STORMWATER SITE PLANNING, ANALYSIS AND DESIGN REPORT

FOR

100 WAMPANOAG TRAIL APARTMENTS

WAMPANOAG TRAIL

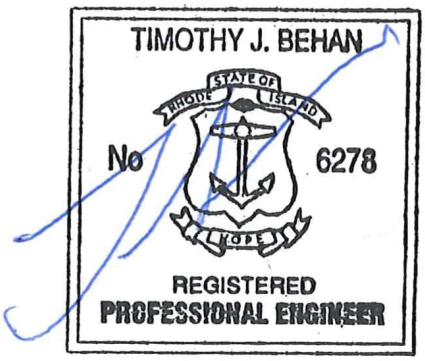
EAST PROVIDENCE, RI

OWNER/APPLICANT:

TOUCHDOWN REALITY GROUP, LLC

167 N QUIDNESSETT ROAD

NORTH KINGSTON, RI 02852



PREPARED BY:

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MARCH 2025

CEC PROJECT NO. 24092.00

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INTRODUCTION

On behalf of Touchdown Reality Group, LLC., Commonwealth Engineers & Consultants, Inc. (CEC) has prepared the following Rhode Island Department of Environmental Management (RIDEM) Stormwater Site Planning, Analysis and Design Report for the proposed Touchdown Reality Group, LLC Plat development on Wampanoag Trail in East Providence, Rhode Island. This report has been prepared in accordance with the requirements of and guidance provided in the following:

- Rhode Island Stormwater Design and Installation Standards Manual, issued March 2015 (hereinafter referred to as the "RISDISM"),
- RIPDES Construction General Permit.
- RISDISM Stormwater Management Checklist (hereinafter referred to as the "Checklist")

I-A - General Project Narrative

The following are a general description of the existing conditions on and near the subject parcel, and a detailed description of the proposed development within a portion of same.

General Description of Project: The applicant proposes to develop A.P. 408 Block 10 Lot 24 into a twenty-six (26) unit apartment complex and 35 space parking area. The existing building will be updated (the building footprint remaining the same).

Existing Property: The Site, identified as A.P. 408 Block 10 Lot 24, is located on Wampanoag Trail between Pickett Road and Dover Avenue. The total size of the lot is 1.5 acres +/- and the proposed limits of disturbance are 0.80 acres +/-. The site is predominately vegetated with lawn & woods and has a paved driveway/parking area.

Abutting Properties: The Site is in an R-3 zone in the City of East Providence. This area contains mostly residential lots of approximately 7,500± square feet. The properties surrounding the Site are:

- residential to the north, south and west, and
- a church/youth center to the east.

Natural Resources in the Area: There are no freshwater wetlands in the immediate area.

The subject property is not situated in a sole source aquifer, natural heritage area, groundwater recharge area, well head protection area or groundwater reservoir as depicted on Rhode Island Department of Environmental Management (RIDEM) Geographical Information System.

Flood Zones: The subject property is not situated in a flood zone.

Topography: The project site slopes in a generally northeasterly direction, from a localized high point located in the southernly grass area (NGVD 88, datum elevation 124 +/-), to the lowest elevation on the parcel (NGVD 88, datum elevation 112 +/-) located at the northeastern corner of the property. There is a small catchment area that is defined by the front parking area that drains to city drainage along Wampanoag Trail, with the larger remaining catchment area draining to the northeasterly direction. The existing topographic contours are depicted on the plans.

Drainage Divides and Soils: The site is primarily underlain with Paxton-Urban (PD) and Canton-Urban (CB) soils which are well drained sandy loam soils. High water tables are generally greater than 6" from the soil survey of RI.

Stormwater Management System: Management of stormwater runoff from the proposed development has been designed in accordance with the Rhode Island "Stormwater Management Design and Installation Rules" (RISMDIR), latest revision. No stormwater treatment systems are required for the proposed project since the impervious areas (and runoff rates) in both catchment areas will decrease from pre-project conditions. The existing pavements will be primarily resurfaced and do not trigger any water quality requirements.

Wastewater Disposal System: The existing building is connected to the public sanitary sewer in Wampanoag Trail.

Potable Water Source: The existing building is connected to the public water system.

Fire Protection: An existing fire hydrant is located on the property and is to remain.

Erosion Control Practices: A detailed soil erosion and sedimentation control (SESC) plan sheet has been prepared in conformance with RI Stormwater Handbook and RIDEM RIPDES permit requirements. A RIPDES permit is not required since the limit of disturbance is less than 1 acre.

I-B – Proposed Stormwater Collection and Treatment system

Stormwater System Design:

There is no need for a Stormwater Collection or Treatment System due to no additional runoff from the site. The proposed activities do not trigger any RIDEM Stormwater permit.

A summary of the pre/post impervious areas on subject property are detailed below:

IMPERVIOUS AREAS

Area	Pre-Project	Post-Project	Difference
Watershed Area 1 (rear yard):	22,630 s.f.	21,211 s.f.	-1,419 s.f.
Watershed Area 2 (front yard):	9,056 s.f.	8,715 s.f.	-341 s.f.

TABLE 1: HYDROCAD MODELING SUMMARY TABLE						
AREA 1 - SUMMARY						
	PRE-PROJECT		POST-PROJECT		CHANGE	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	0.65	0.086	0.63	0.083	-0.02	-0.003
1-YEAR STORM	2.03	0.243	2.03	0.242	0.00	-0.001
10-YEAR STORM	5.71	0.674	5.69	0.672	-0.02	-0.002
100-YEAR STORM	12.60	1.525	12.56	1.521	-0.04	-0.004

AREA 2 – SUMMARY						
	PRE-PROJECT		POST-PROJECT		CHANGE	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	0.20	0.016	0.19	0.016	-0.01	0.000
1-YEAR STORM	0.40	0.031	0.38	0.030	-0.02	-0.001
10-YEAR STORM	1.20	0.091	1.18	0.089	-0.02	-0.002
100-YEAR STORM	2.72	0.211	2.72	0.211	0.00	0.000

Conclusion

The stormwater collection and treatment system meet the intent of the design criteria set forth by RIDEM and City. The system will not increase peak flow rates and volumes through the 100-year storm event.

Subcat Reach Pond Link

Routing Diagram for 100 WAMPANOAG TRAIL
Prepared by HP Inc.

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.754	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 5S)
1.425	74	>75% Grass cover, Good, HSG C (1S, 3S)
0.822	98	Paved parking, HSG B (1S, 2S, 3S, 5S)
1.665	98	Paved parking, HSG C (1S, 2S, 3S, 5S)
2.447	70	Woods, Good, HSG C (1S, 3S)
7.114	**80**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX-WS1 Runoff Area=135,497 sf 34.09% Impervious Runoff Depth>0.33"
Flow Length=450' Tc=30.8 min CN=71/98 Runoff=0.65 cfs 0.086 af

Subcatchment 2S: EX-WS2 Runoff Area=19,443 sf 46.58% Impervious Runoff Depth>0.43"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=61/98 Runoff=0.20 cfs 0.016 af

Subcatchment 3S: PR-WS1 Runoff Area=135,146 sf 32.83% Impervious Runoff Depth>0.32"
Flow Length=450' Tc=30.8 min CN=71/98 Runoff=0.63 cfs 0.083 af

Subcatchment 5S: PR-WS2 Runoff Area=19,794 sf 44.03% Impervious Runoff Depth>0.41"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=61/98 Runoff=0.19 cfs 0.016 af

Total Runoff Area = 7.114 ac Runoff Volume = 0.200 af Average Runoff Depth = 0.34"
65.04% Pervious = 4.627 ac 34.96% Impervious = 2.487 ac

Summary for Subcatchment 1S: EX-WS1

Runoff = 0.65 cfs @ 12.41 hrs, Volume= 0.086 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.20"

Area (sf)	CN	Description
30,297	74	>75% Grass cover, Good, HSG C
35,930	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,497	80	Weighted Average
89,302	71	65.91% Pervious Area
46,195	98	34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 2S: EX-WS2

Runoff = 0.20 cfs @ 12.13 hrs, Volume= 0.016 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.20"

Area (sf)	CN	Description
10,387	61	>75% Grass cover, Good, HSG B
7,766	98	Paved parking, HSG B
1,290	98	Paved parking, HSG C
19,443	78	Weighted Average
10,387	61	53.42% Pervious Area
9,056	98	46.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 3S: PR-WS1

Runoff = 0.63 cfs @ 12.41 hrs, Volume= 0.083 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.20"

Area (sf)	CN	Description
31,766	74	>75% Grass cover, Good, HSG C
34,110	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,146	80	Weighted Average
90,771	71	67.17% Pervious Area
44,375	98	32.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 5S: PR-WS2

Runoff = 0.19 cfs @ 12.13 hrs, Volume= 0.016 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ STORM Rainfall=1.20"

Area (sf)	CN	Description
11,079	61	>75% Grass cover, Good, HSG B
7,523	98	Paved parking, HSG B
1,192	98	Paved parking, HSG C
19,794	77	Weighted Average
11,079	61	55.97% Pervious Area
8,715	98	44.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Subcat Reach Pond Link

Routing Diagram for 100 WAMPANOAG TRAIL
Prepared by HP Inc.

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.754	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 5S)
1.425	74	>75% Grass cover, Good, HSG C (1S, 3S)
0.822	98	Paved parking, HSG B (1S, 2S, 3S, 5S)
1.665	98	Paved parking, HSG C (1S, 2S, 3S, 5S)
2.447	70	Woods, Good, HSG C (1S, 3S)
7.114	**80**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX-WS1 Runoff Area=135,497 sf 34.09% Impervious Runoff Depth>0.94"
Flow Length=450' Tc=30.8 min CN=80 Runoff=2.03 cfs 0.243 af

Subcatchment 2S: EX-WS2 Runoff Area=19,443 sf 46.58% Impervious Runoff Depth>0.84"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=78 Runoff=0.40 cfs 0.031 af

Subcatchment 3S: PR-WS1 Runoff Area=135,146 sf 32.83% Impervious Runoff Depth>0.94"
Flow Length=450' Tc=30.8 min CN=80 Runoff=2.03 cfs 0.242 af

Subcatchment 5S: PR-WS2 Runoff Area=19,794 sf 44.03% Impervious Runoff Depth>0.79"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=77 Runoff=0.38 cfs 0.030 af

Total Runoff Area = 7.114 ac Runoff Volume = 0.546 af Average Runoff Depth = 0.92"
65.04% Pervious = 4.627 ac 34.96% Impervious = 2.487 ac

Summary for Subcatchment 1S: EX-WS1

Runoff = 2.03 cfs @ 12.46 hrs, Volume= 0.243 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YR Rainfall=2.70"

Area (sf)	CN	Description
30,297	74	>75% Grass cover, Good, HSG C
35,930	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,497	80	Weighted Average
89,302	71	65.91% Pervious Area
46,195	98	34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 2S: EX-WS2

Runoff = 0.40 cfs @ 12.15 hrs, Volume= 0.031 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YR Rainfall=2.70"

Area (sf)	CN	Description
10,387	61	>75% Grass cover, Good, HSG B
7,766	98	Paved parking, HSG B
1,290	98	Paved parking, HSG C
19,443	78	Weighted Average
10,387	61	53.42% Pervious Area
9,056	98	46.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 3S: PR-WS1

Runoff = 2.03 cfs @ 12.46 hrs, Volume= 0.242 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YR Rainfall=2.70"

Area (sf)	CN	Description
31,766	74	>75% Grass cover, Good, HSG C
34,110	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,146	80	Weighted Average
90,771	71	67.17% Pervious Area
44,375	98	32.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 5S: PR-WS2

Runoff = 0.38 cfs @ 12.15 hrs, Volume= 0.030 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YR Rainfall=2.70"

Area (sf)	CN	Description
11,079	61	>75% Grass cover, Good, HSG B
7,523	98	Paved parking, HSG B
1,192	98	Paved parking, HSG C
19,794	77	Weighted Average
11,079	61	55.97% Pervious Area
8,715	98	44.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX-WS1 Runoff Area=135,497 sf 34.09% Impervious Runoff Depth>2.60"
Flow Length=450' Tc=30.8 min CN=80 Runoff=5.71 cfs 0.673 af

Subcatchment 2S: EX-WS2 Runoff Area=19,443 sf 46.58% Impervious Runoff Depth>2.44"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=78 Runoff=1.20 cfs 0.091 af

Subcatchment 3S: PR-WS1 Runoff Area=135,146 sf 32.83% Impervious Runoff Depth>2.60"
Flow Length=450' Tc=30.8 min CN=80 Runoff=5.69 cfs 0.672 af

Subcatchment 5S: PR-WS2 Runoff Area=19,794 sf 44.03% Impervious Runoff Depth>2.36"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=77 Runoff=1.18 cfs 0.089 af

Total Runoff Area = 7.114 ac Runoff Volume = 1.525 af Average Runoff Depth = 2.57"
65.04% Pervious = 4.627 ac 34.96% Impervious = 2.487 ac

Summary for Subcatchment 1S: EX-WS1

Runoff = 5.71 cfs @ 12.43 hrs, Volume= 0.673 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.90"

Area (sf)	CN	Description
30,297	74	>75% Grass cover, Good, HSG C
35,930	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,497	80	Weighted Average
89,302	71	65.91% Pervious Area
46,195	98	34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 2S: EX-WS2

Runoff = 1.20 cfs @ 12.14 hrs, Volume= 0.091 af, Depth> 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.90"

Area (sf)	CN	Description
10,387	61	>75% Grass cover, Good, HSG B
7,766	98	Paved parking, HSG B
1,290	98	Paved parking, HSG C
19,443	78	Weighted Average
10,387	61	53.42% Pervious Area
9,056	98	46.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 3S: PR-WS1

Runoff = 5.69 cfs @ 12.43 hrs, Volume= 0.672 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.90"

Area (sf)	CN	Description
31,766	74	>75% Grass cover, Good, HSG C
34,110	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,146	80	Weighted Average
90,771	71	67.17% Pervious Area
44,375	98	32.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 5S: PR-WS2

Runoff = 1.18 cfs @ 12.14 hrs, Volume= 0.089 af, Depth> 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.90"

Area (sf)	CN	Description
11,079	61	>75% Grass cover, Good, HSG B
7,523	98	Paved parking, HSG B
1,192	98	Paved parking, HSG C
19,794	77	Weighted Average
11,079	61	55.97% Pervious Area
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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EX-WS1 Runoff Area=135,497 sf 34.09% Impervious Runoff Depth>5.88"
Flow Length=450' Tc=30.8 min CN=80 Runoff=12.60 cfs 1.525 af

Subcatchment 2S: EX-WS2 Runoff Area=19,443 sf 46.58% Impervious Runoff Depth>5.68"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=78 Runoff=2.72 cfs 0.211 af

Subcatchment 3S: PR-WS1 Runoff Area=135,146 sf 32.83% Impervious Runoff Depth>5.88"
Flow Length=450' Tc=30.8 min CN=80 Runoff=12.56 cfs 1.521 af

Subcatchment 5S: PR-WS2 Runoff Area=19,794 sf 44.03% Impervious Runoff Depth>5.56"
Flow Length=100' Slope=0.0200 '/' Tc=9.6 min CN=77 Runoff=2.72 cfs 0.211 af

Total Runoff Area = 7.114 ac Runoff Volume = 3.467 af Average Runoff Depth = 5.85"
65.04% Pervious = 4.627 ac 34.96% Impervious = 2.487 ac

Summary for Subcatchment 1S: EX-WS1

Runoff = 12.60 cfs @ 12.42 hrs, Volume= 1.525 af, Depth> 5.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.70"

Area (sf)	CN	Description
30,297	74	>75% Grass cover, Good, HSG C
35,930	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,497	80	Weighted Average
89,302	71	65.91% Pervious Area
46,195	98	34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

Summary for Subcatchment 2S: EX-WS2

Runoff = 2.72 cfs @ 12.14 hrs, Volume= 0.211 af, Depth> 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.70"

Area (sf)	CN	Description
10,387	61	>75% Grass cover, Good, HSG B
7,766	98	Paved parking, HSG B
1,290	98	Paved parking, HSG C
19,443	78	Weighted Average
10,387	61	53.42% Pervious Area
9,056	98	46.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 3S: PR-WS1

Runoff = 12.56 cfs @ 12.42 hrs, Volume= 1.521 af, Depth> 5.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.70"

Area (sf)	CN	Description
31,766	74	>75% Grass cover, Good, HSG C
34,110	98	Paved parking, HSG C
53,305	70	Woods, Good, HSG C
5,700	61	>75% Grass cover, Good, HSG B
10,265	98	Paved parking, HSG B
135,146	80	Weighted Average
90,771	71	67.17% Pervious Area
44,375	98	32.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0200	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.30"
5.0	150	0.0100	0.50		**Shallow Concentrated Flow, SHALLOW 1%** Woodland Kv= 5.0 fps
4.7	200	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW 2%** Woodland Kv= 5.0 fps
30.8	450	Total			

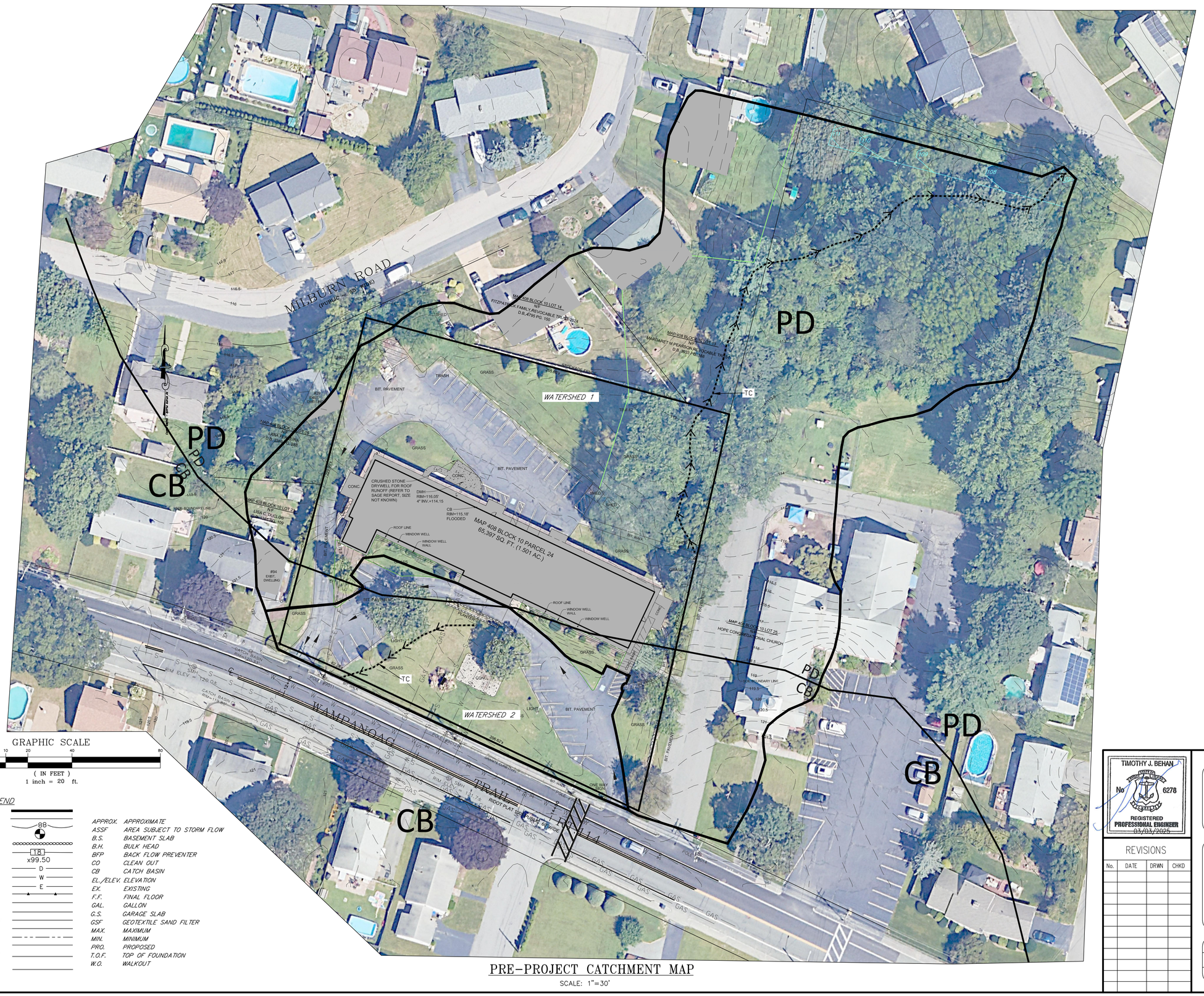
Summary for Subcatchment 5S: PR-WS2

Runoff = 2.72 cfs @ 12.14 hrs, Volume= 0.211 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.70"

Area (sf)	CN	Description
11,079	61	>75% Grass cover, Good, HSG B
7,523	98	Paved parking, HSG B
1,192	98	Paved parking, HSG C
19,794	77	Weighted Average
11,079	61	55.97% Pervious Area
8,715	98	44.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0200	0.17		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.30"



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

LEGEND

LOT LINE	
ABUTTER LINE	
EXISTING CONTOUR	88
TEST HOLE	
STONEWALL	
PROPOSED CONTOUR	18
PROPOSED SPOT GRADE	x99.50
DRAIN LINE	D
WATER LINE	W
ELECTRIC LINE	E
WETLAND EDGE	
50' PERIMETER WETLAND	
STREAM	
100' RIVERBANK WETLAND	
100-YEAR FLOOD PLAIN	
EASEMENT LINE	
BUILDING SETBACK LINE	
COMPOST FILTER SOCK & LIMIT OF DISTURBANCE	
RETAINING WALL	

APPROX.	APPROXIMATE
ASSF	AREA SUBJECT TO STORM FLOW
B.S.	BASEMENT SLAB
B.H.	BULK HEAD
BFP	BACK FLOW PREVENTER
CO	CLEAN OUT
CB	CATCH BASIN
EL./ELEV.	ELEVATION
EX.	EXISTING
F.F.	FINAL FLOOR
GAL.	GALLON
G.S.	GARAGE SLAB
GSF	GEOTEXTILE SAND FILTER
MAX.	MAXIMUM
MIN.	MINIMUM
PRO.	PROPOSED
T.O.F.	TOP OF FOUNDATION
W.O.	WALKOUT

PRE-PROJECT CATCHMENT MAP

SCALE: 1"=30'

DRAWING ISSUE:

- ☐ CONCEPT
- ☐ CUSTOMER APPROVAL
- ☒ PERMITTING
- ☐ CONSTRUCTION
- ☐ AS-BUILT
- ☐ OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

OWNER/APPLICANT
TOUCHDOWN REALTY GROUP, LLC
167 N QUIDNESSETT ROAD
NORTH KINGSTOWN, RI 02852

CONTACT:
TOM & KELLY CLAYTON
PHONE: 703-597-1611
EMAIL: CONTACT@TOUCHDOWNREALTYGROUP.COM

TIMOTHY J. BEHAN
No 6278
REGISTERED PROFESSIONAL ENGINEER
03/03/2025

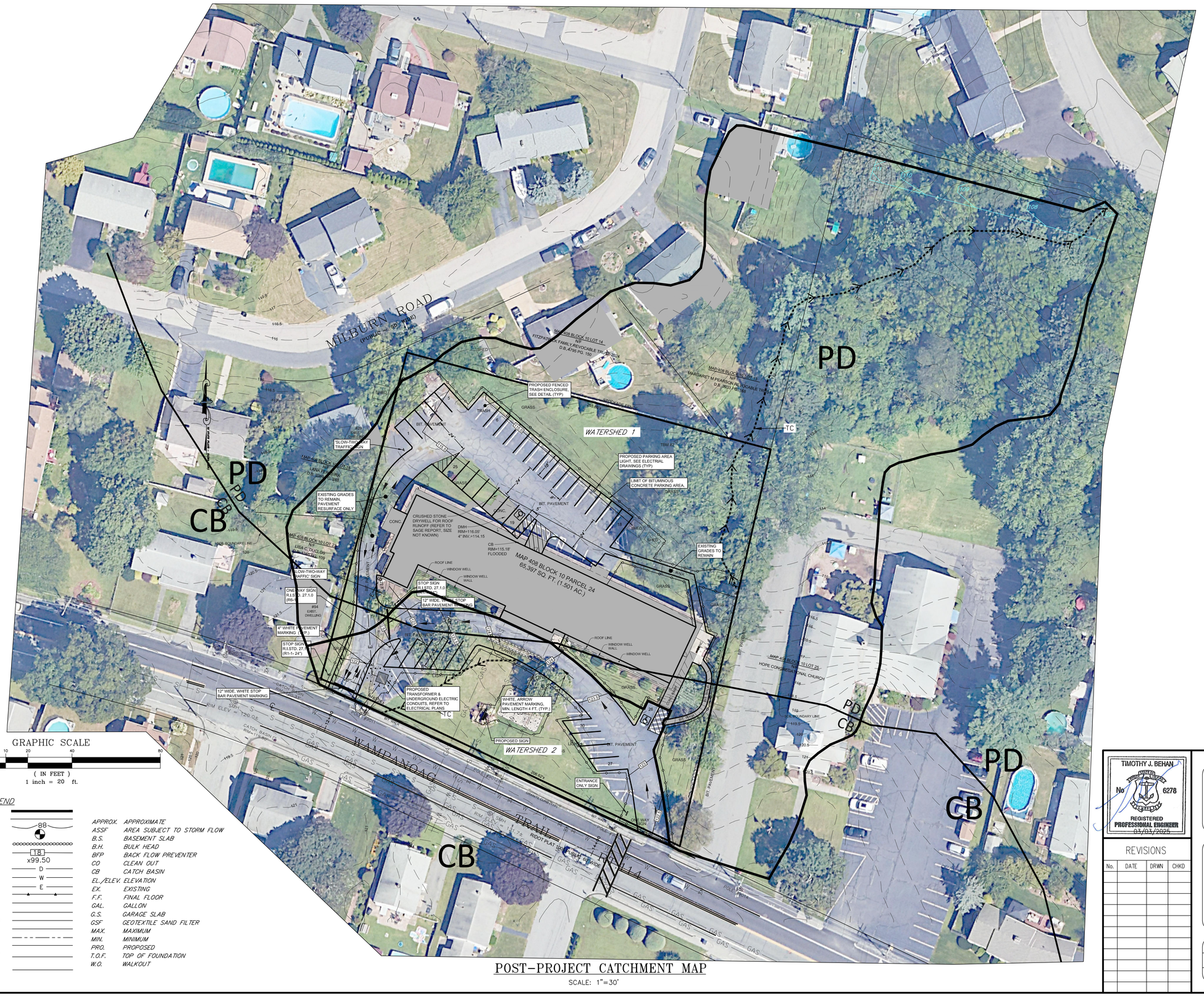
REVISIONS

No.	DATE	DRWN	CHKD

COMMONWEALTH
ENGINEERS & CONSULTANTS, INC.
400 SMITH STREET
PROVIDENCE, RHODE ISLAND 02908
(401) 273-6600

PERMIT AGENCY REVIEW PLAN
FOR
"100 WAMPANOAG TRAIL"
ON
MAP 408, BLOCK 10 PARCEL 24
WAMPANOAG TRAIL
EAST PROVIDENCE, RHODE ISLAND

SCALE: AS SHOWN		SHEET NO: OF 6
DRAWN BY: TJB	DESIGN BY: TJB	CHECKED BY: TJB
DATE: MARCH 3, 2025		PROJECT NO 24092.00



POST-PROJECT CATCHMENT MAP

SCALE: 1"=30'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

LEGEND

LOT LINE	
ABUTTER LINE	
EXISTING CONTOUR	88
TEST HOLE	
STONEWALL	
PROPOSED CONTOUR	18
PROPOSED SPOT GRADE	x99.50
DRAIN LINE	D
WATER LINE	W
ELECTRIC LINE	E
WETLAND EDGE	
50' PERIMETER WETLAND	
STREAM	
100' RIVERBANK WETLAND	
100-YEAR FLOOD PLAIN	
EASEMENT LINE	
BUILDING SETBACK LINE	
COMPOST FILTER SOCK & LIMIT OF DISTURBANCE	
RETAINING WALL	

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PRO.	PROPOSED
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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

100 Wampanoag Trail

December 27, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties
Survey Area Data: Version 24, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CB	Canton-Urban land complex	5.0	30.5%
PD	Paxton-Urban land complex, 3 to 15 percent slopes	11.4	69.5%
Totals for Area of Interest		**16.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties

CB—Canton-Urban land complex

Map Unit Setting

National map unit symbol: 9ltv
Elevation: 0 to 810 feet
Mean annual precipitation: 44 to 50 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 40 percent
Urban land: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: gravelly fine sandy loam
Bw1 - 3 to 15 inches: gravelly loam
Bw2 - 15 to 24 inches: gravelly loam
Bw3 - 24 to 30 inches: gravelly loam
2C - 30 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Urban Land

Setting

Parent material: Human transported material

Typical profile

R - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 6 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Gloucester

Percent of map unit: 6 percent
Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Narragansett

Percent of map unit: 5 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Hills, drumlins
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 3 percent
Landform: Drainageways, depressions
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

PD—Paxton-Urban land complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w67k
Elevation: 0 to 930 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton and similar soils: 45 percent
Urban land: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton

Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Udorthents

Percent of map unit: 4 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 1 percent
Landform: Drumlins, depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf