

## **TRIP REPORT LOCKE MOUNTAIN ROAD 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 Locke Mountain Road Valve Site located in Frankstown Township, Blair County, Pennsylvania, as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP. Two shallow and two deep 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 Mark Mengel 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. Both tests were located in a grassy area, approximately 40 feet southwest of Middletown 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.

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 drops 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 65 degrees Fahrenheit, and no precipitation was observed during the time of testing. Additionally, less than 0.5 inches of precipitation was observed 24 hours prior to testing.

In addition, 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**

Soil encountered generally consisted of a medium thick (up to 9 inches) brown (7.5YR 5/1) to gray (7.5YR 5/2) surface soil layer composed of two zones high in silt underlain by up to a tri-split B horizon composed of a strong brown (7.5YR 5/6) silty clay trending down to gray (N 5/1) clay. Water was noted on the surface of the underlying fractured to consolidated rock noted as saprolite shale and shale bedrock.

Evidence of seasonal high water was observed in IT-A and IT-B at 60 and 58 inches below ground surface (bgs) and bedrock was located at 60 and 50 inches bgs respectively.

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:

- Brinkerton Silt Loam – (BrB soil symbol) with 3-8 percent slopes; with very high runoff and poorly drained.

### **3.2 Infiltration Tests Results**

Table 1 summarizes the infiltration rates (inches per hour) calculated from the test data. 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 results for IT-A (deep) indicated a high infiltration rate, requiring a 10 minute test cycle; whereas, the pre-soak test results for IT-A (deep) and IT-B (surface and deep) indicated low infiltration rates, requiring 30 minute test cycles.

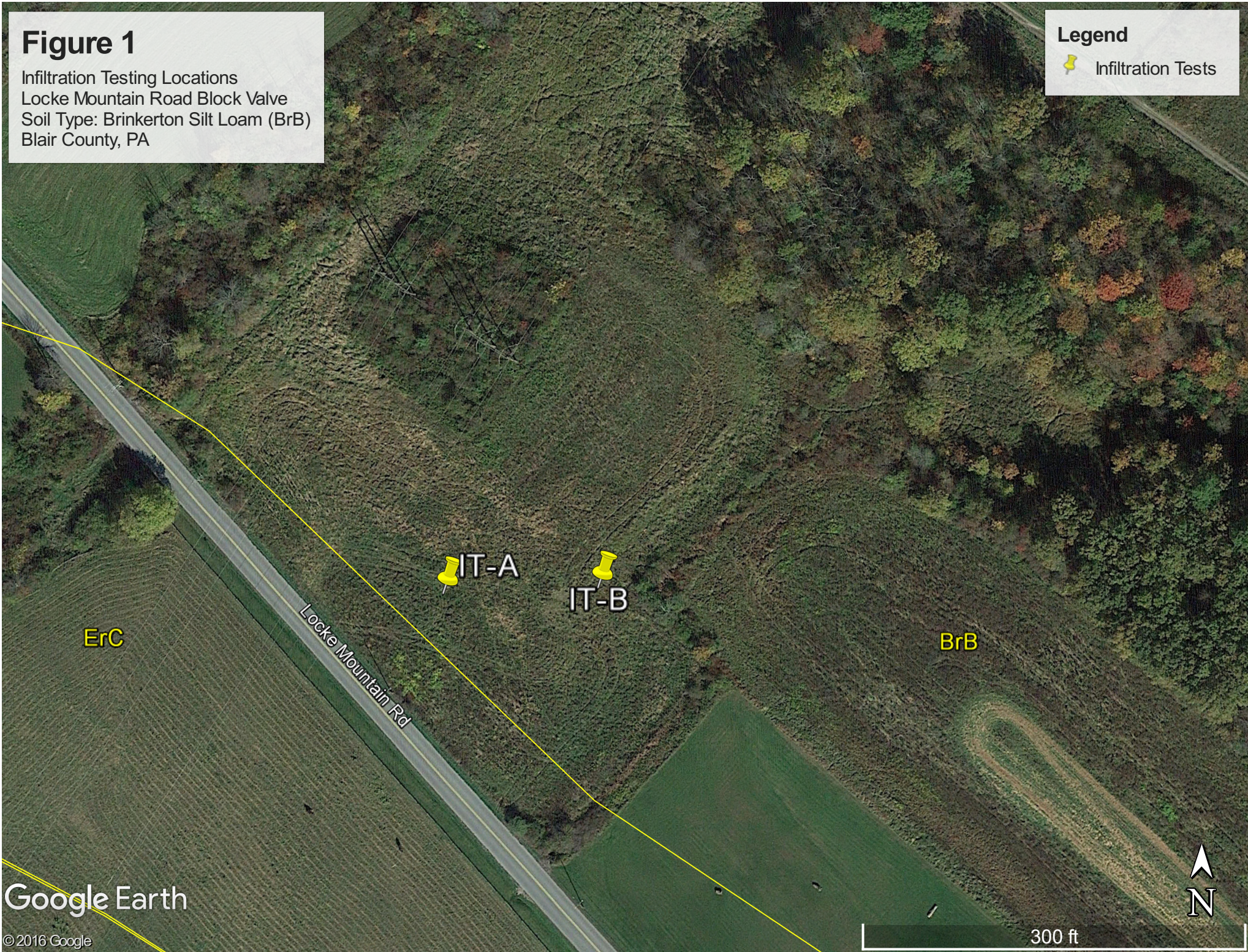
**Table 1**  
**Summary of Infiltration Test Results**  
**Locke Mountain Road**  
**Frankstown Township, Blair County, PA**  
**Sunoco PPP**

Test Location (IT-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
IT-A (shallow)	40.4313940°	- 078.3359642°	2.5	0
IT-A (deep)			36	8.72
IT-B (shallow)	40.4314079°	- 078.3355260°	3	0.13
IT-B (deep)			36	0.13

# Figure 1

Infiltration Testing Locations  
Locke Mountain Road Block Valve  
Soil Type: Brinkerton Silt Loam (BrB)  
Blair County, PA

**Legend**  
📌 Infiltration Tests



## **ATTACHMENTS**

## SOIL LOGS

Soil Log

Tested By: DUANE TRUAX

Project: SCINOCO MARINER

Project No.: 112 SC 05958

Test Pit: 'a'

Date: 9-28-2016

Elevation: ~ 951

Equipment Used: New Holland mini 67

Geology: HAMILTON GROUP

Soil Type: BRACKETON SILT LOAM

Land Use: Agricultural

Weather: P.C. 20's

Structure  
Additional Comments

SITE: LOCKE MOUNTAIN RD. WEST BLOCK VALVE

1,3,6in  
1,1,5in  
3,3,1in  
1,3,1,5in  
0,1m  
-

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
Ap1	0	AS 4	S=12 C=10 <del>100% Sil</del>	Gr 5% 5/2	7.5YR 5/2	-	CFR	-	-	
Ap2	4	AS 9	Sil S=10 C=16	Gr 5% 5/2	7.5YR 5/1	C: 7.5YR 4/4	CFR	-	-	Reddy Conc.
Btg1	9	AW 14	S:Cl S=8 C=38	-	7.5YR 5/1	C: 7.5YR 5/6	FFR	-	-	Reddy Conc. Depleted Matrix
Btg2	14	AW 22	S:Cl S=5 C=42	Cl 5% 5/2	N 5/1	C: 7.5YR 4/6	FFR	-	-	
Cr	22	AW 60	-	Cl 98% 5/2	N 5/1	C: 7.5YR 4/6	Relict Rock Str.	-	-	SANDWICH SHALE
R	60+	-	-	-	-	-	-	60"	60"	SHALE BEDROCK

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from	Use depth and classification	* little bit of water seeping right on top of shale bedrock ** The Cr horizon has occasional fractures with soil infilling. Soil has a depleted matrix w/ conc.
A	Dark colored, mixed mineral organic matter	US Department of Agriculture Soil Conservation Service	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	

Soil Log

Tested By: DUANE TRUAX

Project: SUNOCO MAINTENANCE

Project No.: 112IC05958

Test Pit: 'B'

Date: 9-28-2016

Elevation: ≈ 949

Equipment Used: Newhalland ZFB

Geology: HAMILTON Group

Soil Type: BRUNKERTON SILT LOAM

Land Use: Agricultural

Weather: P. Cloud 70's

Additional Comments

Site: Locke Mt Rd west Block Valve

1/1  
50W  
  
1/2  
PR  
  
1/3  
PR  
  
1/3  
50W

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
Apl	0	A3 4	S: L S=12 C=10	-	7.5YR 5/1	C: 7.5YR 4/6	C, F, R	-	-	Redox Conc.
Ap2	4	A3 8	S: L S=8 C=16	-	7.5YR 4/1	C: 7.5YR 4/6	C, F, R	-	-	
Btg1	8	14	S: C S=6 C=45	-	10YR 4/1	C: 7.5YR 5/6	C, F, R	-	-	DEPLETED MATRIX
Btg2	14	24	CLAY S=4 C=60	-	N 4/1	C: 7.5YR 5/6	C, F, R	-	-	↓
Btg3	24	34	CLAY S=2 C=70	-	N 5/1	C: 7.5YR 5/6	F, R	-	-	
Cr	34	50	-	rock 95% 95%	N 5/1	C: 7.5YR 4/6	-	50"	58"	

R 50 66+

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from	Use depth and classification	*WATER LEVEL ROSE TO 58" DURING DURATION OF TESTING *Cr horizon has occasional fractures w/ soil infilling. Soil has redox features.
A	Dark colored, mixed mineral organic matter	US Department of Agriculture Soil Conservation Service	Classification as Follows: Abrupt	
B	Maximum accumulation of silicate clay minerals		Clear	
C	Weathered parent material		Gradual	
R	Layer of consolidated rock beneath the soil		Diffuse	

**INFILTRATION TEST DATA SHEETS**







