

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Norfolk Southern  
Norfolk Southern Corporation  
650 W Peachtree St NW  
Atlanta, Georgia 30308

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**JOB DESCRIPTION**

East Palestine

**JOB NUMBER**

240-180293-1

# Eurofins Canton

## Job Notes

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## Authorization



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# Definitions/Glossary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

### GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Job ID: 240-180293-1

### Laboratory: Eurofins Canton

#### Narrative

#### Job Narrative 240-180293-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 2/13/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.3° C.

#### GC/MS VOA

Method 524.2 Ext: Ethanol: This sample had residual chlorine at 0.1: PW-207-20230212 (240-180293-2)

Method 524.2 Ext: Ethanol: These samples were not preserved with HCl. The pH was about 6 for all the samples: PW-205-20230212 (240-180293-1), PW-207-20230212 (240-180293-2) and FB-20230212 (240-180293-3)

Method 524.2: FB-20230212 (240-180293-3): The sample contained a large air bubble in its vial (less than 5mL), while the EPA method requires that the sample bottle should not have any trapped air bubbles when sealed. [Analytical Batch 810-47676]

#### Parameters affected:

Vinyl acetate  
n-Butyl acrylate  
Ethyl acrylate  
Epichlorohydrin  
Cyclohexanone  
Butadiene  
Bis(2-chloroethyl)ether  
Benzyl chloride  
2-Methyl-2-propanol  
2-Chloro-1,3-butadiene  
1,4-Dioxane

Method 524.2: PW-205-20230212 (240-180293-1), PW-207-20230212 (240-180293-2) and FB-20230212 (240-180293-3): The sample chromatogram was searched (+/-)-2-ethylhexyl acrylate (CAS #103-11-7), which was observed to elute at 16.0 minutes in a spiked blank. (+/-)-2-ethylhexyl acrylate was not observed in this sample. [Analytical Batch 810-47676]

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC/MS Semi VOA

Method 525.2: The laboratory control sample (LCS) for preparation batch 810-47741 and analytical batch 810-47797 recovered outside control limits (70-130%) for the following analytes: Prometon (10%). Prometon is known to have low extraction recovery under acidic conditions per table 6B of our SOP. Neutral pH extraction is required. See EPA Method 525.2 Rev 2.0 Section 8.2.2.

(LCS 810-47741/1-A)

Method 525.2: The laboratory control sample (LCS) for preparation batch 810-47741 and analytical batch 810-47797 recovered outside control limits (70-130%) for the following analytes: Butachlor (135%) and Chlorobenzilate (136%). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 525.2: LCS was originally spiked at 10ug/L to check for 2-Butoxyethyl acetate as a TIC prior to calibrating the analyte. 2-Butoxyethyl acetate is calculating over the upper calibration limit of 10ug/L in this LCS, but passes percent recovery criteria.

(LCS 810-47741/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Case Narrative

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

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## Job ID: 240-180293-1 (Continued)

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### Laboratory: Eurofins Canton (Continued)

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Method Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

Method	Method Description	Protocol	Laboratory
524.2	Volatile Organic Compounds (GC/MS)	EPA-DW	EA SB
524.2 Ext	Volatile Organic Compounds (GC/MS)	EPA-DW	EA SB
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	EA SB
525.2	Extraction of Semivolatile Compounds	EPA	EA SB

**Protocol References:**

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

**Laboratory References:**

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777



# Sample Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-180293-1	PW-205-20230212	Water	02/12/23 09:50	02/13/23 08:00
240-180293-2	PW-207-20230212	Water	02/12/23 10:20	02/13/23 08:00
240-180293-3	FB-20230212	Water	02/12/23 09:30	02/13/23 08:00
240-180293-4	TB-20230212	Water	02/12/23 00:00	02/13/23 08:00

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# Detection Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

No Detections.

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dibromochloromethane	0.58		0.50	0.10	ug/L	1		524.2	Total/NA
Chloroform	0.99		0.50	0.20	ug/L	1		524.2	Total/NA
Bromodichloromethane	0.99		0.50	0.10	ug/L	1		524.2	Total/NA
Di-n-butyl phthalate	0.12	J B	1.9	0.068	ug/L	1		525.2	Total/NA

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

No Detections.

**Client Sample ID: TB-20230212**

**Lab Sample ID: 240-180293-4**

No Detections.

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

Date Collected: 02/12/23 09:50

Matrix: Water

Date Received: 02/13/23 08:00

**Method: EPA-DW 524.2 Ext - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	5.0	U	10	5.0	ug/L			02/14/23 12:24	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichlorobenzene-d4 (Surr)	96		70 - 130					02/14/23 12:24	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 130					02/14/23 12:24	1
Toluene-d8 (Surr)	101		70 - 130					02/14/23 12:24	1
4-Bromofluorobenzene (Surr)	95		70 - 130					02/14/23 12:24	1

**Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.30	U	0.50	0.30	ug/L			02/13/23 18:34	1
Ethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Styrene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
cis-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
trans-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
N-Propylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
n-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
4-Chlorotoluene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
1,4-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Epichlorohydrin	0.80	U	1.0	0.80	ug/L			02/13/23 19:51	1
1,2-Dibromoethane (EDB)	0.20	U	0.20	0.20	ug/L			02/13/23 18:34	1
1,3-Butadiene	0.50	U	5.0	0.50	ug/L			02/13/23 19:51	1
Allyl chloride	1.1	U	5.0	1.1	ug/L			02/13/23 18:34	1
1,2-Dichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Acrylonitrile	0.90	U	1.0	0.90	ug/L			02/13/23 18:34	1
Chloroacetonitrile	2.0	U	5.0	2.0	ug/L			02/13/23 18:34	1
4-Methyl-2-pentanone (MIBK)	1.5	U	2.0	1.5	ug/L			02/13/23 18:34	1
1,3,5-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Bromobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
Toluene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Chlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Cyclohexanone	2.0	U	5.0	2.0	ug/L			02/13/23 19:51	1
1-Chlorobutane	0.70	U	5.0	0.70	ug/L			02/13/23 18:34	1
Tetrahydrofuran	1.4	U	5.0	1.4	ug/L			02/13/23 18:34	1
trans-1,4-Dichloro-2-butylene	1.4	U	5.0	1.4	ug/L			02/13/23 18:34	1
Bis(2-chloroethyl)ether	0.80	U	2.0	0.80	ug/L			02/13/23 19:51	1
1,2,4-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Dibromochloromethane	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
Methacrylonitrile	1.7	U	5.0	1.7	ug/L			02/13/23 18:34	1
Chloroprene	0.40	U	5.0	0.40	ug/L			02/13/23 19:51	1
Tetrachloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Ethyl acrylate	0.40	U	1.0	0.40	ug/L			02/13/23 19:51	1
n-Butyl acrylate	0.50	U	1.0	0.50	ug/L			02/13/23 19:51	1
1,3-Dichloropropane	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
cis-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
trans-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Methyl-tert-butyl Ether (MTBE)	0.40	U	0.50	0.40	ug/L			02/13/23 18:34	1
m-Xylene & p-Xylene	0.50	U	0.50	0.50	ug/L			02/13/23 18:34	1
1,2,3-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
1,3-Dichlorobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

**Date Collected: 02/12/23 09:50**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
1,1-Dichloropropene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			02/13/23 18:34	1
2,2-Dichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Ethyl ether	0.30	U	2.0	0.30	ug/L			02/13/23 18:34	1
Ethyl tert-butyl ether	0.40	U	2.0	0.40	ug/L			02/13/23 18:34	1
Chloroform	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Hexachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 18:34	1
Benzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
1,1,1-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Bromomethane	0.40	U	0.50	0.40	ug/L			02/13/23 18:34	1
Chloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Methyl iodide	2.0	U	2.0	2.0	ug/L			02/13/23 18:34	1
Dibromomethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Bromochloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Chloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Vinyl chloride	0.20	U	0.20	0.20	ug/L			02/13/23 18:34	1
Dichloromethane	0.40	U	0.50	0.40	ug/L			02/13/23 18:34	1
Carbon disulfide	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Bromoform	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Bromodichloromethane	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
1,1-Dichloroethane	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
1,1-Dichloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
tert-Butyl alcohol	0.60	U	2.0	0.60	ug/L			02/13/23 19:51	1
Trichlorofluoromethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Dichlorodifluoromethane	0.30	U	0.50	0.30	ug/L			02/13/23 18:34	1
Pentachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 18:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.30	U	0.50	0.30	ug/L			02/13/23 18:34	1
1,2-Dichloropropane	0.20	U	0.25	0.20	ug/L			02/13/23 18:34	1
2-Butanone (MEK)	2.0	U	5.0	2.0	ug/L			02/13/23 18:34	1
1,1,2-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Trichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
1,1,2,2-Tetrachloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Methyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 18:34	1
1,2,3-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Hexachlorobutadiene	0.20	U	0.25	0.20	ug/L			02/13/23 18:34	1
Naphthalene	0.30	U	0.50	0.30	ug/L			02/13/23 18:34	1
o-Xylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
2-Chlorotoluene	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
1,2-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
1,2,4-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
1,2-Dibromo-3-Chloropropane	0.20	U	0.20	0.20	ug/L			02/13/23 18:34	1
1,2,3-Trichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Methyl acrylate	0.80	U	1.0	0.80	ug/L			02/13/23 18:34	1
Ethyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 18:34	1
tert-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Isopropylbenzene	0.20	U	0.25	0.20	ug/L			02/13/23 18:34	1
4-Isopropyltoluene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Benzyl chloride	0.40	U	0.50	0.40	ug/L			02/13/23 19:51	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

Date Collected: 02/12/23 09:50

Matrix: Water

Date Received: 02/13/23 08:00

## Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Propionitrile	1.3	U	5.0	1.3	ug/L			02/13/23 18:34	1
Vinyl acetate	2.0	U	5.0	2.0	ug/L			02/13/23 19:51	1
Isopropyl ether	0.50	U	0.50	0.50	ug/L			02/13/23 18:34	1
1,4-Dioxane	2.0	U	5.0	2.0	ug/L			02/13/23 19:51	1
sec-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
2-Nitropropane	0.90	U	2.0	0.90	ug/L			02/13/23 18:34	1
t-Amyl methyl ether	0.60	U	3.0	0.60	ug/L			02/13/23 18:34	1
Acetone	2.0	U	5.0	2.0	ug/L			02/13/23 18:34	1
Bromoethane	0.10	U	0.50	0.10	ug/L			02/13/23 18:34	1
1,3-Dichloropropene, Total	0.20	U	0.50	0.20	ug/L			02/13/23 18:34	1
Xylenes, Total	0.50	U	0.50	0.50	ug/L			02/13/23 18:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 130		02/13/23 18:34	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		02/13/23 18:34	1
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		02/13/23 19:51	1
Toluene-d8 (Surr)	99		70 - 130		02/13/23 18:34	1
Toluene-d8 (Surr)	100		70 - 130		02/13/23 18:34	1
Toluene-d8 (Surr)	93		70 - 130		02/13/23 19:51	1
4-Bromofluorobenzene (Surr)	85		70 - 130		02/13/23 18:34	1
4-Bromofluorobenzene (Surr)	102		70 - 130		02/13/23 18:34	1
4-Bromofluorobenzene (Surr)	89		70 - 130		02/13/23 19:51	1
1,2-Dichlorobenzene-d4 (Surr)	81		70 - 130		02/13/23 18:34	1
1,2-Dichlorobenzene-d4 (Surr)	96		70 - 130		02/13/23 18:34	1
1,2-Dichlorobenzene-d4 (Surr)	89		70 - 130		02/13/23 19:51	1

## Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.020	U	0.49	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Acenaphthylene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Alachlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Aldrin	0.0080	U	0.098	0.0080	ug/L		02/14/23 07:52	02/14/23 18:12	1
Anthracene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Atrazine	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
alpha-Chlordane	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Benzo[a]anthracene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Benzo[a]pyrene	0.012	U	0.020	0.012	ug/L		02/14/23 07:52	02/14/23 18:12	1
Benzo[b]fluoranthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Benzo[g,h,i]perylene	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Benzo[k]fluoranthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Bromacil	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Butachlor	0.020	U *+	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Butylbenzylphthalate	0.020	U	0.98	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Chrysene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Di(2-ethylhexyl)adipate	0.020	U	0.59	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Di(2-ethylhexyl)phthalate	0.098	U	0.59	0.098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Di-n-butyl phthalate	0.069	U	2.0	0.069	ug/L		02/14/23 07:52	02/14/23 18:12	1
Diazinon	0.030	U	0.098	0.030	ug/L		02/14/23 07:52	02/14/23 18:12	1
Dibenz(a,h)anthracene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Dieldrin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

**Date Collected: 02/12/23 09:50**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diethylphthalate	0.020	U	0.98	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Dimethoate	0.030	U	0.49	0.030	ug/L		02/14/23 07:52	02/14/23 18:12	1
Dimethylphthalate	0.30	U	0.98	0.30	ug/L		02/14/23 07:52	02/14/23 18:12	1
Endrin	0.0097	U	0.0098	0.0097	ug/L		02/14/23 07:52	02/14/23 18:12	1
Fluoranthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Fluorene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
gamma-BHC (Lindane)	0.0083	U	0.020	0.0083	ug/L		02/14/23 07:52	02/14/23 18:12	1
Heptachlor	0.0043	U	0.039	0.0043	ug/L		02/14/23 07:52	02/14/23 18:12	1
Heptachlor epoxide	0.0039	U	0.020	0.0039	ug/L		02/14/23 07:52	02/14/23 18:12	1
Hexachlorobenzene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Hexachlorocyclopentadiene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Indeno[1,2,3-cd]pyrene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Isophorone	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Methoxychlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Metolachlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Metribuzin	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Molinate	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Phenanthrene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Propachlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Pyrene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Simazine	0.030	U	0.069	0.030	ug/L		02/14/23 07:52	02/14/23 18:12	1
gamma-Chlordane	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Trifluralin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
trans-Nonachlor	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Thiobencarb	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
1-Methylnaphthalene	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
2-Methylnaphthalene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
4,4'-DDD	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
4,4'-DDE	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
4,4'-DDT	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Acenaphthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Chlorothalonil	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Di-n-octyl phthalate	0.020	U	2.0	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
EPTC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Malathion	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Naphthalene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Parathion	0.089	U	0.49	0.089	ug/L		02/14/23 07:52	02/14/23 18:12	1
Terbacil	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Endrin aldehyde	0.030	U	0.098	0.030	ug/L		02/14/23 07:52	02/14/23 18:12	1
2,4'-DDD	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
2,4'-DDE	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
2,4'-DDT	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
2,6-Dinitrotoluene	0.039	U	0.098	0.039	ug/L		02/14/23 07:52	02/14/23 18:12	1
Acetochlor	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
alpha-BHC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
beta-BHC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Chlorobenzilate	0.030	U **	0.098	0.030	ug/L		02/14/23 07:52	02/14/23 18:12	1
Chloroneb	0.069	U	0.098	0.069	ug/L		02/14/23 07:52	02/14/23 18:12	1
Chlorpyrifos	0.020	U	0.049	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

**Date Collected: 02/12/23 09:50**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Dichlorvos	0.0098	U	0.049	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Endosulfan I	0.039	U	0.098	0.039	ug/L		02/14/23 07:52	02/14/23 18:12	1
Endosulfan II	0.039	U	0.098	0.039	ug/L		02/14/23 07:52	02/14/23 18:12	1
Endosulfan sulfate	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
cis-Permethrin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
trans-Permethrin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Caffeine	0.020	U	0.049	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Pendimethalin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Terbutylazine	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Hexazinone	0.049	U	0.098	0.049	ug/L		02/14/23 07:52	02/14/23 18:12	1
Permethrin	0.020	U	0.20	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Chlordane (n.o.s.)	0.0098	U	0.049	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Cyanazine	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
Prometon	0.0098	U *	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Desethylatrazine	0.0098	U	0.98	0.0098	ug/L		02/14/23 07:52	02/14/23 18:12	1
Deisopropylatrazine	0.039	U	0.98	0.039	ug/L		02/14/23 07:52	02/14/23 18:12	1
Prometryn	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 18:12	1
2-Butoxyethyl acetate	0.098	U	0.098	0.098	ug/L		02/14/23 07:52	02/16/23 12:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenylphosphate (Surr)	101		70 - 130	02/14/23 07:52	02/14/23 18:12	1
Triphenylphosphate (Surr)	109		70 - 130	02/14/23 07:52	02/16/23 12:51	1
Perylene-d12 (Surr)	90		70 - 130	02/14/23 07:52	02/14/23 18:12	1
Perylene-d12 (Surr)	96		70 - 130	02/14/23 07:52	02/16/23 12:51	1
2-Nitro-m-xylene (Surr)	100		70 - 130	02/14/23 07:52	02/14/23 18:12	1
2-Nitro-m-xylene (Surr)	107		70 - 130	02/14/23 07:52	02/16/23 12:51	1

# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

Date Collected: 02/12/23 10:20

Matrix: Water

Date Received: 02/13/23 08:00

**Method: EPA-DW 524.2 Ext - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	5.0	U	10	5.0	ug/L			02/14/23 12:48	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
1,2-Dichlorobenzene-d4 (Surr)	100		70 - 130					02/14/23 12:48	1
1,2-Dichloroethane-d4 (Surr)	100		70 - 130					02/14/23 12:48	1
Toluene-d8 (Surr)	102		70 - 130					02/14/23 12:48	1
4-Bromofluorobenzene (Surr)	99		70 - 130					02/14/23 12:48	1

**Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.30	U	0.50	0.30	ug/L			02/13/23 18:59	1
Ethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Styrene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
cis-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
trans-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
N-Propylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
n-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
4-Chlorotoluene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
1,4-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Epichlorohydrin	0.80	U	1.0	0.80	ug/L			02/13/23 20:14	1
1,2-Dibromoethane (EDB)	0.20	U	0.20	0.20	ug/L			02/13/23 18:59	1
1,3-Butadiene	0.50	U	5.0	0.50	ug/L			02/13/23 20:14	1
Allyl chloride	1.1	U	5.0	1.1	ug/L			02/13/23 18:59	1
1,2-Dichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Acrylonitrile	0.90	U	1.0	0.90	ug/L			02/13/23 18:59	1
Chloroacetonitrile	2.0	U	5.0	2.0	ug/L			02/13/23 18:59	1
4-Methyl-2-pentanone (MIBK)	1.5	U	2.0	1.5	ug/L			02/13/23 18:59	1
1,3,5-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Bromobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1
Toluene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Chlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Cyclohexanone	2.0	U	5.0	2.0	ug/L			02/13/23 20:14	1
1-Chlorobutane	0.70	U	5.0	0.70	ug/L			02/13/23 18:59	1
Tetrahydrofuran	1.4	U	5.0	1.4	ug/L			02/13/23 18:59	1
trans-1,4-Dichloro-2-butylene	1.4	U	5.0	1.4	ug/L			02/13/23 18:59	1
Bis(2-chloroethyl)ether	0.80	U	2.0	0.80	ug/L			02/13/23 20:14	1
1,2,4-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
<b>Dibromochloromethane</b>	<b>0.58</b>		0.50	0.10	ug/L			02/13/23 18:59	1
Methacrylonitrile	1.7	U	5.0	1.7	ug/L			02/13/23 18:59	1
Chloroprene	0.40	U	5.0	0.40	ug/L			02/13/23 20:14	1
Tetrachloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Ethyl acrylate	0.40	U	1.0	0.40	ug/L			02/13/23 20:14	1
n-Butyl acrylate	0.50	U	1.0	0.50	ug/L			02/13/23 20:14	1
1,3-Dichloropropane	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1
cis-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
trans-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Methyl-tert-butyl Ether (MTBE)	0.40	U	0.50	0.40	ug/L			02/13/23 18:59	1
m-Xylene & p-Xylene	0.50	U	0.50	0.50	ug/L			02/13/23 18:59	1
1,2,3-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
1,3-Dichlorobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

Date Collected: 02/12/23 10:20

Matrix: Water

Date Received: 02/13/23 08:00

**Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1
1,1-Dichloropropene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			02/13/23 18:59	1
2,2-Dichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Ethyl ether	0.30	U	2.0	0.30	ug/L			02/13/23 18:59	1
Ethyl tert-butyl ether	0.40	U	2.0	0.40	ug/L			02/13/23 18:59	1
<b>Chloroform</b>	<b>0.99</b>		0.50	0.20	ug/L			02/13/23 18:59	1
Hexachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 18:59	1
Benzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
1,1,1-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Bromomethane	0.40	U	0.50	0.40	ug/L			02/13/23 18:59	1
Chloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Methyl iodide	2.0	U	2.0	2.0	ug/L			02/13/23 18:59	1
Dibromomethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Bromochloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Chloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Vinyl chloride	0.20	U	0.20	0.20	ug/L			02/13/23 18:59	1
Dichloromethane	0.40	U	0.50	0.40	ug/L			02/13/23 18:59	1
Carbon disulfide	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Bromoform	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
<b>Bromodichloromethane</b>	<b>0.99</b>		0.50	0.10	ug/L			02/13/23 18:59	1
1,1-Dichloroethane	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1
1,1-Dichloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
tert-Butyl alcohol	0.60	U	2.0	0.60	ug/L			02/13/23 20:14	1
Trichlorofluoromethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Dichlorodifluoromethane	0.30	U	0.50	0.30	ug/L			02/13/23 18:59	1
Pentachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 18:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.30	U	0.50	0.30	ug/L			02/13/23 18:59	1
1,2-Dichloropropane	0.20	U	0.25	0.20	ug/L			02/13/23 18:59	1
2-Butanone (MEK)	2.0	U	5.0	2.0	ug/L			02/13/23 18:59	1
1,1,2-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Trichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
1,1,2,2-Tetrachloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Methyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 18:59	1
1,2,3-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Hexachlorobutadiene	0.20	U	0.25	0.20	ug/L			02/13/23 18:59	1
Naphthalene	0.30	U	0.50	0.30	ug/L			02/13/23 18:59	1
o-Xylene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
2-Chlorotoluene	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1
1,2-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
1,2,4-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
1,2-Dibromo-3-Chloropropane	0.20	U	0.20	0.20	ug/L			02/13/23 18:59	1
1,2,3-Trichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Methyl acrylate	0.80	U	1.0	0.80	ug/L			02/13/23 18:59	1
Ethyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 18:59	1
tert-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Isopropylbenzene	0.20	U	0.25	0.20	ug/L			02/13/23 18:59	1
4-Isopropyltoluene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Benzyl chloride	0.40	U	0.50	0.40	ug/L			02/13/23 20:14	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

Date Collected: 02/12/23 10:20

Matrix: Water

Date Received: 02/13/23 08:00

## Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Propionitrile	1.3	U	5.0	1.3	ug/L			02/13/23 18:59	1
Vinyl acetate	2.0	U	5.0	2.0	ug/L			02/13/23 20:14	1
Isopropyl ether	0.50	U	0.50	0.50	ug/L			02/13/23 18:59	1
1,4-Dioxane	2.0	U	5.0	2.0	ug/L			02/13/23 20:14	1
sec-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
2-Nitropropane	0.90	U	2.0	0.90	ug/L			02/13/23 18:59	1
t-Amyl methyl ether	0.60	U	3.0	0.60	ug/L			02/13/23 18:59	1
Acetone	2.0	U	5.0	2.0	ug/L			02/13/23 18:59	1
Bromoethane	0.10	U	0.50	0.10	ug/L			02/13/23 18:59	1
1,3-Dichloropropene, Total	0.20	U	0.50	0.20	ug/L			02/13/23 18:59	1
Xylenes, Total	0.50	U	0.50	0.50	ug/L			02/13/23 18:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 130		02/13/23 18:59	1
1,2-Dichloroethane-d4 (Surr)	104		70 - 130		02/13/23 18:59	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 130		02/13/23 20:14	1
Toluene-d8 (Surr)	96		70 - 130		02/13/23 18:59	1
Toluene-d8 (Surr)	97		70 - 130		02/13/23 18:59	1
Toluene-d8 (Surr)	95		70 - 130		02/13/23 20:14	1
4-Bromofluorobenzene (Surr)	84		70 - 130		02/13/23 18:59	1
4-Bromofluorobenzene (Surr)	98		70 - 130		02/13/23 18:59	1
4-Bromofluorobenzene (Surr)	92		70 - 130		02/13/23 20:14	1
1,2-Dichlorobenzene-d4 (Surr)	82		70 - 130		02/13/23 18:59	1
1,2-Dichlorobenzene-d4 (Surr)	97		70 - 130		02/13/23 18:59	1
1,2-Dichlorobenzene-d4 (Surr)	89		70 - 130		02/13/23 20:14	1

## Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.019	U	0.48	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Acenaphthylene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Alachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Aldrin	0.0078	U	0.097	0.0078	ug/L		02/14/23 07:52	02/14/23 18:37	1
Anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Atrazine	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
alpha-Chlordane	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Benzo[a]anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Benzo[a]pyrene	0.012	U	0.019	0.012	ug/L		02/14/23 07:52	02/14/23 18:37	1
Benzo[b]fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Benzo[g,h,i]perylene	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Benzo[k]fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Bromacil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Butachlor	0.019	U *+	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Butylbenzylphthalate	0.019	U	0.97	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Chrysene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Di(2-ethylhexyl)adipate	0.019	U	0.58	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Di(2-ethylhexyl)phthalate	0.097	U	0.58	0.097	ug/L		02/14/23 07:52	02/14/23 18:37	1
<b>Di-n-butyl phthalate</b>	<b>0.12</b>	<b>J B</b>	1.9	0.068	ug/L		02/14/23 07:52	02/14/23 18:37	1
Diazinon	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/14/23 18:37	1
Dibenz(a,h)anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Dieldrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

**Date Collected: 02/12/23 10:20**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diethylphthalate	0.019	U	0.97	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Dimethoate	0.029	U	0.48	0.029	ug/L		02/14/23 07:52	02/14/23 18:37	1
Dimethylphthalate	0.29	U	0.97	0.29	ug/L		02/14/23 07:52	02/14/23 18:37	1
Endrin	0.0096	U	0.0097	0.0096	ug/L		02/14/23 07:52	02/14/23 18:37	1
Fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Fluorene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
gamma-BHC (Lindane)	0.0081	U	0.019	0.0081	ug/L		02/14/23 07:52	02/14/23 18:37	1
Heptachlor	0.0043	U	0.039	0.0043	ug/L		02/14/23 07:52	02/14/23 18:37	1
Heptachlor epoxide	0.0039	U	0.019	0.0039	ug/L		02/14/23 07:52	02/14/23 18:37	1
Hexachlorobenzene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Hexachlorocyclopentadiene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Indeno[1,2,3-cd]pyrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Isophorone	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Methoxychlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Metolachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Metribuzin	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Molinate	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Phenanthrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Propachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Pyrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Simazine	0.029	U	0.068	0.029	ug/L		02/14/23 07:52	02/14/23 18:37	1
gamma-Chlordane	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Trifluralin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
trans-Nonachlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Thiobencarb	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
1-Methylnaphthalene	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
2-Methylnaphthalene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
4,4'-DDD	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
4,4'-DDE	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
4,4'-DDT	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Acenaphthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Chlorothalonil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Di-n-octyl phthalate	0.019	U	1.9	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
EPTC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Malathion	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Naphthalene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Parathion	0.087	U	0.48	0.087	ug/L		02/14/23 07:52	02/14/23 18:37	1
Terbacil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Endrin aldehyde	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/14/23 18:37	1
2,4'-DDD	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
2,4'-DDE	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
2,4'-DDT	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
2,6-Dinitrotoluene	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/14/23 18:37	1
Acetochlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
alpha-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
beta-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Chlorobenzilate	0.029	U **	0.097	0.029	ug/L		02/14/23 07:52	02/14/23 18:37	1
Chloroneb	0.068	U	0.097	0.068	ug/L		02/14/23 07:52	02/14/23 18:37	1
Chlorpyrifos	0.019	U	0.048	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

**Date Collected: 02/12/23 10:20**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Dichlorvos	0.0097	U	0.048	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Endosulfan I	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/14/23 18:37	1
Endosulfan II	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/14/23 18:37	1
Endosulfan sulfate	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
cis-Permethrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
trans-Permethrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Caffeine	0.019	U	0.048	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Pendimethalin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Terbutylazine	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Hexazinone	0.048	U	0.097	0.048	ug/L		02/14/23 07:52	02/14/23 18:37	1
Permethrin	0.019	U	0.19	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Chlordane (n.o.s.)	0.0097	U	0.048	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Cyanazine	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
Prometon	0.0097	U *	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Desethylatrazine	0.0097	U	0.97	0.0097	ug/L		02/14/23 07:52	02/14/23 18:37	1
Deisopropylatrazine	0.039	U	0.97	0.039	ug/L		02/14/23 07:52	02/14/23 18:37	1
Prometryn	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 18:37	1
2-Butoxyethyl acetate	0.097	U	0.097	0.097	ug/L		02/14/23 07:52	02/16/23 13:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenylphosphate (Surr)	103		70 - 130	02/14/23 07:52	02/14/23 18:37	1
Triphenylphosphate (Surr)	110		70 - 130	02/14/23 07:52	02/16/23 13:16	1
Perylene-d12 (Surr)	95		70 - 130	02/14/23 07:52	02/14/23 18:37	1
Perylene-d12 (Surr)	97		70 - 130	02/14/23 07:52	02/16/23 13:16	1
2-Nitro-m-xylene (Surr)	101		70 - 130	02/14/23 07:52	02/14/23 18:37	1
2-Nitro-m-xylene (Surr)	103		70 - 130	02/14/23 07:52	02/16/23 13:16	1

# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

Date Collected: 02/12/23 09:30

Matrix: Water

Date Received: 02/13/23 08:00

## Method: EPA-DW 524.2 Ext - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	5.0	U	10	5.0	ug/L			02/14/23 13:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene-d4 (Surr)	97		70 - 130		02/14/23 13:13	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 130		02/14/23 13:13	1
Toluene-d8 (Surr)	100		70 - 130		02/14/23 13:13	1
4-Bromofluorobenzene (Surr)	98		70 - 130		02/14/23 13:13	1

## Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.30	U	0.50	0.30	ug/L			02/13/23 19:24	1
Ethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Styrene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
cis-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
trans-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
N-Propylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
n-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
4-Chlorotoluene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
1,4-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Epichlorohydrin	0.80	U	1.0	0.80	ug/L			02/13/23 20:38	1
1,2-Dibromoethane (EDB)	0.20	U	0.20	0.20	ug/L			02/13/23 19:24	1
1,3-Butadiene	0.50	U	5.0	0.50	ug/L			02/13/23 20:38	1
Allyl chloride	1.1	U	5.0	1.1	ug/L			02/13/23 19:24	1
1,2-Dichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Acrylonitrile	0.90	U	1.0	0.90	ug/L			02/13/23 19:24	1
Chloroacetonitrile	2.0	U	5.0	2.0	ug/L			02/13/23 19:24	1
4-Methyl-2-pentanone (MIBK)	1.5	U	2.0	1.5	ug/L			02/13/23 19:24	1
1,3,5-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Bromobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
Toluene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Chlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Cyclohexanone	2.0	U	5.0	2.0	ug/L			02/13/23 20:38	1
1-Chlorobutane	0.70	U	5.0	0.70	ug/L			02/13/23 19:24	1
Tetrahydrofuran	1.4	U	5.0	1.4	ug/L			02/13/23 19:24	1
trans-1,4-Dichloro-2-butylene	1.4	U	5.0	1.4	ug/L			02/13/23 19:24	1
Bis(2-chloroethyl)ether	0.80	U	2.0	0.80	ug/L			02/13/23 20:38	1
1,2,4-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Dibromochloromethane	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
Methacrylonitrile	1.7	U	5.0	1.7	ug/L			02/13/23 19:24	1
Chloroprene	0.40	U	5.0	0.40	ug/L			02/13/23 20:38	1
Tetrachloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Ethyl acrylate	0.40	U	1.0	0.40	ug/L			02/13/23 20:38	1
n-Butyl acrylate	0.50	U	1.0	0.50	ug/L			02/13/23 20:38	1
1,3-Dichloropropane	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
cis-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
trans-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Methyl-tert-butyl Ether (MTBE)	0.40	U	0.50	0.40	ug/L			02/13/23 19:24	1
m-Xylene & p-Xylene	0.50	U	0.50	0.50	ug/L			02/13/23 19:24	1
1,2,3-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
1,3-Dichlorobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

Date Collected: 02/12/23 09:30

Matrix: Water

Date Received: 02/13/23 08:00

**Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
1,1-Dichloropropene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			02/13/23 19:24	1
2,2-Dichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Ethyl ether	0.30	U	2.0	0.30	ug/L			02/13/23 19:24	1
Ethyl tert-butyl ether	0.40	U	2.0	0.40	ug/L			02/13/23 19:24	1
Chloroform	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Hexachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 19:24	1
Benzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
1,1,1-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Bromomethane	0.40	U	0.50	0.40	ug/L			02/13/23 19:24	1
Chloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Methyl iodide	2.0	U	2.0	2.0	ug/L			02/13/23 19:24	1
Dibromomethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Bromochloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Chloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Vinyl chloride	0.20	U	0.20	0.20	ug/L			02/13/23 19:24	1
Dichloromethane	0.40	U	0.50	0.40	ug/L			02/13/23 19:24	1
Carbon disulfide	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Bromoform	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Bromodichloromethane	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
1,1-Dichloroethane	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
1,1-Dichloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
tert-Butyl alcohol	0.60	U	2.0	0.60	ug/L			02/13/23 20:38	1
Trichlorofluoromethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Dichlorodifluoromethane	0.30	U	0.50	0.30	ug/L			02/13/23 19:24	1
Pentachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 19:24	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.30	U	0.50	0.30	ug/L			02/13/23 19:24	1
1,2-Dichloropropane	0.20	U	0.25	0.20	ug/L			02/13/23 19:24	1
2-Butanone (MEK)	2.0	U	5.0	2.0	ug/L			02/13/23 19:24	1
1,1,2-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Trichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
1,1,2,2-Tetrachloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Methyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 19:24	1
1,2,3-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Hexachlorobutadiene	0.20	U	0.25	0.20	ug/L			02/13/23 19:24	1
Naphthalene	0.30	U	0.50	0.30	ug/L			02/13/23 19:24	1
o-Xylene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
2-Chlorotoluene	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
1,2-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
1,2,4-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
1,2-Dibromo-3-Chloropropane	0.20	U	0.20	0.20	ug/L			02/13/23 19:24	1
1,2,3-Trichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Methyl acrylate	0.80	U	1.0	0.80	ug/L			02/13/23 19:24	1
Ethyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 19:24	1
tert-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Isopropylbenzene	0.20	U	0.25	0.20	ug/L			02/13/23 19:24	1
4-Isopropyltoluene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Benzyl chloride	0.40	U	0.50	0.40	ug/L			02/13/23 20:38	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

Date Collected: 02/12/23 09:30

Matrix: Water

Date Received: 02/13/23 08:00

## Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Propionitrile	1.3	U	5.0	1.3	ug/L			02/13/23 19:24	1
Vinyl acetate	2.0	U	5.0	2.0	ug/L			02/13/23 20:38	1
Isopropyl ether	0.50	U	0.50	0.50	ug/L			02/13/23 19:24	1
1,4-Dioxane	2.0	U	5.0	2.0	ug/L			02/13/23 20:38	1
sec-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
2-Nitropropane	0.90	U	2.0	0.90	ug/L			02/13/23 19:24	1
t-Amyl methyl ether	0.60	U	3.0	0.60	ug/L			02/13/23 19:24	1
Acetone	2.0	U	5.0	2.0	ug/L			02/13/23 19:24	1
Bromoethane	0.10	U	0.50	0.10	ug/L			02/13/23 19:24	1
1,3-Dichloropropene, Total	0.20	U	0.50	0.20	ug/L			02/13/23 19:24	1
Xylenes, Total	0.50	U	0.50	0.50	ug/L			02/13/23 19:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		70 - 130		02/13/23 19:24	1
1,2-Dichloroethane-d4 (Surr)	107		70 - 130		02/13/23 19:24	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		02/13/23 20:38	1
Toluene-d8 (Surr)	99		70 - 130		02/13/23 19:24	1
Toluene-d8 (Surr)	101		70 - 130		02/13/23 19:24	1
Toluene-d8 (Surr)	94		70 - 130		02/13/23 20:38	1
4-Bromofluorobenzene (Surr)	83		70 - 130		02/13/23 19:24	1
4-Bromofluorobenzene (Surr)	97		70 - 130		02/13/23 19:24	1
4-Bromofluorobenzene (Surr)	92		70 - 130		02/13/23 20:38	1
1,2-Dichlorobenzene-d4 (Surr)	82		70 - 130		02/13/23 19:24	1
1,2-Dichlorobenzene-d4 (Surr)	97		70 - 130		02/13/23 19:24	1
1,2-Dichlorobenzene-d4 (Surr)	91		70 - 130		02/13/23 20:38	1

## Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.020	U	0.49	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Acenaphthylene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Alachlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Aldrin	0.0079	U	0.098	0.0079	ug/L		02/14/23 07:52	02/14/23 19:03	1
Anthracene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Atrazine	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
alpha-Chlordane	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Benzo[a]anthracene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Benzo[a]pyrene	0.012	U	0.020	0.012	ug/L		02/14/23 07:52	02/14/23 19:03	1
Benzo[b]fluoranthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Benzo[g,h,i]perylene	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Benzo[k]fluoranthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Bromacil	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Butachlor	0.020	U *	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Butylbenzylphthalate	0.020	U	0.98	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Chrysene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Di(2-ethylhexyl)adipate	0.020	U	0.59	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Di(2-ethylhexyl)phthalate	0.098	U	0.59	0.098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Di-n-butyl phthalate	0.068	U	2.0	0.068	ug/L		02/14/23 07:52	02/14/23 19:03	1
Diazinon	0.029	U	0.098	0.029	ug/L		02/14/23 07:52	02/14/23 19:03	1
Dibenz(a,h)anthracene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Dieldrin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

**Date Collected: 02/12/23 09:30**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diethylphthalate	0.020	U	0.98	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Dimethoate	0.029	U	0.49	0.029	ug/L		02/14/23 07:52	02/14/23 19:03	1
Dimethylphthalate	0.29	U	0.98	0.29	ug/L		02/14/23 07:52	02/14/23 19:03	1
Endrin	0.0097	U	0.0098	0.0097	ug/L		02/14/23 07:52	02/14/23 19:03	1
Fluoranthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Fluorene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
gamma-BHC (Lindane)	0.0082	U	0.020	0.0082	ug/L		02/14/23 07:52	02/14/23 19:03	1
Heptachlor	0.0043	U	0.039	0.0043	ug/L		02/14/23 07:52	02/14/23 19:03	1
Heptachlor epoxide	0.0039	U	0.020	0.0039	ug/L		02/14/23 07:52	02/14/23 19:03	1
Hexachlorobenzene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Hexachlorocyclopentadiene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Indeno[1,2,3-cd]pyrene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Isophorone	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Methoxychlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Metolachlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Metribuzin	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Molinate	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Phenanthrene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Propachlor	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Pyrene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Simazine	0.029	U	0.068	0.029	ug/L		02/14/23 07:52	02/14/23 19:03	1
gamma-Chlordane	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Trifluralin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
trans-Nonachlor	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Thiobencarb	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
1-Methylnaphthalene	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
2-Methylnaphthalene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
4,4'-DDD	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
4,4'-DDE	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
4,4'-DDT	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Acenaphthene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Chlorothalonil	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Di-n-octyl phthalate	0.020	U	2.0	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
EPTC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Malathion	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Naphthalene	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Parathion	0.088	U	0.49	0.088	ug/L		02/14/23 07:52	02/14/23 19:03	1
Terbacil	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Endrin aldehyde	0.029	U	0.098	0.029	ug/L		02/14/23 07:52	02/14/23 19:03	1
2,4'-DDD	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
2,4'-DDE	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
2,4'-DDT	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
2,6-Dinitrotoluene	0.039	U	0.098	0.039	ug/L		02/14/23 07:52	02/14/23 19:03	1
Acetochlor	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
alpha-BHC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
beta-BHC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Chlorobenzilate	0.029	U **	0.098	0.029	ug/L		02/14/23 07:52	02/14/23 19:03	1
Chloroneb	0.068	U	0.098	0.068	ug/L		02/14/23 07:52	02/14/23 19:03	1
Chlorpyrifos	0.020	U	0.049	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1

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# Client Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

**Date Collected: 02/12/23 09:30**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

**Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Dichlorvos	0.0098	U	0.049	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Endosulfan I	0.039	U	0.098	0.039	ug/L		02/14/23 07:52	02/14/23 19:03	1
Endosulfan II	0.039	U	0.098	0.039	ug/L		02/14/23 07:52	02/14/23 19:03	1
Endosulfan sulfate	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
cis-Permethrin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
trans-Permethrin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Caffeine	0.020	U	0.049	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Pendimethalin	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Terbutylazine	0.0098	U	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Hexazinone	0.049	U	0.098	0.049	ug/L		02/14/23 07:52	02/14/23 19:03	1
Permethrin	0.020	U	0.20	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Chlordane (n.o.s.)	0.0098	U	0.049	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Cyanazine	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
Prometon	0.0098	U *	0.098	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Desethylatrazine	0.0098	U	0.98	0.0098	ug/L		02/14/23 07:52	02/14/23 19:03	1
Deisopropylatrazine	0.039	U	0.98	0.039	ug/L		02/14/23 07:52	02/14/23 19:03	1
Prometryn	0.020	U	0.098	0.020	ug/L		02/14/23 07:52	02/14/23 19:03	1
2-Butoxyethyl acetate	0.098	U	0.098	0.098	ug/L		02/14/23 07:52	02/16/23 13:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenylphosphate (Surr)	97		70 - 130	02/14/23 07:52	02/14/23 19:03	1
Triphenylphosphate (Surr)	108		70 - 130	02/14/23 07:52	02/16/23 13:41	1
Perylene-d12 (Surr)	93		70 - 130	02/14/23 07:52	02/14/23 19:03	1
Perylene-d12 (Surr)	95		70 - 130	02/14/23 07:52	02/16/23 13:41	1
2-Nitro-m-xylene (Surr)	97		70 - 130	02/14/23 07:52	02/14/23 19:03	1
2-Nitro-m-xylene (Surr)	101		70 - 130	02/14/23 07:52	02/16/23 13:41	1



# Client Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: TB-20230212**

**Lab Sample ID: 240-180293-4**

Date Collected: 02/12/23 00:00

Matrix: Water

Date Received: 02/13/23 08:00

**Method: EPA-DW 524.2 Ext - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	5.0	U	10	5.0	ug/L			02/14/23 13:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene-d4 (Surr)	96		70 - 130					02/14/23 13:37	1
1,2-Dichloroethane-d4 (Surr)	100		70 - 130					02/14/23 13:37	1
Toluene-d8 (Surr)	100		70 - 130					02/14/23 13:37	1
4-Bromofluorobenzene (Surr)	95		70 - 130					02/14/23 13:37	1

# Surrogate Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 524.2 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)							
		DCA (70-130)	DCA (70-130)	TOL (70-130)	TOL (70-130)	BFB (70-130)	BFB (70-130)	DCZ (70-130)	DCZ (70-130)
240-180293-1	PW-205-20230212	105	105	99	99	85	85	81	81
240-180293-1	PW-205-20230212	96	96	93	93	89	89	89	89
240-180293-2	PW-207-20230212	106	106	96	96	84	84	82	82
240-180293-2	PW-207-20230212	97	97	95	95	92	92	89	89
240-180293-3	FB-20230212	110	110	99	99	83	83	82	82
240-180293-3	FB-20230212	99	99	94	94	92	92	91	91
MB 810-47646/6	Method Blank	106	106	98	98	87	87	86	86
MB 810-47676/6	Method Blank	97	97	97	97	92	92	93	93
MB 810-47680/6	Method Blank	103	103	99	99	102	102	102	102

### Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)  
TOL = Toluene-d8 (Surr)  
BFB = 4-Bromofluorobenzene (Surr)  
DCZ = 1,2-Dichlorobenzene-d4 (Surr)

## Method: 524.2 Ext - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCZ (70-130)	DCA (70-130)	TOL (70-130)	BFB (70-130)
240-180293-1	PW-205-20230212	96	101	101	95
240-180293-2	PW-207-20230212	100	100	102	99
240-180293-3	FB-20230212	97	101	100	98
240-180293-4	TB-20230212	96	100	100	95
MB 810-47743/4	Method Blank	96	99	99	97

### Surrogate Legend

DCZ = 1,2-Dichlorobenzene-d4 (Surr)  
DCA = 1,2-Dichloroethane-d4 (Surr)  
TOL = Toluene-d8 (Surr)  
BFB = 4-Bromofluorobenzene (Surr)

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		TPP (70-130)	PRY (70-130)	2NMX (70-130)
240-180293-1	PW-205-20230212	101	90	100
240-180293-1	PW-205-20230212	109	96	107
240-180293-2	PW-207-20230212	103	95	101
240-180293-2	PW-207-20230212	110	97	103
240-180293-3	FB-20230212	97	93	97
240-180293-3	FB-20230212	108	95	101
240-180293-3 DU	FB-20230212	106	96	97
LCS 810-47741/1-A	Lab Control Sample	99	99	100
LCS 810-47741/1-A	Lab Control Sample	117	100	110
LCS 810-47741/2-A	Lab Control Sample	109	94	101
LLCS 810-47741/4-A	Lab Control Sample	101	95	98

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# Surrogate Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

## Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TPP (70-130)	PRY (70-130)	2NMX (70-130)
LLCS 810-47741/4-A	Lab Control Sample	108	91	104
MB 810-47741/3-A	Method Blank	95	91	102
MB 810-47741/3-A	Method Blank	112	94	104

### Surrogate Legend

TPP = Triphenylphosphate (Surr)

PRY = Perylene-d12 (Surr)

2NMX = 2-Nitro-m-xylene (Surr)

# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 524.2 - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 810-47646/6**  
**Matrix: Water**  
**Analysis Batch: 47646**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1,2-Tetrachloroethane	0.30	U	0.50	0.30	ug/L			02/13/23 17:50	1
Ethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Styrene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
cis-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
trans-1,3-Dichloropropylene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
N-Propylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
n-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
4-Chlorotoluene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,4-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,2-Dibromoethane (EDB)	0.20	U	0.20	0.20	ug/L			02/13/23 17:50	1
1,2-Dichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
4-Methyl-2-pentanone (MIBK)	1.5	U	2.0	1.5	ug/L			02/13/23 17:50	1
1,3,5-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Bromobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
Toluene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Chlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Tetrahydrofuran	1.4	U	5.0	1.4	ug/L			02/13/23 17:50	1
1,2,4-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Dibromochloromethane	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
Tetrachloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,3-Dichloropropane	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
cis-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
trans-1,2-Dichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Methyl-tert-butyl Ether (MTBE)	0.40	U	0.50	0.40	ug/L			02/13/23 17:50	1
m-Xylene & p-Xylene	0.50	U	0.50	0.50	ug/L			02/13/23 17:50	1
1,2,3-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,3-Dichlorobenzene	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
Carbon tetrachloride	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
1,1-Dichloropropene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			02/13/23 17:50	1
2,2-Dichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Ethyl tert-butyl ether	0.40	U	2.0	0.40	ug/L			02/13/23 17:50	1
Chloroform	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Benzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,1,1-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Bromomethane	0.40	U	0.50	0.40	ug/L			02/13/23 17:50	1
Chloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Dibromomethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Bromochloromethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Chloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Vinyl chloride	0.20	U	0.20	0.20	ug/L			02/13/23 17:50	1
Dichloromethane	0.40	U	0.50	0.40	ug/L			02/13/23 17:50	1
Carbon disulfide	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Bromoform	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Bromodichloromethane	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
1,1-Dichloroethane	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
1,1-Dichloroethene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Trichlorofluoromethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 810-47646/6**  
**Matrix: Water**  
**Analysis Batch: 47646**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Dichlorodifluoromethane	0.30	U	0.50	0.30	ug/L			02/13/23 17:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.30	U	0.50	0.30	ug/L			02/13/23 17:50	1
1,2-Dichloropropane	0.20	U	0.25	0.20	ug/L			02/13/23 17:50	1
2-Butanone (MEK)	2.0	U	5.0	2.0	ug/L			02/13/23 17:50	1
1,1,2-Trichloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Trichloroethylene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,1,1,2-Tetrachloroethane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,2,3-Trichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Hexachlorobutadiene	0.20	U	0.25	0.20	ug/L			02/13/23 17:50	1
Naphthalene	0.30	U	0.50	0.30	ug/L			02/13/23 17:50	1
o-Xylene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
2-Chlorotoluene	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
1,2-Dichlorobenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,2,4-Trimethylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
1,2-Dibromo-3-Chloropropane	0.20	U	0.20	0.20	ug/L			02/13/23 17:50	1
1,2,3-Trichloropropane	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
tert-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Isopropylbenzene	0.20	U	0.25	0.20	ug/L			02/13/23 17:50	1
4-Isopropyltoluene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Isopropyl ether	0.50	U	0.50	0.50	ug/L			02/13/23 17:50	1
sec-Butylbenzene	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
t-Amyl methyl ether	0.60	U	3.0	0.60	ug/L			02/13/23 17:50	1
Acetone	2.0	U	5.0	2.0	ug/L			02/13/23 17:50	1
Bromoethane	0.10	U	0.50	0.10	ug/L			02/13/23 17:50	1
1,3-Dichloropropene, Total	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Xylenes, Total	0.50	U	0.50	0.50	ug/L			02/13/23 17:50	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	106		70 - 130		02/13/23 17:50	1
Toluene-d8 (Surr)	98		70 - 130		02/13/23 17:50	1
4-Bromofluorobenzene (Surr)	87		70 - 130		02/13/23 17:50	1
1,2-Dichlorobenzene-d4 (Surr)	86		70 - 130		02/13/23 17:50	1

**Lab Sample ID: MB 810-47676/6**  
**Matrix: Water**  
**Analysis Batch: 47676**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Epichlorohydrin	0.80	U	1.0	0.80	ug/L			02/13/23 19:27	1
1,3-Butadiene	0.50	U	5.0	0.50	ug/L			02/13/23 19:27	1
Cyclohexanone	2.0	U	5.0	2.0	ug/L			02/13/23 19:27	1
Bis(2-chloroethyl)ether	0.80	U	2.0	0.80	ug/L			02/13/23 19:27	1
Chloroprene	0.40	U	5.0	0.40	ug/L			02/13/23 19:27	1
Ethyl acrylate	0.40	U	1.0	0.40	ug/L			02/13/23 19:27	1
n-Butyl acrylate	0.50	U	1.0	0.50	ug/L			02/13/23 19:27	1
Ethyl tert-butyl ether	0.40	U	2.0	0.40	ug/L			02/13/23 19:27	1
tert-Butyl alcohol	0.60	U	2.0	0.60	ug/L			02/13/23 19:27	1
Benzyl chloride	0.40	U	0.50	0.40	ug/L			02/13/23 19:27	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 810-47676/6**  
**Matrix: Water**  
**Analysis Batch: 47676**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Vinyl acetate	2.0	U	5.0	2.0	ug/L			02/13/23 19:27	1
Isopropyl ether	0.50	U	0.50	0.50	ug/L			02/13/23 19:27	1
1,4-Dioxane	2.0	U	5.0	2.0	ug/L			02/13/23 19:27	1
t-Amyl methyl ether	0.60	U	3.0	0.60	ug/L			02/13/23 19:27	1
Acetone	2.0	U	5.0	2.0	ug/L			02/13/23 19:27	1
Bromoethane	NC		0.50	0.10	ug/L			02/13/23 19:27	1

  

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	97		70 - 130		02/13/23 19:27	1
Toluene-d8 (Surr)	97		70 - 130		02/13/23 19:27	1
4-Bromofluorobenzene (Surr)	92		70 - 130		02/13/23 19:27	1
1,2-Dichlorobenzene-d4 (Surr)	93		70 - 130		02/13/23 19:27	1

**Lab Sample ID: MB 810-47680/6**  
**Matrix: Water**  
**Analysis Batch: 47680**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Allyl chloride	1.1	U	5.0	1.1	ug/L			02/13/23 17:50	1
Acrylonitrile	0.90	U	1.0	0.90	ug/L			02/13/23 17:50	1
Chloroacetonitrile	2.0	U	5.0	2.0	ug/L			02/13/23 17:50	1
4-Methyl-2-pentanone (MIBK)	1.5	U	2.0	1.5	ug/L			02/13/23 17:50	1
1-Chlorobutane	0.70	U	5.0	0.70	ug/L			02/13/23 17:50	1
Tetrahydrofuran	1.4	U	5.0	1.4	ug/L			02/13/23 17:50	1
trans-1,4-Dichloro-2-butylene	1.4	U	5.0	1.4	ug/L			02/13/23 17:50	1
Methacrylonitrile	1.7	U	5.0	1.7	ug/L			02/13/23 17:50	1
Methyl-tert-butyl Ether (MTBE)	0.40	U	0.50	0.40	ug/L			02/13/23 17:50	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			02/13/23 17:50	1
Ethyl ether	0.30	U	2.0	0.30	ug/L			02/13/23 17:50	1
Hexachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 17:50	1
Methyl iodide	2.0	U	2.0	2.0	ug/L			02/13/23 17:50	1
Carbon disulfide	0.20	U	0.50	0.20	ug/L			02/13/23 17:50	1
Pentachloroethane	1.1	U	2.0	1.1	ug/L			02/13/23 17:50	1
2-Butanone (MEK)	2.0	U	5.0	2.0	ug/L			02/13/23 17:50	1
Methyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 17:50	1
Methyl acrylate	0.80	U	1.0	0.80	ug/L			02/13/23 17:50	1
Ethyl methacrylate	1.0	U	1.0	1.0	ug/L			02/13/23 17:50	1
Propionitrile	1.3	U	5.0	1.3	ug/L			02/13/23 17:50	1
2-Nitropropane	0.90	U	2.0	0.90	ug/L			02/13/23 17:50	1
Acetone	2.0	U	5.0	2.0	ug/L			02/13/23 17:50	1
Bromoethane	NC		0.50	0.10	ug/L			02/13/23 17:50	1

  

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		02/13/23 17:50	1
Toluene-d8 (Surr)	99		70 - 130		02/13/23 17:50	1
4-Bromofluorobenzene (Surr)	102		70 - 130		02/13/23 17:50	1
1,2-Dichlorobenzene-d4 (Surr)	102		70 - 130		02/13/23 17:50	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 524.2 Ext - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 810-47743/4**  
**Matrix: Water**  
**Analysis Batch: 47743**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	5.0	U	10	5.0	ug/L			02/14/23 10:23	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene-d4 (Surr)	96		70 - 130					02/14/23 10:23	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130					02/14/23 10:23	1
Toluene-d8 (Surr)	99		70 - 130					02/14/23 10:23	1
4-Bromofluorobenzene (Surr)	97		70 - 130					02/14/23 10:23	1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 810-47741/3-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	0.019	U	0.49	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Acenaphthylene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Alachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Aldrin	0.0079	U	0.097	0.0079	ug/L		02/14/23 07:52	02/14/23 17:47	1
Anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Atrazine	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
alpha-Chlordane	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Benzo[a]anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Benzo[a]pyrene	0.012	U	0.019	0.012	ug/L		02/14/23 07:52	02/14/23 17:47	1
Benzo[b]fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Benzo[g,h,i]perylene	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Benzo[k]fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Bromacil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Butachlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Butylbenzylphthalate	0.019	U	0.97	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Chrysene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Di(2-ethylhexyl)adipate	0.019	U	0.58	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Di (2-ethylhexyl)phthalate	0.097	U	0.58	0.097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Di-n-butyl phthalate	0.196	J	1.9	0.068	ug/L		02/14/23 07:52	02/14/23 17:47	1
Diazinon	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/14/23 17:47	1
Dibenz(a,h)anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Dieldrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Diethylphthalate	0.019	U	0.97	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Dimethoate	0.029	U	0.49	0.029	ug/L		02/14/23 07:52	02/14/23 17:47	1
Dimethylphthalate	0.29	U	0.97	0.29	ug/L		02/14/23 07:52	02/14/23 17:47	1
Endrin	0.0096	U	0.0097	0.0096	ug/L		02/14/23 07:52	02/14/23 17:47	1
Fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Fluorene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
gamma-BHC (Lindane)	0.0081	U	0.019	0.0081	ug/L		02/14/23 07:52	02/14/23 17:47	1
Heptachlor	0.0043	U	0.039	0.0043	ug/L		02/14/23 07:52	02/14/23 17:47	1
Heptachlor epoxide	0.0039	U	0.019	0.0039	ug/L		02/14/23 07:52	02/14/23 17:47	1
Hexachlorobenzene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Hexachlorocyclopentadiene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 810-47741/3-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Indeno[1,2,3-cd]pyrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Isophorone	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Methoxychlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Metolachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Metribuzin	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Molinate	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Phenanthrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Propachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Pyrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Simazine	0.029	U	0.068	0.029	ug/L		02/14/23 07:52	02/14/23 17:47	1
gamma-Chlordane	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Trifluralin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
trans-Nonachlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Thiobencarb	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
1-Methylnaphthalene	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
2-Methylnaphthalene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
4,4'-DDD	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
4,4'-DDE	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
4,4'-DDT	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Acenaphthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Chlorothalonil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Di-n-octyl phthalate	0.019	U	1.9	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
EPTC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Malathion	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Naphthalene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Parathion	0.087	U	0.49	0.087	ug/L		02/14/23 07:52	02/14/23 17:47	1
Terbacil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Endrin aldehyde	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/14/23 17:47	1
2,4'-DDD	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
2,4'-DDE	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
2,4'-DDT	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
2,6-Dinitrotoluene	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/14/23 17:47	1
Acetochlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
alpha-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
beta-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Chlorobenzilate	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/14/23 17:47	1
Chloroneb	0.068	U	0.097	0.068	ug/L		02/14/23 07:52	02/14/23 17:47	1
Chlorpyrifos	0.019	U	0.049	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
delta-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Dichlorvos	0.0097	U	0.049	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Endosulfan I	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/14/23 17:47	1
Endosulfan II	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/14/23 17:47	1
Endosulfan sulfate	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
cis-Permethrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
trans-Permethrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Caffeine	0.019	U	0.049	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Pendimethalin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Terbutylazine	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Hexazinone	0.049	U	0.097	0.049	ug/L		02/14/23 07:52	02/14/23 17:47	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 810-47741/3-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Permethrin	0.019	U	0.19	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Chlordane (n.o.s.)	0.0097	U	0.049	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Cyanazine	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Prometon	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Desethylatrazine	0.0097	U	0.97	0.0097	ug/L		02/14/23 07:52	02/14/23 17:47	1
Deisopropylatrazine	0.039	U	0.97	0.039	ug/L		02/14/23 07:52	02/14/23 17:47	1
Prometryn	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/14/23 17:47	1
Surrogate	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
Triphenylphosphate (Surr)	95		70 - 130				02/14/23 07:52	02/14/23 17:47	1
Perylene-d12 (Surr)	91		70 - 130				02/14/23 07:52	02/14/23 17:47	1
2-Nitro-m-xylene (Surr)	102		70 - 130				02/14/23 07:52	02/14/23 17:47	1

**Lab Sample ID: MB 810-47741/3-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,4-Dinitrotoluene	0.019	U	0.49	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Acenaphthylene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Alachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Aldrin	0.0079	U	0.097	0.0079	ug/L		02/14/23 07:52	02/16/23 09:29	1
Anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Atrazine	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
alpha-Chlordane	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Benzo[a]anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Benzo[a]pyrene	0.012	U	0.019	0.012	ug/L		02/14/23 07:52	02/16/23 09:29	1
Benzo[b]fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Benzo[g,h,i]perylene	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Benzo[k]fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Bromacil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Butachlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Butylbenzylphthalate	0.019	U	0.97	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Chrysene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Di(2-ethylhexyl)adipate	0.019	U	0.58	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Di (2-ethylhexyl)phthalate	0.097	U	0.58	0.097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Di-n-butyl phthalate	0.190	J	1.9	0.068	ug/L		02/14/23 07:52	02/16/23 09:29	1
Diazinon	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/16/23 09:29	1
Dibenz(a,h)anthracene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Dieldrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Diethylphthalate	0.019	U	0.97	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Dimethoate	0.029	U	0.49	0.029	ug/L		02/14/23 07:52	02/16/23 09:29	1
Dimethylphthalate	0.29	U	0.97	0.29	ug/L		02/14/23 07:52	02/16/23 09:29	1
Endrin	0.0096	U	0.0097	0.0096	ug/L		02/14/23 07:52	02/16/23 09:29	1
Fluoranthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Fluorene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
gamma-BHC (Lindane)	0.0081	U	0.019	0.0081	ug/L		02/14/23 07:52	02/16/23 09:29	1
Heptachlor	0.0043	U	0.039	0.0043	ug/L		02/14/23 07:52	02/16/23 09:29	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 810-47741/3-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Heptachlor epoxide	0.0039	U	0.019	0.0039	ug/L		02/14/23 07:52	02/16/23 09:29	1
Hexachlorobenzene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Hexachlorocyclopentadiene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Indeno[1,2,3-cd]pyrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Isophorone	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Methoxychlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Metolachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Metribuzin	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Molinate	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Phenanthrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Propachlor	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Pyrene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Simazine	0.029	U	0.068	0.029	ug/L		02/14/23 07:52	02/16/23 09:29	1
gamma-Chlordane	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Trifluralin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
trans-Nonachlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Thiobencarb	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
1-Methylnaphthalene	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
2-Methylnaphthalene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
4,4'-DDD	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
4,4'-DDE	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
4,4'-DDT	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Acenaphthene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Chlorothalonil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Di-n-octyl phthalate	0.019	U	1.9	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
EPTC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Malathion	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Naphthalene	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Parathion	0.087	U	0.49	0.087	ug/L		02/14/23 07:52	02/16/23 09:29	1
Terbacil	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Endrin aldehyde	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/16/23 09:29	1
2,4'-DDD	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
2,4'-DDE	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
2,4'-DDT	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
2,6-Dinitrotoluene	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/16/23 09:29	1
Acetochlor	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
alpha-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
beta-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Chlorobenzilate	0.029	U	0.097	0.029	ug/L		02/14/23 07:52	02/16/23 09:29	1
Chloroneb	0.068	U	0.097	0.068	ug/L		02/14/23 07:52	02/16/23 09:29	1
Chlorpyrifos	0.019	U	0.049	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
delta-BHC	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Dichlorvos	0.0097	U	0.049	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Endosulfan I	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/16/23 09:29	1
Endosulfan II	0.039	U	0.097	0.039	ug/L		02/14/23 07:52	02/16/23 09:29	1
Endosulfan sulfate	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
cis-Permethrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
trans-Permethrin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Caffeine	0.019	U	0.049	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 810-47741/3-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Pendimethalin	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Terbutylazine	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Hexazinone	0.049	U	0.097	0.049	ug/L		02/14/23 07:52	02/16/23 09:29	1
Permethrin	0.019	U	0.19	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Chlordane (n.o.s.)	0.0097	U	0.049	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Cyanazine	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
Prometon	0.0097	U	0.097	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Desethylatrazine	0.0097	U	0.97	0.0097	ug/L		02/14/23 07:52	02/16/23 09:29	1
Deisopropylatrazine	0.039	U	0.97	0.039	ug/L		02/14/23 07:52	02/16/23 09:29	1
Prometryn	0.019	U	0.097	0.019	ug/L		02/14/23 07:52	02/16/23 09:29	1
2-Butoxyethyl acetate	0.097	U	0.097	0.097	ug/L		02/14/23 07:52	02/16/23 09:29	1

  

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Triphenylphosphate (Surr)	112		70 - 130	02/14/23 07:52	02/16/23 09:29	1
Perylene-d12 (Surr)	94		70 - 130	02/14/23 07:52	02/16/23 09:29	1
2-Nitro-m-xylene (Surr)	104		70 - 130	02/14/23 07:52	02/16/23 09:29	1

**Lab Sample ID: LCS 810-47741/1-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
2,4-Dinitrotoluene	1.93	1.44		ug/L		75	70 - 130
Aldrin	1.93	2.11		ug/L		109	70 - 130
alpha-Chlordane	1.93	2.02		ug/L		104	70 - 130
Bromacil	1.93	2.43		ug/L		126	70 - 130
Butachlor	1.93	2.60	*+	ug/L		135	70 - 130
Chrysene	1.93	2.14		ug/L		110	70 - 130
Di(2-ethylhexyl)adipate	1.93	2.04		ug/L		106	70 - 130
Di (2-ethylhexyl)phthalate	1.93	2.06		ug/L		106	70 - 130
Di-n-butyl phthalate	1.93	2.30		ug/L		119	70 - 130
Diazinon	1.93	1.80		ug/L		93	70 - 130
Dibenz(a,h)anthracene	1.93	1.94		ug/L		100	70 - 130
Dieldrin	1.93	2.15		ug/L		111	70 - 130
Diethylphthalate	1.93	2.10		ug/L		109	70 - 130
Dimethoate	1.93	0.945		ug/L		49	28 - 85
Dimethylphthalate	1.93	2.02		ug/L		104	70 - 130
Endrin	1.93	2.03		ug/L		105	70 - 130
Fluoranthene	1.93	2.24		ug/L		116	70 - 130
Fluorene	1.93	2.04		ug/L		106	70 - 130
gamma-BHC (Lindane)	1.93	2.20		ug/L		114	70 - 130
Heptachlor	1.93	1.87		ug/L		97	70 - 130
Heptachlor epoxide	1.93	1.90		ug/L		98	70 - 130
Hexachlorobenzene	1.93	1.88		ug/L		97	70 - 130
Hexachlorocyclopentadiene	1.93	1.64		ug/L		85	70 - 130
Indeno[1,2,3-cd]pyrene	1.93	1.93		ug/L		100	70 - 130
Isophorone	1.93	1.98		ug/L		102	70 - 130
Methoxychlor	1.93	2.10		ug/L		109	70 - 130

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# QC Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 810-47741/1-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Metolachlor	1.93	2.25		ug/L		117	70 - 130
Metribuzin	1.93	2.14		ug/L		111	70 - 130
Molinate	1.93	2.02		ug/L		104	70 - 130
Phenanthrene	1.93	2.07		ug/L		107	70 - 130
Propachlor	1.93	2.05		ug/L		106	70 - 130
Pyrene	1.93	2.21		ug/L		114	70 - 130
Simazine	1.93	2.04		ug/L		106	70 - 130
gamma-Chlordane	1.93	1.97		ug/L		102	70 - 130
Trifluralin	1.93	1.87		ug/L		97	70 - 130
trans-Nonachlor	1.93	2.00		ug/L		103	70 - 130
Thiobencarb	1.93	2.21		ug/L		114	70 - 130
1-Methylnaphthalene	1.93	2.05		ug/L		106	70 - 130
2-Methylnaphthalene	1.93	1.86		ug/L		96	70 - 130
4,4'-DDD	1.93	2.15		ug/L		111	70 - 130
4,4'-DDE	1.93	2.12		ug/L		109	70 - 130
4,4'-DDT	1.93	2.10		ug/L		109	70 - 130
Acenaphthene	1.93	2.03		ug/L		105	70 - 130
Chlorothalonil	1.93	2.08		ug/L		107	70 - 130
Di-n-octyl phthalate	1.93	1.96		ug/L		101	60 - 122
EPTC	1.93	2.00		ug/L		104	70 - 130
Malathion	1.93	2.28		ug/L		118	80 - 134
Naphthalene	1.93	1.93		ug/L		100	70 - 130
Parathion	1.93	2.09		ug/L		108	80 - 134
Terbacil	1.93	1.93		ug/L		100	70 - 130
Endrin aldehyde	1.93	1.99		ug/L		103	64 - 125
2,4'-DDD	1.93	2.18		ug/L		113	70 - 130
2,4'-DDE	1.93	2.08		ug/L		107	70 - 130
2,4'-DDT	1.93	2.00		ug/L		103	70 - 130
2,6-Dinitrotoluene	1.93	1.42		ug/L		74	70 - 130
Acetochlor	1.93	2.33		ug/L		121	70 - 130
alpha-BHC	1.93	2.07		ug/L		107	70 - 130
beta-BHC	1.93	2.13		ug/L		110	70 - 130
Chlorobenzilate	1.93	2.64	*+	ug/L		136	70 - 130
Chloroneb	1.93	1.95		ug/L		101	70 - 130
Chlorpyrifos	1.93	2.10		ug/L		108	70 - 130
delta-BHC	1.93	2.13		ug/L		110	70 - 130
Dichlorvos	1.93	1.94		ug/L		100	70 - 130
Endosulfan I	1.93	2.23		ug/L		115	70 - 130
Endosulfan II	1.93	2.26		ug/L		117	70 - 130
Endosulfan sulfate	1.93	1.93		ug/L		100	70 - 130
cis-Permethrin	1.93	2.06		ug/L		107	70 - 130
trans-Permethrin	1.93	2.05		ug/L		106	70 - 130
Caffeine	1.93	1.19		ug/L		62	41 - 110
Pendimethalin	1.93	2.27		ug/L		117	65 - 122
Terbutylazine	1.93	2.24		ug/L		116	70 - 130
Hexazinone	1.93	1.88		ug/L		97	70 - 130
Cyanazine	1.93	2.02		ug/L		105	70 - 130
Prometon	1.93	0.201	*-	ug/L		10	70 - 130
Desethylatrazine	1.93	0.823	J	ug/L		43	8 - 94

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 810-47741/1-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Deisopropylatrazine	1.93	0.227	J	ug/L		12	4 - 27
Prometryn	1.93	1.65		ug/L		86	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Triphenylphosphate (Surr)	99		70 - 130
Perylene-d12 (Surr)	99		70 - 130
2-Nitro-m-xylene (Surr)	100		70 - 130

**Lab Sample ID: LCS 810-47741/1-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4-Dinitrotoluene	1.93	1.45		ug/L		75	70 - 130
Aldrin	1.93	1.96		ug/L		101	70 - 130
alpha-Chlordane	1.93	2.04		ug/L		106	70 - 130
Bromacil	1.93	2.25		ug/L		116	70 - 130
Butachlor	1.93	2.62	*+	ug/L		135	70 - 130
Chrysene	1.93	2.22		ug/L		115	70 - 130
Di(2-ethylhexyl)adipate	1.93	2.24		ug/L		116	70 - 130
Di (2-ethylhexyl)phthalate	1.93	2.08		ug/L		107	70 - 130
Di-n-butyl phthalate	1.93	2.29		ug/L		119	70 - 130
Diazinon	1.93	1.68		ug/L		87	70 - 130
Dibenz(a,h)anthracene	1.93	2.09		ug/L		108	70 - 130
Dieldrin	1.93	2.14		ug/L		111	70 - 130
Diethylphthalate	1.93	2.16		ug/L		112	70 - 130
Dimethoate	1.93	0.920		ug/L		48	28 - 85
Dimethylphthalate	1.93	2.07		ug/L		107	70 - 130
Endrin	1.93	2.04		ug/L		106	70 - 130
Fluoranthene	1.93	2.12		ug/L		109	70 - 130
Fluorene	1.93	2.08		ug/L		108	70 - 130
gamma-BHC (Lindane)	1.93	2.11		ug/L		109	70 - 130
Heptachlor	1.93	1.78		ug/L		92	70 - 130
Heptachlor epoxide	1.93	2.11		ug/L		109	70 - 130
Hexachlorobenzene	1.93	1.80		ug/L		93	70 - 130
Hexachlorocyclopentadiene	1.93	1.57		ug/L		81	70 - 130
Indeno[1,2,3-cd]pyrene	1.93	2.09		ug/L		108	70 - 130
Isophorone	1.93	2.10		ug/L		108	70 - 130
Methoxychlor	1.93	2.14		ug/L		110	70 - 130
Metolachlor	1.93	2.19		ug/L		113	70 - 130
Metribuzin	1.93	2.02		ug/L		105	70 - 130
Molinate	1.93	2.01		ug/L		104	70 - 130
Phenanthrene	1.93	1.88		ug/L		97	70 - 130
Propachlor	1.93	2.08		ug/L		108	70 - 130
Pyrene	1.93	2.23		ug/L		116	70 - 130
Simazine	1.93	2.01		ug/L		104	70 - 130
gamma-Chlordane	1.93	2.13		ug/L		110	70 - 130
Trifluralin	1.93	1.93		ug/L		100	70 - 130

# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 810-47741/1-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
trans-Nonachlor	1.93	1.96		ug/L		101	70 - 130
Thiobencarb	1.93	2.18		ug/L		113	70 - 130
1-Methylnaphthalene	1.93	1.95		ug/L		101	70 - 130
2-Methylnaphthalene	1.93	2.01		ug/L		104	70 - 130
4,4'-DDD	1.93	2.21		ug/L		115	70 - 130
4,4'-DDE	1.93	2.20		ug/L		114	70 - 130
4,4'-DDT	1.93	2.17		ug/L		112	70 - 130
Acenaphthene	1.93	1.94		ug/L		100	70 - 130
Chlorothalonil	1.93	1.97		ug/L		102	70 - 130
Di-n-octyl phthalate	1.93	2.11		ug/L		109	60 - 122
EPTC	1.93	2.02		ug/L		105	70 - 130
Malathion	1.93	2.13		ug/L		110	80 - 134
Naphthalene	1.93	2.01		ug/L		104	70 - 130
Parathion	1.93	1.97		ug/L		102	80 - 134
Terbacil	1.93	1.99		ug/L		103	70 - 130
Endrin aldehyde	1.93	2.16		ug/L		112	64 - 125
2,4'-DDD	1.93	2.13		ug/L		110	70 - 130
2,4'-DDE	1.93	2.20		ug/L		114	70 - 130
2,4'-DDT	1.93	2.24		ug/L		116	70 - 130
2,6-Dinitrotoluene	1.93	1.51		ug/L		78	70 - 130
Acetochlor	1.93	2.25		ug/L		116	70 - 130
alpha-BHC	1.93	1.96		ug/L		101	70 - 130
beta-BHC	1.93	2.02		ug/L		104	70 - 130
Chlorobenzilate	1.93	2.72	*+	ug/L		141	70 - 130
Chloroneb	1.93	2.14		ug/L		110	70 - 130
Chlorpyrifos	1.93	2.00		ug/L		103	70 - 130
delta-BHC	1.93	1.96		ug/L		101	70 - 130
Dichlorvos	1.93	1.90		ug/L		98	70 - 130
Endosulfan I	1.93	2.25		ug/L		117	70 - 130
Endosulfan II	1.93	2.26		ug/L		117	70 - 130
Endosulfan sulfate	1.93	2.14		ug/L		111	70 - 130
cis-Permethrin	1.93	2.18		ug/L		113	70 - 130
trans-Permethrin	1.93	2.16		ug/L		112	70 - 130
Caffeine	1.93	1.12		ug/L		58	41 - 110
Pendimethalin	1.93	2.34		ug/L		121	65 - 122
Terbutylazine	1.93	2.12		ug/L		109	70 - 130
Hexazinone	1.93	2.15		ug/L		111	70 - 130
Cyanazine	1.93	1.91		ug/L		99	70 - 130
Prometon	1.93	0.190	*-	ug/L		10	70 - 130
Desethylatrazine	1.93	0.828	J	ug/L		43	8 - 94
Deisopropylatrazine	1.93	0.215	J	ug/L		11	4 - 27
Prometryn	1.93	1.55		ug/L		80	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Triphenylphosphate (Surr)	117		70 - 130
Perylene-d12 (Surr)	100		70 - 130
2-Nitro-m-xylene (Surr)	110		70 - 130

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 810-47741/2-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
2-Butoxyethyl acetate	9.67	10.0	E	ug/L		104	50 - 150	
<b>Surrogate</b>								
	<b>%Recovery</b>	<b>Qualifier</b>						<b>Limits</b>
Triphenylphosphate (Surr)	109							70 - 130
Perylene-d12 (Surr)	94							70 - 130
2-Nitro-m-xylene (Surr)	101							70 - 130

**Lab Sample ID: LLCS 810-47741/4-A**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits	
Aldrin	0.0678	0.0634	J	ug/L		94	50 - 150	
Butachlor	0.0968	0.0953	J	ug/L		98	50 - 150	
Di(2-ethylhexyl)adipate	0.581	0.602		ug/L		104	50 - 150	
Di (2-ethylhexyl)phthalate	0.581	0.694		ug/L		119	50 - 150	
Dieldrin	0.0194	0.019	U	ug/L		93	50 - 150	
Endrin	0.00968	0.0096	U	ug/L		88	50 - 150	
gamma-BHC (Lindane)	0.0194	0.0214		ug/L		110	50 - 150	
Heptachlor	0.00968	0.0119	J	ug/L		123	50 - 150	
Heptachlor epoxide	0.00968	0.00935	J	ug/L		97	50 - 150	
Hexachlorobenzene	0.0968	0.0864	J	ug/L		89	50 - 150	
Hexachlorocyclopentadiene	0.0968	0.0706	J	ug/L		73	50 - 150	
Methoxychlor	0.0968	0.0763	J	ug/L		79	50 - 150	
Metolachlor	0.0968	0.0960	J	ug/L		99	50 - 150	
Metribuzin	0.0968	0.0947	J	ug/L		98	50 - 150	
Propachlor	0.0968	0.0913	J	ug/L		94	50 - 150	
Simazine	0.0678	0.0600	J	ug/L		89	50 - 150	
<b>Surrogate</b>								
	<b>%Recovery</b>	<b>Qualifier</b>						<b>Limits</b>
Triphenylphosphate (Surr)	101							70 - 130
Perylene-d12 (Surr)	95							70 - 130
2-Nitro-m-xylene (Surr)	98							70 - 130

**Lab Sample ID: LLCS 810-47741/4-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Aldrin	0.0678	0.0630	J	ug/L		93	50 - 150
Butachlor	0.0968	0.0895	J	ug/L		92	50 - 150
Di(2-ethylhexyl)adipate	0.581	0.576	J	ug/L		99	50 - 150
Di (2-ethylhexyl)phthalate	0.581	0.592		ug/L		102	50 - 150
Dieldrin	0.0194	0.0200	J	ug/L		104	50 - 150
Endrin	0.00968	0.0115		ug/L		118	50 - 150
gamma-BHC (Lindane)	0.0194	0.0232		ug/L		120	50 - 150
Heptachlor	0.00968	0.0105	J	ug/L		108	50 - 150
Heptachlor epoxide	0.00968	0.00985	J	ug/L		102	50 - 150

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LLCS 810-47741/4-A**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexachlorobenzene	0.0968	0.0750	J	ug/L		77	50 - 150
Hexachlorocyclopentadiene	0.0968	0.0638	J	ug/L		66	50 - 150
Methoxychlor	0.0968	0.0633	J	ug/L		65	50 - 150
Metolachlor	0.0968	0.0926	J	ug/L		96	50 - 150
Metribuzin	0.0968	0.0905	J	ug/L		93	50 - 150
Propachlor	0.0968	0.0892	J	ug/L		92	50 - 150
Simazine	0.0678	0.0612	J	ug/L		90	50 - 150

Surrogate	LLCS %Recovery	LLCS Qualifier	LLCS Limits
Triphenylphosphate (Surr)	108		70 - 130
Perylene-d12 (Surr)	91		70 - 130
2-Nitro-m-xylene (Surr)	104		70 - 130

**Lab Sample ID: 240-180293-3 DU**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: FB-20230212**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
2,4-Dinitrotoluene	0.020	U	0.020	U	ug/L		NC	20
Acenaphthylene	0.0098	U	0.0098	U	ug/L		NC	34
Alachlor	0.0098	U	0.0098	U	ug/L		NC	15
Aldrin	0.0079	U	0.0079	U	ug/L		NC	18
Anthracene	0.0098	U	0.0098	U	ug/L		NC	52
Atrazine	0.0098	U	0.0098	U	ug/L		NC	17
alpha-Chlordane	0.0098	U	0.0098	U	ug/L		NC	15
Benzo[a]anthracene	0.0098	U	0.0098	U	ug/L		NC	14
Benzo[a]pyrene	0.012	U	0.012	U	ug/L		NC	26
Benzo[b]fluoranthene	0.0098	U	0.0098	U	ug/L		NC	20
Benzo[g,h,i]perylene	0.020	U	0.020	U	ug/L		NC	14
Benzo[k]fluoranthene	0.0098	U	0.0098	U	ug/L		NC	20
Bromacil	0.020	U	0.020	U	ug/L		NC	20
Butachlor	0.020	U *	0.020	U *	ug/L		NC	15
Butylbenzylphthalate	0.020	U	0.020	U	ug/L		NC	23
Chrysene	0.0098	U	0.0098	U	ug/L		NC	12
Di(2-ethylhexyl)adipate	0.020	U	0.020	U	ug/L		NC	16
Di (2-ethylhexyl)phthalate	0.098	U	0.098	U	ug/L		NC	18
Di-n-butyl phthalate	0.068	U	0.068	U	ug/L		NC	20
Diazinon	0.029	U	0.029	U	ug/L		NC	16
Dibenz(a,h)anthracene	0.0098	U	0.0098	U	ug/L		NC	19
Dieldrin	0.020	U	0.020	U	ug/L		NC	19
Diethylphthalate	0.020	U	0.020	U	ug/L		NC	21
Dimethoate	0.029	U	0.029	U	ug/L		NC	36
Dimethylphthalate	0.29	U	0.29	U	ug/L		NC	20
Endrin	0.0097	U	0.0097	U	ug/L		NC	18
Fluoranthene	0.0098	U	0.0098	U	ug/L		NC	13
Fluorene	0.0098	U	0.0098	U	ug/L		NC	25
gamma-BHC (Lindane)	0.0082	U	0.0082	U	ug/L		NC	13
Heptachlor	0.0043	U	0.0043	U	ug/L		NC	15

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# QC Sample Results

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 240-180293-3 DU**

**Matrix: Water**

**Analysis Batch: 47797**

**Client Sample ID: FB-20230212**

**Prep Type: Total/NA**

**Prep Batch: 47741**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Heptachlor epoxide	0.0039	U	0.0039	U	ug/L		NC	14
Hexachlorobenzene	0.0098	U	0.0098	U	ug/L		NC	14
Hexachlorocyclopentadiene	0.0098	U	0.0098	U	ug/L		NC	29
Indeno[1,2,3-cd]pyrene	0.0098	U	0.0098	U	ug/L		NC	25
Isophorone	0.0098	U	0.0098	U	ug/L		NC	44
Methoxychlor	0.0098	U	0.0098	U	ug/L		NC	14
Metolachlor	0.0098	U	0.0098	U	ug/L		NC	14
Metribuzin	0.0098	U	0.0098	U	ug/L		NC	24
Molinate	0.020	U	0.020	U	ug/L		NC	16
Phenanthrene	0.0098	U	0.0098	U	ug/L		NC	14
Propachlor	0.0098	U	0.0098	U	ug/L		NC	12
Pyrene	0.0098	U	0.0098	U	ug/L		NC	15
Simazine	0.029	U	0.029	U	ug/L		NC	21
gamma-Chlordane	0.020	U	0.020	U	ug/L		NC	16
Trifluralin	0.020	U	0.020	U	ug/L		NC	19
trans-Nonachlor	0.020	U	0.020	U	ug/L		NC	17
Thiobencarb	0.0098	U	0.0098	U	ug/L		NC	11
1-Methylnaphthalene	0.020	U	0.020	U	ug/L		NC	20
2-Methylnaphthalene	0.0098	U	0.0098	U	ug/L		NC	20
4,4'-DDD	0.020	U	0.020	U	ug/L		NC	17
4,4'-DDE	0.0098	U	0.0098	U	ug/L		NC	19
4,4'-DDT	0.020	U	0.020	U	ug/L		NC	19
Acenaphthene	0.0098	U	0.0098	U	ug/L		NC	31
Chlorothalonil	0.020	U	0.020	U	ug/L		NC	15
Di-n-octyl phthalate	0.020	U	0.020	U	ug/L		NC	20
EPTC	0.0098	U	0.0098	U	ug/L		NC	18
Malathion	0.0098	U	0.0098	U	ug/L		NC	20
Naphthalene	0.0098	U	0.0098	U	ug/L		NC	46
Parathion	0.088	U	0.088	U	ug/L		NC	20
Terbacil	0.020	U	0.020	U	ug/L		NC	22
Endrin aldehyde	0.029	U	0.029	U	ug/L		NC	30
2,4'-DDD	0.0098	U	0.0098	U	ug/L		NC	30
2,4'-DDE	0.0098	U	0.0098	U	ug/L		NC	30
2,4'-DDT	0.0098	U	0.0098	U	ug/L		NC	30
2,6-Dinitrotoluene	0.039	U	0.039	U	ug/L		NC	30
Acetochlor	0.020	U	0.020	U	ug/L		NC	30
alpha-BHC	0.0098	U	0.0098	U	ug/L		NC	30
beta-BHC	0.0098	U	0.0098	U	ug/L		NC	30
Chlorobenzilate	0.029	U *+	0.029	U *+	ug/L		NC	30
Chloroneb	0.068	U	0.068	U	ug/L		NC	30
Chlorpyrifos	0.020	U	0.020	U	ug/L		NC	30
delta-BHC	0.0098	U	0.0098	U	ug/L		NC	30
Dichlorvos	0.0098	U	0.0098	U	ug/L		NC	30
Endosulfan I	0.039	U	0.039	U	ug/L		NC	30
Endosulfan II	0.039	U	0.039	U	ug/L		NC	30
Endosulfan sulfate	0.020	U	0.020	U	ug/L		NC	30
cis-Permethrin	0.020	U	0.020	U	ug/L		NC	30
trans-Permethrin	0.020	U	0.020	U	ug/L		NC	30
Caffeine	0.020	U	0.020	U	ug/L		NC	30

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# QC Sample Results

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

## Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 240-180293-3 DU**  
**Matrix: Water**  
**Analysis Batch: 47797**

**Client Sample ID: FB-20230212**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Pendimethalin	0.020	U	0.020	U	ug/L		NC	30
Terbutylazine	0.0098	U	0.0098	U	ug/L		NC	30
Hexazinone	0.049	U	0.049	U	ug/L		NC	30
Permethrin	0.020	U	0.020	U	ug/L		NC	
Chlordane (n.o.s.)	0.0098	U	0.0098	U	ug/L		NC	30
Cyanazine	0.020	U	0.020	U	ug/L		NC	20
Prometon	0.0098	U *	0.0098	U *	ug/L		NC	30
Desethylatrazine	0.0098	U	0.0098	U	ug/L		NC	51
Deisopropylatrazine	0.039	U	0.039	U	ug/L		NC	78
Prometryn	0.020	U	0.020	U	ug/L		NC	25

Surrogate	DU	DU	Limits
%Recovery	Qualifier		
Triphenylphosphate (Surr)	106		70 - 130
Perylene-d12 (Surr)	96		70 - 130
2-Nitro-m-xylene (Surr)	97		70 - 130

**Lab Sample ID: 240-180293-3 DU**  
**Matrix: Water**  
**Analysis Batch: 47958**

**Client Sample ID: FB-20230212**  
**Prep Type: Total/NA**  
**Prep Batch: 47741**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
2-Butoxyethyl acetate	0.098	U	0.098	U	ug/L		NC	30

# QC Association Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## GC/MS VOA

### Analysis Batch: 47646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	524.2	
240-180293-2	PW-207-20230212	Total/NA	Water	524.2	
240-180293-3	FB-20230212	Total/NA	Water	524.2	
MB 810-47646/6	Method Blank	Total/NA	Water	524.2	

### Analysis Batch: 47676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	524.2	
240-180293-2	PW-207-20230212	Total/NA	Water	524.2	
240-180293-3	FB-20230212	Total/NA	Water	524.2	
MB 810-47676/6	Method Blank	Total/NA	Water	524.2	

### Analysis Batch: 47680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	524.2	
240-180293-2	PW-207-20230212	Total/NA	Water	524.2	
240-180293-3	FB-20230212	Total/NA	Water	524.2	
MB 810-47680/6	Method Blank	Total/NA	Water	524.2	

### Analysis Batch: 47743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	524.2 Ext	
240-180293-2	PW-207-20230212	Total/NA	Water	524.2 Ext	
240-180293-3	FB-20230212	Total/NA	Water	524.2 Ext	
240-180293-4	TB-20230212	Total/NA	Water	524.2 Ext	
MB 810-47743/4	Method Blank	Total/NA	Water	524.2 Ext	

## GC/MS Semi VOA

### Prep Batch: 47741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	525.2	
240-180293-2	PW-207-20230212	Total/NA	Water	525.2	
240-180293-3	FB-20230212	Total/NA	Water	525.2	
MB 810-47741/3-A	Method Blank	Total/NA	Water	525.2	
LCS 810-47741/1-A	Lab Control Sample	Total/NA	Water	525.2	
LCS 810-47741/2-A	Lab Control Sample	Total/NA	Water	525.2	
LLCS 810-47741/4-A	Lab Control Sample	Total/NA	Water	525.2	
240-180293-3 DU	FB-20230212	Total/NA	Water	525.2	

### Analysis Batch: 47797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	525.2	47741
240-180293-2	PW-207-20230212	Total/NA	Water	525.2	47741
240-180293-3	FB-20230212	Total/NA	Water	525.2	47741
MB 810-47741/3-A	Method Blank	Total/NA	Water	525.2	47741
LCS 810-47741/1-A	Lab Control Sample	Total/NA	Water	525.2	47741
LLCS 810-47741/4-A	Lab Control Sample	Total/NA	Water	525.2	47741
240-180293-3 DU	FB-20230212	Total/NA	Water	525.2	47741

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# QC Association Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## GC/MS Semi VOA

### Analysis Batch: 47958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-180293-1	PW-205-20230212	Total/NA	Water	525.2	47741
240-180293-2	PW-207-20230212	Total/NA	Water	525.2	47741
240-180293-3	FB-20230212	Total/NA	Water	525.2	47741
MB 810-47741/3-A	Method Blank	Total/NA	Water	525.2	47741
LCS 810-47741/1-A	Lab Control Sample	Total/NA	Water	525.2	47741
LCS 810-47741/2-A	Lab Control Sample	Total/NA	Water	525.2	47741
LLCS 810-47741/4-A	Lab Control Sample	Total/NA	Water	525.2	47741
240-180293-3 DU	FB-20230212	Total/NA	Water	525.2	47741

# Lab Chronicle

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Client Sample ID: PW-205-20230212**

**Lab Sample ID: 240-180293-1**

**Date Collected: 02/12/23 09:50**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	47676	DC	EA SB	02/13/23 19:51
Total/NA	Analysis	524.2		1	47646	CM	EA SB	02/13/23 18:34
Total/NA	Analysis	524.2		1	47680	CM	EA SB	02/13/23 18:34
Total/NA	Analysis	524.2 Ext		1	47743	WD	EA SB	02/14/23 12:24
Total/NA	Prep	525.2			47741	AM	EA SB	02/14/23 07:52
Total/NA	Analysis	525.2		1	47797	TD	EA SB	02/14/23 18:12
Total/NA	Prep	525.2			47741	AM	EA SB	02/14/23 07:52
Total/NA	Analysis	525.2		1	47958	TD	EA SB	02/16/23 12:51

**Client Sample ID: PW-207-20230212**

**Lab Sample ID: 240-180293-2**

**Date Collected: 02/12/23 10:20**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	47676	DC	EA SB	02/13/23 20:14
Total/NA	Analysis	524.2		1	47646	CM	EA SB	02/13/23 18:59
Total/NA	Analysis	524.2		1	47680	CM	EA SB	02/13/23 18:59
Total/NA	Analysis	524.2 Ext		1	47743	WD	EA SB	02/14/23 12:48
Total/NA	Prep	525.2			47741	AM	EA SB	02/14/23 07:52
Total/NA	Analysis	525.2		1	47797	TD	EA SB	02/14/23 18:37
Total/NA	Prep	525.2			47741	AM	EA SB	02/14/23 07:52
Total/NA	Analysis	525.2		1	47958	TD	EA SB	02/16/23 13:16

**Client Sample ID: FB-20230212**

**Lab Sample ID: 240-180293-3**

**Date Collected: 02/12/23 09:30**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	47676	DC	EA SB	02/13/23 20:38
Total/NA	Analysis	524.2		1	47646	CM	EA SB	02/13/23 19:24
Total/NA	Analysis	524.2		1	47680	CM	EA SB	02/13/23 19:24
Total/NA	Analysis	524.2 Ext		1	47743	WD	EA SB	02/14/23 13:13
Total/NA	Prep	525.2			47741	AM	EA SB	02/14/23 07:52
Total/NA	Analysis	525.2		1	47797	TD	EA SB	02/14/23 19:03
Total/NA	Prep	525.2			47741	AM	EA SB	02/14/23 07:52
Total/NA	Analysis	525.2		1	47958	TD	EA SB	02/16/23 13:41

**Client Sample ID: TB-20230212**

**Lab Sample ID: 240-180293-4**

**Date Collected: 02/12/23 00:00**

**Matrix: Water**

**Date Received: 02/13/23 08:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2 Ext		1	47743	WD	EA SB	02/14/23 13:37

# Lab Chronicle

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

**Laboratory References:**

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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# Accreditation/Certification Summary

Client: Norfolk Southern Corporation  
 Project/Site: East Palestine

Job ID: 240-180293-1

## Laboratory: Eurofins Eaton South Bend

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	ISO/IEC 17025	5794.01	07-31-24
Alabama	State	40700	06-30-23
Alaska	State	IN00035	06-30-23
Arizona	State	AZ0432	07-26-23
Arkansas (DW)	State	EPA IN00035	06-30-23
California	State	2920	06-30-23
Colorado	State	IN00035	02-28-23
Connecticut	State	PH-0132	03-31-22 *
Delaware (DW)	State	IN00035	06-30-23
Florida	NELAP	E87775	06-30-23
Georgia (DW)	State	929	06-30-23
Hawaii	State	IN035	06-30-23
Idaho (DW)	State	IN00035	12-31-23
IL Dept. of Public Health (Micro)	State	17767	12-31-22 *
Illinois	NELAP	200001	09-30-23
Indiana	State	C-71-01	12-31-22 *
Indiana (Micro)	State	M-76-07	12-31-25
Iowa	State	IA Lab #098	11-01-23
Kansas	NELAP	E-10233	10-31-23
Kentucky (DW)	State	KY90056	12-31-22 *
Louisiana (DW)	State	LA014	12-31-23
Maine	State	IN00035	05-01-23
Maryland	State	209	03-31-23
Massachusetts	State	M-IN035	06-30-23
MI - RadChem Recognition	State	9926	06-30-23
Michigan	State	9926	12-31-22 *
Minnesota	NELAP	1989807	12-31-23
Mississippi	State	IN00035	06-30-22 *
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	01-02-24
Nebraska	State	NE-OS-05-04	06-30-23
Nevada	State	IN000352021-2	07-31-23
New Hampshire	NELAP	2124	11-05-23
New Jersey	NELAP	IN598	06-30-23
New Mexico	State	IN00035	06-30-23
New York	NELAP	11398	04-01-23
North Carolina (DW)	State	18700	07-31-23
North Dakota	State	R-035	06-30-23
Ohio	State	87775	06-30-23
Oklahoma	NELAP	D9508	08-31-23
Oregon	NELAP	4156	09-16-23
Pennsylvania	NELAP	68-00466	04-30-23
Puerto Rico	State	IN00035	04-01-23
Rhode Island	State	LAO00343	12-30-22 *
South Carolina	State	95005001	06-30-23
South Dakota (DW)	State	IN00035	12-31-22 *
Tennessee	State	TN02973	06-30-23
Texas	NELAP	T104704187-22-16	12-31-23
Texas	TCEQ Water Supply	TX207	06-30-23
USEPA Reg X SDWA	US Federal Programs	IN00035	08-20-22 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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# Accreditation/Certification Summary

Client: Norfolk Southern Corporation  
Project/Site: East Palestine

Job ID: 240-180293-1

## Laboratory: Eurofins Eaton South Bend (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-23
Vermont	State	VT-8775	11-15-23
Virginia	NELAP	460275	03-14-23
Washington	State	C837	01-01-23 *
West Virginia (DW)	State	9927 C	12-31-22 *
Wisconsin	State	999766900	08-31-23
Wisconsin (Micro)	State	10121	12-31-22 *
Wyoming	State	8TMS-L	06-30-23

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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<b>Client Information</b> Client Contact: <b>Stephanie Knight 919-995-5100</b> Phone: <b>734-779-2132</b>		Lab PM: <b>Brooks, Kris M</b> E-Mail: <b>Kris.Brooks@et.eurofins.com</b>		Carrier Tracking No(s): State of Origin: <b>OH</b>		COC No: <b>240-104726-37549.1</b> Page: <b>1 of 1</b> Job #: <b>900909193</b>	
<b>Company/AECOM</b> Address: <b>5438 Wade Park Blvd Unit 200</b> City: <b>Raleigh</b> State, Zip: <b>NC, 27607</b> Phone: <b>919-995-5792</b> Email: <b>stephanie.knight@aecom.com</b>		FWSID: Due Date Requested: TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: WO #: Project #: <b>24030748</b> SSO#: Project Name: <b>East Palerstone</b> Site:		<b>Analysis Requested</b>		Preservation Codes: A - HCL B - NaOH O - AsNaO2 C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:  M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
<b>Sample Identification</b>		Sample Date Sample Time Sample Type (C=Comp, G=grab) Matrix (W=water, S=solid, O=soil, B=trace, A=air)		Field Filtered Sample (Yes or No) Perform MSMSD (Yes or No)		Total Number of Containers	
PW-205-20230212 PW-207-20230212 FB-20230212 TB-20230212		2/12/23 09:50 2/12/23 10:20 2/12/23 09:30 2/12/23		G G G -		Water Water Water Water Water Water Water Water Water Water	
Preservation Code:		H N Q N N 3 1 2 N N 3 1 2 N N 3 1 2 N N 1		A N Q 524.2 VOCs 524.2 Ethanol only 525.2 SVCS		Special Instructions/Note:  240-180293 Chain of Custody	
<b>Possible Hazard Identification</b> <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify)		<input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Relinquished by: <b>Jillian Ashton</b> Relinquished by: <b>M. D. Sison</b>		Date/Time: <b>2/12/23 19:00</b> Date/Time: <b>2-12-23 9:40pm</b>		Date/Time: <b>2-12-23 8:00pm</b> Date/Time: <b>2-13-23 08:00</b>		Company: <b>AECOM</b> Company: <b>Eurofins</b> Company: <b>Eurofins</b> Company:	
Relinquished by: <b>M. D. Sison</b> Relinquished by:		Date/Time: <b>2-12-23 9:40pm</b>		Date/Time:		Date/Time:	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		Method of Shipment:	



Barberton Facility

Client AECOM Site Name \_\_\_\_\_ Cooler unpacked by: [Signature]  
Cooler Received on 2-12-23 Opened on 2-13-23

FedEx: 1<sup>st</sup> Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other \_\_\_\_\_

Receipt After-hours: Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_

Eurofins Cooler # EC Foam Box Client Cooler Box Other \_\_\_\_\_  
Packing material used: Bubble Wrap Foam Plastic Bag None Other \_\_\_\_\_  
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt  See Multiple Cooler Form  
IR GUN # IR-13 (CF -0.2 °C) Observed Cooler Temp. 3.5 °C Corrected Cooler Temp. 3.3 °C  
IR GUN # IR-16 (CF -0.1 °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp. \_\_\_\_\_ °C  
IR GUN # IR-17 (CF -0.3 °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp. \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No  
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA  
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No  
-Were tamper/custody seals intact and uncompromised? Yes No NA

Tests that are not checked for pH by Receiving:  
VOAs  
Oil and Grease  
TOC

3. Shippers' packing slip attached to the cooler(s)? Yes No  
4. Did custody papers accompany the sample(s)? Yes No  
5. Were the custody papers relinquished & signed in the appropriate place? Yes No  
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No  
7. Did all bottles arrive in good condition (Unbroken)? Yes No  
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No  
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?  
10. Were correct bottle(s) used for the test(s) indicated? Yes No  
11. Sufficient quantity received to perform indicated analyses? Yes No  
12. Are these work share samples and all listed on the COC? Yes No

If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC203064-291590  
14. Were VOAs on the COC? Yes No  
15. Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA  
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042016 Yes No  
17. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM KMB/PO Date 2-13-23 by [Signature] via Verbal Voice Mail Other [Signature]

Concerning \_\_\_\_\_

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES  additional next page Samples processed by: \_\_\_\_\_

19. SAMPLE CONDITION

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
Sample(s) \_\_\_\_\_ were received in a broken container.  
Sample(s) 3x40 pres VOAs for Pw 205 were received with bubble >6 mm in diameter. (Notify PM)  
3x40 pres VOAs for FB

20. SAMPLE PRESERVATION

Sample(s) \_\_\_\_\_ were further preserved in the laboratory.  
Time preserved: \_\_\_\_\_ Preservative(s) added/Lot number(s): \_\_\_\_\_

VOA Sample Preservation - Date/Time VOAs Frozen: \_\_\_\_\_

180 S. Van Buren Avenue  
Barberton, OH 44203  
Phone: 330-497-9396 Fax: 330-497-0772

# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab Pk:	Carrier Tracking No(s):	COC No:
Client Contact:		Phone:	Brooks, Kris M	State of Origin:	240-163860.1
Shipping/Receiving:		E-Mail:	Kris Brooks@et.eurolfins.com	Ohio	Page: 1 of 1
Company:		Accreditations Required (See note):	Job #: 240-180293-1		
Address:		Due Date Requested:	Preservation Codes:		
110 S Hill Street,		2/17/2023	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDTA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)		
City:		TAT Requested (days):	<b>Analysis Requested</b>		
South Bend		7	Perform MS/MSD (Yes or No)		
State, Zip:		PO #:	524.2_Pres_PREC/ VOC_524.2 Extended		
IN, 46617		WC #:	525.2_Ext/525.2_Prep (MOD) Extended SVOC list		
Phone:		Project #:	524.2_Ext/ Ethanol		
574-233-4777(Tel) 574-233-8207(Fax)		24030748	Total Number of containers		
Email:		SSOW#:	Special Instructions/Note:		
Project Name:		Site:	Ethanol Smart TIC 3 VOC vials w/ acceptable bubbles Ethanol Smart TIC Ethanol Smart TIC Ethanol Smart TIC 5 VOC vials w/ large bubbles Ethanol Smart TIC ppw 02/13/23		
East Palestine		Project #:	Ethanol Smart TIC		
Site:		SSOW#:	Ethanol Smart TIC		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C-comp, G-grab)	MATRIX (Water, Sealed, Overstated, B1-tissue, AAH)
PW-205-20230212 (240-180293-1)		2/12/23	09:50	Water	Water
PW-207-20230212 (240-180293-2)		2/12/23	10:20	Water	Water
FB-20230212 (240-180293-3)		2/12/23	09:30	Water	Water
TB-20230212 (240-180293-4)		2/12/23	Eastern	Water	Water

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyze & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

**Possible Hazard Identification**  
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_

Relinquished by: *[Signature]* Date/Time: 2-13-23 10:10 Company: ETR

Relinquished by: *[Signature]* Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Custody Seals Intact:  Yes  No Custody Seal No.: \_\_\_\_\_

Client Provided Sample Container

Special Instructions/QC Requirements:  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Received by: *[Signature]* Date/Time: 02/13/23 15:00 Company: ETR

Received by: *[Signature]* Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Initial Temp: 7.8  
Corrected Temp: 8.8  
IR Gun # \_\_\_\_\_

Cooler Temperature(s) °C and Other Remarks: \_\_\_\_\_



# Login Sample Receipt Checklist

Client: Norfolk Southern Corporation

Job Number: 240-180293-1

**Login Number: 180293**

**List Number: 2**

**Creator: Pehling-Wright, Penny**

**List Source: Eurofins Eaton South Bend**

**List Creation: 02/13/23 03:12 PM**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	False	Client provided containers

