



# WISCONSIN DEPARTMENT OF TRANSPORTATION

Additional Phase 2.5 Groundwater Sampling and  
Analysis - STH 13 - Boyd Creek Bridge (B-04-0114)

Town of Barksdale, Bayfield County, Wisconsin

WisDOT Project ID: 8160-00-01

AECOM Project No. 60486923

January 2020

**AECOM**

January 22, 2020

Aaron Gustafson  
Environmental Coordinator  
Wisconsin Department of Transportation - Northwest Region  
1701 North 4<sup>th</sup> Street  
Superior, WI 54880

**Subject: Additional Phase 2.5 Groundwater Sampling and Analysis  
STH 13 – Boyd Creek Bridge (B-04-0114)  
Town of Barksdale, Bayfield County, Wisconsin  
WisDOT Project ID: 8160-00-01  
AECOM Project No. 60486923**

Dear Mr. Gustafson:

AECOM is pleased to submit this report documenting additional Phase 2.5 groundwater sampling and analysis conducted for the STH 13 – Boyd Creek Bridge improvement project in the Town of Barksdale, Wisconsin. The purpose of the work was to determine, before construction begins, whether or not nitroaromatic and nitroamine organic compound (NNOC) levels in waste water generated by excavation dewatering near preliminary geotechnical Boring B-7 could exceed the Wisconsin Department of Natural Resources (WDNR) calculated daily or weekly maximum discharge limits. Demonstrating that the limits would not likely be exceeded can avoid potential additional costs during construction associated with special management (i.e., treatment or off-site disposal) of contaminated waste water. The work was authorized by the Wisconsin Department of Transportation's (WisDOT's) signed acceptance of AECOM's Amendment No.5 to Work Order No. 42, on August 5, 2019.

### **Background**

The project site is located adjacent to and downgradient of the Former DuPont Barksdale Works (BRRS Nos. 02-04-000156 and 02-04-550402). Soil and groundwater associated with the Former DuPont Barksdale Works (Chemours) are known to be contaminated with low-level NNOCs, including dinitrotoluenes, trinitro-m-xylene, and isomers of dinitro-m-xylene.

In September 2017, AECOM sampled groundwater from preliminary geotechnical Boring B-7 advanced within the project limits near the existing bridge. Laboratory analysis detected low-level NNOCs in the sample; however, the analytical results were likely biased high due to the sampling method used (i.e., a grab sample taken from a 1 inch diameter temporary well). Subsequently, NNOCs were not detected in groundwater samples collected in two geotechnical borings (B-1 and TS-2) sampled at other locations within the project limits in May 2018.

In June 2019, the WDNR's Waste Water Section provided WisDOT with calculated daily and weekly maximum waste water discharge limits for NNOCs detected in the groundwater sample collected from preliminary Boring B-7, including the following:

- 2-amino-4,6-Dinitrotoluene
- 4-amino-2,6-Dinitrotoluene
- 2,4,6-Trinitrotoluene

The waste water discharge limits for NNOCs were incorporated with the final Hazardous Materials Special Provisions prepared by AECOM and submitted to WisDOT in June 2019.

The WDNR's continuing concern is with detected NNOCs in groundwater at the location of preliminary Boring B-7. They believe there is a reasonable potential that waste water generated by construction excavation dewatering could exceed the calculated weekly discharge limits for NNOCs, if the September 2017 laboratory results for preliminary Boring B-7 are assumed to be representative. In that situation, WDNR recommended that treatment or some other method of disposal should be considered. A site location map is provided on the enclosed Figure 1.

Significant project dates include:

Let: January 2020

Construction: 2020

## Approach

AECOM's approach to resampling groundwater at the location of preliminary Boring B-7 included installing one monitoring well (MW-1, Figure 2) constructed in accordance with the requirements of Chapter NR 140, Wisconsin Administrative Code (WAC). An NR 140 monitoring well, having a standard 10-foot length of screen, can minimize the potential for analytical bias because samples would be collected from a water column that is as much as 10 feet deep. Consequently, laboratory results would be more representative of NNOC levels in groundwater during construction dewatering operations.

## Scope of Services

The additional Phase 2.5 scope of services included the following:

1. Retaining a subcontract driller, Geiss Soil & Samples, LLC (Geiss), to locate underground utilities, provide traffic control, install and develop one monitoring well on the project site, and containerize investigation derived wastes (IDW).
2. Retaining a WDNR certified laboratory, Pace Analytical Services, Inc. (Pace), to analyze the water sample collected from the site.
3. Advancing one soil boring (hollow stem auger method) to a depth of 16 feet below ground surface (bgs) to be converted to a monitoring well (MW-1) at the approximate location of preliminary geotechnical Boring B-7.
4. Visually classifying soil cuttings obtained from the monitoring well boring and field screening the cuttings for potential explosives residue using *Expray 1*®. Recording soil cuttings descriptions and field screening results onto WDNR soil boring log Form 4400-122.
5. Converting the boring to a water table monitoring well constructed in compliance with the requirements of Chapter NR 141, WAC. The monitoring well was constructed using a 2-inch diameter Schedule 40 polyvinyl chloride well screen and riser.
6. Completing the monitoring well at the ground surface with a locking cap and flush-mount protective cover.
7. Developing the monitoring well until the water produced was relatively sediment free.

8. Documenting the monitoring well construction and development on WDNR Forms 4400-113A and 4400-113B, respectively.
9. Photographing the monitoring well location and measuring its location from a fixed site feature for use in preparing a site map.
10. Allowing the monitoring well to stabilize for approximately one week prior to the collection of a water level measurement and groundwater sample.
11. Purging the monitoring well and collecting one groundwater sample for laboratory analysis according to WDNR field sampling protocol, using a peristaltic pump and the low-flow method.
12. Laboratory analyzing the groundwater sample for NNOCs (U.S. Environmental Protection Agency Method 8270).
13. Preparing this report, which summarizes the additional Phase 2.5 investigation findings.

## Site Information

General site information includes:

Site Name: Boyd Creek Bridge (B-04-0114)

Location: STH 13 Stations 109+62 to 115+63 (approximate)  
NE ¼ of the NW ¼ of Sec 25, T48 N, R5W  
Town of Barksdale  
Bayfield County  
See Figure 1

Wisconsin Transverse Mercator coordinates: X = 448034 and Y = 682711

Site Plan: See Figure 2

## Monitoring Well Drilling and Installation

On September 16, 2019, Monitoring Well MW-1 was drilled and installed by Geiss at the STH 13 Boyd Creek Bridge site adjacent to preliminary geotechnical Boring B-7. The monitoring well borehole was drilled using a 4.25-inch inside diameter hollow stem auger. A completed soil boring log (WDNR Form 4400-122) for the monitoring well is also enclosed.

The monitoring well borehole was converted to a monitoring well, constructed in compliance with the requirements of Chapter NR 141, WAC, with 2-inch diameter, Schedule 40, polyvinyl chloride riser pipe and screen. The well included a 10-foot length of slotted well screen (0.01 inch manufactured slots) installed to intersect the water table observed in the field. A sand filter pack was placed in the annular space adjacent to the well screen to approximately 2 feet above the top of the screen, followed by 2 feet of fine sand, and the remainder of the annular space was filled with bentonite chips.

Monitoring Well MW-1 was completed at the surface with a locking cap and a flush-mounted protective cover.



Monitoring Well MW-1 was developed using a submersible pump until the water produced was relatively sediment free. Copies of the completed monitoring well construction and development forms are enclosed. Photographs of the site and MW-1 are also enclosed.

### **Groundwater Sampling and Analytical Results**

AECOM collected one groundwater sample from MW-1 using the low-flow method on September 24, 2019. The stabilized water level in the well was approximately 10.48 feet bgs before sample collection. The monitoring well was purged before sampling until field parameters stabilized, including dissolved oxygen, pH, temperature, conductivity, and oxidation-reduction potential. A copy of the completed well purging and sample collection form is enclosed.

The groundwater sample collected from MW-1 was laboratory analyzed by Pace for NNOCs by U.S. Environmental Protection Agency Method 8270.

Pace reported that NNOCs were not detected above the reporting limit in the groundwater sample collected from MW-1. A copy of the Pace laboratory analytical report is enclosed.

### **Investigation Derived Waste**

Soil cuttings and waste water generated during the monitoring well drilling, installation, and sampling activities were containerized in two 55-gallon steel drums. Each drum was identified with a WisDOT non-hazardous label and temporarily stored at the Bayfield County Highway garage in Washburn, Wisconsin, until pickup for off-site disposal at a later date.

AECOM emailed a non-hazardous IDW pickup request to Veolia Environmental Services on October 14, 2019, with waste characterization results and other supporting documentation for the containerized soil cuttings and waste water. A copy of AECOM's IDW disposal request with supporting documentation is enclosed.

### **Future Use and Abandonment of MW-1**

Monitoring Well MW-1 will be left in place until the start of the new bridge construction in 2020 for the purpose of collecting water level measurements; however, no further groundwater sampling and analysis for NNOCs is planned or proposed. AECOM will permanently abandon MW-1 in accordance with the requirements of Chapter NR 141, WAC, with the assistance of the construction contractor at the time of bridge construction.



We appreciate the opportunity to assist WisDOT's Northwest Region with this project. If you have any questions regarding information contained in this report or if you need additional assistance, please contact Kyle Wagoner.

Sincerely,

Kyle W. Wagoner, P.G., CHMM  
Project Manager  
AECOM Environment  
715.342.3038  
kyle.wagoner@aecom.com

Daniel Barton  
Scientist  
AECOM Environment

Enclosures:     Figure 1 – Site Location Map  
                      Figure 2 – Site Plan  
                      MW-1 Soil Boring Log  
                      MW-1 Construction Form  
                      MW-1 Development Form  
                      Photograph Log  
                      MW-1 Purge and Sample Collection Form  
                      Pace Analytical Report, dated October 7, 2019  
                      IDW Disposal Request Documentation

c/encl: Sharlene Te Beest, WisDOT-BTS-ESS (electronic copy only)  
          Orville King, WisDOT – Northwest Region (electronic copy only)  
          Greg Pesola, WisDOT – Northwest Region (electronic copy only)  
          Phillip Richard, WDNR – Northern Region (electronic copy only)

P:\604403171900\_Work\1920\_GIS\Figures\Figure 1\_Site Location Map.mxd Nov 17 2015 - 9:04:05 AM Novakd2

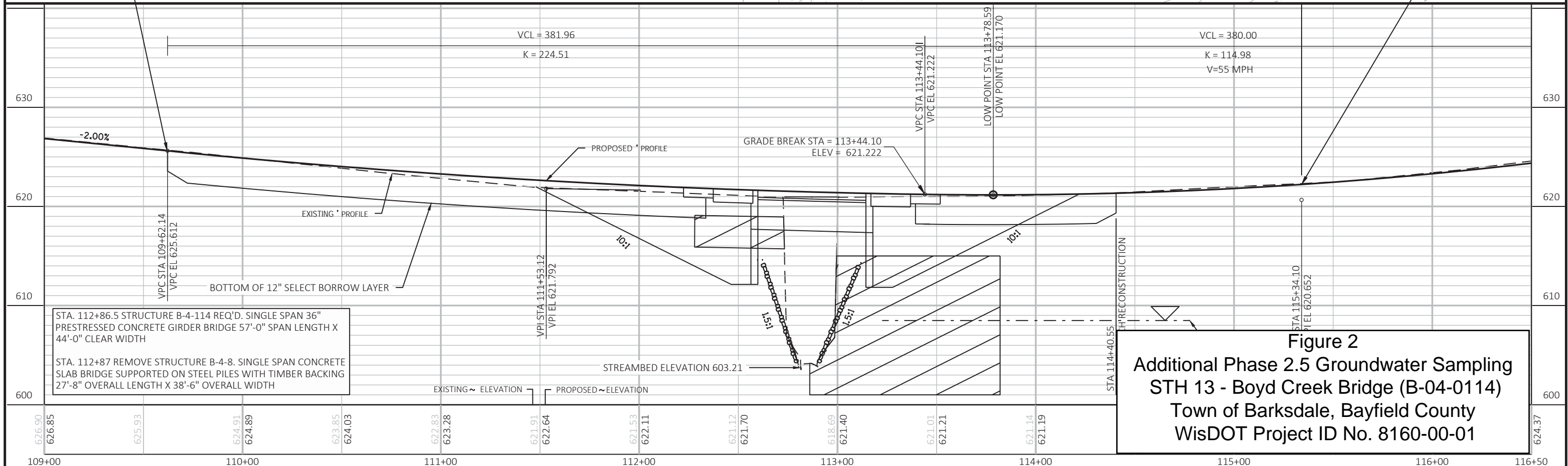
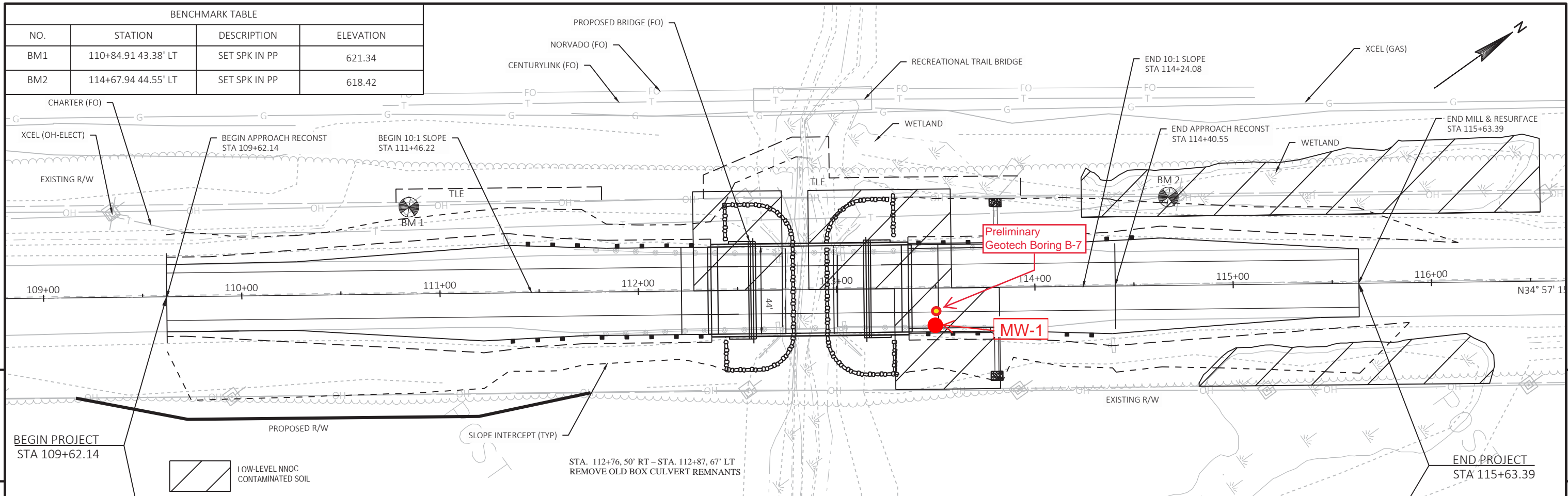


Site Location Map

Project No.: 60486923  
Date: January 2020

Additional Phase 2.5 Groundwater Sampling  
STH 13, Boyd Creek Bridge B-04-0114 Bayfield  
County, Wisconsin  
WisDOT Project ID 8160-00-01

BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEVATION
BM1	110+84.91 43.38' LT	SET SPK IN PP	621.34
BM2	114+67.94 44.55' LT	SET SPK IN PP	618.42



**Figure 2**  
**Additional Phase 2.5 Groundwater Sampling**  
**STH 13 - Boyd Creek Bridge (B-04-0114)**  
**Town of Barksdale, Bayfield County**  
**WisDOT Project ID No. 8160-00-01**



Route To:  Watershed/Wastewater  Waste Management   
 Remediation/Redevelopment  Other

Facility/Project Name <b>STH 13 Boyd Creek Phase 2.5</b>		License/Permit/Monitoring Number		Boring Number <b>MW-1</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Darren Prentice Geiss</b>		Date Drilling Started <b>9/16/2019</b>		Date Drilling Completed <b>9/16/2019</b>	
Drilling Method <b>solid stem auger</b>		Final Static Water Level <b>7.0 Feet MSL</b>		Surface Elevation <b>Feet MSL</b>	
Borehole Diameter <b>inches</b>		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Local Grid Location	
State Plane <b>N, E S/C/N</b>		Lat _____ "		<input type="checkbox"/> N <input type="checkbox"/> E	
1/4 of _____ 1/4 of Section _____ T _____ N,R		Long _____ "		<input type="checkbox"/> S <input type="checkbox"/> W	

Facility ID	County <b>Bayfield</b>	County Code <b>4</b>	Civil Town/City/ or Village <b>Barkside</b>
-------------	---------------------------	-------------------------	------------------------------------------------

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			1.5	Brown organic topsoil with sand											
			3.0	Brown to light brown sand with some gravel											
			4.5		SW										
			6.0												
			7.5	Soil appears saturated at 7.0 feet											
			9.0	Brown to light brown medium to fine coarsed sand with silt, wet											
			10.5		SM										
			12.0	Well screened 5.0-15.0 feet											
			13.5												
			15.0	End of Boring at 15.0 feet											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm <b>AECOM</b> 200 Indiana Avenue, Stevens Point, Wisconsin 54481
---------------	----------------------------------------------------------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Route to: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Stn 13 Boyd Creek Bridge</b>	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/> ) or Well Location <input type="checkbox"/> Lat. " Long. " or	Wis. Unique Well No. DNR Well ID No.
Facility ID	St. Plane ft. N. ft. E. S/C/N	Date Well Installed <b>09, 16, 2019</b> m m d d y y y y
Type of Well Well Code <b>11, MW</b>	Section Location of Waste/Source 1/4 of 1/4 of Sec. T. N, R. <input type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm <b>Darrin Prentice</b> <b>Geiss Soil &amp; Samples LLC</b>
Distance from Waste/Source ft.	Enf. Stds. Apply <input type="checkbox"/>	
	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

A. Protective pipe, top elevation ----- ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation ----- ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>8</u> in.
C. Land surface elevation ----- ft. MSL	b. Length: <u>1</u> ft.
D. Surface seal, bottom ----- ft. MSL or <u>0</u> ft.	c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
13. Sieve analysis performed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input checked="" type="checkbox"/> 01 Other <input type="checkbox"/>
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Other <input type="checkbox"/>
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. _____ Lbs/gal mud weight... Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight... Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite... Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft <sup>3</sup> volume added for any of the above
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08
Describe _____	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
17. Source of water (attach analysis, if required): _____	7. Fine sand material: Manufacturer, product name & mesh size a. <u>#20 Red Flint</u>
E. Bentonite seal, top ----- ft. MSL or <u>8</u> ft.	b. Volume added _____ ft <sup>3</sup>
F. Fine sand, top ----- ft. MSL or <u>3.5</u> ft.	8. Filter pack material: Manufacturer, product name & mesh size a. <u>#40 Red Flint</u>
G. Filter pack, top ----- ft. MSL or <u>4</u> ft.	b. Volume added _____ ft <sup>3</sup>
H. Screen joint, top ----- ft. MSL or <u>5.5</u> ft.	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
I. Well bottom ----- ft. MSL or <u>15.5</u> ft.	10. Screen material: <u>PVC</u>
J. Filter pack, bottom ----- ft. MSL or <u>16</u> ft.	a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
K. Borehole, bottom ----- ft. MSL or <u>16</u> ft.	b. Manufacturer <u>Johnson</u>
L. Borehole, diameter <u>8.25</u> in.	c. Slot size: <u>0.010</u> in.
M. O.D. well casing <u>2.40</u> in.	d. Slotted length: <u>10</u> ft.
N. I.D. well casing <u>2.06</u> in.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Darrin Prentice Firm Geiss Soil & Samples LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route to: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <u>STH 13 Bay Creek</u>	County Name <u>Bayfield</u>	Well Name <u>MW-1</u>	
Facility License, Permit or Monitoring Number	County Code <u>24</u>	Wis. Unique Well Number	DNR Well ID Number

1. Can this well be purged dry?  Yes  No

2. Well development method
- surged with bailer and bailed  41
  - surged with bailer and pumped  61
  - surged with block and bailed  42
  - surged with block and pumped  62
  - surged with block, bailed and pumped  70
  - compressed air  20
  - bailed only  10
  - pumped only  51
  - pumped slowly  50
  - Other \_\_\_\_\_  \_\_\_\_\_

3. Time spent developing well 58 min.

4. Depth of well (from top of well casing) 15.5 ft.

5. Inside diameter of well 2.02 in.

6. Volume of water in filter pack and well casing 68 gal.

7. Volume of water removed from well 30.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added \_\_\_\_\_

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>10.60</u> ft.	<u>13.80</u> ft.
Date	b. <u>09/16/2019</u>	<u>    </u>
Time	c. <u>12:24</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	<u>13:22</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	<u>0.0</u> inches	<u>0.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) _____	Clear <input checked="" type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe) _____

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids \_\_\_\_\_ mg/l \_\_\_\_\_ mg/l

15. COD \_\_\_\_\_ mg/l \_\_\_\_\_ mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Darren Last Name: Prentice

Firm: Geiss

Name and Address of Facility Contact /Owner/Responsible Party

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_  
Name: \_\_\_\_\_

Facility/Firm: WisDOT

Street: 4822 Madison Yards Way

City/State/Zip: Madison, WI 53705

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: [Signature]

Print Name: Dan Barton

Firm: AECOM

**Client Name:**  
Wisconsin Department of Transportation

**Site Location:**  
STH 13 Boyd Creek Bridge, Town of Barksdale,  
Bayfield County

**Project No.**  
60486923

**Photo No.**  
**1**

**Date:**  
9/16/2019

**Direction Photo Taken:**  
Southwest

**Description:**

MW-1 located on highway shoulder



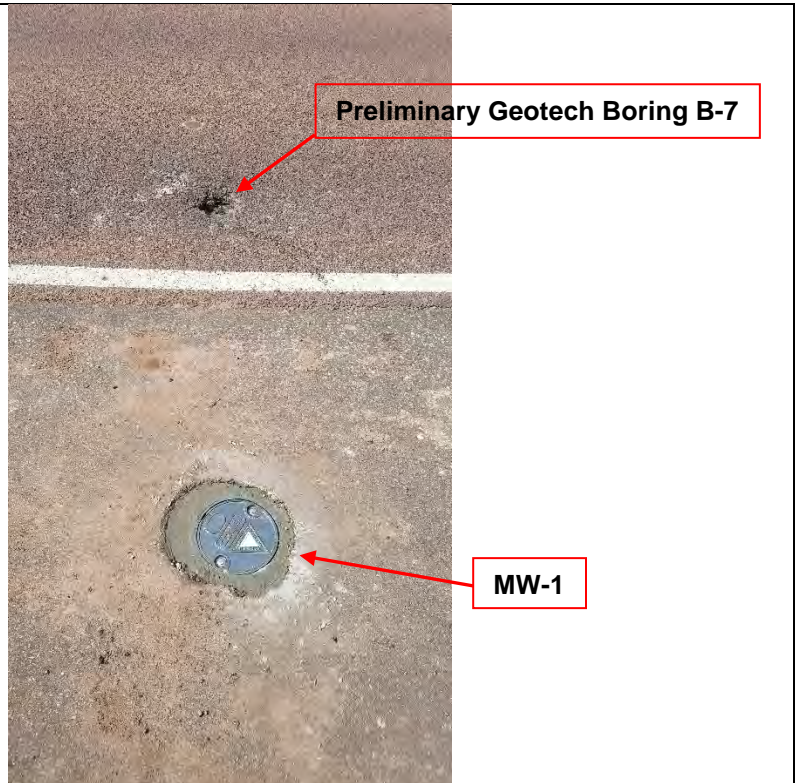
**Photo No.**  
**2**

**Date:**  
9/16/2019

**Direction Photo Taken:**  
Down (facing west)

**Description:**

Flush-mount cover of  
MW-1 on highway  
shoulder adjacent to  
preliminary geotech  
Boring B-7





Well Purging and Sample Collection

Well No. MW-1  
 Water Level (ft TPVC) 10.48  
 Well Depth (ft TPVC) -  
 Purging Method low flow  
 Purge Start Time 1250  
 Purge Stop Time \_\_\_\_\_  
 Sampling Method \_\_\_\_\_  
 Sampler Intake Depth (ft) \_\_\_\_\_  
 Average Sample Flow Rate \_\_\_\_\_  
 Sample Collection Time 1335

Site Name/Location Bayd Creek STA 13  
 AECOM Job No. 66486923  
 Weather sunny  
 Person(s) Sampling Dan Barton

Field Measurements and Observations											
Time	DO (mg/L)	Temp (deg C)	pH	Cond (uMhos/cm)	ORP (mV)	Turbidity (NTU)	Color	Odor	Water Level (ft TPVC)	Flow Rate (mL/min)	GW Rem. (gal)
1255	3.48	17.88	6.55	6366	51.9	high	tan	None			
1300	1.64	17.79	6.46	6321	60.0	med	tan	None			
1305	1.60	17.90	6.41	6279	61.0	low	clear	None			
1310	1.31	16.48	6.40	6046	53.6	low	clear				
1315	1.10	16.02	6.40	5800	38.3	low	clear				
1320	0.98	15.72	6.38	5595	27.4	low	clear				
1325	0.88	15.59	6.35	5245	18.7	low	clear				
1330	0.65	15.54	6.39	4776	3.0	low	clear				
1335	0.64	15.59	6.40	4689	1.8	low	clear				

Stabilization Criteria	
pH:	± 0.1
Specific Conductance	± 3%
ORP	± 10 mV
Turbidity	± 10% (when >10 NTU)
DO	± 0.3 mg/L

Comments ✓ 3 gal purged

Well Condition	Repairs Required	Comments
Protective Cover	<u>None</u>	
Concrete Pad		
Inner Well Casing		
Locking Cap/Padlock		
Well ID Label		
Frost Heave?		

Form Completed By: Dan Barton Title Env Engineer Date 9/24/19

October 07, 2019

Kyle Wagoner  
AECOM, Inc. - Stevens Point  
200 INDIANA AVE  
Stevens Point, WI 54481

RE: Project: 60486923 BOYD CREEK STH 13  
Pace Project No.: 40195859

Dear Kyle Wagoner:

Enclosed are the analytical results for sample(s) received by the laboratory on September 25, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Christopher Hyska  
christopher.hyska@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Dan Barton, AECOM



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE SUMMARY

Project: 60486923 BOYD CREEK STH 13

Pace Project No.: 40195859

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
40195859001	MW-1	Water	09/24/19 13:35	09/25/19 10:00

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## PROJECT NARRATIVE

Project:

Pace Project No.:

---

**Method:**

**Description:**

**Client:**

**Date:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.







2525 Advance Road  
Madison, WI 53718  
608.221.8700 Phone  
608.221.4889 Fax

October 07, 2019

Christopher Hyska  
Pace Analytical  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302  
RE: BOYD CREEK STH 13

Enclosed are the analytical results for the samples received by the laboratory on 09/25/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser  
Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2020
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2020
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2020
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2020
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2020



2525 Advance Road  
Madison, WI 53718  
608.221.8700 Phone  
608.221.4889 Fax

Pace Analytical  
1241 Bellevue Street, Suite 9  
Green Bay WI, 54302

Project: BOYD CREEK STH 13  
Project Number: 40195859  
Project Manager: Christopher Hyska

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 (40195859001)	A193912-01	Water	09/24/2019	09/25/2019

**CASE NARRATIVE**

**Sample Receipt Information:**

1 sample was received on 09/25/2019. Sample was received at 5.2 degrees Celsius. Sample was received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.



Pace Analytical  
 1241 Bellevue Street, Suite 9  
 Green Bay WI, 54302

Project: BOYD CREEK STH 13  
 Project Number: 40195859  
 Project Manager: Christopher Hyska

**MW-1 (40195859001)**

Date Sampled  
**09/24/2019 13:35**

**A193912-01 (Water)**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
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**Pace Analytical - Madison**

**Explosive Compounds by EPA Method 8270**

**Preparation Batch: A910187**

1,2-Dimethyl-3,4-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,2-Dimethyl-3,5-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,2-Dimethyl-3,6-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,2-Dimethyl-4,5-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,3,5-Trinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,3-Dimethyl-2,4-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,3-Dimethyl-2,5-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,3-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,4-Dimethyl-2,3-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,4-Dimethyl-2,5-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,4-Dimethyl-2,6-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,5-Dimethyl-2,3-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,5-Dimethyl-2,4-Dinitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2,3-Dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2,4,6-Trinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2,4-Dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2,5-Dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2,6-Dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2-Amino-4,6-dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
2-Nitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
3,4-Dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
3,5-Dinitroaniline	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
3,5-Dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
3-Nitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
4-Amino-2,6-dinitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
4-Nitrotoluene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
Nitrobenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	
1,3,5-Trinitro-2,4-dimethylbenzene	ND	0.94	ug/L	1	10/01/2019	10/01/2019 16:03	EPA 8270D	

Surrogate: 2,2'-Dinitrobiphenyl 50.3 % 60-140 10/01/2019 10/01/2019 16:03 EPA 8270D S

Surrogate: Nitrobenzene-d5 83.9 % 60-140 10/01/2019 10/01/2019 16:03 EPA 8270D

Pace Analytical  
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Green Bay WI, 54302

Project: BOYD CREEK STH 13  
Project Number: 40195859  
Project Manager: Christopher Hyska

### Explosive Compounds by EPA Method 8270 - Quality Control

#### Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch A910187 - EPA 3510C

##### Blank (A910187-BLK1)

Prepared: 10/01/2019 Analyzed: 10/01/2019 15:31

1,2-Dimethyl-3,4-Dinitrobenzene	ND	1.0	ug/L							
1,2-Dimethyl-3,5-Dinitrobenzene	ND	1.0	ug/L							
1,2-Dimethyl-3,6-Dinitrobenzene	ND	1.0	ug/L							
1,2-Dimethyl-4,5-Dinitrobenzene	ND	1.0	ug/L							
1,3,5-Trinitrobenzene	ND	1.0	ug/L							
1,3-Dimethyl-2,4-Dinitrobenzene	ND	1.0	ug/L							
1,3-Dimethyl-2,5-Dinitrobenzene	ND	1.0	ug/L							
1,3-Dinitrobenzene	ND	1.0	ug/L							
1,4-Dimethyl-2,3-Dinitrobenzene	ND	1.0	ug/L							
1,4-Dimethyl-2,6-Dinitrobenzene	ND	1.0	ug/L							
1,4-Dimethyl-2,5-Dinitrobenzene	ND	1.0	ug/L							
1,5-Dimethyl-2,3-Dinitrobenzene	ND	1.0	ug/L							
1,5-Dimethyl-2,4-Dinitrobenzene	ND	1.0	ug/L							
2,3-Dinitrotoluene	ND	1.0	ug/L							
2,4,6-Trinitrotoluene	ND	1.0	ug/L							
2,4-Dinitrotoluene	ND	1.0	ug/L							
2,5-Dinitrotoluene	ND	1.0	ug/L							
2,6-Dinitrotoluene	ND	1.0	ug/L							
2-Amino-4,6-dinitrotoluene	ND	1.0	ug/L							
2-Nitrotoluene	ND	1.0	ug/L							
3,4-Dinitrotoluene	ND	1.0	ug/L							
3,5-Dinitroaniline	ND	1.0	ug/L							
3,5-Dinitrotoluene	ND	1.0	ug/L							
3-Nitrotoluene	ND	1.0	ug/L							
4-Amino-2,6-dinitrotoluene	ND	1.0	ug/L							
4-Nitrotoluene	ND	1.0	ug/L							
Nitrobenzene	ND	1.0	ug/L							
1,3,5-Trinitro-2,4-dimethylbenzene	ND	1.0	ug/L							
Surrogate: 2,2'-Dinitrobiphenyl	5.51		ug/L	9.716		56.7	60-140			S
Surrogate: Nitrobenzene-d5	9.89		ug/L	10.00		98.9	60-140			

##### LCS (A910187-BS1)

Prepared: 10/01/2019 Analyzed: 10/01/2019 15:00

1,2-Dimethyl-3,4-Dinitrobenzene	9.76	1.0	ug/L	9.980		97.8	60-140			
1,2-Dimethyl-3,5-Dinitrobenzene	9.28	1.0	ug/L	10.10		91.8	60-140			
1,2-Dimethyl-3,6-Dinitrobenzene	9.52	1.0	ug/L	9.995		95.3	60-140			
1,2-Dimethyl-4,5-Dinitrobenzene	9.58	1.0	ug/L	10.13		94.5	60-140			
1,3,5-Trinitrobenzene	9.11	1.0	ug/L	10.00		91.1	60-140			
1,3-Dimethyl-2,4-Dinitrobenzene	9.27	1.0	ug/L	10.10		91.7	60-140			
1,3-Dimethyl-2,5-Dinitrobenzene	9.55	1.0	ug/L	10.01		95.4	60-140			
1,3-Dinitrobenzene	9.40	1.0	ug/L	10.00		94.0	60-140			
1,4-Dimethyl-2,3-Dinitrobenzene	9.20	1.0	ug/L	10.03		91.8	60-140			
1,4-Dimethyl-2,5-Dinitrobenzene	9.34	1.0	ug/L	10.13		92.2	60-140			
1,4-Dimethyl-2,6-Dinitrobenzene	9.27	1.0	ug/L	9.980		92.9	60-140			
1,5-Dimethyl-2,3-Dinitrobenzene	9.72	1.0	ug/L	10.06		96.6	60-140			
1,5-Dimethyl-2,4-Dinitrobenzene	9.37	1.0	ug/L	9.830		95.4	60-140			
2,3-Dinitrotoluene	8.90	1.0	ug/L	10.00		89.0	60-140			

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Project: BOYD CREEK STH 13  
Project Number: 40195859  
Project Manager: Christopher Hyska

### Explosive Compounds by EPA Method 8270 - Quality Control

#### Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch A910187 - EPA 3510C

##### LCS (A910187-BS1)

Prepared: 10/01/2019 Analyzed: 10/01/2019 15:00

2,4,6-Trinitrotoluene	9.14	1.0	ug/L	10.00		91.4	60-140			
2,4-Dinitrotoluene	10.2	1.0	ug/L	10.00		102	60-140			
2,5-Dinitrotoluene	9.31	1.0	ug/L	10.00		93.1	60-140			
2,6-Dinitrotoluene	9.23	1.0	ug/L	10.00		92.3	60-140			
2-Amino-4,6-dinitrotoluene	8.38	1.0	ug/L	10.00		83.8	60-140			
2-Nitrotoluene	9.32	1.0	ug/L	10.00		93.2	60-140			
3,4-Dinitrotoluene	9.38	1.0	ug/L	10.00		93.8	60-140			
3,5-Dinitroaniline	9.45	1.0	ug/L	10.00		94.5	60-140			
3,5-Dinitrotoluene	9.52	1.0	ug/L	10.00		95.2	60-140			
3-Nitrotoluene	9.50	1.0	ug/L	10.00		95.0	60-140			
4-Amino-2,6-dinitrotoluene	7.88	1.0	ug/L	10.00		78.8	60-140			
4-Nitrotoluene	9.67	1.0	ug/L	10.00		96.7	60-140			
Nitrobenzene	9.90	1.0	ug/L	10.00		99.0	60-140			
<i>Surrogate: 2,2'-Dinitrobiphenyl</i>	<i>9.18</i>		<i>ug/L</i>	<i>9.716</i>		<i>94.5</i>	<i>60-140</i>			
<i>Surrogate: Nitrobenzene-d5</i>	<i>10.0</i>		<i>ug/L</i>	<i>10.00</i>		<i>100</i>	<i>60-140</i>			

##### Matrix Spike (A910187-MS1)

Source: A193912-01

Prepared: 10/01/2019 Analyzed: 10/01/2019 16:34

1,2-Dimethyl-3,4-Dinitrobenzene	9.13	0.96	ug/L	9.596	ND	95.1	60-140			
1,2-Dimethyl-3,5-Dinitrobenzene	8.59	0.96	ug/L	9.712	ND	88.5	60-140			
1,2-Dimethyl-3,6-Dinitrobenzene	9.04	0.96	ug/L	9.611	ND	94.0	60-140			
1,2-Dimethyl-4,5-Dinitrobenzene	9.26	0.96	ug/L	9.740	ND	95.0	60-140			
1,3,5-Trinitrobenzene	8.84	0.96	ug/L	9.615	ND	92.0	60-140			
1,3-Dimethyl-2,4-Dinitrobenzene	8.79	0.96	ug/L	9.712	ND	90.5	60-140			
1,3-Dimethyl-2,5-Dinitrobenzene	8.91	0.96	ug/L	9.625	ND	92.6	60-140			
1,3-Dinitrobenzene	8.97	0.96	ug/L	9.615	ND	93.3	60-140			
1,4-Dimethyl-2,3-Dinitrobenzene	8.84	0.96	ug/L	9.644	ND	91.7	60-140			
1,4-Dimethyl-2,5-Dinitrobenzene	9.15	0.96	ug/L	9.740	ND	93.9	60-140			
1,4-Dimethyl-2,6-Dinitrobenzene	8.87	0.96	ug/L	9.596	ND	92.5	60-140			
1,5-Dimethyl-2,3-Dinitrobenzene	9.13	0.96	ug/L	9.673	ND	94.4	60-140			
1,5-Dimethyl-2,4-Dinitrobenzene	8.83	0.96	ug/L	9.452	ND	93.4	60-140			
2,3-Dinitrotoluene	8.47	0.96	ug/L	9.615	ND	88.1	60-140			
2,4,6-Trinitrotoluene	8.76	0.96	ug/L	9.615	ND	91.1	60-140			
2,4-Dinitrotoluene	9.66	0.96	ug/L	9.615	ND	100	60-140			
2,5-Dinitrotoluene	9.00	0.96	ug/L	9.615	ND	93.7	60-140			
2,6-Dinitrotoluene	8.75	0.96	ug/L	9.615	ND	91.0	60-140			
2-Amino-4,6-dinitrotoluene	8.51	0.96	ug/L	9.615	ND	88.5	60-140			
2-Nitrotoluene	8.97	0.96	ug/L	9.615	ND	93.3	60-140			
3,4-Dinitrotoluene	9.22	0.96	ug/L	9.615	ND	95.9	60-140			
3,5-Dinitroaniline	9.47	0.96	ug/L	9.615	ND	98.5	60-140			
3,5-Dinitrotoluene	9.16	0.96	ug/L	9.615	ND	95.2	60-140			
3-Nitrotoluene	9.16	0.96	ug/L	9.615	ND	95.3	60-140			
4-Amino-2,6-dinitrotoluene	8.13	0.96	ug/L	9.615	ND	84.5	60-140			
4-Nitrotoluene	9.39	0.96	ug/L	9.615	ND	97.7	60-140			
Nitrobenzene	9.59	0.96	ug/L	9.615	ND	99.7	60-140			
<i>Surrogate: 2,2'-Dinitrobiphenyl</i>	<i>9.07</i>		<i>ug/L</i>	<i>9.342</i>		<i>97.1</i>	<i>60-140</i>			
<i>Surrogate: Nitrobenzene-d5</i>	<i>9.64</i>		<i>ug/L</i>	<i>9.615</i>		<i>100</i>	<i>60-140</i>			

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Green Bay WI, 54302

Project: BOYD CREEK STH 13  
Project Number: 40195859  
Project Manager: Christopher Hyska

### Explosive Compounds by EPA Method 8270 - Quality Control

#### Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch A910187 - EPA 3510C

##### Matrix Spike Dup (A910187-MSD1)

Source: A193912-01

Prepared: 10/01/2019 Analyzed: 10/01/2019 17:06

1,2-Dimethyl-3,4-Dinitrobenzene	8.52	0.94	ug/L	9.415	ND	90.5	60-140	6.88	20	
1,2-Dimethyl-3,5-Dinitrobenzene	7.94	0.94	ug/L	9.528	ND	83.3	60-140	7.98	20	
1,2-Dimethyl-3,6-Dinitrobenzene	8.52	0.94	ug/L	9.429	ND	90.3	60-140	5.91	20	
1,2-Dimethyl-4,5-Dinitrobenzene	8.75	0.94	ug/L	9.557	ND	91.6	60-140	5.63	20	
1,3,5-Trinitrobenzene	8.29	0.94	ug/L	9.434	ND	87.9	60-140	6.42	20	
1,3-Dimethyl-2,4-Dinitrobenzene	8.27	0.94	ug/L	9.528	ND	86.8	60-140	6.06	20	
1,3-Dimethyl-2,5-Dinitrobenzene	8.53	0.94	ug/L	9.443	ND	90.3	60-140	4.41	20	
1,3-Dinitrobenzene	8.65	0.94	ug/L	9.434	ND	91.7	60-140	3.64	20	
1,4-Dimethyl-2,3-Dinitrobenzene	8.33	0.94	ug/L	9.462	ND	88.0	60-140	5.95	20	
1,4-Dimethyl-2,6-Dinitrobenzene	8.39	0.94	ug/L	9.415	ND	89.2	60-140	5.54	20	
1,4-Dimethyl-2,5-Dinitrobenzene	8.67	0.94	ug/L	9.557	ND	90.7	60-140	5.38	200	
1,5-Dimethyl-2,3-Dinitrobenzene	8.47	0.94	ug/L	9.491	ND	89.3	60-140	7.45	20	
1,5-Dimethyl-2,4-Dinitrobenzene	8.40	0.94	ug/L	9.274	ND	90.6	60-140	5.00	20	
2,3-Dinitrotoluene	7.98	0.94	ug/L	9.434	ND	84.6	60-140	5.98	20	
2,4,6-Trinitrotoluene	8.25	0.94	ug/L	9.434	ND	87.5	60-140	5.95	20	
2,4-Dinitrotoluene	9.29	0.94	ug/L	9.434	ND	98.5	60-140	3.89	20	
2,5-Dinitrotoluene	8.54	0.94	ug/L	9.434	ND	90.5	60-140	5.32	20	
2,6-Dinitrotoluene	8.41	0.94	ug/L	9.434	ND	89.1	60-140	3.96	20	
2-Amino-4,6-dinitrotoluene	8.12	0.94	ug/L	9.434	ND	86.1	60-140	4.72	20	
2-Nitrotoluene	8.43	0.94	ug/L	9.434	ND	89.3	60-140	6.25	20	
3,4-Dinitrotoluene	8.45	0.94	ug/L	9.434	ND	89.6	60-140	8.69	20	
3,5-Dinitroaniline	9.13	0.94	ug/L	9.434	ND	96.8	60-140	3.67	20	
3,5-Dinitrotoluene	8.65	0.94	ug/L	9.434	ND	91.7	60-140	5.70	20	
3-Nitrotoluene	8.62	0.94	ug/L	9.434	ND	91.3	60-140	6.16	20	
4-Amino-2,6-dinitrotoluene	7.84	0.94	ug/L	9.434	ND	83.1	60-140	3.59	20	
4-Nitrotoluene	8.72	0.94	ug/L	9.434	ND	92.4	60-140	7.41	20	
Nitrobenzene	8.85	0.94	ug/L	9.434	ND	93.8	60-140	8.03	20	
Surrogate: 2,2'-Dinitrobiphenyl	8.62		ug/L	9.166		94.0	60-140			
Surrogate: Nitrobenzene-d5	9.05		ug/L	9.434		95.9	60-140			

Pace Analytical  
1241 Bellevue Street, Suite 9  
Green Bay WI, 54302

Project: BOYD CREEK STH 13  
Project Number: 40195859  
Project Manager: Christopher Hyska

### Notes and Definitions

- S Surrogate recovery was outside of laboratory control limits.
- ND Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
- NR Not Reported
- dry Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
- RPD Relative Percent Difference







Wagoner, Kyle

---

**From:** Barton, Daniel  
**Sent:** Monday, October 14, 2019 4:11 PM  
**To:** zach.davis@veolia.com  
**Cc:** Greg Holtzen; DOTHazmatUnit@dot.wi.gov; Wagoner, Kyle; aaron.gustafson@dot.wi.gov  
**Subject:** IDW Pickup Request for Boyd Creek Bridge STH 13 Monitoring Well Installation (WisDOT #8160-00-01)  
**Attachments:** 20190916\_134845.jpg; 20190916\_134848.jpg; 20190916\_134858.jpg; 40195859\_frc.pdf; Drum Location Map.pdf; dt1229 (STH 13 Boyd Creek Bridge).docx; dt1229 (STH 13 Boyd Creek Bridge).pdf; Location Map (Bayfield County Hwy Shop).pdf; Pace Lab Report (WC-1).pdf; Re\_FW\_Waste Characterization Protocol for Nitroaromatic & Nitroamine Compounds\_ STH 13 Boyd Creek Bridge, Bayfield County (WisDOT #8160-00-01).pdf

Hello Zach,

Please process the attached IDW pickup request and let me know if you need anything else.

Regards,

Dan Barton

**Daniel Barton**, EIT  
Environmental Engineer, Environment, Central Region  
D +1-715-342-3025  
M +1-248-385-7046  
[daniel.barton@aecom.com](mailto:daniel.barton@aecom.com)

**AECOM**  
200 Indiana Avenue  
Stevens Point, WI 54481, USA  
T +1-715-341-8110  
[aecom.com](http://aecom.com)

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# NON-HAZARDOUS WASTE INVENTORY RECORD

Wisconsin Department of Transportation  
 DT1229 6/2016 (For use with DT1208)

DTSD Region and Office Northwest - Superior		
WisDOT Project ID 8160-00-01	County Bayfield	Highway and Termini STH 13 Boyd Creek Bridge
Site Name Boyd Creek Bridge		Phase of Investigation 2.5
Consultant Company AECOM		
Consultant Contact Kyle Wagoner		
Contact (Area Code) Telephone Number (715) 342-3038		
Contact Email Address kyle.wagoner@aecom.com		
Consultant ID for this Site 60486923		
Generation Date (m/d/yyyy) 9/16/2019		
Comments, special instructions for pickup or site access Two steel drums containing soil cuttings and purge water are temporarily stored next to the blue building at the Bayfield County Hwy. Dept. shop located at 311 1 <sup>st</sup> Ave. East in Washburn, WI (see location map and photos). Contact is Mike (phone #715-373-6116).		

Waste Description – describe containers of similar size and contents in one row. Insert additional rows as needed.  
*Number and Label Each Container.*

Container ID Number	Container Size and Type	Estimated Volume of Waste	Source: Tank, Well, Boring	Contents: Soil, Water, Other (Describe)
Example: 1, 4, 5, 6, 7, 18, 22, 23	Example: 30 gallon metal drum	Example: 8 drums x 30 gal = 240 gallons	Example: monitoring wells # MW3, MW4, and MW7	Example: wash water,alconox
1	55-gallon steel drum	55 gallons	MW1	Soil
2	55-gallon steel drum	30 gallons	MW1	Purge and development water
Total Number of Containers to be picked up: 1				

Container Location: Attach map or site sketch to Email

Analytical Results: Attach analytical results to Email

Email one copy of this form to each of the following:

- [DOT Hazardous Materials Specialist](#)
- [Regional Environmental or Hazardous Materials Coordinator](#)
- [Hazardous Waste Contractor](#)

Include a copy of this form as the final appendix in the report for this site.

Google Maps Washburn



Map data ©2017 Google United States 1000 ft



Bayfield County  
Highway Department

Blue Bldg

Salt Shed

Location of two drums  
containing soil and purge  
water from WIS 13 Boyd  
Creek Bridge Drilling

October 04, 2017

Kyle Wagoner  
AECOM, Inc. - Stevens Point  
200 INDIANA AVE  
Stevens Point, WI 54481

WASTE CHARACTERIZATION -  
SOIL CUTTINGS  
STH 13 BOYD CREEK BRIDGE  
WISDOT # 8160-00-01

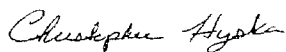
RE: Project: 60486923 STH 13-BOYD CR.BRIDGE  
Pace Project No.: 40157280

Dear Kyle Wagoner:

Enclosed are the analytical results for sample(s) received by the laboratory on September 22, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Christopher Hyska  
christopher.hyska@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: 60486923 STH 13-BOYD CR.BRIDGE  
Pace Project No.: 40157280

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



### ANALYTICAL RESULTS

Project: 60486923 STH 13-BOYD CR.BRIDGE  
Pace Project No.: 40157280

Sample: WC-1 Lab ID: 40157280011 Collected: 09/20/17 15:30 Received: 09/22/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Leachate Method/Date: EPA 1311; 09/25/17 12:24									
Arsenic	<0.042	mg/L	0.12	0.042	1	09/26/17 13:58	09/27/17 11:36	7440-38-2	
Barium	0.53	mg/L	0.075	0.025	1	09/26/17 13:58	09/27/17 11:36	7440-39-3	
Cadmium	<0.0066	mg/L	0.025	0.0066	1	09/26/17 13:58	09/27/17 11:36	7440-43-9	
Chromium	<0.013	mg/L	0.050	0.013	1	09/26/17 13:58	09/27/17 11:36	7440-47-3	
Lead	<0.022	mg/L	0.065	0.022	1	09/26/17 13:58	09/27/17 11:36	7439-92-1	
Selenium	<0.083	mg/L	0.25	0.083	1	09/26/17 13:58	09/27/17 11:36	7782-49-2	
Silver	<0.017	mg/L	0.050	0.017	1	09/26/17 13:58	09/27/17 11:36	7440-22-4	
<b>7470 Mercury, TCLP</b>									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Leachate Method/Date: EPA 1311; 09/25/17 12:24									
Mercury	<0.00013	mg/L	0.00042	0.00013	1	09/26/17 13:05	09/27/17 08:29	7439-97-6	
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 09/25/17 12:24									
1,4-Dichlorobenzene	<0.019	mg/L	0.062	0.019	1	09/28/17 08:15	09/28/17 14:06	106-46-7	
2,4-Dinitrotoluene	<0.0079	mg/L	0.026	0.0079	1	09/28/17 08:15	09/28/17 14:06	121-14-2	
Hexachloro-1,3-butadiene	<0.025	mg/L	0.082	0.025	1	09/28/17 08:15	09/28/17 14:06	87-68-3	
Hexachlorobenzene	<0.017	mg/L	0.056	0.017	1	09/28/17 08:15	09/28/17 14:06	118-74-1	
Hexachloroethane	<0.027	mg/L	0.089	0.027	1	09/28/17 08:15	09/28/17 14:06	67-72-1	
2-Methylphenol(o-Cresol)	<0.0087	mg/L	0.029	0.0087	1	09/28/17 08:15	09/28/17 14:06	95-48-7	
3&4-Methylphenol(m&p Cresol)	<0.016	mg/L	0.052	0.016	1	09/28/17 08:15	09/28/17 14:06		
Nitrobenzene	<0.015	mg/L	0.048	0.015	1	09/28/17 08:15	09/28/17 14:06	98-95-3	
Pentachlorophenol	<0.014	mg/L	0.048	0.014	1	09/28/17 08:15	09/28/17 14:06	87-86-5	
Phenol	<0.0060	mg/L	0.020	0.0060	1	09/28/17 08:15	09/28/17 14:06	108-95-2	
Pyridine	<0.018	mg/L	0.060	0.018	1	09/28/17 08:15	09/28/17 14:06	110-86-1	
2,4,5-Trichlorophenol	<0.0084	mg/L	0.028	0.0084	1	09/28/17 08:15	09/28/17 14:06	95-95-4	
2,4,6-Trichlorophenol	<0.021	mg/L	0.070	0.021	1	09/28/17 08:15	09/28/17 14:06	88-06-2	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	84	%	53-100		1	09/28/17 08:15	09/28/17 14:06	4165-60-0	
2-Fluorobiphenyl (S)	70	%	59-109		1	09/28/17 08:15	09/28/17 14:06	321-60-8	
Terphenyl-d14 (S)	88	%	59-108		1	09/28/17 08:15	09/28/17 14:06	1718-51-0	
Phenol-d6 (S)	28	%	18-120		1	09/28/17 08:15	09/28/17 14:06	13127-88-3	
2-Fluorophenol (S)	46	%	27-67		1	09/28/17 08:15	09/28/17 14:06	367-12-4	
2,4,6-Tribromophenol (S)	88	%	65-140		1	09/28/17 08:15	09/28/17 14:06	118-79-6	
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 09/25/17 12:24									
Benzene	<0.0050	mg/L	0.010	0.0050	10		09/27/17 17:51	71-43-2	
2-Butanone (MEK)	<0.030	mg/L	0.20	0.030	10		09/27/17 17:51	78-93-3	
Carbon tetrachloride	<0.0050	mg/L	0.010	0.0050	10		09/27/17 17:51	56-23-5	
Chlorobenzene	<0.0050	mg/L	0.010	0.0050	10		09/27/17 17:51	108-90-7	
Chloroform	<0.025	mg/L	0.050	0.025	10		09/27/17 17:51	67-66-3	
1,2-Dichloroethane	<0.0017	mg/L	0.010	0.0017	10		09/27/17 17:51	107-06-2	
1,1-Dichloroethene	<0.0041	mg/L	0.010	0.0041	10		09/27/17 17:51	75-35-4	
Tetrachloroethene	<0.0050	mg/L	0.010	0.0050	10		09/27/17 17:51	127-18-4	

### REPORT OF LABORATORY ANALYSIS

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**ANALYTICAL RESULTS**

Project: 60486923 STH 13-BOYD CR.BRIDGE  
Pace Project No.: 40157280

**Sample: WC-1**      **Lab ID: 40157280011**      Collected: 09/20/17 15:30      Received: 09/22/17 10:15      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV TCLP</b>		Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 09/25/17 12:24							
Trichloroethene	<0.0033	mg/L	0.010	0.0033	10		09/27/17 17:51	79-01-6	
Vinyl chloride	<0.0018	mg/L	0.010	0.0018	10		09/27/17 17:51	75-01-4	L2,M0
<b>Surrogates</b>									
Toluene-d8 (S)	91	%	70-130		10		09/27/17 17:51	2037-26-5	
4-Bromofluorobenzene (S)	93	%	61-130		10		09/27/17 17:51	460-00-4	
Dibromofluoromethane (S)	115	%	67-130		10		09/27/17 17:51	1868-53-7	

**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: 60486923 STH 13-BOYD CR.BRIDGE

Pace Project No.: 40157280

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay

### ANALYTE QUALIFIERS

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: **AECOM**  
 Branch/Location: **STEVENS POINT, WI**  
 Project Contact: **KYLE WAGONER**  
 Phone: **715 342-3038**  
 Project Number: **60486923**  
 Project Name: **STH 13 - BOYD CR BRIDGE**  
 Project State: **WI**  
 Sampled By (Print): **ERIC SCHMIDT**  
 Sampled By (Sign): *[Signature]*  
 PO #:

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	B-2 (1-3)	9/20/17	09:15	S
002	B-7 (1-3)		10:50	
003	B-7 (9-10)		11:30	↓
004	B-7		11:50	GW
005	B-9 (1-3)		12:35	S
006	B-8 (1-3)		13:35	
007	B-8 (9-10)		14:00	
008	B-5 (3-5)		14:25	
009	B-5 (10-12)		14:45	
010	B-3 (1-3)		15:25	
011	WC-1	↓	15:30	↓



UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

40157280

UPS TRACKING 12A478E9 01 9466 0935

### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED? (YES/NO)  
 PRESERVATION (CODE)\*

Y/N	Pick Letter	Analyses Requested
N	A	NITRO ORGANICS + DNX (8270)
N	A	TCLP VOCs (1311/8260)
N	A	TCLP SVOCs (1311/8270)
N	A	TCLP PCRA METALS (1311/6010/1470)
N	A	% MOISTURE

**Quote #:**

**Mail To Contact:** KYLE WAGONER

**Mail To Company:** AECOM

**Mail To Address:** 200 INDIANA AVE STEVENS POINT, WI 54481

**Invoice To Contact:** KYLE WAGONER

**Invoice To Company:**

**Invoice To Address:**

**Invoice To Phone:**

**CLIENT COMMENTS**

**LAB COMMENTS (Lab Use Only)**

**Profile #**

1-9ozag<sup>A</sup>

4-1Lag<sup>A</sup>

2-9ozag<sup>A</sup> 1-4ozag<sup>A</sup>

**Rush Turnaround Time Requested - Prelims**  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:

Email #2:

Telephone:

Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: <i>[Signature]</i>	Date/Time: 9/21/17 10:00	Received By:	Date/Time:
Relinquished By: DPS	Date/Time: 9/22/17 1015	Received By: <i>[Signature]</i>	Date/Time: 9/22/17 1015
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

**PACE Project No.**  
40157280

**Receipt Temp =** 201 °C

**Sample Receipt pH**  
OK / Adjusted

**Cooler Custody Seal**  
Present / Not Present  
Intact / Not Intact



2525 Advance Road  
Madison, WI 53718  
608.221.8700 Phone  
608.221.4889 Fax

October 04, 2017

Christopher Hyska  
Pace Analytical  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302  
RE: STH 13-BOYD CR.BRIDGE

Enclosed are the analytical results for the samples received by the laboratory on 09/23/2017.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser  
Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2018
ILEPA	Illinois Secondary NELAP Accreditation	003174	04/30/2018
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2017
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2017
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018



2525 Advance Road  
Madison, WI 53718  
608.221.8700 Phone  
608.221.4889 Fax

Pace Analytical 1241 Bellevue Street, Suite 9 Green Bay WI, 54302	Project: STH 13-BOYD CR.BRIDGE Project Number: 40157280 Project Manager: Christopher Hyska
-------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------

**WC-1 (40157280011)**

Date Sampled

A173901-11 (Soil)

09/20/2017 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
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**Pace Analytical - Madison**

**Explosive Compounds by EPA Method 8270**

**Preparation Batch: A709066**

1,2-Dimethyl-3,4-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,2-Dimethyl-3,5-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,2-Dimethyl-3,6-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,2-Dimethyl-4,5-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,3,5-Trinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,3-Dimethyl-2,4-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,3-Dimethyl-2,5-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,3-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,4-Dimethyl-2,3-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,4-Dimethyl-2,5-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,4-Dimethyl-2,6-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,5-Dimethyl-2,3-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,5-Dimethyl-2,4-Dinitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2,3-Dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2,4,6-Trinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2,4-Dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2,5-Dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2,6-Dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2-Amino-4,6-dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
2-Nitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
3,4-Dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
3,5-Dinitroaniline	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
3,5-Dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
3-Nitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
4-Amino-2,6-dinitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
4-Nitrotoluene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
Nitrobenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	
1,3,5-Trinitro-2,4-dimethylbenzene	ND	200	ug/kg dry	1	09/28/2017	09/29/2017 06:36	EPA 8270D	

Surrogate: 2,2'-Dinitrohiphenyl 89.4 % 48.3-152 09/28/2017 09/29/2017 06:36 EPA 8270D

Surrogate: Nitrobenzene-d5 94.0 % 72-126 09/28/2017 09/29/2017 06:36 EPA 8270D

**Classical Chemistry Parameters**

**Preparation Batch: A709071**

% Solids	99.1	0.00	% by Weight	1	09/29/2017	09/30/2017 11:00	SM 2540B	
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2525 Advance Road  
Madison, WI 53718  
608.221.8700 Phone  
608.221.4889 Fax

Pace Analytical 1241 Bellevue Street, Suite 9 Green Bay WI, 54302	Project: STH 13-BOYD CR.BRIDGE Project Number: 40157280 Project Manager: Christopher Hyska
-------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------

### Notes and Definitions

- MI Spike recoveries were not evaluated because of elevated levels of the spiked analyte in the parent sample.
- M The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory control limits.
- HC Results may be biased high because of high continuing calibration verification (CCV).
- D Data reported from a dilution
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
- RPD Relative Percent Difference





## About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A *Fortune 500* firm, AECOM had revenue of approximately \$20.2 billion during fiscal year 2018. See how we deliver what others can only imagine at [aecom.com](http://aecom.com) and [@AECOM](https://www.instagram.com/AECOM).

### Kyle Wagoner

200 Indiana Avenue

Stevens Point, WI 54481

T: 715.342.3038

E: [kyle.wagoner@aecom.com](mailto:kyle.wagoner@aecom.com)

