

## **TRIP REPORT**

### **WEST TRINDLE ROAD 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 West Trindle Road Valve site located in Silver Spring Township, Cumberland County, Pennsylvania, as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP. Two surface tests (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 Kevin Nuble and Cosmo Lettich of CH2M Hill, 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 a field near the intersection of West Trindle Road and the Pennsylvania Turnpike (Route 76).

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 care was taken to minimize disturbance of the soil surface to be tested. Double-ring infiltrometers were used for testing and consisted of 8-inch diameter and 4-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.

The weather at the time of testing was sunny and approximately 65 degrees Fahrenheit. Additionally, less than 0.5 inches of precipitation was observed 24 hours prior to testing.

A hand auger was utilized to characterize the soil, determine the depth to bedrock, if encountered, and inspect for evidence of the seasonal high water table near the test areas. This was completed from the ground surface down to two feet below the target infiltration test depth. Descriptions of the soil were documented on field logs, which were based on the form example in the BMP manual. Copies of the soil logs are attached to this report.

### **3.0 RESULTS**

#### **3.1 Soil Description**

Soils encountered at the site generally consisted of a thin (up to approximately 2 inches) brown (10YR [4/3, 5/3]) topsoil/surface soil layer composed of an organic silt loam with small roots which was underlain by a yellow brown (10YR [5/4, 5/6, 5/8]) silt loam with small roots. An illuvial layer was found approximately 4 to 24 inches below ground surface and consisted of a reddish brown (5YR [4/3, 4/4, 5/3, 5/4]) silty clay which trended to a clay loam with depth. Bedrock was not encountered.

Seasonal high water was not observed at the testing location, with lithochromatic mottling being observed in test unit B at roughly 12 inches below ground surface, however this may have been due to mixing of soils and not indicative of seasonal high water.

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

- Hagerstown Silt Loam - (HaA soil symbol) with 0-3 percent slopes; with low 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 indicated a high infiltration rate, requiring a 10 minute test cycle; whereas, the pre-soak test result for IT-B indicated a low infiltration rate, requiring a 30 minute test cycle.

**Table 1**  
**Summary of Infiltration Test Results**  
**West Trindle Road Valve**  
**Silver Spring Township, Cumberland County, PA**  
**Sunoco PPP**

Test Location (IT-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
IT-A (shallow)	40.2029080°	- 077.0442170°	2.5	12.00*
IT-B (shallow)	40.2028173°	- 077.0443268°	2.5	0.00


\* Water level dropped from 8" to 6" within infiltration test ring for a 2" drop per 10 minute interval

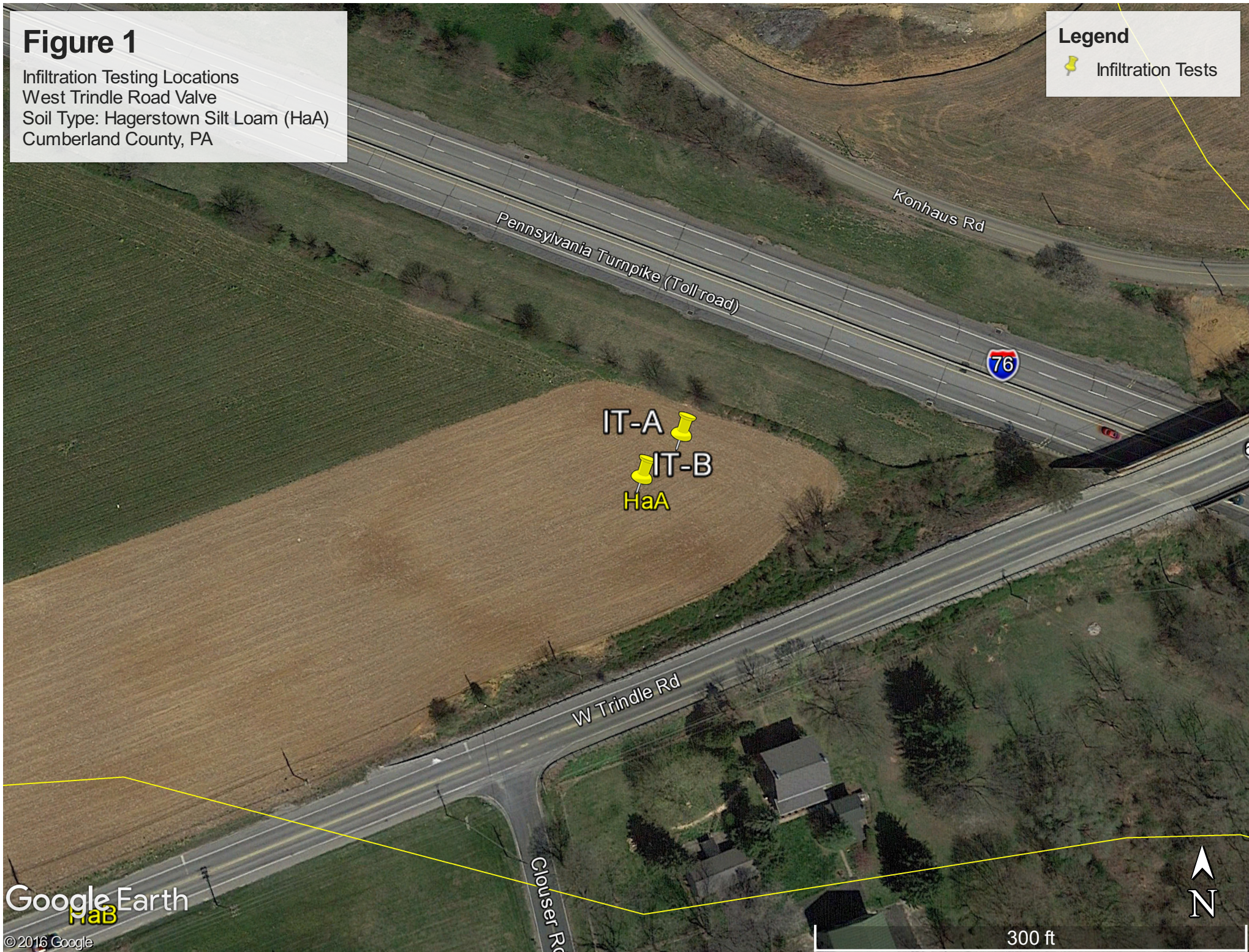


# Figure 1

Infiltration Testing Locations  
West Trindle Road Valve  
Soil Type: Hagerstown Silt Loam (HaA)  
Cumberland County, PA

Legend

 Infiltration Tests





## **ATTACHMENTS**

## SOIL LOGS



TETRA TECH

Soil LogTested By: K. NubieTest Pit: W Trindle A

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

Date: 10/6/16

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

Project: SUNOCO LOS

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

Land Use: AG USTProject No.: 112 IC 05958

Equipment

Used: SHAWWeather: Sunny

Additional Comments

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	O	2"	topsoil	silt/sand	Brown	Brown	COAL	—	—	
A	2"	4"	silt/clay	Red Br. Yellow Brown	organic silt	Nm.	Nm	—	—	
B	4"	24"	CLAY LoA	Red Brown	clay	Yellow to Red	Nm	—	—	

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	AG Field well compacted Heavy clay
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
C	Weathered parent material		Clear	
R	Layer of consolidated rock beneath the soil		Gradual	
			Diffuse	

Table based on: Sample soil log located on page 12 of the Pennsylvania Stormwater Best Management Practices Manual  
 USDA Definitions located from: [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2\\_054308](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054308)



## Soil Log

Tested By: C. Letlich

Test Pit: 2' hand dug

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

Date: 10/6/16

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

Project: Sunoco Logistics

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

Land Use: Corn Field

Project No.: 112 IC 05958

Equipment Used: Shovel

Weather: warm, clear

### Additional Comments

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	O	2"	Top Soil	organic material	yellowish brown	Homogeneous	Corn Roots	NA	NA	
A	2"	4"	Silty Clay	None	↓	↓	↓	↓	↓	
B	4"	12 1/2"	lean silty clay	↓	↓	mottled @ 12"	Fine Roots	↓	↓	
B	12"	24"	lean clay	↓	reddish brown	Homogeneous	None	↓	↓	

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	
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
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## **INFILTRATION TEST DATA SHEETS**



# INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

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## INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

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