

## **TRIP REPORT**

### **MONTELLO VALVE SITE – INFILTRATION TESTING**

#### **1.0 PURPOSE**

This Trip Report presents the field data and results of double-ring soil infiltration tests conducted to support the design of a stormwater management system at the Montello site located in Spring Township, Berks County, Pennsylvania, as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP. One surface and one deep test (IT-A and IT-B) were performed at the site. The test locations are listed by coordinates (latitude and longitude) in Table 1 and shown on the attached figure.

#### **2.0 FIELD ACTIVITIES**

The infiltration tests were conducted by Keith Simpson and Jake Marlow of Tetra Tech, Inc., on October 6, 2016. The test locations were positioned in the field using a handheld, WAAS-enabled GPS unit. Table 1 provides the coordinates of the test locations. The tests were located in an agricultural field northeast of Montello Road.

The infiltration tests were performed in accordance with the procedure specified in the 2006 Pennsylvania Stormwater Best Management Practices (BMP) Manual. The test locations were prepared with hand tools and a mini-excavator, and care was taken to minimize disturbance of the soil surface to be tested. Double-ring infiltrometers were used for testing and consisted of 10-inch diameter and 6-inch diameter sections of steel casing, each 10 inches in height. After digging to the target depth, the test surface was leveled, and loose soil and debris were removed. The rings were driven a minimum of 2 inches into the soil. The infiltration test depths are presented in Table 1.

The test locations were pre-soaked for 1 hour. The tests were then conducted with measurements at 10-minute or 30-minute intervals, based on the observed water level drop during the last half of the pre-soak period. Pre-soak and test information was recorded on infiltration test data sheets; copies of the test data sheets are attached to this report.

During the testing, the weather was sunny, approximately 60 degrees Fahrenheit, and no precipitation was observed during the time of testing. Additionally, no precipitation was observed 24 hours prior to testing.

Test pits were excavated near each testing location to characterize the soil, determine the depth to bedrock, if encountered, and inspect for evidence of the seasonal high water table. The test pits were identified with the corresponding infiltration test name. The test pits were machine-excavated to 2 feet below the target infiltration test depth or refusal, whichever was encountered first. Descriptions of the soil were recorded on field logs, which were based on the form example in the BMP manual. Copies of the field soil logs are attached to this report.

### **3.0 RESULTS**

#### **3.1 Soil Description**

Soils encountered generally consisted of a thin (up to approximately 9 inches) dark yellowish brown (10YR 4/6) silty clay loam with few fine roots underlain by a yellowish brown (10YR 5/8) silty clay illuvial layer. Test unit IT-B contained a fill layer which ranged down to approximately 28 inches, and a layer trending to a saprolite approximately 55 inches below ground surface. Bedrock was not encountered.

Seasonal high water was not observed at the testing location, nor was any mottling observed.

According to United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey data, the soil type for the test locations is mapped as follows:

- Duffield Silt Loam - (DbB soil symbol) with 3-8 percent slopes; with medium runoff and is well drained.

#### **3.2 Infiltration Tests Results**

Table 1 summarizes the infiltration rates (inches per hour) calculated from the test data. The infiltration rates presented in Table 1 were calculated from the average water level drop of the last four stabilized readings measured in the inner ring.

The pre-soak test result for IT-A (shallow) indicated a high infiltration rate, requiring a 10 minute test cycle; whereas, the test result for IT-B (deep) indicated a low infiltration rate, requiring a 30 minute test cycle.

**Table 1**  
**Summary of Infiltration Test Results**  
**Montello**  
**Spring Township, Berks County, PA**  
**Sunoco PPP**


Test Location (IT-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
IT-A (shallow)	40.3142025°	- 076.0387100°	3	6.84
IT-B (deep)	40.3151803°	- 076.0379154°	36	0.38

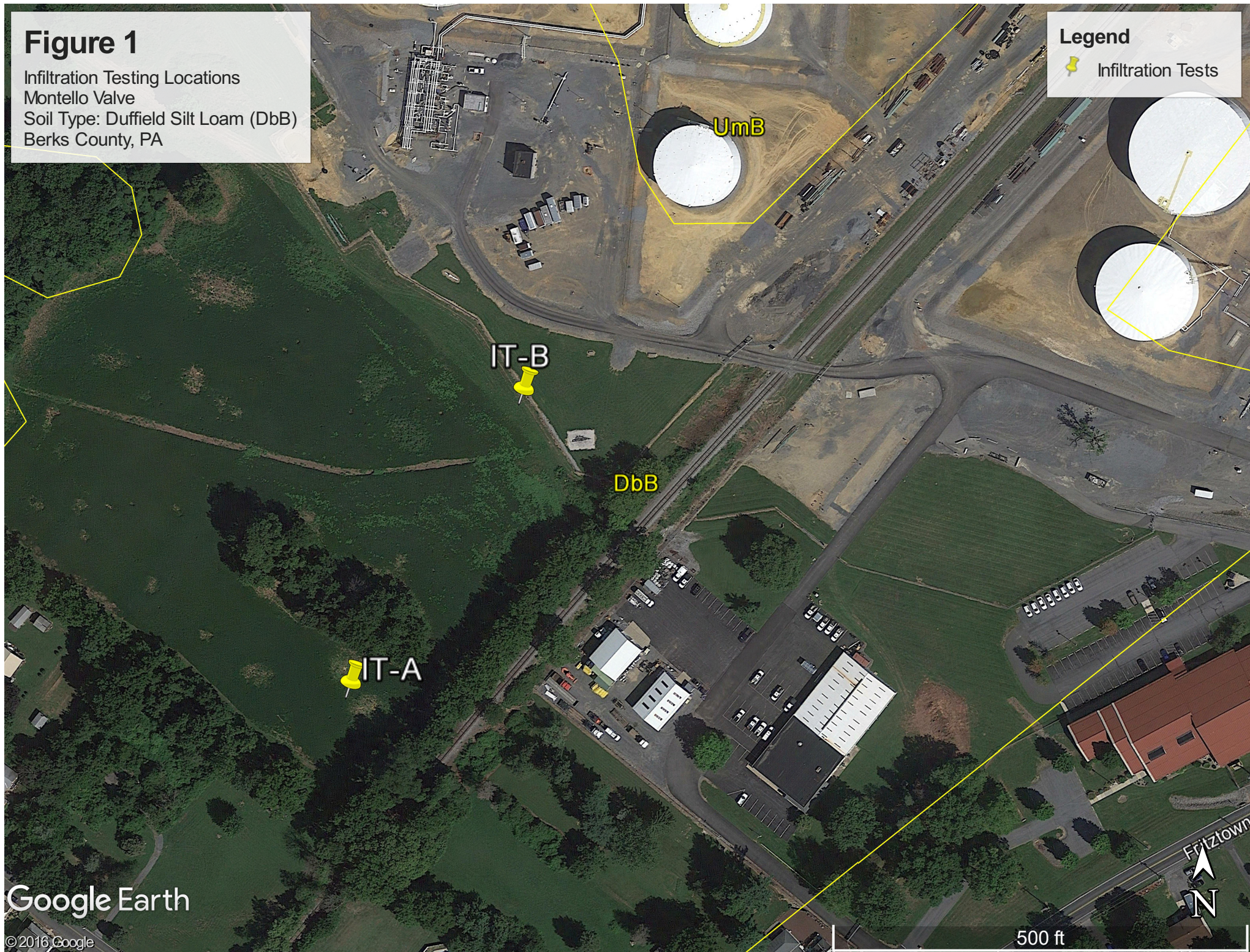


# Figure 1

Infiltration Testing Locations  
Montello Valve  
Soil Type: Duffield Silt Loam (DbB)  
Berk County, PA

Legend

 Infiltration Tests





## **ATTACHMENTS**

## SOIL LOGS





## Soil Log

Tested By: Jake Marlow

Project: SUNOCO PPP

Project No.: 112IC03458

Test Pit: Montello IT-A

Date: 10/6/16

Elevation: \_\_\_\_\_

Equipment Used Mini Excavator

Geology: Millbach Formation

Soil Type: \_\_\_\_\_

Land Use: \_\_\_\_\_

Weather: 70° Sunny

### Additional Comments

Mini Excavator to 27"

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
A	0"	9"	Silty clay loam	Clay w/ Fine silt trace Fine sand	10YR 4/6	Solid	Pores Few roots	—	—	Moist top soil
B	9"	27"	Silty clay	Clay w/ trace silt	10YR 5/8	Solid	Few pores	—	—	Moist

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	<u>- Did Not Encounter Seasonal High Groundwater</u> <u>- No Re Fused</u> <u>- &lt; 0.5" of Rain in past 24 hours</u>
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
C	Weathered parent material		<u>Clear</u>	
R	Layer of consolidated rock beneath the soil		Gradual	
			Diffuse	

# Soil Log

Tested By: Jake Marlow

Project: Synoco - PPP

Project No.: 112IC05958

Test Pit: Montello IT-B

Date: 10/6/16

Elevation: \_\_\_\_\_

Equipment Used Mini Excavator

Geology: \_\_\_\_\_

Soil Type: \_\_\_\_\_

Land Use: \_\_\_\_\_

Weather: 60° Sunny

## Additional Comments

Mini Excavator to 62"

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
O	0"	1"	Loam	Fine sand and silt trace clay	10YR 4/3		Pores Roots Vegetation	-	-	Organic Debris Dry
A	1"	28"	Silt clay Loam	Fine silt w/ clay and minor fine sand F to C gravel	10YR 4/2		Pores 1/2" Rocks	-	-	- Dry - Pieces of Plastic - Possible Fill
B	28"	55"	Silty clay	Clay w/ F silt	10YR 5/8	Solid	No Pores No Roots	-	-	- Moist
C	55"	62"	Silty clay Loam	Clay w/ trace silt and trace fine sand F to C gravel w/ cobble size weathered bedrock	10YR 4/6	Solid	Pores 1" Rock	-	-	- Dry to Moist

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	- Did Not Encounter Seasonal High Groundwater - No Refuse! - <0.5" of Rain in Past 24 hours
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
C	Weathered parent material		<u>Clear</u>	
R	Layer of consolidated rock beneath the soil		Gradual	
			Diffuse	



## **INFILTRATION TEST DATA SHEETS**

# INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

MONTELLO

PROJECT NAME: SUNOCO LOGISTICS

TEST AREA ID:

IT-A

SURFACE

PROJECT NUMBER: 112 IC 05958 - 17

PERSONNEL:

K. SIMPSON, J. MARLOW

TEST METHOD: Double Ring Infiltrometer Percolation  
Single Ring Infiltrometer

Location Coordinates or Description:

INNER RING INSIDE

DIAMETER/HEIGHT:

6" x 10"

40.3142025

OUTER RING INSIDE

DIAMETER/HEIGHT:

10" x 10"

-076.0397100

PERCOLATION HOLE DIAMETER:

NA

(If performing an open hole perc test)

DATE(s):

10/6/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches):

7.5'

MEASURING POINT: Ring Rim Indicator Mark

DEPTH OF TEST: 3" BGS

[illegible]

ALSO SEE PHOTO & LOG  
SOIL



# INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

B

MONTELO

PROJECT NAME: SUNOCO LOGISTICS

TEST AREA ID:

TT-B DEEP

PROJECT NUMBER: 112 IC 05958 - 17

PERSONNEL: K. SIMPSON, J. MARLOW

TEST METHOD: Double Ring Infiltrometer Percolation  
Single Ring Infiltrometer

Location Coordinates or Description:

INNER RING INSIDE

DIAMETER/HEIGHT:

6" x 10"

OUTER RING INSIDE

DIAMETER/HEIGHT:

 $10^k \times 10^l$ 

40,315,803

-076.0379154

PERCOLATION HOLE DIAMETER:

NA

(If performing an open hole perc test)

DATE(s):

10/6/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches):

7.5"

MEASURING POINT: Ring Rim Indicator Mark

DEPTH OF TEST: 3' BAS

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
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## PRESOAK DATA

0850	0	-----	4.2	
0920	30	11/16	0.3	
0950	60	7/16	0.2	

## TEST DATA

## 30 MIN. INTERVALS

SCHEDULE INTERVALS				
0950	0 (60)	-----		START TEST
1020	30 (90)	8/16	0.2	
1050	60 (120)	6/16	0.2	
1120	90 (150)	2/16	0.05	
1150	120 (180)	2/16	0.05	
1220	150 (210)	2/16	0.05	END TEST

NO RAIN OVER LAST 24 HRS

TRASH NOTED (PLASTIC) @ 3' BGS

SEE PHOTO & SOIL LOG ALSO