ELEV	ELEVATION
CC	CENTER OF CURVE
H.P.	HIGH POINT
L.P.	LOW POINT
R	RADIUS OF CURVATURE
STA	STATION
S.S.D.	STOPPING SIGHT DISTANCE
TC	TOP OF CURB
TW	TOP OF WALL

PILLAR DESIGN STUDIOS

Weston & Sampson design studio
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT::
PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE::
GENERAL NOTES
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET::
L001
SKATE PARK

Locus Map

Aerial Map

SCALE: 1" = 20' - 0"

0 20 40 60

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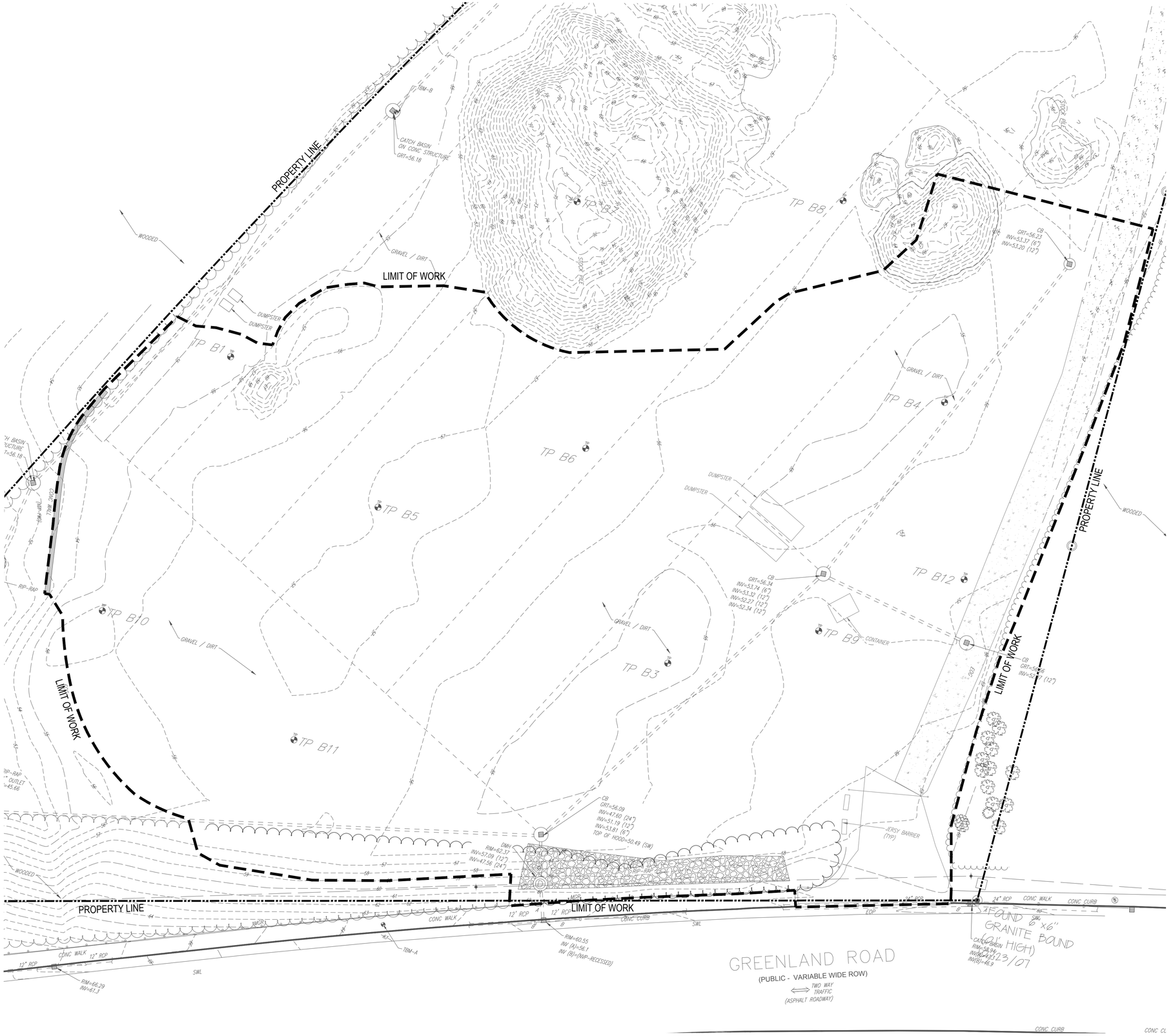
PROJECT::
PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE::
SITE PLAN
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET::
L002
SKATE PARK



LEGEND

	LIMIT OF WORK
	PROPERTY LINE
	GUARDRAIL
	EDGE OF WOODS
	OVERHEAD UTILITIES
65	EXISTING CONTOUR
	EXISTING DRAIN
	CATCH BASIN
	UTILITY POLE
	DRAIN MANHOLE
	RIPRAP
	GRAVEL

BK.2562/PG.2783	BOOK NO./PAGE NO.
CB	CATCH BASIN
CPP	CORRUGATED PLASTIC PIPE
DMH	DRAINAGE MANHOLE
EP	EDGE OF PAVEMENT
FES	FLARED END SECTION
HDPE	HIGH DENSITY POLYETHYLENE
INV.	INVERT
L	LENGTH OF CURVE
N/F	NOW OR FORMERLY
PSNH	PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCP	REINFORCED CONCRETE PIPE
S.F.	SQUARE FEET
TP	TEST PIT

NOTES

1. THE PARCEL IS LOCATED IN THE MUNICIPAL DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 241 AS LOT 18.
3. THE PARCEL IS LOCATED IN FLOOD ZONE X AS SHOWN ON FLOOD INSURANCE RATE MAP, ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 270 OF 681, MAP NUMBER 33015C0270E, EFFECTIVE DATE: MAY 17, 2005.
4. OWNER OF RECORD:
   CITY OF PORTSMOUTH
   C/O WATER DEPARTMENT
   DEPARTMENT OF PUBLIC WORKS
   PO BOX 628
   PORTSMOUTH, NH 03802
5. ZONING REQUIREMENTS:
   LOTS AND BUILDINGS IN THE MUNICIPAL DISTRICT ARE EXEMPT FROM ALL DIMENSIONAL AND INTENSITY REGULATIONS.
   SEE SECTION 10.560 OF THE CITY OF PORTSMOUTH ZONING ORDINANCE.
6. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). CONTOUR INTERVAL IS 1'.
7. HORIZONTAL DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83).
8. THE UNDERGROUND SYSTEM SHOWN HEREON WAS NOT FIELD LOCATED. LOCATION TAKEN FROM "GRADING PLAN ROUTE 33 RECREATION AREA" BY UNDERWOOD ENGINEERS, DATED 12/17/2013. THIS LOCATION SHOWN HEREON IS APPROXIMATE ONLY.
9. EXISTING CONDITIONS SURVEY PERFORMED BY _____
   DATED _____

PLAN REFERENCES:

1. "LOT LINE ADJUSTMENT ISLINGTON STREET & GREENLAND ROAD, PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH" BY JAMES VERRA AND ASSOCIATES, INC. DATED 1-30-2002. PLAN NOT RECORDED.
2. "RIGHT OF WAY EASEMENT PLAN FOR THE CITY OF PORTSMOUTH, GREENLAND ROAD/MIDDLE ROAD, PORTSMOUTH, NEW HAMPSHIRE" PREPARED BY VANASSE HANGEN BRUSTLIN, INC., DATED SEPTEMBER 28, 2007, REVISED APRIL 28, 2008. RCRD PLAN #D-35481.
3. "AS BUILT PLAN OF A PORTION OF NH ROUTE 33, PORTSMOUTH, NEW HAMPSHIRE" BY AMBIT ENGINEERING, INC. DATED AUGUST 2010, REVISED 9/21/10. PLAN NOT RECORDED.
4. "EXISTING FEATURES PLAN TAX MAP 241 LOT 18 PROPERTY OF CITY OF PORTSMOUTH 305 GREENLAND ROAD PORTSMOUTH, NEW HAMPSHIRE COUNTY OF ROCKINGHAM" BY MSC CIVIL ENGINEERS & LAND SURVEYORS, DATED NOVEMBER 2, 2012 WITH REVISION 1 DATED 11/05/2012. PLAN IS NOT RECORDED.

TFM MSC — A division of TFMoran, Inc.
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.mscengineers.com

CONTROL POINT ASSOCIATES, INC.

SCALE: 1" = 20' - 0"
0 20 40 60

STATE OF NEW HAMPSHIRE — JAMES L. PEARSON No. 14212 LICENSED PROFESSIONAL ENGINEER
1/23/2023

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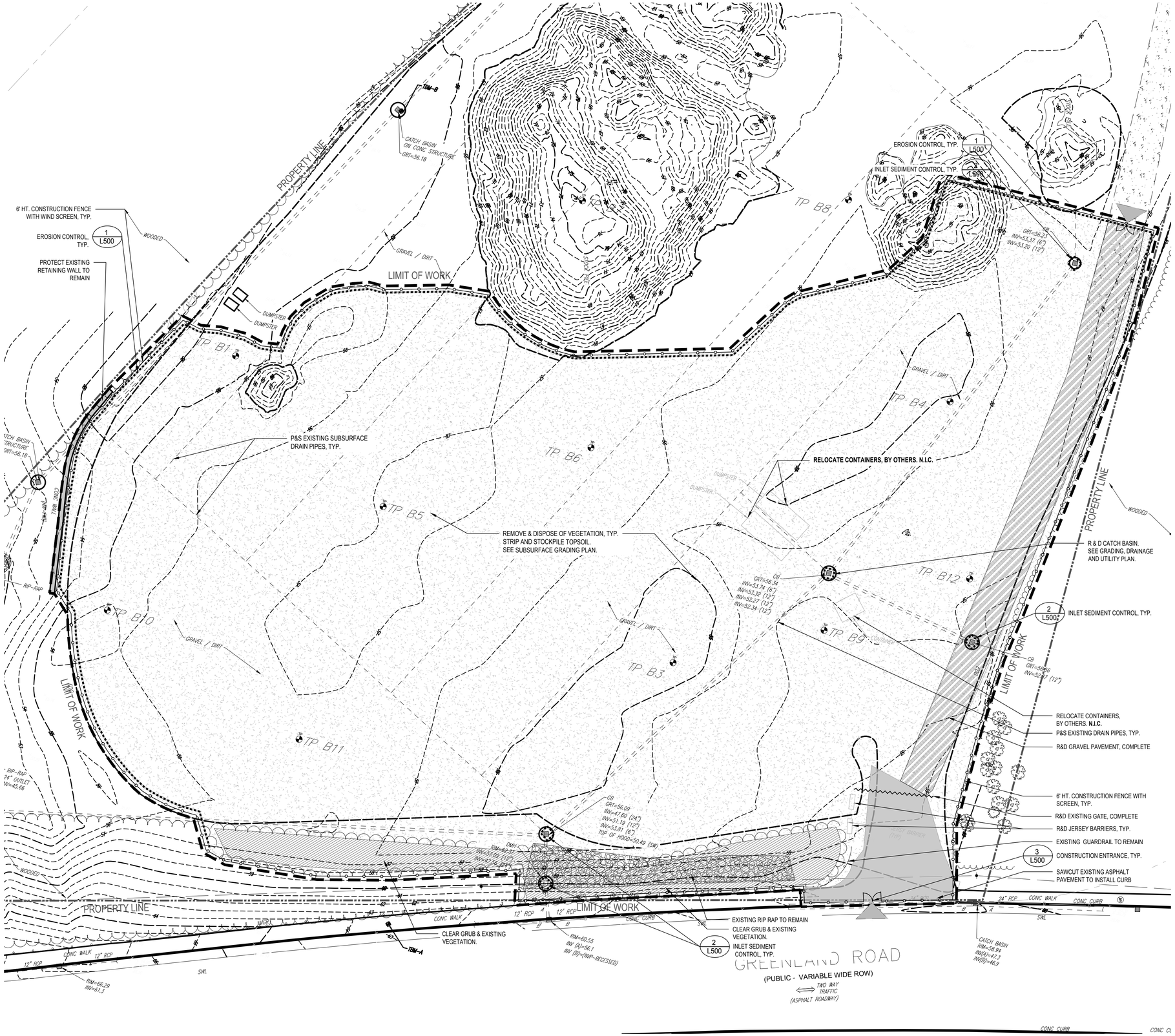
PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: EXISTING CONDITIONS
SITE PLAN APPLICATION – NOT FOR CONSTRUCTION

SHEET:: L100
SKATE PARK



LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- CLEAR & GRUB EX. VEGETATION
- R&D GRAVEL PAVEMENT, COMPLETE
- R&D VEGETATION, COMPLETE
- EXISTING ASPHALT PAVEMENT
- EROSION CONTROLS
- INLET SEDIMENT CONTROL, TYP.
- 6' HT. CONSTRUCTION FENCE WITH WIND SCREEN, TYP.
- R&D EXISTING GATE, COMPLETE
- CONSTRUCTION ENTRANCE

TYP.	TYPICAL
EX.	EXISTING
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STORE
P&S	PROTECT AND SAVE

NOTES

1. CONTRACTOR SHALL REMOVE ALL ASPHALT, BIT. CONCRETE, RUBLE, DEBRIS, AND ALL MATERIAL WITHIN PHASE 1 LIMIT OF WORK NECESSARY AROUND ENTIRE SITE PRIOR TO CONSTRUCTION.
2. REMOVE ALL VEGETATION WITHIN THE ENTIRE CONSTRUCTION SITE AS SHOWN ON THE PLANS. AS DETERMINED BY THE ENGINEER/LANDSCAPE ARCHITECT.
3. EX. DRAINAGE SYSTEM CONNECTS TO STORMWATER FROM GREENLAND ROAD, AND MUST BE KEPT CLEAN AND OPERATIONAL THROUGHOUT THE DURATION OF THE PROJECT.

PROPOSED BORING LOCATIONS 1-16

STATE OF NEW HAMPSHIRE – JAMES I. PEARSON No. 14212 LICENSED PROFESSIONAL ENGINEER – 1/23/2023

SCALE: 1" = 20' - 0"

0 20 40 60

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85 Devonshire Street
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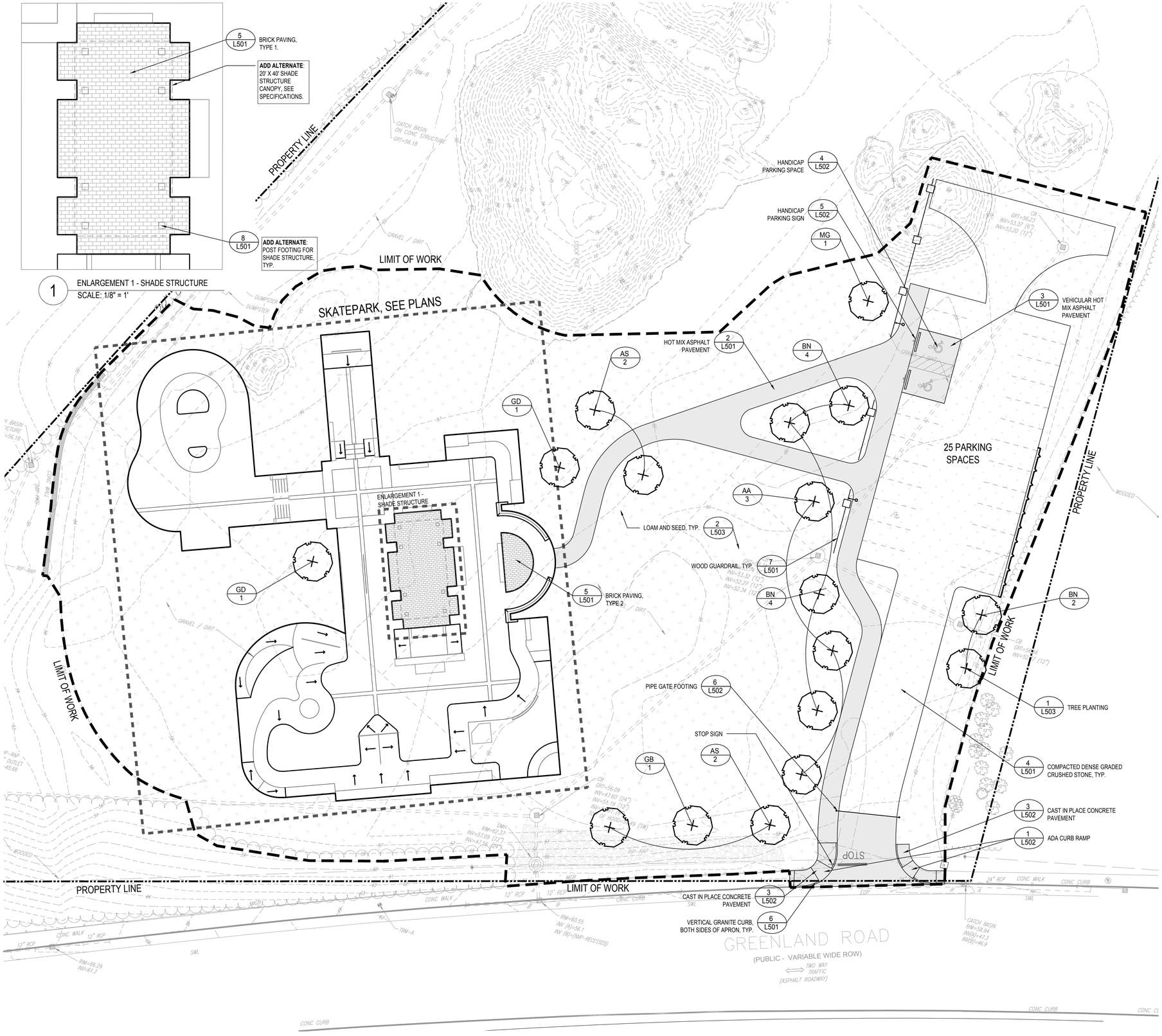
www.westonandsampson.com

DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT:: **PORTSMOUTH SKATEPARK**
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: SITE PREPARATION AND DEMOLITION PLAN
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET:: **L110** SKATE PARK



LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- ENLARGEMENT
- COMPACTED DENSE GRADED CRUSHED STONE
- LOAM AND SEED
- HOT MIX ASPHALT PAVEMENT
- BRICK PAVERS
- PROPOSED TREE

STATE OF NEW HAMPSHIRE – JAMES L. PEARSON No. 14212 LICENSED PROFESSIONAL ENGINEER

1/23/2023

PLANT SCHEDULE - **NOT IN CONTRACT**

TREES

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	NOTES
AA	3	AMELANCHIER ARBOREA	SERVICE BERRY	2"-2.5" CAL.	B&B	
AS	4	ACER SACCHARUM	SUGAR MAPLE	2"-2.5" CAL.	B&B	MULTI-TRUNK
BN	6	BETULA NIGRA	RIVER BIRCH	12-14' HEIGHT	B&B	
GB	1	GINGKO BILOBA	GINGKO	2"-2.5" CAL.	B&B	
GD	2	GYMNOCLADUS DIOICUS	ESPRESSO COFFEETREE	2"-2.5" CAL.	B&B	
MG	1	METASEQUOIA GLYPTOSTROBOIDES	DAWN REDWOOD	2"-2.5" CAL.	B&B	

Note:
1. The tree planting schedule is for reference only. The City of Portsmouth shall install all trees at a future date. Under this contract the contractor shall loam and seed all disturbed areas complete.

SCALE: 1" = 20' - 0"
0 20 40 60

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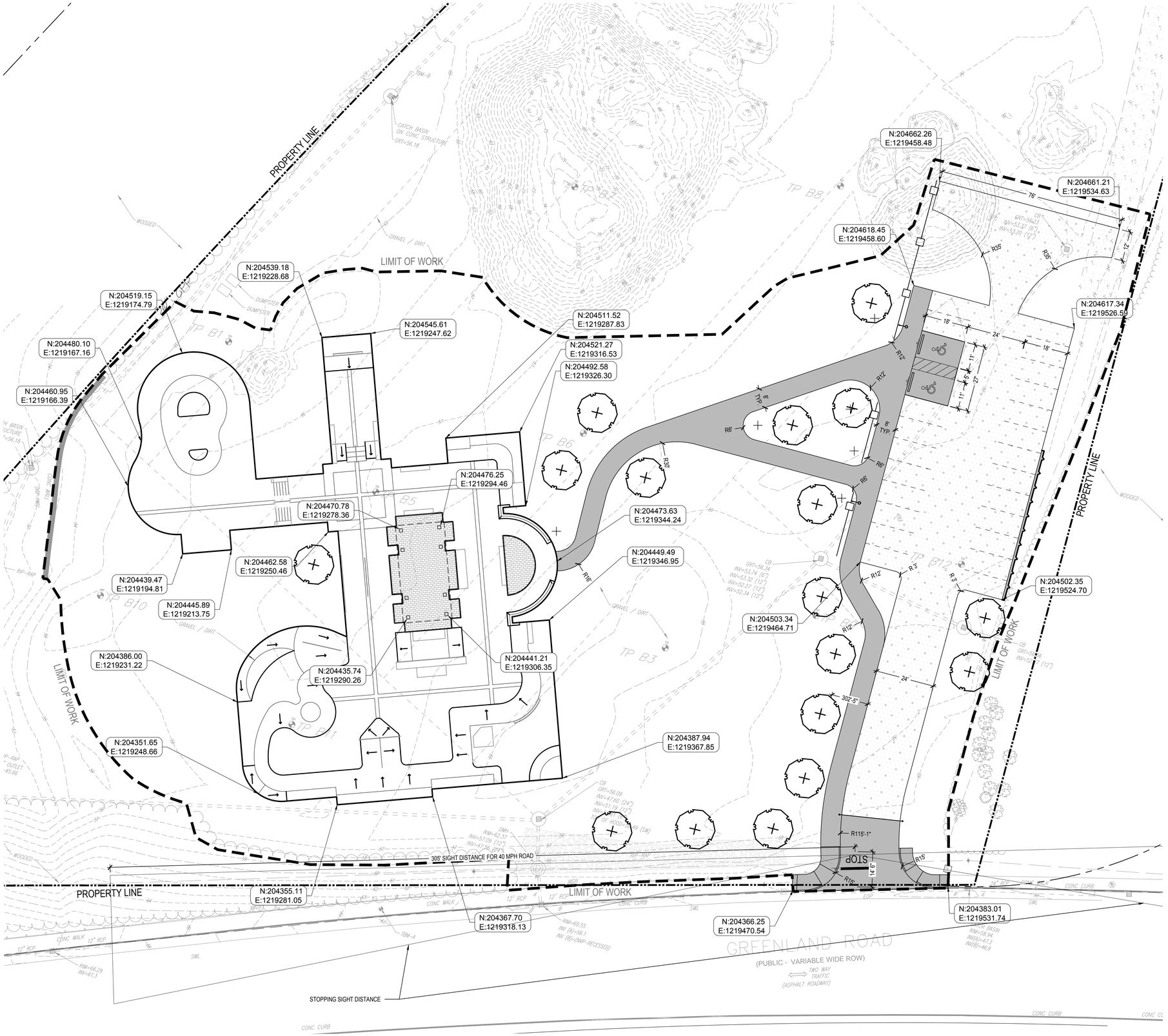
DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: MATERIALS AND PLANTING PLAN
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET:: L120
SKATE PARK



LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- XX' — TYP. DIMENSION
- X'-X" — TYP. ARC DIMENSION
- XX° / RX — TYP. ANGLE DIMENSION / TYP. RADIUS DIMENSION
- ℄ — CENTER LINE
- ℗ — CENTER POINT

STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
LICENSED PROFESSIONAL ENGINEER
1/23/2023

NOTES

1. REFER TO EXISTING CONDITIONS PLAN AND SURVEY NOTES FOR SURVEY INFORMATION.
2. COORDINATE ALL LAYOUT ACTIVITIES WITH THE SCOPE OF WORK CALLED FOR BY ALL OPERATIONS ENCOMPASSED BY THIS CONTRACT SET. PROTECT AND REPLACE REFERENCE STAKES AS NECESSARY OR AS REQUIRED BY THE OWNER'S REPRESENTATIVE.
3. THE CONTRACTOR SHALL PERFORM ALL WORK UNLESS SPECIFICALLY INDICATED THAT THE WORK WILL BE PERFORMED "BY OTHERS" OR "OWNER".
4. ALL PROPOSED SITE FEATURES SHALL BE LAID OUT AND STAKED FOR REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF INSTALLATION. ANY REQUIRED ADJUSTMENTS TO THE LAYOUT SHALL BE UNDERTAKEN AS DIRECTED, AT NO ADDITIONAL COST TO THE OWNER.
5. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASUREMENT OF ALL PROPOSED SITE IMPROVEMENTS.

SCALE: 1" = 20' - 0"
0 20 40 60

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REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: LAYOUT PLAN
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET:: L130
SKATE PARK

LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- EXISTING DRAINAGE STRUCTURE. SEE UTILITIES PLAN
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING SPOT ELEVATION
- PROPOSED SUBGRADE ELEVATION
- PROPOSED SLOPE
- PROPOSED PARK LIGHT
- PROPOSED HANDHOLD ELECTRICAL
- PROPOSED WIRED CONDUIT
- CATCH BASIN OR PVC AREA DRAIN, REFER TO PLANS
- HDPE OR PVC SOLID DRAIN PIPE, DIAMETER VARIES
- GRADE BREAK
- HP HIGH POINT
- LP LOW POINT
- TW TOP OF WALL
- BW BOTTOM OF WALL

STATE OF NEW HAMPSHIRE – JAMES L. PEARSON No. 14212 LICENSED PROFESSIONAL ENGINEER

1/23/2023

SCALE: 1" = 20' - 0"

0 20 40 60

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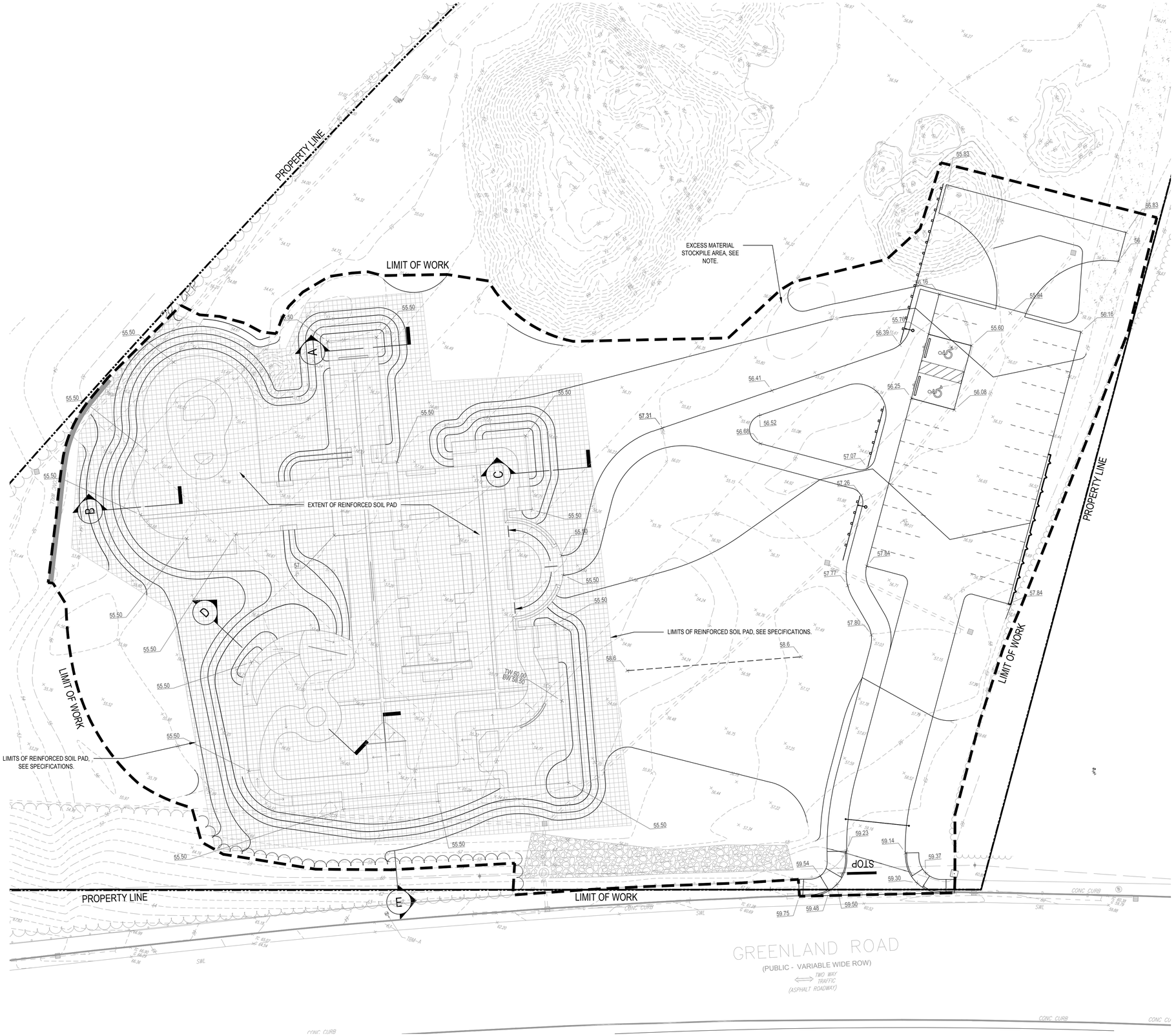
APPROVED BY::		
DATE::	01/23/23	

PROJECT::
PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE::
GRADING, DRAINAGE AND UTILITIES PLAN
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET::
L140
SKATE PARK



LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- EXISTING DRAINAGE STRUCTURE. SEE UTILITIES PLAN
- 12 — EXISTING CONTOURS
- 14 — PROPOSED CONTOURS
- 95.10 + EXISTING SPOT ELEVATION
- 8.25 PROPOSED SUBGRADE ELEVATION
- 1:3 PROPOSED SLOPE
- CATCH BASIN OR PVC AREA DRAIN, REFER TO PLANS
- D — HDPE OR PVC SOLID DRAIN PIPE, DIAMETER VARIES
- GRADE BREAK
- HP HIGH POINT
- LP LOW POINT
- TW TOP OF WALL
- BW BOTTOM OF WALL
- REINFORCED SOIL PAD

NOTES:

1. USE EXISTING ON-SITE SOIL WITHIN THE EXTENTS OF THE REINFORCED SOIL PAD AREA TO PROVIDE CONSISTENT GRADE OF EL/ 56. EXCESS MATERIAL GENERATED DURING THIS WORK SHALL BE SEPARATED AND STOCKPILED ON-SITE AT THE LOCATION SHOWN ON THIS PLAN.

SCALE: 1" = 20' - 0"
0 20 40 60

STATE OF NEW HAMPSHIRE
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LICENSED PROFESSIONAL ENGINEER
1/23/2023

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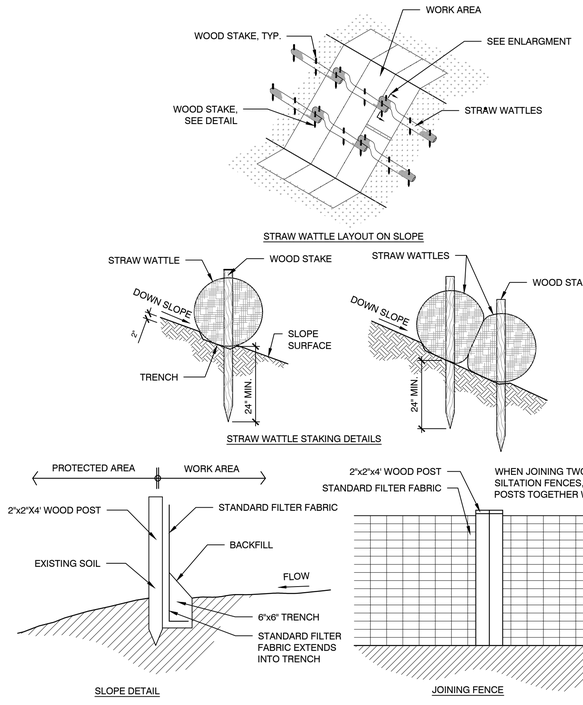
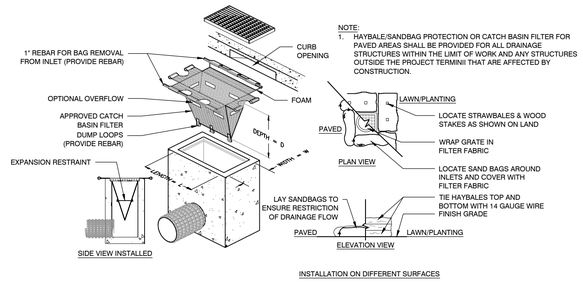
DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: SUBGRADE ELEVATION PLAN
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

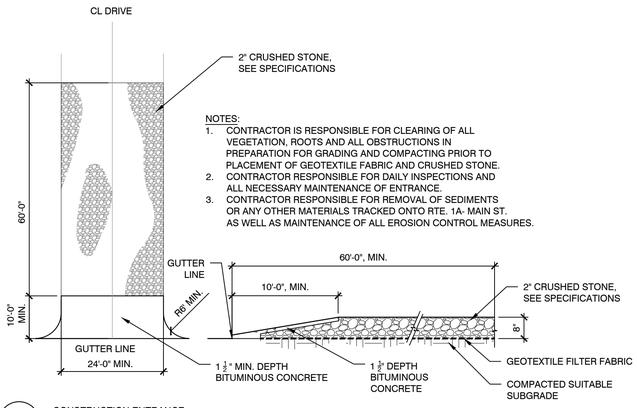
SHEET:: L141
SKATE PARK



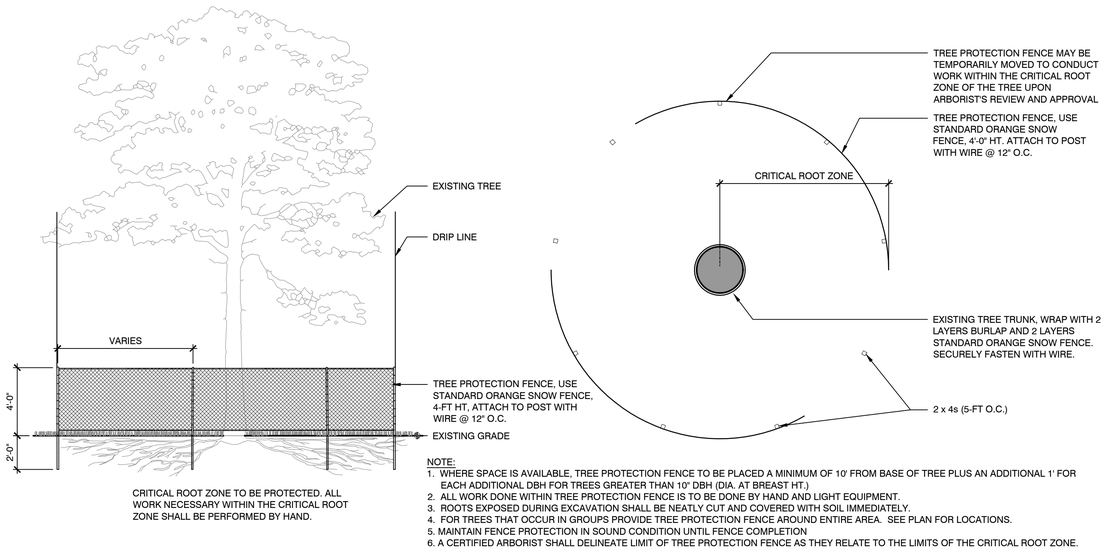
1 EROSION CONTROLS- STRAW WATTLES AND FILTER FABRIC
SCALE: NTS



2 CATCH BASIN/ INLET SEDIMENT CONTROL PROTECTION
SCALE: NTS



3 CONSTRUCTION ENTRANCE
SCALE: NTS



NOTE:
1. WHERE SPACE IS AVAILABLE, TREE PROTECTION FENCE TO BE PLACED A MINIMUM OF 10' FROM BASE OF TREE PLUS AN ADDITIONAL 1' FOR EACH ADDITIONAL DBH FOR TREES GREATER THAN 10" DBH (DIA. AT BREAST HT.)
2. ALL WORK DONE WITHIN TREE PROTECTION FENCE IS TO BE DONE BY HAND AND LIGHT EQUIPMENT.
3. ROOTS EXPOSED DURING EXCAVATION SHALL BE NEATLY CUT AND COVERED WITH SOIL IMMEDIATELY.
4. FOR TREES THAT OCCUR IN GROUPS PROVIDE TREE PROTECTION FENCE AROUND ENTIRE AREA. SEE PLAN FOR LOCATIONS.
5. MAINTAIN FENCE PROTECTION IN SOUND CONDITION UNTIL FENCE COMPLETION
6. A CERTIFIED ARBORIST SHALL DELINEATE LIMIT OF TREE PROTECTION FENCE AS THEY RELATE TO THE LIMITS OF THE CRITICAL ROOT ZONE.

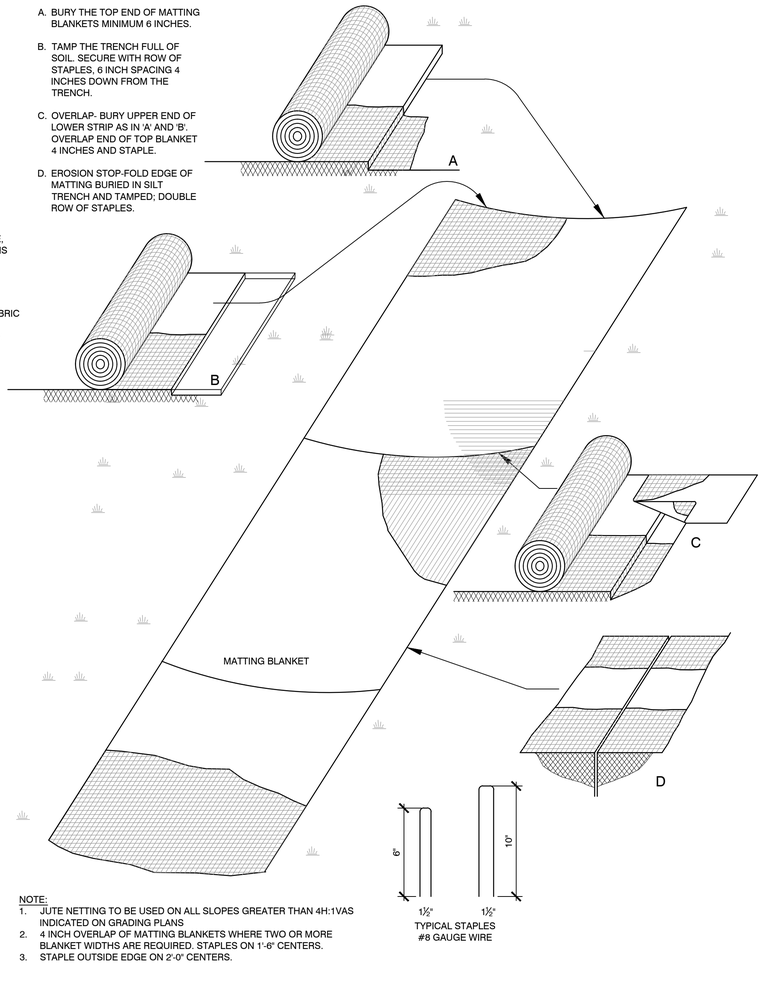
4 TREE PROTECTION
SCALE: NTS

A. BURY THE TOP END OF MATTING BLANKETS MINIMUM 6 INCHES.

B. TAMP THE TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 6 INCH SPACING 4 INCHES DOWN FROM THE TRENCH.

C. OVERLAP- BURY UPPER END OF LOWER STRIP AS IN 'A' AND 'B'. OVERLAP END OF TOP BLANKET 4 INCHES AND STAPLE.

D. EROSION STOP-FOLD EDGE OF MATTING BURIED IN SILT TRENCH AND TAMPED; DOUBLE ROW OF STAPLES.



NOTE:
1. JUTE NETTING TO BE USED ON ALL SLOPES GREATER THAN 4H:1VAS INDICATED ON GRADING PLANS
2. 4 INCH OVERLAP OF MATTING BLANKETS WHERE TWO OR MORE BLANKET WIDTHS ARE REQUIRED. STAPLES ON 1'-6" CENTERS.
3. STAPLE OUTSIDE EDGE ON 2'-0" CENTERS.

5 EROSION CONTROL BLANKET
SCALE: NTS

STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
LICENSED
PROFESSIONAL ENGINEER

1/23/2023

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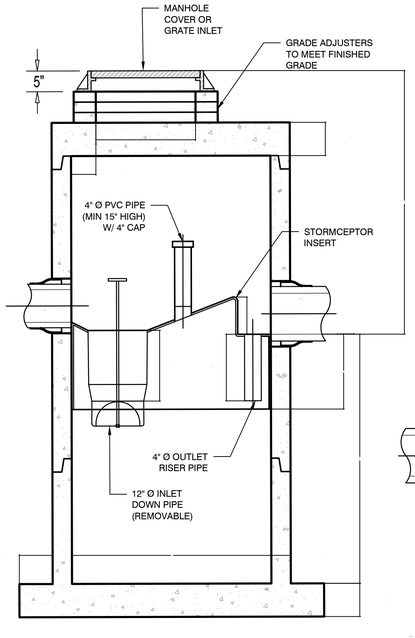
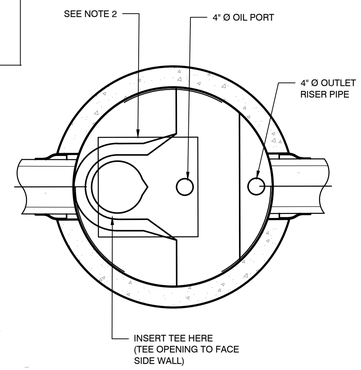
DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

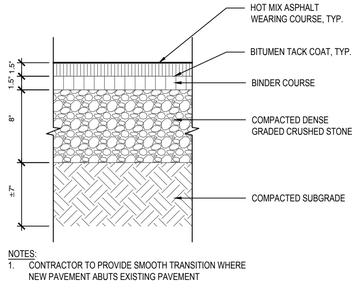
PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CONSTRUCTION DETAILS
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET:: L500 SKATE PARK



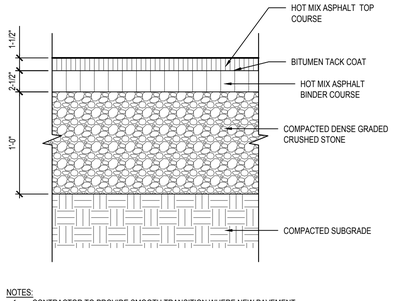


1 DRAIN MANHOLE
SCALE: NTS



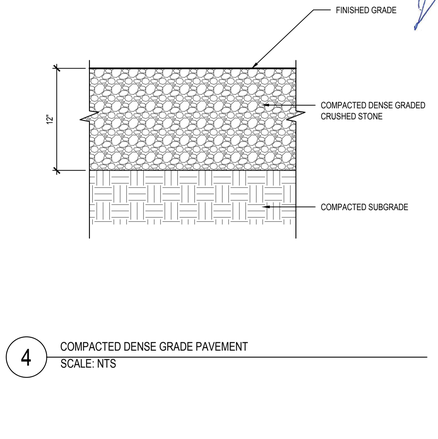
NOTES:
1. CONTRACTOR TO PROVIDE SMOOTH TRANSITION WHERE NEW PAVEMENT ABUTS EXISTING PAVEMENT

2 HOT MIX ASPHALT PAVEMENT SIDEWALK
SCALE: NTS

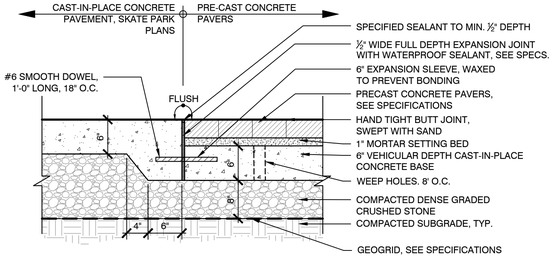


NOTES:
1. CONTRACTOR TO PROVIDE SMOOTH TRANSITION WHERE NEW PAVEMENT ABUTS EXISTING PAVEMENT.

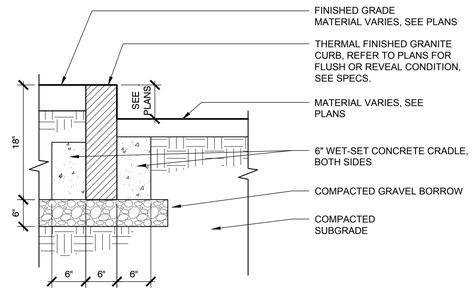
3 VEHICULAR HOT MIX ASPHALT PAVEMENT
SCALE: NTS



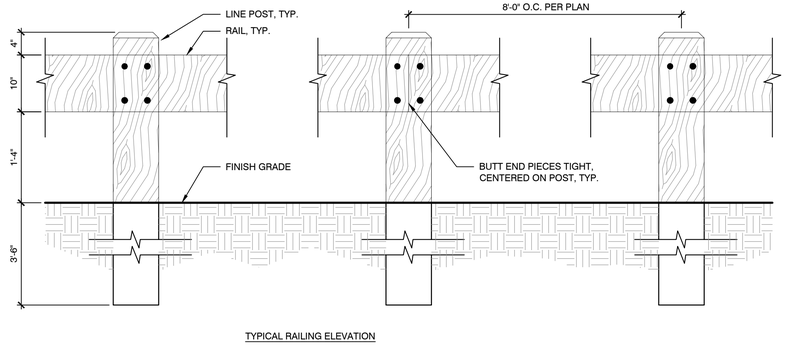
4 COMPACTED DENSE GRADE PAVEMENT
SCALE: NTS

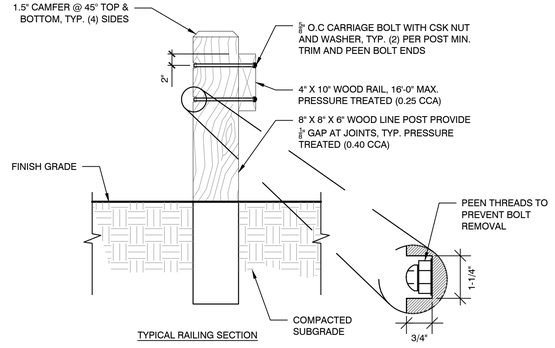


5 PRE-CAST CONCRETE PAVERS - TYPE 1
SCALE: NTS

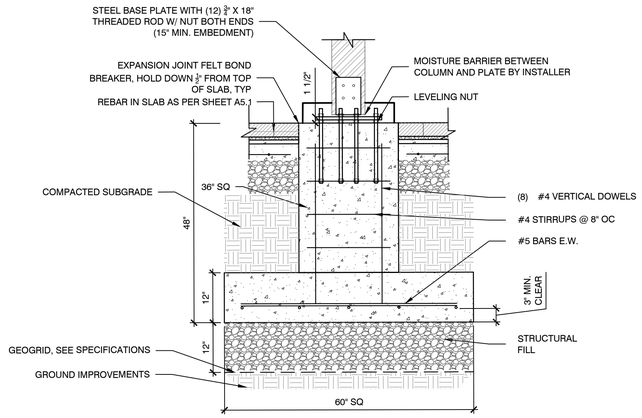


6 VERTICAL GRANITE CURB
SCALE: NTS





7 WOOD GUARDRAIL
SCALE: NTS



8 POST FOOTING FOR SHADE STRUCTURE
SCALE: NTS

STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
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1/23/2023

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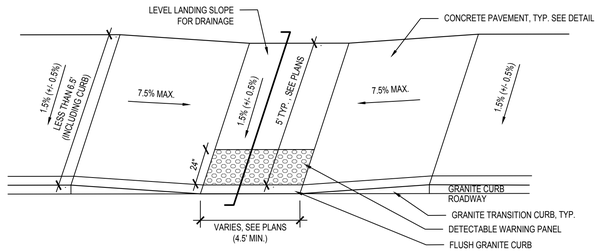
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

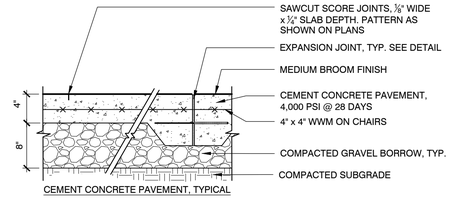
PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CONSTRUCTION DETAILS
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET:: L501
SKATE PARK



NOTES:
1. CONTRACTOR SHALL REMOVE AND REPLACE ASPHALT PAVEMENT, GRAVEL BORROW, AND SUBGRADE NECESSARY TO CONSTRUCT A CLEAN, SMOOTH TRANSITION AT ADA CURB CUT.

1 ADA CURB RAMP
SCALE: NTS

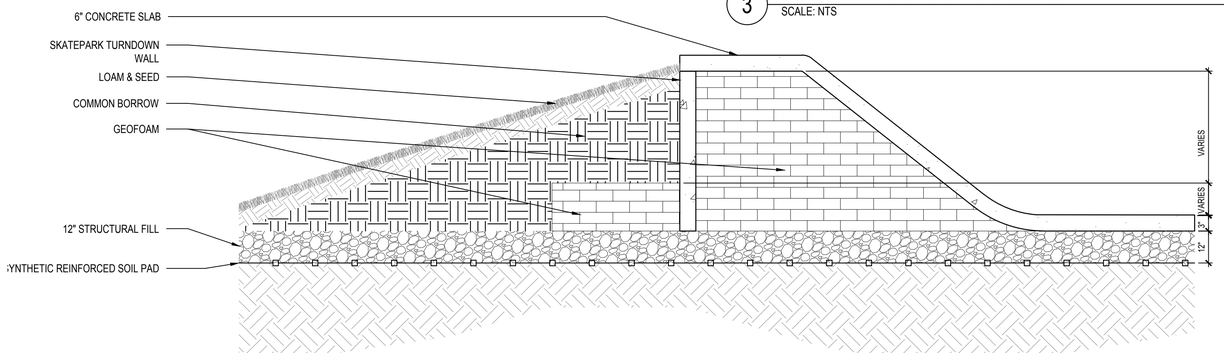


EXPANSION JOINT INSTALLATION NOTES:

1. DOWEL IS TYPICAL AT ALL EXPANSION JOINTS (18' O.C.) WITHIN CONCRETE PAVING AND BETWEEN NEW CONCRETE PAVING AND EXISTING CONCRETE PAVING TO REMAIN.
2. DELETE EXPANSION SLEEVE AND DOWEL WHERE JOINT ABUTS WALL, CURBS, OR OTHER VERTICAL SURFACES, UNLESS OTHERWISE NOTED.
3. EXPANSION JOINTS MAX. 25'-0" O.C. UNLESS SHOWN OTHERWISE.
4. EXPANSIONS JOINTS SHALL BE PLACED WHERE NEW CEMENT CONCRETE PAVEMENT MEETS EXISTING PAVEMENT OR WALLS TO REMAIN.

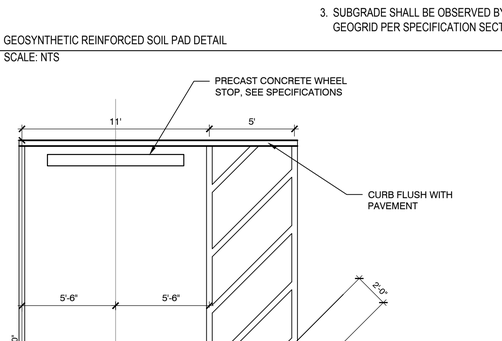
EXPANSION JOINT, TYPICAL

3 CAST IN PLACE CONCRETE PAVEMENT AND EXPANSION JOINT
SCALE: NTS



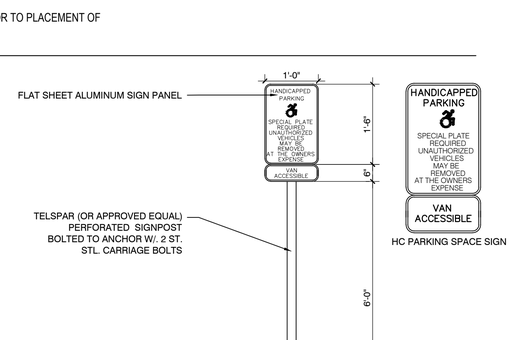
NOTES:
1. THE GEOSYNTHETIC REINFORCED SOIL PAD SHALL EXTEND TO THE LIMITS SHOWN ON DWG L141.
2. GEOGRID SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION 31 23 00.
3. SUBGRADE SHALL BE OBSERVED BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF GEOGRID PER SPECIFICATION SECTION 31 23 00.

2 GEOSYNTHETIC REINFORCED SOIL PAD DETAIL
SCALE: NTS

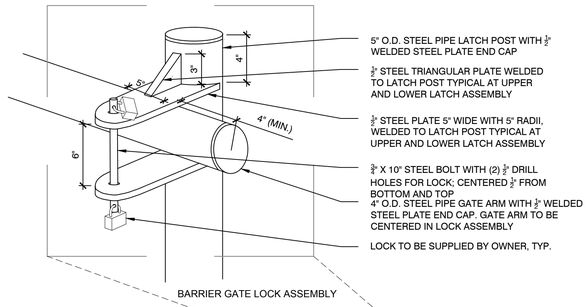


NOTE:
1. SEE SPECIFICATIONS FOR TYPICAL LINE PAINT FOR ALL PAVEMENT MARKINGS.

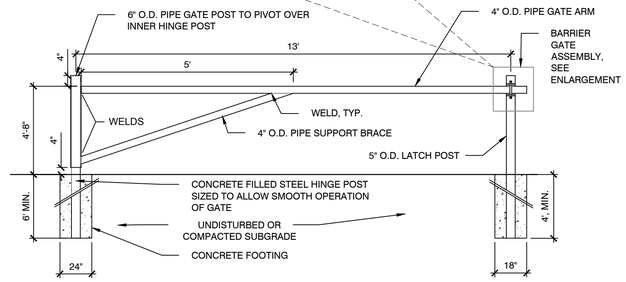
4 HANDICAP PARKING SPACE LAYOUT DETAIL
SCALE: NTS



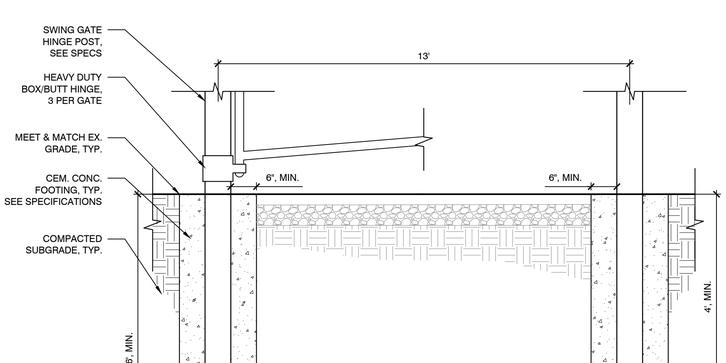
5 HANDICAP PARKING SIGN
SCALE: NTS



BARRIER GATE LOCK ASSEMBLY



NOTES:
1. SEE SPECIFICATIONS. CONTRACTOR TO PROVIDE COMPLETE SHOP DRAWINGS PRIOR TO FABRICATION.
2. ALL STEEL PIPE SHALL BE SCHEDULE 40.
3. ALL STEEL SHALL BE FABRICATED WITH WELDS GROUND SMOOTH, AND EACH COMPONENT HOT-DIPPED GALVANIZED.
4. PROVIDE TWO LATCH POST, ONE IN OPEN POSITION, AND ONE IN CLOSED POSITION.



6 PIPE GATE FOOTING
SCALE: NTS

NOTE:
1.) PROVIDE EXPANDED POLYSTYRENE FILL ("GEOFOAM") TO THE LINES AND GRADES SHOWN HEREIN AND AS SPECIFIED IN SECTION 31 23 23 - EXPANDED POLYSTYRENE FILL (GEOFOAM).

2.) GEOFOAM SHALL MEET THE MINIMUM REQUIREMENTS FOR EPS15 GEOFOAM BLOCKS

3.) EPS BLOCKS SHALL BE PLACED SO THAT ALL VERTICAL AND HORIZONTAL JOINTS BETWEEN BLOCKS ARE TIGHT. AVOID CONTINUOUS VERTICAL JOINTS BY LAYING BLOCKS IN A RUNNING BOND PATTERN AND ORIENTING THE LONG AXIS OF THE BLOCKS IN EACH SUCCESSIVE LAYER PERPENDICULAR TO THE LONG AXIS OF THE BLOCKS IN THE UNDERLYING LAYER.

4.) THREE FEET HIGH GEOFOAM BLOCK SHALL BE PLACED WITHIN ALL THE 3:1 GRASSED SLOPES ON OUTSIDE EDGES OF SKATEPARK TURNDOWN WALL.

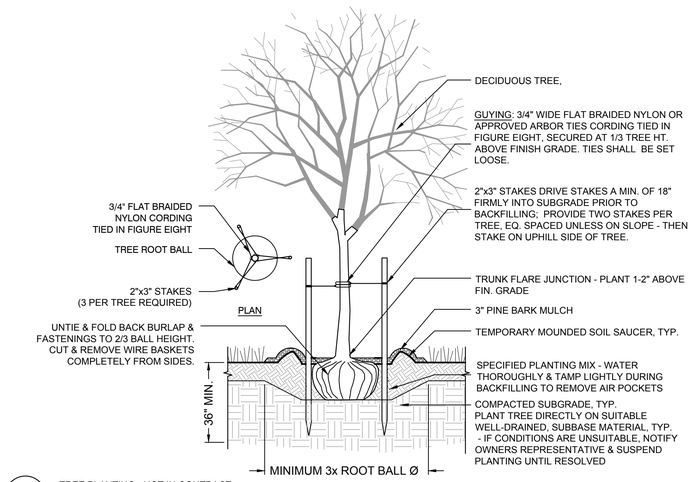
STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
LICENSED PROFESSIONAL ENGINEER
1/23/2023

Weston & Sampson design studio
85 Devonshire Street
3rd Floor, Boston, MA 02109
617.412.4480 800.SAMPSON
www.westonandsampson.com

DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CONSTRUCTION DETAILS
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET:: L502
SKATE PARK



1 TREE PLANTING - NOT IN CONTRACT
SCALE: NTS

2 LOAM AND SEED
SCALE: NTS

STATE OF NEW HAMPSHIRE
JAMES L. PEARSON
No. 14212
LICENSED
PROFESSIONAL ENGINEER

1/23/2023

PILLAR DESIGN STUDIOS

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DRAWN BY:: KC
REVIEWED BY:: BK
APPROVED BY::
DATE:: 01/23/23

PROJECT::
PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE::
CONSTRUCTION DETAILS
SITE PLAN APPLICATION - NOT FOR CONSTRUCTION

SHEET::
L503
SKATE PARK

PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE

90% SUBMITTAL

GENERAL NOTES

1. NOTIFY THE ACTION SPORTS DESIGNER IMMEDIATELY OF ANY DISCREPANCIES WITHIN TEH CONSTYRUCTION DOCUMENTS AND/OR WRITTEN SPECIFICATIONS.

2. THE METRIC EQUIVALENT "[ ]" DIMENSIONS ARE SHOWN FOR REFERNCE ONLY.

3. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL QUANTITIES.

4. PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND/OR NATIONAL BUILDING CODES AND REQUIREMENTS.

5. THE ACTIONS SPORTS DESIGNER SHALL HAVE NO CONTROL OR CHARGE OF, NOR BE RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, SAFETY PRECAUTIONS OR PROHRAMS IN CONNECTION WITH THE WORK, THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY PERSONS PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.

6. PROVIDE SPECIAL INSPECTION AS REQUIRED BY BUILDING CODES FOR THE FOLLOWING ITEMS:
   -TAKING OF TEST SPECIMENS OF ALL CONCRETE AND SHOTCRETE.

7. THE CONTRACTOR SHALL WARRANTY ALL OF THEIR WORK DURING CONSTRUCTION AND A MINIMUM OF ONE YEAR AFTER THE PROJECT IS COMPLETED.

8. CONCRETE MIXES SHALL BE DESIGNED BY A TESTING LABRATORY APPROVED BY THE ACTION SPORTS DESIGNER PRIOR TO USE.

STEEL SHAPES CHART

ROUND		SQUARE		RECTANGULAR	
NOMINAL	HSS	NOMINAL	HSS	NOMINAL	HSS
2"	2.375 x 0.1875 6.03cm x 4.76mm	2"x2"	2.00 x 2.00 x 0.1875 5.08cm x 5.08cm x 4.76mm	2"x6"	2.00 x 6.00 x 0.1875 5.08cm x 15.24cm x 4.76mm
2-1/2"	2.875 x 0.1875 7.30cm x 4.76mm	2-1/2"x2-1/2"	2.50 x 2.50 x 0.1875 7.30cm x 7.30cm x 4.76mm	2"x8"	2.00 x 8.00 x 0.1875 5.08cm x 20.32cm x 4.76mm
3"	3.50 x 0.1875 8.89cm x 4.76mm	3"x3"	3.00 x 3.00 x 0.1875 7.62cm x 7.62cm x 4.76mm	2-1/2"x4"	2.50 x 4.00 x 0.1875 6.35cm x 10.16cm x 4.76mm
3-1/2"	4.00 x 0.1875 10.16cm x 4.76mm	3-1/2"x3-1/2"	3.50 x 3.50 x 0.1875 8.89cm x 8.89cm x 4.76mm	2-1/2"x5"	2.50 x 5.00 x 0.1875 6.35cm x 12.70cm x 4.76mm
4"	4.50 x 0.1875 11.43cm x 4.76mm	4"x4"	4.00 x 4.00 x 0.1875 10.16cm x 10.16cm x 4.76mm	3"x5"	3.00 x 5.00 x 0.1875 7.62cm x 12.70cm x 4.76mm

NOTES:
1. ALL HOLLOW STRUCTURAL SECTIONS (HSS) TO BE ASTM A-500 GRADE B STEEL.

REBAR DEVELOPMENT LENGTHS

NORMAL WEIGHT CONCRETE							
REBAR SIZE		3000 P.S.I.			4000 P.S.I.		
ENGLISH	METRIC	TOP BARS ld	BOT. BARS ld	ldh	TOP BARS ld	BOT. BARS ld	ldh
#3	#10	21" [53.34cm]	16" [40.64cm]	8" [20.32cm]	18" [45.72cm]	14" [35.56cm]	7" [17.78cm]
#4	#13	28" [71.12cm]	22" [55.88cm]	11" [27.94cm]	25" [63.50cm]	19" [48.26cm]	9" [22.86cm]
#5	#16	36" [91.44cm]	27" [68.58cm]	14" [35.56cm]	31" [78.74cm]	24" [60.96cm]	12" [30.48cm]
#6	#19	43" [109.22cm]	33" [83.82cm]	16" [40.64cm]	37" [93.98cm]	28" [71.12cm]	14" [35.56cm]
#7	#22	62" [157.48cm]	48" [121.92cm]	19" [48.26cm]	54" [137.16cm]	42" [106.68cm]	17" [43.18cm]
#8	#25	71" [180.34cm]	55" [139.70cm]	22" [55.88cm]	62" [157.48cm]	47" [119.38cm]	19" [48.26cm]
#9	#29	80" [203.20cm]	62" [157.48cm]	25" [63.50cm]	69" [175.26cm]	53" [134.62cm]	21" [53.34cm]
#10	#32	89" [226.06cm]	68" [172.72cm]	27" [68.58cm]	77" [195.58cm]	59" [149.86cm]	24" [60.96cm]
#11	#36	98" [248.92cm]	75" [190.50cm]	30" [76.20cm]	85" [215.90cm]	65" [165.10cm]	26" [66.04cm]

NOTES:
1. THESE LENGTHS APPLY TYPICALLY UNLESS OTHERWISE NOTED.
2. CLEAR SPACING BETWEEN PARALLEL BARS MUST BE AT LEAST ONE BAR DIAMETER BUT NOT LESS THAN 1" [2.54cm].
3. TOP BARS: HORIZONTAL BARS SO PLACED THAT MORE THAN 12" [30.48cm] OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW.
4. LIGHTWEIGHT CONCRETE: MULTIPLY VALUES IN TABLE BY 1.3.
5. CLASS B SPLICE: LD X 1.3 LAP LENGTH. STAGGER SPLICES MIN. OF 24" [60.96cm].

CONSTRUCTION DISCLAIMER

ALL MEASUREMENTS, DISTANCES AND RADII TO BE VERIFIED IN THE FIELD.

STRUCTURAL NOTES

REINFORCING STEEL:

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (Fy = 60 KSI) DEFORMED BARS FOR ALL BARS #3 AND LARGER. ALL REINFORCING TO BE WELDED SHALL BE ASTM A706. WELDED WIRE FABRIC PER ASTM A185, WIRE PER ASTM A82. LATEST ACI CODE AND DETAILING MANUAL APPLY.

2. ACCURATELY PLACE OR SUPPORT ALL REINFORCING, INCLUDING WELDED WIRE FABRIC, WITH GALVANIZED METAL CHAIRS, SPACERS OR HANGERS FOR THE FOLLOWING CLEAR CONCRETE COVERAGES:
   CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ------- 3"
   EXPOSED TO EARTH OR WEATHER
   #6 OR LARGER ---------- 2"
   #5 AND SMALLER ---------- 1 1/2"
   COLUMNS (TO TIES) ---------- 1 1/2"
   BEAMS (TO STIRRUPS) ---------- 1 1/2"
   FLAT SLAB ---------- 3/4"
   ALL OTHER PER LATEST EDITION OF ACI 318.

3. REINFORCING BAR SPACING GIVEN ARE MAXIMUM ON CENTERS. ALL BARS PER CRSI SPECIFICATIONS AND HANDBOOK. DOWEL ALL VERTICAL REINFORCING TO FOUNDATION WITH STANDARD 90 DEGREE HOOKS UNLESS NOTED OTHERWISE. SKEW HOOKS AS REQUIRED TO MAINTAIN CONCRETE COVER. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE. CONCRETE COLUMN DOWEL EMBEDMENT SHALL BE A STANDARD COMPRESSION DOWEL WITH EMBEDMENT LENGTH ACCORDING TO THE LATEST EDITION OF THE ACI 318.

STRUCTURAL STEEL:

1. ALL STEEL CONSTRUCTION SHALL CONFORM WITH THE LATEST AISC HANDBOOK.
   ALL RECTANGULAR TS/HSS SHALL BE ASTM A500, GRADE B (Fy = 46 KSI).
   ALL PIPE STEEL SHALL BE ASTM A53, GRADE B (Fy = 35 KSI). ALL OTHER STRUCTURAL SHAPES AND PLATES SHALL BE ASTM A36 (Fy = 36 KSI). PAINT ALL STEEL SURFACES WITH FABRICATOR'S STANDARD RUST-INHIBITING PRIMER EXCEPT AT SURFACES ENCASED IN CONCRETE.

2. ALL WELDING PER LATEST AMERICAN WELDING SOCIETY STANDARDS, (EXCEPT STEEL JOISTS AND JOIST GIRDERS SHALL COMPLY WITH SJI STANDARDS). ALL WELDING DONE BY E70 SERIES LOW HYDROGEN RODS UNLESS NOTED OTHERWISE. FOR GRADE 60 REINFORCING BARS, USE E90 SERIES. THESE DRAWINGS DO NOT DISTINGUISH BETWEEN SHOP AND FIELD WELDS; THE CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION.

3. NON-SHRINK GROUT SHALL BE 5,000 PSI, FIVE STAR, SIKA 212 OR EQUIVALENT. INSTALL NON-SHRINK GROUT UNDER BEARING PLATES BEFORE FRAMING MEMBER IS INSTALLED.

POST-INSTALLED ANCHORS:

1. EPOXY BOLTS OR DOWELS SHALL BE A THREADED ROD OR REINFORCING STEEL INSTALLED WITH THE ONE OF THE FOLLOWING APPROVED PRODUCTS SATISFYING CRACKED CONCRETE REQUIREMENTS IN ACCORDANCE WITH ACI APPENDIX D.

   SIMPSON "SET-XP" ICC REPORT ESR-2508
   HILTI "RE-500 SD" ICC REPORT ESR-2322
   POWERS "PE1000+" ICC REPORT ESR-2583

2. THE CONTRACTOR MAY NOT USE SUBSTITUTES FOR EPOXY OR EXPANSION ANCHORS WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

3. FOR MINIMUM EMBEDMENT LENGTH SEE DETAILS. INSTALL ALL BOLTS AS OUTLINED IN MANUFACTURER'S SPECIFICATIONS, UTILIZING PROPER SIZE AND TYPE OF DRILL, CLEANING HOLE, DRIVING AND TIGHTENING BOLT.

CONSTRUCTION DETAIL NOTES

1. "BASE COURSE" SHALL CONSIST OF A 4" [10.16cm] LAYER OF COMPACTED 1" [2.54cm] CRUSHED ROCK; "COMPACTED SUBGRADE" SHALL CONSIST OF THE UPPER MOST 1'-0" [30.48cm] OF NATIVE SOIL AND/OR ENGINEERED FILL COMPACTED TO 95% STANDARD PROCTOR. IF THESE GUIDELINES CONFLICT WITH THE GEO-TECHNICAL REPORT, THE CONTRACTOR TO FOLLOW THE MORE STRINGENT OF THE TWO GUIDELINES

2. GRIND SMOOTH ALL EXPOSED COPING AND RAIL WELDS. APPLY END CAPS TO ALL EXPOSED COPING AND RAIL ENDS, OPEN STEEL ENDS OR CONCRETE FILLED CAPS ARE UNACCEPTABLE.

3. HOOK ANCHORS OR HEX BOLTS MAY BE USED IN-LIEU OF NELSON STUDS TO SECURE COPING AND PROTECTIVE PLATES IN PLACE PROVIDED THEY ARE THE SAME NOMINAL SIZE.

4. ALL RAIL POSTS SHALL BE PLACED 3" [7.62cm] MINIMUM CLEAR OF ALL CONCRETE AND/OR SHOTCRETE FACES.

5. SOME REINFORCEMENT MEMBERS MAY BE SHOWN OUT OF SCALE AND/OR POSITION FOR CLARITY ONLY. AT A MINIMUM ALL REINFORCEMENT SHALL BE PLACED CLEAR OF ALL CONCRETE AND/OR SHOTCRETE FACES AS NOTED BELOW:
   - WELDED WIRE FABRIC: 2" [5.08cm]
   - SPEED DOWELS: 3" [7.62cm]
   - REBAR IN FLATWORK, BANKS, BOWLS, WATERFALLS AND TURNDOWN WALLS: 2" [5.08cm] OR 3" [7.62cm] IF PERMANENTLY EXPOSED TO EARTH
   - REBAR IN FORMED LEDGES, EXTENSIONS AND RETAINING WALLS: 3" [7.62cm]

6. ALL SHOTCRETE SHALL BE CUT, SCREEDED AND INSPECTED WITH TEMPLATES CUT TO THE SPECIFIED HEIGHT, WIDTH, RADIUS AND/OR ANGLE. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH DIMENSIONS, MATERIAL AND LOCATION OF USED FOR ALL TEMPLATES FOR APPROVAL BY THE OWNER'S REPRESENTATIVE AND THE ACTION SPORTS DESIGNER.

7. ALL CONCRETE AND SHOTCRETE SHALL HAVE A SMOOTH TROWEL FINISH UNLESS OTHERWISE NOTED.

8. ALL EXPOSED OUTSIDE CONCRETE CORNERS SHALL RECEIVE A 1/2" [12.70mm] CHAMFER UNLESS OTHERWISE NOTED.

9. THE FENCE SHALL MATCH THE PROFILE AND CONTOUR OF THE PARK PERIMETER. RAILS SHALL BE ROLLED TO MATCH RADII. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING ALL FENCE PROFILES.

10. CAP ALL EXPOSED ENDS, FILL ALL VOIDS AND GRIND ALL WELDS SMOOTH.

11. ALL FENCE METAL WORK SHALL BE WARRANTED BY THE CONTRACTOR AGAINST DEFECTS, RUST, PAINT CHIPPING, ETC. FOR A PERIOD OF FIVE YEARS.

STRUCTURAL NOTES

1. DESIGN CRITERIA
   DESIGN CRITERIA:

   2015 EDITION OF THE INTERNATIONAL BUILDING CODE, WITH LOCAL AMENDMENTS.

   LOADS:

   WIND DESIGN: BASIC WIND SPEED = 90 MPH (3 SECOND GUST). Iw = 1.0. EXPOSURE C.

   SEISMIC DESIGN: Ie = 1.0. Ss = 0.172 S1 = 0.051 SEISMIC SITE CLASS = D.
   Sds = 0.183 SD1 = 0.081 SEISMIC DESIGN CATEGORY B.

   GENERAL:

   1. WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA.

   2. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT. FOR BIDDING PURPOSES, WHERE ANY MEMBER IS SHOWN BUT NOT CALLED OUT, THE LARGEST SIMILAR MEMBER SHALL BE UTILIZED.

   3. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL STRUCTURAL NOTES AND SPECIFICATIONS, THE GREATER REQUIREMENTS SHALL GOVERN.

   4. ANY ENGINEERING DESIGN, PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW, SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT OCCURS.

   CONCRETE AND SHOTCRETE:

   1. ALL CONCRETE WORK SHALL CONFORM WITH THE REQUIREMENTS OF ACI 301 AND ACI 318. CEMENT PER ASTM C150, TYPE II. AGGREGATE PER ASTM C33. LIGHTWEIGHT AGGREGATE PER ASTM C330. CONCRETE SHALL BE READY MIXED IN ACCORDANCE WITH ASTM C94 AND SHALL BE DESIGNED FOR A MINIMUM 28 DAY COMPRESSIVE STRENGTH AS FOLLOWS:

      FLAT SLABS, WALLS ----------4,000 PSI
      SLABS ON GRADE ----------4,000 PSI
      FOUNDATIONS ----------4,000 PSI

   2. ALL SHOTCRETE WORK SHALL CONFORM WITH THE REQUIREMENTS OF ACI 506, LATEST EDITION, "SPECIFICATION FOR MATERIALS, PROPORTIONING AND APPLICATION OF SHOTCRETE" AND ACI 506.2, LATEST EDITION, "RECOMMENDED PRACTICES FOR SHOTCRETE." AGGREGATE PER ASTM C33.

   3. SHOTCRETE MIX DESIGNS SHALL BE DESIGNED FOR A MINIMUM 28 DAY COMPRESSIVE STRENGTH AS FOLLOWS:

      FLAT SLABS, WALLS ----------4,000 PSI
      SLABS ON GRADE ----------4,000 PSI

   4. SHOTCRETE SURFACE PREPARATION: EXPOSED EXISTING CONCRETE SHALL BE SANDBLASTED CLEAN. SURFACES SHALL BE FOLLOWED BY WETTING AND DAMP DRYING JUST PRIOR TO SHOTCRETE APPLICATION.

   5. ANY REBOUND OR ACCUMULATED LOOSE AGGREGATE SHALL BE REMOVED FROM THE SURFACES TO BE COVERED PRIOR TO PLACING THE INITIAL OR ANY SUCCEEDING LAYERS OF SHOTCRETE, REBOUND SHALL NOT BE REUSED AS AGGREGATE.

   6. JOINTS IN WALL POURS ARE PERMISSIBLE. AT JOINTS, SHOTCRETE SHALL BE SLOPED TO A THIN EDGE. BEFORE PLACING ADDITIONAL MATERIAL, ALL SURFACES SHALL BE THOROUGHLY CLEANED AND WETTED AND ALL REINFORCING STEEL SHALL BE BRUSHED FREE OF LATENT SHOTCRETE MATERIAL.

   7. ANY IN-PLACE SHOTCRETE MATERIAL WHICH EXHIBITS SAGS OR SLOUGHS, SEGREGATION, HONEY COMBING, SAND POCKETS OF OTHER OBVIOUS DEFECTS SHALL BE REMOVED AND REPLACED.

   8. TESTING AND INSPECTION OF IN-PLACE SHOTCRETE SHALL BE IN ACCORDANCE WITH 2015 IBC.

9. CONCRETE SHALL BE PLACED WITHIN 90 MINUTES OF BATCHING AND SHALL NOT EXCEED A TEMPERATURE OF 90 DEGREES F UNLESS PRE-APPROVED BY THE ACTION SPORTS DESIGNER.

10. DURING THE CURING PERIOD, CONCRETE SHALL BE MAINTAINED AT A TEMPERATURE ABOVE 40 DEGREES F AND IN MOIST CONDITION. FOR INITIAL CURING, CONCRETE SHALL BE KEPT CONTINUOUSLY MOIST FOR 24 HOURS AFTER PLACEMENT IS COMPLETE. FINAL CURING SHALL CONTINUE FOR SEVEN DAYS AFTER PLACEMENT AND SHALL CONSIST OF APPLICATION OF CURING COMPOUND PER ASTM C309. APPLY AT A RATE SUFFICIENT TO RETAIN MOISTURE, BUT NOT LESS THAN 1 GALLON PER 200 SQUARE FEET. COVER CONCRETE WITH POLYETHYLENE PLASTIC TO MAINTAIN TEMPERATURE IF NECESSARY. LAP SEAMS IN THE PLASTIC 6" AND TAPE, WEIGHT DOWN THE PLASTIC AS NEEDED.

11. THE CONTRACTOR SHALL FIX ALL CRACKS AND DISPLACEMENTS LARGER THAN 1/8".

12. CONDUITS, PIPES, AND SLEEVES EMBEDDED IN CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF IBC SECTION 1906.

13. TESTING OF COMPRESSIVE STRENGTH AND SLUMP PER ASTM C31, C39 AND C143.
    PROVIDE A MINIMUM OF 3 CYLINDERS FOR EACH DAY'S PLACEMENT U.N.O. A QUALIFIED TESTING LABORATORY SHALL TEST ONE CYLINDER AT 7 DAYS AND TWO AT 28 DAYS.

CONTACTS

CLIENT	CITY OF PORTSMOUTH PETER RICE, DIRECTOR OF PUBLIC WORKS 680 PEVERLY HILL RD PORTSMOUTH, NH 03801 [t] 603.4276.1530 [f] 603.427.1539
SKATEPARK DESIGNER	PILLAR DESIGN STUDIOS BRAD SIEDLECKI 1960 W. HAWK CT. CHANDLER, ARIZONA 85286 [t] 888.880.5112 [f] 888.841.2569
CIVIL	WESTON & SAMPSON BRANDON KUNKEL, RLA 85 DEVONSHIRE ST, 3RD FLOOR BOSTON, MA 02109 [t] 617.412.4480 X 7705
SPECIALTY CONTRACTOR	ARTISAN SKATEPARKS ANDY DUCK 4600 TAMARACK DRIVE KITTY HAWK, NORTH CAROLINA 27949 [t] 252.202.1333

SHEET INDEX

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20.024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: COVER SHEET

SHEET:: 01 OF 16
AS-01
SKATE PARK

NOTES

1. ALL ELEVATIONS ARE BASED ON AN ASSUMED ELEVATION OF 0'-0", AND ARE USED TO DEMONSTRATE OVERALL TERRAIN ELEVATIONS ONLY. REFER TO SURFACE GRADING & DRAINAGE PLAN FOR ACTUAL ELEVATIONS.

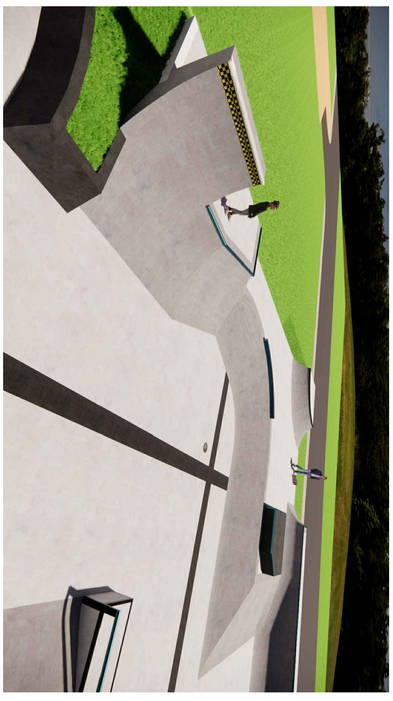
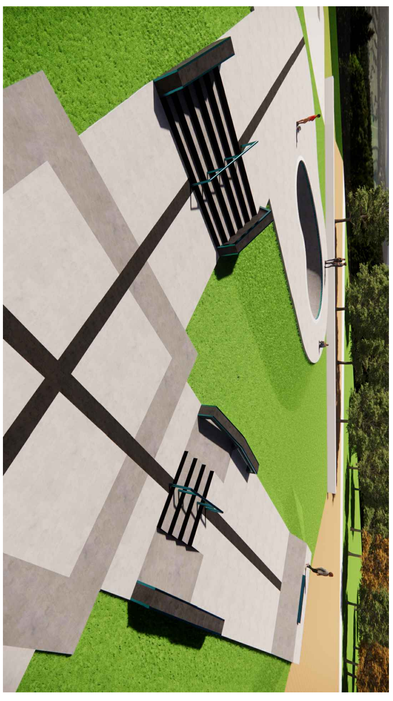
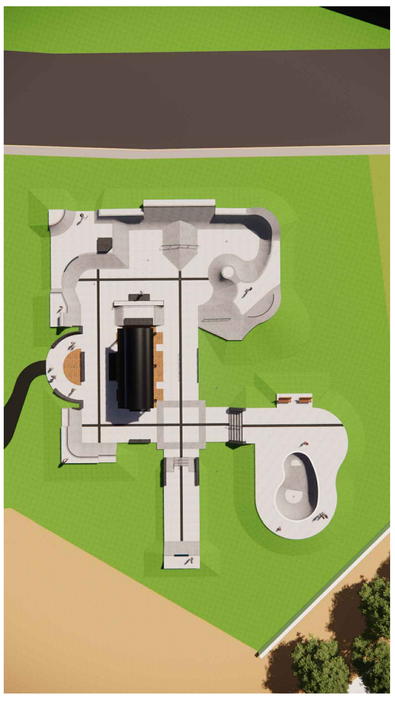
LEGEND

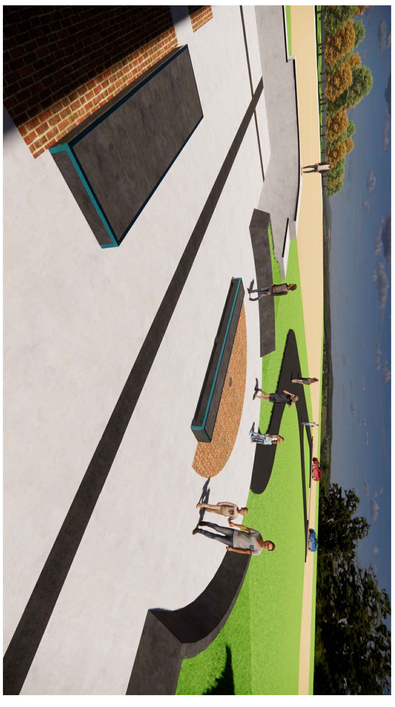
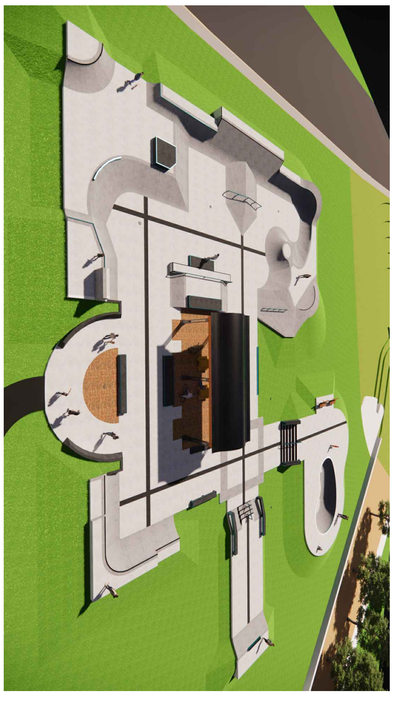
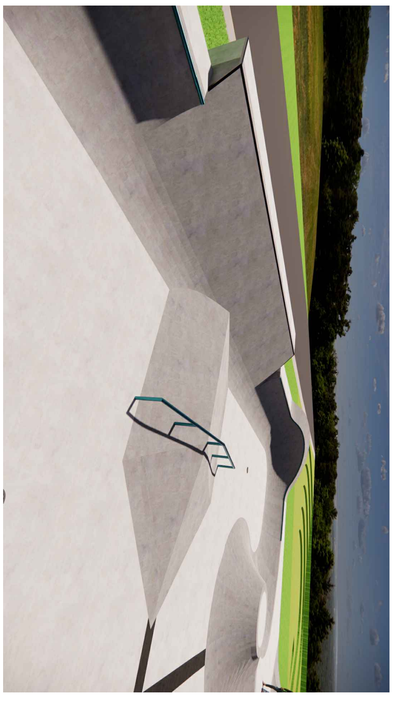
SYMBOL	DESCRIPTION	DETAIL(S)	QUANTITY
?'-?"R	RADIUS OF THE TRANSITION	AS-14 / 1	N/A
→	BANK	AS-14 / 2	N/A
	FINISH GRADE CONTOUR	AS-06	N/A
	BY OTHERS - SEE SHEETS 0 - 0		

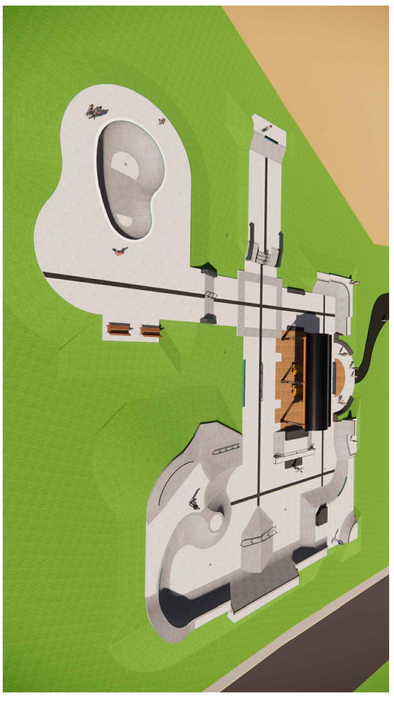
DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: MASTER PLAN

SHEET:: 02 OF 16
AS-02
SKATE PARK



3D GRAPHICS ARE FOR REFERENCE ONLY.

SHEET:: 03 OF 16

AS-03
SKATE PARK

PROJECT::
PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE::
3D IMAGES

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

LEGEND

SYMBOL	DESCRIPTION	DETAIL(S)
	COLD JOINT (C.J.)	AS-12
	DRAIN INLET	AS-08

NOTES

1. COORDINATE VALUES SHOWN ARE INTENDED FOR HORIZONTAL POSITIONING AND DIMENSION CLARIFICATION ONLY. ALL POINTS SET IN THE FIELD FROM THESE VALUES SHALL FIRST BE CHECKED BY THE CONTRACTOR TO ENSURE THAT THE LOCATION IS CONSISTENT WITH THE DIMENSIONS AND GRAPHIC LOCATIONS SHOWN WITHIN THE APPROVED CONSTRUCTION DOCUMENTS. IN THE CASE OF A DISCREPANCY WITH ANY COORDINATE VALUE SHOWN, THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY THE ACTION SPORTS DESIGNER PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITY THAT MAY BE AFFECTED.

2. UPON REQUEST PILLAR DESIGN STUDIOS WILL PROVIDE THE CONTRACTOR/ SURVEYOR WITH A DIGITAL FILE CONTAINING THE POINT INFORMATION FOR THIS PROJECT.

3. ALL COORDINATES SHOWN AT THE BOTTOM OF ALL BANKS/ TRANSITIONS ARE LOCATED AT THE COLD JOINT.

4. BECAUSE OF THE SCALE OF THIS DRAWING AND PROXIMITY OF FEATURES TO EACH OTHER, THE LOCATION OF SOME OF THE POINTS MAY BE OBSCURED. REFER TO THE POINT TABLE(S) FOR THE ACTUAL LOCATIONS FOR ALL POINTS.

PROGRESS SUBMITTAL

THIS PLAN IS INCOMPLETE AND SHALL BE FINALIZED FOR THE NEXT SUBMITTAL.

NORTH

0'-0" 10'-0" 20'-0" 30'-0"

SCALE: 1" = 10'-0"

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20.024
DATE:: 12/07/22

PROJECT:: **PORTSMOUTH SKATEPARK**
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: HORIZONTAL CONTROL PLAN

SHEET:: 04 OF 16
AS-04
SKATE PARK

PROGRESS SUBMITTAL

THIS PLAN IS INCOMPLETE AND SHALL BE FINALIZED FOR THE NEXT SUBMITTAL.

DESIGNED:: PILLAR TEAM

DRAWN:: PILLAR TEAM

PROJECT #:: 20.024

DATE:: 12/07/22

PROJECT:: **PORTSMOUTH SKATEPARK**
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE:: HORIZONTAL CONTROL PLAN

SHEET:: 05 OF 16

AS-05

SKATE PARK

LEGEND

SYMBOL	DESCRIPTION	DETAIL(S)
———	FINISH GRADE CONTOUR	N/A
×100.00	TOP OF CONCRETE SPOT ELEVATION	N/A
——→——	DIRECTION OF SURFACE FLOW, 1.00% MINIMUM SLOPE	N/A
- - - - -	GRADE BREAK	N/A
⌖	6" [15.24cm] ROUND DRAIN INLET	AS-14 / 9

NOTES

1. FINE GRADE ALL AREAS DISTURBED BY CONSTRUCTION OPERATIONS.
2. ALL SPOT ELEVATIONS ARE TOP OF CONCRETE UNLESS OTHERWISE NOTED.
3. MINIMUM SLOPE FOR ALL TOP DECK AND FLATBOTTOM SLABS SHALL BE 1/8" [3.18mm] PER 1'-0" [30.48cm] ≈ 1.00%.
4. THE TOP OF ALL ROUND COPING SHALL BE 3/8" [9.53mm] ABOVE THE TOP OF CONCRETE ELEVATIONS.

NORTH

0'-0" 10'-0" 20'-0" 30'-0"

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: SURFACE GRADING & DRAINAGE PLAN

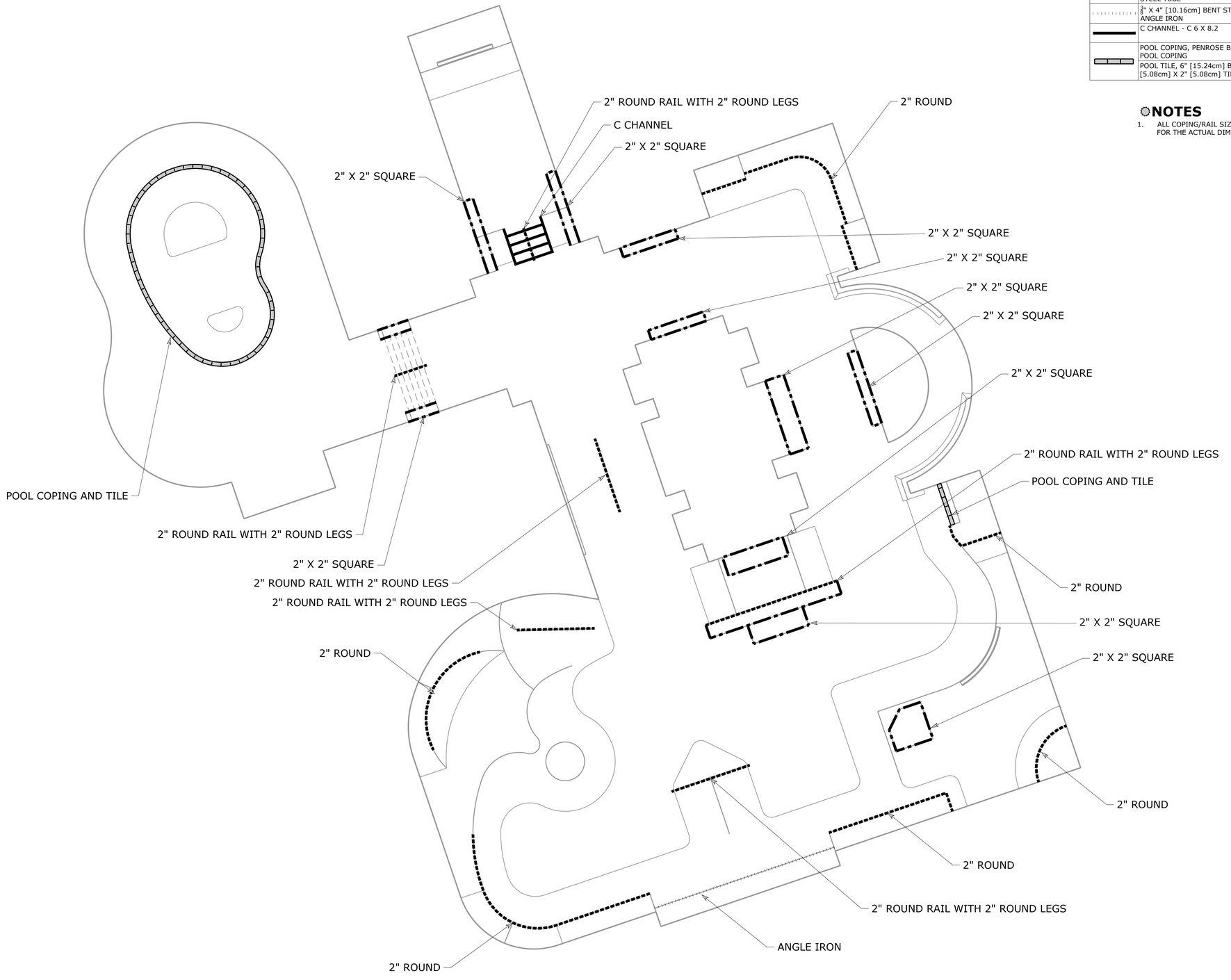
SHEET:: AS-06 SKATE PARK
06 OF 16

LEGEND

SYMBOL	DESCRIPTION	DETAIL(S)	COLOR	FINISH
	2" [6.03cm] ROUND STEEL PIPE	AS-13 / 1	T.B.D.	PAINTED
	2" [5.08cm] X 2" [5.08cm] SQUARE STEEL TUBE	AS-13 / 3 & 4	T.B.D.	PAINTED
	3/8" X 4" [10.16cm] BENT STEEL PLATE - ANGLE IRON	AS-13 / 9	T.B.D.	PAINTED
	C CHANNEL - C 6 X 8.2	AS-15 / 4	T.B.D.	PAINTED
	POOL COPING, PENROSE BULLNOSE POOL COPING	AS-13 / 8	NATURAL GRAY	N/A
	POOL TILE, 6" [15.24cm] BAND OF 2" [5.08cm] X 2" [5.08cm] TILES	AS-13 / 8	T.B.D.	N/A

NOTES

1. ALL COPING/RAIL SIZES ARE NOMINAL, REFER TO THE STEEL SHAPES CHART FOR THE ACTUAL DIMENSIONS.



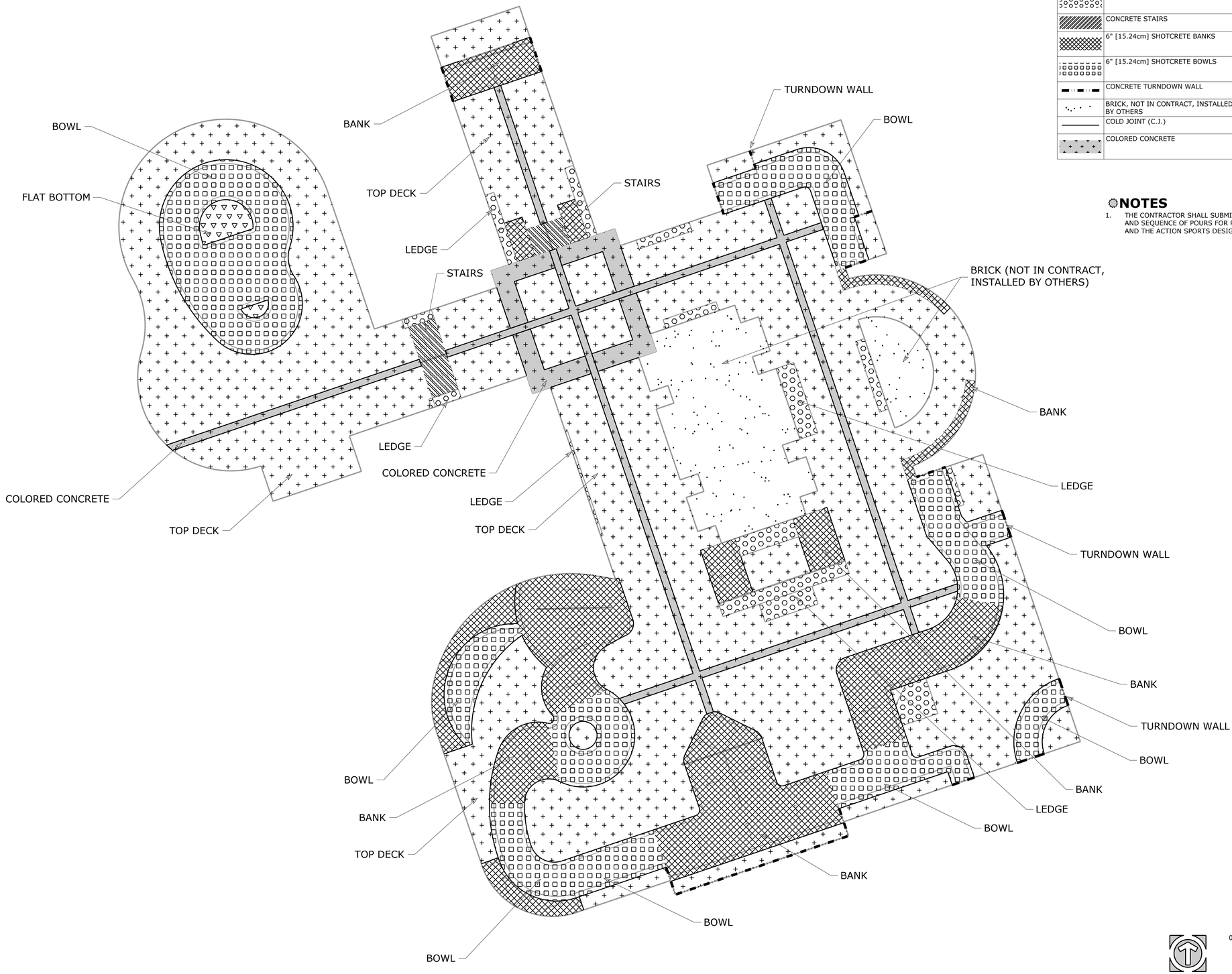
NORTH

0'-0" 10'-0" 20'-0" 30'-0"

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: **PORTSMOUTH SKATEPARK**
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: COPING PLAN

SHEET:: 07 OF 16
AS-07
SKATE PARK



LEGEND

SYMBOL	DESCRIPTION	DETAIL(S)	COLOR	FINISH
	4" [10.16cm] CONCRETE TOP DECK	AS-14 / 4	NATURAL GRAY	SMOOTH TROWEL
	6" [15.24cm] CONCRETE FLATBOTTOM	AS-14 / 5	NATURAL GRAY	SMOOTH TROWEL
	CONCRETE GRIND LEDGES	AS-15 / 2 & 3	DAVIS COLORS - GRAPHITE	SMOOTH TROWEL
	CONCRETE STAIRS	AS-14 / 7	NATURAL GRAY	LIGHT BROOM
	6" [15.24cm] SHOTCRETE BANKS	AS-14 / 2	DAVIS COLORS - DARK GRAY	SMOOTH TROWEL
	6" [15.24cm] SHOTCRETE BOWLS	AS-14 / 1	DAVIS COLORS - DARK GRAY	SMOOTH TROWEL
	CONCRETE TURNDOWN WALL	AS-15 / 1	NATURAL GRAY	SMOOTH TROWEL
	BRICK, NOT IN CONTRACT, INSTALLED BY OTHERS	SEE CIVIL PLANS	N/A	N/A
	COLD JOINT (C.J.)	AS-16	N/A	N/A
	COLORED CONCRETE	N/A	DAVIS COLORS - GRAPHITE	SMOOTH TROWEL

NOTES

1. THE CONTRACTOR SHALL SUBMIT A POUR SCHEDULE DEPICTING LOCATION AND SEQUENCE OF POURS FOR REVIEW BY THE OWNER'S REPRESENTATIVE AND THE ACTION SPORTS DESIGNER.

NORTH

0'-0" 10'-0" 20'-0" 30'-0"

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CONCRETE PLAN

SHEET:: 08 OF 16
AS-08
SKATE PARK

LEGEND

SYMBOL	DESCRIPTION	DETAIL(S)	QUANTITY
———	COLD JOINT (C.J.)	AS-16 / 1, 2, 3 & 4	0 L.F.
—— · ——	EXPANSION JOINT (E.J.)	AS-16 / 5 & 6	0 L.F.
- - - - -	SAWCUT JOINT (S.J.)	AS-16 / 7 & 8	0 L.F.
⌖	DRAIN INLET	AS-06	N/A

NOTES

1. THE JOINTING PLAN IS DIAGRAMMATIC ONLY.
2. CONTRACTOR SHALL SNAP CHALK LINES FOR ALL SAW-CUT JOINTS FOR REVIEW BY THE ACTION SPORTS DESIGNER PRIOR TO CUTTING JOINTS.

NORTH

0'-0" 10'-0" 20'-0" 30'-0"

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20.024
DATE:: 12/07/22

PROJECT:: **PORTSMOUTH SKATEPARK**
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: JOINTING PLAN

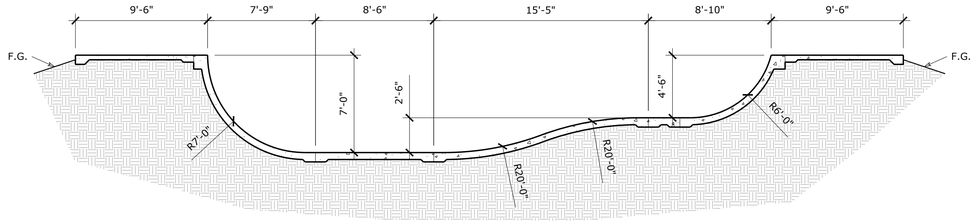
SHEET:: 09 OF 16
AS-09
SKATE PARK

LEGEND

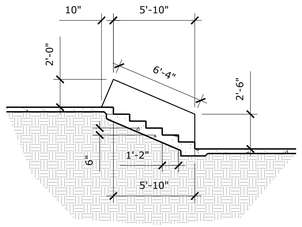
SYMBOL	DESCRIPTION	DETAIL(S)
	CONCRETE/SHOTCRETE	N/A
	SUBGRADE	N/A
F.G.	FINISH GRADE	N/A

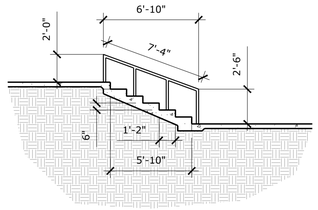
NOTES

1. REFER TO THE COPING PLAN FOR EDGE TREATMENT LOCATION AND TYPE
2. REFER TO THE HORIZONTAL CONTROL PLAN FOR ACTUAL HORIZONTAL LOCATIONS.
3. REFER TO THE SURFACE GRADING AND DRAINAGE PLAN FOR ACTUAL VERTICAL ELEVATIONS.



SECTION 1





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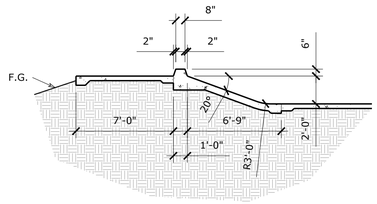

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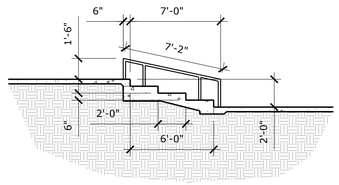
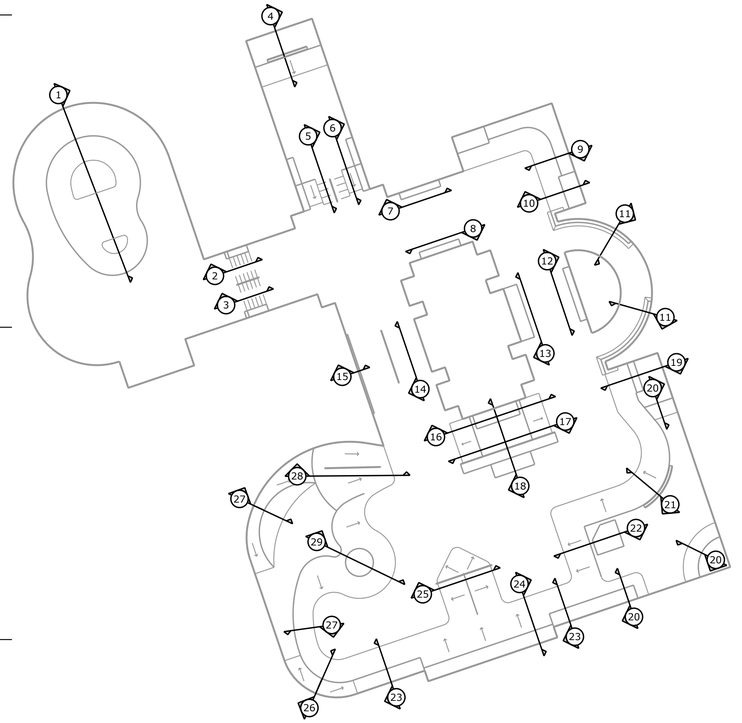


KEY MAP



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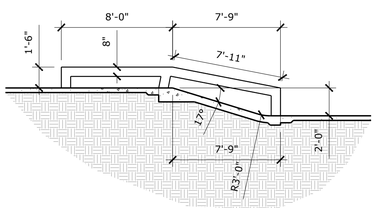
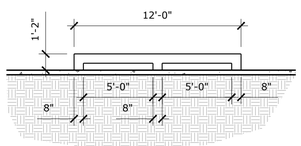
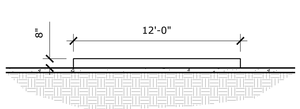


SECTION 5



SECTION 6



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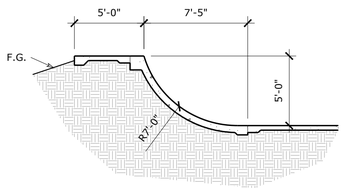


SECTION 8

SECTION 9

NORTH

0'-0" 20'-0" 40'-0" 60'-0"

DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CROSS SECTIONS

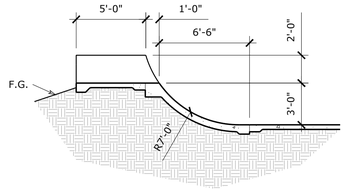
SHEET:: 10 OF 16
AS-10
SKATE PARK

LEGEND

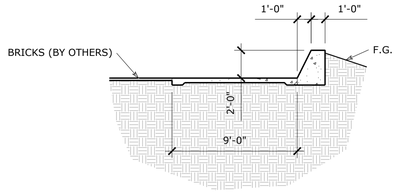
SYMBOL	DESCRIPTION	DETAIL(S)
	CONCRETE/SHOTCRETE	N/A
	SUBGRADE	N/A
F.G.	FINISH GRADE	N/A

NOTES

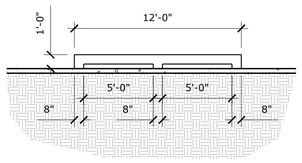
1. REFER TO THE COPING PLAN FOR EDGE TREATMENT LOCATION AND TYPE
2. REFER TO THE HORIZONTAL CONTROL PLAN FOR ACTUAL HORIZONTAL LOCATIONS.
3. REFER TO THE SURFACE GRADING AND DRAINAGE PLAN FOR ACTUAL VERTICAL ELEVATIONS.



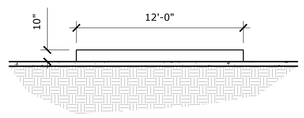
SECTION 10



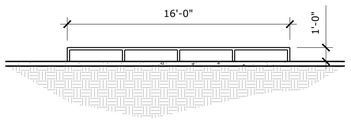
SECTION 11



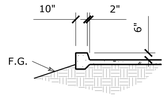
SECTION 12



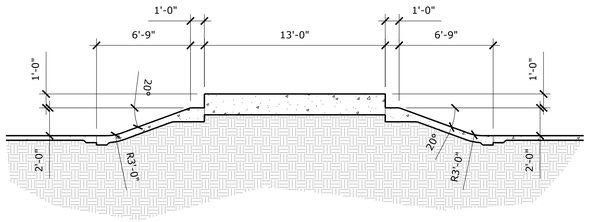
SECTION 13



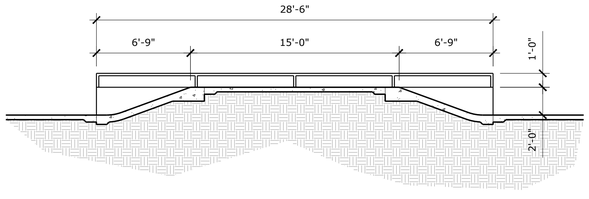
SECTION 14



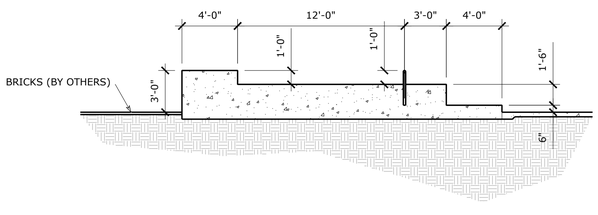
SECTION 15



SECTION 16



SECTION 17



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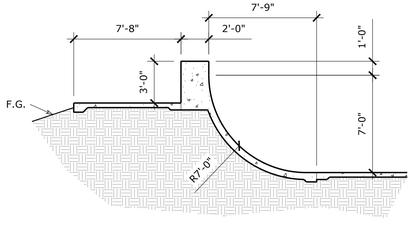
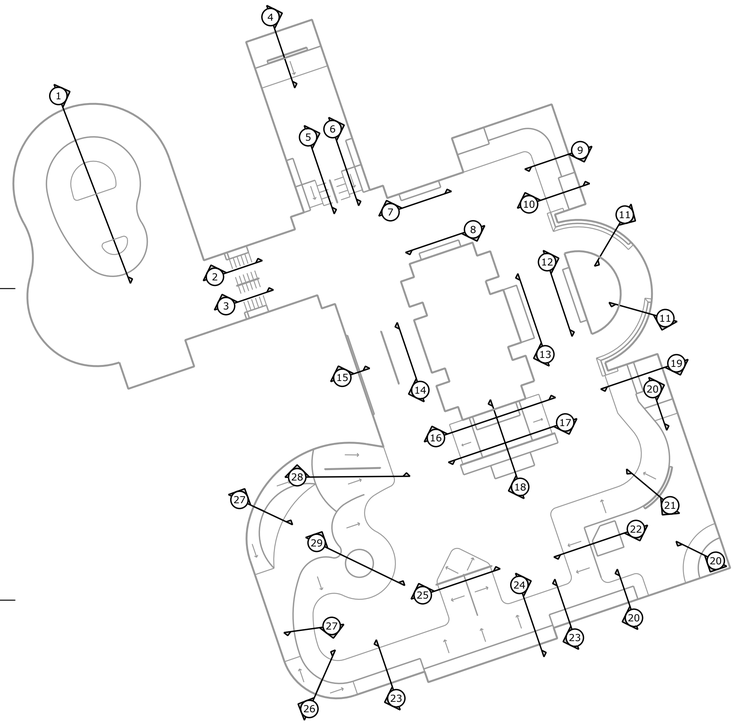
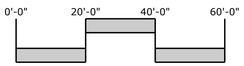


SECTION 19

KEY MAP





DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CROSS SECTIONS

SHEET:: 11 OF 16
AS-11
SKATE PARK

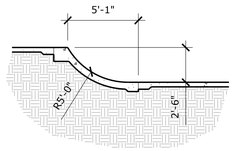
LEGEND

SYMBOL	DESCRIPTION	DETAIL(S)
	CONCRETE/SHOTCRETE	N/A
	SUBGRADE	N/A
F.G.	FINISH GRADE	N/A

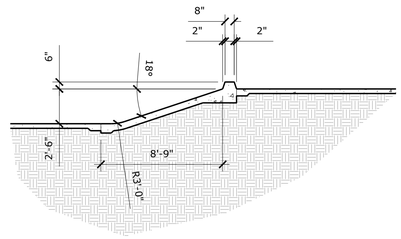
NOTES

1. REFER TO THE COPING PLAN FOR EDGE TREATMENT LOCATION AND TYPE
2. REFER TO THE HORIZONTAL CONTROL PLAN FOR ACTUAL HORIZONTAL LOCATIONS.
3. REFER TO THE SURFACE GRADING AND DRAINAGE PLAN FOR ACTUAL VERTICAL ELEVATIONS.

SECTION 20



SECTION 21



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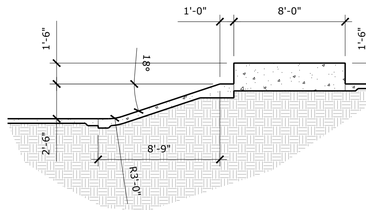

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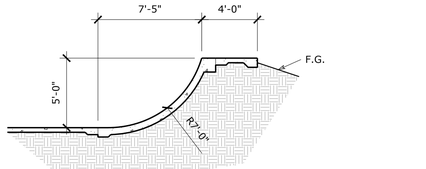

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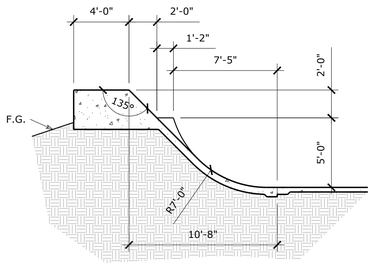
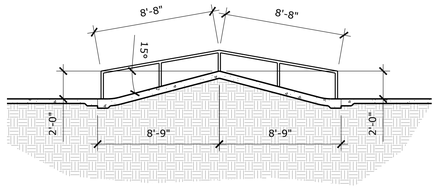
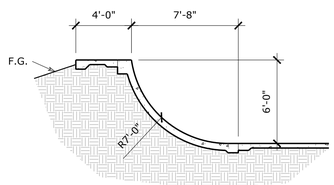


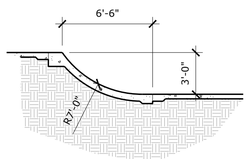
SECTION 25



SECTION 26



SECTION 27



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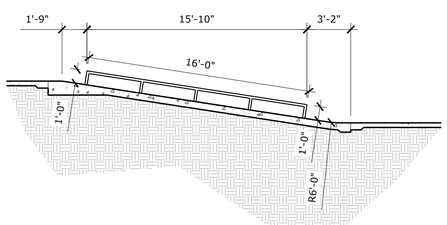

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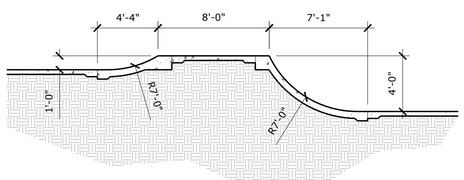
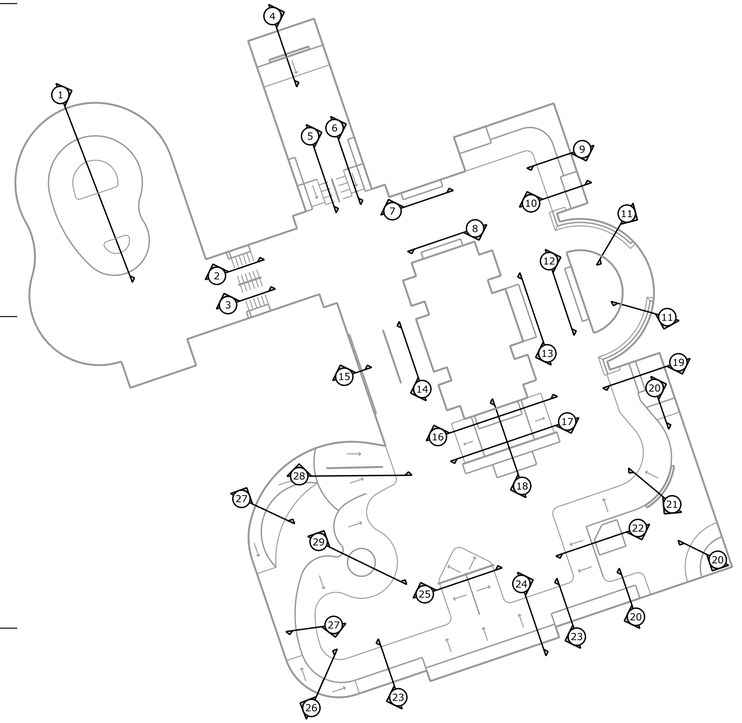


KEY MAP



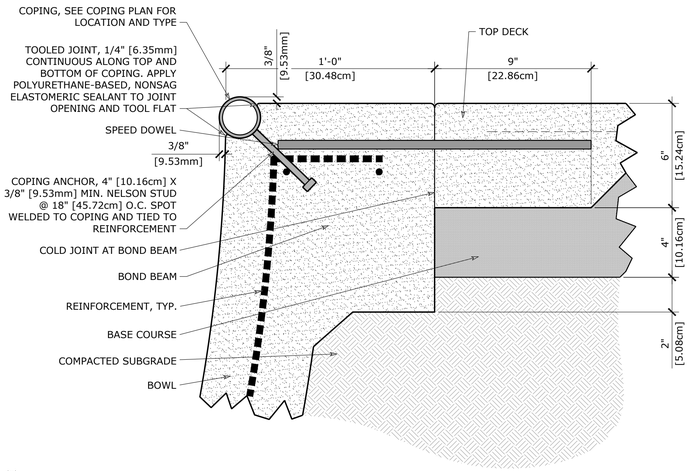
NORTH

0'-0" 20'-0" 40'-0" 60'-0"

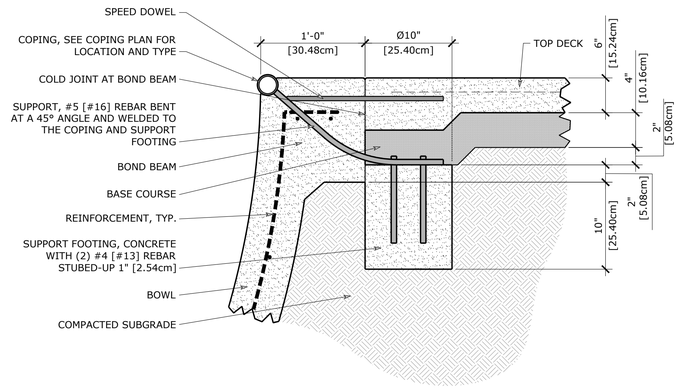
DESIGNED:: PILLAR TEAM
DRAWN:: PILLAR TEAM
PROJECT #:: 20-024
DATE:: 12/07/22

PROJECT:: PORTSMOUTH SKATEPARK
PORTSMOUTH, NEW HAMPSHIRE
SHEET TITLE:: CROSS SECTIONS

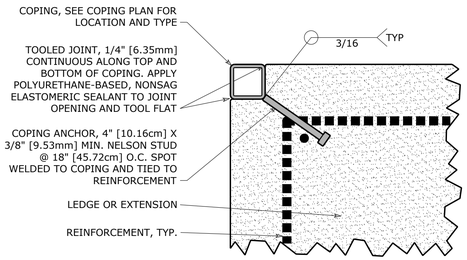
SHEET:: AS-12
12 OF 16
SKATE PARK



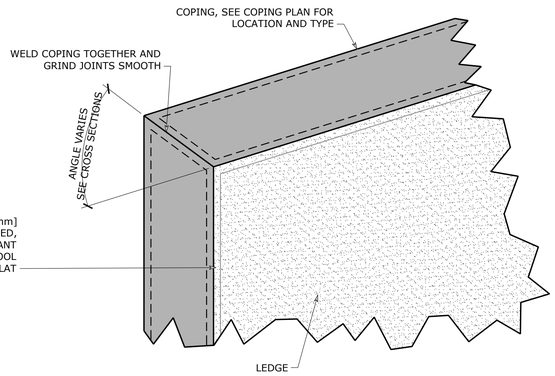
1 STEEL COPING - ROUND
SCALE: 3" = 1'-0"



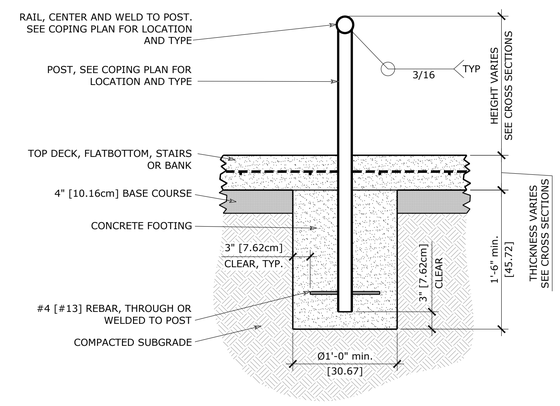
2 COPING CONSTRUCTION SUPPORT
SCALE: 1-1/2" = 1'-0"



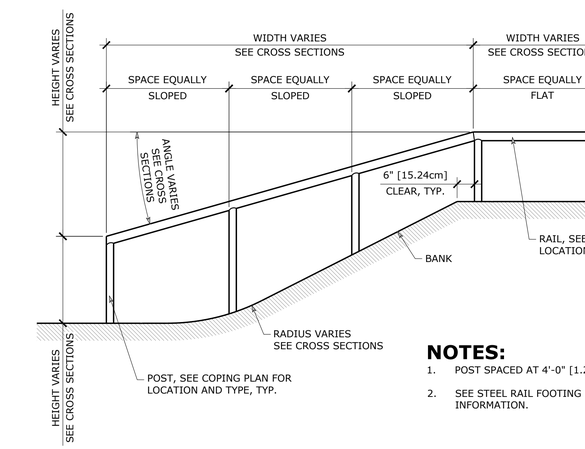
3 STEEL COPING - SQUARE
SCALE: 3" = 1'-0"



4 HUBBA LEDGE COPING
SCALE: 6" = 1'-0"

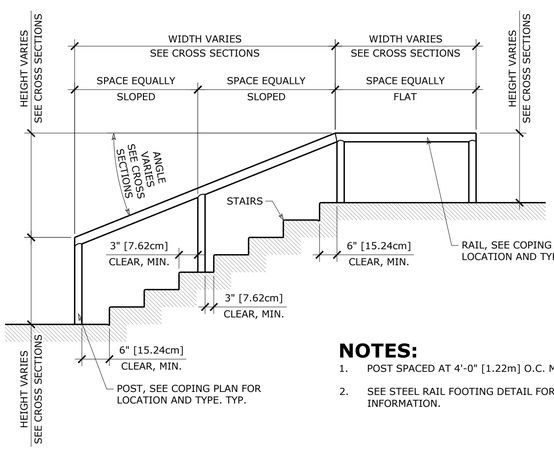


5 STEEL RAIL FOOTING
SCALE: 1" = 1'-0"



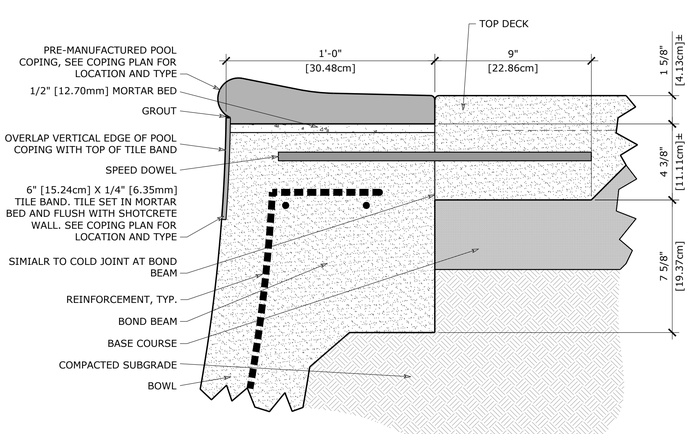
NOTES:
1. POST SPACED AT 4'-0" [1.22m] O.C. MAXIMUM.
2. SEE STEEL RAIL FOOTING DETAIL FOR ADDITIONAL INFORMATION.

6 STEEL RAIL IN BANK
SCALE: 1/2" = 1'-0"

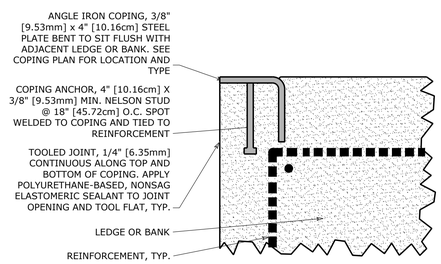


NOTES:
1. POST SPACED AT 4'-0" [1.22m] O.C. MAXIMUM.
2. SEE STEEL RAIL FOOTING DETAIL FOR ADDITIONAL INFORMATION.

7 STEEL RAIL IN STAIRS
SCALE: 1/2" = 1'-0"



8 POOL COPING AND TILE
SCALE: 3" = 1'-0"



9 COPING - ANGLE IRON
SCALE: N.T.S.

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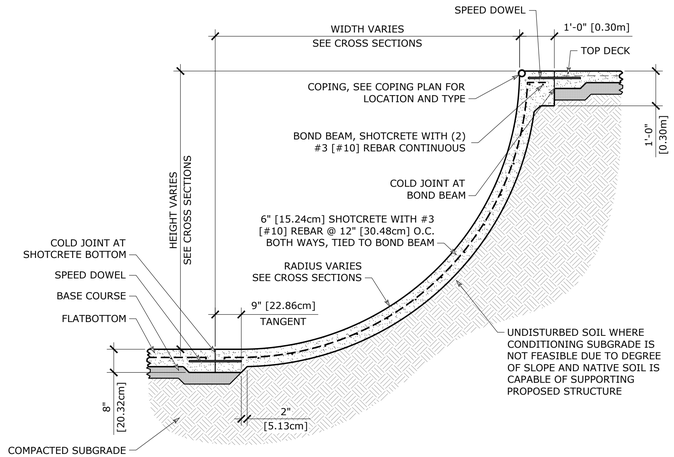
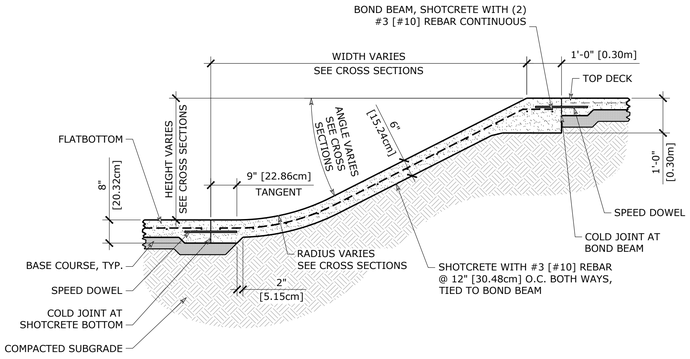
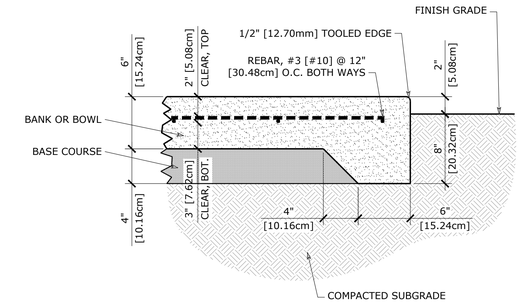


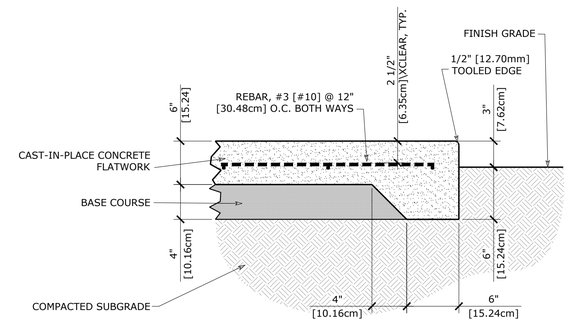
1 SHOTCRETE BOWL
SCALE: 1/2" = 1'-0"



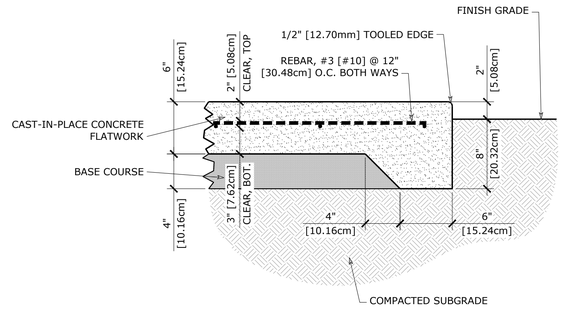
2 SHOTCRETE BANK
SCALE: 1/2" = 1'-0"



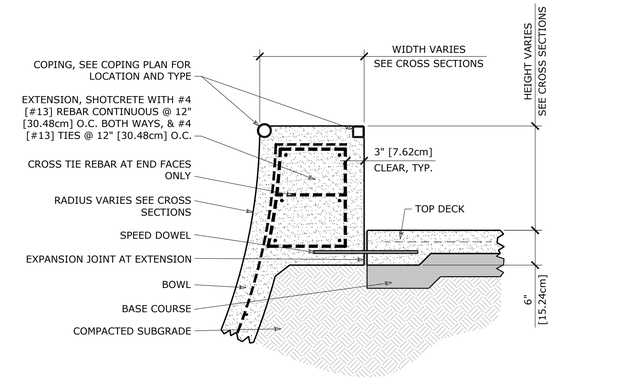
3 SHOTCRETE SECTION
SCALE: 1-1/2" = 1'-0"



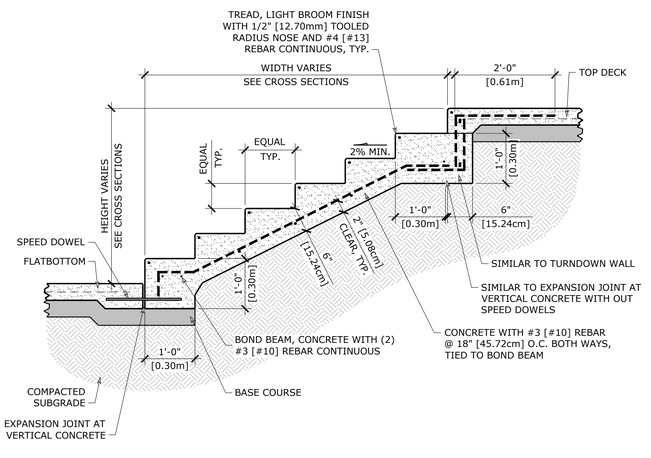
4 CONCRETE TOP DECK SECTION
SCALE: 1-1/2" = 1'-0"



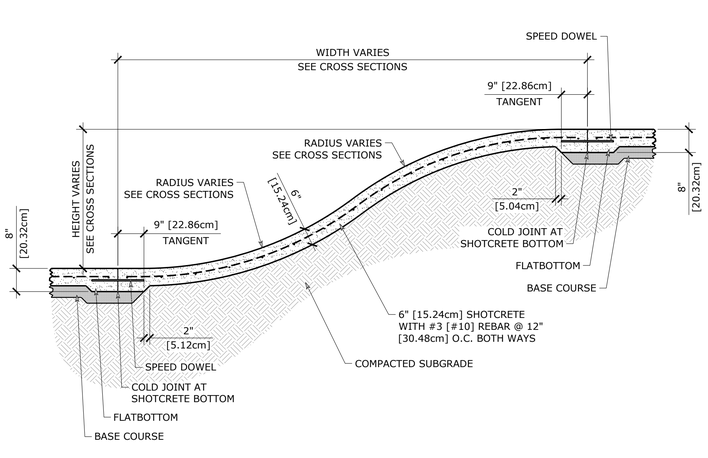
5 CONCRETE FLATBOTTOM SECTION
SCALE: 1-1/2" = 1'-0"



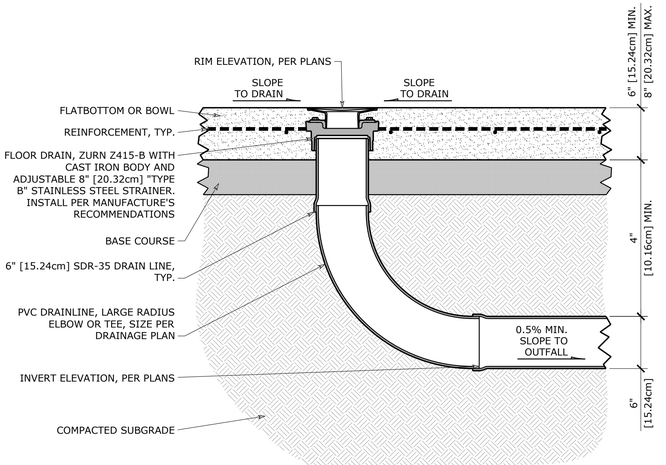
6 SHOTCRETE EXTENSION
SCALE: 1" = 1'-0"



7 CONCRETE STAIRS
SCALE: 1" = 1'-0"



8 SHOTCRETE WATERFALL
SCALE: 1" = 1'-0"



9 DRAINLINE INLET
SCALE: 1-1/2" = 1'-0"

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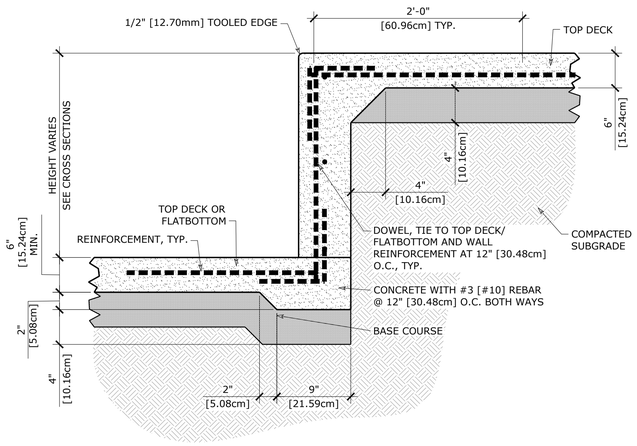
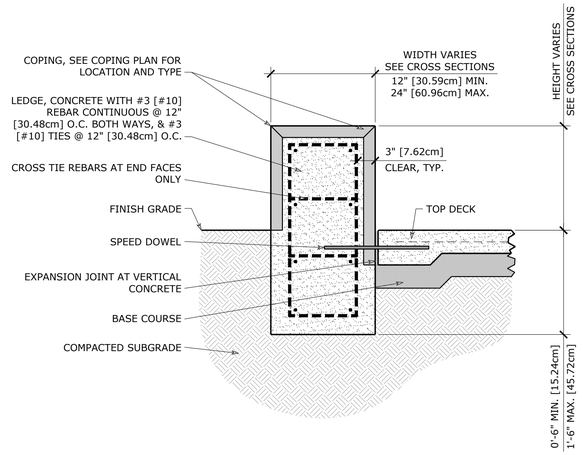
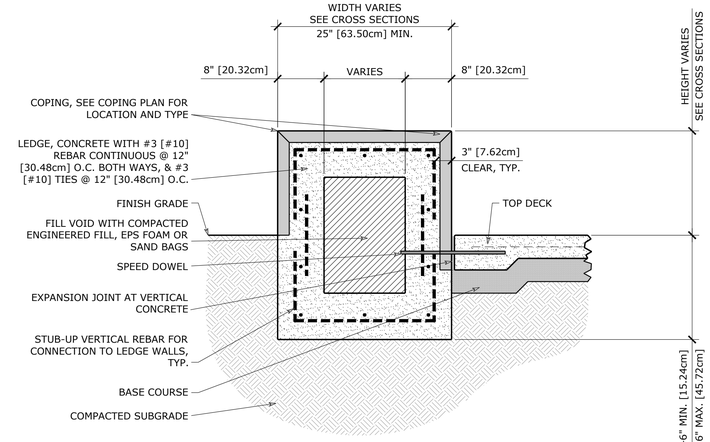


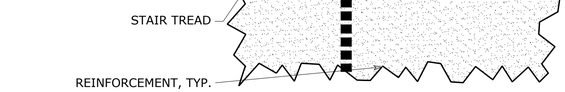
1 CONCRETE TURNDOWN WALL
SCALE: 1-1/2" = 1'-0"



2 CONCRETE GRIND LEDGE - MEDIUM
SCALE: 1" = 1'-0"



3 CONCRETE GRIND LEDGE - LARGE
SCALE: 1" = 1'-0"



4 STAIR COPING - C6 X 8.2 STEEL CHANNEL
SCALE: 3" = 1'-0"

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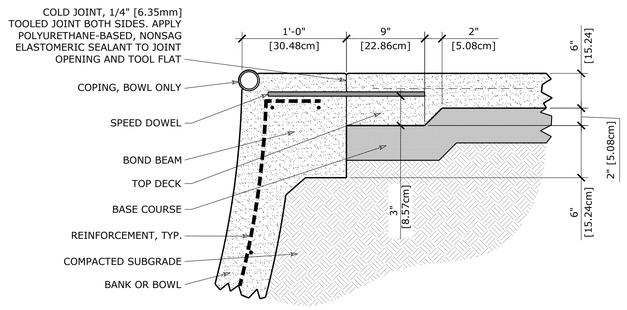
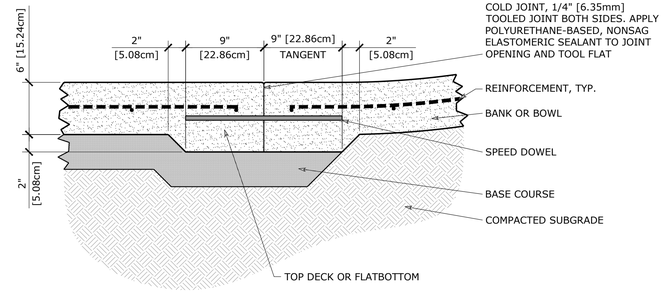
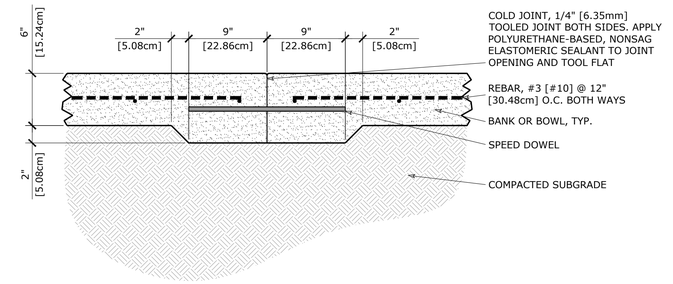


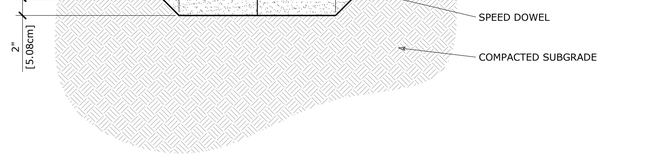
1 COLD JOINT AT BOND BEAM
SCALE: 1-1/2" = 1'-0"



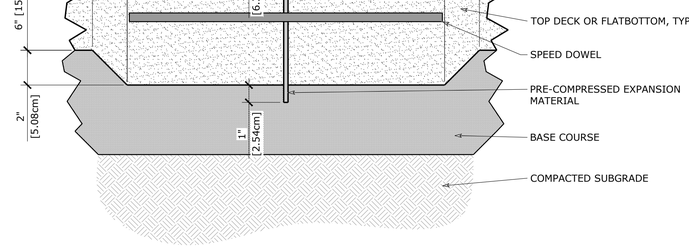
2 COLD JOINT AT SHOTCRETE BOTTOM
SCALE: 1-1/2" = 1'-0"



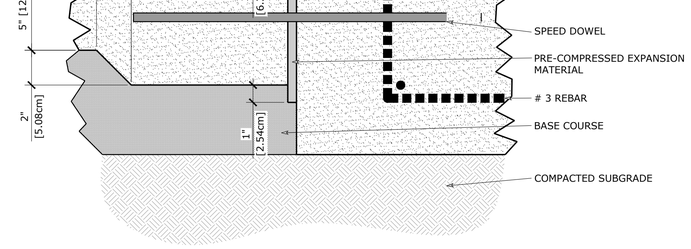
3 COLD JOINT AT MID CONCRETE
SCALE: 1-1/2" = 1'-0"



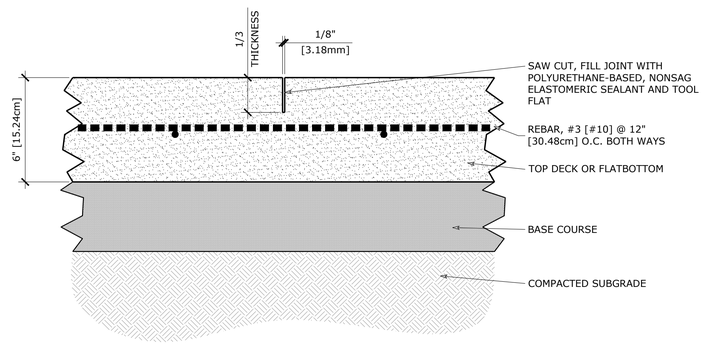
4 COLD JOINT AT MID SHOTCRETE
SCALE: 1-1/2" = 1'-0"



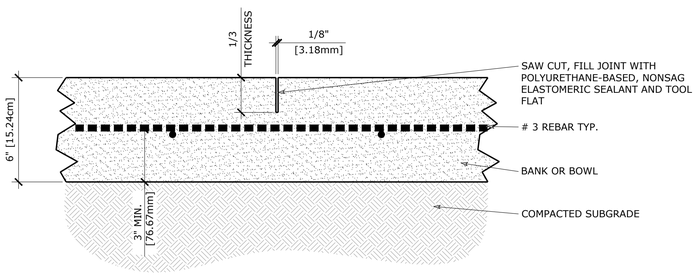
5 EXPANSION JOINT AT MID CONCRETE
SCALE: 3" = 1'-0"



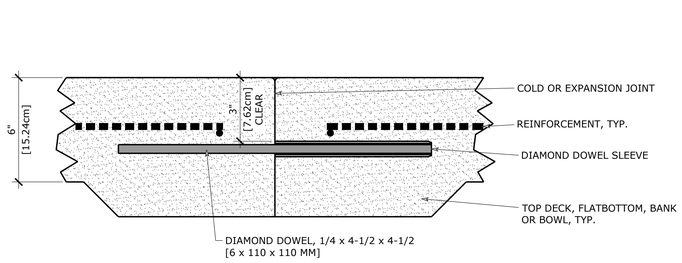
6 EXPANSION JOINT AT VERTICAL CONCRETE
SCALE: 3" = 1'-0"



7 SAWCUT JOINT AT MID CONCRETE
SCALE: 3" = 1'-0"



8 SAWCUT JOINT AT MID SHOTCRETE
SCALE: 3" = 1'-0"



NOTES:
1. SPEED DOWELS SHALL BE LOCATED AT 1'-6" [0.46m] O.C. ALONG JOINT.

9 SPEED DOWEL
SCALE: 3" = 1'-0"

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