



Stormwater Management Report

For

Block 5002, Lot 12
Township of Neptune
Monmouth County, NJ

Project No. 23220

June 26, 2024

Prepared by:

A handwritten signature in black ink, appearing to read 'W. Hopkin', with a long horizontal line extending to the right.

Walter Joseph Hopkin
New Jersey Professional Engineer
License Number 40673

A. Introduction:

The project site is known as Lot 12, Block 5002 in Neptune, Monmouth County, New Jersey, and consists of 0.23± acres. The site is going to be evenly split into two 0.115± acre lots in a minor subdivision. The site is located East of the main road of Brighton Avenue and north of another main road named Lakewood Road. Both lots are currently designed with a 2 ½ -story frame dwelling, an open porch connected to the front steps, a deck in the rear and an asphalt driveway. The proposed development of these 2 properties involves the removal of an existing frame shed located in the rear of the adjoining subdivided lots and the construction of a new frame building, driveway and stormwater recharge system on each lot.

B. Soil Characteristics:

The existing soil classifications for the site are based on the USDA NRCS Web Soil Survey. The survey is useful at the planning level to draw general conclusions about the suitability of a site for certain land uses. Based on the web site data, the site consists of the following soil types:

EvuB: Evesboro-Urban land complex, 0 to 5 Percent Slopes – The Evesboro-series consists of excessively-drained sand and sandy eolian deposits and/or sandy fluviomarine deposits. The Tinton series is a hydrologic soil group “A”

Soil logs were performed within the site area to confirm the on-site soils, soils permeability, and estimate seasonal highwater table. A copy of the soil logs and performed permeability tests are located in the Appendix.

C. Pre-Developed Drainage Conditions

The site is currently developed with a frame shed. Currently, 353± square feet (0.0081± acres) of impervious coverage exist onsite. The stormwater runoff generated from the site flows South towards Moore Road.

D. Post-Developed Drainage Conditions

The development of this site will consist of two 1,561 S.F. 2 ½ story dwelling, an asphalt driveway and a stormwater recharge system. Stormwater runoff generated from the proposed dwelling rooftop will be directed to the underground recharge system. This system is designed to store and infiltrate the entire stormwater runoff volume generated by the 2-year storm event. Calculations for the 2-year storm events are included in the appendix of this report. The project disturbs approximately 2,098± square feet (0.048± acres) of land on each lot.

PROFILE PIT REPORT

LOCATION: # 405 Moore Rd., Neptune, N.J.

Date: December 12, 2023

PROFILE PIT # 1

0"-8" = DK YELLOWISH BRN, SAND, GRANULAR, LOOSE

8"-14"=GRAY, SAND GRANULAR, LOOSE

14"-35"=YELLOWISH BRN, LOAMY SAND, GRANULAR, LOOSE

35"-120"=YELLOWISH BRN, SANDY LOAM, GRANULAR, LOOSE
(SAMPLE TAKEN)

PROFILE PIT # 2

0"-3" = DK YELLOWISH BRN, SAND, GRANULAR, LOOSE

3"-8"=GRAY, SAND GRANULAR, LOOSE

8"-120"=YELLOWISH BRN, SANDY LOAM, GRANULAR, LOOSE, MOTTLED AT
84 INCHES LIGHT GRAY & OLIVE BRN, MANY, MED., DISTINCT

(SAMPLE TAKEN)

WATER TABLE:

- 1) SEEPAGE= NONE
- 2) MOTTLING= NONE IN TEST #1. TEST #2 MOTTLES AT 84 INCHES
NOTE: TEST #2 LOCATED IN HOLE FROM REMOVAL OF PREVIOUS
FOUNDATION. ELEVATION IS LOWER THAN TEST # 1
- 3) 3) SWHT= TEST #1 > 120 INCHES TEST #2 = 84 INCHES AT MOTTLES

END OF REPORT



NOAA Atlas 14, Volume 2, Version 3
 Location name: Neptune, New Jersey, USA*
 Latitude: 40.1957°, Longitude: -74.0513°
 Elevation: 94 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.341 (0.307-0.379)	0.408 (0.368-0.453)	0.483 (0.435-0.537)	0.539 (0.485-0.599)	0.608 (0.544-0.675)	0.658 (0.585-0.730)	0.708 (0.626-0.788)	0.755 (0.663-0.841)	0.813 (0.707-0.911)	0.859 (0.740-0.967)
10-min	0.545 (0.491-0.605)	0.652 (0.589-0.724)	0.774 (0.697-0.860)	0.862 (0.775-0.957)	0.969 (0.867-1.08)	1.05 (0.932-1.16)	1.12 (0.995-1.25)	1.20 (1.05-1.33)	1.29 (1.12-1.44)	1.35 (1.17-1.52)
15-min	0.682 (0.614-0.756)	0.820 (0.740-0.911)	0.979 (0.882-1.09)	1.09 (0.981-1.21)	1.23 (1.10-1.36)	1.33 (1.18-1.47)	1.42 (1.26-1.58)	1.51 (1.33-1.68)	1.62 (1.41-1.82)	1.70 (1.46-1.91)
30-min	0.934 (0.841-1.04)	1.13 (1.02-1.26)	1.39 (1.25-1.55)	1.58 (1.42-1.76)	1.82 (1.63-2.02)	2.00 (1.78-2.22)	2.18 (1.93-2.42)	2.35 (2.06-2.62)	2.58 (2.24-2.89)	2.75 (2.37-3.10)
60-min	1.16 (1.05-1.29)	1.42 (1.28-1.58)	1.78 (1.61-1.98)	2.06 (1.85-2.28)	2.42 (2.17-2.69)	2.71 (2.41-3.00)	3.00 (2.65-3.34)	3.30 (2.90-3.67)	3.70 (3.21-4.14)	4.01 (3.46-4.52)
2-hr	1.44 (1.29-1.60)	1.76 (1.58-1.96)	2.23 (2.00-2.48)	2.59 (2.32-2.88)	3.09 (2.75-3.43)	3.49 (3.09-3.88)	3.92 (3.44-4.36)	4.36 (3.80-4.86)	4.97 (4.29-5.58)	5.47 (4.67-6.16)
3-hr	1.59 (1.43-1.78)	1.94 (1.76-2.17)	2.47 (2.22-2.76)	2.88 (2.58-3.20)	3.45 (3.07-3.84)	3.92 (3.47-4.36)	4.41 (3.87-4.91)	4.92 (4.28-5.50)	5.65 (4.84-6.34)	6.24 (5.29-7.04)
6-hr	2.02 (1.82-2.27)	2.46 (2.21-2.76)	3.12 (2.78-3.48)	3.64 (3.25-4.06)	4.41 (3.89-4.91)	5.04 (4.42-5.61)	5.72 (4.96-6.38)	6.45 (5.55-7.21)	7.51 (6.35-8.43)	8.39 (7.01-9.45)
12-hr	2.46 (2.21-2.76)	2.99 (2.68-3.35)	3.80 (3.40-4.26)	4.49 (3.99-5.01)	5.50 (4.85-6.13)	6.38 (5.58-7.10)	7.33 (6.33-8.17)	8.39 (7.15-9.37)	9.96 (8.33-11.2)	11.3 (9.30-12.7)
24-hr	2.86 (2.62-3.15)	3.47 (3.18-3.82)	4.50 (4.11-4.94)	5.38 (4.90-5.90)	6.72 (6.08-7.34)	7.89 (7.08-8.60)	9.21 (8.19-10.0)	10.7 (9.41-11.6)	13.0 (11.2-14.1)	14.9 (12.7-16.3)
2-day	3.35 (3.06-3.70)	4.06 (3.72-4.49)	5.24 (4.79-5.79)	6.25 (5.68-6.89)	7.76 (7.01-8.55)	9.08 (8.14-9.98)	10.5 (9.37-11.6)	12.2 (10.7-13.4)	14.6 (12.7-16.1)	16.8 (14.3-18.5)
3-day	3.53 (3.25-3.86)	4.28 (3.94-4.69)	5.50 (5.06-6.02)	6.53 (5.98-7.14)	8.07 (7.34-8.81)	9.39 (8.49-10.2)	10.9 (9.74-11.8)	12.5 (11.1-13.6)	14.9 (13.0-16.3)	17.0 (14.7-18.6)
4-day	3.71 (3.44-4.02)	4.50 (4.17-4.88)	5.76 (5.33-6.24)	6.81 (6.29-7.38)	8.38 (7.68-9.06)	9.71 (8.85-10.5)	11.2 (10.1-12.1)	12.8 (11.5-13.8)	15.2 (13.4-16.5)	17.2 (15.1-18.7)
7-day	4.29 (4.00-4.63)	5.17 (4.82-5.57)	6.50 (6.04-7.00)	7.61 (7.06-8.20)	9.24 (8.53-9.94)	10.6 (9.75-11.4)	12.1 (11.0-13.0)	13.8 (12.4-14.8)	16.2 (14.4-17.4)	18.2 (16.0-19.7)
10-day	4.83 (4.52-5.17)	5.79 (5.43-6.20)	7.17 (6.71-7.68)	8.31 (7.76-8.89)	9.94 (9.24-10.6)	11.3 (10.4-12.1)	12.7 (11.7-13.6)	14.3 (13.0-15.3)	16.6 (15.0-17.9)	18.6 (16.6-20.0)
20-day	6.54 (6.18-6.93)	7.78 (7.34-8.25)	9.36 (8.83-9.91)	10.6 (10.0-11.2)	12.4 (11.6-13.1)	13.7 (12.9-14.5)	15.2 (14.1-16.0)	16.6 (15.4-17.6)	18.6 (17.1-19.8)	20.2 (18.4-21.6)
30-day	8.09 (7.69-8.52)	9.58 (9.11-10.1)	11.3 (10.7-11.9)	12.7 (12.0-13.3)	14.5 (13.7-15.3)	15.9 (15.0-16.8)	17.4 (16.3-18.3)	18.8 (17.6-19.8)	20.7 (19.2-21.9)	22.1 (20.5-23.5)
45-day	10.3 (9.80-10.8)	12.1 (11.6-12.7)	14.1 (13.4-14.8)	15.6 (14.9-16.4)	17.6 (16.7-18.5)	19.1 (18.1-20.0)	20.6 (19.5-21.6)	22.0 (20.7-23.1)	23.8 (22.3-25.0)	25.1 (23.5-26.5)
60-day	12.3 (11.8-12.9)	14.5 (13.8-15.1)	16.6 (15.9-17.4)	18.3 (17.4-19.1)	20.3 (19.4-21.3)	21.8 (20.8-22.8)	23.3 (22.1-24.3)	24.6 (23.3-25.8)	26.3 (24.8-27.6)	27.5 (25.9-29.0)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

6-24-24 Stormwater - Recharge Trench

NOAA 24-hr D 2-YR Rainfall=4.13"

Prepared by WJH Engineering

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Summary for Pond RT: Recharge Trench

Inflow Area = 1,899 sf, 100.00% Impervious, Inflow Depth = 3.89" for 2-YR event
 Inflow = 0.14 cfs @ 12.14 hrs, Volume= 616 cf
 Outflow = 0.04 cfs @ 12.54 hrs, Volume= 616 cf, Atten= 72%, Lag= 23.9 min
 Discarded = 0.04 cfs @ 12.54 hrs, Volume= 616 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 2.36' @ 12.54 hrs Surf.Area= 120 sf Storage= 136 cf

Plug-Flow detention time= 23.0 min calculated for 616 cf (100% of inflow)
 Center-of-Mass det. time= 23.0 min (779.6 - 756.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.50'	38 cf	12.0" Round Pipe Storage x 2 Inside #2 L= 24.0'
#2	0.00'	105 cf	2.50'W x 24.00'L x 2.50'H Stone Trench x 2 300 cf Overall - 38 cf Embedded = 262 cf x 40.0% Voids
		143 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	6.400 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = -2.00' Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 12.54 hrs HW=2.36' (Free Discharge)
 1=Exfiltration (Controls 0.04 cfs)

