

TRIP REPORT

HAPPY HILLS ROAD VALVE SITE – INFILTRATION TESTING

1.0 PURPOSE

This Trip Report presents the field data and results of a double-ring soil infiltration test conducted to support the design of a stormwater management system at the Happy Hills Road Valve site located in Union Township, Huntingdon County, Pennsylvania, as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP. One shallow test (IT-A) was performed at the site. The test location is listed by coordinates (latitude and longitude) in Table 1 and shown on the attached figure.

2.0 FIELD ACTIVITIES

The infiltration test was conducted by Jim Goerdt and Jim Coffman of Tetra Tech, Inc., on October 4, 2016. The test location was positioned in the field using a handheld, WAAS-enabled GPS unit. Table 1 provides the coordinates of the test location. IT-A was located within the overgrown utility right-of-way, approximately 60 feet east of Happy Hills Road.

The infiltration test was performed in accordance with the procedure specified in the 2006 Pennsylvania Stormwater Best Management Practices (BMP) Manual. The test location was 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 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 depth is presented in Table 1.

The test location was pre-soaked for 1 hour. The test was 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 were recorded on an infiltration test data sheet; a copy of the test data sheet is attached to this report.

During the testing, the weather was cloudy and approximately 55 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.

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 area. This was completed from the ground surface down to two feet below the target infiltration test depth. Descriptions of the soil were documented on a field log, which was based on the form example in the BMP manual. A copy of the soil log is attached to this report.

3.0 RESULTS

3.1 Soil Description

Soils encountered generally consisted of a thin (up to approximately 6 inches) dark reddish brown (2.5YR 3/4) sandy loam topsoil/surface layer with some gravel consisting of siltstones and sandstones up to small cobble sized rock fragments. This topsoil/surface layer was underlain by a second sandy loam with similar rock content and was reddish brown (2.5YR 4/4) in color. From 12-27 inches below ground surface a loamy sand with gravel was found and was reddish brown in color (2.5YR 4/4).

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 location is mapped as follows:

- Klinsville Shaly Silt Loam - (KID soil symbol) with 15-25 percent slopes; with medium runoff and is somewhat excessively drained.

3.2 Infiltration Tests Results

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

The pre-soak test result indicated a high infiltration rate, requiring a 10 minute test cycle.


Table 1
Summary of Infiltration Test Results
Happy Hills Road Valve
Union Township, Huntingdon County, PA
Sunoco PPP

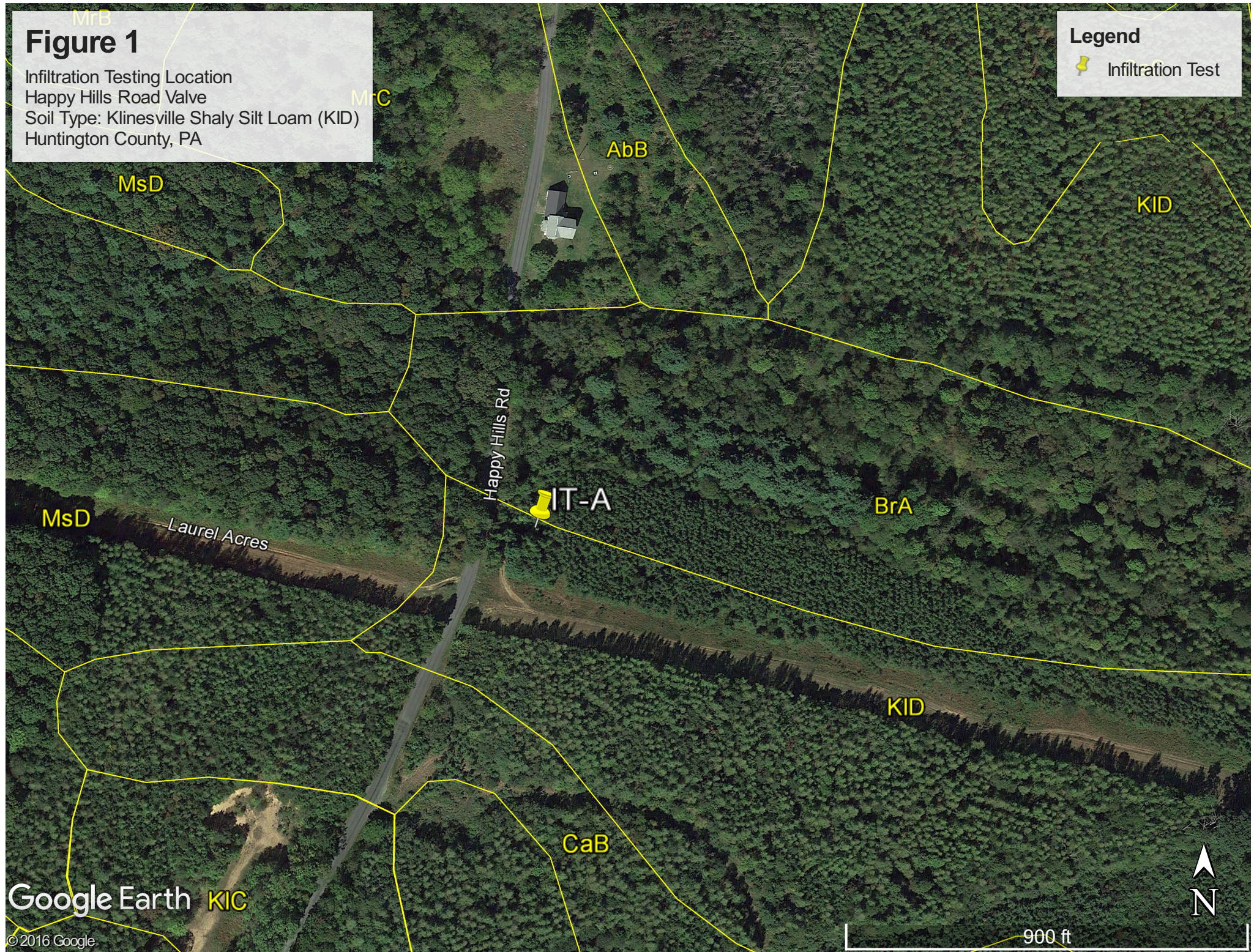
Test Location (IT-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
IT-A	40.3605894°	- 078.0275764°	3	13.5

Figure 1

Infiltration Testing Location
Happy Hills Road Valve
Soil Type: Klinesville Shaly Silt Loam (KID)
Huntington County, PA

Legend

 Infiltration Test



ATTACHMENTS

SOIL LOGS



Soil Log

Tested By: J. Coffman

Project: Sunoco Marine E2

Project No.: 112IC05958

Test Pit: Happy Hills (Raystown) A

Date: 10/4/16

Elevation: _____

Equipment Used: hand auger

Geology: Soil

Soil Type: sandy loam/loamy sand and gravel

Land Use: Bushy/undeveloped

Weather: Foggy 65°

Additional Comments

Benched area @ bottom of a slope, ground drops again below bench

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"	6"	Sandy loam some gravel	Siltstone & v.f. sandstone up to cobble-sized frag	Bwn	Solid 2.5R 2/4 no mottling	roots	—	—	moist
A	6"	12"	"	"	Reddish-Bwn	Solid 2.5YR 4/4 no mottling		—	—	moist
B	12"	27"	loamy sand and gravel	"	Reddish-Bwn	Solid 2.5YR 4/4 no mottling		—	—	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	
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

INFILTRATION TEST DATA SHEETS

