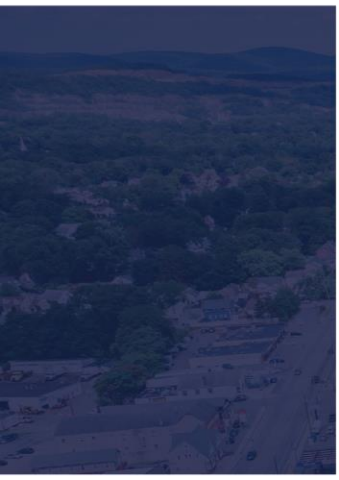
FRENCH & PARRELLO ASSOCIATES

ENGINEERING AND CONSULTING **SINCE 1974**

Operations and Maintenance Manual

Country Woods at Neptune

Block 3101, Lot 1
Township of Neptune
Monmouth County, New Jersey



Prepared for:

RMH at Country Woods, LLC
247 Bridge Avenue, Suite 5
Red Bank, NJ 07701

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing this information. I believe tat the information is true, accurate, and complete. I am ware that there are significant penalties for knowingly submitting false information, including the possibility of fine or imprisonment.

_____
Mark Shenoda, PE
NJPE License No. 24GE05006700

January 16, 2023 | FPA No. 17340.002
1800 Route 34, Suite 101, Wall Township, NJ 07719

Stormwater Management Measures
Maintenance Plan & Field Manuals

Development Name: Holy Innocents

Address: Jumping Brook Road

Block(s) / Lot(s): Block 3101, Lot 1

Township, County: Township of Neptune, Monmouth County, NJ

Party Responsible for Maintenance:

Home Owners' Association - TBD

Address: _____

Contact Person(s): _____ Phone: _____

Prepared by: French & Parrello Associates, P.A. Date: 06/08/2022

This plan is recorded in

Deed Book # _____ Page # ____ with _____ County Clerk on Date _____

Last Revised on ____/____/_____

Table of Contents

Part I- Maintenance

Part II- Field Manuals and Maintenance Records

Part I- Maintenance Plan

List of Stormwater Management Measures

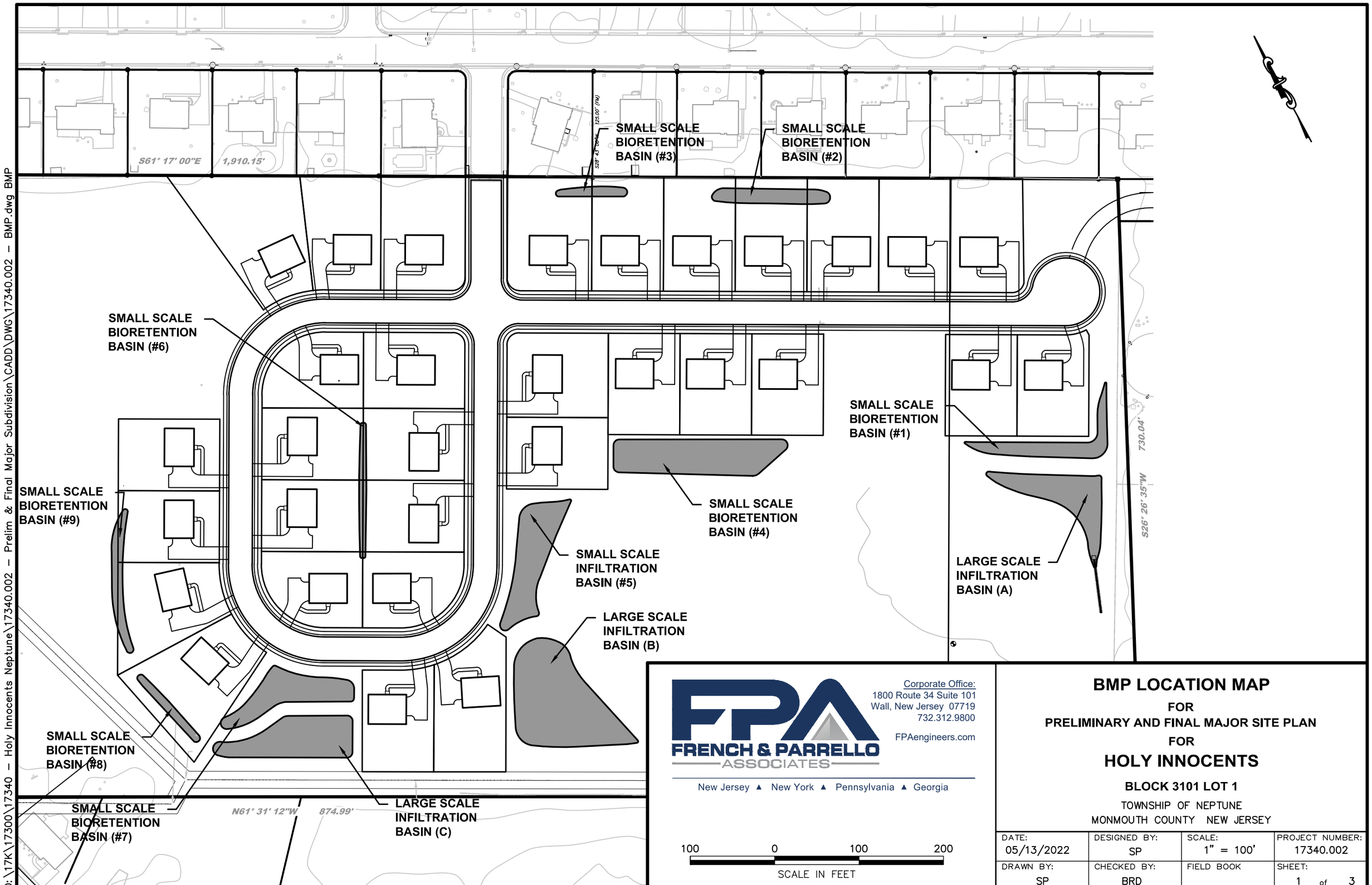
The stormwater management measures incorporated into this development are listed below. The corresponding Field Manuals for the stormwater management measures are located in Part II of the Maintenance Plan.

Type of Stormwater Management Measure	BMP No.	Location Description	State Plane Coordinates / Lat., Long.
Small Scale Bioretention Basin	Basin #1	Eastern end of site, south of cul-de-sac, north of Basin A	E(X): 608,914 N(Y): 502,176
Small Scale Bioretention Basin	Basin #2	Northeastern end of site, east of Basin #3	E(X): 608,716 N(Y): 502,624
Small Scale Bioretention Basin	Basin #3	Northern end of site, east of development access driveway	E(X): 608,533 N(Y): 502,729
Small Scale Bioretention Basin	Basin #4	Middle of project site, northeast of Basin #5	E(X): 608,487 N(Y): 502,396
Small Scale Infiltration Basin	Basin #5	Middle of project site, southwest of Basin #4	E(X): 608,261 N(Y): 502,326
Small Scale Bioretention Basin	Basin #6	Middle of project site, central point of eight proposed lots	E(X): 608,131 N(Y): 502,557
Small Scale Bioretention Basin	Basin #7	Southwestern end of site, north of Basin C	E(X): 607,928 N(Y): 502,388
Small Scale Bioretention Basin	Basin #8	Southwestern end of site, west of Basin #7	E(X): 607,801 N(Y): 502,431
Small Scale Bioretention Basin	Basin #9	Western end of site, north of Basin #8	E(X): 607,823 N(Y): 502,598
Large Scale Infiltration Basin	Basin A	Southeastern end of site, south of Basin #1	E(X): 608,874 N(Y): 502,138
Large Scale Infiltration Basin	Basin B	Southern end of site, south of Basin #5	E(X): 608,202 N(Y): 502,217
Large Scale Infiltration Basin	Basin C	Southwestern end of site, south of Basin #7	E(X): 607,917 N(Y): 502,326

Location Map

See Attached Map entitled "BMP Location Map"

No.	Type of Stormwater Management Measure
Basin #1	Small Scale Bioretention Basin
Basin #2	Small Scale Bioretention Basin
Basin #3	Small Scale Bioretention Basin
Basin #4	Small Scale Bioretention Basin
Basin #5	Small Scale Infiltration Basin
Basin #6	Small Scale Bioretention Basin
Basin #7	Small Scale Bioretention Basin
Basin #8	Small Scale Bioretention Basin
Basin #9	Small Scale Bioretention Basin
Basin A	Large Scale Infiltration Basin
Basin B	Large Scale Infiltration Basin
Basin C	Large Scale Infiltration Basin



O:\17K\17300\17340 – Holy Innocents Neptune\17340.002 – Prelim & Final Major Subdivision\CADD\DWG\17340.002 – BMP.dwg BMP

FPA FRENCH & PARRELLO ASSOCIATES

Corporate Office:
1800 Route 34 Suite 101
Wall, New Jersey 07719
732.312.9800

FPAengineers.com

New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

100 0 100 200
SCALE IN FEET

BMP LOCATION MAP

FOR
PRELIMINARY AND FINAL MAJOR SITE PLAN
FOR
HOLY INNOCENTS

BLOCK 3101 LOT 1

TOWNSHIP OF NEPTUNE
MONMOUTH COUNTY NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
05/13/2022	SP	1" = 100'	17340.002
DRAWN BY:	CHECKED BY:	FIELD BOOK	SHEET:
SP	BRD		1 of 3

Description of Stormwater Management Measures

Name of the stormwater management measure: Basin #1
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __230'_ (Length) x __13'__ (Width) x ___30"___ (Depth)

Name of the stormwater management measure: Basin #2
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __140'_ (Length) x __13'__ (Width) x ___12"___ (Depth)

Name of the stormwater management measure: Basin #3
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __84'_ (Length) x __10'__ (Width) x ___18"___ (Depth)

Name of the stormwater management measure: Basin #4
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __160.2'_ (Length) x __30.2'__ (Width) x ___21.6"___ (Depth)

Name of the stormwater management measure: Basin #5
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Detention
- Dimensions: __174'_ (Length) x __35.2'__ (Width) x ___24"___ (Depth)

Name of the stormwater management measure: Basin #6
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __160'_ (Length) x __3.8'__ (Width) x ___18"___ (Depth)

Name of the stormwater management measure: Basin #7
Design storm: 100-Yr Storm
- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __170'_ (Length) x __30'__ (Width) x ___20.4"___ (Depth)

Name of the stormwater management measure: Basin #8
Design storm: 100-Yr Storm

- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __104'_ (Length) x __10'__ (Width) x ___15.6"___ (Depth)

Name of the stormwater management measure: Basin #9
Design storm: 100-Yr Storm

- Design Purposes:
    - Groundwater Recharge; Water Quality; Detention
- Dimensions: __173'_ (Length) x __12'__ (Width) x ___24"___ (Depth)

Name of the stormwater management measure: Basin #A
Design storm: 100-Yr Storm

- Design Purposes:
    - Detention
- Dimensions: __220'_ (Length) x __30'__ (Width) x ___42"___ (Depth)

Name of the stormwater management measure: Basin #B
Design storm: 100-Yr Storm

- Design Purposes:
    - Detention
- Dimensions: __160'_ (Length) x __130'__ (Width) x ___36"___ (Depth)

Name of the stormwater management measure: Basin #C
Design storm: 100-Yr Storm

- Design Purposes:
    - Detention
- Dimensions: __165_ (Length) x __50'__ (Width) x ___24"___ (Depth)

Preventative and Corrective Maintenance Action Plan

As per N.J.A.C. 7:8-5.8(b) & (e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per NJDEP BMP Manual Ch. 8 Feb. 2004), maintenance plans should include specific preventative and corrective maintenance tasks such as removal of sediment, trash, and debris; mowing, pruning, and restoration of vegetation; restoration of eroded areas; elimination of mosquito breeding habitats; control of aquatic vegetation; and repair or replacement of damaged or deteriorated components.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include recommended corrective responses to various emergency conditions that may be encountered at the stormwater management measure. It should be noted that if the stormwater management measure includes a Class I or II dam as defined in the NJDEP Dam Safety Standards at N.J.A.C. 7:20, an emergency action plan for the dam is also required. See N.J.A.C. 7:20-1.7(f) for more information.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should address the maintenance of access points to the stormwater management measures in accordance with the following:

- all components of the stormwater management measures must be readily accessible for inspection and maintenance;
- trees, shrubs, and underbrush must be pruned or trimmed as necessary to maintain access to the stormwater management measure;
- the exact limits of inspection and maintenance easements and rights-of-way should be specified on stormwater management measure plans and included in the maintenance plan.

Preventative Maintenance Actions

Frequency	Preventative Maintenance Actions	Stormwater Measures/ No.
Quarterly	Sediment removal	Basin #1 Basin #2 Basin #3 Basin #4 Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C
Semiannual	Sediment removal	Basin #1 Basin #2 Basin #3 Basin #4 Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C
Annual	Basin Structural Inspection	Basin #1 Basin #2 Basin #3 Basin #4 Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C
Unscheduled	Quick inspection after every 1″ rain	Basin #1 Basin #2 Basin #3 Basin #4

		Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C
Other	When establishing or restoring vegetation, inspections should be performed biweekly	Basin #1 Basin #2 Basin #3 Basin #4 Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C

Each underground infiltration basin will contain a debris collection area located adjacent to the basin inlet. The debris collection area is designed to collect the majority of large debris entering the basins. Debris rows are to be vacuumed during scheduled sediment removal to help maintain basin infiltration capacity.

Corrective Maintenance Actions

Potential Corrective Maintenance Actions	Stormwater Management Measures/No.
- Repair/replacement of outlet pipes or orifices	Basin #1 Basin #2 Basin #3 Basin #4 Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C
- Sediment Removal	Basin #1 Basin #2 Basin #3 Basin #4 Basin #5 Basin #6 Basin #7 Basin #8 Basin #9 Basin A Basin B Basin C

Inspection and Logs of All Preventative and Corrective Maintenance

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

As per NJDEP BMP Manual Ch. 8 (Feb, 2004), a maintenance plan shall include a schedule of regular inspections and tasks, and detailed logs of all preventative and corrective maintenance performed on the stormwater management measure, including all maintenance-related work orders. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs and other records for review by a public entity with administrative, health, environmental, or safety authority over the site.

Inspection Checklists in the Field Manual for the stormwater management measures on this site include:

- Basin #1
- Basin #2
- Basin #3
- Basin #4
- Basin # 5
- Basin #6
- Basin #7
- Basin #8
- Basin #9
- Basin A
- Basin B
- Basin C

The logs of all inspections, and both preventative and corrective maintenance performed should be attached in the "**Maintenance Logs and Inspection Records**" section. See Part II of the Maintenance Plan

Maintenance Personnel, Equipment, Tools, and Supplies

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. Sources of specialized, proprietary, and nonstandard equipment, tools, and supplies should also be provided.

This section applies to both maintenance tasks that are performed by in-house personnel or are outsourced.

Maintenance Personnel/Equipment/Tools/Supplies

Personnel/Equipment/Tools Name	Quantity
General Maintenance Crew	1
Shovel, rake, pick, wheel barrow, gloves, sediment probe, flashlight, camera, hard hat, broom, power washer, hose	As needed
Trucks, lightweight backhoe, vacuum truck, sump pump	As needed

Disposal Plan

Disposal/Recycling Procedures

Dewatering procedures and requirements

Sediment removal shall take place when all runoff has drained from basins, pervious pavers and storm sewer system and all are dry.

Unloading procedures and requirements

Disposal of the debris, trash, sediment and all other waste material should be done at an approved disposal/recycling site and in accordance with all applicable local, state and federal regulation

Disposal Field – Offsite

Cost Estimate

As per N.J.A.C.7:8-5.8(b), cost estimates of maintenance tasks, including, but not limited to, sediment, trash and debris removal must be included in the maintenance plan. Below is an illustration of a cost breakdown and estimation for maintenance of stormwater management measures. The actual costs may vary with factors such as local requirements, equipment, personnel, weather, and maintenance methods.

COST ESTIMATES

Cost Overview

The design engineer should list the maintenance tasks and break down the costs for each maintenance task.

Cost Type	Cost	Details
Annual Contract to perform all routine and unscheduled maintenance	$2,000 per basin	
Annual contract to perform corrective measures	$5,000 per basin	

Safety Measures and Procedures

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include procedures and equipment required to protect the safety of inspection and maintenance personnel.

Safety Regulations and Requirements

Attach all local ordinance(s) and state and federal regulations regarding occupational safety after this section

Safety Tools, Equipment and Garments

Safety Tools and Equipment	Location	Responsible Person/Contact #

Emergency Procedures

In case of emergency, Call 911

Training Plan and Records

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

I. Training Plan

Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable

Content of Training

- **Stormwater Management Basic Training**
    - Purposes and Functions of BMPs

      Example Training Material
        - NJDEP Stormwater BMP Manual, Chapter Nine: Structural Stormwater Management Measures
            - Chapter 9.5 Infiltration Basins

More training information is available at NJ Stormwater.org (http://www.nj.gov/dep/stormwater/training.htm)

- Vegetation Care

  Example Training Material
    - NJDEP Stormwater BMP Manual, Chapter Seven: Landscaping

- Field Manual Usage Training

    - Field Manuals attached to this Maintenance Plan

- Equipment and Tools Operation Training

    - Equipment or tool manufacturer's Operation & Maintenance Manual

- Occupational Safety Training

    - OSHA Training
    - Equipment or tool manufacturer's Operation & Maintenance Manual

II. Training Records

Training attendance sheets should be attached by the responsible party after each training.

Attach training attendance sheets from each training

Annual Evaluation of the Effectiveness of the Plan

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

Documents

Please attach the following:

Transfer Agreement

As per N.J.A.C. 7:8-5.8(b), if the maintenance plan identifies a person other than the developer as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

Deed

As per N.J.A.C. 7:8-5.8(d), if the person responsible for maintenance is not a public agency, the maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

As-Built Drawings with Drainage Plans

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), as-built construction plans of the stormwater management measure and copies of pertinent construction documents, such as laboratory test results, permits, and completion certificates should be included in this Maintenance Plan.

Landscaping Plan for the Stormwater Management Measures

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if there is a Landscaping Plan for the stormwater management measures, it should be included in this Maintenance Plan.

Permeability Test/Infiltration Test Report

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if a permeability test or infiltration test is required and available, the reports for pre-construction and post-construction testing should be included in this Maintenance Plan.

Groundwater Mounding Analysis

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if a groundwater mounding analysis is required and the groundwater mounding analysis was performed, a copy of the analysis should be included in this Maintenance Plan.

Soil Boring Logs

As per NJDEP BMP Manual Ch.8 (Feb., 2004), if any soil borings were taken prior to construction, a copy of the soil boring logs should be included in this Maintenance Plan.

Local, State, Federal Permits

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), local, state, or federal permits related to the stormwater management measures for this development should be included in this Maintenance Plan. See Cost Estimate Section of This Maintenance Plan for more information. The requirement to obtain State permits depends on specific circumstances, such as, but not limited to, the specific design of the stormwater management measures, the maintenance

actions, the access and disturbance, the disposal methods, the location of disposal, the method to empty a basin, the method to dredge the basin, the pollutants in the basin, the damages to the basin, and the method to repair the basin.

Check Maintenance Guidance in NJDEP Stormwater Management Website for details and links to the relevant permits and program areas (http://www.njstormwater.org).

Safety Regulations and Requirements

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), all local ordinances and state and federal regulations regarding occupational safety should be included in this Maintenance Plan.

Devices/Tools/Equipment Operation and Maintenance Manual and Warranties

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), maintenance, repair, and replacement instructions for specialized, proprietary, and nonstandard equipment, tools, supplies, manufacturers' product instructions, and user manuals should be included in this Maintenance Plan.

Attach Documents Here

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-1

SHEET NO.: 1 OF 28

DATE: 1/10/2022

ELEV: 76.5 ±
DEPTH OF WATER: 86" ±
ESHWT DEPTH: 68" ±
ESHWT ELEV: 70.8 ±

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organics
8"- 35"	Brownish Yellow *(10YR 6/6)* **sandy loam**; crumb, friable; (40% gravel)
35"- 42"	Yellow *(10YR 7/6)* **sandy loam**; crumb, friable; (5% gravel)
42"- 68"	Brownish Yellow *(10YR 6/8)* **sandy loam**; crumb, friable
68"- 100"	Yellowish Brown *(10YR 7/6)* **sandy loam**; subangular block, friable; with common, medium, distinct Reddish Yellow *(5YR 6/8)* mottles

END OF SOIL LOG

Notes: Seepage 86"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-2

SHEET NO.: 2 OF 28

DATE: 1/10/2022

ELEV: 80.0 ±
DEPTH OF WATER: 90" ±
ESHWT DEPTH: 83" ±
ESHWT ELEV: 73.1 ±

DEPTH	DESCRIPTION
0" - 11"	Topsoil/Organics
11"- 33"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (50% gravel)
33"- 83"	Yellowish Brown *(10YR 5/8)* **sandy loam**; crumb, friable; (15% gravel)
83"- 95"	Gray *(10YR 5/1)* **sandy loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 6/8)* mottles
95"- 120"	Grayish Brown *(10YR 5/2)* **silt loam**; subangular blocky, friable

END OF SOIL LOG

Notes: Seepage 90"

Signature of Soil Evaluator: _____ Date: ___/___/_____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: ___/___/_____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-3

SHEET NO.: 3 OF 28

DATE: 1/10/2022

ELEV: 78.5 ±
DEPTH OF WATER: 86" ±
ESHWT DEPTH: 72" ±
ESHWT ELEV: 72.5 ±

DEPTH	DESCRIPTION
0" - 6"	Topsoil/Organics
6"- 40"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (50% gravel)
40"- 72"	Brownish Yellow *(10YR 6/8)* **sandy loam**; crumb, friable; (15% gravel)
72"- 90"	Gray *(10YR 5/1)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles

END OF SOIL LOG

Notes: Seepage 86"

Signature of Soil Evaluator: _____ Date: ___/___/_____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: ___/___/_____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-4

SHEET NO.: 4 OF 28

DATE: 1/10/2022

ELEV: 81.3 ±
DEPTH OF WATER: 120" ±
ESHWT DEPTH: 105" ±
ESHWT ELEV: 75.3 ±

DEPTH	DESCRIPTION
0" - 5"	Topsoil/Organics
5"- 30"	Dark Brown *(10YR 3/3)* **silt loam**; crumb, friable
30"- 51"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (50% gravel)
51"- 75"	Brownish Yellow *(10YR 6/6)* **sandy clay loam**; crumb, friable
75"-105"	Yellow *(10YR 7/8)* **sandy clay**; subangular blocky, friable
105"-122	Yellow *(10YR 7/6)* **silty clay**; angular blocky, firm; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles

END OF SOIL LOG

Notes: Seepage 120"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-5

SHEET NO.: 5 OF 28

DATE: 1/10/2022

ELEV: 82.5 ±
DEPTH OF WATER: 85" ±
ESHWT DEPTH: 61" ±
ESHWT ELEV: 77.4 ±

DEPTH	DESCRIPTION
0" - 9"	Topsoil/Organics
9"- 61"	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**; subangular blocky, friable
61"- 75"	Pale Brown *(10YR 6/3)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
75"- 95"	Brownish Yellow *(10YR 6/6)* **sandy clay loam**; subangular blocky, friable

END OF SOIL LOG

Notes: Seepage 85"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-6

SHEET NO.: 6 OF 28

DATE: 1/10/2022

ELEV: 81.5 ±
DEPTH OF WATER: 82" ±
ESHWT DEPTH: 60" ±
ESHWT ELEV: 76.5 ±

DEPTH	DESCRIPTION
0" - 10"	Topsoil/Organics
10"- 60"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (10% gravel)
60"- 72"	Pale Brown *(10YR 6/3)* **sandy loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
72"- 90"	Brownish Yellow *(10YR 6/6)* **sandy clay loam**; crumb, friable; (25% gravel)

END OF SOIL LOG

Notes: Seepage 82"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-7

SHEET NO.: 7 OF 28

DATE: 1/10/2022

ELEV: 84.5 ±
DEPTH OF WATER: 75" ±
ESHWT DEPTH: 49" ±
ESHWT ELEV: 80.4 ±

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organics
8"- 49"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; subangular blocky, friable
49"- 66"	Pale Brown *(10YR 6/3)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
66"- 80"	Brownish Yellow *(10YR 6/6)* **sandy loam**; crumb, friable; (50% gravel)

END OF SOIL LOG

Notes: Seepage 75"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-8

SHEET NO.: 8 OF 28

DATE: 1/10/2022

ELEV: 79.1 ±
DEPTH OF WATER: 65" ±
ESHWT DEPTH: 54" ±
ESHWT ELEV: 74.6 ±

DEPTH	DESCRIPTION
0" - 3"	Topsoil/Organics
3"- 20"	Dark Yellowish Brown *(10YR 3/6)* **sandy clay loam**; subangular blocky, friable
20"- 54"	Yellowish Brown *(10YR 5/4)* **sandy loam**; subangular blocky, friable
54"- 63"	Brownish Yellow *(10YR 6/6)* **sandy loam**; crumb, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles (20% gravel)
63"- 90"	Reddish Yellow *(5YR 4/6)* **sandy loam**; subangular blocky, friable; (10% gravel)

END OF SOIL LOG

Notes: Seepage 65"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-9

SHEET NO.: 9 OF 28

DATE: 1/10/2022

ELEV: 79.0 ±
DEPTH OF WATER: 69" ±
ESHWT DEPTH: 57" ±
ESHWT ELEV: 74.3 ±

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organics
8"- 41"	Dark Yellowish Brown *(10YR 6/4)* **silty clay loam**; subangular blocky, friable
41"- 57"	Yellowish Brown *(10YR 5/8)* **sandy loam**; crumb, friable; (40% gravel)
57"- 77"	Brownish Yellow *(10YR 5/8)* **sandy loam**; crumb, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles (20% gravel)

END OF SOIL LOG

Notes: Seepage 69"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-10

SHEET NO.: 10 OF 28

DATE: 1/10/2022

ELEV: 78.5 ±
DEPTH OF WATER: 49" ±
ESHWT DEPTH: 38" ±
ESHWT ELEV: 75.3 ±

DEPTH	DESCRIPTION
0" - 6"	Topsoil/Organics
6"- 28"	Dark Yellowish Brown *(10YR 4/4)* **sandy clay loam**; crumb, friable; (30% gravel)
28"- 38"	Yellowish Brown *(10YR 5/8)* **sandy clay loam**; subangular blocky, friable; (5% gravel)
38"- 61"	Brownish Yellow *(10YR 5/8)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Light Gray *(10YR 7/2)* mottles
61"- 75"	Light Gray *(10YR 7/2)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 49"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-11

SHEET NO.: 11 OF 28

DATE: 1/10/2022

ELEV: 84.7 ±
DEPTH OF WATER: 80" ±
ESHWT DEPTH: 54" ±
ESHWT ELEV: 80.2 ±

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organics
8"- 54"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (15% gravel)
54"- 68"	Pale Brown *(10YR 6/3)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
68"- 105"	Grayish Brown *(10YR 5/2)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 80"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-12

SHEET NO.: 12 OF 28

DATE: 1/10/2022

ELEV: 80.9 ±
DEPTH OF WATER: 45" ±
ESHWT DEPTH: 30" ±
ESHWT ELEV: 78.4 ±

DEPTH	DESCRIPTION
0" - 14"	Topsoil/Organics
14"- 30"	Gray *(10YR 6/1)* **silty clay**; angular blocky, firm
30"- 40"	Light Gray *(10YR 7/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Brownish Yellow *(10YR 6/6)* mottles
40"- 65"	Grayish Brown *(10YR 5/2)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 45"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-13

SHEET NO.: 13 OF 28

DATE: 1/10/2022

ELEV: 81.4 ±
DEPTH OF WATER: 52" ±
ESHWT DEPTH: 30" ±
ESHWT ELEV: 78.9 ±

DEPTH	DESCRIPTION
0" - 18"	Topsoil/Organics
18"- 30"	Gray *(10YR 6/1)* **silty clay**; angular blocky, firm
30"- 45"	Light Gray *(10YR 7/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Brownish Yellow *(10YR 6/6)* mottles
45"- 75"	Grayish Brown *(10YR 5/2)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 52"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-14

SHEET NO.: 14 OF 28

DATE: 1/10/2022

ELEV: 82.0 ±
DEPTH OF WATER: 46" ±
ESHWT DEPTH: 42" ±
ESHWT ELEV: 72.5 ±

DEPTH	DESCRIPTION
0" - 12"	Topsoil/Organics
12"- 29"	Light Yellowish Brown *(10YR 6/4)* **sandy clay loam**; subangular blocky, friable
29"- 42"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; crumb, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles; (45% gravel)
42"- 60"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable; (50% gravel)

END OF SOIL LOG

Notes: Seepage 46"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-15

SHEET NO.: 15 OF 28

DATE: 1/10/2022

ELEV: 82.5 ±
DEPTH OF WATER: 66" ±
ESHWT DEPTH: 48" ±
ESHWT ELEV: 78.5 ±

DEPTH	DESCRIPTION
0" - 6"	Topsoil/Organics
6"- 18"	Dark Yellowish Brown *(10YR 4/4)* **sandy clay loam**; subangular blocky, friable
18"- 38"	Yellowish Brown *(10YR 5/6)* **sandy clay loam**; subangular blocky, friable
38"- 48"	Brownish Yellow *(10YR 5/8)* **sandy loam**; crumb, friable
48"- 60"	Brownish Yellow *(10YR 5/8)* **sandy loam**; crumb, friable; with common, medium, distinct Light Gray *(10YR 7/2)* mottles
60"-80"	Brown *(10YR 5/3)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 66"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /____

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-16

SHEET NO.: 16 OF 28

DATE: 1/10/2022

ELEV: 82.0 ±
DEPTH OF WATER: 62" ±
ESHWT DEPTH: 47" ±
ESHWT ELEV: 78.1 ±

DEPTH	DESCRIPTION
0" - 6"	Topsoil/Organics
6"- 18"	Light Yellowish Brown *(10YR 6/4)* **sandy clay loam**; subangular blocky, friable
18"- 47"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; subangular blocky, friable
47"- 58"	Light Brownish Gray *(10YR 6/2)* **sandy loam**; crumb, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
58"- 80"	Brownish Yellow *(10YR 5/8)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 62"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /____

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-17

SHEET NO.: 17 OF 28

DATE: 1/10/2022

ELEV: 81.5 ±
DEPTH OF WATER: 50" ±
ESHWT DEPTH: 36" ±
ESHWT ELEV: 78.5 ±

DEPTH	DESCRIPTION
0" - 6"	Topsoil/Organics
6"- 36"	Dark Yellowish Brown *(10YR 4/4)* **sandy clay loam**; subangular blocky, friable
36"- 52"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
52"- 88"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable; (50% gravel)

END OF SOIL LOG

Notes: Seepage 50"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-18

SHEET NO.: 18 OF 28

DATE: 1/10/2022

ELEV: 81.0 ±
DEPTH OF WATER: 58" ±
ESHWT DEPTH: 32" ±
ESHWT ELEV: 78.3 ±

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organics
8"- 32"	Dark Yellowish Brown *(10YR 4/4)* **sandy clay loam**; subangular blocky, friable
32"- 42"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
42"- 65"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable; (40% gravel)

END OF SOIL LOG

Notes: Seepage 58"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-19

SHEET NO.: 19 OF 28

DATE: 1/10/2022

ELEV: 82.0 ±
DEPTH OF WATER: 62" ±
ESHWT DEPTH: 40" ±
ESHWT ELEV: 78.7 ±

DEPTH	DESCRIPTION
0" - 8"	Topsoil/Organics
8"- 40"	Dark Yellowish Brown *(10YR 4/4)* **sandy clay loam**; subangular blocky, friable
40"- 65"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
65"- 80"	Yellowish Brown *(10YR 5/6)* **sandy loam**; subangular blocky, friable

END OF SOIL LOG

Notes: Seepage 62"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-20

SHEET NO.: 20 OF 28

DATE: 1/10/2022

ELEV: 79.9 ±
DEPTH OF WATER: 63" ±
ESHWT DEPTH: 44" ±
ESHWT ELEV: 76.2 ±

DEPTH	DESCRIPTION
0" – 9"	Topsoil/Organics
9"- 44"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; crumb, friable
44"- 62"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
62"- 80"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable

END OF SOIL LOG

Notes: Seepage 63"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-21

SHEET NO.: 21 OF 28

DATE: 1/10/2022

ELEV: 81.0 ±
DEPTH OF WATER: 63" ±
ESHWT DEPTH: 49" ±
ESHWT ELEV: 76.9 ±

DEPTH	DESCRIPTION
0" – 8"	Topsoil/Organics
8"- 49"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; crumb, friable
49"- 58"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
58"- 78"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable; (40% gravel)

END OF SOIL LOG

Notes: Seepage 60"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-22

SHEET NO.: 22 OF 28

DATE: 1/10/2022

ELEV: 80.0 ±
DEPTH OF WATER: 62" ±
ESHWT DEPTH: 43" ±
ESHWT ELEV: 76.4 ±

DEPTH	DESCRIPTION
0" – 10"	Topsoil/Organics
10"- 43"	Dark Yellowish Brown *(10YR 4/4)* **sandy clay loam**; subangular blocky, friable
43"- 55"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
55"- 78"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable; (35% gravel)

END OF SOIL LOG

Notes: Seepage 62"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-23

SHEET NO.: 23 OF 28

DATE: 1/10/2022

ELEV: 80.0 ±
DEPTH OF WATER: 69" ±
ESHWT DEPTH: 51" ±
ESHWT ELEV: 75.8 ±

DEPTH	DESCRIPTION
0" – 8"	Topsoil/Organics
8"- 51"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; crumb, friable
51"- 62"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
62"- 80"	Reddish Yellow *(5YR 4/6)* **sandy loam**; crumb, friable; (25% gravel)

END OF SOIL LOG

Notes: Seepage 69"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-24

SHEET NO.: 24 OF 28

DATE: 1/10/2022

ELEV: 81.0 ±
DEPTH OF WATER: 67" ±
ESHWT DEPTH: 53" ±
ESHWT ELEV: 76.6 ±

DEPTH	DESCRIPTION
0" – 7"	Topsoil/Organics
7"-53"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; crumb, friable
53"- 65"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
65"- 85"	Yellowish Brown *(10YR 5/6)* **sandy loam**; crumb, friable; (25% gravel)

END OF SOIL LOG

Notes: Seepage 67"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-25

SHEET NO.: 25 OF 28

DATE: 1/10/2022

ELEV: 81.4 ±
DEPTH OF WATER: 65" ±
ESHWT DEPTH: 55" ±
ESHWT ELEV: 76.8 ±

DEPTH	DESCRIPTION
0" – 6"	Topsoil/Organics
6"-25"	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**; subangular blocky, friable
25"- 55"	Brownish Yellow *(10YR 6/6)* **sandy loam**; crumb, friable; (25% gravel)
55"- 80"	Yellowish Brown *(10YR 6/6)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Dark Yellowish Brown *(10YR 4/6)* mottles (20% gravel)
80"-95"	Very Pale Brown *(10YR 7/3)* **sandy loam**; crumb, friable; (5% gravel)

END OF SOIL LOG

Notes: Seepage 65"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-26

SHEET NO.: 26 OF 28

DATE: 1/10/2022

ELEV: 78.9 ±
DEPTH OF WATER: 60" ±
ESHWT DEPTH: 46" ±
ESHWT ELEV: 75.1 ±

DEPTH	DESCRIPTION
0" – 8"	Topsoil/Organics
8"-46"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; subangular blocky, friable
46"- 57"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
57"- 80"	Yellowish Brown *(10YR 5/6)* **sandy loam**; subangular blocky friable; (30% gravel)

END OF SOIL LOG

Notes: Seepage 60"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-27

SHEET NO.: 27 OF 28

DATE: 1/10/2022

ELEV: 80.1 ±
DEPTH OF WATER: 58" ±
ESHWT DEPTH: 49" ±
ESHWT ELEV: 76.0 ±

DEPTH	DESCRIPTION
0" – 5"	Topsoil/Organics
5"-49"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; subangular blocky, friable
49"- 61"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
61"- 75"	Yellowish Brown *(10YR 5/6)* **sandy loam**; subangular blocky friable; (40% gravel)

END OF SOIL LOG

Notes: Seepage 58"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

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SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-28

SHEET NO.: 28 OF 28

DATE: 1/10/2022

ELEV: 79.2 ±
DEPTH OF WATER: 65" ±
ESHWT DEPTH: 44" ±
ESHWT ELEV: 75.5 ±

DEPTH	DESCRIPTION
0" – 7"	Topsoil/Organics
7"-44"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; subangular blocky, friable
44"- 57"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
57"- 79"	Yellowish Brown *(10YR 5/6)* **sandy loam**; subangular blocky friable; (40% gravel)

END OF SOIL LOG

Notes: Seepage 65"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-29
DATE: 3/16/2022

GROUND ELEV.: 83.1 ±
DEPTH OF WATER: 2'7" ±
GROUNDWATER ELEV.: 80.5 ±
SEASONAL HIGH-WATER ELEV.: 81.0 ±

DEPTH	DESCRIPTION
0 – 18"	Dark Brown **Clayey SILT**, little f Sand. (w/ large roots)
18 – 48"	Tan-Grey mf **SAND**, some^{+} Silt.
48 – 54"	Tan cmf **SAND**, little cmf Gravel, trace Silt.

END OF TEST PIT AT @ 4'6"

NOTES: Orange-Brown mottling at 25".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-30
DATE: 3/16/2022

GROUND ELEV.: 85.5±
DEPTH OF WATER: 5'4" ±
GROUNDWATER ELEV.: 80.2 ±
SEASONAL HIGH-WATER ELEV.: 81.0 ±

DEPTH	DESCRIPTION
0 – 18"	Dark Brown **Clayey SILT**, some f Sand. (w/ large roots)
18 – 47"	Orange-Brown cmf **SAND**, little^{+} cmf Gravel, trace Silt.
47 – 66"	Tan c^{+}mf **SAND**, little^{+} cmf Gravel, trace Silt.

END OF TEST PIT AT @ 5'6"

NOTES: Orange-Brown mottling at 54".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-31
DATE: 3/16/2022

GROUND ELEV.: 86.5±
DEPTH OF WATER: 5'11" ± (Minor seepage)
GROUNDWATER ELEV.: 80.6 ±
SEASONAL HIGH-WATER ELEV.: 81.1 ±

DEPTH	DESCRIPTION
0 – 30"	Brown **Clayey SILT**, trace^{+} mf^{+} Sand. (w/ many roots)
30 – 64"	Light Tan-Brown cm^{+}f **SAND**, some^{+} cm^{+}f Gravel, little^{+} Silt.
64 – 76"	Light Grey-Brown **SILT**, trace^{+} c^{-}mf Sand.

END OF TEST PIT AT @ 6'4"

NOTES: Orange-Brown mottling at 65".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-32
DATE: 3/16/2022

GROUND ELEV.: 85.9±
DEPTH OF WATER: 6'11" ±
GROUNDWATER ELEV.: 79.0 ±
SEASONAL HIGH-WATER ELEV.: 79.7 ±

DEPTH	DESCRIPTION
0 – 15"	Dark Brown **Clayey SILT**, trace m⁺f Sand. (w/ some roots)
15 – 32"	Light Brown **Clayey SILT**, trace⁺ mf Sand, trace⁺ mf Gravel.
33 – 60"	Tan-Brown cm⁺f **SAND**, some⁺ cm⁺f Gravel, little⁺ Silt.
60 – 90"	Light Yellow-Brown mf⁺ **SAND**, some⁻ Silt, little⁺ c⁻mf Gravel.

END OF TEST PIT AT @ 8'4"

NOTES: Orange-Brown mottling at 75".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-33
DATE: 3/16/2022

GROUND ELEV.: 85.2±
DEPTH OF WATER: 6' ±
GROUNDWATER ELEV.: 79.2±
SEASONAL HIGH-WATER ELEV.: 79.9±

DEPTH	DESCRIPTION
0 – 24"	Dark Brown **Clayey SILT**, little f Sand. (w/ roots)
24 – 74"	Orange-Tan cmf **SAND**, little cmf Gravel, trace^{+} Silt.

END OF TEST PIT AT @ 6'2"

NOTES: Orange-Brown mottling at 64".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-34
DATE: 3/16/2022

GROUND ELEV.: 79.5±
DEPTH OF WATER: 5' ±
GROUNDWATER ELEV.: 74.5±
SEASONAL HIGH-WATER ELEV.: 76.7 ±

DEPTH	DESCRIPTION
0 – 8"	Dark Brown **Clayey SILT**, trace^{+} mf^{+} Sand. (w/ few roots)
8 – 36"	Light Brown **Clayey SILT**, little mf^{+} Sand.
36 – 65"	Tan-Brown cm^{+}f **SAND**, some c^{-}mf Gravel, some^{-} Silt.
65 – 70"	Light Brown & Tan-Brown cmf **SAND**, little^{+} Silt, little mf Gravel.

END OF TEST PIT AT @ 5'10"

NOTES: Tan mottling at 34".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-35
DATE: 3/16/2022

GROUND ELEV.: 79.1±
DEPTH OF WATER: 3'5" ±
GROUNDWATER ELEV.: 75.7±
SEASONAL HIGH-WATER ELEV.: 76.0±

DEPTH	DESCRIPTION
0 – 19"	Dark Brown **Clayey SILT**, little^{-} f Sand. (w/ roots)
19 – 42"	Tan-Brown c^{+}mf **SAND**, some^{-} cmf Gravel, some- Silt.

END OF TEST PIT AT @ 3'6"

NOTES: Tan mottling at 37".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-36
DATE: 3/18/2022

GROUND ELEV.: 80.5±
DEPTH OF WATER: 5' ±
GROUNDWATER ELEV.: 75.5 ±
SEASONAL HIGH-WATER ELEV.: 76.3 ±

DEPTH	DESCRIPTION
0 – 12"	Light Grey-Brown mf **SAND**, little Silt.
12 – 48"	Light Tan-Orange mf **SAND**, little^{+} Silt.
48 – 60"	Orange-Tan cmf **SAND**, little^{+} cmf Gravel, little^{+} Silt.

END OF TEST PIT AT @ 5'

NOTES: Orange-Brown mottling at 51".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-37
DATE: 3/18/2022

GROUND ELEV.: 81.0±
DEPTH OF WATER: 6'6" ±
GROUNDWATER ELEV.: 74.5 ±
SEASONAL HIGH-WATER ELEV.: 75.8 ±

DEPTH	DESCRIPTION
0 – 12"	Light Grey-Brown mf^{+} **SAND**, little^{+} Silt.
12 – 60"	Tan mf^{+} **SAND**, little^{+} Silt.
60 – 84"	Orange-Tan cmf **SAND**, little cmf Gravel, trace Silt.

END OF TEST PIT AT @ 7'10"

NOTES: Orange-Brown mottling at 62"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-38
DATE: 3/18/2022

GROUND ELEV.: 80.0 ±
DEPTH OF WATER: 4'5" ±
GROUNDWATER ELEV.: 75.6±
SEASONAL HIGH-WATER ELEV.: 76.3 ±

DEPTH	DESCRIPTION
0 – 12"	Light Brown mf^{+} **SAND**, and^{-} Silt.
12 – 60"	Tan-Grey mf **SAND**, little^{+} Silt.
60 – 64"	Orang-Brown cmf **SAND**, little^{+} cmf Gravel, little^{+} Silt.

END OF TEST PIT AT @ 12'

NOTES: Orange-Brown mottling at 44"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-39
DATE: 3/18/2022

GROUND ELEV.: 80.1±
DEPTH OF WATER: 5' ±
GROUNDWATER ELEV.: 75.1±
SEASONAL HIGH-WATER ELEV.: 76.3 ±

DEPTH	DESCRIPTION
0 – 30"	Light Brown mf^{+} **SAND**, and^{-} Silt.
30 – 60"	Tan-Grey **SILT**, and mf Sand, trace mf Gravel.
60 – 64"	Orange-Brown c^{+}mf **SAND** some cmf Gravel, little Silt.

END OF TEST PIT AT @ 5'4"

NOTES: Orange-Brown mottling at 46"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-40
DATE: 3/16/2022

GROUND ELEV.: 80.0±
DEPTH OF WATER: 3'9" ± (Minor Seepage)
GROUNDWATER ELEV.: 76.3 ±
SEASONAL HIGH-WATER ELEV.: 76.7±

DEPTH	DESCRIPTION
0 – 6"	Dark Brown **Clayey SILT**, little^{-} mf^{+} Sand. (w/ few large roots)
6 – 17"	Light Brown **SILT**, and^{-} mf^{+} Sand, trace^{-} f Gravel.
17 – 43"	Light Brown mf^{+} **SAND**, some^{+} Silt, little^{+} cm^{+}f Gravel.
43 – 90"	Orange-Brown & Light Grey f **SAND**, and^{-} Silt.

END OF TEST PIT AT @ 8'4"

NOTES: Orange-Brown mottling at 40"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-41
DATE: 3/18/2022

GROUND ELEV.: 79.9±
DEPTH OF WATER: 4' ±
GROUNDWATER ELEV.: 75.9 ±
SEASONAL HIGH-WATER ELEV.: 76.7 ±

DEPTH	DESCRIPTION
0 – 22"	Dark Brown **Clayey SILT**, little mf Sand.
22 – 50"	Orange-Tan & Grey mf^{+} **SAND**, some Silt, trace^{+} cmf Gravel.

END OF TEST PIT AT @ 4'2"

NOTES: Red-Brown mottling at 38"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-42
DATE: 3/18/2022

GROUND ELEV.: 81.0±
DEPTH OF WATER: 4' 8"±
GROUNDWATER ELEV.: 76.3±
SEASONAL HIGH-WATER ELEV.: 76.8±

DEPTH	DESCRIPTION
0 – 32"	Light Brown $m^{-}f^{+}$ SAND, and^{-} Silt, $trace^{-}$ f Gravel. (w/ some roots)
32 – 65"	Orange-Brown c^{+}mf **SAND**, $some^{+}$ cm^{+}f Gravel, $little^{+}$ Silt.

END OF TEST PIT AT @ 5'5"

NOTES: Red-Brown mottling at 50"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-43
DATE: 3/16/2022

GROUND ELEV.: 80.0±
DEPTH OF WATER: 3'3" ±
GROUNDWATER ELEV.: 76.8 ±
SEASONAL HIGH-WATER ELEV.: 77.1 ±

DEPTH	DESCRIPTION
0 – 21"	Dark Brown **Clayey SILT**, little f Sand, trace mf Gravel.
21 – 36"	Brown-Grey cmf **SAND**, and- Clayey Silt.
36 – 48"	Orange-Brown cmf **SAND**, some- cmf Gravel, trace Silt.

END OF TEST PIT AT @ 4'

NOTES: Orange-Brown mottling at 35"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-44
DATE: 3/18/2022

GROUND ELEV.: 80.5±
DEPTH OF WATER: 3'9" ±
GROUNDWATER ELEV.: 76.8 ±
SEASONAL HIGH-WATER ELEV.: 77.4 ±

DEPTH	DESCRIPTION
0 – 18"	Dark Brown **Clayey SILT**, trace^{+} m^{-}f Sand. (w/ some small roots)
18 – 29"	Light Brown **SILT & CLAY**, some^{-} m^{-}f Sand, trace f Gravel.
29 – 54"	Tan-Brown cm^{+}f **SAND**, some^{+} cm^{+}f Gravel, little Silt.

END OF TEST PIT AT @ 4'6"

NOTES: Orange-Brown mottling at 37"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **1 (TP-1)** Date Tested **1-6-2022**

2. Depth **40" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 6 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **0.25**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.5"**	**0.50"**
7"	**6.6"**	**0.40"**
7"	**6.6"**	**0.40"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **5.6 min**
   b. Percolation Rate = a/6 = 5.6/ 6= **0.93** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **0.93** min/in. = **21.5** in/ hr **21.5**/2 = **10.75 in/hr** Therefore, Use **10.00 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **2 (TP-2)** Date Tested **1-6-2022**

2. Depth **36" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 2.5 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **0.25**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.3"**	**1.70"**
7"	**5.6"**	**1.40"**
7"	**5.7"**	**1.30"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **1.25 min**
   b. Percolation Rate = a/6 = 1.25/ 6= **0.21** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **0.21** min/in. = **95.2** in/ hr **95.2**/2 = **47.6 in/hr** Therefore, Use **10.00 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

Percolation Test Data: Block **3101** Lot **1**

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

1. Test Number **3 (TP-3)** Date Tested **1-6-2022**

2. Depth **36" below grade**

3. Pre-soak:
X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 3 MIN
_____ Four Hour Pre-soak completed - Indicate result:
_____ Test Hole Drained within 15 to 24 hours after Pre-soak
_____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
a. Time Interval Selected, Minutes **0.25**
b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.6"**	**1.40"**
7"	**5.7"**	**1.30"**
7"	**5.7"**	**1.30"**

5. Percolation Rate:
a. Time, minutes, Required for a Six-inch Drop in the Water level **1.5 min**
b. Percolation Rate = a/6 = 1.5/ 6= **0.25** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
K = 20/ **0.25** min/in. = **80** in/ hr **80**/2 = **40 in/hr** Therefore, Use **10.00 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

Percolation Test Data: Block **3101** Lot **1**

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

1. Test Number **4 (TP-8)** Date Tested **1-6-2022**

2. Depth **20" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 225 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 20
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **185 min**
   b. Percolation Rate = a/6 = 185/ 6= **30.8** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **30.8** min/in. = **0.65** in/ hr **0.65**/2 = **0.33 in/hr** Therefore, Use 0.33 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **5 (TP-10)** Date Tested **1-6-2022**

2. Depth **10" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 50 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **2.0**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.3"**	**0.7"**
7"	**6.2"**	**0.8"**
7"	**6.2"**	**0.8"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **25 min**
   b. Percolation Rate = a/6 = 25/ 6= **4.2** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **4.2** min/in. = **4.7** in/ hr **4.7**/2 = **2.35 in/hr** Therefore, Use **2.35 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

Percolation Test Data: Block **3101** Lot **1**

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **6 (TP-15)** Date Tested **1-6-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 55 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **5**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **50 min**
   b. Percolation Rate = a/6 = 50/ 6= **8.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **8.3** min/in. = **2.4** in/ hr **2.4**/2 = **1.2 in/hr** Therefore, Use **1.2 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **7 (TP-17)** Date Tested **1-6-2022**

2. Depth **6" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 222 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 25
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **183 min**
   b. Percolation Rate = a/6 = 183/ 6= **30.5** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **30.5** min/in. = **0.66** in/ hr **0.66**/2 = **0.33 in/hr** Therefore, Use 0.33 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **8 (TP-12)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 340 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 20
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.5"**	**0.5"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **294 min**
   b. Percolation Rate = a/6 = 294/ 6= **49** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **49** min/in. = **0.41**in/ hr **0.41**/2 = **0.21 in/hr** Therefore, Use 0.21 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **9 (TP-13)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 314 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 25
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **266 min**
   b. Percolation Rate = a/6 = 266/ 6= **44.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **44.3** min/in. = **0.45**in/ hr **0.45**/2 = **0.23 in/hr** Therefore, Use 0.23 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **10 (TP-14)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 362 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 30
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **305 min**
   b. Percolation Rate = a/6 = 305/ 6= **50.8** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **50.8** min/in. = **0.39**in/ hr **0.39**/2 = **0.20 in/hr** Therefore, Use 0.20 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **11 (TP-23)** Date Tested **1-6-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 60 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **10**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **89**
   b. Percolation Rate = a/6 = 89/ 6= **14.83** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **14.83** min/in. = **1.35** in/ hr /2 = **0.68 in/hr** Therefore, Use 0.68 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **12 (TP-26)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 60 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **5**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **40**
   b. Percolation Rate = a/6 = 40/ 6= **6.7** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **6.7** min/in. = **3.0** in/ hr /2 = **1.5 in/hr** Therefore, Use 1.5 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **13 (TP-27)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 46 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **5**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **32**
   b. Percolation Rate = a/6 = 32/ 6= **5.41**min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **5.41** min/in. = **3.7** in/ hr /2 = **1.85 in/hr** Therefore, Use 1.85 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **14 (TP-28)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 38 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **5**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **26**
   b. Percolation Rate = a/6 = 26/ 6= **4.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **4.3** min/in. = **4.7** in/ hr /2 = **2.35 in/hr** Therefore, Use 2.35 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **15 (TP-29)** Date Tested **3-16-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 222 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 25
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **188 min**
   b. Percolation Rate = a/6 = 188/ 6= **31.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **31.3** min/in. = **0.64**in/ hr **0.64**/2 = **0.32 in/hr** Therefore, Use 0.32 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **16 (TP-30)** Date Tested **3-16-2022**

2. Depth **38" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 15
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 4
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**4.0"**	**3.0"**
7"	**4.5"**	**2.5"**
7"	**4.5"**	**2.5"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **9 min**
   b. Percolation Rate = a/6 = 1.5/ 6= **1.5** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **1.5** min/in. = **13.3** in/ hr **13.3**/2 = **6.66 in/hr** Therefore, Use **6.66 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **17 (TP-31)** Date Tested **3-16-2022**

2. Depth **42" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 55
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 4
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.6"**	**1.7"**
7"	**5.9"**	**1.1"**
7"	**5.9"**	**1.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **41**
   b. Percolation Rate = a/6 = 41/ 6= **6.83** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **6.83** min/in. = **2.92** in/ hr **2.92**/2 = **1.46 in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **18 (TP-32)** Date Tested **3-16-2022**

2. Depth **36" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes, 25
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **4**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.0"**	**2.0"**
7"	**5.0"**	**2.0"**
7"	**5.0"**	**2.0"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **17 min**
   b. Percolation Rate = a/6 = 17/ 6= **2.83** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **2.83** min/in. = **7.1** in/ hr **7.1**/2 = **3.55 in/hr** Therefore, Use **3.55 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **19 (TP-33)** Date Tested **3-16-2022**

2. Depth **42" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes, 14
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **4**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**2.0"**	**5.0"**
7"	**2.0"**	**5.0"**
7"	**2.0"**	**5.0"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **10 min**
   b. Percolation Rate = a/6 = 10/ 6= **1.6** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **1.6** min/in. = **12.5** in/ hr **12.5**/2 = **6.25 in/hr** Therefore, Use **6.25 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data:

1. Test Number **20 (TP-34)** Date Tested **1-6-2022**

2. Depth **18" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 245 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 20
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **198 min**
   b. Percolation Rate = a/6 = 198/ 6= **33** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **33** min/in. = **0.61** in/ hr **0.61**/2 = **0.31 in/hr** Therefore, Use 0.31 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **21 (TP-35)** Date Tested **3-18-2022**

2. Depth **19" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 168 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 10
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.5"**	**0.5"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **114**
   b. Percolation Rate = a/6 = 114/ 6= **19** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **19** min/in. = **1.05** in/ hr **1.05**/2 = **0.53 in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **22 (TP-36)** Date Tested **3-18-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 243 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **20**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **184**
   b. Percolation Rate = a/6 = 184/ 6= **30.7**min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **30.7** min/in. = **0.65** in/ hr /2 = **0.33 in/hr** Therefore, Use 0.33 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **23 (TP-37)** Date Tested **3-16-2022**

2. Depth **30" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes, 120
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **1**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.0"**	**1.0"**
7"	**6.6"**	**0.4"**
7"	**6.6"**	**0.4"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **89 min**
   b. Percolation Rate = a/6 = 10/ 6= **14.8** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **14.8** min/in. = **2.7** in/ hr **2.7**/2 = **1.34 in/hr** Therefore, Use **1.34 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **24 (TP-38)** Date Tested **3-16-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 288 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **25**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **216**
   b. Percolation Rate = a/6 = 216/ 6= 36 min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ 36 min/in. = **0.56** in/ hr /2 = **0.28 in/hr** Therefore, Use 0.28 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **25 (TP-39)** Date Tested **3-16-2022**

2. Depth **30" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 189 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **10**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **111 min**
   b. Percolation Rate = a/6 = 111/ 6= **18.5** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **18.5** min/in. = **1.08** in/ hr **1.08**/2 = **0.54 in/hr** Therefore, Use **0.54 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **26 (TP-40)** Date Tested **3-18-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 218 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **174**
   b. Percolation Rate = a/6 = 174/ 6= **29** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **29** min/in. = **0.69** in/ hr **0.69**/2 = **0.35 in/hr** Therefore, Use **0.35 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **27 (TP-41)** Date Tested **3-18-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 220 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **164**
   b. Percolation Rate = a/6 = 164/ 6= **27.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **27.3** min/in. = **0.73** in/ hr **0.73**/2 = **0.36 in/hr** Therefore, Use **0.36 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **28 (TP-42)** Date Tested **3-18-2022**

2. Depth **32" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 198 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.6"**	**0.4"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **148**
   b. Percolation Rate = a/6 = 148/ 6= **24.7** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **24.7** min/in. = **0.81** in/ hr **0.81**/2 = **0.41 in/hr** Therefore, Use **0.41 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **29 (TP-43)** Date Tested **3-18-2022**

2. Depth **21" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 240 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **171**
   b. Percolation Rate = a/6 = 171/ 6= **28.5** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **28.5** min/in. = **0.70** in/ hr **0.70**/2 = **0.35 in/hr** Therefore, Use **0.35 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **30 (TP-44)** Date Tested **3-18-2022**

2. Depth **29" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 275 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 20
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **206**
   b. Percolation Rate = a/6 = 206/ 6= **34.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **34.3** min/in. = **0.58** in/ hr **0.58**/2 = **0.29 in/hr** Therefore, Use **0.29 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

BASIN 1

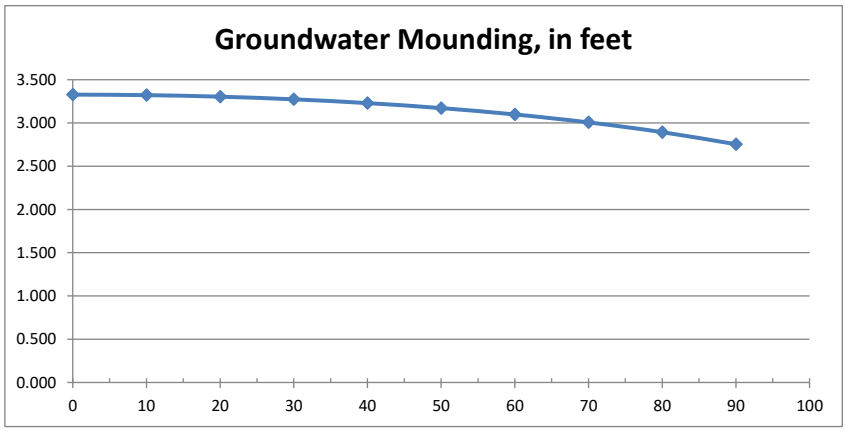
Input Values

2.00	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
115.000	x	1/2 length of basin (x direction, in feet)
8.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.328	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.328	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.328	0
3.322	10
3.304	20
3.273	30
3.230	40
3.172	50
3.098	60
3.007	70
2.894	80
2.754	90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

BASIN 2

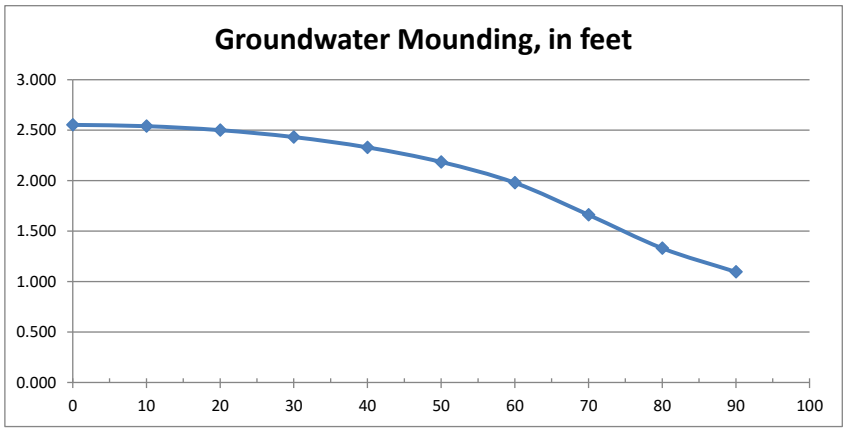
Input Values

1.10	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
17.75	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
70.000	x	1/2 length of basin (x direction, in feet)
6.500	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

12.553	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.553	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.553	0
2.540	10
2.500	20
2.432	30
2.330	40
2.185	50
1.979	60
1.661	70
1.330	80
1.095	90

Re-Calculate Now



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BASIN 3

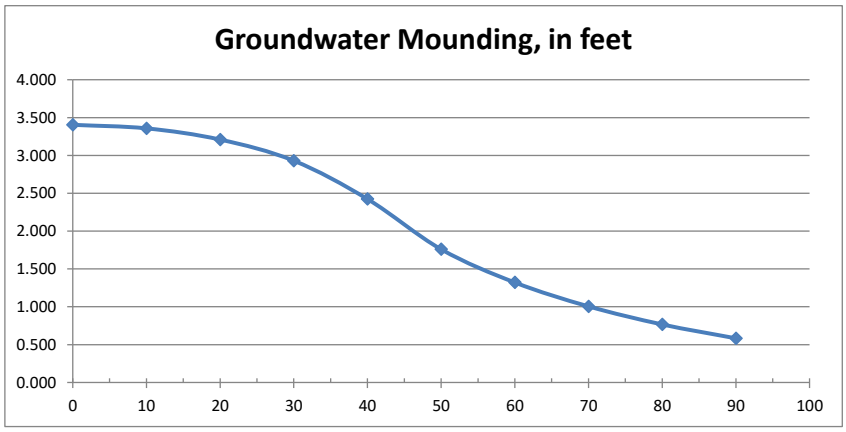
Input Values

1.10	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
7.30	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
42.000	x	1/2 length of basin (x direction, in feet)
6.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.404	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.404	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.404	0
3.357	10
3.209	20
2.930	30
2.423	40
1.759	50
1.321	60
1.005	70
0.767	80
0.583	90

Re-Calculate Now



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BASIN 4

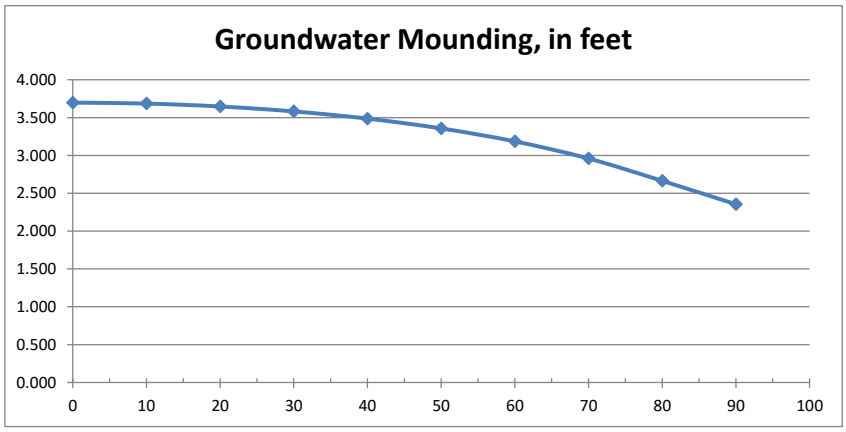
Input Values

1.14	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
80.100	x	1/2 length of basin (x direction, in feet)
20.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.697	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.697	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.697	0
3.685	10
3.646	20
3.581	30
3.486	40
3.357	50
3.185	60
2.959	70
2.664	80
2.355	90

Re-Calculate Now



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BASIN 5

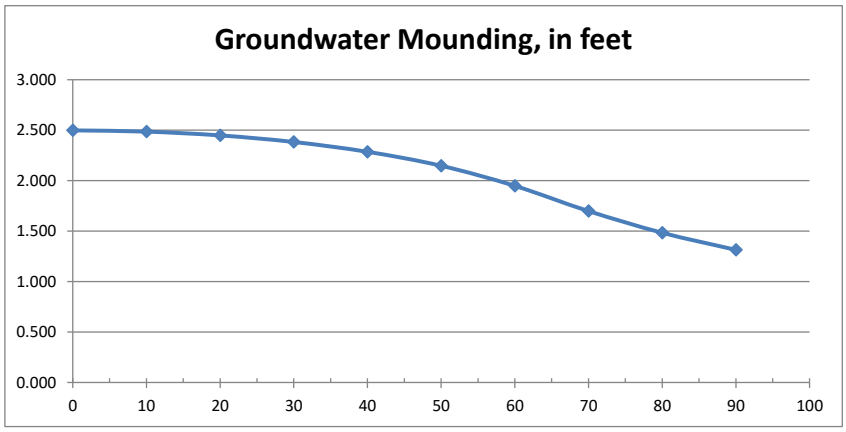
Input Values

1.40	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
64.700	x	1/2 length of basin (x direction, in feet)
11.500	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

12.498	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.498	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.498	0
2.486	10
2.448	20
2.383	30
2.286	40
2.147	50
1.948	60
1.698	70
1.483	80
1.314	90

Re-Calculate Now



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BASIN 6

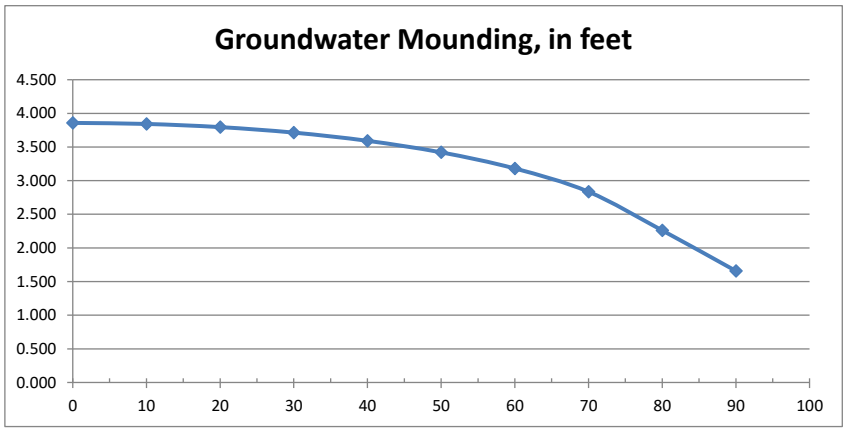
Input Values

5.00	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
25.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
80.000	x	1/2 length of basin (x direction, in feet)
3.800	y	1/2 width of basin (y direction, in feet)
23.80	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.858	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.858	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.858	0
3.843	10
3.796	20
3.714	30
3.592	40
3.420	50
3.181	60
2.835	70
2.261	80
1.658	90

Re-Calculate Now



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BASIN 7

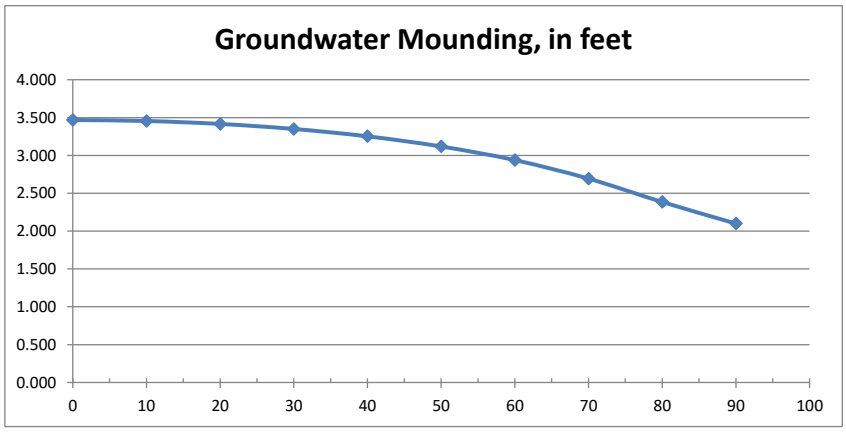
Input Values

1.34	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
76.200	x	1/2 length of basin (x direction, in feet)
16.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.468	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.468	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.468	0
3.455	10
3.416	20
3.349	30
3.252	40
3.118	50
2.938	60
2.693	70
2.384	80
2.099	90

Re-Calculate Now



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BASIN 8

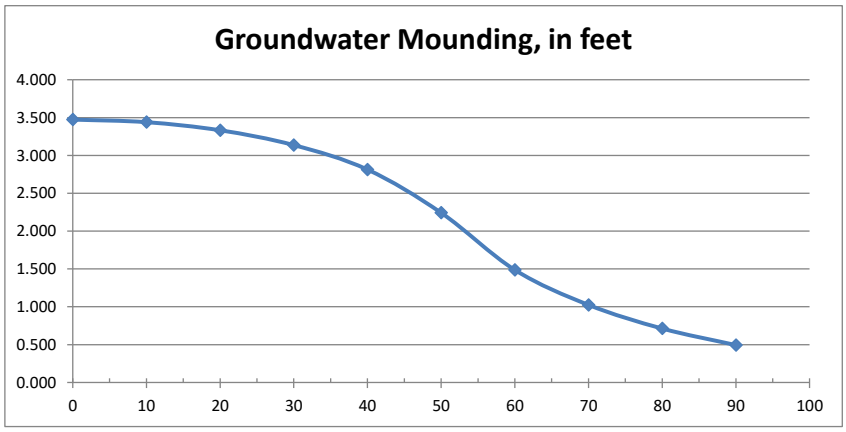
Input Values

5.00	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
25.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
52.000	x	1/2 length of basin (x direction, in feet)
5.000	y	1/2 width of basin (y direction, in feet)
12.20	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.473	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.473	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.473	0
3.439	10
3.332	20
3.136	30
2.812	40
2.242	50
1.487	60
1.025	70
0.713	80
0.494	90

Re-Calculate Now



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BASIN 9

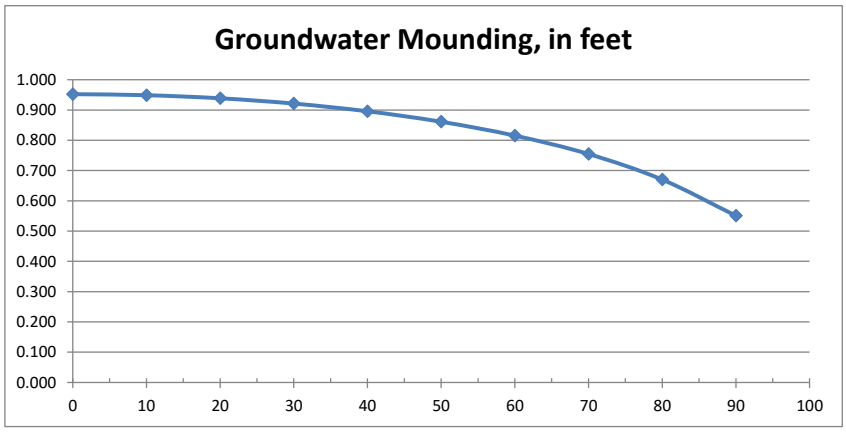
Input Values

0.50	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
25.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
86.500	x	1/2 length of basin (x direction, in feet)
6.000	y	1/2 width of basin (y direction, in feet)
66.40	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

10.952	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
0.952	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
0.952	0
0.949	10
0.939	20
0.921	30
0.896	40
0.861	50
0.815	60
0.755	70
0.670	80
0.551	90

Re-Calculate Now



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Part II- Field Manuals

Attachment of Field Manuals
for Stormwater Management Measures on this Site

As per N.J.A.C. 7:8-5.8(b)&(e), preventative and corrective maintenance shall be performed to maintain the function of stormwater management measures, including repair or replacement of the structure; removal of sediment, debris or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; repair or replacement of non-vegetated linings, and removal of rodent/wildlife and repair/restoration to damaged affected areas caused by them.

Each Field Manual attached to this Maintenance Plan is a separate document pertaining to one specific stormwater management measure, and should be used by inspections and maintenance crews in order to carry out the maintenance work required by N.J.A.C. 7:8-5.8(e).

Field Manual for Bioretention Basins

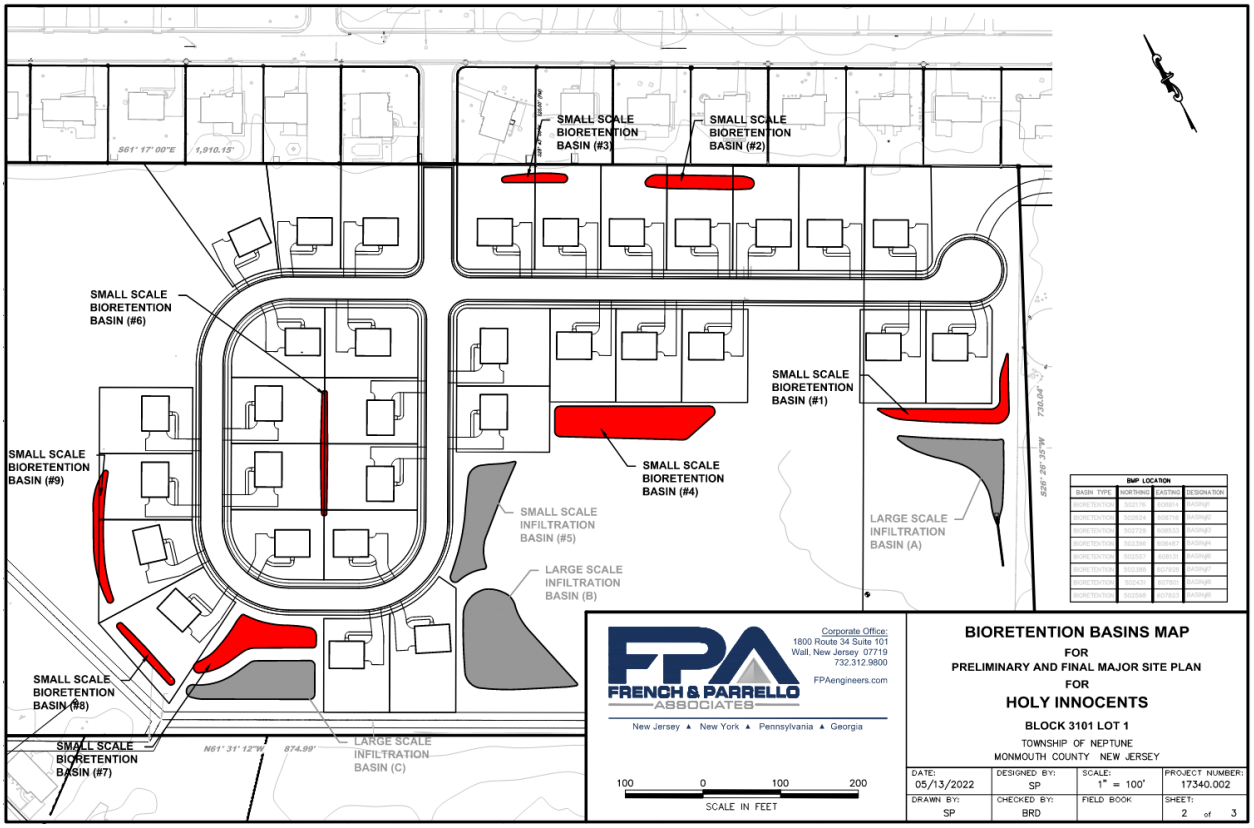
Bioretention System
Basin #1, 2, 3, 4, 6, 7, 8, & 9 on the Location Map

Development Name: Holy Innocents

Township, County: Neptune Township, Monmouth County, NJ

BMP	Location	Location Description
Basin #1	E(X): 608,914; N(Y): 502,176	Eastern end of site, south of cul-de-sac, north of Basin A
Basin #2	E(X): 608,716; N(Y): 502,624	Northeastern end of site, east of Basin #3
Basin #3	E(X): 608,533; N(Y): 502,729	Northern end of site, east of development access driveway
Basin #4	E(X): 608,487; N(Y): 502,396	Middle of project site, northeast of Basin #5
Basin #6	E(X): 608,131; N(Y): 502,557	Middle of project site, central point of eight proposed lots
Basin #7	E(X): 607,928; N(Y): 502,388	Southwestern end of site, north of Basin C
Basin #8	E(X): 607,801; N(Y): 502,431	Southwestern end of site, west of Basin #7
Basin #9	E(X): 607,823; N(Y): 502,598	Western end of site, north of Basin #8

Location Map



NOTE

This Field Manual is intended to be editable and adjustable in accordance with the design of stormwater management measures, the site conditions, and the special needs of responsible party. The Engineer should supplement information and best management practice to assist the responsible party to perform maintenance.

Table of Contents

Bioretention System Overview

Functionality

Bioretention systems are used to remove a wide range of pollutants, such as suspended solids, nutrients, metals, hydrocarbons, and bacteria from stormwater runoff. They can also be used to reduce peak runoff rates and increase stormwater infiltration when designed as a multi-stage, multi-function facility.

A bioretention system can be configured as either a bioretention basin or a longer, narrower bioretention swale. In general, a bioretention basin has a flat bottom while a bioretention swale may have sloping bottom. Runoff storage depths above the soil bed surface are typically shallow. The TSS removal rate for bioretention systems is 80 or 90 percent, depending upon the thickness of the soil planting bed and the type of vegetation grown in the bed.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin / Infiltration

A bioretention system is a type of **dry** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

A bioretention system with infiltration can also be designed for extended detention, in which case it will attenuate peak flows from storms larger than the Water Quality Design Storm.

Basic Design Information – Basin #1

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 72.00 hours.
3. The elevation of the seasonal high water table of this basin was observed on 01 / 10 / 2022 and it was 4.90 feet below the basin bottom surface, at EL. 73.10 feet.
4. This system is designed with a subsoil permeability rate of 10.00 inches/hour (pre-construction) and 10.00 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	44	4,487
Peak Flow Rate (cfs)	0.00	0.00	0.02	1.38
Water Surface Elevation (feet)	78.37	78.48	79.06	80.19

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 4.90 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 10.00 inches/hour (pre-construction) and 10.00 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	0.33 ft	79.00

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #2

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 72.00 hours.
3. The elevation of the seasonal high water table of this basin was observed on 03 / 16 / 2022 and it was 3.60 feet below the basin bottom surface, at EL. 79.90 feet.
4. This system is designed with a subsoil permeability rate of 6.25 inches/hour (pre-construction) and 3.55 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	0	3,920
Peak Flow Rate (cfs)	0.00	0.00	0.00	0.99
Water Surface Elevation (feet)	83.62	83.66	83.91	84.46

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
    - The depth of the soil planting bed is 3.60 feet.
    - Mixture of the planting soil is to be determined.
    - The pH of the planting soil shall be determined.
    - Filter fabric is placed along the sides of the soil planting bed.
    - The system is designed with a planting soil permeability rate of 6.25 inches/hour (pre-construction) and 3.55 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	1.00 ft	84.00

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #3

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 72.00 hours.
3. The elevation of the seasonal high water table of this basin was observed on 03 / 16 / 2022 and it was 3.50 feet below the basin bottom surface, at EL. 81.10 feet.
4. This system is designed with a subsoil permeability rate of 1.46 inches/hour (pre-construction) and 1.46 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	0	3,441
Peak Flow Rate (cfs)	0.00	0.00	0.00	0.85
Water Surface Elevation (feet)	84.97	85.11	85.51	86.01

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 3.50 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 1.46 inches/hour (pre-construction) and 1.46 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	1.00 ft	85.60

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #4

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 72.00 hours.
3. The elevation of the seasonal high water table of this basin was observed on 01 / 10 / 2022 and it was 4.00 feet below the basin bottom surface, at EL. 76.70 feet.
4. This system is designed with a subsoil permeability rate of 0.33 inches/hour (pre-construction) and 10.00 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	131	1,220
Peak Flow Rate (cfs)	0.00	0.00	0.06	0.16
Water Surface Elevation (feet)	80.78	80.82	81.10	81.94

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 4.00 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 0.33 inches/hour (pre-construction) and 10.00 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Orifice	2.5 in	80.86

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #6

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 23.80 hours.
3. The elevation of the seasonal high water table of this basin was observed on 03 / 16 / 2022 and it was 3.90 feet below the basin bottom surface, at EL. 77.10 feet.
4. This system is designed with a subsoil permeability rate of 0.29 inches/hour (pre-construction) and 5.00 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	479	5,532
Peak Flow Rate (cfs)	0.00	0.00	0.22	2.64
Water Surface Elevation (feet)	81.16	81.51	82.09	82.48

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 3.90 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 0.29 inches/hour (pre-construction) and 5.00 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	2.50 ft	82.00

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #7

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 72.00 hours.
3. The elevation of the seasonal high water table of this basin was observed on 03 / 18 / 2022 and it was 3.50 feet below the basin bottom surface, at EL. 76.30 feet.
4. This system is designed with a subsoil permeability rate of 0.54 inches/hour (pre-construction) and 10.00 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	1,873	12,589
Peak Flow Rate (cfs)	0.00	0.00	1.27	7.55
Water Surface Elevation (feet)	80.08	80.23	80.70	81.15

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 3.50 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 0.54 inches/hour (pre-construction) and 10.00 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	4.50 ft	80.50

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #8

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 12.20 hours.
3. The elevation of the seasonal high water table of this basin was observed on 03 / 16 / 2022 and it was 3.50 feet below the basin bottom surface, at EL. 76.70 feet.
4. This system is designed with a subsoil permeability rate of 0.35 inches/hour (pre-construction) and 5.00 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	0	1
Peak Flow Rate (cfs)	0.00	0.00	0.00	0.00
Water Surface Elevation (feet)	80.29	80.39	80.66	81.25

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 3.50 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 0.35 inches/hour (pre-construction) and 5.00 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Orifice	2.5 in	81.20

4. Vegetation
    - The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information – Basin #9

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The design drain time is 66.40 hours.
3. The elevation of the seasonal high water table of this basin was observed on 03 / 18 / 2022 and it was 3.70 feet below the basin bottom surface, at EL. 76.80 feet.
4. This system is designed with a subsoil permeability rate of 0.41 inches/hour (pre-construction) and 5.00 inches/hour (post-construction).

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm	10-year storm	100-year storm
Rainfall Depth (inches)	1.25 inch in 2 hours	3.38 inches in 24 hours	5.23 inches In 24 hours	8.94 inches In 24 hours
Runoff Volume (cubic feet)	0	0	0	0
Peak Flow Rate (cfs)	0.00	0.00	0.00	0.00
Water Surface Elevation (feet)	80.56	80.57	80.66	81.07

Note: The design engineer shall fill out the table in accordance with the design of the stormwater management measure. If the item is not applicable, enter **N/A** in the table.

Basin Configuration Targets

1. No pretreatment is provided for this basin.
2. Planting Soil Bed
   - The depth of the soil planting bed is 3.70 feet.
   - Mixture of the planting soil is to be determined.
   - The pH of the planting soil shall be determined.
   - Filter fabric is placed along the sides of the soil planting bed.
   - The system is designed with a planting soil permeability rate of 0.41 inches/hour (pre-construction) and 5.00 inches/hour (post-construction).

3. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	50	81.50

4. Vegetation

- The vegetation type to be used in this bioretention system is noted in the "Typical Bioretention Basin Planting Plan." A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Visual Aid for Bioretention System Inspection

No photos are currently available. Photos will be updated upon availability.

Reference Documents

Documents to be placed in this field manual should include the following:

- As-built Drawings with Drainage Plans
- Soil Boring Logs
- Permeability Test (Pre-construction)
- Permeability Test (Post-construction)
- Groundwater Mounding Analysis
- Filter Fabric Information

Attach Reference Documents Here

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-2

SHEET NO.: 2 OF 28

DATE: 1/10/2022

ELEV: 80.0 ±
DEPTH OF WATER: 90" ±
ESHWT DEPTH: 83" ±
ESHWT ELEV: 73.1 ±

DEPTH	DESCRIPTION
0" - 11"	Topsoil/Organics
11"- 33"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (50% gravel)
33"- 83"	Yellowish Brown *(10YR 5/8)* **sandy loam**; crumb, friable; (15% gravel)
83"- 95"	Gray *(10YR 5/1)* **sandy loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 6/8)* mottles
95"- 120"	Grayish Brown *(10YR 5/2)* **silt loam**; subangular blocky, friable

END OF SOIL LOG

Notes: Seepage 90"

Signature of Soil Evaluator: _____ Date: ___/___/_____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: ___/___/_____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-8

SHEET NO.: 8 OF 28

DATE: 1/10/2022

ELEV: 79.1 ±
DEPTH OF WATER: 65" ±
ESHWT DEPTH: 54" ±
ESHWT ELEV: 74.6 ±

DEPTH	DESCRIPTION
0" - 3"	Topsoil/Organics
3"- 20"	Dark Yellowish Brown *(10YR 3/6)* **sandy clay loam**; subangular blocky, friable
20"- 54"	Yellowish Brown *(10YR 5/4)* **sandy loam**; subangular blocky, friable
54"- 63"	Brownish Yellow *(10YR 6/6)* **sandy loam**; crumb, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles (20% gravel)
63"- 90"	Reddish Yellow *(5YR 4/6)* **sandy loam**; subangular blocky, friable; (10% gravel)

END OF SOIL LOG

Notes: Seepage 65"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-31
DATE: 3/16/2022

GROUND ELEV.: 86.5±
DEPTH OF WATER: 5'11" ± (Minor seepage)
GROUNDWATER ELEV.: 80.6 ±
SEASONAL HIGH-WATER ELEV.: 81.1 ±

DEPTH	DESCRIPTION
0 – 30"	Brown **Clayey SILT**, trace^{+} mf^{+} Sand. (w/ many roots)
30 – 64"	Light Tan-Brown cm^{+}f **SAND**, some^{+} cm^{+}f Gravel, little^{+} Silt.
64 – 76"	Light Grey-Brown **SILT**, trace^{+} c^{-}mf Sand.

END OF TEST PIT AT @ 6'4"

NOTES: Orange-Brown mottling at 65".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-33
DATE: 3/16/2022

GROUND ELEV.: 85.2±
DEPTH OF WATER: 6' ±
GROUNDWATER ELEV.: 79.2±
SEASONAL HIGH-WATER ELEV.: 79.9±

DEPTH	DESCRIPTION
0 – 24"	Dark Brown **Clayey SILT**, little f Sand. (w/ roots)
24 – 74"	Orange-Tan cmf **SAND**, little cmf Gravel, trace^{+} Silt.

END OF TEST PIT AT @ 6'2"

NOTES: Orange-Brown mottling at 64".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-39
DATE: 3/18/2022

GROUND ELEV.: 80.1±
DEPTH OF WATER: 5' ±
GROUNDWATER ELEV.: 75.1±
SEASONAL HIGH-WATER ELEV.: 76.3 ±

DEPTH	DESCRIPTION
0 – 30"	Light Brown mf^{+} **SAND**, and^{-} Silt.
30 – 60"	Tan-Grey **SILT**, and mf Sand, trace mf Gravel.
60 – 64"	Orange-Brown c^{+}mf **SAND** some cmf Gravel, little Silt.

END OF TEST PIT AT @ 5'4"

NOTES: Orange-Brown mottling at 46"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-40
DATE: 3/16/2022

GROUND ELEV.: 80.0±
DEPTH OF WATER: 3'9" ± (Minor Seepage)
GROUNDWATER ELEV.: 76.3 ±
SEASONAL HIGH-WATER ELEV.: 76.7±

DEPTH	DESCRIPTION
0 – 6"	Dark Brown **Clayey SILT**, little^{-} mf^{+} Sand. (w/ few large roots)
6 – 17"	Light Brown **SILT**, and^{-} mf^{+} Sand, trace^{-} f Gravel.
17 – 43"	Light Brown mf^{+} **SAND**, some^{+} Silt, little^{+} cm^{+}f Gravel.
43 – 90"	Orange-Brown & Light Grey f **SAND**, and^{-} Silt.

END OF TEST PIT AT @ 8'4"

NOTES: Orange-Brown mottling at 40"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-42
DATE: 3/18/2022

GROUND ELEV.: 81.0±
DEPTH OF WATER: 4' 8"±
GROUNDWATER ELEV.: 76.3±
SEASONAL HIGH-WATER ELEV.: 76.8±

DEPTH	DESCRIPTION
0 – 32"	Light Brown $m^{-}f^{+}$ SAND, and^{-} Silt, $trace^{-}$ f Gravel. (w/ some roots)
32 – 65"	Orange-Brown c^{+}mf **SAND**, $some^{+}$ cm^{+}f Gravel, $little^{+}$ Silt.

END OF TEST PIT AT @ 5'5"

NOTES: Red-Brown mottling at 50"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-43
DATE: 3/16/2022

GROUND ELEV.: 80.0±
DEPTH OF WATER: 3'3" ±
GROUNDWATER ELEV.: 76.8 ±
SEASONAL HIGH-WATER ELEV.: 77.1 ±

DEPTH	DESCRIPTION
0 – 21"	Dark Brown **Clayey SILT**, little f Sand, trace mf Gravel.
21 – 36"	Brown-Grey cmf **SAND**, and- Clayey Silt.
36 – 48"	Orange-Brown cmf **SAND**, some- cmf Gravel, trace Silt.

END OF TEST PIT AT @ 4'

NOTES: Orange-Brown mottling at 35"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-44
DATE: 3/18/2022

GROUND ELEV.: 80.5±
DEPTH OF WATER: 3'9" ±
GROUNDWATER ELEV.: 76.8 ±
SEASONAL HIGH-WATER ELEV.: 77.4 ±

DEPTH	DESCRIPTION
0 – 18"	Dark Brown **Clayey SILT**, trace^{+} m^{-}f Sand. (w/ some small roots)
18 – 29"	Light Brown **SILT & CLAY**, some^{-} m^{-}f Sand, trace f Gravel.
29 – 54"	Tan-Brown cm^{+}f **SAND**, some^{+} cm^{+}f Gravel, little Silt.

END OF TEST PIT AT @ 4'6"

NOTES: Orange-Brown mottling at 37"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: C. Pulaski	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **2 (TP-2)** Date Tested **1-6-2022**

2. Depth **36" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 2.5 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **0.25**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.3"**	**1.70"**
7"	**5.6"**	**1.40"**
7"	**5.7"**	**1.30"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **1.25 min**
   b. Percolation Rate = a/6 = 1.25/ 6= **0.21** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **0.21** min/in. = **95.2** in/ hr **95.2**/2 = **47.6 in/hr** Therefore, Use **10.00 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

Percolation Test Data: Block **3101** Lot **1**

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

1. Test Number **4 (TP-8)** Date Tested **1-6-2022**

2. Depth **20" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 225 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 20
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **185 min**
   b. Percolation Rate = a/6 = 185/ 6= **30.8** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **30.8** min/in. = **0.65** in/ hr **0.65**/2 = **0.33 in/hr** Therefore, Use 0.33 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **17 (TP-31)** Date Tested **3-16-2022**

2. Depth **42" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 55
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 4
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.6"**	**1.7"**
7"	**5.9"**	**1.1"**
7"	**5.9"**	**1.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **41**
   b. Percolation Rate = a/6 = 41/ 6= **6.83** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **6.83** min/in. = **2.92** in/ hr **2.92**/2 = **1.46 in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **19 (TP-33)** Date Tested **3-16-2022**

2. Depth **42" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes, 14
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **4**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**2.0"**	**5.0"**
7"	**2.0"**	**5.0"**
7"	**2.0"**	**5.0"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **10 min**
   b. Percolation Rate = a/6 = 10/ 6= **1.6** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **1.6** min/in. = **12.5** in/ hr **12.5**/2 = **6.25 in/hr** Therefore, Use **6.25 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **25 (TP-39)** Date Tested **3-16-2022**

2. Depth **30" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 189 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **10**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **111 min**
   b. Percolation Rate = a/6 = 111/ 6= **18.5** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **18.5** min/in. = **1.08** in/ hr **1.08**/2 = **0.54 in/hr** Therefore, Use **0.54 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

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Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **26 (TP-40)** Date Tested **3-18-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 218 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **174**
   b. Percolation Rate = a/6 = 174/ 6= **29** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **29** min/in. = **0.69** in/ hr **0.69**/2 = **0.35 in/hr** Therefore, Use **0.35 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

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Mark Kalusz, EIT

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Brian Decina, PE

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COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **28 (TP-42)** Date Tested **3-18-2022**

2. Depth **32" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 198 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.6"**	**0.4"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **148**
   b. Percolation Rate = a/6 = 148/ 6= **24.7** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **24.7** min/in. = **0.81** in/ hr **0.81**/2 = **0.41 in/hr** Therefore, Use **0.41 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

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License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **29 (TP-43)** Date Tested **3-18-2022**

2. Depth **21" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 240 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 15
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **171**
   b. Percolation Rate = a/6 = 171/ 6= **28.5** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **28.5** min/in. = **0.70** in/ hr **0.70**/2 = **0.35 in/hr** Therefore, Use **0.35 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **30 (TP-44)** Date Tested **3-18-2022**

2. Depth **29" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 275 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 20
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **206**
   b. Percolation Rate = a/6 = 206/ 6= **34.3** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **34.3** min/in. = **0.58** in/ hr **0.58**/2 = **0.29 in/hr** Therefore, Use **0.29 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

BASIN 1

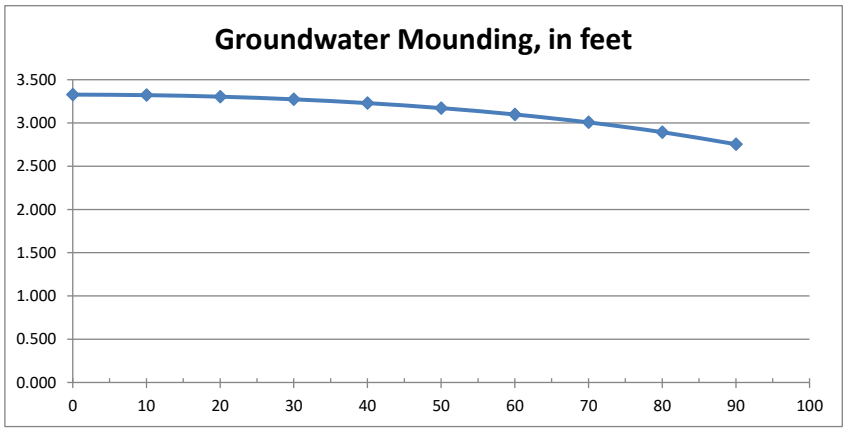
Input Values

2.00	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
115.000	x	1/2 length of basin (x direction, in feet)
8.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.328	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.328	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.328	0
3.322	10
3.304	20
3.273	30
3.230	40
3.172	50
3.098	60
3.007	70
2.894	80
2.754	90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

BASIN 2

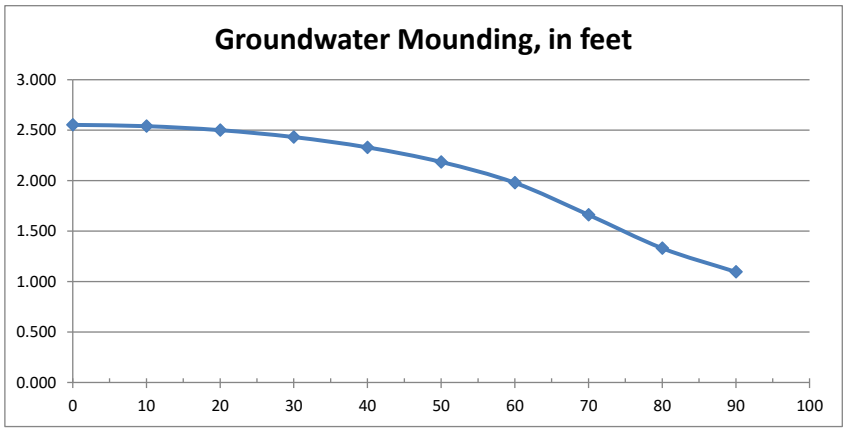
Input Values

1.10	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
17.75	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
70.000	x	1/2 length of basin (x direction, in feet)
6.500	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

12.553	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.553	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.553	0
2.540	10
2.500	20
2.432	30
2.330	40
2.185	50
1.979	60
1.661	70
1.330	80
1.095	90

Re-Calculate Now



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BASIN 3

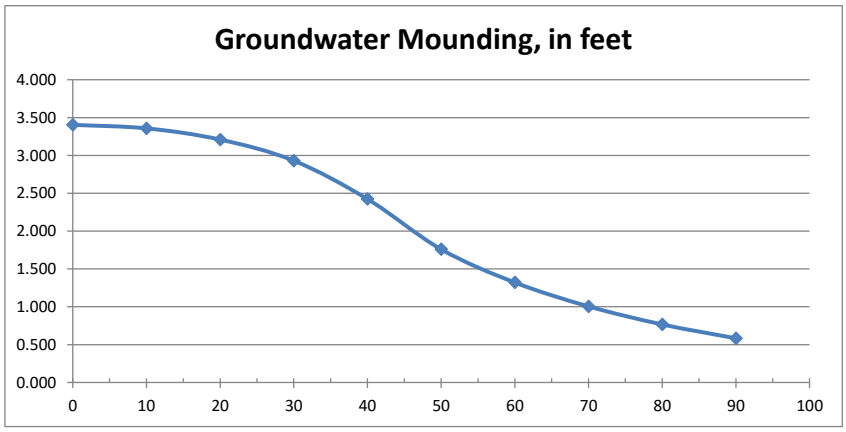
Input Values

1.10	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
7.30	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
42.000	x	1/2 length of basin (x direction, in feet)
6.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.404	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.404	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.404	0
3.357	10
3.209	20
2.930	30
2.423	40
1.759	50
1.321	60
1.005	70
0.767	80
0.583	90

Re-Calculate Now



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BASIN 4

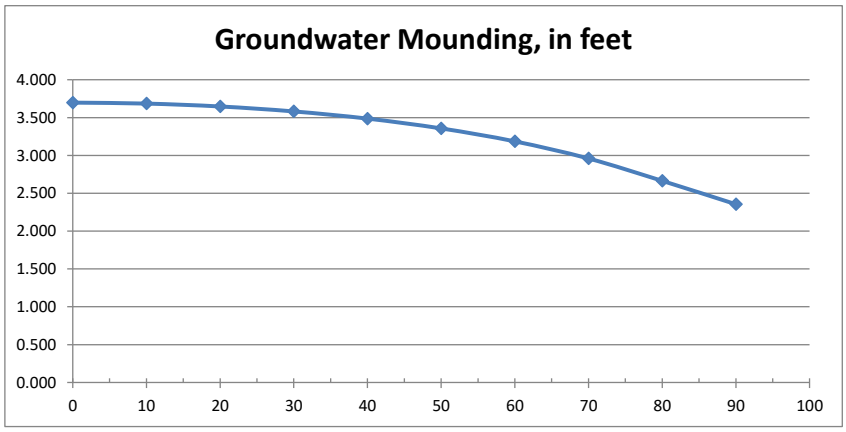
Input Values

1.14	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
80.100	x	1/2 length of basin (x direction, in feet)
20.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.697	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.697	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.697	0
3.685	10
3.646	20
3.581	30
3.486	40
3.357	50
3.185	60
2.959	70
2.664	80
2.355	90

Re-Calculate Now



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BASIN 6

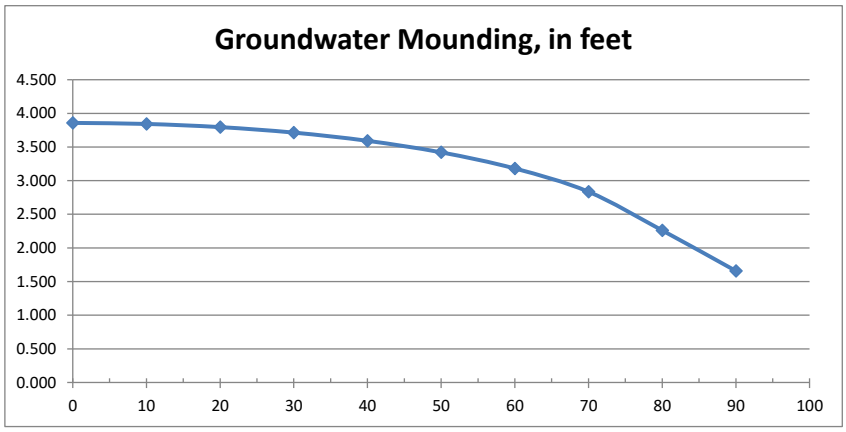
Input Values

5.00	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
25.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
80.000	x	1/2 length of basin (x direction, in feet)
3.800	y	1/2 width of basin (y direction, in feet)
23.80	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.858	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.858	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.858	0
3.843	10
3.796	20
3.714	30
3.592	40
3.420	50
3.181	60
2.835	70
2.261	80
1.658	90

Re-Calculate Now



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BASIN 7

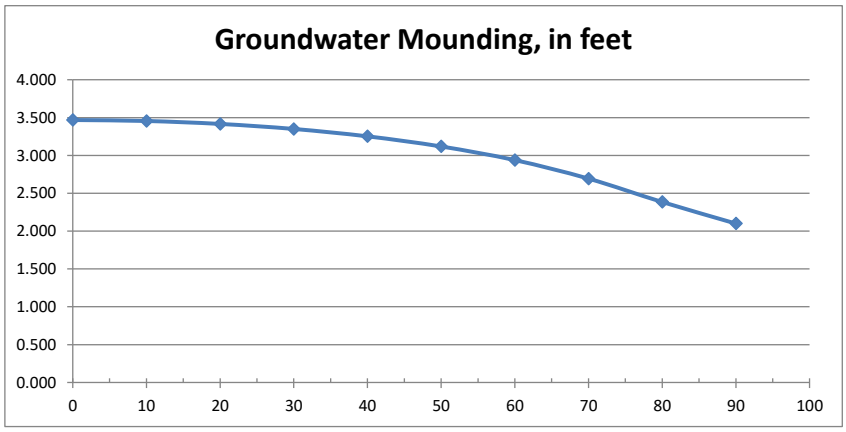
Input Values

1.34	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
76.200	x	1/2 length of basin (x direction, in feet)
16.000	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.468	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.468	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.468	0
3.455	10
3.416	20
3.349	30
3.252	40
3.118	50
2.938	60
2.693	70
2.384	80
2.099	90

Re-Calculate Now



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BASIN 8

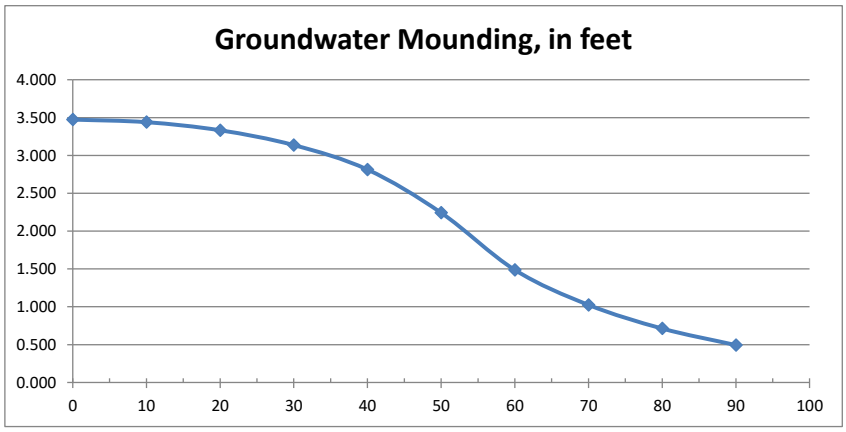
Input Values

5.00	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
25.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
52.000	x	1/2 length of basin (x direction, in feet)
5.000	y	1/2 width of basin (y direction, in feet)
12.20	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.473	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.473	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.473	0
3.439	10
3.332	20
3.136	30
2.812	40
2.242	50
1.487	60
1.025	70
0.713	80
0.494	90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

BASIN 9

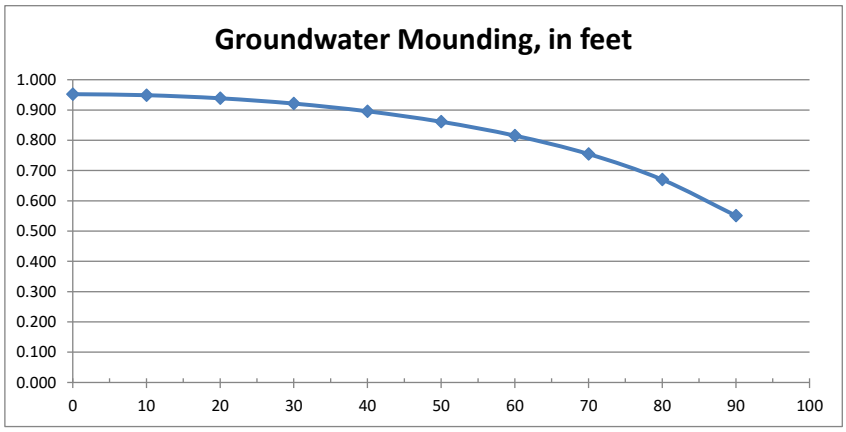
Input Values

0.50	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
25.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
86.500	x	1/2 length of basin (x direction, in feet)
6.000	y	1/2 width of basin (y direction, in feet)
66.40	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

10.952	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
0.952	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
0.952	0
0.949	10
0.939	20
0.921	30
0.896	40
0.861	50
0.815	60
0.755	70
0.670	80
0.551	90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Inspection Checklist / Maintenance Actions
Bioretention System

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

The inspection items and preventative/corrective maintenance actions listed below represent general requirements. The design engineer and/or responsible party shall adjust the items and actions to better meet the conditions of the site, the specific design targets, and the requirements of regulatory authorities.

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Basin Bed	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours.	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup Check the soil permeability Till the soil bed with rotary tiller or disc harrow Replace the planting soil, if necessary Work Order # _____
	2	Excessive sediment, silt, or trash accumulation on basin bed	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash
	3	Erosion or channelization is present	Y__ N__	Check whether the flow bypass or diversion device is clogged Re-grade the infiltration bed Work Order # _____
	4	Animal burrows/rodents are present	Y__ N__	Pest control Work Order # _____
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Basin Bed	5	Uneven bed	Y__ N__	Use light equipment to resurface the bed Work Order # _____
	6	Evidence of sinkholes or subsidence	Y__ N__	Monitor for sinkhole development
B Vegetation	1	Large spot(s) showing bare soil	Y__ N__	Vegetative cover must be maintained at 85%. Revegetate the entire basin if 50% or more vegetation has been lost. Check Landscaping plan for guidance (if available) Work Order # _____
	2	Invasive plants are present	Y__ N__	Remove the invasive plants and restore the vegetation in accordance with the landscaping plan Work Order # _____
	3	The vegetation in the basin has been mowed or removed	Y__ N__	Revegetate the system in accordance with the vegetation plan Work Order # _____ Note: The vegetation in a bioretention system should **not** be mowed or removed
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
C Bioretention System Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Direct the overland runoff to the forebay or pretreatment area Restabilize the bank Work Order # _____
	2	Overgrown perimeter vegetation	Y__ N__	Mow the vegetation on the perimeter of the embankment Work Order # _____ Note: Mowing of vegetation should only take place in the area **outside** the basin. Dense vegetation must be maintained in the basin.
D Outlet	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
	2	Trash rack is damaged or rusted greater than 50% Trash rack is bent, loose, or missing parts	Y__ N__	Repair or replace trash rack Work Order #_____
	3	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y__ N__	Repair or replace component Work Order #_____
	4	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #_____
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
G Miscellaneous	1	Fence: broken or eroded parts	Y__ N__	Repair or replace Work Order #_____
	2	Gate: missing gate or lock	Y__ N__	Repair or replace Work Order #_____
	3	Sign/plate: tiled, missing, or faded	Y__ N__	Repair or replace Work Order #_____
	4	Excessive or overgrown vegetation blocking access to the basin	Y__ N__	Clear, trim, or prune the vegetation to allow access for inspection and maintenance Work Order #_____
Note:				

Follow Up Items (Component No. / Inspection Item No.):
_(e.g., B/1, C/2)_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____	_____	_____
Inspector Name	Signature	Date

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should be taken place when the basin is thoroughly dry.**	A – Basin Bed	
	C – Bioretention System Embankment and Side Slopes	
	D – Outlet	
Vegetation removal	A – Basin Bed	
	C – Basin Embankment and Side Slopes	
	D – Outlet	
(List additional tasks, if applicable)		

Vegetation is removed by _____ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is _____ (type), and _____ (quantity per usage) is applied _____ (frequency of use).

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order #** _____ **Date Issued** _____

2. **Issue to be resolved:**
(e.g., orifice plate is loose and bent)

3. The issue was from **Corresponding Checklist** _____, **Component No.** (e.g., E – Outlet), **Inspection Item No.**___ (e.g., 2, 3)_____.

4. **Required Actions**

Actions	Planned Date	Date Completed
Install new bolts to fix the orifice plate		
Repair/replace the trash rack		
Restabilize side slope (indicate location)		
Repair riprap apron with 100 cubic yards of aggregate		
Revegetate		
(If there are additional tasks, list them here.)		

5. **Responsible person(s):**
_____

6. **Special requirements**
   - Time of the season or weather condition :_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Attachment of Field Manuals
for Stormwater Management Measures on this Site

As per N.J.A.C. 7:8-5.8(b)&(e), preventative and corrective maintenance shall be performed to maintain the function of stormwater management measures, including repair or replacement of the structure; removal of sediment, debris or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; repair or replacement of non-vegetated linings, and removal of rodent/wildlife and repair/restoration to damaged affected areas caused by them.

Each Field Manual attached to this Maintenance Plan is a separate document pertaining to one specific stormwater management measure, and should be used by inspections and maintenance crews in order to carry out the maintenance work required by N.J.A.C. 7:8-5.8(e).

Field Manual for Infiltration Basins

Infiltration Basins
Basin 5, A, B, & C on the Location Map

Development Name: __Country Woods at Neptune ___

Township, County: _Township of Neptune, Monmouth County, NJ 08730_____

Type of Stormwater Management Measure	BMP No.	Location Description	State Plane Coordinates / Lat., Long.
Small Scale Infiltration Basin	Basin #5	Middle of project site, southwest of Basin #4	E(X): 608,261 N(Y): 502,326
Large Scale Infiltration Basin	Basin A	Southeastern end of site, south of Basin #1	E(X): 608,874 N(Y): 502,138
Large Scale Infiltration Basin	Basin B	Southern end of site, south of Basin #5	E(X): 608,202 N(Y): 502,217
Large Scale Infiltration Basin	Basin C	Southwestern end of site, south of Basin #7	E(X): 607,917 N(Y): 502,326

Location Map

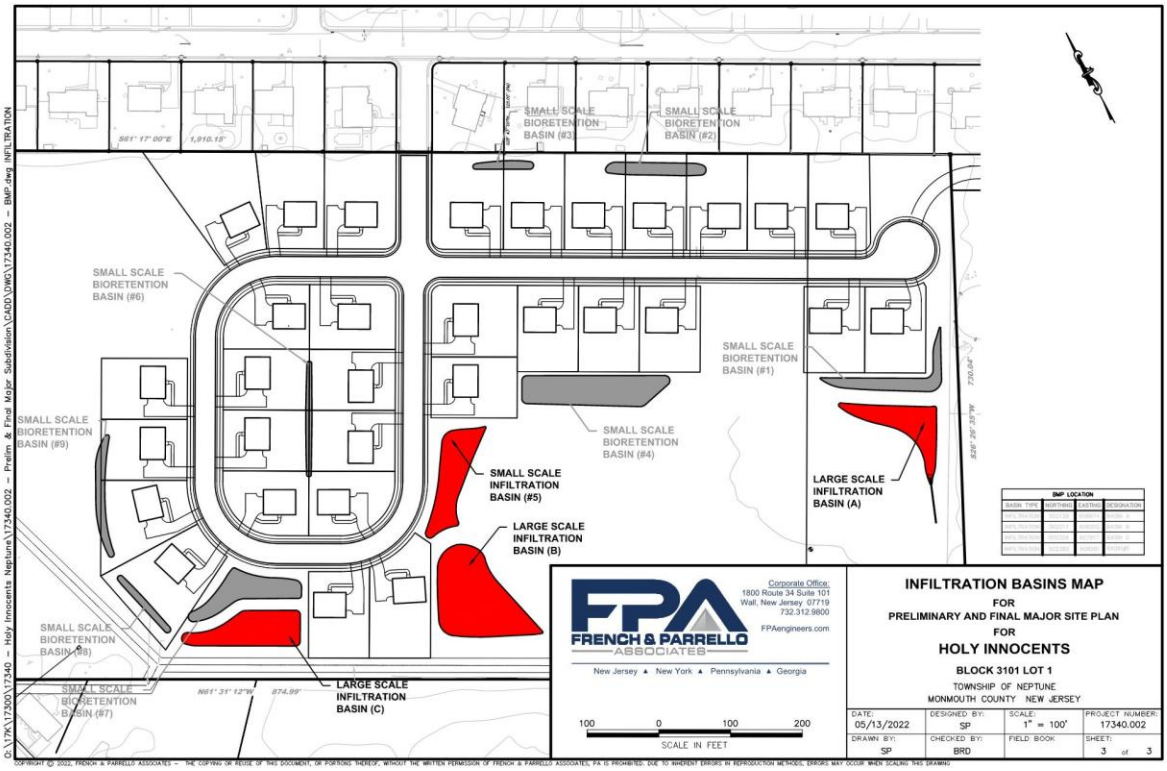


Table of Contents

Small-Scale Infiltration Basin Overview

Functionality

An infiltration basin is a stormwater management facility constructed on highly permeable soils, which provides temporary storage of stormwater runoff. Infiltration basins are used to provide groundwater recharge.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin / Infiltration Only

An infiltration basin is a type of ***dry*** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

This subsurface infiltration basin is designed for **infiltration only** and is **not** designed for extended detention.

Basic Design Information

Hydrology Design Targets

Basin 5

1. The infiltration basin is designed with a subsoil permeability rate of: _0.53___ inches/hour (pre-construction) and __10___ inches/hour (post-construction - tested on 01/10/2022).
2. The design drain time for the water quality storm is: __Less than 5_ hours.
3. The elevation of the seasonal high water table of the basins was observed on 01/10/2022 and the elevation was determined to be 76.00.
4. The overflow from this basin will be discharged overland to existing wetlands.

Basin A

1. The infiltration basin is designed with a subsoil permeability rate of: _10.00___ inches/hour (pre-construction) and __10.00___ inches/hour (post-construction - tested on 01/10/2022).
2. The design drain time for the water quality storm is: __Less than 5_ hours.
3. The elevation of the seasonal high water table of the basins was observed on 01/10/2022 and the elevation was determined to be 73.50.
4. The overflow from this basin will be discharged overland to existing wetlands.

Basin B

1. The infiltration basin is designed with a subsoil permeability rate of: _1.50___ inches/hour (pre-construction) and __1.50___ inches/hour (post-construction - tested on 01/10/2022).
2. The design drain time for the water quality storm is: __Less than 5_ hours.
3. The elevation of the seasonal high water table of the basins was observed on 01/10/2022 and the elevation was determined to be 76.00.
4. The overflow from this basin will be discharged overland to existing wetlands.

Basin C

1. The infiltration basin is designed with a subsoil permeability rate of: _0.28___ inches/hour (pre-construction) and __0.28___ inches/hour (post-construction - tested on 01/10/2022).
2. The design drain time for the water quality storm is: __Less than 5_ hours.
3. The elevation of the seasonal high water table of the basins was observed on 01/10/2022 and the elevation was determined to be 7630.
4. The overflow from this basin will be discharged overland to existing wetlands.

Hydraulic Design Targets

1. Basin 5 is designed to infiltrate the runoff from the NJ water quality storm.

Basin Configuration Targets

1. Pretreatment is not required.

Critical Maintenance Features

1. Collected sediment, if any, shall be removed with vacuum truck and disposed of.

Reference Documents

Documents to be placed in this field manual should include the following:

- As-built Drawings with Drainage Plans
- Soil Boring Logs
- Permeability Test (Pre-construction)
- Permeability Test (Post-construction)

Attach Reference Documents Here

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-2

SHEET NO.: 2 OF 28

DATE: 1/10/2022

ELEV: 80.0 ±
DEPTH OF WATER: 90" ±
ESHWT DEPTH: 83" ±
ESHWT ELEV: 73.1 ±

DEPTH	DESCRIPTION
0" - 11"	Topsoil/Organics
11"- 33"	Dark Yellowish Brown *(10YR 4/6)* **sandy loam**; crumb, friable; (50% gravel)
33"- 83"	Yellowish Brown *(10YR 5/8)* **sandy loam**; crumb, friable; (15% gravel)
83"- 95"	Gray *(10YR 5/1)* **sandy loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 6/8)* mottles
95"- 120"	Grayish Brown *(10YR 5/2)* **silt loam**; subangular blocky, friable

END OF SOIL LOG

Notes: Seepage 90"

Signature of Soil Evaluator: _____ Date: ___/___/_____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: ___/___/_____

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

HOLY INNOCENTS
Block 3101 Lot 1
Township of Neptune NJ 07753
Monmouth County
(FPA NO. 17340.002)

SOIL LOG NO.: TP-27

SHEET NO.: 27 OF 28

DATE: 1/10/2022

ELEV: 80.1 ±
DEPTH OF WATER: 58" ±
ESHWT DEPTH: 49" ±
ESHWT ELEV: 76.0 ±

DEPTH	DESCRIPTION
0" – 5"	Topsoil/Organics
5"-49"	Dark Yellowish Brown *(10YR 4/4)* **sandy loam**; subangular blocky, friable
49"- 61"	Light Brownish Gray *(10YR 6/2)* **sandy clay loam**; subangular blocky, friable; with common, medium, distinct Reddish Yellow *(5YR 4/6)* mottles
61"- 75"	Yellowish Brown *(10YR 5/6)* **sandy loam**; subangular blocky friable; (40% gravel)

END OF SOIL LOG

Notes: Seepage 58"

Signature of Soil Evaluator: _____ Date: / /
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, PE Date: / /

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-35
DATE: 3/16/2022

GROUND ELEV.: 79.1±
DEPTH OF WATER: 3'5" ±
GROUNDWATER ELEV.: 75.7±
SEASONAL HIGH-WATER ELEV.: 76.0±

DEPTH	DESCRIPTION
0 – 19"	Dark Brown **Clayey SILT**, little^{-} f Sand. (w/ roots)
19 – 42"	Tan-Brown c^{+}mf **SAND**, some^{-} cmf Gravel, some- Silt.

END OF TEST PIT AT @ 3'6"

NOTES: Tan mottling at 37".

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

HOLY INNOCENTS DUE DILIGENCE SERVICES, BLOCK 3101, LOT 1
NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY (FPA JOB NO. 17340.002)

TEST PIT NO.: TP-38
DATE: 3/18/2022

GROUND ELEV.: 80.0 ±
DEPTH OF WATER: 4'5" ±
GROUNDWATER ELEV.: 75.6±
SEASONAL HIGH-WATER ELEV.: 76.3 ±

DEPTH	DESCRIPTION
0 – 12"	Light Brown mf^{+} **SAND**, and^{-} Silt.
12 – 60"	Tan-Grey mf **SAND**, little^{+} Silt.
60 – 64"	Orang-Brown cmf **SAND**, little^{+} cmf Gravel, little^{+} Silt.

END OF TEST PIT AT @ 12'

NOTES: Orange-Brown mottling at 44"

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:**
TEST PIT OBSERVER: M. Milgrom	**EXCAVATOR:**

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **2 (TP-2)** Date Tested **1-6-2022**

2. Depth **36" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 2.5 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **0.25**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**5.3"**	**1.70"**
7"	**5.6"**	**1.40"**
7"	**5.7"**	**1.30"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **1.25 min**
   b. Percolation Rate = a/6 = 1.25/ 6= **0.21** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **0.21** min/in. = **95.2** in/ hr **95.2**/2 = **47.6 in/hr** Therefore, Use **10.00 in/hr**

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

Percolation Test Data: Block **3101** Lot **1**

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **13 (TP-27)** Date Tested **1-6-2022**

2. Depth **12" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 46 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **5**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.8"**	**0.2"**
7"	**6.9"**	**0.1"**
7"	**6.9"**	**0.1"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **32**
   b. Percolation Rate = a/6 = 32/ 6= **5.41**min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **5.41** min/in. = **3.7** in/ hr /2 = **1.85 in/hr** Therefore, Use 1.85 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **21 (TP-35)** Date Tested **3-18-2022**

2. Depth **19" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, 168 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes 10
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.5"**	**0.5"**
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **114**
   b. Percolation Rate = a/6 = 114/ 6= **19** min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ **19** min/in. = **1.05** in/ hr **1.05**/2 = **0.53 in/hr** Therefore, Use

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

License No. _____

COUNTY/MUNICIPALITY MONMOUTH / NEPTUNE

Percolation Test Data: Block **3101** Lot **1**

1. Test Number **24 (TP-38)** Date Tested **3-16-2022**

2. Depth **24" below grade**

3. Pre-soak:
   X Sandy Textured Soil Only, Shortened Pre-soak - Indicate Time Required for 12 in. of Water to Drain after Second Filling, Minutes 288 MIN
   _____ Four Hour Pre-soak completed - Indicate result:
   _____ Test Hole Drained within 15 to 24 hours after Pre-soak
   _____ Test Hole did not Drain within 24 hours after Pre-soak

4. Rate of Fall Data:
   a. Time Interval Selected, Minutes **25**
   b. Record the Drop in Water Level during each time Interval to the nearest 1/10th-inch on the line below:

Depth of Water, Start of Interval (inches)	Depth of Water, End of Interval (inches)	Drop in Water Level (inches)
7"	**6.7"**	**0.3"**
7"	**6.8"**	**0.2"**
7"	**6.8"**	**0.2"**

5. Percolation Rate:
   a. Time, minutes, Required for a Six-inch Drop in the Water level **216**
   b. Percolation Rate = a/6 = 216/ 6= 36 min/in

6. Per NJ Stormwater Best Management Practices Manual, Appendix E Section B1(e.)

   K = a/pm (in/hr) where a = 20 for a bottom width of 6 inches
   K = 20/ 36 min/in. = **0.56** in/ hr /2 = **0.28 in/hr** Therefore, Use 0.28 in/hr

7. I hereby certify that the information furnished on Form 3d of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator _____
Mark Kalusz, EIT

Date _____

Signature of Professional Engineer _____
Brian Decina, PE

BASIN 5

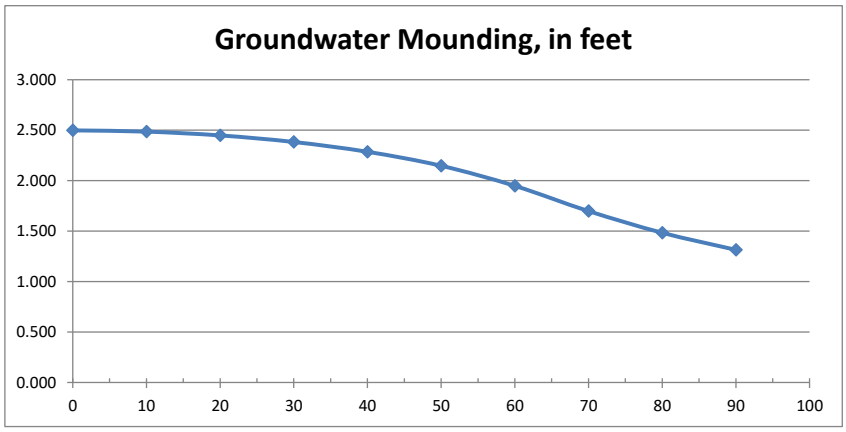
Input Values

1.40	*R*	Recharge rate (permeability rate) (in/hr)
		Specific yield, Sy (dimensionless)
0.150	Sy	default value is 0.15; max value is 0.2 provided that a lab test data is submitted
		Horizontal hydraulic conductivity (in/hr)
50.00	Kh	Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
64.700	x	1/2 length of basin (x direction, in feet)
11.500	y	1/2 width of basin (y direction, in feet)
72.00	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

12.498	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.498	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.498	0
2.486	10
2.448	20
2.383	30
2.286	40
2.147	50
1.948	60
1.698	70
1.483	80
1.314	90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Inspection Checklist / Maintenance Actions
Small-Scale Infiltration Basins

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one)**:**
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one)**:**
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
A Infiltration Bed Through Inspection ports	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours.	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup with vacuum truck. Work Order # _____
	2	Excessive sediment, silt, or trash accumulation within distribution pipes	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash Work Order # _____
Note:				

Follow Up Items (Component No. / Inspection Item No.):

_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____ _____ _____

Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities, if standing water is present longer than 5 days.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should take place when the basin is thoroughly dry**		
Other		

Debris, sediment, and trash are handled by _____ to disposal site _____.
(See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order #** _____ **Date Issued** _____

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist No.** _____**, Component No.** ____ _____**, Inspection Item No.**_____**.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Maintenance Logs and Inspection Records

As per N.J.A.C. 7:8-5.8(e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure(s), including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

The responsible party shall maintain a record of all maintenance actions performed, including:

- Inspection checklists from each performed inspection
- Preventative maintenance logs
- Corrective maintenance logs, including work orders
- Other maintenance records