



Chairman
Justin DeBrod

TOWN OF LEDYARD CONNECTICUT

741 Colonel Ledyard Highway
Ledyard, Connecticut 06339

Inland Wetland and Water Courses Commission

~ AGENDA ~

Regular Meeting

Tuesday, January 3, 2023

7:00 PM

Council Chambers -Hybrid Format

REMOTE MEETING INFORMATION

Town Hall Annex - Council Chambers

Join Zoom Meeting

<https://us06web.zoom.us/j/89886460535?pwd=NG5INIRROGpLTiBiTjIvc0laUGxmdz09>

Meeting ID: 898 8646 0535

Passcode: 509697

- I. CALL TO ORDER
- II. ROLL CALL
- III. CITIZENS COMMENTS
- VIII. OLD BUSINESS

Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

- Attachments:** [Exhibit #1 - Application and Supporting Documents](#)
[Exhibit #2 - Legal Notice - November 1, 2022 - Public Hearing](#)
[Exhibit #3 - Decmeber 6, 2022, Public Hearing](#)
[Exhibit #4 - Abutter Letter to Applicant 112122](#)
[Exhibit 5 - LLHD Letter - August 3, 2022](#)
[Exhibit 6 - Soil Scientist Report - August 22, 2022](#)
[Exhibit #7 - GEI Report Water](#)
[Exhibit #8 - GU Comments - September 30, 2022](#)
[Exhibit #9 - IWWC#22-18URA LLHD](#)
[Exhibit #10 - CLA Review - Ocotber 27, 2022 -7336](#)
[Exhibit #11 - GU Comment - October 28, 2022](#)
[Exhibit #12 - DPH Letter, November 1, 2022](#)
[Exhibit #13 - LLHD Letter, November 9, 2022](#)
[Exhibit #14 - LBM Engineering Report, November 13, 2022](#)
[Exhibit #15 - FEMA Map, October 4, 2022](#)
[Exhibit #16 - Plan Set, July 22, 2022](#)
[Exhibit #17, Revised Plan Set, October 31, 2022](#)
[Exhibit #18 - Second Revision Plan Set, November 14, 2022](#)
[Exhibit #19 - Revised Application, November 22](#)
[Exhibit #20 - Revised Narrative - November 22, 2022](#)
[Exhibit #21 - Ltr. Town Resubmission, November 22, 2022](#)
[Exhibit #22 - Notice of Abutters Documentation, December 2, 2022](#)
[Exhibit #23 - KA - GU Statement, December 6, 2022](#)
[Exhibit #24 - KA - GU Resume, December 6, 2022](#)
[Exhibit #25 - Memorandum from Public Works, December 6, 2022](#)
[Exhibit #26 - Revised Soil Scientist Report, December 6, 2022](#)
[Exhibit #27 - GU Statement, December 6, 2022](#)
[Exhibit #28 - KA Resume, December 6, 2022](#)
[Exhibit #29 - Verified Notice of Intervention, December 6, 2022](#)
[Exhibit #30 - Revised Plans Dated - Pages 3 and 6, December 6, 2022](#)
[Exhibit #31 - CT Public Health Code - OnSite Sewage Disposal Regulations, December 6, 2022](#)
[Exhibit #32 - Separating Distance Chart](#)
[Exhibit #33 - Excerpt from Waterbury V Washington, December 6, 2022](#)
[Exhibit #34 - Revised Plans, December 6, 2022](#)
[Exhibit #35 - Sheet 10 elevaiton revision -dec 14](#)
[Exhibit #36 - Dec 15](#)
[Exhibit #37 - Revision to Address Pipe Length Dec 15](#)
[Exhibit #38 - PH Re-notice to Abutters](#)
[Exhibit #39 - S. Masalin Review, Dec 22](#)
[Exhibit #40 - I. Cole and J. Martucci Resume](#)

XI. NEW BUSINESS

VI. REPORTS

Staff Reports

Attachments: [1. Wetlands Report for January 3, 2023](#)

VII. APPROVAL OF MINUTES

Approval of December 6, 2022 Minutes

Attachments: [IWWC December 6 Draft Meeting Minutes](#)

V. MEETING REVIEW

X. ADJOURNMENT

DISCLAIMER: Although we try to be timely and accurate these are not official records of the Town.



TOWN OF LEDYARD

741 Colonel Ledyard
Highway
Ledyard, CT 06339-1511

File #: 22-360

Agenda Date: 1/3/2023

Agenda #:

APPLICATION

Subject/Application:

Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

Background:

This Application is associated with Application PZ#22-18SUB that was submitted the same day for a 36 Lot re-subdivision pursuant to CGS 8-30g (Affordable Housing). The parcel is 9.21 acres. Total Area of Wetlands is 5,600sf. The total area to be disturbed in the URA is 37,700sf. No wetlands will be filled.

Each of the 36 Lots will have individual wells and septic systems. The development will be derived by a private loop driveway. The property is with the Groton Utility Watershed Area.

Staff Comments:

(type text here)

Street No./ Name: _____

**TOWN OF LEDYARD
INLAND WETLANDS AND WATERCOURSES COMMISSION (IWWC)
APPLICATION FOR PERMIT (Or Commission ruling that a permit is not needed)**

Application No. _____

Receipt Date _____

Date Submitted _____

Applicant/Agent Avery Brook Homes, LLC

Owner (if different) Avery Brook Homes, LLC

Address 1641 Connecticut Route 12, Gales Ferry, Connecticut 06335

Address of Owner Same as Applicant

Phones (860) 464-7455 / (860) 334-0081 cell

Phone (860) 464-7455

- I have received information on the Army Corps of Engineers permit procedure.
- I have read and have included all the application and site plan requirements in Section 7 of the IWWC Regulations
Avery Brook Homes, LLC

Its Member _____

Signature of Applicant/ Agent _____

Location of Property 94, 96, 98 and 100 Stoddards Wharf Road

Tax Assessor's Map No. 65

Zoning District R-60*

*Affor housing subdiv

Written Description of Proposed Activity Upland review area activities in conjunction with the siting of primary and reserve septic areas, grading and/or dwelling houses

on proposed Lots 2, 3, 4, 5, 6 and primary and reserve septic areas on proposed lots 10, 11, 12 and 13 in upland review areas, all as depicted on a plan entitled "Property of Avery Brook Homes LLC"

94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1" = 40' June 2022 Sheet 3 of 8" prepared by Dieter & Gardner, Inc. No direct impacts to inland wetlands or watercourses are proposed. See attached Narrative.

Proposed Erosion/ Sediment Control Measures: See attached Narrative

Total Area of Site 9.21 acres

Total Area of Wetlands per Official Inventory Map 5,600

Amount of Fill, in Cubic Yards 0

Disturbed Area, in Square Feet 37,700 or in Acres see square feet

Area Increase/Decrease in Wetlands _____ (For Map Amendment Only*)

Soil Types from USDA Soil Survey See attached Narrative

General Description of Vegetative Cover Successional growth.

Name and Address of Adjacent Property Owners

See attached list

Anticipated Start Date 4/2023

Completion Date 10/2027

List previous IWWC application #'s Unknown

IWW Commission Disposition: IWWC Regulations; Section _____

Classification _____

Signature of Chair _____

FEE: _____ + \$60.00 State Fee = _____

DATE PAID _____

RECEIPT # _____

AUTHORIZATION

AVERY BROOK HOMES, LLC hereby authorizes the law firm of Heller, Heller & McCoy, the land surveying – planning firm of Dieter & Gardner, Inc. and Ian Cole, Certified Soil Scientist and Wetland Ecologist to represent its interests in all proceedings before the Town of Ledyard Inland Wetlands and Watercourses Commission with respect to a permit application to conduct regulated activities in upland review areas in conjunction with the residential development of properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 in the Town of Ledyard, Connecticut in accordance with a plan entitled “Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown June 2022 Sheets 1 of 6 to 6 of 6 Dieter & Gardner Land Surveyors – Planners P.O. Box 335 1641 Connecticut Route 12 Gales Ferry, CT 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com”.

Dated at Montville, Connecticut this 26th day of August, 2022.

AVERY BROOK HOMES, LLC

By: _____

Peter C. Gardner, its Member

**APPLICATION OF AVERY BROOK HOMES, LLC TO TOWN OF LEDYARD
INLAND WETLANDS AND WATERCOURSES COMMISSION**

94, 96, 98 AND 100 STODDARDS WHARF ROAD, LEDYARD, CONNECTICUT

LIST OF ABUTTING PROPERTY OWNERS

NORTH

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

EAST

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

SOUTH

Keith Tyler
Michela Lavin
89 Stoddards Wharf Road
Ledyard, CT 06339

Allan Bruckner
Kathy Bruckner
93 Stoddards Wharf Road
Ledyard, CT 06339

Ann Marie Donohue
James Lawrence McCarthy, Jr.
95 Stoddards Wharf Road
Ledyard, CT 06339

Randy D. Palmer
Sandra M. Palmer
101 Stoddards Wharf Road
Gales Ferry, CT 06335

WEST

Shirley P. Pandora Grantor Retained Income Trust U/A 12/13/2018
102 Stoddards Wharf Road
Ledyard, CT 06339

Arlene Allard
P.O. Box 94
Ledyard, CT 06339

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike

Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)

Harry B. Heller (hheller@hellermccoy.com)

William E. McCoy (bmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)

Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248

Facsimile: (860) 848-4003

August 22, 2022

VIA CERTIFIED MAIL

City of Groton Utilities

295 Meridian Street

Groton, CT 06340

Re: Avery Brook Homes, LLC – Application to the Town of Ledyard Inland Wetlands and Watercourses Commission for a permit to conduct regulated activities in upland review areas in conjunction with the development of a proposed affordable housing subdivision on properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214
Ledyard Assessor's Designation: Map 65, Lots 94, 96, 98 and 100

Gentleperson:

Please be advised that this office represents Avery Brook Homes, LLC, the owner of properties located at 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 in Ledyard, Connecticut. Our client is proposing to develop this property for thirty-six (36) individual single-family dwelling houses together with a loop road (private) which will provide access from Connecticut Route 214. In conjunction therewith, our client has submitted an application to the Town of Ledyard Inland Wetlands and Watercourses Commission for a permit to conduct regulated activities in the development of this project in upland review areas adjacent to inland wetlands on and adjacent to its properties.

Our client's properties are located within the watershed area of Groton Utilities as evidenced by the watershed map filed by Groton Utilities with the Ledyard Town Clerk. Therefore, in accordance with requirements of §8-3i of the Connecticut General Statutes, we are providing you with notice of the filing of this application with the Town of Ledyard Inland Wetlands and Watercourses Commission. A copy of this notice is also being provided contemporaneously herewith to the Commissioner of Public Health of the State of Connecticut.

I enclose herewith for your reference a copy of the permit application which is being filed contemporaneously herewith with the Ledyard Inland Wetlands and Watercourses Commission, a copy of our transmittal to the Town of Ledyard Inland Wetlands and Watercourses Commission delineating

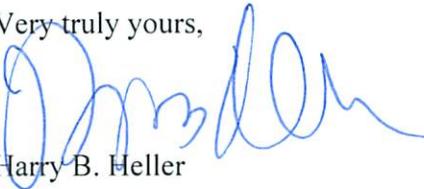
Z:\Avery Brook Homes, LLC\Wetlands\ltr.Groton DPU.docx

City of Groton Utilities
August 22, 2022
Page 2 of 2

the supplemental information which has been provided with the application, a copy of the site development plan which was submitted with the application and a copy of the supplemental information.

Should you have any questions or need any additional information, please feel free to contact the undersigned.

Very truly yours,



Harry B. Heller

HBH/rmb
Enclosures



Statewide Inland Wetlands & Watercourses Activity Reporting Form

Please complete this form in accordance with the instructions on pages 2 and 3 and mail to:

DEEP Land & Water Resources Division, Inland Wetlands Management Program, 79 Elm Street, 3rd Floor, Hartford, CT 06106

Incomplete or incomprehensible forms will be mailed back to the inland wetlands agency.

PART I: Must Be Completed By The Inland Wetlands Agency

- DATE ACTION WAS TAKEN: year: _____ month: _____
- ACTION TAKEN (see instructions - one code only): _____
- WAS A PUBLIC HEARING HELD (check one)? yes no
- NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:
(print name) _____ (signature) _____

PART II: To Be Completed By The Inland Wetlands Agency Or The Applicant

- TOWN IN WHICH THE ACTIVITY IS OCCURRING (print name): Ledyard
does this project cross municipal boundaries (check one)? yes no
if yes, list the other town(s) in which the activity is occurring (print name(s)): _____
- LOCATION (see instructions for information): USGS quad name: Uncasville or number: 87
subregional drainage basin number: 3000-02
- NAME OF APPLICANT, VIOLATOR OR PETITIONER (print name): Avery Brook Homes, LLC
- NAME & ADDRESS OF ACTIVITY / PROJECT SITE (print information): Avery Brook Homes Affordable Housing Development
briefly describe the action/project/activity (check and print information): temporary permanent description: Upland review area activities in conjunction with the development of single family residential lots
- ACTIVITY PURPOSE CODE (see instructions - one code only): B
- ACTIVITY TYPE CODE(S) (see instructions for codes): 12, 14, _____, _____
- WETLAND / WATERCOURSE AREA ALTERED (see instructions for explanation, must provide acres or linear feet):
wetlands: 0 acres open water body: 0 acres stream: 0 linear feet
- UPLAND AREA ALTERED (must provide acres): 4.5 acres UPLAND REVIEW AREA ALTERED 37,700 square feet
- AREA OF WETLANDS / WATERCOURSES RESTORED, ENHANCED OR CREATED (must provide acres): 0 acres

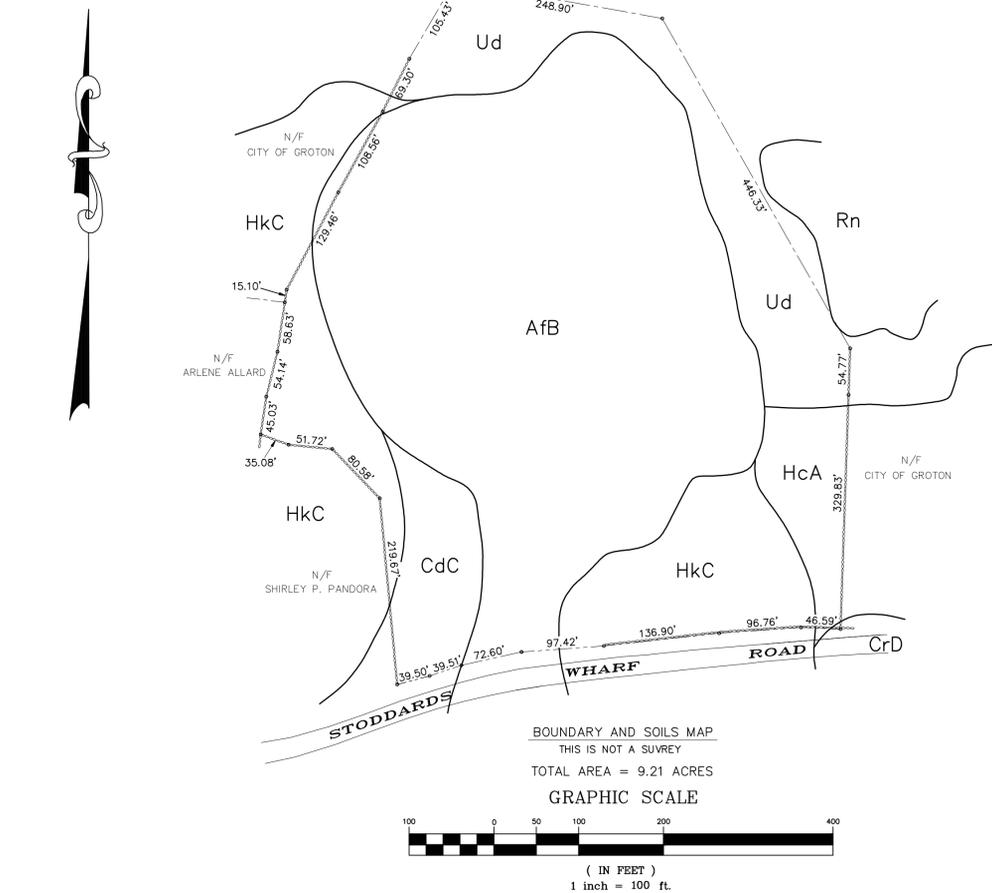
DATE RECEIVED:

PART III: To Be Completed By The DEEP

DATE RETURNED TO DEEP:

FORM COMPLETED: YES NO

FORM CORRECTED / COMPLETED: YES NO



APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

IWVC APPLICATION# _____

APPROVED _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____

LEGEND

— — — — — STONE WALL
 - - - - - PROPERTY LINE
 = = = = = STREET LINE
 (98) STREET NUMBER

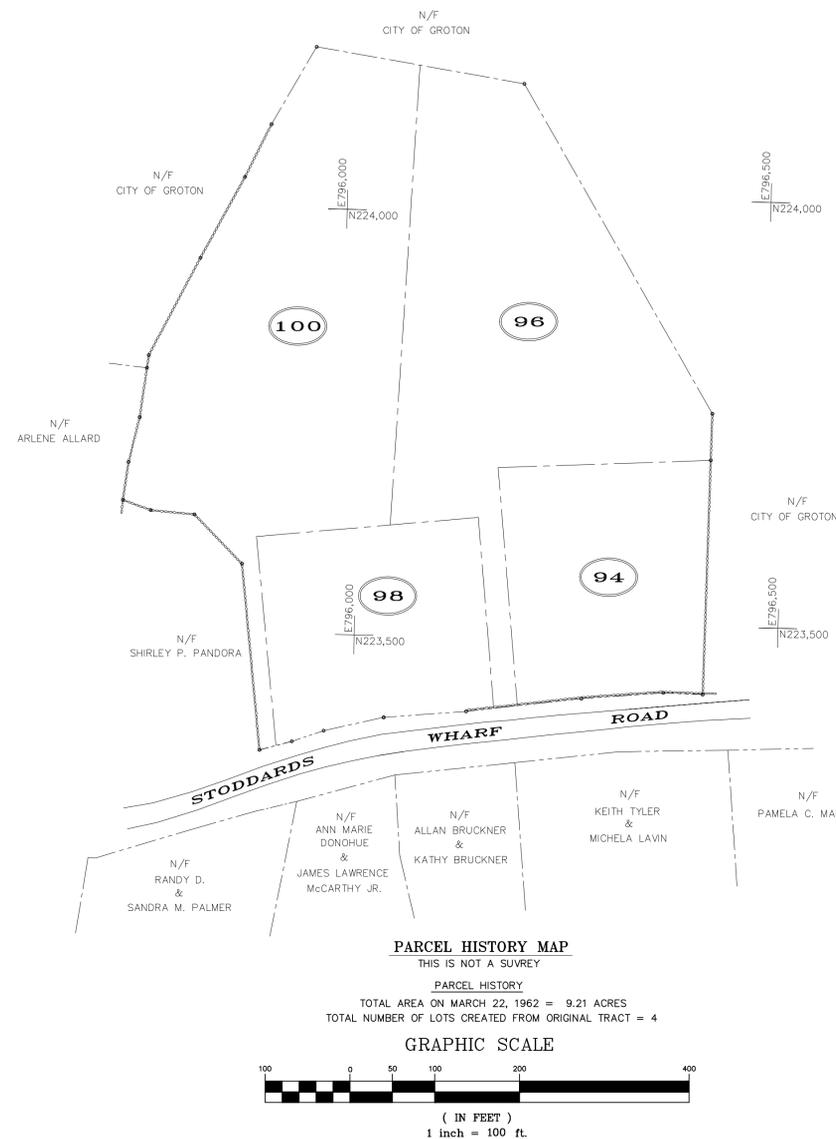
SOILS LEGEND

Afb - AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
 CdC - CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
 CrD - CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
 HcA - HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
 HkC - HINCKLEY GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES
 Rn - RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
 Ud - UDORTMENTS-URBAN LAND COMPLEX

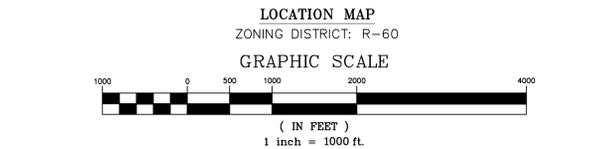
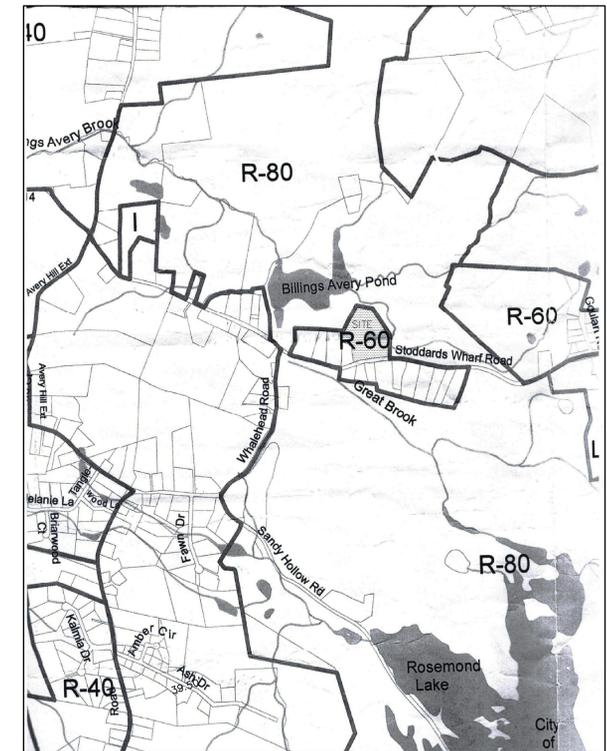
THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG FBK#327

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATION PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 P.O. BOX 335
 1641 CONNECTICUT ROUTE 12
 GALES FERRY, CT. 06335
 (860) 464-7455
 EMAIL: DIETER.GARDNER@YAHOO.COM



- GENERAL NOTES:**
- MAP REFERENCES:
 A) SUBDIVISION PLAN PREPARED FOR AMER JAVAD 98 STODDARDS WHARF ROAD - (CONN. RTE #214) LEDYARD, CONNECTICUT BOUNDARY SURVEY MAP DATE: 9/12/11 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
 B) LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 98 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
 - CALL BEFORE YOU DIG AT 1-800-922-4455 BEFORE ANY CONSTRUCTION ACTIVITY.
 - ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
 - THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
 - HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
 - ZONING SETBACKS: LOTS SUBMITTED AS A SET-ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8-30g. MINIMUM FRONT YARD SETBACK 12' FROM COMMON DRIVE. MINIMUM SIDE YARD SETBACK 6'. MINIMUM REAR YARD SETBACK 15'.
 - PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.



SHEET INDEX

SHEET 1 - 100 SCALE BOUNDARY MAP; PARCEL HISTORY MAP; LOCATION MAP AND GENERAL NOTES
 SHEET 2 - 40 SCALE A-2 PLAN
 SHEET 3 - 40 SCALE CONCEPTUAL LAYOUT PLAN
 SHEET 4 - DEEP TEST PIT DATA
 SHEET 5 - PERCOLATION TEST RESULTS AND SEPTIC SYSTEM DESIGN CRITERIA
 SHEET 6 - CONSTRUCTION DETAILS; EROSION AND SEDIMENT CONTROL NARRATIVE AND DETAILS
 SHEET 7 - 40 SCALE SIGHTLINE DEMONSTRATION PLAN

PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT SCALES AS SHOWN JULY 2022

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D". TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
 DATE: JULY 7, 2022

DEEP TEST PIT DATA

WITNESSED AND RECORDED BY WENDY BROWN-ARNOLD RS, REHS AND ALEX WILBOUR LEDGE LIGHT HEALTH DISTRICT ON 5/2/22, 5/5/22 AND 5/23/2022 AND WENDY BROWN-ARNOLD RS, REHS ON JUNE 14, 2022.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

IHWG APPLICATION# _____ APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA) NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA, NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____

TP 1
0-45" FILL-DISTURBED
LOAM, ROCKS, BRICK
NO MOTTLING
NO WATER
LEDGE @ 45"

TP 2
0-16" DISTURBED SOIL & FILL
16-50" LIGHT TAN FINE SAND
W/GRAVEL & ROCKS
NO MOTTLING
NO WATER
LEDGE @ 50"

TP 3
0-10" TOPSOIL
10-28" LIGHT BROWN FINE SANDY LOAM
28-87" LIGHT TAN FINE SAND W/GRAVEL
COBBLES, LARGE STONES
NO MOTTLING
NO WATER
NO LEDGE

TP 4
0-11" TOPSOIL
11-34" LIGHT BROWN FINE SANDY LOAM
34-90" LIGHT TAN/GRAY FINE SAND W/
GRAVEL, SOME COBBLES
MOTTLING @ 64"
WATER @ 80"
NO LEDGE

TP 5
0-16" TOPSOIL
16-45" LIGHT BROWN SILT LOAM, SOME FINE SAND
45-94" TAN/GRAY FINE TO MED. SAND W/
GRAVEL
MOTTLING @ 33"
WATER @ 33"
NO LEDGE

TP 6
0-9" TOPSOIL
9-37" BROWN FINE TO VERY FINE SANDY LOAM
37-84" TAN/GRAY FINE TO MED. SAND W/
GRAVEL, FEW COBBLES
MOTTLING @ 46"
WATER @ 50"
NO LEDGE

TP 7
0-7" TOPSOIL
7-30" BROWN FINE TO MED. SANDY LOAM
30-77" TAN COARSE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 8
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-64" ORANGE/TAN COARSE SAND
W/GRAVEL
64-95" TAN/GRAY FINE TO MED. SAND
MOTTLING @ 73"
WATER @ 83"
NO LEDGE

TP 9
0-15" TOPSOIL
15-31" BROWN FINE SANDY LOAM
31-96" TAN MED. TO COARSE SAND AND
GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 10
0-11" TOPSOIL
11-23" BROWN FINE SANDY LOAM
23-84" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 11
0-11" TOPSOIL
11-34" BROWN FINE TO MED. SANDY LOAM
34-96" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 12
0-12" TOPSOIL
12-29" BROWN FINE TO MED. SANDY LOAM
29-95" BROWN TO TAN MED. TO COARSE SAND W/
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 13
0-13" TOPSOIL
13-25" BROWN FINE TO MED. SANDY LOAM
25-91" TAN TO BROWN MED. TO COARSE SAND AND
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 14
0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" TAN MED. TO FINE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 15
0-10" TOPSOIL
10-39" BROWN FINE SANDY LOAM
39-99" TAN TO OLIVE MED. TO COARSE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 16
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-96" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 17
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-89" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 18
0-9" TOPSOIL
9-29" YELLOW TO BROWN FINE SANDY LOAM
29-103" TAN TO OLIVE MED. TO COARSE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 19
0-14" TOPSOIL
14-36" BROWN FINE SANDY LOAM
36-84" TAN/GRAY COARSE SAND
W/GRAVEL
MOTTLING @ 40"
WATER @ 43"
NO LEDGE

TP 20
0-17" TOPSOIL
17-31" BROWN FINE SANDY LOAM
31-83" TAN/GRAY COARSE SAND
W/GRAVEL AND FEW COBBLES
MOTTLING @ 43"
WATER @ 46"
NO LEDGE

TP 21
0-17" SANDY FILL & DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN/BROWN FINE MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 22
0-19" FILL
19-32" TOPSOIL
32-53" BROWN MED. SANDY LOAM
53-103" TAN TO BROWN MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 23
0-17" SANDY FILL AND DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN TO BROWN MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 24
0-8" TOPSOIL
8-46" BROWN FINE TO MED. SANDY LOAM.
46-92" TAN TO GRAY COARSE SAND
W/GRAVEL AND COBBLES
MOTTLING @ 60"
WATER 64" UPHILL, 32" DOWNHILL
NO LEDGE

TP 25
0-10" TOPSOIL
10-29" BROWN FINE TO MED. SANDY LOAM,
SOME SILT
29-75" BROWN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES
MOTTLING @ 33"
WATER 33", 30" DOWNHILL
NO LEDGE

TP 26
0-7" TOPSOIL
7-36" YELLOW TO BROWN FINE TO MED.
SILT LOAM W/TRACE FINE SAND
36-82" BROWN TO GRAY FINE TO MED.
SAND W/GRAVEL AND COBBLES, SOME SILT
MOTTLING @ 26"
WATER @ 26"
NO LEDGE

TP 27
0-11" TOPSOIL
11-24" BROWN FINE TO MED. SANDY LOAM
24-39" TAN FINE TO MED. SAND
39-87" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 28
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO MED. SANDY LOAM
32-96" LIGHT TAN FINE TO MED. SAND W/
GRAVEL AND COBBLES STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 29
0-12" TOPSOIL
12-32" BROWN FINE TO MED. SANDY LOAM
32-99" TAN TO GRAY MED. TO FINE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 30
0-12" TOPSOIL
12-34" BROWN FINE SANDY LOAM (DEPTH VARIES)
34-98" TAN TO MED. TO FINE SAND W/GRAVEL AND
GRAVEL, STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 31
0-7" TOPSOIL
7-31" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
31-100" TAN FINE TO MED. SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 32
0-34" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-82" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 33
0-10" TOPSOIL
10-34" BROWN FINE SANDY LOAM
34-75" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 34
0-12" TOPSOIL
12-44" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
44-89" TAN TO BROWN MED. SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 35
0-9" TOPSOIL
9-21" BROWN FINE SANDY LOAM
21-47" TAN TO BROWN MED. SAND W/GRAVEL,
FEW COBBLES
47-110" TAN TO BROWN, MED. SAND W/GRAVEL,
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 36
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-94" TAN TO GRAY MED. TO
FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 37
0-9" TOPSOIL
9-39" LIGHT BROWN TO TAN,
FINE TO VERY FINE, SANDY LOAM
39-100" LIGHT TAN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 38
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-90" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 39
0-5" TOPSOIL
5-41" LIGHT BROWN FINE SANDY LOAM
41-83" TAN TO MED. SAND W/
GRAVEL AND COBBLES
83-104" OLIVE TO BROWN FINE SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 40
0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-58" TAN TO GRAY SILT WITH
PATCHY ORANGE REDOX INCONSISTENT AROUND
58-99" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 41
0-9" TOPSOIL
9-29" BROWN FINE TO MED. SANDY LOAM
29-62" TAN TO GRAY SILT FINE SAND
62-101" TAN TO GRAY, FINE TO MED. SAND
AND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 42
0-5" TOPSOIL
5-14" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
14-50" ORANGE TO GRAY SILT, STAINED
50-105" TAN TO BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 43
0-8" TOPSOIL
8-33" BROWN FINE SANDY LOAM
33-45" TAN TO GRAY SILT INCONSISTENT
AROUND HOLE
45-83" TAN TO MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 44
0-6" TOPSOIL
6-14" BROWN FINE TO MED. SANDY LOAM
14-42" TAN TO GRAY SILT INCONSISTENT AROUND HOLE
42-102" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 45
0-13" TOPSOIL
13-23 BROWN FINE TO VERY FINE SANDY LOAM
23-37" GRAY TO TAN VERY FINE SAND W/SILT
37-93" BROWN TO GRAY COARSE SAND W/
GRAVEL AND SOME COBBLES
MOTTLING @ 37"
NO WATER
NO LEDGE

TP 46
0-15" TOPSOIL
15-39" GRAY
39-51" GRAY FINE TO MED. SAND W/SILT & HEAVILY
MOTTLED THROUGHOUT
51-108" BROWN TO TAN COARSE SAND W/
GRAVEL AND SOME COBBLES
OLD FILTER FABRIC AND GRAVEL @ 20"
MOTTLING @ 39"
WATER @ 96"
NO LEDGE

TP 47
0-10" TOPSOIL
10-22" BROWN FINE TO MED. SANDY LOAM W/SILT
22-41" LIGHT BROWN TO ORANGE SILTY LOAM,
TRACE FINE SAND
41-98" BROWN TO GRAY COARSE SAND W/GRAVEL
AND SOME COBBLES
NO MOTTLING
WATER @ 96"
NO LEDGE

TP 48
0-10" TOPSOIL
10-28" BROWN FINE TO VERY FINE SANDY LOAM TO SILT
28-106" BROWN TO GRAY MED. TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER-WET AT BOTTOM
NO LEDGE

TP 49
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-52" LIGHT YELLOW TO BROWN VERY
FINE SAND W/SILT
52-99" BROWN TO GRAY COARSE SAND WITH
GRAVEL, FEW COBBLES
POSSIBLE MOTTLING @ 52"
WATER @ 90"
NO LEDGE

TP 50
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-41" LIGHT YELLOW TO TAN VERY FINE SAND,
W/SILT
41-111" TAN TO BROWN COARSE SAND W/GRAVEL
AND SOME COBBLES
NO MOTTLING
WATER @ 106"
NO LEDGE

TP 51
0-10" TOPSOIL
10-20" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM
20-42" LIGHT YELLOW TO BROWN VERY FINE
SAND W/TRACE SILT
42-101" BROWN TO TAN COARSE SAND WITH
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 52
0-13" TOPSOIL
13-38" BROWN FINE TO VERY FINE SANDY LOAM
38-90" BROWN TO TAN COARSE TO MED. SAND
WITH SOME GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 53
0-13" TOPSOIL
13-32" BROWN FINE TO MED. SANDY LOAM
32-92" BROWN TO TAN COARSE TO
MED. SAND W/GRAVEL AND MANY COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 54
0-11" TOPSOIL
11-32" BROWN FINE TO VERY FINE SANDY LOAM
32-95" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 55
0-14" TOPSOIL
14-22" BROWN FINE TO VERY FINE SANDY LOAM
22-37" LIGHT BROWN FINE TO VERY FINE SAND W/SILT
37-110" TAN MED. SAND W/GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 56
0-15" TOPSOIL
15-43" LIGHT BROWN SILT LOAM, SOME FINE SAND
43-110" TAN MED. SAND SOME GRAVEL
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 57
0-8" TOPSOIL
8-27" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
27-104" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 58
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
32-98" TAN TO GRAY MED. TO FINE
SAND WITH GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 59
0-11" TOPSOIL
11-23" BROWN FINE TO VERY FINE SANDY LOAM
23-93" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 60
0-10" TOPSOIL
10-23" BROWN FINE TO VERY FINE SANDY LOAM
23-97" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 61
0-8" TOPSOIL
8-28" BROWN VERY FINE SANDY LOAM
28-99" TAN TO BROWN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 62
0-9" TOPSOIL
9-24" LIGHT BROWN VERY FINE SANDY LOAM
24-96" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 63
0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" BROWN TO TAN COARSE TO MED. SAND,
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 64
0-10" TOPSOIL
10-31" BROWN FINE SANDY LOAM
31-91" BROWN TO TAN COARSE TO MED.
SAND W/SOME SILT GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 65
0-13" TOPSOIL
13-30" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
30-100" TAN TO BROWN COARSE SAND
WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 66
0-10" TOPSOIL
10-28" BROWN FINE SANDY LOAM
28-90" TAN TO GRAY MED. TO COARSE
SAND W/SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 67
0-14" TOPSOIL
14-25" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
25-108" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 68
0-11" TOPSOIL
11-29" BROWN FINE TO MED. SANDY LOAM
29-80" TAN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 69
0-12" TOPSOIL
12-36" YELLOW TAN FINE TO VERY FINE SANDY LOAM
36-93" TAN TO BROWN MED. TO FINE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 70
0-14" TOPSOIL
14-36" BROWN FINE TO MED. SANDY LOAM
36-91" TAN MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 71
0-8" TOPSOIL
8-36" BROWN FINE TO MED. SANDY LOAM
36-96" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 72
0-6" TOPSOIL
6-32" BROWN FINE TO MED. SANDY LOAM
32-91" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 73
0-13" TOPSOIL
13-28" BROWN FINE SANDY LOAM
28-37" YELLOW TAN FINE TO VERY FINE
SANDY LOAM
37-90" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 74
0-6" TOPSOIL
6-39" BROWN FINE SANDY LOAM
39-99" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 75
0-15" TOPSOIL
10-29" LIGHT BROWN FINE SANDY LOAM
29-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 76
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 77
0-15" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 78
0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-106" BROWN TO TAN MED. FINE SAND
W/ SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 79
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
38-90" TAN TO GRAY MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 80
0-13" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 81
0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 82
0-9" SAND AND GRAVEL FILL
9-18" TOPSOIL
18-52" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM, SOME SILT
52-101" TAN TO BROWN FINE TO MED.
SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 83
0-9" TOPSOIL
9-31" BROWN FINE SANDY LOAM
31-104" TAN-BROWN COARSE SAND
WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 104"

TP 84
0-11" TOPSOIL
11-38" BROWN FINE SANDY LOAM
38-92" TAN TO BROWN MED-COARSE
SAND W/GRAVEL AND COBBLES
NO MOTTLING,
WATER @ 79"
LEDGE-NONE TO 92"

TP 85
0-12" TOPSOIL
12-33" BROWN FINE SANDY LOAM
30-98" TAN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 98"

TP 86
0-8" TOPSOIL
8-30" BROWN FINE SANDY LOAM
30-89" TAN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 89"

PLAN SHOWING
DEEP TEST PIT DATA
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022

DIETER & GARDNER
LAND SURVEYORS & PLANNERS
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JOB#22-007.DWG FBK#327

LOT 1 27" DEEP		LOT 2 30" DEEP		LOT 3 30" DEEP		LOT 4 26" DEEP		LOT 5 26" DEEP		LOT 6 29" DEEP		LOT 7 30" DEEP		LOT 8 30" DEEP		LOT 9 29" DEEP	
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING
8:59	2"	8:51	4"	9:00	2 1/2"	9:02	2 1/4"	9:55	2"	1:30	4"	1:32	4"	1:34	4"	1:41	4"
9:04	6 3/4"	8:56	10"	9:05	7 1/2"	9:07	13 1/2"	10:00	8 1/2"	1:35	20"	1:37	13"	1:39	9 1/2"	1:46	10"
9:09	9"	9:01	13 3/4"	9:10	11"	9:12	19"	10:05	13"	1:40	23"	1:42	18"	1:44	13"	1:51	13"
9:14	11"	9:06	16"	9:15	13 1/2"	9:17	22 1/2"	10:10	17"	1:45	24 1/2"	1:47	20 1/2"	1:49	15 1/2"	1:56	15 1/2"
9:19	12 1/2"	9:11	18"	9:20	16"	9:22	24 1/2"	10:15	19 1/2"	1:50	25 1/2"	1:52	23"	1:54	18"	2:01	17 1/2"
9:24	14"	9:16	20"	9:25	17 1/2"	9:27	26"	10:20	22"	1:55	26 1/2"	1:57	24"	1:59	20"	2:06	19"
9:29	15 1/2"	9:21	21"	9:30	19 1/2"	9:32	DRY	10:25	24"	2:00	27 1/2"	2:02	25"	2:04	21 1/2"	2:11	20 1/2"
9:34	17"	9:26	22"	9:35	20 1/2"			10:30	25"	2:05	28 1/2"	2:07	25 3/4"	2:09	23"	2:16	22"
9:39	18 1/4"	9:31	23"	9:40	21 1/2"			10:35	26"	2:10	DRY	2:12	26 3/4"	2:14	24 1/2"	2:21	23 1/2"
9:44	19 1/4"	9:36	24"	9:45	22 1/2"			10:40	DRY			2:17	27 3/4"	2:19	28"	2:26	25"
9:49	20 1/4"	9:41	25"													2:31	26 1/2"
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/3.3 MINS.	

LOT 10 27" DEEP		LOT 11 27" DEEP		LOT 12 27" DEEP		LOT 13 30" DEEP		LOT 14 32" DEEP		LOT 15 30" DEEP		LOT 16 30" DEEP		LOT 17 28" DEEP			
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING		
9:13	4"	9:10	4"	9:18	3"	11:28	4"	11:24	3 1/2"	10:41	9"	10:39	7"	10:45	3"		
9:18	11 1/2"	9:15	14 1/2"	9:23	7"	11:33	10"	11:29	17 1/2"	10:46	12 1/2"	10:44	12"	10:50	12"		
9:23	16"	9:20	17 1/2"	9:28	10"	11:38	12 1/2"	11:34	21"	10:51	15"	10:49	15"	10:55	14 1/4"		
9:28	18"	9:25	21"	9:33	11 3/4"	11:43	14 1/2"	11:39	23 1/2"	10:56	17"	10:54	19 1/2"	11:00	15 1/4"		
9:33	20"	9:30	22"	9:38	13"	11:48	16 1/2"	11:44	25 1/2"	11:01	19"	10:59	20 1/2"	11:05	17 1/4"		
9:38	21 1/2"	9:35	23"	9:43	14 1/4"	11:53	17 1/4"	11:49	27 1/2"	11:06	19 1/2"	11:04	22"	11:10	19 1/4"		
9:43	22 1/2"	9:40	24"	9:48	15 1/2"	11:58	19"	11:54	29"	11:11	20 1/2"	11:09	23"	11:15	21"		
9:48	23 1/2"	9:45	25"	9:53	16 1/2"	12:03	20 1/2"	11:59	30 1/2"	11:16	21 1/2"	11:14	24"	11:20	22 1/4"		
9:53	24 1/2"	9:50	26"	9:58	17 7/8"	12:08	21 1/8"	11:59	30 1/2"	11:21	22 1/2"	11:19	25"	11:25	23 1/4"		
9:58	25 1/2"	9:55	DRY	10:03	19 1/2"			12:04	DRY	11:26	23 1/2"	11:24	25 3/4"	11:30	24 1/2"		
10:03	DRY													11:35	25 3/4"		
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3 MINS.		PERC RATE: 1"/3 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/6.7 MINS.		PERC RATE: 1"/4 MINS.			

LOT 18 28" DEEP		LOT 19 27" DEEP		LOT 20 30" DEEP		LOT 21 29" DEEP		LOT 22 28" DEEP		LOT 23 29" DEEP		LOT 24 30" DEEP		LOT 25 28" DEEP			
TIME	READING	TIME	READING	TIME	READING	TIME	READING										
10:37	3"	8:48	2"	8:41	4"	8:43	5"	8:40	5 1/2"	1:50	4 1/4"	1:30	2 1/2"	10:42	3"		
10:42	6 3/4"	8:53	9"	8:46	8 1/4"	8:48	10 3/4"	8:45	9 1/2"	1:55	11 7/8"	1:35	9 1/2"	10:47	10"		
10:47	9 1/4"	8:58	14"	8:51	10 1/4"	8:53	15"	8:50	11 1/2"	2:00	15 1/2"	1:40	13 1/2"	10:52	14"		
10:52	12 1/2"	9:03	18"	8:56	12 1/2"	8:58	17 1/2"	8:56	14"	2:05	18"	1:45	15"	10:57	17"		
10:57	15"	9:08	20"	9:01	15"	9:03	19 1/2"	9:00	15 1/2"	2:10	21"	1:50	17 1/2"	11:02	19"		
11:02	17"	9:13	22"	9:06	17"	9:08	21"	9:05	16 1/2"	2:15	23"	1:55	20"	11:07	21"		
11:07	19"	9:18	23"	9:11	18"	9:13	22"	9:10	17 3/4"	2:20	25"	2:00	21 1/2"	11:12	23 1/2"		
11:12	20"	9:23	24"	9:16	19"	9:18	23"	9:15	18 1/2"	2:25	27"	2:05	22 1/2"	11:17	25"		
11:17	21"	9:28	25"	9:21	20"	9:23	23 3/4"	9:20	19 1/2"	2:30	28 7/8"	2:10	23 1/2"	11:22	26 1/2"		
11:22	22 1/8"	9:33	26"	9:26	21"	9:28	24 1/2"	9:25	20 1/2"	2:35	DRY	2:15	24 1/2"				
11:27	23 1/8"	9:38	DRY	9:31	22"	9:33	25 1/2"	9:30	21 1/2"								
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/2.7 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.			

LOT 26 30" DEEP		LOT 27 29" DEEP		LOT 28 30" DEEP		LOT 29 28" DEEP		LOT 30 29" DEEP		LOT 31 29" DEEP		LOT 32 28" DEEP		LOT 33 30" DEEP			
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING		
11:43	3 1/2"	12:30	3"	12:27	3"	11:23	3"	11:45	3"	11:46	3"	10:15	3"	10:18	2 1/2"		
11:48	8"	12:35	12"	12:32	7 1/2"	11:28	11 3/4"	11:50	7 3/4"	11:51	6 1/2"	10:20	11 1/2"	10:23	12"		
11:53	10"	12:40	17 1/2"	12:37	11 1/2"	11:33	15"	11:55	11 1/2"	11:56	9"	10:25	16 1/2"	10:28	15 1/2"		
12:08	13"	12:45	20"	12:42	14"	11:38	18"	12:00	13 3/4"	12:01	12"	10:30	21"	10:33	19 1/2"		
12:13	14 1/2"	12:50	23"	12:47	16"	11:43	21 1/2"	12:05	16"	12:06	13 1/2"	10:35	24"	10:38	21"		
12:18	16"	12:55	25"	12:52	18"	11:48	24"	12:10	18"	12:11	14 1/2"	10:40	25 1/2"	10:43	22 1/2"		
12:23	17"	1:00	26 1/2"	12:57	19"	11:53	26"	12:15	20"	12:16	16"	10:45	27"	10:48	24"		
12:28	20"	1:05	28"	1:02	20"	11:58	DRY	12:20	21"	12:21	17 1/2"	10:50	DRY	10:53	25"		
		1:10	DRY	1:07	21"			12:25	22 1/4"	12:26	18 1/2"			10:58	25 3/4"		
				1:12	22"			12:30	23 1/2"	12:31	19 1/2"			11:03	26 3/4"		
								12:35	25"	12:36	20 1/2"						
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/2.5 MINS.		PERC RATE: 1"/4 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/6 MINS.			

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____ THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

IWVC APPLICATION# _____

APPROVED _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____

LOT 34 29" DEEP		LOT 35 30" DEEP		LOT 36 28" DEEP	
TIME	READING	TIME	READING	TIME	READING
10:49	3"	1:27	2 1/2"	1:38	5"
10:54	11"	1:32	8 1/4"	1:43	11"
10:59	15"	1:37	13"	1:48	13 1/2"
11:04	18 1/2"	1:42	15 1/2"	1:53	16"
11:09	20 1/2"	1:47	18"	1:58	18"
11:14	22"	1:52	19 1/2"	2:03	19"
11:19	23 1/2"	1:57	21 1/2"	2:08	20 1/8"
11:24	25"	2:02	23"	2:13	21 1/2"
11:29	26 1/2"	2:07	24 1/2"	2:18	22 1/2"
		2:12	26"	2:23	23 1/2"
				2:28	24 1/2"
PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.	

SANITARY DESIGN CRITERIA

- A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.
 - B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/INCH OR LESS REQUIRES 495 S.F. OF EFFECTIVE LEACHING AREA.
 - C. GST 6236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN. LOTS 2 & 3 WILL BE 45' MANTIS 536-8. CREDIT PER L.F. IS 26.2 S.F. MINIMUM REQUIRED AREA IS 495 S.F./ 26.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.
- HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
 FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
 PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/INCH.

LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	MLSS TABLE				SYSTEM
				HF	FF	PF	MLSS	
1	3 & 4	*	*	*	1.5	1.0		20 L.F. GST 6236
2	5 & 6	8.1 TO 10.0%	30.1-36.0"	24	1.5	1.0	36	45' MANTIS 536-8
3	19 & 20	3.1 TO 4.0%	36.1-42.0"	26	1.5	1.0	42	45' MANTIS 536-8
4	7 & 8				1.5	1.0		20 L.F. GST 6236
5	9 & 10				1.5	1.0		20 L.F. GST 6236
6	11 & 12				1.5	1.0		20 L.F. GST 6236
7	13 & 14				1.5	1.0		20 L.F. GST 6236
8	15 & 16				1.5	1.0		20 L.F. GST 6236
9	17 & 18				1.5	1.0		20 L.F. GST 6236
10	21 & 22				1.5	1.0		20 L.F. GST 6236
11	85 & 86				1.5	1.0		20 L.F. GST 6236
12	83 & 84				1.5	1.0		20 L.F. GST 6236
13	27 & 28				1.5	1.0		20 L.F. GST 6236
14	29 & 30				1.5	1.0		20 L.F. GST 6236
15	31 & 32				1.5	1.0		20 L.F. GST 6236
16	33 & 34				1.5	1.0		20 L.F. GST 6236
17	35 & 36				1.5	1.0		20 L.F. GST 6236
18	37 & 38				1.5	1.0		20 L.F. GST 6236
19	81 & 82				1.5	1.0		20 L.F. GST 6236
20	39 & 40				1.5	1.0		20 L.F. GST 6236
21	41 & 42				1.5	1.0		20 L.F. GST 6236
22	43 & 44				1.5	1.0		20 L.F. GST 6236
23	51 & 52				1.5	1.0		20 L.F. GST 6236
24	53 & 54				1.5	1.		

EROSION AND SEDIMENTATION CONTROL PLAN

THIS PLAN HAS BEEN DEVELOPED TO MINIMIZE EROSION AND SEDIMENTATION AND REDUCE THE IMPACT OF STORM WATER RUNOFF DURING CONSTRUCTION USING ENGINEERING PRINCIPALS DETAILED IN THE CONNECTICUT GUIDELINES FOR SOIL AND EROSION AND SEDIMENT CONTROL.

THE ACCOMPANYING PLANS PROVIDE THE FOLLOWING INFORMATION FOR THE IMPLEMENTATION OF THIS PLAN:

- LOCATION OF SEDIMENT CONTROL BARRIERS
- FINISHED GRADES TO BE ACHIEVED
- CONSTRUCTION SEQUENCE AND DETAILS

THIS PROJECT IS FOR THE DEVELOPMENT OF 36 LOT RESIDENTIAL SUBDIVISION. THERE ARE INLAND WETLANDS ON THIS PROPERTY.

OWNER AT TIME OF CONSTRUCTION WILL SERVE AS CONTACT PERSON FOR IMPLEMENTING EROSION AND SEDIMENT CONTROL MEASURES ON THIS PLAN. EROSION CONTROL NOT REQUIRED FOR AVERY BROOK CIRCLE.

CONSTRUCTION SEQUENCE: HOMES

1. STAKEOUT LIMITS OF CONSTRUCTION FOR THE DRIVEWAYS, HOMES AND SEPTIC SYSTEMS.
2. INSTALL SEDIMENTATION CONTROL BARRIERS AS SHOWN ON THE PLAN.
3. REMOVE EXISTING VEGETATION AND TOPSOIL WITHIN THE LIMITS OF CONSTRUCTION. STOCKPILE TOPSOIL AS SHOWN ON THE PLAN.
4. ROUGH GRADE THE DRIVEWAY AND HOUSE AREA.
5. INSTALL/CONNECT UTILITIES
6. FOLLOWING CONSTRUCTION OF THE HOME, FINISH GRADE ALL DISTURBED AREAS.
7. LOAM AND SEED ALL DISTURBED AREAS.

MAINTENANCE:

INSPECT SEDIMENT BARRIERS AFTER EACH STORM EVENT AND REPAIR OR REPLACE AS NECESSARY. CLEAN OUT OF ACCUMULATED SEDIMENT IS NECESSARY IF 1/2 OF THE ORIGINAL HEIGHT OF THE BARRIER BECOMES FILLED IN WITH SEDIMENT.

GENERAL NOTES:

1. MAINTAIN ALL SEDIMENT AND EROSION CONTROL FACILITIES UNTIL ALL AREAS HAVE BEEN STABILIZED.
2. LIMITS OF DISTURBANCE AND EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSIDERED AS TYPICAL MINIMUM STANDARDS. THE GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL AND FOR IMPLEMENTING ADDITIONAL MEASURES AS SITE CONDITIONS WARRANT.
3. SLOPES IN HIGH MAINTENANCE AREAS SHALL NOT EXCEED 3:1 (H:V).
4. NO DRIVEWAY SHALL BE GREATER THAN 15% SLOPE AT ANY POINT. ANY DRIVEWAY HAVING A GRADE OF 8% OR MORE, BUT NOT EXCEEDING 15% SHALL BE PAVED FOR THAT PORTION OF DRIVEWAY THAT EXCEEDS 8%.
5. CONSTRUCTION EXPECTED TO BEGIN IN THE FALL OF 2022.

TEMPORARY SEEDING

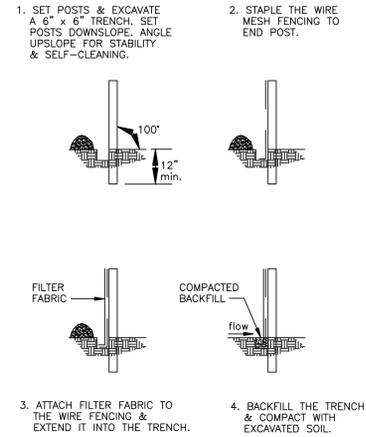
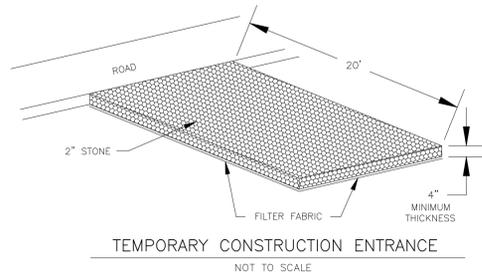
USE A TEMPORARY VEGETATION COVER OF ANNUAL RYE GRASS AT A RATE OF 1.0 lbs./1000 S.F. APPLY 10-10-10 FERTILIZER, OR EQUIVALENT, AT A RATE OF 7.5 lbs./1000 S.F. AND LIMESTONE AT A RATE OF 90 lbs./1000 S.F. APPLY STRAW OR HAY MULCH AT A RATE OF 70 lbs./1000 S.F.

PERMANENT SEEDING

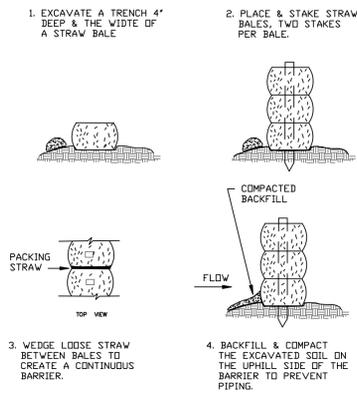
SEED BED PREPARATION: FINE GRADE AND RAKE SOIL SURFACE TO REMOVE STONES LARGER THAN 2" IN DIAMETER. APPLY LIMESTONE AT A RATE OF 90 lbs./1000 S.F. FERTILIZE WITH 10-10-10, OR EQUIVALENT, AT A RATE OF 7.5 lbs./1000 S.F. WORK LIMESTONE AND FERTILIZER INTO SOIL UNIFORMLY TO A DEPTH OF 4" WITH A HARROW OR EQUIVALENT. SEED APPLICATION: APPLY LAWN SEED BY HAND, CYCLONE SEEDER OR HYDROSEEDER. LIGHTLY DRAG OR ROLL THE SEED SURFACE TO COVER SEED. SEEDING SHOULD BE DONE BETWEEN APRIL 15 AND JUNE 15 OR BETWEEN AUGUST 15 AND SEPTEMBER 30. IF SEEDING CANNOT BE DONE DURING THESE TIMES, REPEAT MULCHING PROCEDURE BELOW UNTIL SEEDING CAN TAKE PLACE. NOTE: IF HYDROSEEDER IS USED, INCREASE SEED MIXTURE BY 10X. MULCHING: IMMEDIATELY FOLLOWING SEEDING, MULCH THE SEED SURFACE WITH STRAW OR HAY AT A RATE OF 70 lbs./1000 S.F. SPREAD MULCH BY HAND OR MULCH BLOWER. PUNCH MULCH INTO SOIL SURFACE WITH TRACK MACHINE OR DISK HARROW.

CONSTRUCTION SEQUENCE: AVERY BROOK CIRCLE

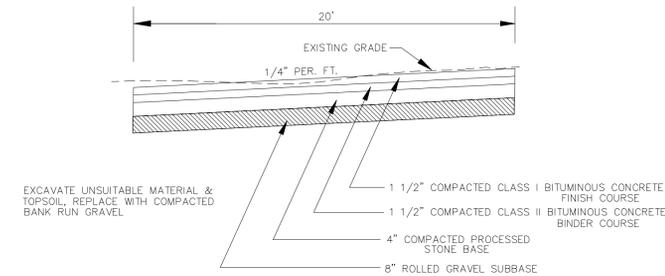
- 1) STAKEOUT OFFSETS AND GRADE STAKES AT 50 FOOT STATIONS
- 2) REMOVE/DISPOSE OF ANY STUMPS/TREE DEBRIS.
- 3) STRIP/STOCKPILE TOPSOIL - LOCATION OF STOCKPILES TO BE DETERMINED. INSTALL EROSION CONTROL AT STOCKPILES.
- 4) EXCAVATE TO SUBGRADE. INSTALL 4" SUBBASE; 4" BASE AND BITUMINOUS CONCRETE.
- 5) INSTALL/GRADE/SEED TOPSOIL SHOULDERS OF AVERY BROOK CIRCLE.



FILTER FABRIC SEDIMENT BARRIER
NOT TO SCALE



CONSTRUCTION OF A STRAW BALE BARRIER
NOT TO SCALE



AVERY BROOK CIRCLE CROSS-SECTION
NOT TO SCALE

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

IWVC APPLICATION# _____

APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____

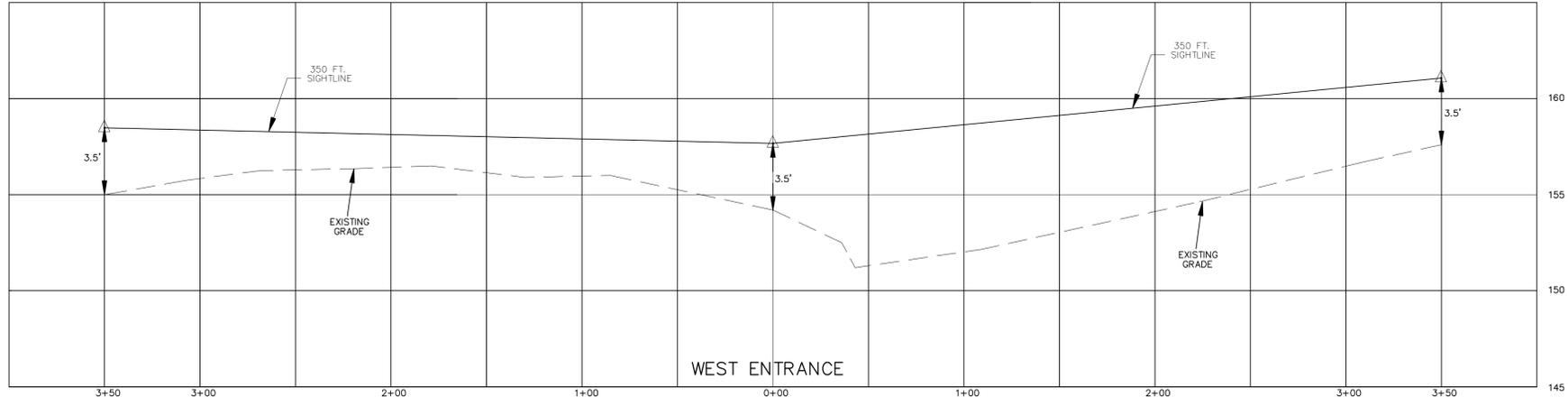
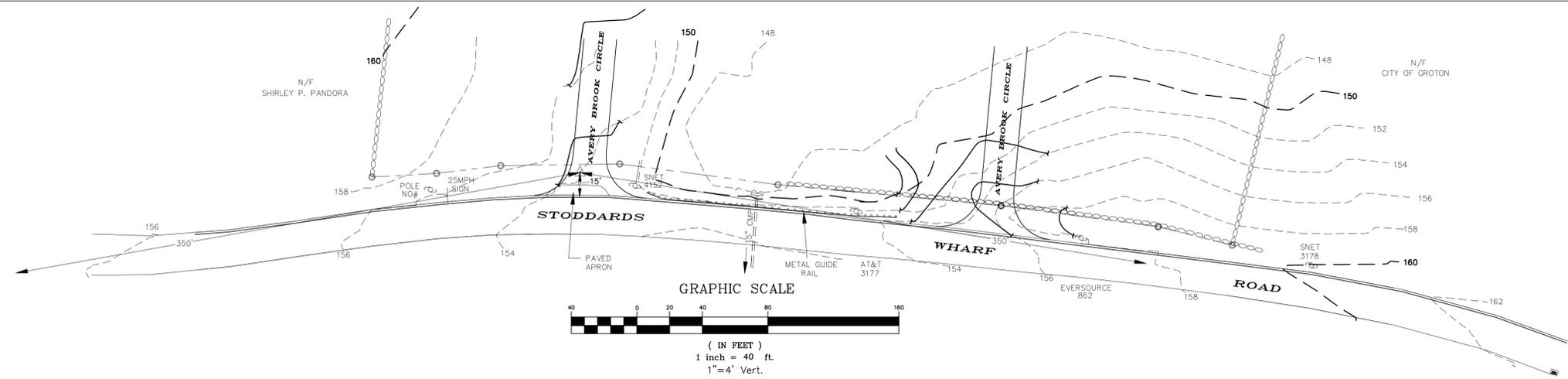
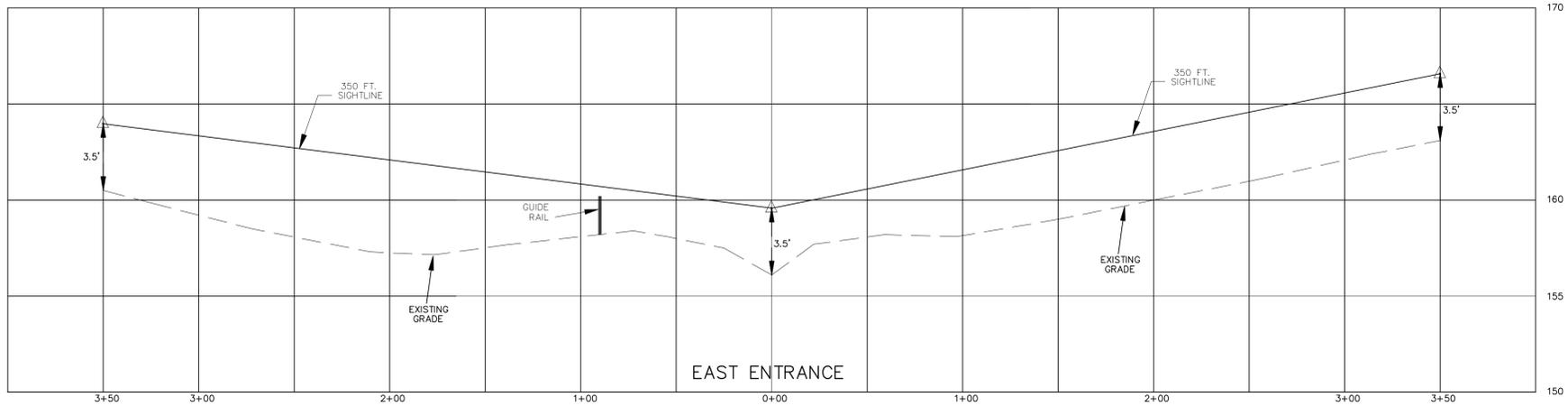
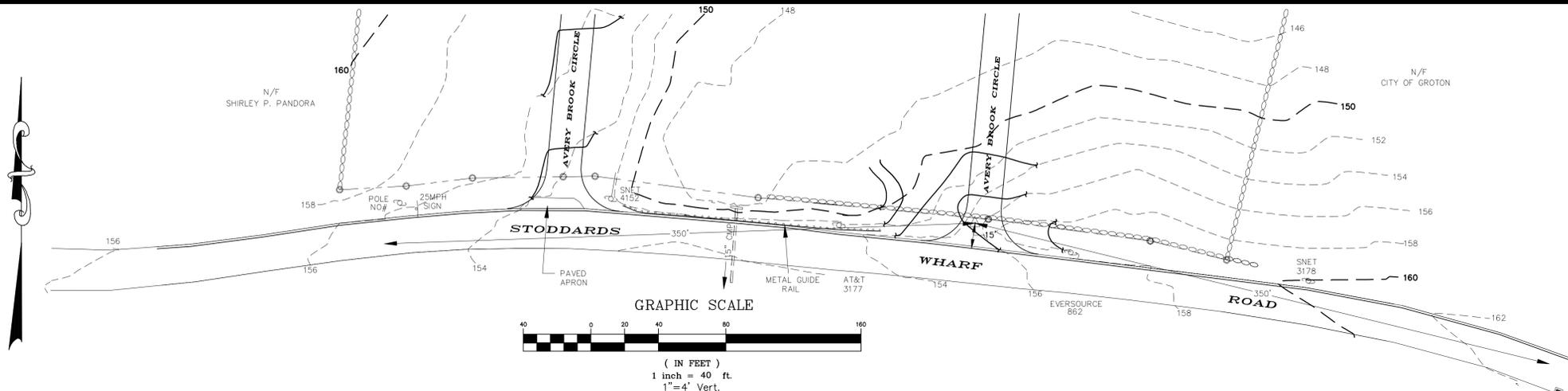
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DIETER & GARDNER
LAND SURVEYORS • PLANNERS
1641 CONNECTICUT ROUTE 12
P.O. BOX 335
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

**PLAN SHOWING
EROSION AND SEDIMENT CONTROL
NARRATIVE AND DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022**



DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 P.O. BOX 335
 1641 CONNECTICUT ROUTE 12
 GALES FERRY, CT. 06335
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 EMAIL: DIETER.GARDNER@YAHOO.COM



LEGEND

	STONE WALL
	PROPERTY LINE
	STREET LINE
	EXISTING CONTOUR
	PROPOSED CONTOUR
	UTILITY POLE

**SIGHTLINE
 DEMONSTRATION PLAN
 PROPERTY OF
 AVERY BROOK HOMES LLC
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT
 SCALE: 1"=40' HORIZ.
 1"=4' VERT.
 JULY 2022**

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 THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND
 SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN.
 JOB#22-007.DWG FBK#327

**APPLICATION OF AVERY BROOK HOMES, LLC TO
TOWN OF LEDYARD INLAND WETLANDS AND WATERCOURSES COMMISSION**

**NARRATIVE DESCRIPTION AND CONSTRUCTION SEQUENCE RELATIVE TO
THE DEVELOPMENT OF A PROPOSED THIRTY-SIX (36) LOT RESIDENTIAL
AFFORDABLE HOUSING SUBDIVISION AT 94, 96, 98 AND 100 STODDARDS
WHARF ROAD A.K.A. CONNECTICUT ROUTE 214**

PROJECT OVERVIEW:

The Applicant is the owner of four (4) certain contiguous tracts or parcels of land located on the northerly side of Stoddards Wharf Road A.K.A. Connecticut Route 214 in the Town of Ledyard, Connecticut comprising 9.21 acres, more or less. The properties are designated as 94, 96, 98 and 100 Stoddards Wharf Road and are more particularly delineated on Ledyard Assessor's Map 65. The Applicant's properties (hereinafter collectively referred to as the "Property") is abutted to the northwest, north, northeast and east by land of the City of Groton. The Property is comprised of well-drained soils as depicted on the "Boundary and Soils Map" (and as hereinafter described in the Soils section of this Narrative) as depicted on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown June 2022 Sheet 1 of 6 Dieter & Gardner Land Surveyors – Planners P.O. Box 335 1641 Connecticut Route 12 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

The Applicant is proposing to develop the Property for a thirty-six (36) lot single family residential subdivision under the Affordable Housing Act, Connecticut General Statutes §8-30g. The development scheme for the Property contemplates the development of a private loop road with two (2) access points on the northerly side of Stoddards Wharf Road. Due to the free draining nature of the soils prevalent throughout the site, no closed drainage system is proposed in the roadway system with the anticipation that stormwater runoff from improved portions of the project site will infiltrate into the existing well-drained soils throughout the site. This will eliminate any point source discharges resulting from the proposed development.

There are only peripheral areas of regulated inland wetlands located on the Property as depicted by Wetland Flags 1 – 6 (along the easterly periphery of Proposed Lots 2 and 3), Wetland Flags 1A – 8A (along the easterly periphery of Lot 6) and Wetland Flags 10B – 12B (along the northerly periphery of Lot 12) all as shown on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1" = 40' June 2022 Sheet 2 of 6 Dieter & Gardner Land Surveyors – Planners 1641 Connecticut Route 12 P.O. Box 335 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

Each of the proposed building lots in the affordable housing subdivision will contain a drilled potable water supply well and a subsurface sewage disposal system. The development scheme for the project is depicted on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route

As depicted on the Plan, the Applicant is not proposing any direct impacts to inland wetlands and watercourses. However, the Applicant is proposing construction activities, including the placement of subsurface sewage disposal systems, grading and portions of dwelling houses in upland review areas adjacent to inland wetlands on Proposed Lots 2, 3, 4, 5, 6, 10, 11, 12 and 13 as depicted on the Plan.

An evaluation of the wetland systems located along the periphery of the project site, the characteristics of those wetland systems and an evaluation of the lack of adverse impacts to those systems as a result of the proposed development is contained in a separate report submitted with this application to the Town of Ledyard Inland Wetlands and Watercourses Commission prepared by Ian Cole, Certified Soil Scientist and Wetland Ecologist.

SOILS:

UPLAND SOILS

Upland soils found on the Project site consist of the following:

Charlton-Hollis Soils (CrD). This series consists of well drained to somewhat excessively well drained, non-stony to extremely stony soils that formed in loamy glacial till. Charlton-Hollis Soils are found on upland hills, ridges and glacial till plains. Slopes range from 3 to 45 percent. Charlton-Hollis Soils are found in a drainage sequence on the landscape with moderately well drained Sutton Soils and poorly drained Leicester Soils. They are near well drained Canton, Narragansett, Agawam and Paxton Soils. These soils have finer textures in the C horizon than Canton and Narragansett Soils and a more friable C horizon than Paxton Soils. Soil characteristics are as follows:

- | | |
|-----------|---|
| 0” – 2” | Very dark brown, fine sandy loam; weak medium granular structure; very friable; many fine roots; 5 percent rock fragment; strongly acid, clear wavy boundary. |
| 2” – 5” | Dark brown, fine sandy loam; weak medium granular structure; very friable; common fine roots; 5 percent rock fragment; strongly acid; gradual wavy boundary. |
| 5” – 12” | Dark yellowish-brown, fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 5 percent rock fragment; strongly acid; gradual wavy boundary. |
| 12” – 17” | Dark yellowish-brown, fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 5 percent rock fragment; strongly acid. |

- 17” – 24” Yellowish-brown, fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; clear wavy boundary.
- 24” – 29” Light olive-brown, fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent rock fragment; medium acid; clear wavy boundary.
- 29” – 60” Grayish-brown, fine sandy loam; massive; friable; 15 percent rock fragment; medium acid.

Canton and Charlton Very Stony Fine Sandy Loams 3 – 15 Percent Slopes (CdC). These gently sloping and sloping well-drained soils are found on glacial till upland hills, plains and ridges. Stones and boulders cover 8 – 25 percent of the surface. Mapped areas are dominantly irregular in shape and mostly 2 to 40 acres. The mapped acreage of this undifferentiated group is about 55 percent Canton soil, 25 percent Charlton soil and 20 percent other soils. Mapped areas consist of Canton soil or Charlton soil, or both. These soils were mapped together because there are no major differences in use or management. Canton soils are found near somewhat excessively drained Merrimack and Hollis soils, well-drained Charlton and Montauk soils, moderately well-drained Sutton soils and poorly drained Leicester soils.

The soil stratification of the Canton soil is as follows:

- 0” – 1” Black fine sandy loam; weak fine granular structure; very friable; common fine roots and medium; strongly acid; abrupt wavy boundary.
- 1” – 5” Dark yellowish-brown fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; 10 percent rock fragment; strongly acid; gradual wavy boundary.
- 5” – 15” Dark yellowish-brown sandy loam; weak medium granular structure; very friable; common fine and medium roots; 15 percent rock fragment; strongly acid; gradual wavy boundary.
- 15” – 24” Dark yellowish-brown sandy loam; weak medium granular structure; very friable; few fine roots; 15 percent rock fragment; strongly acid; gradual wavy boundary.
- 24” – 60” Grayish brown gravelly sand; massive; friable; 20 percent rock fragment; strongly acid.

The Charlton soils are found in the drainage sequence on the landscape with moderately well-drained Sutton soils and poorly drained Leicester soils. They are near somewhat excessively

drained Hollis soils and well-drained Canton, Narragansett, Agawam and Paxton soils. The soil stratification of the Charlton soil is as follows:

- 0" – 8" Very dark grayish-brown fine sandy loam; weak medium granular structure; friable; common fine and medium roots; 10 percent rock fragment; strongly acid; abrupt wavy boundary.
- 8" – 15" Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; gradual wavy boundary.
- 15" – 24" Yellowish-brown fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; clear wavy boundary.
- 24" – 29" Light olive brown fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent rock fragment; medium acid; clear wavy boundary
- 29" – 60" Grayish brown fine sandy loam; massive; friable; 15 percent rock fragment; medium acid.

Agawam Fine Sandy Loam, 3 – 8 Percent Slopes (AfB). The Agawam soil consists of well-drained soils that formed in glacial outwash. Agawam soils are found on stream terraces and outwash plains. Slopes range from 0 to 8 percent. The Agawam soils are found in the drainage sequence on the landscape with moderately well-drained Ninigret soils. They are near excessively drained Hinckley soils, somewhat excessively drained Merrimack soils, well-drained Haven, Canton and Charlton soils and poorly drained Raypol and Walpole soils. The soil stratification of the Agawam soil is as follows:

- 0" – 9" Dark brown fine sandy loam; weak medium granular structure; very friable; few fine roots; 5 percent coarse fragment; strongly acid; abrupt wavy boundary.
- 9" – 19" Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent coarse fragment; strongly acid; gradual wavy boundary.
- 19" – 24" Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent coarse fragment; medium acid; abrupt wavy boundary.
- 24" – 32" Light olive brown sand; massive; very friable; few fine roots; 15 percent coarse fragment; medium acid; abrupt wavy boundary

32" – 60" Light olive brown very gravelly coarse sand; single grain; loose; 55 percent coarse fragment; medium acid.

Haven Silt Loam, 0 to 3 Percent Slopes (HcA). The Haven soil consists of well-drained soils that formed in glacial outwash. Haven soils are found on stream terraces and outwash plains. Slopes range from 0 to 3 percent. Haven soils are found in the drainage sequence on the landscape with moderately well-drained Tisbury soils and poorly drained Raypol soils. They are found near excessively drained Hinckley soils, well-drained Canton, Charlton, Narragansett and Agawam soils, and moderately well-drained Ninigret soils. The soil stratification of the Haven soil is as follows:

0" – 7" Dark brown silt loam; weak fine granular structure; very friable; common fine and medium roots; 5 percent coarse fragment; strongly acid; abrupt wavy boundary.

7" – 11" Brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent coarse fragment; strongly acid; gradual wavy boundary.

11" – 15" Dark yellowish-brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent coarse fragment; strongly acid; gradual wavy boundary.

15" – 23" Yellowish-brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent coarse fragment; strongly acid; clear wavy boundary

23" – 60" Light yellowish-brown very gravelly sand; single grain; loose; 55 percent coarse fragment; medium acid.

Hinckley Gravelly Sandy Loam, 3 to 15 Percent Slopes (HkC). This gently sloping and sloping, excessively drained soil is found on stream terraces, outwash plains, kames and eskers. Mapped areas are dominantly irregular in shape and mostly 2 to 25 acres. The Hinckley soils are found near excessively drained Windsor soils, somewhat excessively drained Merrimack soils, well-drained Agawam and Haven soils, moderately well-drained Sudbury soils, poorly drained Walpole soils and very poorly drained Scarboro soils. The soils stratification of the Hinckley soil is as follows:

0" – 7" Dark brown gravelly sandy loam; weak fine granular structure; very friable; many fine roots; 20 percent coarse fragment; medium acid; abrupt wavy boundary.

7" – 14" Yellowish-brown gravelly loamy sand; single grain; loose; few fine roots; 25 percent coarse fragment; medium acid; gradual wavy boundary.

14" – 22" Yellowish-brown gravelly loamy sand; single grain; loose; few fine roots; 40 percent coarse fragment; strongly acid; clear wavy boundary.

22” –60” Brownish-yellow very gravelly coarse sand; single grain; loose; 60 percent coarse fragment; medium acid.

Udorthents Urban Land Complex (Ud). Udorthents soils consist of excessively drained to moderately well-drained soils found on glacial till upland hills, ridges, till plans, drumlins and outwash plains and on stream terraces. They are found in areas where more than two feet of the upper part of the original soil has been removed, or in areas that have been covered by more than two feet of fill material. Udorthents are found in loamy or sandy glacial till and gravelly or very gravelly outwash. Slopes range from 0 to 15 percent. Mapped areas are mostly 5 to 40 acres. Included within this complex in mapping are small, intermingled areas of undisturbed soils. Due to the disturbed nature of this soil, this soil complex is not assigned to a capability subclass.

WETLAND SOILS:

Ridgebury-Leicester-Whitman Soils (3). These poorly drained and very poorly drained soils are found in drainageways and depressions on glacial till, upland hills, ridges, plains and drumloidal landforms. Stones and boulders cover 8-25% of the surface. Slopes range from 0-30%. The mapped acreage of this undifferentiated group is about 35% Ridgebury soil, 30% Leicester soil, 20% Whitman soil and 15% other soils. Some mapped areas consist of one of these soils, and other areas consist of two or three. These soils were mapped together because there are no major differences in use and management.

The soil stratification for the Ridgebury soil is as follows:

- 0” – 1” Partly decomposed leaves.
- 0” – 4” Black, fine sandy loam; weak medium granular structure; friable; common fine roots; 5% rock fragments; strongly acid; clear wavy boundary.
- 4” – 13” Gray fine sandy loam; common medium distinct strong brown mottles and common, medium faint yellowish brown mottles; massive; friable; 5% rock fragments; strongly acid; gradual wavy boundary.
- 13” – 20” Brown fine sandy loam; many medium distinct yellowish brown mottles and few fine faint grayish brown mottles; massive; friable; firm in place; 10% rock fragments; slightly acid; clear wavy boundary.
- 20” – 60” Grayish brown sandy loam; few fine faint yellowish brown mottles; massive; very firm, brittle; 5% rock fragment; slightly acid.

The soil stratification of the Leicester soil is as follows:

- 0” – 2” Decomposed leaves.

- 2" – 6" Very dark gray fine sandy loam; weak fine granular structure; very friable; few fine and medium roots; 5% rock fragments; very strongly acid; abrupt smooth boundary.
- 6" – 12" Dark grayish brown, fine sandy loam; few fine faint yellowish-brown mottles and many medium distinct light brownish gray mottles; weak medium subangular blocky structure; very friable; few medium roots; 5% rock fragments; strongly acid; clear wavy boundary.
- 12" – 24" Grayish brown, fine sandy loam; few medium distinct yellowish-brown and dark grayish brown mottles; weak medium subangular blocky structure; friable; 10% rock fragments; strongly acid; gradual wavy boundary.
- 24" – 32" Pale olive fine sandy loam; many coarse distinct yellowish brown mottles; weak medium subangular blocky structure; friable; 15% rock fragments; strongly acid; gradual wavy boundary.
- 32" – 60" Light olive gray gravelly fine sandy loam; many medium distinct yellowish-brown mottles; massive; friable; 25% rock fragment; strongly acid.

The soil stratification of the Whitman soil is as follows:

- 0" – 1" Decomposed leaf litter.
- 1" – 9" Black fine sandy loam; weak medium granular structure; friable; common fine and medium roots; strongly acid; abrupt wavy boundary.
- 9" – 16" Dark grayish brown fine sandy loam; few fine faint yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; 5% rock fragments; medium acid; clear wavy boundary.
- 16" – 22" Grayish brown, fine sandy loam; common medium distinct strong brown mottles and few medium light brownish gray mottles; moderate medium platy structure; very firm, brittle; 5% rock fragments; slightly acid; gradual wavy boundary.
- 22" – 60" Grayish brown fine sandy loam; common medium distinct strong brown mottles and few medium faint light brownish gray mottles; massive; firm, brittle; 5% rock fragments; slightly acid.

Included with these soils in mapping are small areas of moderately well drained Rainbow, Sutton and Woodbridge soils and very poorly drained Adrian and Palms soils. The Ridgebury soil

has a seasonal high water table at a depth of about 6". Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The Leicester soil has a seasonal high water table at a depth of about 6". Permeability is moderate or moderately rapid. The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum.

GENERAL PROCEDURES:

1. Prior to commencing construction of the Project, the Developer and the Developer's contractor shall meet with the Ledyard Wetlands Enforcement Officer (the "Preconstruction Meeting") to agree upon the method of installation and maintenance of erosion and sediment control measures during the development of the Project.
2. Subsequent to the Preconstruction Meeting, the Developer shall install all erosion and sediment control measures in accordance with the Plan. As development occurs on each individual building lot within the Project, additional erosion and sediment control measures as depicted on the Plan shall be installed to mitigate erosion and sediment migration on the particular lot being developed.
3. The Developer's contractor shall install an anti-tracking pad in accordance with the "Temporary Construction Entrance" detail depicted on Sheet 6 of 6 of the Plan at each point of access to the project site from Stoddards Wharf Road A.K.A. Connecticut Route 214.
4. Prior to conducting any construction activities at the Project, the Developer shall notify the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer that erosion and sediment control measures have been installed and request that the same be inspected and approved by the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer. This procedure shall be repeated as the development of each lot in the residential subdivision progresses.
5. All activities in conjunction with the development of the Project shall be conducted in accordance with the terms and provisions of the Plan and this Narrative. The Ledyard Wetlands Enforcement Officer shall have authority to modify any construction details or procedures hereinafter contained as warranted by field conditions during the duration of the development of the Project.
6. All erosion and sediment control measures shall be inspected at least weekly while construction is ongoing on each lot, and after every storm event resulting in a discharge, and repaired and maintained as necessary.
7. During the stabilization period (after the completion of development, but prior to the certification of approval by the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer for the removal of erosion and sediment control measures),

all erosion and sediment control measures shall be maintained in proper working order. Prior to the commencement of construction on each lot in the subdivision, the Developer shall certify, in writing, to the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer the name, address, telephone number and facsimile number of the person who will be primarily responsible for the installation and maintenance of sediment and erosion control measures on each lot in the subdivision. Such person shall be the designated representative of the Developer responsible for compliance with all erosion and sediment control measures in conjunction with the development of each lot. All erosion and sediment control measures shall be inspected and maintained and/or repaired, as necessary, on a weekly basis during the stabilization period and after each storm occurrence resulting in a discharge. Until notified otherwise, in writing, "Peter C. Gardner, a member of the Developer, 1641 Connecticut Route 12, Gales Ferry, Connecticut 06335; Telephone: (860) 464-7455; E-mail: dieter.gardner@yahoo.com" shall be the party responsible for compliance with the terms and provisions of the erosion and sediment control plan for the development of the Project.

8. At such time as stabilization has been achieved, and certification thereof received from the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer, erosion control measures shall be removed.
9. During the stabilization period, any erosion which occurs shall be immediately repaired by the Developer, reseeded with the seeding mixes set forth in the Construction Sequencing Section of this Narrative, and re-stabilized.
10. If any erosion and sediment control measures fail, or are not installed or maintained in accordance with this Narrative, the Plan, or the directives of the Ledyard Wetlands Enforcement Officer, the Developer, or its successors, shall be required to cease all development activities on such lot until such time as said erosion and sediment control measures have been installed in accordance with this Narrative, the Plan and the directives of the Ledyard Wetlands Enforcement Officer and approval of the same has been certified by the Ledyard Wetlands Enforcement Officer, in writing.

CONSTRUCTION SEQUENCING

LOT DEVELOPMENT (TYPICAL):

1. The Developer shall install erosion and sediment control measures in the location delineated on the Plan and in accordance with the detail depicted on the Plan.
2. An anti-tracking pad construction entrance shall be installed at the intersection of the driveway for each lot with Avery Brook Circle. The construction entrance shall be constructed in accordance with the "Temporary Construction Entrance" detail delineated on Sheet 6 of 6 of the Plan.

3. That portion of the lot designated for development for a single-family dwelling house and appurtenant facilities shall be cleared, grubbed and rough graded. All vegetated material shall be removed from the lot. Stumps shall either be (i) ground in place or (ii) removed to a location approved in advance by the Town of Ledyard Wetlands Enforcement Officer and the Town of Ledyard Zoning Enforcement Officer. No stumps shall be buried on the Project site.
4. The driveway serving the lot shall be installed at rough grade.
5. The foundation hole shall be excavated. Any stored or stockpiled material shall be encompassed by a single row of silt fence in the "Proposed Stockpile Area" for each lot. All topsoil on the project site shall be retained for the post-construction stabilization of the project area.
6. Footings and foundations shall be poured; and, after the application of water proofing and the passing of the curing period, backfilled with stockpiled material. Due to the pervious nature of the soils on the project site, footing drains are not required.
7. House construction shall commence and proceed to completion, including the installation of the onsite septic system.
8. The finished course, bearing surface, of the driveway shall be installed.
9. Final grading of the lot shall be completed.
10. Disturbed areas of the lot shall be stabilized by spreading surface soil over the same at a thickness of not less than 6 inches. Areas to be seeded will be prepared by spreading ground limestone equivalent to 50 percent calcium plus magnesium oxide applied at a rate of 100 pounds per 1,000 square feet. Fertilizer (10-10-10) is to be applied at a rate of 15 pounds per 1,000 square feet. All areas shall then be seeded with a seeding mix of Creeping Red Fescue applied at a rate of 20 pounds per acre, Kentucky Bluegrass applied at a rate of 20 pounds per acre and Perennial Ryegrass applied at a rate of 5 pounds per acre, for a total application of 45 pounds per acre. After the seeding, the area seeded shall be stabilized with hay mulch applied at a rate of 2 bales per 1,000 square feet, and anchored immediately after spreading by tracking. In the alternative, disturbed areas may be hydroseeded using a hydroseed mix containing similar cultivars. Seeding shall only occur between April 1 and June 15 and August 15 and October 1.
11. Once all seeded areas have been thoroughly stabilized and mowed with a minimum of two mowings, erosion control measures shall be removed.



TOWN OF LEDYARD CONNECTICUT
Planning & Zoning Commission
741 Colonel Ledyard Highway
Ledyard, CT 06339-1551
PHONE (860) 464-3215 www.ledyardct.org

Justin Debrodt, Chairman

Certified Mail: 7017 1450 0002 0797 6099

October 19, 2022

Avery Brook Homes, LLC
Mr. Peter Gardner
1641 Route 12
Gales Ferry, CT 06335

RE: Public Hearing: Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12 Gales Ferry, CT 06335, for a 36-lot re-subdivision pursuant to CGS 8-30g, on parcels located at 94, 96, 98 & 100 Stoddards Wharf Rd., Gales Ferry, CT.

Dear Applicant:

Your Application #IWWC22-18URA 94, 96, 98 & 100 Stoddards Wharf Rd., Gales Ferry, CT, was accepted at the Ledyard Inland Wetland & Watercourses Commission Meeting on September 6, 2022. On October 4, 2022, the Commission scheduled a Public Hearing for this application at 7:00 PM on November 1, 2022, in-person and via remote ZOOM. You or your representative are required to attend this meeting to answer any questions the Commission may have.

You will also receive a link in your email a few days before the hearing to access this meeting through ZOOM directly from your computer/laptop/tablet or phone.

Please contact me at Town Hall if you have any questions **(860) 464-3215**.

For the Commission,

Juliet Hodge
Town of Ledyard, Land Use Dept.

cc: Attorney Harry Heller via email

Exhibit #2

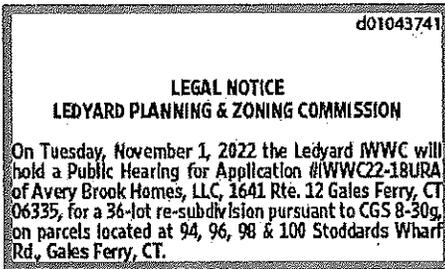
Juliet Hodge

From: Suraci, Matt <m.suraci@theday.com>
Sent: Monday, October 17, 2022 1:55 PM
To: Juliet Hodge
Subject: RE: LEGAL NOTICE IWWC22-18URA

Just checked this is the first I have seen of this particular notice.

All set now to print tomorrow 10-18 and 10-25 🍪

Total : \$201.30



Matt Suraci

Classified & Legal Account Executive
860-701-4410
Direct: m.suraci@theday.com
Legals: legal@theday.com
The Day Publishing Company
47 Eugene O'Neill Drive, PO Box 1231
New London, CT 06320
www.theday.com

From: Juliet Hodge <planner@ledyardct.org>
Sent: Monday, October 17, 2022 1:50 PM
To: Suraci, Matt <m.suraci@theday.com>
Subject: LEGAL NOTICE IWWC22-18URA

Here it is. It was all typed out... so can you make sure I did not already send it to you?
Sorry for being so frazzled. We still have no Admin. Person.
Juliet

Juliet Hodge
Director of Land Use & Planning
741 Colonel Ledyard Highway
Ledyard, CT 06339
Phone: (860)464-3215
planner@ledyardct.org

Exhibit # 3

LEGAL NOTICE
LEDYARD INLAND WETLAND WATERCOURSES COMMISSION

On Tuesday 12/6/22, the Ledyard IWWC will hold a Public Hearing for the following application:

#IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12 Gales Ferry, CT for a 26-lot re-subdivision pursuant to CGS 8-30g, on parcels located at 94, 96, 98 & 100 Stoddards Wharf Rd., Gales Ferry, CT.

A copy of the application and all supporting documents will be on file in the Town Clerk's Office and the Land Use Department at Town Hall, 741 Colonel Ledyard Hwy, Ledyard, CT

FOR PUBLICATION IN THE DAY ON Tuesday, November 22 & Tuesday, November 29.

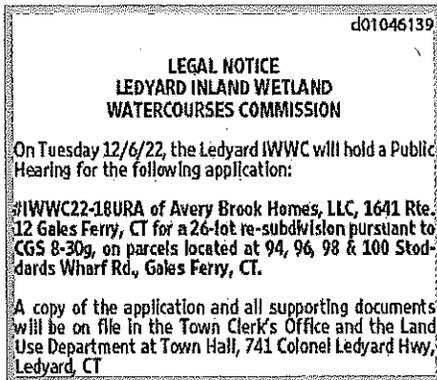
Makenna Perry

From: Suraci, Matt <m.suraci@theday.com>
Sent: Monday, November 21, 2022 9:40 AM
To: Makenna Perry
Subject: RE: Notice of Public Hearing

Good monring ! – this notice will run on 11-22 and 11-29

Thanks 😊

Total : \$278.00



Matt Suraci

Classified & Legal Account Executive
860-701-4410
Direct: m.suraci@theday.com
Legals: legal@theday.com
The Day Publishing Company
47 Eugene O'Neill Drive, PO Box 1231
New London, CT 06320
www.theday.com

From: Makenna Perry <MakennaP@ledyardct.org>
Sent: Monday, November 21, 2022 8:59 AM
To: Suraci, Matt <m.suraci@theday.com>
Subject: Notice of Public Hearing

Good morning!

Attached is a Notice of Public Hearing to be posted November 22nd, and November 29th. Please let me know if you have any questions.

Thank you,

Makenna Perry

MBL	Location	Owner	Address	Town	State	Zip
65-2360-106	106 STODDARDS WHARF RD	ALLARD ARLENE	PO BOX 94	LEDYARD	CT	06339
65-2360-93	93 STODDARDS WHARF RD	BRUCKNER ALLAN + KATHY	93 STODDARDS WHARF	LEDYARD	CT	06339
66-2360-70	70 STODDARDS WHARF RD	GROTON CITY OF	295 MERIDIAN STREET	GROTON	CT	06340
65-2360-89	89 STODDARDS WHARF RD	LAVIN MICHELA + KEITH TYLER	89 STODDARDS WHARF RD	LEDYARD	CT	06339
66-2360-85	85 STODDARDS WHARF RD	MAHER PAMELA C	85 STODDARDS WHARF RD	GALES FERRY	CT	06335
65-2360-95	95 STODDARDS WHARF RD	MCCARTHY JAMES LAWRENCE JR + DONOHUE ANN MARIE	95 STODDARDS WHARF RD	LEDYARD	CT	06339
65-2360-101	101 STODDARDS WHARF RD	PALMER RANDY D + SANDRA M	101 STODDARDS WHARF RD	GALES FERRY	CT	06335
65-2360-102	102 STODDARDS WHARF RD	PANDORA SHIRLEY P GRANTOR RETAINED	102 STODDARDS WHARF RD	LEDYARD	CT	06339



TOWN OF LEDYARD
Inland Wetland & Watercourses Commission

Juliet Hodge, Director of Planning and Development

741 Colonel Ledyard Highway

Ledyard, CT 06339-1551

PHONE (860) 464-3215

www.ledyardct.org

RE: Public Hearing: Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12 Gales Ferry, CT 06335, for a 26-lot re-subdivision pursuant to CGS 8-30g, on parcels located at 94, 96, 98 & 100 Stoddards Wharf Rd., Gales Ferry, CT.

Dear Mr. Gardner,

Your application #IWWC11-18URA of Avery Brook Homes, LLC, 1641 Rte. 12 Gales Ferry, CT 06335, for a 36-lot re-subdivision pursuant to CGS 8-30g, on parcels located at 94, 96, 98 & 100 Stoddards Wharf Rd., Gales Ferry, was accepted at the Ledyard Inland Wetland & Watercourses Commission Meeting on September 6, 2022. The modified Application revised October 31, 2022 was received in the Land Use Department on November 14, 2022.

The Commission has scheduled a Public Hearing for this application at 7:00 PM on December 6, 2022, in the Town Hall Annex Building, 741 Colonel Ledyard Highway, Ledyard, CT. You or your representative are required to be at this meeting to answer any questions the Commission may have.

Wetlands Regulation Section 9.3 requires you to do the following:

The applicant shall provide notice of the public hearing to the owner(s) of record of abutting land and land directly across the street, no less than fifteen days prior to the day of the hearing. Such notice shall be by certified mail or the posting of a sign on site.

Please provide a copy of the letter you send to your abutting property owners and certificates of mailing for our files. A list of abutting properties is attached to assist you.

Please contact me if you have any questions (860) 464-3266.

For the Commission,

Makenna Perry

Land Use Department Administrative Assistant

Inland Wetlands Watercourses Commission



Promoting healthy communities.

Date: 3 August 2022
To: Peter Gardner, LS
Subject Property: 94, 96, 98, 100 Stoddards Wharf Rd. Ledyard

Plan Designed by: Peter Gardner, LS Plan Date: July 7, 2022 Last Revision Date: Date Paid: July 7, 2022
The plan and associated information was submitted to our office on July 7, 2022 for a proposed 36 lot subdivision/commission review. Lots range from 0.19 to 0.42 acres and are to be served by private well water and private septic systems, in the Town of Ledyard .

The Ledge Light Health District (LLHD) does not issue approvals for Subdivision or Commission reviews, but our recommendation for suitability of the previously stated plan/lots to accommodate the LLHD Subdivision Submission Requirements and Connecticut Public Health Code Section 19-13-B103e are as follows:

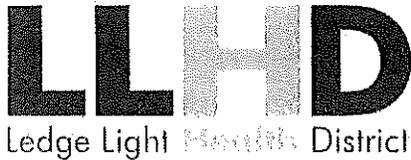
- ☒ Lots 1-5, 7-11, 13-23, 25-32, 35-36 are recommended suitable in their current condition IF footing drains are not required
☒ Lot 34 is recommended suitable IF AND when the following plan issues are addressed: No well is shown on this lot
☒ Lots 6, 12, 24, and 33 are recommended suitable IF AND when the following plan issues are addressed: Suitable tank location to be demonstrated

Comments

1. The feasibility of providing each lot with a private well that would produce an adequate quantity of water to serve a 3 bedroom single family dwelling was studied by GEI Consultants, and the results of the study provided in a document: "Water Study Proposed Stoddards Wharf Road Subdivision Ledyard, CT" July 6, 2022. The document concludes that "multiple lines of evidence" suggest that the current groundwater supply is adequate to supply the subdivision as proposed. It should be noted that the study uses an estimated subdivision demand of 7.5gpm "assuming typical residential demands", whereas the CT Public Health Code would assume a demand of 11.25gpm for 36 lots, 3 bedrooms per lot. The study states that the expected bedrock aquifer recharge over the footprint of the proposed subdivision is estimated to be 4.0gpm, leaving a deficit of 3.5gpm to be made up by groundwater flow entering the subdivision footprint horizontally. This deficit may in fact be greater (7.25gpm) based on the expected water demand for the total number of bedrooms.

There is no doubt that siting 36 wells in such close proximity could have a noticeable effect on the local groundwater table. Data collected for 5 existing wells in the area (drilled over 25 years ago) indicate that they are fairly deep (average 280ft) and have yields around 3gpm. The study does point out that the proposed subdivision is at least partially surrounded by an undeveloped watershed area, allowing for replenishment of the aquifer that would serve the wells. In Connecticut it is recommended that the 75ft well protective radius be located completely on the property that the well serves in order to allow neighbors full use of their property; it is further recommended that well casings be located 10ft or more from driving surfaces to avoid damage.

Due to the density of the proposed subdivision, It is noted that a public water supply would be the preferable means of supplying water to the community.



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communities

2. Proposed septic layouts on the lots demonstrate the feasibility of siting code complying primary and reserve septic leaching areas on the lots using proprietary leaching products that provide a high leaching credit per linear foot. The layouts are so close on some lots that positioning of the septic tank in a way to meet code requirements may be difficult and should be demonstrated in the context of not just the property served but also with respect to the surrounding properties.
3. It is recommended that thought be given to space on the lots that might be needed for Water Treatment Wastewater systems in the future.
4. No road drainage or catch basins are shown on the proposed site plan. It should be noted that wells and septic systems must be located 25ft or more from drains.
5. Individual site plans may require additional soil testing. Individual site plans where the house location, septic location or well location differs from the approved subdivision plan must be submitted on plans that show the proposed (or actual) locations of these items on the surrounding lots to ensure the proper separating distances are met.

*Please note that soils testing indicated on this plan are representative of actual soils conditions and additional deep test pits and percolation tests may be required by the Ledge Light Health District if the building or system location is altered and/or the suitable septic area is limited. Applicant should be aware that subdivision approval IS NOT sufficient for individual lot approval. Each lot must be reviewed by the Ledge Light Health District at the time of building permit application in order to obtain lot approval and issue a septic/well permit.

Please call me at 860-910-0446 with any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'Wendy K. Brown-Arnold'.

Wendy K. Brown-Arnold, RS, REHS
Supervisor, Land Use Activities

cc: Town of Ledyard Planning and Zoning Departments



Ian T. Cole

Professional Registered Soil Scientist / Professional Wetland Scientist

PO BOX 619

Middletown, CT 06457

Itcole@gmail.com

860-514-5642

August 22, 2022

Mr. Peter Gardner P.L.S.
Dieter & Gardner, Inc.
Land Surveying Planning Engineering
P.O. Box 335
Gales Ferry, CT 06335

RE: WETLAND ASSESSMENT REPORT – AVERY BROOK HOMES, LLC;
RESUBDIVISION OF 94,96, 98 and 100 STODDERS WHARF ROAD (aka ROUTE
214), LEDYARD, CONNECTICUT.

Dear Mr. Gardner:

On behalf of the applicant Avery Brook Homes, LLC I have completed a site review and wetland assessment of the above referenced Project for the construction of 36 new single-family affordable residential lots at 94, 96, 98, and 100 Stodders Wharf Road. I offer the following comments relative to assessing impacts to the inland wetlands and watercourses due to the proposed activities.

EXISTING CONDITIONS

The site combines 4-parcels totaling approximately 9.2 acres of vacant land. A home site previously occupied the 1.37-acre parcel 98. Parcels 94, 96 and 100 are abandoned agricultural lands that have reverted into unmanaged xeric early successional habitat dominated by dry upland grasses and eastern red cedar (Photo 1). The bulk of the property was used as agricultural crop and pasture lands and can be seen in various stages of use in CTDEEP's Historic Air Photos for 1934 (Figure 2), 1951 and 1970. Post agriculture abandonment the site has been idle for several decades and has subsequently revegetated with early successional colonizers that flavor the dry sandy soil conditions and open canopy habitat.

Three wetland resources were identified at the peripheral of the property positioned in the low-lying lands to the north and east. Billings-Avery Pond is located off-site to the north; single family residential lots are found to the west and south along the road frontage of Route 214; and vacant woodlands occupy the bulk of the undeveloped lands east and north of the site which are contiguous to the Billings-Avery Pond watershed.



Photo 1: Typical upland conditions that characterize the property – abandoned agricultural lands



Figure 1: 2019 AIR PHOTO – TOWN GIS PARCEL DATA & GENERAL REFERENCE LOCATIONS OF FLAGGED WETLANDS



Figure 2: CTDEEP 1934 AIR PHOTO – Documenting past agricultural land use practices
– Note Billings Avery Pond north of site has not yet been constructed.

In March 2022, I completed a field delineation of the jurisdictional freshwater inland wetland and watercourses boundaries of the above referenced properties.

Delineation Methodology

The second order soil survey and wetland delineation were completed in accordance with the standards of the Natural Resources Conservation Services (NRCS) National Cooperative Soil Survey and the definitions of inland wetlands and watercourses as found in the Connecticut General Statutes, Chapter 440, Sections 22a-36 through 22a-45 as amended. Wetlands, as defined by the Statute are those soil types designated as poorly drained, very poorly drained, floodplain or alluvial in accordance with the NRCS National Cooperative Soil Survey. Such areas may also include disturbed areas that have been filled, graded, or excavated and which possess an aquic (saturated) soil moisture regime.

Watercourses means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, vernal, or intermittent, public, or private, which are contained within, flow through or border upon the Town of Ledyard or any portion thereof not regulated pursuant to sections 22a-28 through 22a-35, inclusive, of the Connecticut General Statutes. Intermittent watercourses are defined permanent channel and bank and the occurrence of two or more of the following characteristics: (a) evidence of scour or deposits of recent alluvium or detritus, (b) the presence of standing or flowing water for duration longer than a particular storm incident, and (c) the presence of hydrophytic vegetation.

Wetland Delineation Findings

The on-site wetland delineation examined the upper 20" of the soil profile for the presence of hydric soil conditions. Those areas meeting the wetland criteria noted above were marked in the field with sequentially numbered pink and blue wetland flagging and are correctly illustrated on the subject site development plans.

Wetland Resources

Three wetland boundaries were identified on the property. The wetlands partly have their origin tied to past agricultural and land management practices.

Wetland #1 is an unnamed intermittent watercourse that flows across the eastern property line (Photo 2). The watercourse is well-defined and is confined to the banks of the stream and its associated low-lying and level poorly drained soils. As the watercourse flows across the property line the channel takes an abrupt 90 degree turn to the north. Alder, dogwood, spicebush, sweet pepperbush, and high bush blueberry shrubs characteristically define the shrub layer that line the banks of the stream channel. A herbaceous growth of tussock sedge, cinnamon fern and skunk cabbage carpets the wetland forest floor. These wetland conditions quickly give rise to upland vegetation and well-drained sandy soil conditions that define the adjacent abandoned fields.

Wetland #2 is a wetland pocket that formed in the bottom of an excavated borrow pit (Photo 3). Material was excavated to a point where it intercepted the groundwater table creating seasonal ponding that supported the development of ephemeral wetland conditions.

Wetland #3 is associated with the wetted perimeter and forested fringe of Billings-Avery Brook (Photo 4). The wetland boundary is well-defined and closely follows a distinct break in slope. The wetlands exhibit classic seasonally flooded palustrine forested red maple swamp vegetation common to the area.

Wetland Functions and Values

The assessment of wetland functions and values is based on the US Army Corps of Engineers' (USACE) Descriptive Approach (1995) methodology, and on best professional judgment.

The principal function of the regulated wetlands is groundwater discharge and recharge. Secondary functions include flood flow alteration (storage and desynchronization), water quality renovation properties (nutrient and sediment uptake and retention), and general wildlife habitat properties typically associated with undeveloped lands. Additionally, the short section of the intermittent watercourse channel adjacent to the development primarily functions to convey surface runoff down slope during the high seasonal water table period and after heavy rains.

Other wetland functions and services are somewhat limited due to the private ownership of the property, overall site setting, relatively small size (*specifically the wetland pocket on Lot #5*), association with an open channel, landscape position, intermittent hydro-period, lack of open standing deep water habitat, and presence of invasive and non-native species.



PHOTO 2: WETLAND #1 – Denoted by wetland flags 1 through 8 – Watercourse and Wetland that flows across eastern property line onto proposed lots #2 & #3.



Photo 3: Wetland Pocket in rear of proposed Lot #5. Ephemeral wetland is located in the bottom of a previously graveled-out “borrow pit”.



Photo 4: Typical early emergent conditions along Billings-Avery Brook in early March 2022. Generally, the watercourse channel and adjacent wetland boundary is well-defined.

Soil Survey

The soils identified on-site are a refinement of the Natural Resources Conservation Service (NRCS) Websoil Soil Survey. The site occurs at the interface of the dense glacial till and bedrock-controlled landscape that characterizes the high elevations on the extreme westerly side of the site with the opposing glacial meltwater outwash sands and gravels that cover the Avery Brook watershed.

Wetland Soils

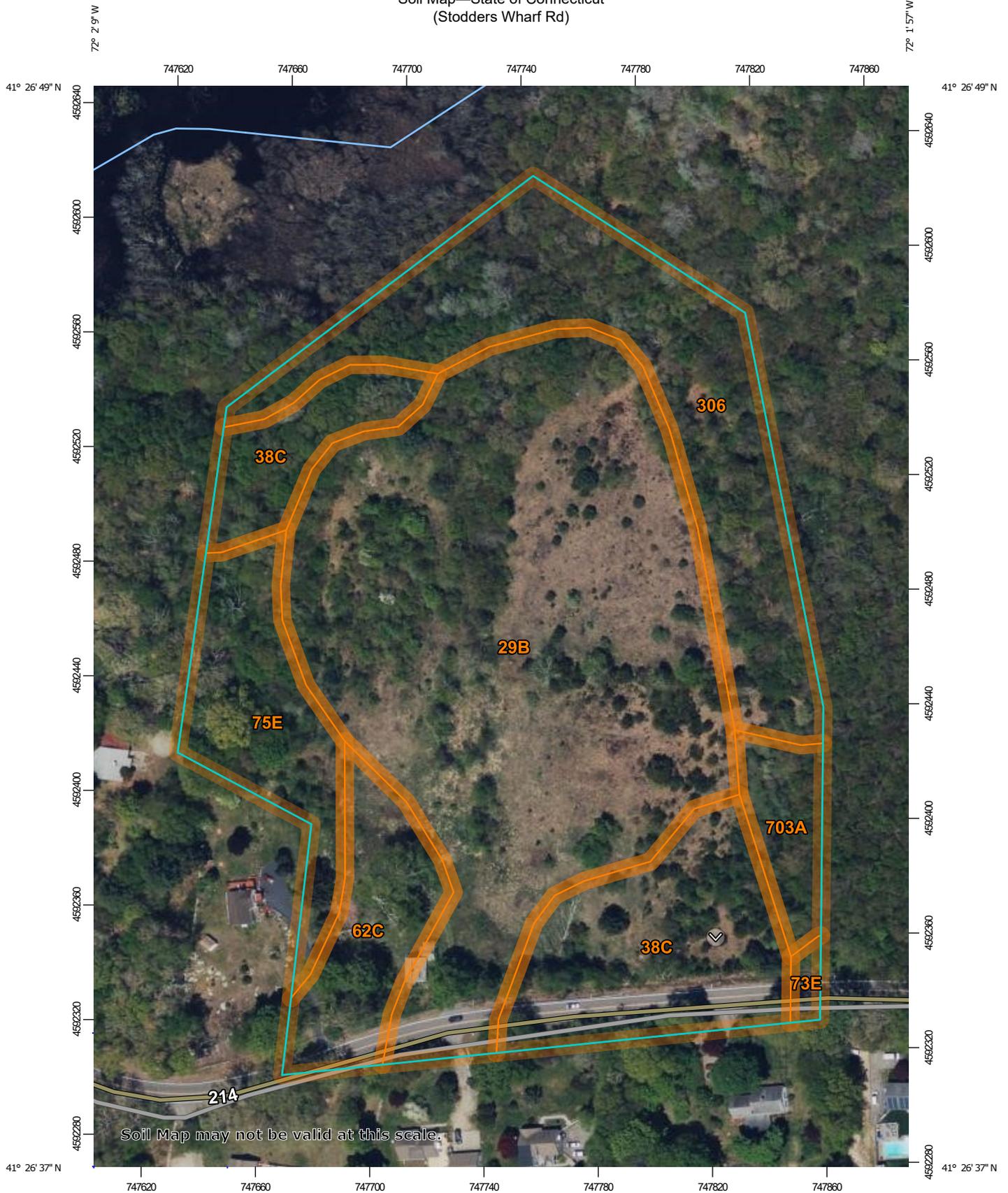
The primary wetlands soil series along the flagged wetland boundaries are classified as (3) Ridgebury, Leicester, and Whitman fine sandy loams. The poorly drained soils along the wetland boundary belong to the Ridgebury and Leicester soil series. Ridgebury and Leicester soils are found within drainageways and depressions on glacial till landscapes. Ridgebury and Leicester soils have a seasonal high-water table at a depth of about 6 inches. Very poorly drained Whitman soils are found in the lowest lying areas within the interior the wetlands where the water table is at the surface thought most of the growing season.

A typical soil profile along the wetland boundary consists of approximately 2"-0" of intermediately decomposed organic material (Oi), followed by 0"-8" of a thick dark topsoil horizon (A), underlain by 8-20" of a wet weakly developed grayish subsoil horizon (Bg) with common redoximorphic features (Common medium distinct strong brown mottles, masses) ranging from fine sandy loam to very fine sandy loam. This subsoil is underlain by a saturated sandy loam to fine sandy loam gray substratum (2Cg).

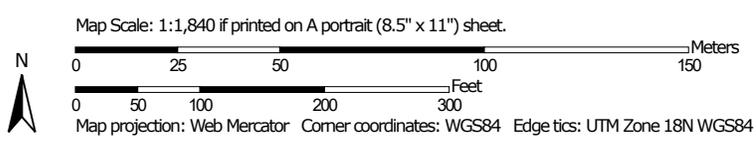
Upland Soils

The upland soils are located on a transition from the higher elevation till soils west and south of the proposed development to outwash material lower on the landscape. The bulk of the uplands are mapped as well drained – Agawam fine sandy loams. This stratified water sorted sands and gravels are well suited for development and are generally unrestricted. Along the property boundaries of the are notable pockets of excessively well-drained Hinckley loamy sands. These deep sands and gravels have rapid permeability and high infiltration rates. Surrounding the property are notable bands of mapped Udorthent soils. These mapping units occur in areas where material was previously mined, evidence of how useful the sandy soil material at the site is for building purposes.

Soil Map—State of Connecticut
(Stodders Wharf Rd)



Soil Map may not be valid at this scale.



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 Connecticut

Survey Area Data: Version 21, Sep 7, 2021

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

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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
29B	Agawam fine sandy loam, 3 to 8 percent slopes	6.2	47.1%
38C	Hinckley loamy sand, 3 to 15 percent slopes	2.0	15.4%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	0.8	6.4%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.1	0.5%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	1.1	8.1%
306	Udorthents-Urban land complex	2.5	19.3%
703A	Haven silt loam, 0 to 3 percent slopes	0.4	3.1%
Totals for Area of Interest		13.2	100.0%

PROPOSED ACTIVITIES

The proposed development of the site calls for the construction of 36 individual single-family homes. Lots range from .19 to .42 acres and are to be serviced by private well water and private on-site septic systems. The homes will be accessible by a private loop road to be named Avery Brook Circle.

IMPACT ASSESSMENT

There are no direct impacts to the wetlands due to the proposed activities.

Wetlands are found on 4 of the 36 lots.

1. Billings Avery Brook's associated forested wetland fringe (Photo 4) encroaches onto the northern limits of Lot #12
2. A wetland pocket (Photo 3) is found in the rear of Lot #5
3. The wetted perimeter of an intermittent watercourse (Photo 2) flows along the easterly property boundary and onto the easterly portion of Lot #2 and Lot #3.

The development and associated activities will maintain the holistic functions and value of the wetlands. The wetland including their existing functions as well as the on-site drainage patterns will be maintained. The beneficial and functional service of the neighboring wetlands is the conveyance of seasonal flow and groundwater recharge, which the development will be preserving by maintaining overall existing drainage patterns and flow dynamics.

INDIRECT IMPACTS

Indirect or secondary impacts to a wetland or watercourse can occur as a result of activities outside of the wetlands or watercourses. These impacts can be either short-term (*construction phase*) or long-term (*i.e., change in drainage patterns / whole-sale clear cutting*) and are typically associated with erosion and sedimentation during construction, removal or disturbance of vegetation in adjacent upland areas, alteration of ground / drainage patterns that could effect the flow regime of a watercourse, and the discharge of degraded or insufficiently treated surface or groundwater, which may adversely impact the water quality of the regulate resource.

The potential for any of these indirect impacts to occur at the site as a result of the development depends on the quality of the regulated resources, the sensitivity to said resources, the resource's physical and ecological characteristics, and the degree to which those resources provide recognized functions and values. These potential impacts are described in detail below:

EROSION AND SEDIMENTATION

To minimize potential impacts the design incorporates industry standard best management practices (BMPs) and guidelines for residential developments. A construction sequence is

provided on the site plans notes. Additional construction notes include details on the proposed earthwork and grading, site stabilization, and best management practices (BMPs) for protecting the environment. All construction activities will be completed in compliance with the standards and guidelines provided by the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. These controls as well as compliance with permit approvals will assure that no permanent adverse effects will impact the receiving wetlands.

The site risk or potential for adverse impacts from erosion and sedimentation is considered low-moderate because 1.) a detailed erosion and sediment control plan has been prepared and submitted, and 2) the site's in-situ undisturbed soils are for the most part low to moderately erosive. 3) the site is generally level and topography is easily managed, 4) no need for large scale tree removal as the land is open field habitat, and 5) there is a neighboring nearby stream channels which provide opportunity for offsite migration. Therefore, it is my professional opinion that with watchful monitoring and maintenance of erosion and sediment controls until construction is completed and restoration is stabilized that no adverse impacts to the regulated resources are expected.

VEGETATION REMOVAL AND HABITAT LOSS

Habitat loss associated with land clearing is a consequence of land development which has the potential of impacting wetlands and watercourses. The proposed development will kept clearing limits to a minimum by clearing what is physically needed for facilitating the construction of the homes and associated appurtenances. The past agricultural uses of the properties have maintained and promoted open conditions for a long time which will result in a reduction of whole-sale land clearing requirements to facilitate construction of the proposed development. The conversion of the vegetation cover within the development envelope will not change or diminish the ecological integrity of the surrounding forest and wetland communities.

POTENTIAL IMPACTS TO WETLAND HYDROLOGY AND STREAM DYNAMICS

The hydrologic and flow regime of Billings Avery Brook and the intermittent watercourse along the eastern property line are supported by off-site contributions from groundwater and surface water inputs. The proposed development will not impact drainage patterns either on-site or off-site. The wetlands baseflow will be recharged from the natural high infiltration rates as stormwater runoff freely drains back into the underlying sandy soil.

POTENTIAL WATER QUALITY IMPACTS

The proposed development has been reviewed by the Ledge Light Health District (LLHD) for the suitability of the proposal to support on-site septic service and provide adequate water supply. LLHD comments have been satisfied and LLHD has recommended that all 36 Lots are suitable for development in their current configuration with the caveat that no footing drains are required (*which given the demonstrated high soil permeability and high percolation test rates (generally > 5min/inch) footing drains are not needed and should not be required*).

Additionally, the project retained the professional engineering services of GEI Consultants Inc, to provide a water supply study “*Water Study Proposed Stoddard’s Wharf Road Subdivision Ledyard, CT*” July 6, 2022. The study demonstrates the sites natural capacity to provide each lot with a private well that would produce an adequate quantity of water to service a 3-bedroom single family dwelling. The study concludes that the current ground water supply is adequate to support the subdivision as proposed. Additionally, the report points out that the proposed subdivision is partially surround by an undeveloped watershed area, allowing for sufficient and natural replenishment of the aquifer that would serve the wells.

The proposed development will not create any new point discharges. The site will be graded so stormwater runoff will sheet flow across the landscape to promote infiltration into the surrounding well drained soils. This infiltration into the ground will recharge the nearby wetland resource baseflow.

CONCLUSION

Due to the needs of the proposed development and proximity of the wetland resources the location of 5 homes on Lots #2-#6 will require activities within the 100’ upland review area. Additionally, the septic systems for lots #9 – #13 will be located within the upland review area, leaving the bulk of the development outside of any regulated area.

The naturally occurring very well drained sandy soils will beneficially and promote infiltration to maintain and recharge baseflow to downstream resources.

Alterations within the URA will have some conversion of habitat. The activities in the uplands required to facilitate the development will not result in any loss of wetland function. Post development the wetlands and watercourse will still have the same ability to perform the existing functions they currently provide. As a result, environmental effects will be minor and highly localized. The applicant will mitigate such impacts by implementing standard construction BMPs and conforming to permit conditions.

The design has minimized wetland disturbances by:

1. Avoidance of any direct wetland disturbance.
2. Providing and maintaining erosion and sediment controls during construction.
3. Commitment to adhering to permit conditions and construction industry standard best management practices (BMPs).

Please do not hesitate to contact me at; (860) 514-5642 or itcole@gmail.com if you have any questions or need any additional information.

Respectfully Submitted.

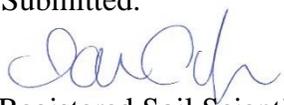
Ian T. Cole 
Professional Registered Soil Scientist
Professional Wetland Scientist #2006

Exhibit #6

Revised 12/4/22

IAN T. COLE
DELEINEATIONS WITHOUT DELAY
Professional Soil Scientist / Professional Wetland Scientist

PO BOX 619
Middletown CT 06457
860-514-5643 • itcole@gmail.com

PROFESSIONAL SUMMARY AND ACCOMPLISHMENTS

I have over 20 years of professional environmental experience throughout New England and the Mid-Atlantic states. I have professional certifications as a Registered Professional Soil Scientist (*Society of Soil Scientists of Southern New England*) and Certified Professional Wetland Scientist (#2006- *Society of Wetland Scientists*). I have over two decades of experience delineating wetlands and developing site-specific soil survey assessments. Skills and experience include the ability to identify resident and migrant avian species by sight and sound, and the ability to locate and identify all New England's native amphibians and reptiles. I have significant experience identifying and mapping vernal pools, including cryptic and range restricted vernal pool indicator species.

Over the course of my career I have assisted and lead hundreds of wildlife studies throughout New England. I routinely support projects with the processes and documentations required to work under Scientific Collectors Permits (including handling and trapping) of state-listed wildlife. I am responsible for the management, coordination and submittal of applications and subsequent state-listed species studies for a range of projects in the Utility industry and various local commercial and residential development projects. I have extensive experience in species research, plant phenology and am familiar with nuances of listed species and close associations with habitat requirements and time of year survey windows.

Delineations without Delay provides consulting services in the areas of biological, wetland, and soil sciences. In addition to the identification, description, and classification of natural resources, the firm also provides functional evaluation of wetlands and other biological systems, guidelines for mitigation of potential adverse impacts, and permit support through expert testimony and public representation. Services provided revolve around the impact of human activities on terrestrial, wetland, aquatic, and marine resources.

In addition to my biological science foundation , I have a strong working knowledge of local, state and federal environmental permitting process including but not limited to: United States of Army Corps of Engineers (ACOE) (404, 408 Section 10), Connecticut Department of Energy and Environmental Protection (CTDEEP)(401, NDDDB, SWPCP), Massachusetts Department of Environmental Protection (MassDEP), as well as the review processes of Massachusetts Environmental Policy Act (MEPA), National Historic Preservation Act (NHPA) -Section 106, and Endangered Species Act (ESA) -Section 107, and Tribal consultations (THPO). I am accustomed to the fast-paced working environment and demands of planning and construction schedules and routinely navigate and provide resolution to complex issues that may arise during project planning keeping projects on critical path forward.

PROFESSIONAL EXPERIENCE

Delineations Without Delay, Middletown, CT

Lead Soil Scientist: May 2015-Present

- Expert in Wetland Delineation and Soil Science
- Rare, Threatened and Endangered species surveys – expert in Botanical, Avian, Amphibian & Reptile focused studies, coordination and participation in invertebrate species.
- Manage multiple licensing and permitting consultants to provide environmental services
- Develops strategies and permitting approach to secure required environmental permits
- Routinely consults with regulatory agencies on a range of permitting (404, 401, 106, 107)
- Oversees environmental compliance and mitigation to support construction projects
- Supports cross discipline project team including engineering, survey, outreach, planning and vegetation management
- Represents projects at public hearings, open houses, conservation meetings.

Kleinschmidt Associates, Essex, CT

Project Scientist: April 2008-May 2015

- Project manager responsible for scope, schedule and budgets
- Technical lead for terrestrial, wetland and RTE studies
- Oversee and mentor junior staff
- Wetland mitigation planning and design
- FERC compliance liaison for relicensing of hydroelectric facilities
- Licensing and permitting specialist

CME Associates, Woodstock, CT

Wetland / Soil Scientist: May 1999 - April 2008

- Wetland delineation & evaluations
- Wildlife, vernal pool, and vegetation surveys
- Soil evaluations and mapping
- Supported environmental remediation, civil engineering and land survey divisions

EDUCATION

University of Rhode Island, Kingstown, RI

Bachelors of Science, Environmental Science and Management 1999

- Focus on wetland and soil science
- Completed additional graduate coursework in wetland studies (24 credits)

TECHNICAL SKILLS

- Proficient in Microsoft Office (Word, Excel, PowerPoint)
- Hands on experience with remote data loggers and software
- CT Safe Boating Certificate & familiarity with a range of off-road vehicles
- Expert in field identification of wetlands, soils, wildlife, botanical, vernal pool resources.

ASSOCIATIONS

- Professional Member Soil Science Society of Southern New England
- Society of Wetland Scientist - Certified Professional Wetland Scientist
- Connecticut Association of Wetland Scientist
- Former commission member of The Town of Ledyard IWWC agency 2005-2012

Consulting
Engineers and
Scientists

July 6, 2022
Project 2201518
Mr. Peter Gardner, President
Dieter & Gardner, Inc.
1641 Route 12
Gales Ferry, CT 06335

Dear Mr. Gardner:

**Re: Water Study
Proposed Stoddards Wharf Road Subdivision
Ledyard, Connecticut**

This letter report documents the results of a water study performed by GEI Consultants, Inc. for the above-referenced project. The project location is shown in Fig. 1. The water study was performed to address the Town of Ledyard's Subdivision regulation Section 8.5.4, which apply to the project, because greater than 30 homes with individual domestic wells are proposed. The intent of the study is described below, followed by a summary of findings and the study itself.

1. Intent of Water Study

The Town of Ledyard's subdivision regulation, as amended September 30, 2013, Section 8.5.4 specifies the scope of the water study:

“Water studies shall address the adequacy of ground water supplies and the effect of the proposed subdivision on existing surrounding wells”.

The regulations for Open-Space Subdivisions (Section 4.9.7, Yield Formula) while not regulatorily applicable to this application, are instinctive as to the analysis to be performed:

“...evidence the fact that there is sufficient groundwater recharge located within or contributing to the area of the open space subdivision to support the number of supply wells, including community wells, which will be drilled in conjunction with the development of the open space subdivision and all other existing potable water supply wells located within the sub-watershed in which the open space subdivision is being proposed.”

Section 8.5.4 requires the study be prepared by a certified geohydrologist. While this specific credential does not exist by name, section 4.9.7 requires a Professional Engineer (P.E.) stamp, which is affixed to this letter, which has been authored by a P.E. specializing in hydrogeology.

Based on the information above, the scope of the subject water study was derived to include:

- Hydrogeologic Characterization.
- Water balance specific to the property on which the subdivision is proposed.
- Water balance for northern portions of the Great Brook and the Avery-Billings watersheds. The project-specific water contribution area includes portions of both watersheds (Fig. 2), from which contributions from both portions were combined for the water budget analysis.
- Drawdown analysis to estimate water level changes adjacent to the proposed subdivision.

2. Summary of Findings

In summary, multiple lines of evidence indicate that an adequate supply of groundwater is present to support the subdivision as proposed, with minimal effect on surrounding wells. The following key concepts are noted:

- **Hydrogeologic Characterization:** The watershed basin is predominantly undeveloped, allowing for replenishment of the aquifer. The proposed subdivision is in a low-lying area where a gravel aquifer is fed by streams and ponds, which would in turn recharge the bedrock aquifer from which the domestic wells will be installed. A geologic fault runs along the west side of Billings-Avery Pond (Fig. 2). The fault zone can be expected to have a relatively high density of fracturing which would provide both storage and transmissivity. Domestic well records for the area indicate typical well yields for bedrock for the region.
- **Water Balance, within area of proposed subdivision:** Assuming typical residential demands, the estimated subdivision demand is 7.5 gpm. Bedrock areal aquifer recharge over the footprint of the subdivision is estimated at 4.0 gpm, resulting in a net demand of 3.5 gpm. This demand is expected to be met by flow entering the subdivision footprint horizontally from off-property. In general, the capture zone for any well on relatively low-acreage parcels is likely to extend off-property.
- **Water Balance, for area contributing water to the area of open-space subdivision:** Assuming typical residential and estimated agricultural demands, the project would use approximately 2.4% of bedrock flow to the contributing area that is not otherwise part of the estimated existing demand. This finding is in agreement with a general statement made for a water study in Greenwich, which noted that estimated groundwater consumptive use is small compared to recharge rates (USGS, 2002).
- Based on a modeling analysis presented herein, the subdivision is estimated to cause an approximate one- to five-foot drawdown within the bedrock aquifer at the subdivision property boundary, as estimated by simplifying groundwater flow through bedrock fractures as an equivalent homogeneous aquifer.

We qualify the findings primarily based on uncertainties inherent in estimation of groundwater flow through fractured bedrock. A good bedrock water source depends on sufficient aperture, extent, and connectivity of fractures. Lines of evidence presented in this study suggest a level of confidence that the watershed will provide an adequate water source.

3. Hydrogeologic Characterization

3.1 Geologic Setting

The site is an approximate 9.4-acre undeveloped parcel abutting Stoddards Wharf Road (CT Route 214) to the south, and wetlands alongside Billings-Avery Pond to the north and east. The parcel is relatively level at approximate Elevation 160 feet relative to North American Vertical Datum of 1988 (NAVD). A relief view of the contributing watershed area (described further in Section 3.2), is shown in Fig. 3.

The project site is in the Avalonian Terrane geologic region of Connecticut. Geology in the region comprises undulating till ridges and alluvial or stratified drift-filled valleys, underlain by gneiss and granite bedrock. Alluvium and stratified drift contain predominantly sand, with stratified drift being coarser.

Domestic well logs for five adjacent or nearby residences were reviewed for soil and yield testing observations. Table 1 provides a summary of information found in the logs. Overburden soil (material above bedrock) in the site vicinity was predominantly reported as sand and gravel, with two of the five logs noting “hardpan”, which is likely low-permeability till beneath the sand and gravel. The remaining descriptions note sand, gravel, and cobbles. Measured overburden thickness ranged from 8 to 40 feet. State geologic mapping shows that the site is located on an east-west trending stratified drift valley along Avery Brook as shown in Fig. 4 (Stone, 1992). Stratified drift deposits are generally associated with high potential water yield in the overburden, given adequate thickness of saturated overburden.

Bedrock comprises fractured crystalline rock, in which groundwater flow occurs through fractures. Fracturing can be seen in roadside outcrops occurring in the area. Bedrock serves as the predominant source of groundwater for private domestic wells in Connecticut. Bedrock groundwater is drawn from fractures. USGS (1969) notes that bedrock in the area is fractured to a depth of several hundred feet, and it is along the fractures that most groundwater moves. Bedrock fracture distribution is generally uneven, making it difficult to predict potential yield. Sheeting joints common to igneous rocks in the area comprise steeply dipping or vertical joints intersecting horizontal tension joints roughly parallel to bedrock surface (USGS, 1969). Fractures have been observed in quarries where zones of close fracturing were separated by intervals of greater distance between fractures (USGS, 1969). Joints generally become scarcer with depth, such that the chance for significant yield at depths greater than 200 to 300 feet below top of bedrock is slight (USGS, 1969). For purposes of this study, a 300-foot-thick aquifer is assumed.

Bedrock mineral type at the site is mapped as Hope Valley Alaskite Gneiss (Figs. 2 and 5), characterized as gray, medium-grained gneiss (Rodgers, 1985). Adjacent bedrock types comprise Mamacoke Formation (gneiss) and the Plainfield Formation (quartzite). USGS (1968) notes that despite mineralogic and petrologic differences, the water yielding characteristics of the various rock types are similar.

The site is adjacent to a north-south trending fault extending from Preston to Noank (Fig. 5). The fault is part of the Lantern Hill fault system (Goldsmith, 1985). Faults are more likely to form buried valleys, which are typically overlain by stratified drift (including as described onsite above) that may contribute to increased bedrock yield (USGS, 1969). Faults can increase yield due to openings along fault joints where differential movement of rock masses have occurred. Increased transmissivity may extend outward along fault-associated joints. The highest bedrock yields reported by USGS were in wells situated close to faults, where wells yielding at least

40 gallons per minute (gpm) were reported (USGS, 1969). The five well records reviewed for this study showed yields ranging from 2 to 5 gpm (Table 1).

3.2 Hydrology

The site is within the Avery Brook watershed, which naturally drains easterly to the Thames River. An east-west trending series of ponds coincides with the east-west trend of the Billings-Avery sub-watershed (Fig. 6). Billings-Avery Pond receives direct runoff from its basin and is expected to receive some groundwater discharge. The site abuts the Great Brook watershed to the south, which drains naturally in a southerly direction to the coastline. Proposed pumping from residential wells in bedrock is expected to draw water in from both watersheds. The area of estimated contribution to the project is shown in Fig. 6, delineated for purposes of this study based on:

- The northern and eastern limits of contribution are assumed to comprise the natural watershed boundary.
- The southern and western limits of contribution were drawn based on topography. Ground elevation at the site and vicinity undulates, with lower-lying areas occurring at similar elevations. This can be seen qualitatively on the relief map in Fig. 3. South and west of the assumed contribution area, greener shades become darker, indicating an increasing decline in elevation.

Surface water in the area is used for regional water supply and is managed by Groton Utilities. Groton Utilities' watershed map is provided as Fig. 7. Groton Utilities withdraws surface water primarily from the Poquonnock Reservoir, which is within the Great Brook watershed and receives water from ponds and reservoirs to the north, including Billings-Avery Pond. Although Billings-Avery Pond's watershed drains to the east, pond water is also diverted south to the Great Brook watershed via a spillway and Stoddards Brook (Fig. 2). Surficial water transfer is not expected to affect water levels in bedrock, as Groton Utilities maintains the pond's levels, and aquifer discharge or replenishment is a function of surface water levels more so than flow direction.

For streams in the lower Thames and southeastern coastal river basins, USGS (1968) reported equivalent annual contribution of stream flow from surficial runoff ranging from approximately 7 to 15 inches per year, with most being in the 11 to 12 range.

3.2.1 Aquifer Recharge

Groundwater in bedrock aquifers is replenished by precipitation infiltrating through soil or directly to fractures at exposed outcrops. Annual precipitation reported for Norwich, Groton, and Westerly ranges from 47.4 to 54.8 inches (2015 US Climate Data). Rainfall or snowmelt transitions to the processes of runoff, evapotranspiration (plant uptake or evaporation), or recharge (infiltration to the water table). In general, about one fourth of annual precipitation becomes recharge. The units of inches per year are generally used to express rainfall and aquifer recharge rates.

Site topography suggests that under natural conditions, horizontal groundwater flow would occur in an easterly direction. Text books such as Fetter (1994) explain vertical flow relative to topography: Groundwater flow is also expected to occur in a downward direction in upslope areas, being driven by recharge. Upward vertical flow is more likely to occur in low-lying areas such as along surface water features, being driven by pressure relief at discharge seepage locations to streams and ponds. Pumping may alter groundwater flow where pumping withdraws

water from the deeper aquifer and discharge to the stream is replaced by a greater fraction from septic return flow.

A groundwater model for the Sound View well field in Old Lyme used recharge rates ranging from 7.2 inches/year in areas of till to 22 inches per year in stratified drift (USGS 2005). Leggette, Brashears & Graham (LBG, 2011) reported a conservative bedrock recharge rate of 5 inches per year for a site in Guilford. A comprehensive analysis for Greenwich estimated recharge rates between 3.9 and 7.5 inches per year (USGS, 2002). The Greenwich study estimated recharge using a formula correlating recharge rate with till presence, suggesting that some water discharges before reaching bedrock groundwater.

GEI used a conservative value of 5 inches per year of recharge to the bedrock aquifer for the Project water study. Due to the site's location along a largely undeveloped valley, within a stratified-drift overburden aquifer, and in proximity to surface water, lower rates are not expected. It is assumed that most roof and street runoff discharges to ground surface. The water table is expected to be shallow, within stratified drift at the project location. Assuming a typical recharge rate to the water table of 22 inches per year, a 5 inch per year recharge rate suggests that 25% (conservatively rounded down) to the stratified drift aquifer enters the underlying bedrock aquifer as recharge. This 25% value was applied in the water budget analysis to septic return flow, in which it was assumed that 25% of septic return flow (assumed as 85% of pumping demand per citation in Table 2) recharges downward to the bedrock aquifer.

3.2.2 Hydraulic Conductivity

Hydraulic conductivity (K) is a basic property of soil used in the estimation of groundwater flow rates. Hydraulic conductivity is a proportionality constant expressed in units of feet per day (ft/d). For scale, clays can have a value of 0.001 ft/d or less, and highly productive gravel aquifers may have hydraulic conductivities in the 50-300 ft/d range.

Sand and gravel in the stratified drift beneath the site could potentially have hydraulic conductivities of 50 ft/d or higher, especially along the centerline axis where coarse material would settle out of fast-moving glacial meltwater. Hydraulic conductivity of till has been reported at 0.03 ft/d for compact silty till to 16 ft/d for loose sandy till (USGS, 1968).

It is common to assign hydraulic conductivities to bedrock for simplification and comparison purposes, even though bedrock is not a uniform porous medium. Fractured bedrock can, however, approach similar behavior to porous media at a large enough scale. USGS (1969) reports a typical hydraulic conductivity value of 0.27 ft/d based on a study of 262 wells in the lower Thames/southeast coastal basin region. For the Sound View well field (Old Lyme) model, USGS (2005) reports using bedrock K values of 0.088 to 1 ft/d along hilltops and 0.13 to 0.23 ft/d for valleys. Values ranging from 0.05 to 2.7 ft/d were used by USGS for the Greenwich study (USGS, 2004), where bedrock is of similar granite/gneiss composition. As shown in Fig. 5, the type of crystalline bedrock varies throughout the region. USGS reports that despite mineralogic and petrologic differences, the water yielding characteristics of the various rocks are similar (USGS, 1968). Values of 0.2 and 0.05 ft/d were used in the drawdown analysis presented in Section 4.

4. Water Balance

A water balance analysis is presented in Tables 2 and 3 and described below, in which projected demand is compared to aquifer contributions as described in Section 3.

4.1 Water Demand

Water demand was estimated using a typical value of 75 gallons per person per day. The Connecticut Department of Public Health (DPH, 2009) and LBG (2011) report a usage rate of 75 gallons per day (gpd) per capita, equivalent to long-term average of 300 gpd for an average of four persons per household. For 36 households, the combined long-term average withdrawal for the subdivision would be 10,800 gpd assuming pumping 24 hours per day at a uniform rate.

Actual usage would be cyclical with higher pumping rates during morning and evening demand. Drawdown would be greatest during high demand. Water table recovery would occur during low demand periods.

The majority of domestic pumpage would recirculate to the shallow aquifer as return flow from septic systems. LBG (2011) reported a 15% consumptive use rate (car washing, lawn irrigation, recreation) that would not be returned to the aquifer.

For the water budget analysis (following section), water demand for all households, existing and proposed, was set at the same value and number and persons per household. It is assumed that all residential homes being serviced by domestic wells are single-family. Agricultural water use in the basin was estimated based assumed low levels of horse and livestock husbandry, using literature-based water demands as described in Table 3. Aerial imagery and roadside observations in the area showed no indication of significant agricultural or industrial operations warranting additional itemization of water withdrawals.

4.2 Water Budget Analysis

Tables 2 and 3 present a breakdown of demand and recharge. Table 2 is a summary comparison of inflow and outflow to the aquifer expressed as gpm). Table 3 shows unit flow rate demands used to compute total flows in Table 2. The source for other inputs (recharge, septic, rainfall, and stream flow) is described in Section 3.

In Table 2, the difference between inflow and demand is calculated, where inflow is estimated to exceed demand, with the difference is tabulated as bedrock surplus flow. Bedrock available flow represents water in the bedrock aquifer that is not otherwise used for water supply.

- **Within area of proposed subdivision:** The estimated subdivision demand is 7.5 gpm. Bedrock aquifer recharge over the footprint of the subdivision is estimated at 4.0 gpm, resulting in a net demand within the subdivision footprint of 3.5 gpm. This demand is expected to be met by flow entering the subdivision footprint horizontally from off-property but within the contribution area. In general, the capture zone for any well on relatively low-acreage parcels is likely to extend off-property.
- **Area contributing water to area of affordable housing subdivision:** The proposed subdivision is predicted to use about 2.4% of available flow in the basin, including septic return flow.

Based on the water budget described herein, the subject parcel and contributing areas appear to have an adequate quantity of water available to support the proposed subdivision in addition to existing surrounding demand. This finding is in agreement with a general statement made for a water study in Greenwich, which noted that estimated groundwater consumptive use is small compared to recharge rates (USGS, 2002).

Surface water losses due to increase groundwater usage are considered insignificant for this analysis. Groton Utilities' safe yield for the Great Brook reservoir system is 12.6 mgd, with average uses in the 5.6 to 5.8 mgd range. The estimated withdrawal from the proposed subdivision, is 7.5 gpm or 0.01 mgd, which is approximately 0.09 % of the reservoir system's 12.6 mgd yield.

4.3 Drawdown Analysis

GEI's approach to assess the effect of domestic pumping was to construct a computer model using the open-source USGS computer code MODFLOW, which solves groundwater mass balance flow continuity equations. MODFLOW is an industry standard program used for groundwater flow computations. A three-dimensional model was created to approximate the bedrock aquifer from which the domestic wells are to pump. MODFLOW is set up by creating a virtual grid, which divides the simulation into cells and layers. The grid is rectilinear across which flow and heads are calculated from cell to cell (as divided by grid lines) subject to boundary conditions (heads along the model borders, aquifer areal recharge, and pumping inputs), and to aquifer hydraulic conductivity. The model was run at steady-state, which represents an average long-term pumping condition.

The proposed subdivision is shown in Fig. 8 along with domestic well locations as simulated. The area modeled is shown in Fig. 9. The modeled area encompasses the estimated water contribution area described above. The model is intended to be a simplification of the bedrock aquifer, in that bedrock is assumed to have a flat surface elevation throughout the model (assigned as elevation 145 feet msl, or approximately 15 feet below ground onsite). The model is intended to have sufficient inputs to represent the approximate flow conditions and available water specific to the site and abutting areas. In the model, an east-to-west flow direction was assumed, based on general topography of the watershed.

Three simulations were performed: Present Conditions, Baseline Pumping, and Sensitivity Pumping. The Present Conditions run represents pre-development water levels for comparison to predicted levels under pumping conditions. The Present Condition run also allows visualization of heads to show representativeness. The Baseline Pumping run represents groundwater flow under the most reasonably expected inputs based on interpretation of information presented herein. The Sensitivity Pumping run represents aquifer parameters (recharge rate and hydraulic conductivity) at the lower end of reported ranges, and with pumping at twice the reference levels shown in Table 3.

Parameter	Baseline Pumping	Sensitivity Pumping
Bedrock Hydraulic Conductivity	0.2 ft./d	0.05 ft./d
Bedrock Aquifer Recharge	5 in./yr.	2 in./yr.
Domestic Pumping Rate	75 gpd/capita	150 gpd/capita

As described earlier in this report, higher recharge rates than those listed above may apply to the overlying stratified drift overburden, however it is assumed that the recharge rate to bedrock is limited by the capacity of bedrock fractures to absorb water from the overlying saturated material. The overburden was represented as an upper model layer with hydraulic conductivity of 25 ft./d. The river, pond, and wetland systems were represented in the model as drain elements, which function to draw off excess groundwater resulting from recharge saturating the aquifer. The model does not include specific offsite pumping wells or septic returns assuming the recharge rate reflects these effects; and in addition, if included separately in the model, the individual effects would cancel each other out in the comparative drawdown calculation (no other changes to basin water use are assumed to occur concurrent with the proposed subdivision). The fault system was

not included in the model because hydraulic characteristics of the fault are not known. It is a conservative assumption to not include the fault, because faulting would transmit water more rapidly toward the subdivision area, resulting in less computed drawdown.

MODFLOW computes groundwater levels throughout the model, which can then be presented as groundwater elevation contours. The computed Present Condition contours are shown in Fig. 9.

For the drawdown estimate, a graphical comparison of computed heads was performed. Heads computed for the Pumping Condition were subtracted for those of the Baseline Condition. Plots showing the result are shown in Fig. 10. As can be seen in Fig. 10, the predicted drawdown of approximately 1 foot occurs along the approximate subdivision perimeter. A drawdown of 1 foot is not considered significant relative to the assumed aquifer thickness of 300 feet.

A sensitivity analysis was performed to evaluate the variability in prediction due to uncertainty in calculation inputs, with inputs varied as tabulated above. The sensitivity analysis shows a 5-foot drawdown prediction at the site boundary. In a comparative model run, a drawdown of 5 feet was also predicted by running the sensitivity analysis model but reducing the number of lots from 36 to 30 (removing the northernmost six residences), the threshold requiring a water study. A 5-foot drawdown is considered minor relative to a 300-foot-thick aquifer. It is possible that temporary drawdowns of such magnitude could occur during peak demand.

As described in Section 2, flow of groundwater in fractured bedrock is difficult to predict. Actual drawdown could be greater or less depending on connectivity of the fracture network. As interferences within residential clusters are not known as a concern in the region, the chance for interferences at the proposed subdivision may be higher but potentially offset by the subdivision's location along a stratified-drift valley with expansive ponds and wetlands and the nearby fault system.

At the existing pumping wells shown in Table 1, drawdown corresponding to the sustained yields was generally reported as the same depth as bottom of well. A specific capacity calculation can be used to estimate drawdown based on typical long-term demand. Specific capacity represents yield per foot of drawdown. Assuming, for a typical 300-foot-deep well with a 3 gpm sustainable yield, the specific capacity would be 0.01 gpm/foot of drawdown. A long-term continuous pumping rate of 0.21 gpm (300 gals/day) divided by 0.01 gpm per foot specific capacity results in a long term drawdown in the well of 21 feet. Drawdown in individual wells may be greater than that in the adjacent fracture network due to fracture interconnection and well interface inefficiencies. The drawdown contours shown in Fig. 10 represent hydrostatic pressures in the formation, and not necessarily within the wells themselves.

Limitations

Bedrock fracture flow is difficult to predict. As with any bedrock well, performance of individual wells may be affected by connectivity of fractures and interferences from other wells.

The analysis was performed based on the information summarized in this report in consideration of standard hydrogeological concepts. No other representations and no warranty, express or implied, is made. No field testing was performed for this analysis. The water balance and drawdown calculations are simplified representations. The drawings are to the approximate scale as noted, and not intended for design or construction. This letter is for the sole use of Dieter & Gardner and the Ledyard Planning and Zoning Department in making decisions related to permitting approvals for the Project.

We appreciate the opportunity to be of service on this proposed subdivision.

Sincerely,

GEI CONSULTANTS, INC.



A handwritten signature in blue ink that reads "A.M. Adinolfi".

Andrew M. Adinolfi, P.E.
Senior Environmental Engineer

A handwritten signature in blue ink that reads "Zachary Tyczka".

Zachary Tyczka
Hydrogeologist

AMA/ZT:bdp

Attachments:

- Table 1. Well Records
- Table 2. Water Balance
- Table 3. Water Balance Inputs
- Fig. 1 – Site Location
- Fig. 2 – Topography and Subbasins
- Fig. 3 – Basin Relief Map
- Fig. 4 – Surficial Geology
- Fig. 5 – Bedrock Geology
- Fig. 6 – Watershed Boundaries and Estimated Area of Contribution
- Fig. 7 – Great Brook Watershed
- Fig. 8 – Drawdown Prediction Locations
- Fig. 9 – Groundwater Model
- Fig. 10 – Bedrock Aquifer Drawdown Prediction

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Tables

Table 1. Well Records
Water Study
Stoddards Road Subdivision
Ledyard, Connecticut

Address	Static Depth to Water(a,b) ft. bgs	Reported Yield gpm	Depth to Bedrock ft. bgs	Depth of Well ft. bgs	Reported Overburden
81 Stoddards Wharf Rd.	40	3	14	200	Hardpan, Cobbles, Gravel
85 Stoddards Wharf Rd.	20	3	10	400	Gravelly
95 Stoddards Wharf Rd.	25	5	15	100	Gravel
102 Stoddards Wharf Rd.	10	2	8	320	Topsoil, Gravel
110 Stoddards Wharf Rd.	25	2	40	375	Hardpan, gravel, sand

Notes:

ft. bgs = feet below ground surface.

Source: Well construction reports on file with Ledge Light Health District.

gpm = gallons per minute, measured during time of well construction.

a. Water level apparent on well construction report, at time of well construction. Wells installed between 1970 and 1994.

b. Wells listed above are open to bedrock fractures and sealed above bedrock. Water levels shown indicate hydrostatic heads in the bedrock aquifer, assuming that depth to water measurements were taken at hydrostatic equilibrium. Bedrock water levels may be above bedrock surface in elevation, but not necessarily equal to water levels in the surficial aquifer overlying bedrock.

Table 2. Water Balance
Water Study
Stoddards Road Subdivision
Ledyard, Connecticut

Component	Existing Conditions		Project Conditions		Source
	Site (g)	Watershed	Site (g)	Watershed	
Acres:	9.4	1282	9.4	1282	Source
Flow Rate Units:	GPM	GPM	GPM	GPM	
WATER BALANCE FOR BEDROCK AQUIFER					
Outflow (Demand)					
Project - Proposed	--	--	7.5	7.5	See Table 3
Residences - Existing	--	11.3	--	11.3	See Table 3
Agriculture / Other	--	9.9	--	9.9	See Table 3
Total Outflow	--	21.1	7.5	28.6	
Inflow					
Septic Return - Proposed (f)	--	--	1.6	1.6	LBG (2011) (e)
Septic Return - Existing	--	2.4	--	2.4	LBG (2011) (e)
Recharge	2.4	331.1	2.4	331.1	USGS (1968), LBG (2011) (c)
Total Inflow (h)	2.4	333.5	4.0	335.1	
Available Flow (a)	2.4	312.4	-3.5	306.5	
Project Percentage (b)	--	--	-86.5%	2.4%	
SOURCE WATER BALANCE					
Streamflow Comparison					
Rainfall	23	3179	23	3179	Randall, 1996 (f)
Streamflow	12	1614	12	1614	USGS (1968), Table 5 (d)
Available for GW (b)	11	1565	11	1565	Rainfall minus streamflow

Notes:

- a. Calculated as total inflow minus total demand. Represents water in bedrock aquifer not otherwise used for water supply. Negative indicates net demand within project footprint (assumed to be made up by horizontal inflows from adjacent bedrock).
- b. Project demand as percentage of bedrock inflow. Negative value indicates net demand, assumed to be met by horizontal inflows from adjacent bedrock.
- c. Equivalent to 5 inches/year. Within range used by published models 3.6-7.9 in./yr for deep bedrock (USGS, 2002) and conservative relative to 8-10 in./yr cited by LBG (2011).
- d. USGS (1968) reports watershed contribution to stream flow for several streams in the region of 1.16 mgd/square mile, equivalent to 24.4 in./yr leaving watershed as runoff.
- e. LBG (2011) assumed 85% of residential water is returned to the aquifer through percolation from leachfields.
- f. Ledyard is within the 48-inch per year precipitation average contour presented in this reference.
- g. Water balance within footprint of proposed subdivision only.
- h. Mass balance includes slight net increase in recharge due to fraction of septic return originating from outside the volume of bedrock represented (e.g. from horizontal inflows, or downward flow from slight additional mounding in overburden (due to septic return) inducing slight increase of inflow to bedrock).

Table 3. Water Balance Inputs
Water Study
Stoddards Road Subdivision
Ledyard, Connecticut

Residential							
Water Use - Residential	No. of Lots / Residences	Capita Per Address	Population Served	GPD Per Capita	Total GPD	Total GPM	Source
Project (Stoddards Wharf)	36	4	144	75	10800	7.5	75 gpd/cap, DPH (2009)
Existing (within Contribution Area)(d)	54	4	216	75	16200	11.3	75 gpd/cap, DPH (2009)
Total Water Use - Residential					27000	18.8	
Agricultural (b)							
Water Use - Livestock		Livestock	Assumed Heads	GPD Per Head	Total GPD	Total GPM	
Livestock	--	Dairy	20	30	600	0.42	Korzendorfer (1990) (a)
Horses	--	Horses	20	30	600	0.42	
Water Use - Irrigation		Crop	Irrigated Acres	GPD Per Acre	Total GPD	Total GPM	
Assumed Potential Irrigation	--	Vegetables	10	1200	12000	8.3	USDA (1997) (c)
Hay Fields	--	Hay	10	0	0	0	Hay field, no irrigation.
Water Use - Other							
Unaccounted (b)	--	--	--	--	1000	0.69	Unaccounted consumptive use (e)
Total Water Use - Agricultural / Other					14200	9.9	

Notes:

- a. Assumed typical value for dairy cows. Shees, pigs, beef cow values are lower. Same value assumed for horses.
- e. Assumed values for acreages and herd count that will potentially be used for agricultural/husbandry purposes in the amount shown.
- c. Assumed 16 in/yr artificial irrigation as reported for Atlantic states
- d. 54 residential addresses were apparent on Assessor's map within contribution area, excluding the Ledyard Center town water service area.
- e. Allowance per day for unknown water use such as maintenance, incidental evaporation, inefficiency.

Figures



Source: <https://www.topozone.com/connecticut/>



SCALE, MILES

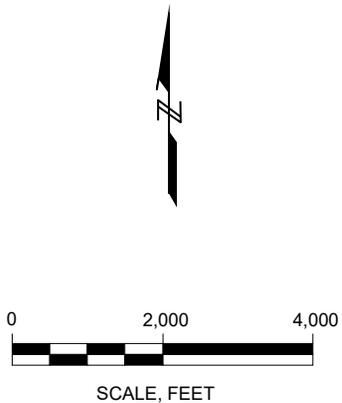
WATER STUDY
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT

AVERY BROOK PROPERTIES LLC
 GALES FERRY, CONNECTICUT



Site Location

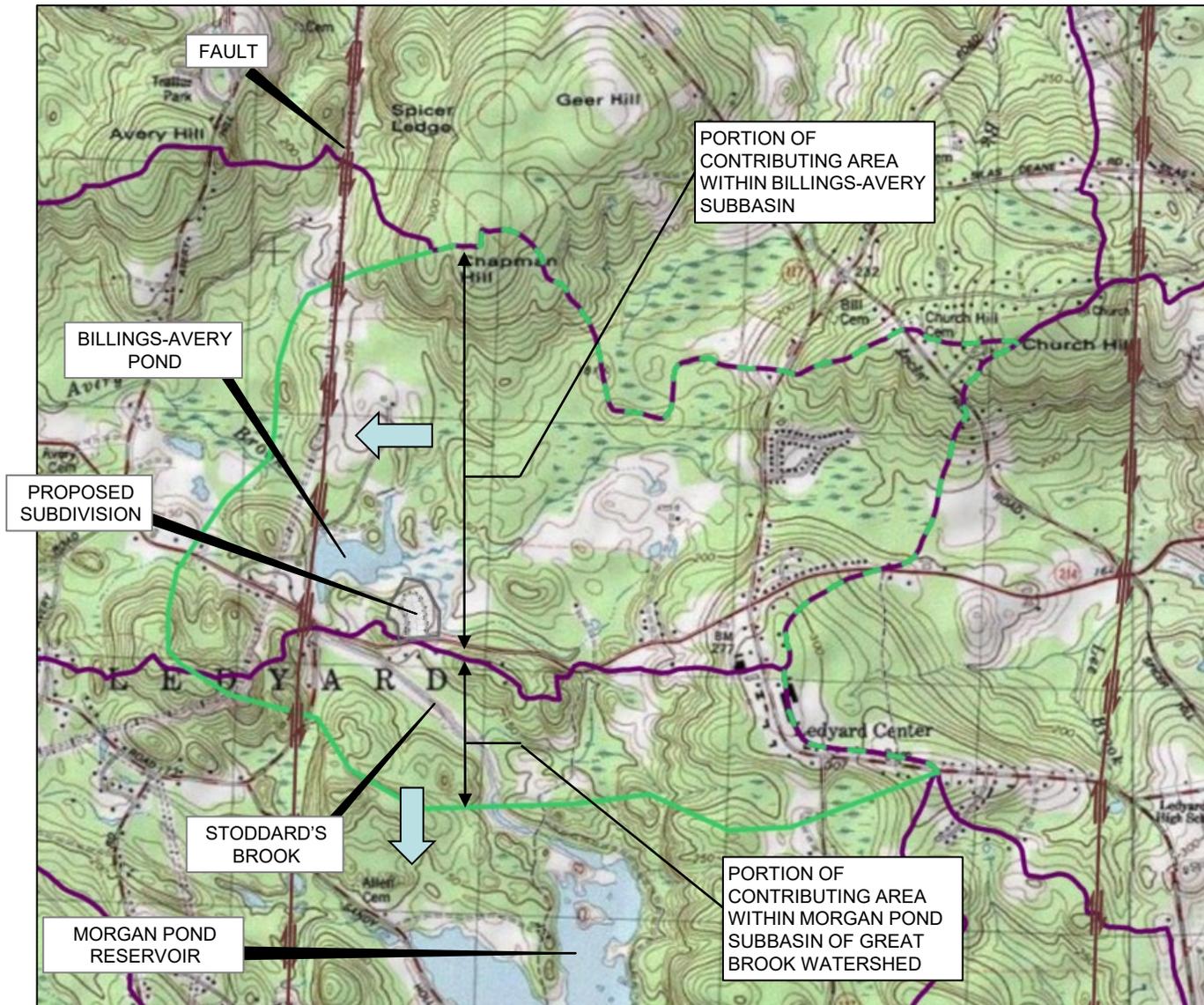
Project 2201518 July 2022 Fig. 1



LEGEND:

-  CT DEEP DRAINAGE SUBBASIN BOUNDARY (DASHED WHERE COINCIDES WITH CONTRIBUTING AREA).
-  ASSUMED CONTRIBUTING AREA, SEE. FIG. 7. (DASHED WHERE COINCIDES WITH SUBBASIN BDY).
-  FAULT
-  GENERALIZED NATURAL SURFICIAL DRAINAGE DIRECTION WITHIN SUBBASIN

SOURCE:
<https://www.topozone.com/connecticut/new-london-ct/city/ledyard-center/>



WATER STUDY
STODDARDS WHARF ROAD
LEDYARD, CONNECTICUT

AVERY BROOK PROPERTIES LLC
GALES FERRY, CONNECTICUT

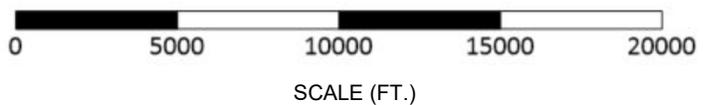
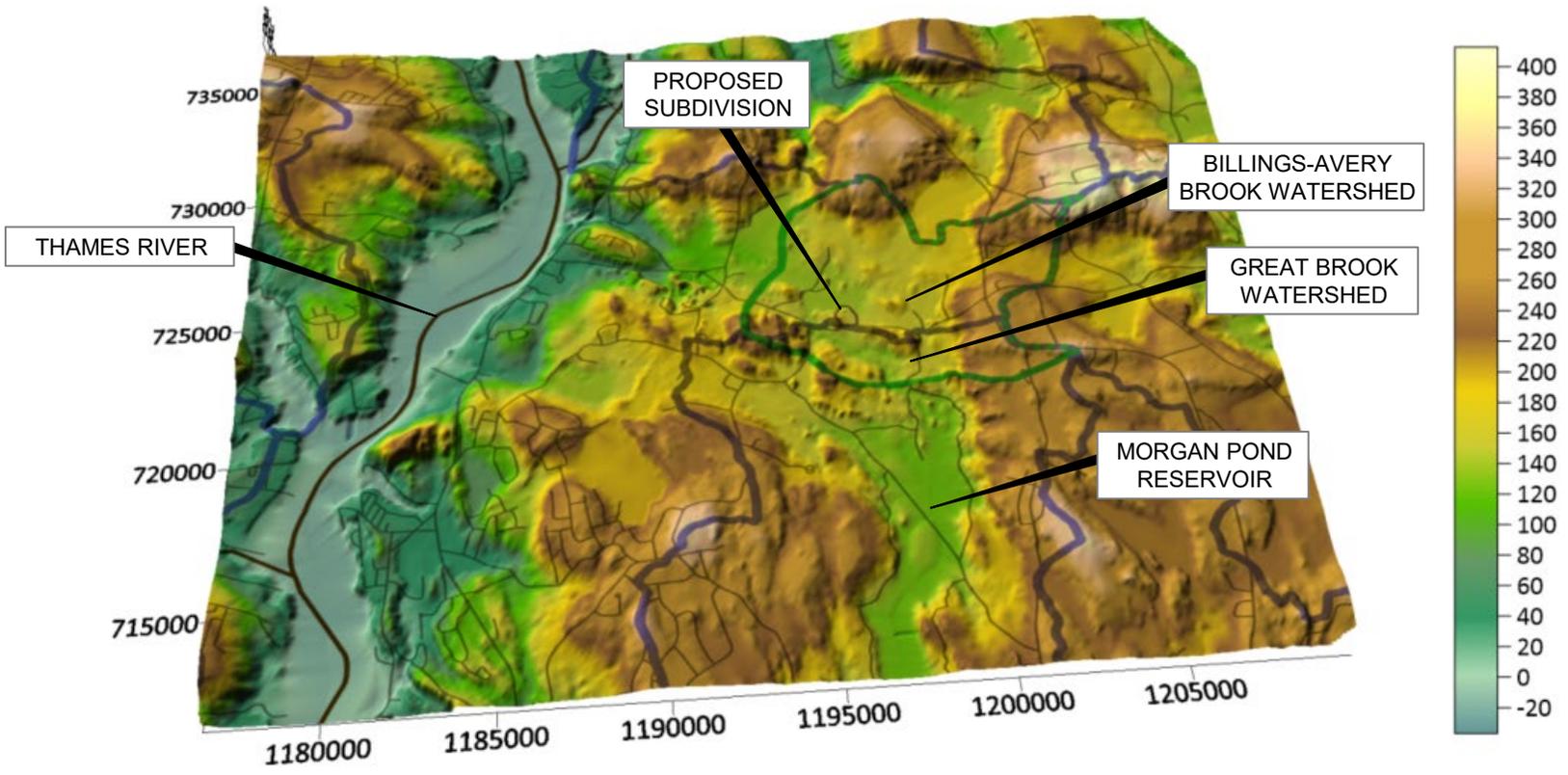


Project 2201518

Topography and Subbasins

July 2022

Fig. 2



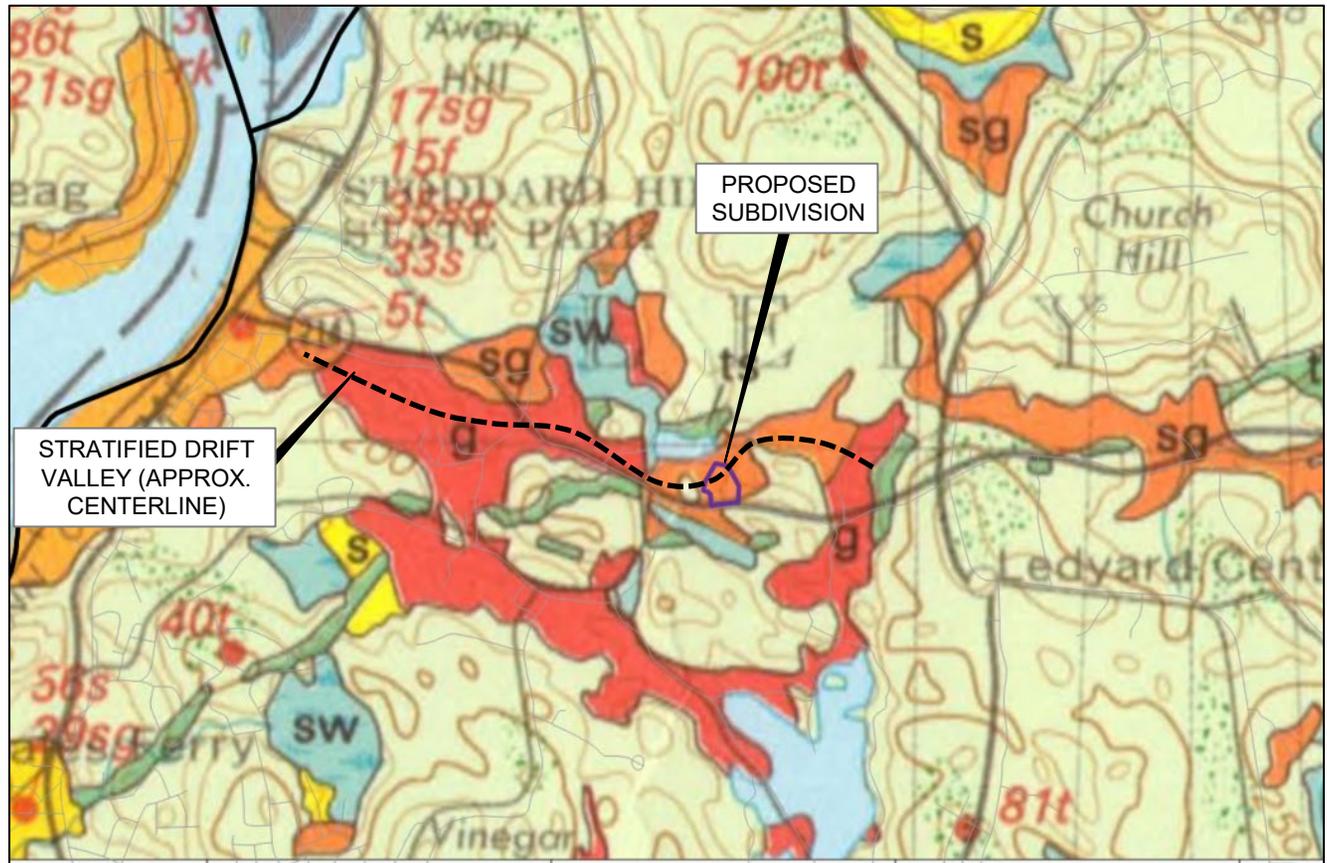
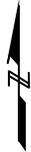
LEGEND:

-  PROJECT BOUNDARY
-  CT DEEP DRAINAGE SUBBASIN BOUNDARY
-  ESTIMATED AREA OF BEDROCK GROUNDWATER CONTRIBUTION (DASHED WHERE COINCIDES WITH DEEP SUBBASINS)

SOURCE:
CT DEEP GIS

WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT		Basin Relief Map
AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT		Project 2201518 July 2022

- Coarse Deposits**
- g** Gravel—Composed mainly of gravel-sized particles; cobbles and boulders predominate; minor amounts of sand within gravel beds, and sand comprises few separate layers. Gravel layers generally are poorly sorted and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. Gravel deposits are shown only where observed in the field; additional gravel deposits may be expected, principally in areas mapped as unit sg (proximal fluvial deposits or delta-topset beds)
 - sg** Sand and gravel—Composed of mixtures of gravel and sand within individual layers and as alternating layers. Sand and gravel layers generally range from 25 to 50 percent gravel particles and from 50 to 75 percent sand particles. Layers are well to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. It is likely that some deposits within this map unit actually are gravel or sand and gravel overlying sand. It is less likely that some of these deposits are sand (fluvial deposits or delta-topset beds)
 - s** Sand—Composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay (delta-foreset beds, very distal fluvial deposits, or windblown sediment)



NOTES:

1. ORANGE, RED, YELLOW SHADED AREAS REPRESENT POTENTIAL HIGH-YIELD OVERBURDEN AQUIFERS
2. NUMBERING INDICATES OBSERVED THICKNESSES OF OVERBURDEN MATERIALS IN FEET

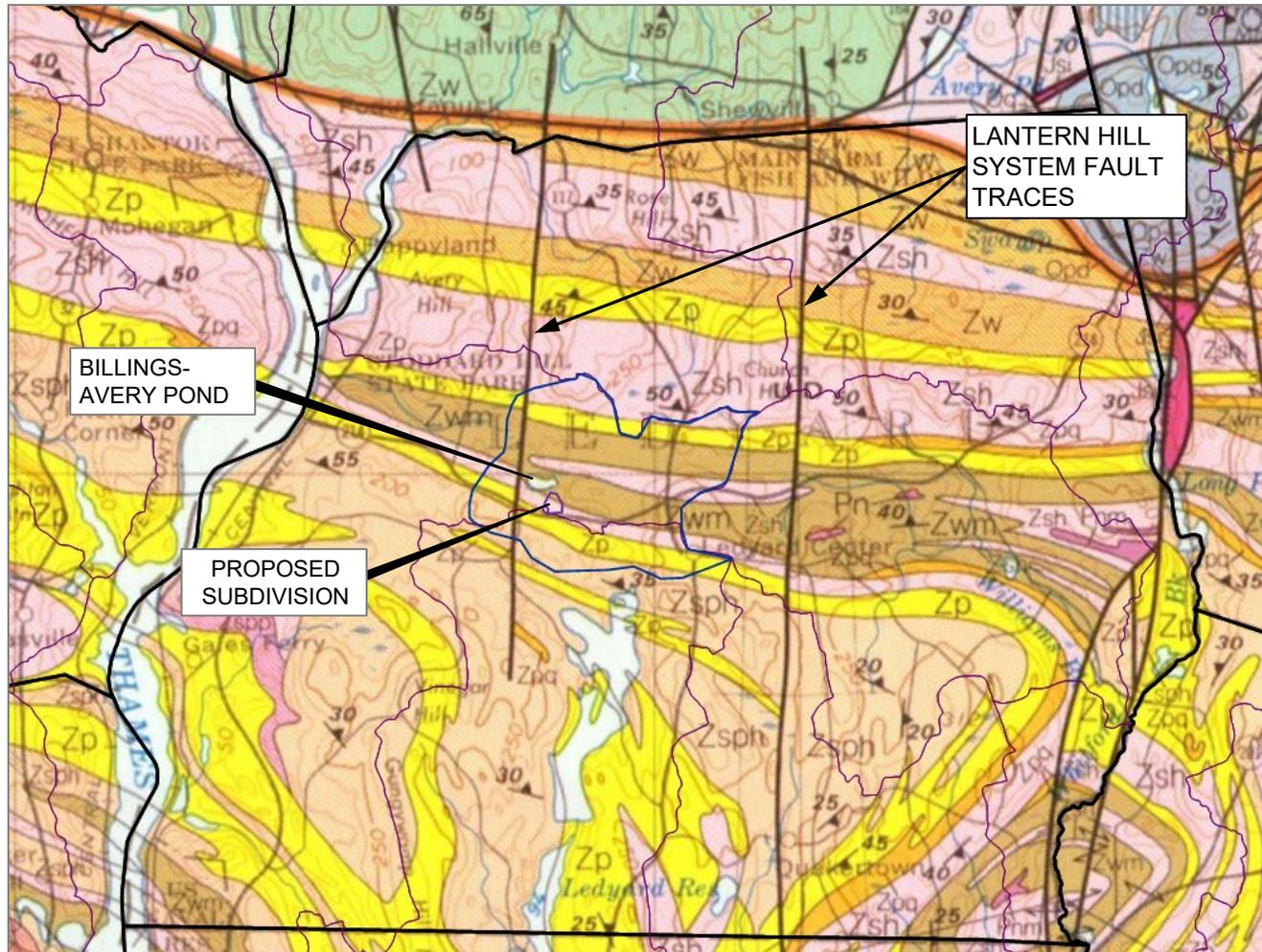
SOURCE:
SURFICIAL MATERIALS MAP OF CONNECTICUT (STONE, 1992).

WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT	 GEI Consultants	Surficial Geology
AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT		Project 2201518 July 2022

Fig. 4

Bedrock formation

- Zp Plainfield Formation
- Zpq: Quartzite subunit
- Zsh: Hope Valley Alaskite Gneiss
- Zsph: Potter Hill Granite Gneiss
- Zw: Waterford Group
- Zwm: Mamacoke Formation



LEGEND:

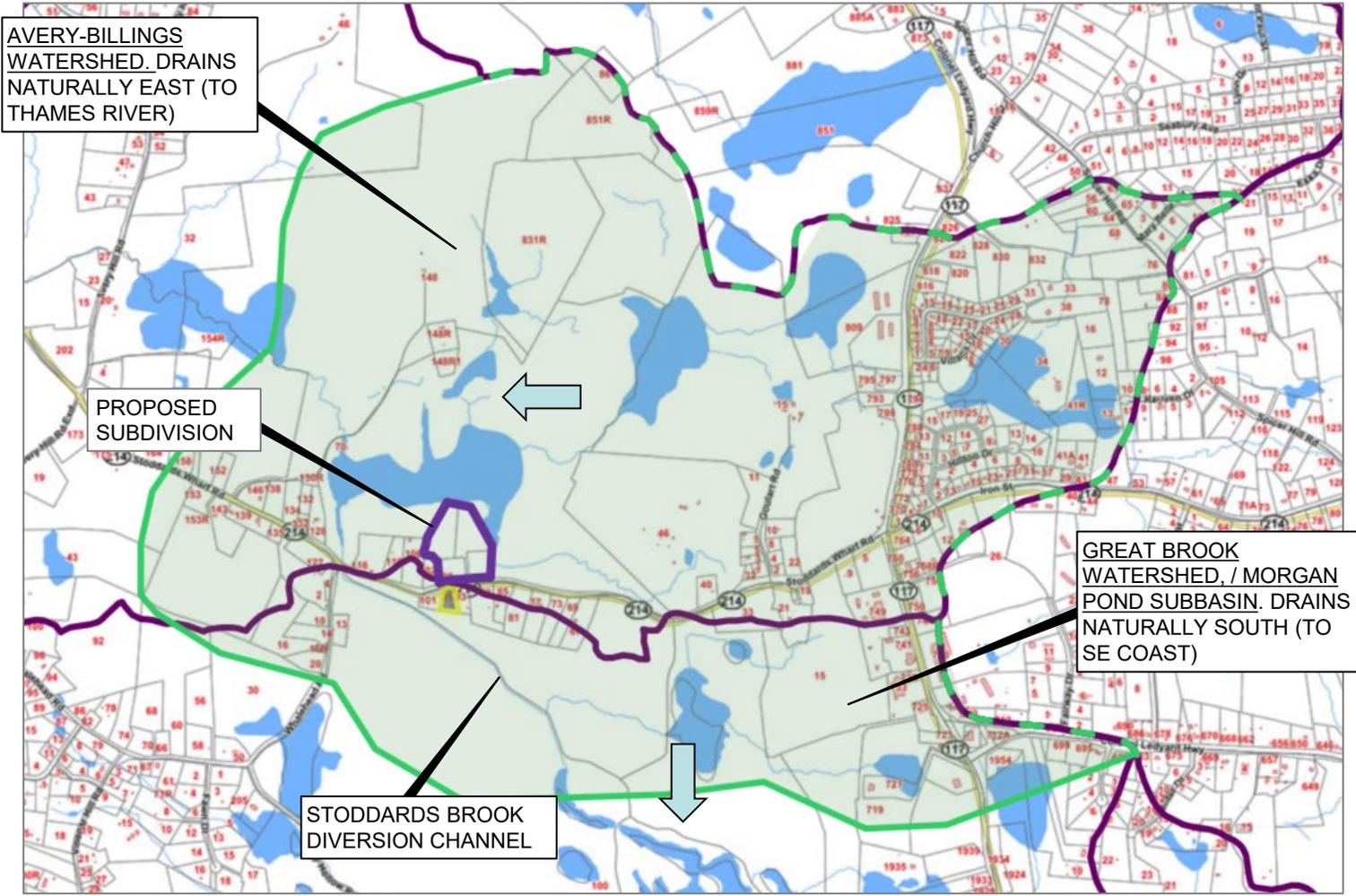
-  CT DEEP DRAINAGE SUBBASIN BOUNDARY
-  ESTIMATED AREA OF BEDROCK GROUNDWATER CONTRIBUTION

SOURCE:

BEDROCK GEOLOGICAL MAP OF CONNECTICUT (RODGERS, 1985). https://ngmdb.usgs.gov/Prodesc/proddesc_54245.htm

WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT	 GEI Consultants	Bedrock Geology
AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT		Project 2201518 July 2022

Fig. 5



LEGEND:

- PROJECT BOUNDARY
- CT DEEP DRAINAGE SUBBASIN BOUNDARY
- ESTIMATED EXTENT OF AREA CONTRIBUTING WATER TO AREA OF OPEN-SPACE SUBDIVISION (DASHED WHERE COINCIDES WITH DEEP SUBBASINS)

SOURCE:
 TOWN ASSESSORS LOTS, <http://www.mapsonline.net/ledyardct/index.html>
 SUBREGIONAL BASIN POLY OVERLAY, CT DEEP GIS
http://www.ct.gov/deep/cwp/view.asp?a=2698&q=322898&deepNav_GID=1707

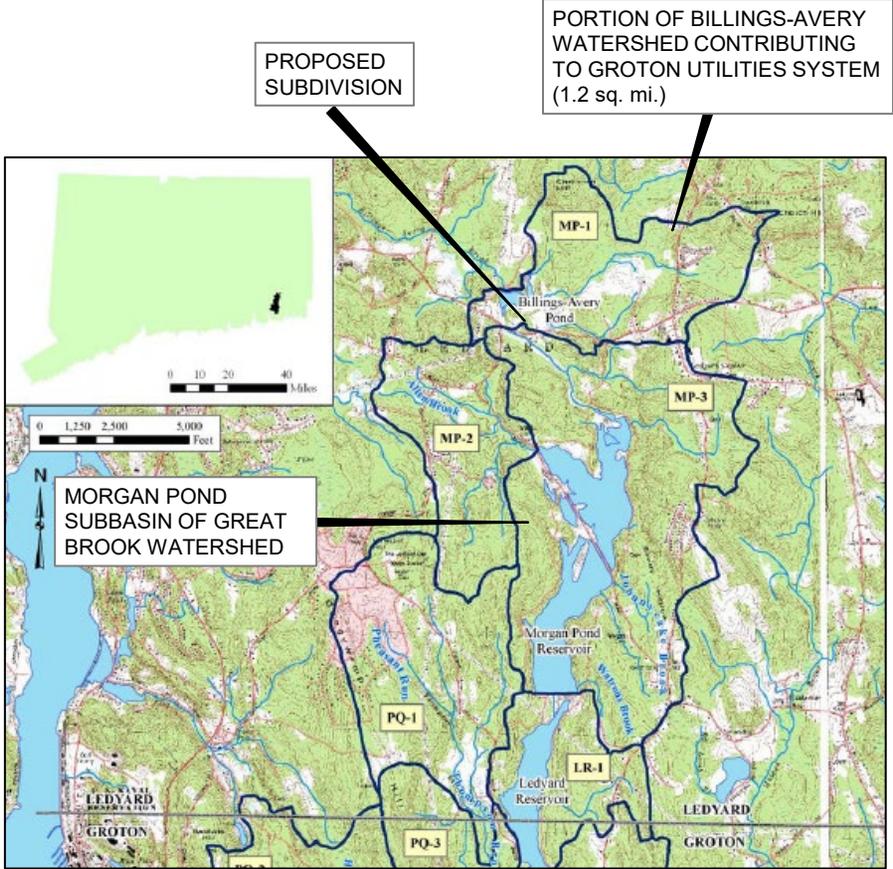
WATER STUDY
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT

AVERY BROOK PROPERTIES LLC
 GALES FERRY, CONNECTICUT



**Watershed Boundaries
 and Estimated Area of
 Contribution**

Project 2201518 July 2022 Fig. 6



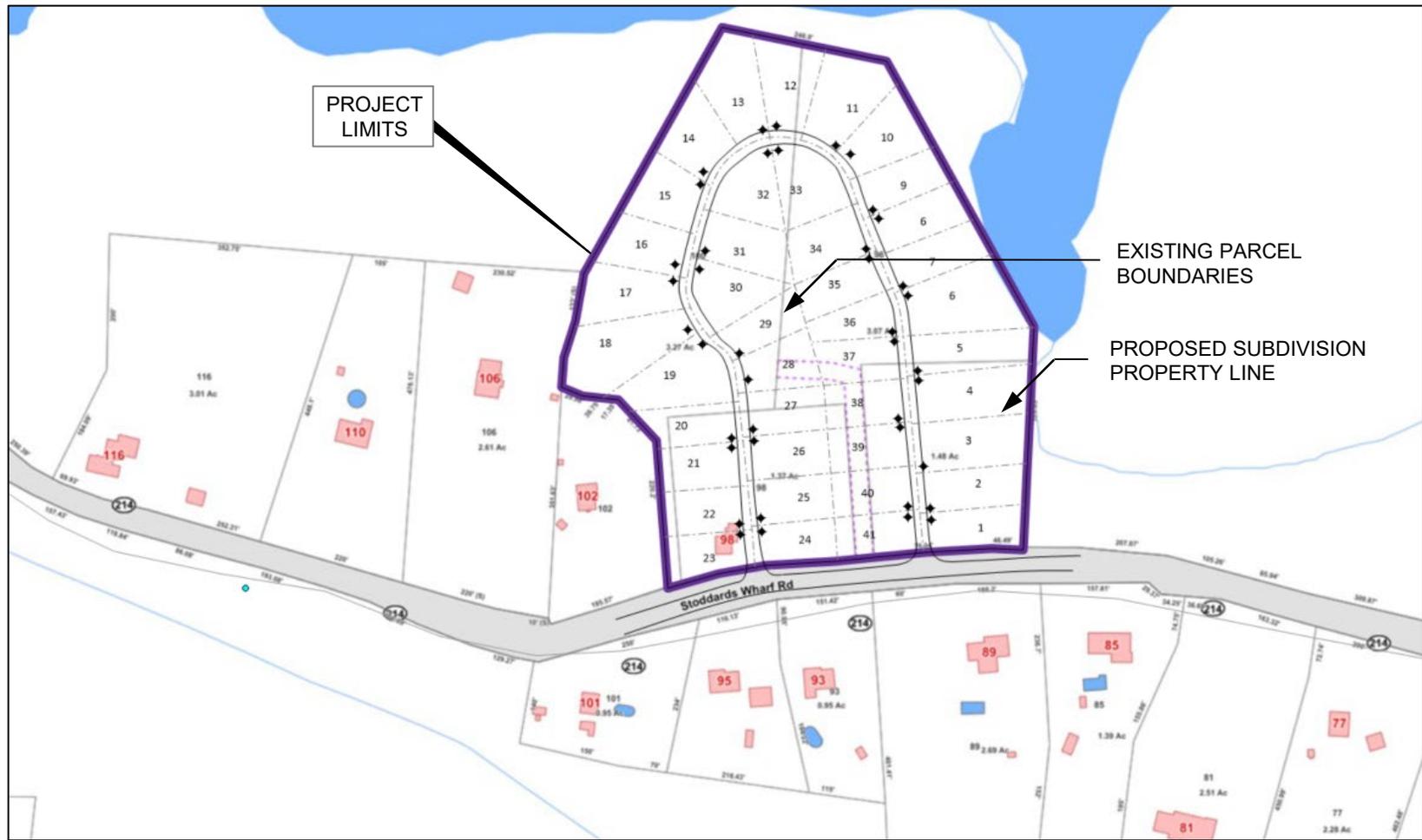
NORTHERN WATERSHED
(LEDYARD)



SOUTHERN WATERSHED
(GROTON)

SOURCE:
MILONE & MACBROOM, INC. SOUTHEAST CONNECTICUT DRINKING
WATER QUALITY MANAGEMENT PLAN, Fig. 1, MAY 2008.

<p>WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT</p>	 <p>GEI Consultants</p>	<p>Great Brook Watershed</p>
<p>AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT</p>	<p>Project 2201518</p>	<p>July 2022 Fig. 7</p>



LEGEND

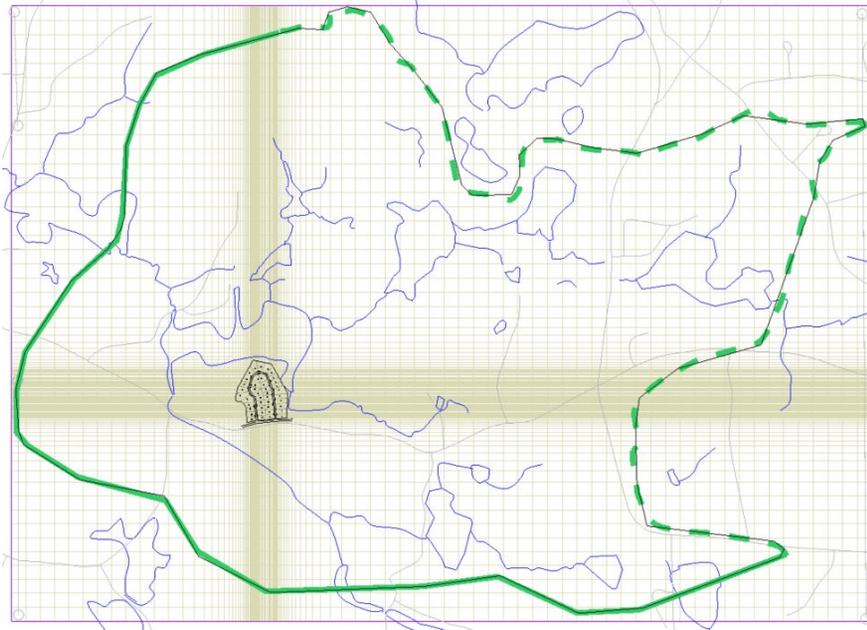
● CONCEPTUAL PROPOSED WELL LOCATION



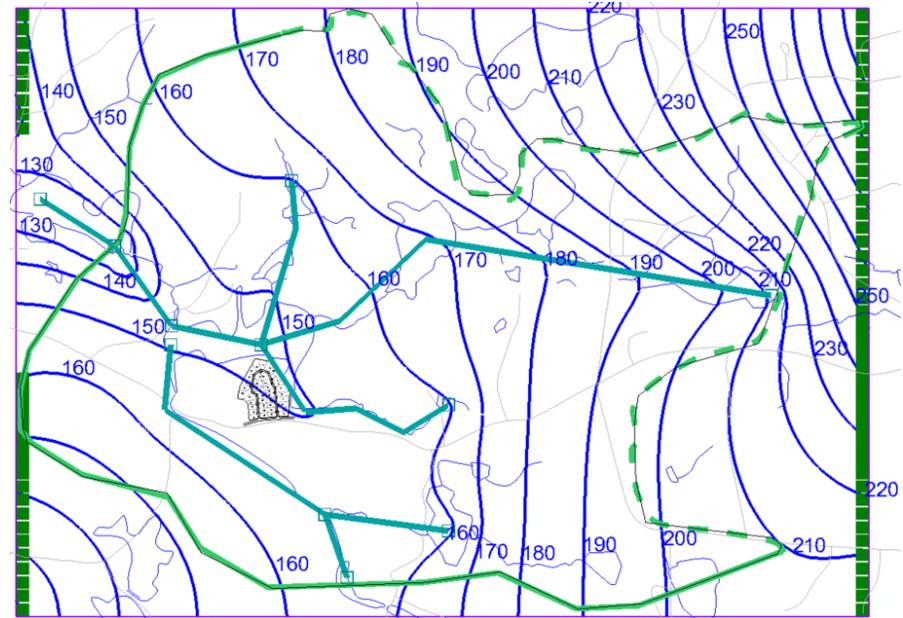
SOURCES:

1. "PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC STODDARDS WHARF RD. AKA CT ROUTE 214, LEDYARD, CONNECTICUT", DIETER & GARDNER, June 2022.
2. LEDYARD ASSESSORS MAP <https://www.mapsonline.net/ledyardct/>

<p>WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT</p>		 <p>GEI Consultants</p>	<p>Drawdown Prediction Locations</p>	
<p>AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT</p>			<p>Project 2201518</p>	<p>July 2022</p>



MODEL COMPUTATIONAL GRID



COMPUTED GROUNDWATER CONTOURS (PRESENT CONDITION)

LEGEND:

-  MODEL EXTENT
-  GRID COMPUTATION CELLS
-  ASSUMED CONTRIBUTING AREA (NOT PART OF MODEL CALCULATION), REF. FIG. 6
-  HEAD BOUNDARY LOCATION. HEAD ELEV. SET TO ROUGHLY MIMIC TOPOGRAPHY
-  DRAIN BOUNDARY LOCATION. REPRESENTS GROUNDWATER SEEPAGE TO STREAMS. HEAD ELEV. SET TO APPROX. GROUND ELEVATION AT PONDS/STREAMS.

-  200 COMPUTED GROUNDWATER CONTOURS (FT. MSL)
 -  STREAM OR LAKE (APPROX. AS MAPPED BY LEDYARD ASSESSORS)
- 0 2000 4000

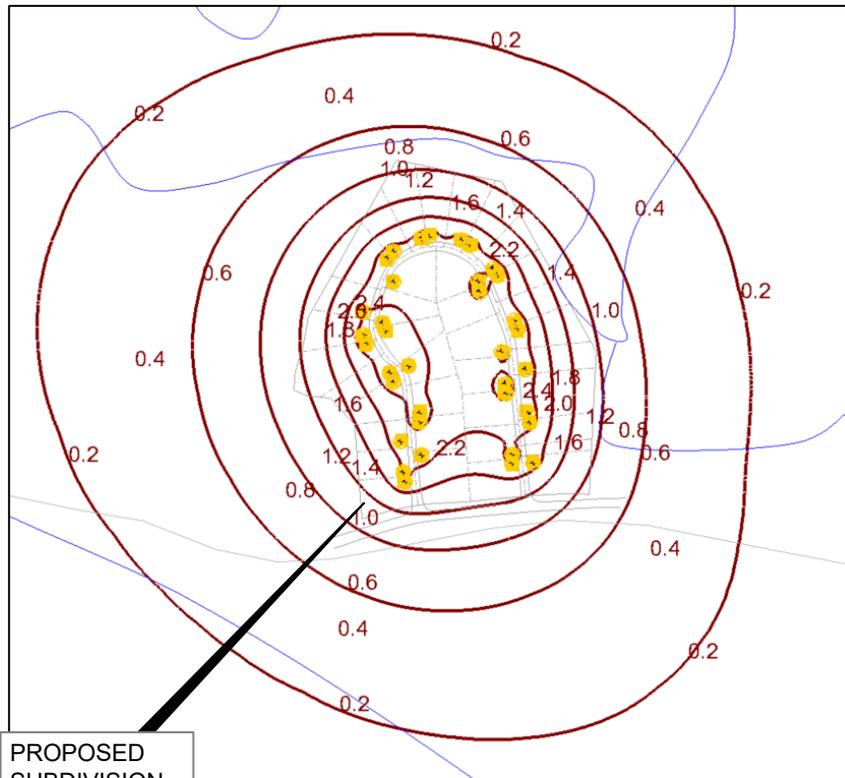
 SCALE, FEET

MODEL DIMENSIONS

AREA: 11,500 X 8,200 FT.
 TWO LAYERS (ELEV. IN FT. MSL):
 TOP LAYER 1: ELEV. 300
 (DOES NOT AFFECT CALC.)
 TOP LAYER 2: ELEV. 145
 (ASSUMED TOP OF BEDROCK ONSITE)
 BOT LAYER 3: ELEV. -150
 (ASSUMED ~300 FT. THICK VIABLE BEDROCK AQUIFER)
 GRID SPACING :
 190 FT. AT CORNERS
 APPROX. 3-15 FT. INTERIOR ON-SITE

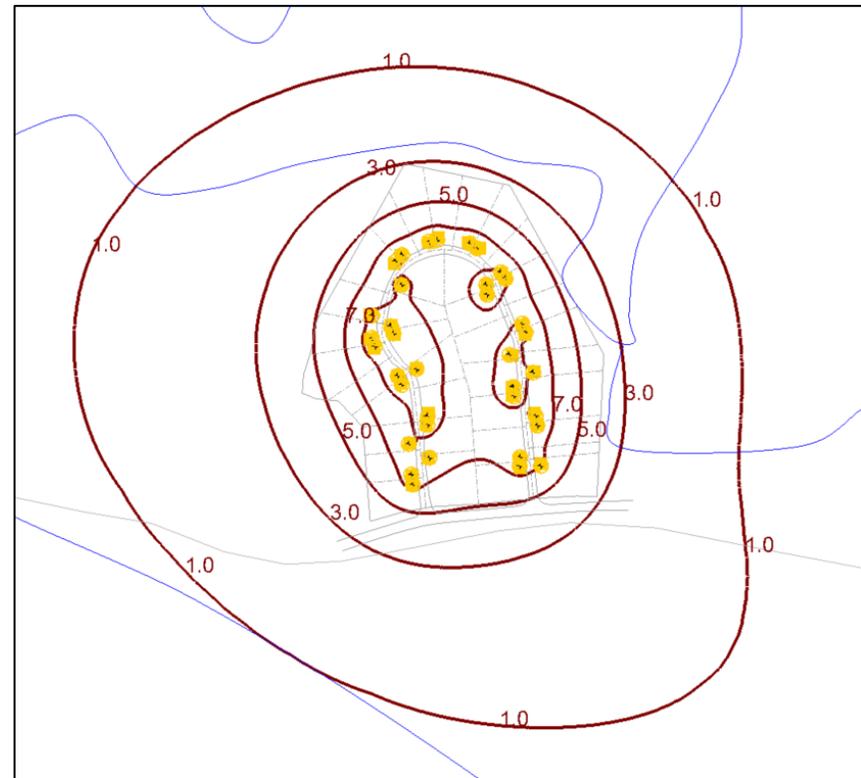


<p>WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT</p>		<p>Groundwater Model</p>
<p>AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT</p>	<p>Project 2201518</p>	<p>July 2022</p>



PROPOSED
SUBDIVISION

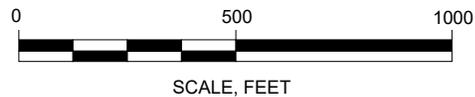
MODEL PREDICTION (BASELINE)



SENSITIVITY ANALYSIS
(HIGHER PUMPING WITH LOWER PERMEABILITY AND
AQUIFER RECHARGE RATE)

LEGEND:

— CONTOURS SHOWING FEET OF
DRAWDOWN DUE TO PUMPING,
RELATIVE TO THE ASSUMED
PRESENT-CONDITION STATIC
WATER LEVEL.



WATER STUDY STODDARDS WHARF ROAD LEDYARD, CONNECTICUT		 GEI Consultants	Bedrock Aquifer Drawdown Prediction
AVERY BROOK PROPERTIES LLC GALES FERRY, CONNECTICUT			Project 2201518 July 2022

REVIEW COMMENTS FOR PROPOSED SUBDIVISION
AVERY BROOK HOMES LLC
STODDARDS WHARF ROAD
LEDYARD, CONNECTICUT

[Plans Dated July 7, 2022]

Groton Utilities has reviewed the latest plans for this proposed subdivision, taking into account that changes have been made since our preliminary comments. The number of lots has been reduced from 41 to 36, additional information has been provided on soil testing and a water study by an outside consultant has been added to the submittals.

(1) **Soils** – The data provided on the plans indicates a high degree of permeability for soils throughout the site, as evidenced by the test pit data and percolation rates for the site of each proposed lot. This points to a relatively rapid discharge and migration of effluent to the underlying water table and to areas immediately surrounding the subsurface sewage disposal system, resulting in significant nutrient loadings detrimental to a safe drinking water supply.

(2) **Water Supply** – A study has been presented by GEI Consultants examining the adequacy of water supply for the number of lots and the anticipated number of individuals expected to inhabit the area. It shows that there is an adequate supply of groundwater in the area for meeting the needs of the subdivision. It does, however, point out, that the amount of required water for supply cannot be met from onsite groundwater alone, but must rely on drawdown from properties adjacent to this site, including the Groton Utilities property which borders this subdivision on three sides. In addition, it is also important to note that the study addresses only adequacy of supply, but not the quality of existing groundwater, nor the potential impact of drawdown from multiple wells in close proximity to other lots and to the adjacent neighborhood. Nor does it address the potential issue of drawing water from a water table that has significant effluent dispersal from multiple subsurface sewage disposal systems in close proximity to each other.

(3) **Subsurface Sewage Disposal Systems** – The concentration of the proposed subsurface sewage disposal systems, although slightly less in number, still represents a dense layout with a hydraulic profile that includes effluent discharge from multiple systems combined along the same slope and outflow directions. All effluent is discharged toward Groton Utilities property from these systems, with wetlands and open water in close proximity to a drinking water supply reservoir. We ask that an in-depth study of the water table's hydraulics and the ability of the soils to treat or renovate the wastewaters prior to dispersal onto Groton Utilities property be provided. Though lots have been tested, designed and reviewed on an individual basis, it is critical to see this type of dense layout as a cumulative impact that must meet certain standards at the property line – particularly because that property line and

underlying groundwater and surrounding wetlands are directly linked to a drinking water supply that affects both adjacent towns and the Town of Ledyard.

(4) **Stormwater** – This issue has not been addressed with regard to the proposal. When viewed from a built out community, we see not only a significant density of housing, but a substantial increase of the area of impervious and landscaped cover leading to a high degree of stormwater surface runoff. This runoff from rainwater carries with it various substances from land within its watershed (i.e., the proposed subdivision) containing contaminants such as bacteria, parasites, viruses, and chemicals from lawn treatments and road and driveway surfaces, all harmful to human health.

A preliminary estimate indicates that the area of the road, driveways and houses represents 30% of the surface area of this proposed subdivision, not including landscaped areas. Combined with landscaped areas, we anticipate a significant amount of runoff directed not only toward downstream housing, but also immediately toward Groton Utilities property and the adjacent reservoir and wetland areas, without detention, renovation or treatment of any kind. As shown by currently available topographic information, stormwater runoff would be directed downslope through the development, over individual lots (between dense housing where structures are relatively close to each other) and over the interior road, directly toward adjacent wetlands. The runoff between houses would result in concentrated flow areas susceptible to erosive flows; resulting transport of sediment would then be directed to the adjacent property lines, wetlands and reservoir.

Rainfall, other than that resulting in direct runoff, will infiltrate into the ground and, based on percolation rates, make its way rapidly to the underlying water table which (as with surface runoff) is directed to the adjacent property and drinking water supply reservoir. Groundwater contributions to water supply are the least visible but important factors in the development and maintenance of a drinking water supply.

This again will be detrimental not only to the housing community, but also to our sources of drinking water supply. We urge that this issue be addressed and examined in detail through a definitive hydrogeologic and environmental impact study to ascertain flow directions, proper renovation of pollutants and future impact on water bodies, particularly with respect to nutrient loadings from both subsurface sewage disposal systems and the potential addition of fertilizers used for landscaping.

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(9) **Surface & Groundwater Classifications** – We remind the Commission again, that current State DEEP mapping designates the groundwater beneath this proposed subdivision as GAAs. Class GAAs is a subclass of GAA for ground water which is tributary to a public water supply reservoir.

The adjacent surface water designation for the reservoir is AA. Class AA designated uses are existing or proposed drinking water supplies, habitat for fish and other aquatic life and wildlife, recreation, and water supply for industry and agriculture.

Considering the issues noted above, we feel that the applicant has not adequately addressed the safety, health and welfare of this proposal to the community and the drinking water supply of both the Town of Ledyard and the surrounding communities.

Rec. 10/4/22



Promoting healthy communities

Date: 27 September 2022
To: Peter Gardner, LS
Subject Property: 94, 96, 98, 100 Stoddards Wharf Rd. Ledyard

Plan Designed by: Peter Gardner, LS Plan Date: July 7, 2022 Last Revision Date: (plan needs revision date)
Date Paid: July 7, 2022

The plan and associated information was submitted to our office on July 30, 2022 for a proposed 36 lot subdivision/commission review. Lots range from 0.19 to 0.42 acres and are to be served by private well water and private septic systems, in the Town of Ledyard .

The Ledge Light Health District (LLHD) does not issue approvals for Subdivision or Commission reviews, but our recommendation for suitability of the previously stated plan/lots to accommodate the LLHD Subdivision Submission Requirements and Connecticut Public Health Code Section 19-13-B103e are as follows:

- Lots 1-36 are recommended suitable in their current condition IF footing drains are not required

Comments

1. Approval of no foundation drains to be provided by Ledyard Building Official.
2. The plan submitted on 30 August 2022 lacks a revision date but is clearly a revision of the July 7, 2022 plan. Final version must have a correct revision date.
3. The feasibility of providing each lot with a private well that would produce an adequate quantity of water to serve a 3 bedroom single family dwelling was studied by GEI Consultants, and the results of the study provided in a document: "Water Study Proposed Stoddards Wharf Road Subdivision Ledyard, CT" July 6, 2022. The document concludes that "multiple lines of evidence" suggest that the current groundwater supply is adequate to supply the subdivision as proposed. It should be noted that the study uses an estimated subdivision demand of 7.5gpm "assuming typical residential demands", whereas the CT Public Health Code would assume a demand of 11.25gpm for 36 lots, 3 bedrooms per lot. The study states that the expected bedrock aquifer recharge over the footprint of the proposed subdivision is estimated to be 4.0gpm, leaving a deficit of 3.5gpm to be made up by groundwater flow entering the subdivision footprint horizontally. This deficit may in fact be greater (7.25gpm) based on the expected water demand for the total number of bedrooms.

There is no doubt that siting 36 wells in such close proximity could have a noticeable effect on the local groundwater table. Data collected for 5 existing wells in the area (drilled over 25 years ago) indicate that they are fairly deep (average 280ft) and have yields around 3gpm. The study does point out that the proposed subdivision is at least partially surrounded by an undeveloped watershed area, allowing for replenishment of the aquifer that would serve the wells. In Connecticut it is recommended that the 75ft well protective radius be located completely on the property that the well serves in order to allow neighbors full use of their property; it is further recommended that well casings be located 10ft or more from driving surfaces to avoid damage.

Due to the density of the proposed subdivision, It is noted that a public water supply would be the preferable means of supplying water to the community.

4. Proposed septic layouts on the lots demonstrate the feasibility of siting code complying primary and reserve septic leaching areas on the lots using proprietary leaching products that provide a high leaching credit per linear



Promoting
healthy
communities

foot. The layouts are so close on some lots that positioning of the septic tank in a way to meet code requirements may be difficult and should be demonstrated in the context of not just the property served but also with respect to the surrounding properties.

5. It is recommended that thought be given to space on the lots that might be needed for Water Treatment Wastewater systems in the future.
6. No road drainage or catch basins are shown on the proposed site plan. It should be noted that wells and septic systems must be located 25ft or more from drains.
7. Individual site plans may require additional soil testing. Individual site plans where the house location, septic location or well location differs from the approved subdivision plan must be submitted on plans that show the proposed (or actual) locations of these items on the surrounding lots to ensure the proper separating distances are met.

*Please note that soils testing indicated on this plan are representative of actual soils conditions and additional deep test pits and percolation tests may be required by the Ledge Light Health District if the building or system location is altered and/or the suitable septic area is limited. Applicant should be aware that subdivision approval IS NOT sufficient for individual lot approval. Each lot must be reviewed by the Ledge Light Health District at the time of building permit application in order to obtain lot approval and issue a septic/well permit.

Please call me at 860-910-0446 with any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Wendy K. Brown-Arnold".

Wendy K. Brown-Arnold, RS, REHS
Supervisor, Land Use Activities

cc: Town of Ledyard Planning and Zoning Departments

CLA Engineers, Inc.

Civil • Structural • Survey

317 MAIN STREET • NORWICH, CT 06360 • (860) 886-1966 • (860) 886-9165 FAX

October 27, 2022

Juliet Hodge, Planning Director
Ledyard Planning & Development Department
741 Colonel Ledyard Highway
Ledyard, CT 06339-1511
planner@ledyardct.org

RE: Engineering Review
Application PZ#22-18SUB
Avery Brook Homes, LLC
94, 96, 98 and 100 Stoddards Wharf Rd.
CLA-7336

Dear Ms. Hodge:

CLA Engineers, Inc. has received and conducted a review of the following application materials for the above referenced project:

1. Plan showing Resubdivision, Property of Avery Brook Homes, LLC, 94, 96, 98 and 100 Stoddards Wharf Road, A.K.A. Connecticut Route 214, Ledyard, Connecticut, Sheet 1-7, July 7, 2022.
2. Declaration of Avery Brook Homes, a De Minimis Planned Community.
3. Water Study, Proposed Stoddards Wharf Road Subdivision, Ledyard, Connecticut, prepared by GEI Consultants, Dated July 6, 2022, Project 2201518.
4. Traffic Impact Study, 94, 96, 98 and 100 Stoddards Wharf Road, Ledyard, Connecticut, prepared for Avery Brook Homes LLC, Prepared by KWH Enterprise, LLC, August 2022.

We have reviewed the site and the application documents and offer the following comments:

1. The Applicant should provide stormwater drainage calculations demonstrating existing condition and post development stormwater flow rates and volumes leaving the site. The development as proposed does not appear to provide for mitigation of potential increase in stormwater runoff from the proposed impervious areas. An increase in stormwater runoff from the development could negatively impact the existing road, existing cross culverts, downstream infrastructure, and private property located downstream of the development.
2. The Applicant should address how the development will meet the CTDEEP and Town stormwater quality requirements for runoff from the proposed impervious areas including the roadway, driveways, and roofs. Pollutants from untreated stormwater runoff could have a negative impact to groundwater, inland wetlands, or the surrounding properties.
3. It appears that a portion of the stormwater from the site will flow toward a cross culvert under the DOT Road (Route 214). Have plans and stormwater drainage calculations been submitted to DOT District 2, and has DOT District 2 performed a review of the documents?

4. The applicant should indicate the total proposed area of disturbance for the development, and if a CTDEEP Construction Stormwater General Permit will be required. It appears the total disturbance will exceed the 5-acre threshold and will require the General Permit. If so, CLA recommends that the Applicant provide the Town with a copy of their approved General Permit application documents and copies of the weekly inspection reports after construction commences.
5. A plan and profile of the proposed roadway should be provided indicating the proposed roadway horizontal and vertical geometries.
6. A stormwater pollution prevention plan and a roadway maintenance and operation plan should be provided on the project plans.
7. The proposed sequence of construction should be clarified and any project phasing should be shown on the project plans.
8. Erosion and sedimentation controls should be provided for the roadway construction phase of the development. Stockpile and staging areas should be shown for the roadway construction.
9. The Applicant should address if school buses, trash pick-up, or US Mail delivery will access the private road.
10. The 20' road width appears too narrow for safe pedestrian access through the development. The Applicant should address if sidewalks are required or needed along the roadway. CLA would recommend sidewalks be provided if school buses will not access the private road.
11. The Applicant should demonstrate that a fire truck could navigate the curvature of the proposed roadway.
12. CLA recommends that stop signs and stop bars be provided at the intersections with Stoddards Wharf Road.
13. The Applicant should address if on-street parking will be allowed within the development.
14. The Applicant should address if the proposed driveways and residences provide adequate parking in accordance with the Zoning Regulations.
15. Clearing limits and/or limits of disturbance should be shown on the plans, including any clearing needed in the State right-of-way to achieve the sight lines shown. Phased clearing limits should be shown if applicable.
16. Will the electrical service be above or underground? The location of any underground utilities should be shown on the plans.
17. Will street lighting be provided?

18. The front and rear setback lines specified in General Note #6 (Sheet 1) don't match the building line setbacks depicted on the plans (Sheet 3).
19. How will property line monumentation be provided within the centerline of the new roadway?
20. The proposed residences appear to be in relatively close proximity to each other (several within 20') without a water system for fire protection. The Applicant should address if this meets building code requirements, if there are additional building code requirements, or other provisions required for a development of this density without a water system available for fire protection.
21. Costs for street sweeping and any other stormwater pollution prevention operation and maintenance as applicable should be included in Schedule C of the Declaration document.
22. An itemized erosion and sedimentation control bond estimate should be provided for the development.

Please feel free to call me at our office or email me at khaubert@claengineers.com with any questions or comments.

Very truly yours,
CLA Engineers, Inc.



Kyle Haubert, P.E.

To the Town of Ledyard Inland Wetlands & Watercourses Commission
October 28, 2022

=====

Re: Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

Groton Utilities has been made aware of this upcoming application to the IWWC and has previously reviewed the proposal with respect to plans and other materials submitted to the Planning and Zoning Commission. As there have been no noted changes to this proposal received by us to date, we continue to express our concerns with respect to the dense layout of homes, subsurface sewage disposal systems, wells and the private road passing through the subdivision without any design provision for drainage infrastructure or accommodation for stormwater renovation directly adjacent to a drinking water supply reservoir.

We are attaching a narrative and list of those concerns as presented to the Planning and Zoning Commission, Ledyard WPCA and ask that they be addressed in any upcoming proceedings. We have a duty to both local and regional consumers to protect the quality of our source waters; a clean and protected watershed is our first line of defense in this endeavor.

Please let us know if there are any questions or if any changes or updates to the proposal have been presented.

REVIEW COMMENTS FOR PROPOSED SUBDIVISION
AVERY BROOK HOMES LLC
STODDARDS WHARF ROAD
LEDYARD, CONNECTICUT

[Plans Dated July 7, 2022]

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STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH



Manisha Juthani, MD
Commissioner

Ned Lamont
Governor
Susan Bysiewicz
Lt. Governor

Drinking Water Section

November 1, 2022

Juliet Hodge
Planning Director, Town of Ledyard
741 Colonel Ledyard Highway
Ledyard, CT 06339-1511

RE: Avery Brook Homes LLC's Proposal to Develop a 36-Lot Subdivision on the Parcels of Land Located at 94, 96, 98 and 100 Stoddards Wharf Road in Ledyard, Connecticut.

Dear Ms. Hodge,

The Department of Public Health Drinking Water Section's Source Water Assessment and Protection Unit has reviewed a proposal to develop a 36-lot subdivision at 94, 96, 98 and 100 Stoddards Wharf Road in Ledyard, Connecticut. Please refer to the attached report for our comments.

If you have any questions, you may contact Lisette Stone of this office at lisette.stone@ct.gov.

Sincerely,

Eric McPhee

Eric McPhee
Supervising Environmental Analyst
Drinking Water Section

RECEIVED

NOV 1 2022

LAND USE DEPARTMENT

Cc: Wendy Brown-Arnold, Supervisor of Land Use Activities, Ledge Light Health District
Ron Gaudet, Director of Utilities, Groton Utilities
Peter Gardner, President, Dieter & Gardner Inc.
Harry B. Heller, Heller, Heller & McCoy Attorneys at Law



Phone: (860) 509-7101 • Fax: (860) 509-7111
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410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Affirmative Action/Equal Opportunity Employer



MEMORANDUM

Subject: Review of Avery Brook Homes LLC, Project Proposal for a 36-Lot subdivision on the parcels of land located at 94, 96, 98 and 100 Stoddards Wharf Road in Ledyard, Connecticut, Pursuant to Connecticut General Statutes (CGS) CGS Section 25-32f

Date: November 1, 2022

Pursuant to Connecticut General Statutes (CGS) CGS Section 25-32f, the Department of Public Health Drinking Water Section has reviewed the proposal of one Avery Brook Homes, LLC, to develop a subdivision of 36 individual housing units, each with a dedicated private drinking water well and subsurface sewage disposal system (a.k.a. septic system), on a \pm 9.4 acre area of land located at the integrated parcel formerly 94, 96, 98 and 100 Stoddard's Wharf Road, in the town of Ledyard, Connecticut and offers the follow comments.

The location of proposed development is approximately 245' Southeast of the Billings Avery Brook Diversion, a public drinking water source, and entirely within the reservoir's associated public drinking watershed. This reservoir is currently utilized as a source for drinking water supply by Groton Utilities (PWSID CT0590011), a public water system that serves over 30,000 people.

In order to protect drinking water resources, the Department of Public Health provides the following comments during the design and approval phase of this proposed development:

- It is recommended that Avery Brook Homes LLC coordinate with Ledge Light Health District, the Town of Ledyard and Groton Utilities in a comprehensive review of the site's Water Study (July 6th 2022, GEI Consultants) to ensure hydrogeological data reflect that the quality and supply of public drinking water resources will not be adversely impacted by the development, use or maintenance of the proposed subdivision.
- Pursuant to the Regulations of Connecticut State Agencies (RCSA) Sec. 19-13-B32(c) Sanitation of Watersheds; *No sewage disposal system shall be located on any watershed, unless such a facility is so constructed that no portion of the contents can escape or be washed into the stream or reservoir.* It is recommended that the Town of Ledyard and Ledge Light Health review and consult if additional protections may be necessary to mitigate the potential for mobilization of contaminants from the construction and collective use of 36 individual subsurface sewage disposal systems within the drinking water watershed.
- It is recommended that consideration be given to the carrying capacity of the aquifer for the large number of wells to be constructed on this lot. Yield tests of all 36 wells are to be conducted for each well as part of the development requirements; it is recommended that consideration be given to monitoring adjacent wells during the testing process or conducting simultaneous yield tests to determine the ability of the aquifer to reliably sustain all of these sources. Results of any monitoring should be provided to the Department of Public Health and Ledge Light Health

District with any other evidence illustrating that the wells will be able to provide an adequate water supply to the residences.

- The Regulations of Connecticut State Agencies (RCSA) Section Sec. 19-13-B32(h) was promulgated to limit the impact of road salt on drinking water watersheds. Considerations for placement of the 36 residential wells and management of snow/ice mitigation on the property should reflect the concern that sodium and chloride are increasing in public water supplies, including Groton Utilities.
- A comprehensive stormwater management plan, consistent with the Town of Ledyard's Stormwater Management Plan, should be incorporated into the construction design and maintenance of the subdivision to ensure that runoff from impermeable surfaces will not compromise the quality of subdivision residential wells or public drinking water resources. Green Stormwater Infrastructure (GSI) and Low Impact Development (LID) methods are recommended for incorporation into the design, construction and maintenance of the subdivision to prevent any pollutants from being discharged and/or mobilized within drinking water resources.
- The Department of Public Health, Ledge Light Health District, Groton Utilities and the Town of Ledyard should be granted reasonable access at regular intervals to ensure that the proposed development is constructed, operated and maintained in a manner that is protective of the public drinking water resources.
- The Town of Ledyard should ensure that the proposed construction activities are consistent with the policies of GMP #5 of the Conservation and Development Policies Plan for Connecticut 2018-2023 (C and D Plan). This Plan serves as a guidance for all development in the state. Growth Management Principle #5 (Protect and Ensure the Integrity of the Environmental Assets Critical to Public Health and Safety) of the C and D Plan states:

"It is also important that municipal land use commissions fully consider the broader regional implications of their decision-making processes, whenever there are potential impacts to the integrity of environmental assets and working lands that are critical to the well-being of citizens beyond their local boundaries."

- Pursuant to Connecticut General Statute (CGS) 19a-37 (2), newly constructed private wells must be tested for water quality with results submitted by the conducting laboratory to Local and State Health Departments within 30 days of testing. While on-going testing of existing private wells may not be required at this time, it is important to take proactive and preventative measures to ensure that drinking water quality maintains the highest of standards for its consumers.

The below guidance is provided in support of the recommendations provided herein.

DPH

- Recommendations for Testing Private Wells and Semipublic wells

EPA

- Prevent Water Well Pollution
- Drinking Water From Household Wells

UCONN Center for Land Use Education and Research (CLEAR):

- Green Stormwater Infrastructure (GSI) and Low Impact Development (LID)
- The State of Low Impact Development in Connecticut
- CT Nonpoint Education for Municipal Officials (NEMO): Stormwater Basics

DEEP

- Connecticut Stormwater Quality Manual
- Stormwater Quality Worksheet



Promoting healthy communities

Date: 9 November 2022
To: Peter Gardner, LS
Subject Property: 94, 96, 98, 100 Stoddards Wharf Rd. Ledyard

Plan Designed by: Peter Gardner, LS Plan Date: July 7, 2022 Last Revision Date: October 31, 2022
Date Paid: July 7, 2022

The plan and associated information was submitted to our office on July 30, 2022 for a proposed 26 lot subdivision/commission review. Lots range from 0.17 to 0.54 acres and are to be served by private well water and private septic systems, in the Town of Ledyard .

The Ledge Light Health District (LLHD) does not issue approvals for Subdivision or Commission reviews, but our recommendation for suitability of the previously stated plan/lots to accommodate the LLHD Subdivision Submission Requirements and Connecticut Public Health Code Section 19-13-B103e are as follows:

Lots 1-26 are recommended suitable in their current condition IF footing drains are not required

Comments

1. Some lots may require further soil testing if the proposed septic location is not close to test holes that have been recorded. These lots are recommended as suitable in their current state based on the consistency of soil observed in the vicinity. Lot 1 is recommended as suitable because suitable soil in a suitable location exists, even though the proposed septic system is not shown in this area.
2. Approval of no foundation drains (on lots where septic systems are to be located less than 25ft from the house) is to be provided by Ledyard Building Official.
3. The feasibility of providing each lot with a private well that would produce an adequate quantity of water to serve a 3 bedroom single family dwelling was studied by GEI Consultants, and the results of the study provided in a document: "Water Study Proposed Stoddards Wharf Road Subdivision Ledyard, CT" July 6, 2022. The document concludes that "multiple lines of evidence" suggest that the current groundwater supply is adequate to supply the subdivision as proposed. It should be noted that the study uses an estimated subdivision demand of 7.5gpm "assuming typical residential demands", whereas the CT Public Health Code would assume a demand of 8.1gpm for 26 lots, 3 bedrooms per lot. The study states that the expected bedrock aquifer recharge over the footprint of the proposed subdivision is estimated to be 4.0gpm, leaving a deficit of 3.5gpm to be made up by groundwater flow entering the subdivision footprint horizontally. This deficit may in fact be greater (4.1gpm) based on the expected water demand for the total number of bedrooms.

There is no doubt that siting 26 wells in such close proximity could have a noticeable effect on the local groundwater table. Data collected for 5 existing wells in the area (drilled over 25 years ago) indicate that they are fairly deep (average 280ft) and have yields around 3gpm. The study does point out that the proposed subdivision is at least partially surrounded by an undeveloped watershed area, allowing for replenishment of the aquifer that would serve the wells. In Connecticut it is recommended that the 75ft well protective radius be located completely on the property that the well serves in order to allow neighbors full use of their property. While the 75ft radii of the proposed wells are not located completely on the individual lots they serve, none of the radii extend onto neighboring properties beyond the subdivision.



Promoting
healthy
communities

Due to the density of the proposed subdivision, it is noted that a public water supply would be the preferable means of supplying water to the community.

4. Proposed septic layouts on the lots demonstrate the feasibility of siting code complying primary and reserve septic leaching areas on the lots using proprietary leaching products that provide a high leaching credit per linear foot. On a few lots, positioning of the septic tank in a way to meet code requirements may be difficult and should be demonstrated in the context of not just the property served but also with respect to the surrounding properties.
5. It is recommended that thought be given to space on the lots that might be needed for Water Treatment Wastewater systems in the future.
6. Individual site plans may require additional soil testing. Individual site plans where the house location, septic location or well location differs from the approved subdivision plan must be submitted on plans that show the proposed (or actual) locations of these items on the surrounding lots to ensure the proper separating distances are met.

*Please note that soils testing indicated on this plan are representative of actual soils conditions and additional deep test pits and percolation tests may be required by the Ledge Light Health District if the building or system location is altered and/or the suitable septic area is limited. Applicant should be aware that subdivision approval IS NOT sufficient for individual lot approval. Each lot must be reviewed by the Ledge Light Health District at the time of building permit application in order to obtain lot approval and issue a septic/well permit.

Please call me at 860-910-0446 with any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Wendy K. Brown-Arnold".

Wendy K. Brown-Arnold, RS, REHS
Supervisor, Land Use Activities

cc: Town of Ledyard Planning and Zoning Departments

LBM Engineering, LLC

11 Hally Lane, Colchester, CT 06415-2133 Phone 860-416-9809 Email John@LBMEngineering.com

CIVIL ENGINEERING - LAND DEVELOPMENT - SITE PLANS - STORMWATER MANAGEMENT

**Engineering Report
For Land Use Commissions Submittals
Avery Brook Homes Subdivision,
Stoddards Warf Road, Ledyard, Connecticut**

November 13, 2022

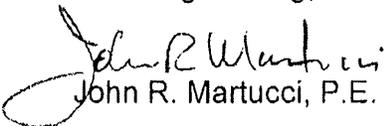
EXISTING CONDITIONS: Reference is made to the following Plan Set: "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road, A.K.A. Connecticut Route 214 Ledyard, Connecticut" Scales as Shown July 2022, Revised October 31, 2022, By Dieter & Gardner, Gales Ferry, CT. The property is located on the north side of Stoddards Wharf Road approximately one quarter mile east of the intersection of Whalehead Road and Stoddards Wharf Road. The property is wooded. The property drains primarily to the east and north.

STORMWATER MANAGEMENT: Detention of peak flow rates is not proposed for this development. The Town of Ledyard's Ordinance Regulating the Management of Stormwater Runoff, Part I. Section 3. Paragraph C. states: "A zero percent increase in discharge characteristics is specifically not applicable in cases where the applicant can demonstrate that the runoff will discharge to the Thames River or Groton Reservoir system without increasing the potential of downstream flooding." Runoff leaves this site in the form of sheet flow discharging to the watershed of the Groton Reservoir system. The runoff is dispersed along the north and east boundary lines.

WATER QUALITY: The proposal includes a water quality basin which is designed to hold the Water Quality Volume (WQV) for 12 hours to settle out suspended solids from the proposed roadway's runoff. The CT D.E.E.P. 2004 Stormwater Quality Manual Paragraph 7.4.1 states: "In the northeastern U.S., the 90 percent rainfall event is equal to approximately one inch, which is consistent with the recommended WQV sizing criteria for Connecticut." Therefore, by treating one inch of runoff from the new road's drainage system, the proposal effectively improves the runoff from the property for 90 percent of all storm events.

CONCLUSION: The proposed development will not have adverse effects on down-gradient properties, nor will it increase the potential for downstream flooding and is in keeping with the policies and goals of the Ledyard Planning and Zoning Commission.

Submitted by:
LBM Engineering, LLC


John R. Martucci, P.E.

NOV 15 2022
10:30 AM
Ledyard Planning and Zoning Commission

COMPUTATIONS FOR:	Project
WATER QUALITY FLOW / WATER QUALITY VOLUME	Made By: JRM
AVERY BROOK HOMES SUBDIVISION	Date: 8/31/2022
LEDYARD	Rev:
	Date:

IN SYSTEM TO BASIN				
ConnDOT Drainage Manual Ch. 10 and Ch. 11, Appendix C				
Contributing Basins TO BASIN	Wooded Area (acres)	Grass Area (acres)	Paved /Roof (acres)	Total Area (acres)
	0	3.09	0.41	3.5
			0.48	0.48
Total	0	3.09	0.89	3.98
Equation 10.31: $WQV = (1")(R)(A)/12 =$ 0.083 acre-feet or 3,630 cubic-feet				
I = % of Impervious Cover = 22%				
R = volumetric runoff coeff. $0.05 + 0.009(I) =$ 0.2513				
A = site area (acres) = 3.98 acres = 0.0062 miles ²				
Q = runoff depth (in watershed inches) = $[WQV(\text{acre-feet})][12(\text{inches/foot})]/\text{drainage area (acres)}$				
Q = 0.2512563				
CN = $1000 / [10 + 5P + 10Q - 10(Q^2 + 1.25QP)^{0.5}] =$ 87.9				
P = design precipitation (1" for water quality storm) = 1 inch				
Q = runoff depth (in watershed inches)				
$t_c =$ 10 min				
$t_c = 10 \text{ minutes} =$ 0.167 hours				
From Table 4-1, $I_a =$ 0.273 $I_a/P =$ 0.273				
From Exhibit 4-III, $q_u =$ 500				
WQF = $(q_u)(A)(Q) =$ 0.78 cfs				

TO POND 1 1

PREPARED BY JRM	DATE PREPARED 10/2022	LBM Engineering, LLC 11 HALLY LANE COLCHESTER, CONNECTICUT 06415 TEL: (860)-416-9809 EMAIL: JOHN@LBMENGINEERING.COM	JOB NUMBER	PAGE NUMBER
CHECKED BY	DATE CHECKED		CLIENT NAME	TOTAL PAGES

AVERY BROOK HOMES

DRAINAGE AREA BREAKDOWN TO DETERMINE WQV

3.98 AC TOTAL

12 LOTS ROOF & DRIVEWAY 1500 SF EA X 12 =
18,000 SF 0.41 AC

950' OF 22' WIDE ROAD = 20,900 SF = 0.48 AC

3.98 AC - 0.89 = 3.09 AC OVERLAND

PREPARED BY JRM	DATE PREPARED 11/2022	LBM Engineering, LLC 11 HALLY LANE COLCHESTER, CONNECTICUT 06415 TEL: (860)-416-9809 EMAIL: JOHN@LBMENGINEERING.COM	JOB NUMBER	PAGE NUMBER
CHECKED BY	DATE CHECKED		CLIENT NAME	TOTAL PAGES

CB 1 STA 12+30 RT
 CB 2 STA 23+13 RT
 CB 3 STA 23+13 LT

CB 1

STA 10+10 - 16+20 RIGHT SIDE OF ROAD

ROAD $620' \times 11' = 6820 \text{ SF} = 0.16 \text{ ACRES}$ 'C' = 0.9

CB 2

ROAD $630' \times 11' = 6930 \text{ SF} = 0.16 \text{ AC}$

ROOF & DRIVES $1500 \text{ SF} \times 2 \text{ LOTS} = 3000 \text{ SF} = 0.07 \text{ AC}$

OVERLAND $16,200 \text{ SF} = 0.37 \text{ AC}$

TOTAL AREA 0.60 AC

WEIGHTED 'C' $[(0.23 \times 0.9) + (0.37 \times 0.3)] \div 0.60 \text{ AC} = 0.53$

CB 3

ROAD $750' \times 11' = 8250 \text{ SF} = 0.19 \text{ AC}$

ROOF & DRIVES $1500 \times 6 \text{ LOTS} = 9,000 \text{ SF} = 0.21 \text{ AC}$

OVERLAND $50,095 \text{ SF} = 1.15 \text{ AC}$ (1.55 TOTAL)

WEIGHTED 'C' $[(0.40 \times 0.9) + (1.15 \times 0.3)] \div 1.55 = 0.45$

DESIGNED BY: JRM DATE: 11/12/22
 CHECKED BY: _____ REV: _____
 DATE: _____

PROJECT: AVERY BROOK SUBDIVISION
 PROJECT NO.: _____
 TOWN: Ledyard
 ROUTE: _____
 LOCATION: N/A

GUTTER FLOW ANALYSIS - 25 YR STORM																
Inlet ID	Inlet Station and Offset	Area in Acres (A)	Runoff Coeff. (C)	Time to Inlet (min.)	Rainfall Intensity (in/hr)	AC	Total AC	Q to Inlet (cfs)	Grade of Gutter/ft (SL)	Cross Slope Of Shoulder ft/ft (Sx)	Depth of Flow of Gutter (ft)	Gutter Flow Width (ft)	Q Bypassing Inlet (cfs)	AC Bypassing Inlet	AC Entering Catch Basin	Inlet Type
PROPOSED ROAD RIGHT GUTTER																
CB 1	12+30, RT	0.180	0.9	10	6.20	0.144	0.144	0.982	LOWPT	0.043	SEE LOW POINT ANALYSIS	SEE LOW POINT ANALYSIS	0.144	0.144	0.144	"C"
CB 2	23+13, RT	0.600	0.53	10	6.20	0.318	0.318	2.169	LOWPT	0.043	SEE LOW POINT ANALYSIS	SEE LOW POINT ANALYSIS	0.318	0.318	0.318	"C"
PROPOSED ROAD LEFT GUTTER																
CB 3	23+13, LT	1.660	0.45	10	6.20	0.698	0.698	4.757	LOWPT	0.043	SEE LOW POINT ANALYSIS	SEE LOW POINT ANALYSIS	0.698	0.698	0.698	"C"
LOW POINT ANALYSIS																
INLET	Q TO INLET	PERIM.	C WEIR	d WEIR	WIDTH OF FLOW	d ORIFICE										
CB 1	0.982	5.020	3	0.162	3.24	0.014										
CB 2	2.169	5.020	3	0.275	5.49	0.066										
CB 3	4.757	7.330	3	0.360	7.20	0.320										

NOTES:

- Notes:
 1.) Manning's n = 0.016 (asphalt)
 2.) Tc = 5 minutes minimum for areas with all pavement
 3.) Tc = 10 minutes minimum for small areas with pavement and grass
 4.) All low points operate as a weir. Depth (d) over grate is less than 0.4 feet

GRATES	PERIM	AREA
C	5.02	3.13
C DOUB	7.33	6.25
CL	7.33	3.13
CL DOUB	11.96	6.25

COMPUTATIONS FOR:	Project
ORIFICE SIZING WORKSHEET	Made By: JRM
AVERY BROOK HOMES	Date: 11/13/2022
LEDYARD, CT	Rev:
	Date:

ORIFICE SIZING FOR EXTENDED DETENTION UNDERDRAIN

BASIN VOLUME AT SPILLWAY = 3,600 CUBIC FT
 TARGET VOLUME (HALF EMPTY)

ConnDOT Drainage Manual Equation 10.32

Q_{av} = VOL./T
 VOLUME (FT³) 3600
 T (SEC.)= 12 Hrs = 43,200
 Q_{av} (CFS) = 0.0833 Target Q at Half Volume

ConnDOT Drainage Manual Equation 10.18

Q = Kor D² Ho^{0.50} Kor = 3.78 Q = Flow in CFS
 Kor= Oriface Coefficient = 3.78
 D= Oriface
 H= Head in Feet

HEAD AT FULL = 2.5'

D (inch)	D (FT.)	H	Q (CFS)	
1.75	0.146	2.50	0.1271	USE 1-3/4" ORIFICE
2.00	0.167	2.50	0.1660	
2.50	0.208	2.50	0.2594	
3.00	0.250	2.50	0.3735	

HEAD AT HALF EMPTY = 1.25'

D (inch)	D (FT.)	H	Q (CFS)	
1.75	0.146	1.25	0.0899	USE 1-3/4" ORIFICE
2.00	0.167	1.25	0.1174	
2.50	0.208	1.25	0.1834	
3.00	0.250	1.25	0.2641	

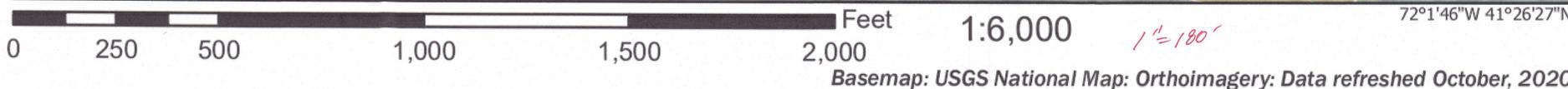
HEAD AT 0.5'

D (inch)	D	H	Q (CFS)	
1.75	0.146	0.50	0.0568	USE 1-3/4" ORIFICE
2.00	0.167	0.50	0.0742	
2.50	0.208	0.50	0.1160	
3.00	0.250	0.50	0.1671	

National Flood Hazard Layer FIRMette



72°2'24"W 41°26'54"N



Legend

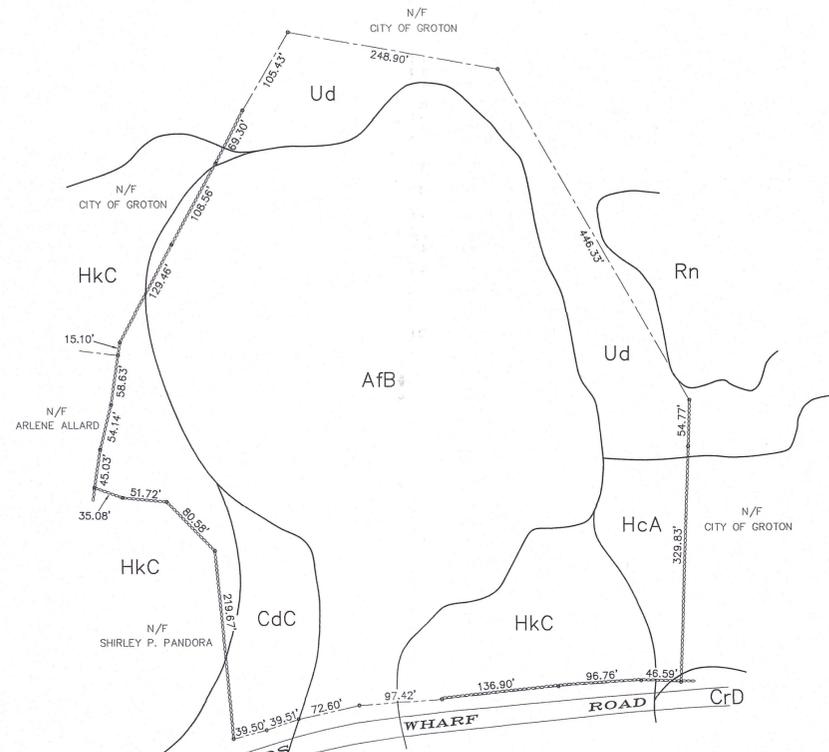
SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | | |
|------------------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
Zone A, V, A99 |
| | | With BFE or Depth Zone AE, AO, AH, VE, AR |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
| | | Future Conditions 1% Annual Chance Flood Hazard Zone X |
| | | Area with Reduced Flood Risk due to Levee. See Notes. Zone X |
| | | Area with Flood Risk due to Levee Zone D |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard Zone X |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard Zone D |
| | | Channel, Culvert, or Storm Sewer |
| | | Levee, Dike, or Floodwall |
| OTHER FEATURES | | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | 17.5 |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| | | Jurisdiction Boundary |
| MAP PANELS | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |
- The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

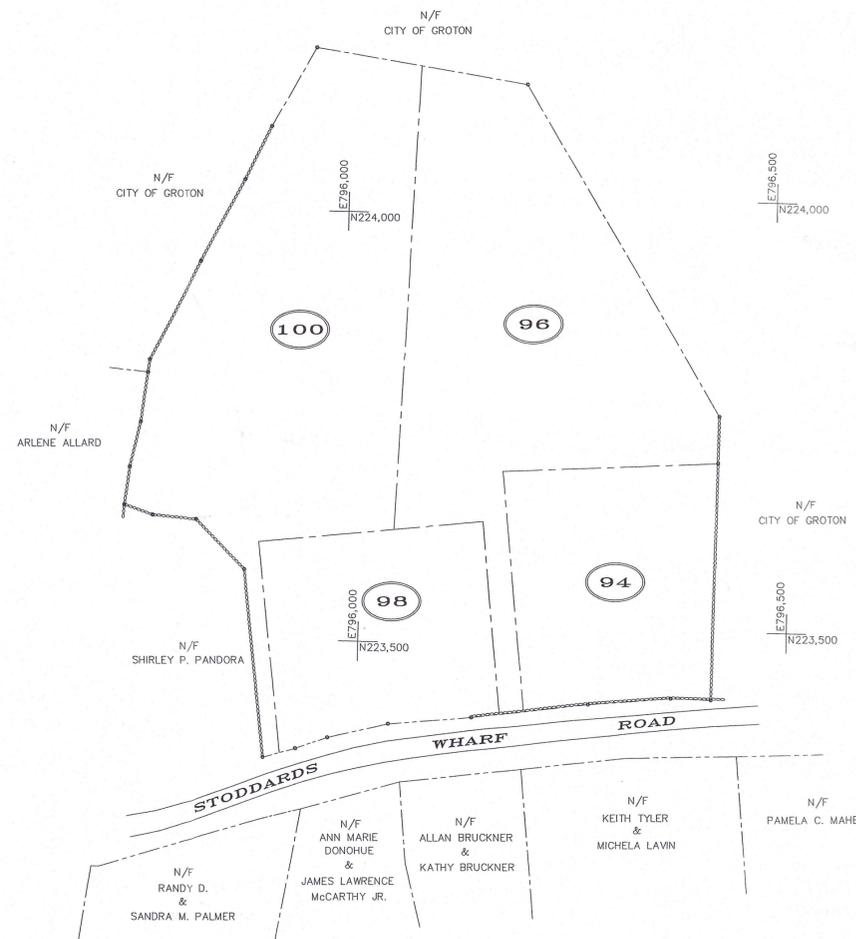
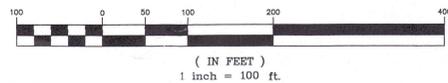
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/13/2022 at 1:12 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



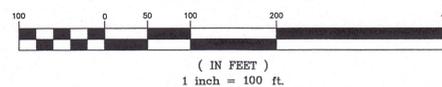
BOUNDARY AND SOILS MAP
THIS IS NOT A SURVEY
TOTAL AREA = 9.21 ACRES
GRAPHIC SCALE



PARCEL HISTORY MAP
THIS IS NOT A SURVEY

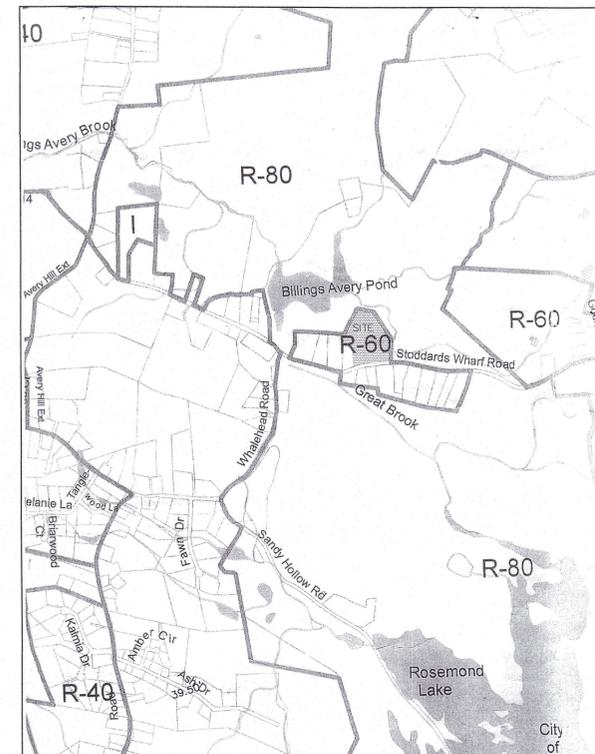
PARCEL HISTORY
TOTAL AREA ON MARCH 22, 1982 = 9.21 ACRES
TOTAL NUMBER OF LOTS CREATED FROM ORIGINAL TRACT = 4

GRAPHIC SCALE

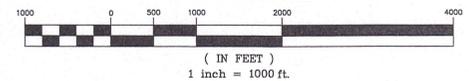


GENERAL NOTES:

- MAP REFERENCES:
 - SUBDIVISION PLAN PREPARED FOR AMER JAVAD 98 STODDARDS WHARF ROAD - (CONN. RTE #214) LEDYARD, CONNECTICUT BOUNDARY SURVEY MAP DATE: 9/12/11 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
 - LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 98 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
- CALL BEFORE YOU DIG AT 1-800-922-4455 BEFORE ANY CONSTRUCTION ACTIVITY.
- ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
- THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
- HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
- ZONING SETBACKS: LOTS SUBMITTED AS A SET-ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8-30g. MINIMUM FRONT YARD SETBACK 12' FROM COMMON DRIVE. MINIMUM SIDE YARD SETBACK 6'. MINIMUM REAR YARD SETBACK 15'.
- PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.



LOCATION MAP
ZONING DISTRICT: R-60
GRAPHIC SCALE



APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____ THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR _____

ASSESSOR _____ DATE _____

IWFC APPLICATION# _____ APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA)

NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____

ZONING ENFORCEMENT OFFICER _____ DATE _____

LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- 98 STREET NUMBER

SOILS LEGEND

- AfB - AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- CdC - CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
- CrD - CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
- HcA - HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
- HkC - HINCKLEY GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES
- Rn - RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
- Ud - UDRTHENTS-URBAN LAND COMPLEX

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATION PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
P.O. BOX 335
1641 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

SHEET INDEX

- SHEET 1 - 100 SCALE BOUNDARY MAP; PARCEL HISTORY MAP; LOCATION MAP AND GENERAL NOTES
- SHEET 2 - 40 SCALE A-2 PLAN
- SHEET 3 - 40 SCALE CONCEPTUAL LAYOUT PLAN
- SHEET 4 - DEEP TEST PIT DATA
- SHEET 5 - PERCOLATION TEST RESULTS AND SEPTIC SYSTEM DESIGN CRITERIA
- SHEET 6 - CONSTRUCTION DETAILS; EROSION AND SEDIMENT CONTROL NARRATIVE AND DETAILS
- SHEET 7 - 40 SCALE SIGHTLINE DEMONSTRATION PLAN

PLAN SHOWING
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
SCALES AS SHOWN
JULY 2022

Revised
RECEIVED
AUG 29 2022
LAND USE DEPARTMENT

TITLE: LAND SURVEYOR CT No. 14208
DATE: JULY 7, 2022

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENDORSED BY CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D" TO MY KNOWLEDGE AND BELIEF. THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG FBK#327



DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 1641 CONNECTICUT ROUTE 12
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 GALES FERRY, CT. 06335
 (860) 464-7455
 EMAIL: DIETER.GARDNER@YAHOO.COM

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____
 THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR _____ DATE _____

ASSESSOR _____ DATE _____

IWWC APPLICATION# _____
 APPROVED, _____
 NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)
 NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____
 PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____
 ZONING ENFORCEMENT OFFICER _____ DATE _____



LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EDGE OF WETLANDS & FLAG NUMBER
- BUILDING SETBACK LINE
- APPROXIMATE DEEP TEST PIT
- APPROXIMATE PERC TEST LOCATION
- UTILITY POLE
- CONCEPTUAL HOME
- CONCEPTUAL PRIMARY SEPTIC
- CONCEPTUAL RESERVE AREA
- CONCEPTUAL WELL
- TOPSOIL STOCKPILE
- HAYBALES/SILT FENCE/WOODCHIPS
- PROPOSED SEPTIC TANK

I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

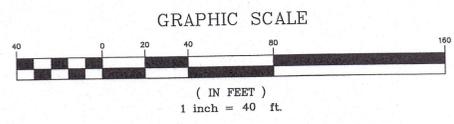
Ian Cole
 IAN COLE
 SOIL SCIENTIST

THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF, AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY. THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

© THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG FBK#327

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATION PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

NOTE: FOOTING DRAINS NOT REQUIRED OR PROPOSED.



**PLAN SHOWING
 RESUBDIVISION
 PROPERTY OF
 AVERY BROOK HOMES LLC
 94, 96, 98 AND 100
 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT
 SCALE: 1"=40'
 JULY 2022**

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENDORSED BY CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "1" AND TOPOGRAPHIC ACCURACY 1-2. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
 DATE: JULY 7, 2022

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

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ASSESSOR _____ DATE _____

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PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

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CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____

ZONING ENFORCEMENT OFFICER _____ DATE _____

WITNESSED AND RECORDED BY WENDY BROWN-ARNOLD RS./REHS AND ALEX WILBOUR LEDGE LIGHT HEALTH DISTRICT ON 5/2/22, 5/5/22 AND 5/23/2022 AND WENDY BROWN-ARNOLD RS./REHS ON JUNE 14, 2022.

DEEP TEST PIT DATA

Table with 4 columns of test pit data. Each entry includes a test pit number (e.g., TP 1, TP 2), depth (e.g., 0-11", 0-12"), and soil composition (e.g., FILL-DISTURBED, LOAM, ROCKS, BRICK; BROWN FINE TO MED. SANDY LOAM; TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES). Many entries conclude with 'NO MOTTLING', 'NO WATER', and 'NO LEDGE'.



DIETER & GARDNER
LAND SURVEYORS • PLANNERS
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THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB#22-007.DWG FBK#327

PLAN SHOWING
DEEP TEST PIT DATA
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022

PERCOLATION TESTS PERFORMED ON MAY 26 & 27, JUNE 3 AND JUNE 10, 2022 BY DIETER & GARDNER, INC. (JODY TERRY AND MATT EMILYTA)

LOT 1	LOT 2	LOT 3	LOT 4	LOT 5	LOT 6	LOT 7	LOT 8	LOT 9
27" DEEP TIME READING 8:50 2" 9:04 6 3/4" 9:09 9" 9:14 11" 9:19 14" 9:24 15 1/2" 9:34 17" 9:39 18 1/4" 9:44 19 1/4" 9:49 20 1/4" PERC RATE: 1 1/5 MINS.	28" DEEP TIME READING 8:51 4" 9:05 10" 9:10 13 3/4" 9:15 18" 9:20 18" 9:25 20" 9:30 21" 9:35 22" 9:40 23" 9:45 24" 9:50 25" PERC RATE: 1 1/5 MINS.	30" DEEP TIME READING 9:00 4" 9:05 10" 9:10 13 3/4" 9:15 18" 9:20 18" 9:25 20" 9:30 21" 9:35 22" 9:40 23" 9:45 24" 9:50 25" PERC RATE: 1 1/5 MINS.	26" DEEP TIME READING 9:02 2 1/4" 9:07 13 1/2" 9:12 19" 9:17 22 1/2" 9:22 24 1/2" 9:27 26" 9:32 DRY PERC RATE: 1 1/3 MINS.	26" DEEP TIME READING 9:55 2" 10:00 8 1/2" 10:05 13" 10:10 17" 10:15 19 1/2" 10:20 22" 10:25 24" 10:30 25" 10:35 26" 10:40 DRY PERC RATE: 1 1/5 MINS.	29" DEEP TIME READING 1:30 4" 1:35 20" 1:40 23" 1:45 24 1/2" 1:50 25 1/2" 1:55 26 1/2" 2:00 27 1/2" 2:05 28 1/2" 2:10 DRY PERC RATE: 1 1/5 MINS.	30" DEEP TIME READING 1:32 4" 1:37 13" 1:42 18" 1:47 20 1/2" 1:52 23" 1:57 24" 2:02 25" 2:07 25 3/4" 2:12 26 3/4" 2:17 27 3/4" PERC RATE: 1 1/5 MINS.	30" DEEP TIME READING 1:34 4" 1:39 9 1/2" 1:44 13" 1:49 15 1/2" 1:54 18" 1:59 20" 2:04 21 1/2" 2:09 23" 2:14 24 1/2" 2:19 26" PERC RATE: 1 1/3 MINS.	29" DEEP TIME READING 1:41 4" 1:46 10" 1:51 13" 1:56 15 1/2" 2:01 17 1/2" 2:06 19" 2:11 20 1/2" 2:16 22" 2:21 23 1/2" 2:26 25" 2:31 26 1/2" PERC RATE: 1 1/3 MINS.

SANITARY DESIGN CRITERIA

- A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.
 - B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/INCH OR LESS REQUIRES 495 S.F. OF EFFECTIVE LEACHING AREA.
 - C. GST 6236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN. LOTS 2 & 3 WILL BE 45' MANTIS 536-B. CREDIT PER L.F. IS 26.2 S.F. MINIMUM REQUIRED AREA IS 495 S.F./ 26.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.
- HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
 FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
 PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/INCH.

LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	HF	FF	PF	MLSS	SYSTEM
1	3 & 4	*	*	*	1.5	1.0		20 L.F. GST 6236
2	5 & 6	8.1 TO 10.0%	30.1-36.0"	24	1.5	1.0	36	45' MANTIS 536-B
3	19 & 20	3.1 TO 4.0%	36.1-42.0"	26	1.5	1.0	42	45' MANTIS 536-B
4	7 & 8				1.5	1.0		20 L.F. GST 6236
5	9 & 10				1.5	1.0		20 L.F. GST 6236
6	11 & 12				1.5	1.0		20 L.F. GST 6236
7	13 & 14				1.5	1.0		20 L.F. GST 6236
8	15 & 16				1.5	1.0		20 L.F. GST 6236
9	17 & 18				1.5	1.0		20 L.F. GST 6236
10	21 & 22				1.5	1.0		20 L.F. GST 6236
11	85 & 86				1.5	1.0		20 L.F. GST 6236
12	83 & 84				1.5	1.0		20 L.F. GST 6236
13	27 & 28				1.5	1.0		20 L.F. GST 6236
14	29 & 30				1.5	1.0		20 L.F. GST 6236
15	31 & 32				1.5	1.0		20 L.F. GST 6236
16	33 & 34				1.5	1.0		20 L.F. GST 6236
17	35 & 36				1.5	1.0		20 L.F. GST 6236
18	37 & 38				1.5	1.0		20 L.F. GST 6236
19	81 & 82				1.5	1.0		20 L.F. GST 6236
20	39 & 40				1.5	1.0		20 L.F. GST 6236
21	41 & 42				1.5	1.0		20 L.F. GST 6236
22	43 & 44				1.5	1.0		20 L.F. GST 6236
23	51 & 52				1.5	1.0		20 L.F. GST 6236
24	53 & 54				1.5	1.0		20 L.F. GST 6236
25	59 & 60				1.5	1.0		20 L.F. GST 6236
26	64 & 66				1.5	1.0		20 L.F. GST 6236
27	71 & 72				1.5	1.0		20 L.F. GST 6236
28	73 & 74				1.5	1.0		20 L.F. GST 6236
29	77 & 78				1.5	1.0		20 L.F. GST 6236
30	76 & 79				1.5	1.0		20 L.F. GST 6236
31	69 & 75				1.5	1.0		20 L.F. GST 6236
32	67 & 68				1.5	1.0		20 L.F. GST 6236
33	61 & 62				1.5	1.0		20 L.F. GST 6236
34	57 & 58				1.5	1.0		20 L.F. GST 6236
35	50 & 55				1.5	1.0		20 L.F. GST 6236
36	47 & 48				1.5	1.0		20 L.F. GST 6236

NOTE: THE MLSS CRITERIA DOES NOT APPLY TO PITS NOTED BY *

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LOT NUMBERS ASSIGNED BY THE ASSESSOR _____ DATE _____

ASSASSOR _____ DATE _____

I/WWC APPLICATION# _____ APPROVED. _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA) NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

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EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

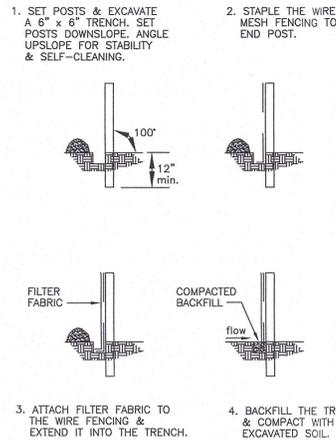
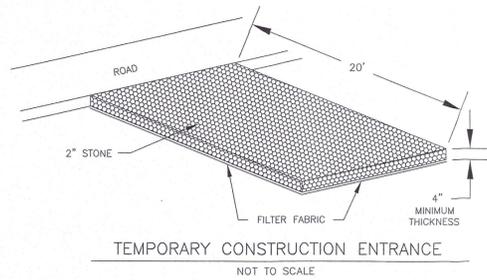
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION ZONING ENFORCEMENT OFFICER _____ DATE _____

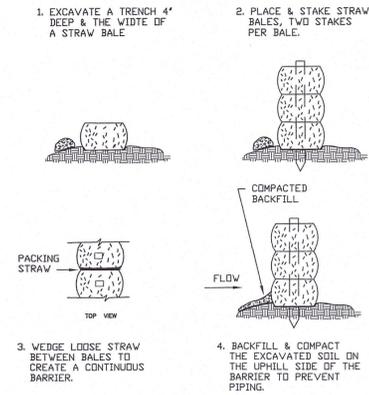
LOT 34	LOT 35	LOT 36
29" DEEP TIME READING 10:49 3" 10:54 11" 10:59 15" 11:04 18 1/2" 11:09 20 1/2" 11:14 22" 11:19 23 1/2" 11:24 25" 11:29 26 1/2" PERC RATE: 1 1/3 MINS.	30" DEEP TIME READING 11:23 3" 11:28 11 3/4" 11:33 15" 11:38 18" 11:43 21 1/2" 11:48 24" 11:53 26" 11:58 DRY PERC RATE: 1 1/3 MINS.	28" DEEP TIME READING 1:38 5" 1:43 11" 1:48 13 1/2" 1:53 16" 1:58 18" 2:03 19" 2:08 20 1/8" 2:13 21 1/2" 2:18 22 1/2" 2:23 23 1/2" 2:28 24 1/2" PERC RATE: 1 1/5 MINS.

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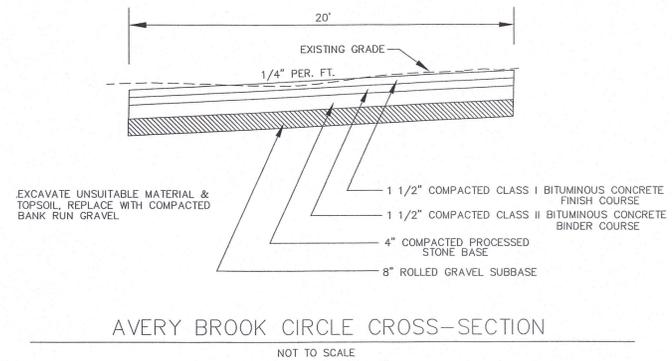
PLAN SHOWING
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 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT
 JULY 2022



FILTER FABRIC SEDIMENT BARRIER
NOT TO SCALE



CONSTRUCTION OF A STRAW BALE BARRIER
NOT TO SCALE



AVERY BROOK CIRCLE CROSS-SECTION
NOT TO SCALE

EROSION AND SEDIMENTATION CONTROL PLAN

THIS PLAN HAS BEEN DEVELOPED TO MINIMIZE EROSION AND SEDIMENTATION AND REDUCE THE IMPACT OF STORM WATER RUNOFF DURING CONSTRUCTION USING ENGINEERING PRINCIPALS DETAILED IN THE CONNECTICUT GUIDELINES FOR SOIL AND EROSION AND SEDIMENT CONTROL. THE ACCOMPANYING PLANS PROVIDE THE FOLLOWING INFORMATION FOR THE IMPLEMENTATION OF THIS PLAN:

- LOCATION OF SEDIMENT CONTROL BARRIERS
- FINISHED GRADES TO BE ACHIEVED
- CONSTRUCTION SEQUENCE AND DETAILS

THIS PROJECT IS FOR THE DEVELOPMENT OF 36 LOT RESIDENTIAL SUBDIVISION. THERE ARE INLAND WETLANDS ON THIS PROPERTY. OWNER AT TIME OF CONSTRUCTION WILL SERVE AS CONTACT PERSON FOR IMPLEMENTING EROSION AND SEDIMENT CONTROL MEASURES ON THIS PLAN. EROSION CONTROL NOT REQUIRED FOR AVERY BROOK CIRCLE.

CONSTRUCTION SEQUENCE: HOMES

- STAKEOUT LIMITS OF CONSTRUCTION FOR THE DRIVEWAYS, HOMES AND SEPTIC SYSTEMS.
- INSTALL SEDIMENTATION CONTROL BARRIERS AS SHOWN ON THE PLAN.
- REMOVE EXISTING VEGETATION AND TOPSOIL WITHIN THE LIMITS OF CONSTRUCTION. STOCKPILE TOPSOIL AS SHOWN ON THE PLAN.
- ROUGH GRADE THE DRIVEWAY AND HOUSE AREA.
- INSTALL/CONNECT UTILITIES
- FOLLOWING CONSTRUCTION OF THE HOME, FINISH GRADE ALL DISTURBED AREAS.
- LOAM AND SEED ALL DISTURBED AREAS.

MAINTENANCE:

INSPECT SEDIMENT BARRIERS AFTER EACH STORM EVENT AND REPAIR OR REPLACE AS NECESSARY. CLEAN OUT OF ACCUMULATED SEDIMENT IS NECESSARY IF 1/2 OF THE ORIGINAL HEIGHT OF THE BARRIER BECOMES FILLED IN WITH SEDIMENT.

GENERAL NOTES:

- MAINTAIN ALL SEDIMENT AND EROSION CONTROL FACILITIES UNTIL ALL AREAS HAVE BEEN STABILIZED.
- LIMITS OF DISTURBANCE AND EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSIDERED AS TYPICAL MINIMUM STANDARDS. THE GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL AND FOR IMPLEMENTING ADDITIONAL MEASURES AS SITE CONDITIONS WARRANT.
- SLOPES IN HIGH MAINTENANCE AREAS SHALL NOT EXCEED 3:1 (H:V).
- NO DRIVEWAY SHALL BE GREATER THAN 15% SLOPE AT ANY POINT. ANY DRIVEWAY HAVING A GRADE OF 8% OR MORE, BUT NOT EXCEEDING 15%, SHALL BE PAVED FOR THAT PORTION OF DRIVEWAY THAT EXCEEDS 8%.
- CONSTRUCTION EXPECTED TO BEGIN IN THE FALL OF 2022.

TEMPORARY SEEDING

USE A TEMPORARY VEGETATION COVER OF ANNUAL RYE GRASS AT A RATE OF 1.0 lbs./1000 S.F. APPLY 10-10-10 FERTILIZER, OR EQUIVALENT, AT A RATE OF 7.5 lbs./1000 S.F. AND LIMESTONE AT A RATE OF 90 lbs./1000 S.F. APPLY STRAW OR HAY MULCH AT A RATE OF 70 lbs./1000 S.F.

PERMANENT SEEDING

SEED BED PREPARATION: FINE GRADE AND RAKE SOIL SURFACE TO REMOVE STONES LARGER THAN 2" IN DIAMETER. APPLY LIMESTONE AT A RATE OF 90 lbs./1000 S.F. FERTILIZE WITH 10-10-10, OR EQUIVALENT, AT A RATE OF 7.5 lbs./1000 S.F. WORK LIMESTONE AND FERTILIZER INTO SOIL UNIFORMLY TO A DEPTH OF 4" WITH A HARROW OR EQUIVALENT. SEED APPLICATION: APPLY LAWN SEED BY HAND, CYCLONE SEEDER OR HYDROSEEDER. LIGHTLY DRAG OR ROLL THE SEED SURFACE TO COVER SEED. SEEDING SHOULD BE DONE BETWEEN APRIL 15 AND JUNE 15 OR BETWEEN AUGUST 15 AND SEPTEMBER 30. IF SEEDING CANNOT BE DONE DURING THESE TIMES, REPEAT MULCHING PROCEDURE BELOW UNTIL SEEDING CAN TAKE PLACE. NOTE: IF HYDROSEEDER IS USED, INCREASE SEED MIXTURE BY 10%. MULCHING: IMMEDIATELY FOLLOWING SEEDING, MULCH THE SEEDED SURFACE WITH STRAW OR HAY AT A RATE OF 70 lbs./1000 S.F. SPREAD MULCH BY HAND OR MULCH BLOWER. PUNCH MULCH INTO SOIL SURFACE WITH TRACK MACHINE OR DISK HARROW.

CONSTRUCTION SEQUENCE: AVERY BROOK CIRCLE

- STAKEOUT OFFSETS AND GRADE STAKES AT 50 FOOT STATIONS
- REMOVE/DISPOSE OF ANY STUMPS/TREE DEBRIS.
- STRIP/STOCKPILE TOPSOIL - LOCATION OF STOCKPILES TO BE DETERMINED. INSTALL EROSION CONTROL AT STOCKPILES.
- EXCAVATE TO SUBGRADE, INSTALL 8" SUBBASE, 4" BASE AND BITUMINOUS CONCRETE.
- INSTALL/GRADE/SEED TOPSOIL SHOULDERS OF AVERY BROOK CIRCLE.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

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LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

TWFC APPLICATION# _____

APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

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CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____

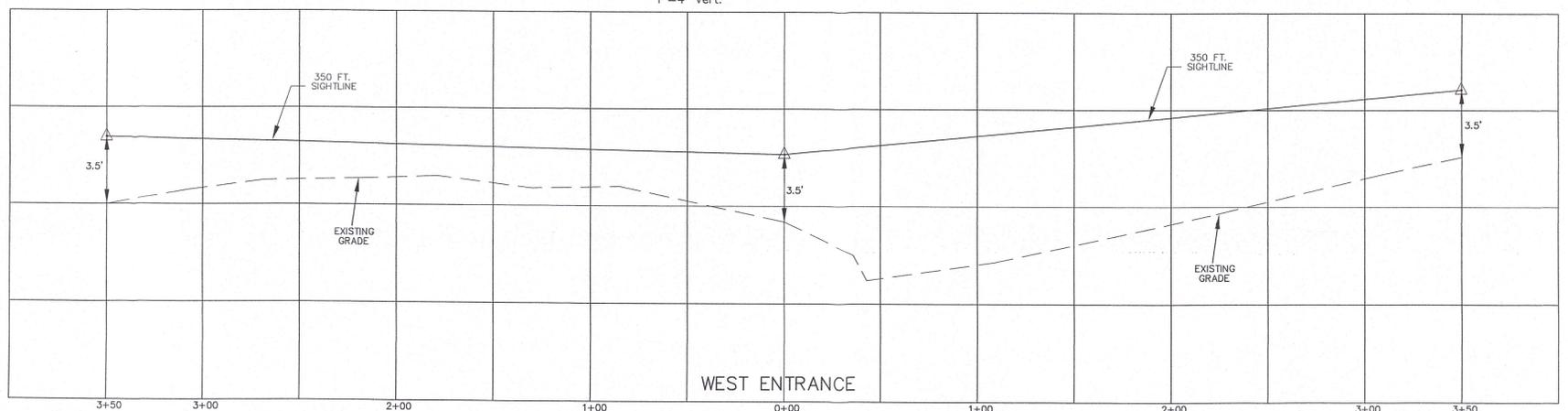
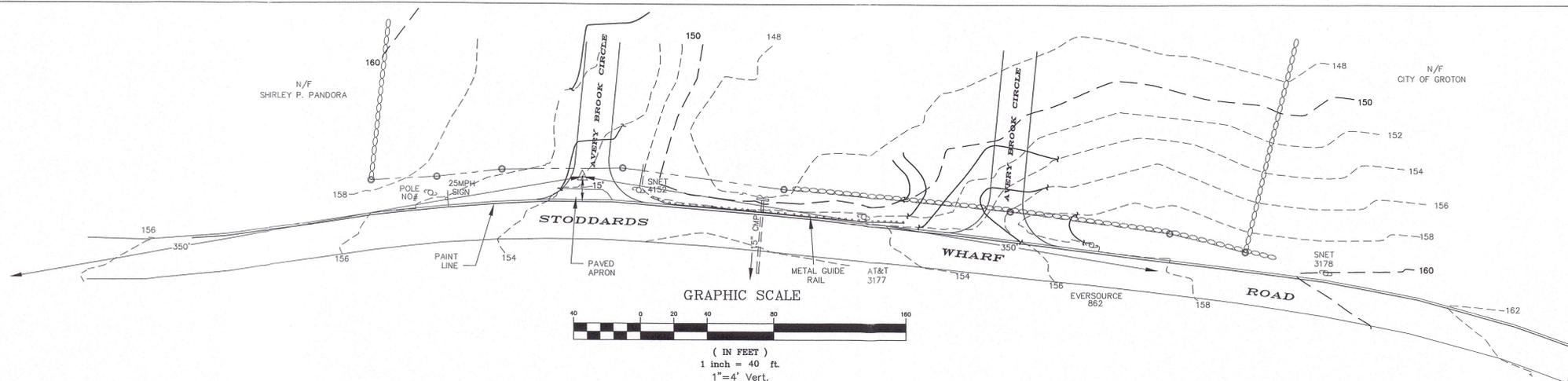
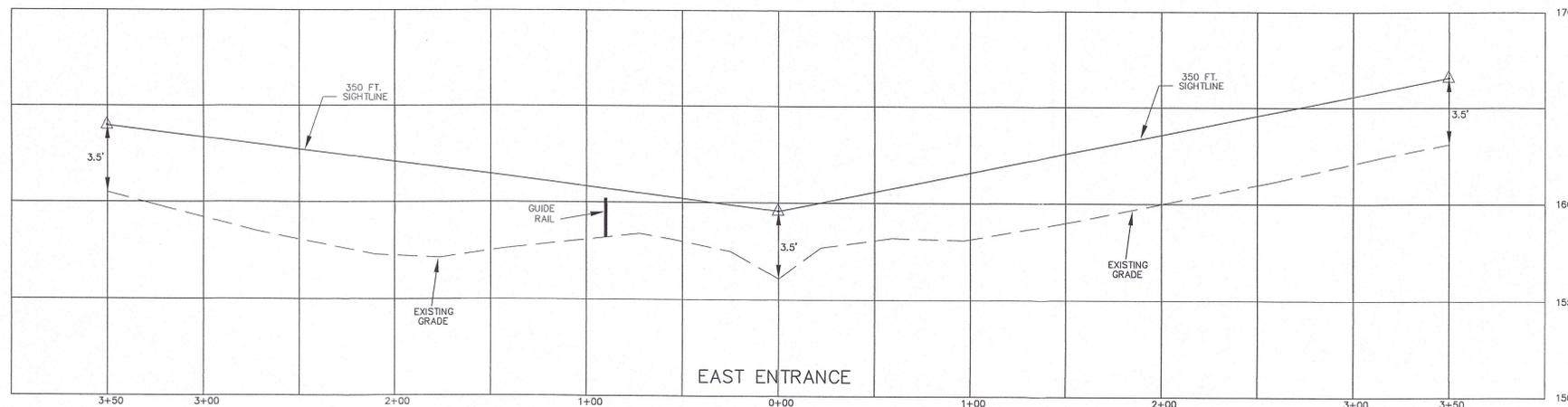
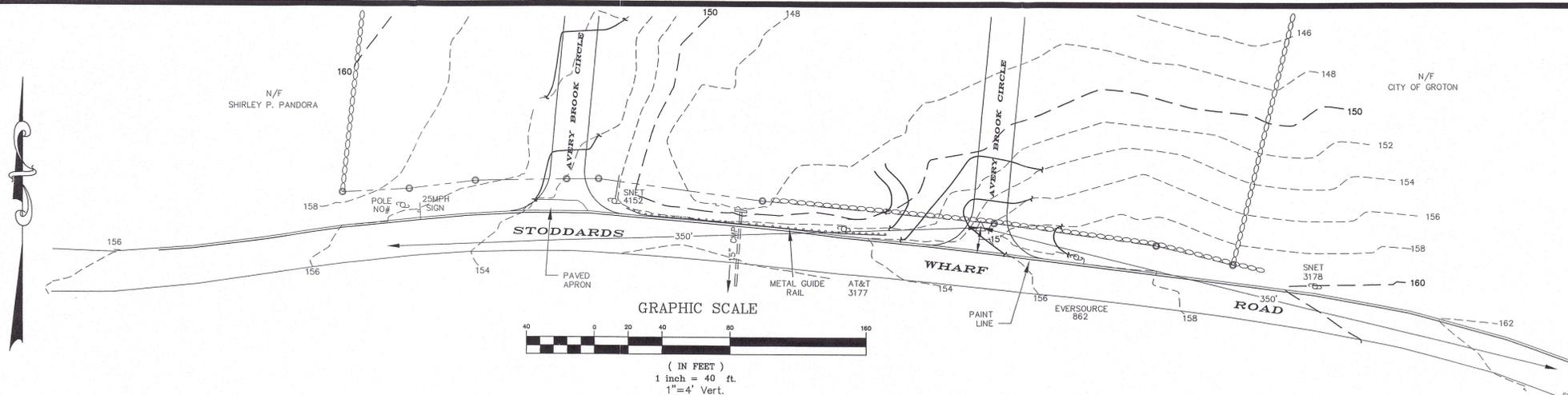
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DIETER & GARDNER
LAND SURVEYORS • PLANNERS
1641 CONNECTICUT ROUTE 12
P.O. BOX 335
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

PLAN SHOWING
EROSION AND SEDIMENT CONTROL
NARRATIVE AND DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022



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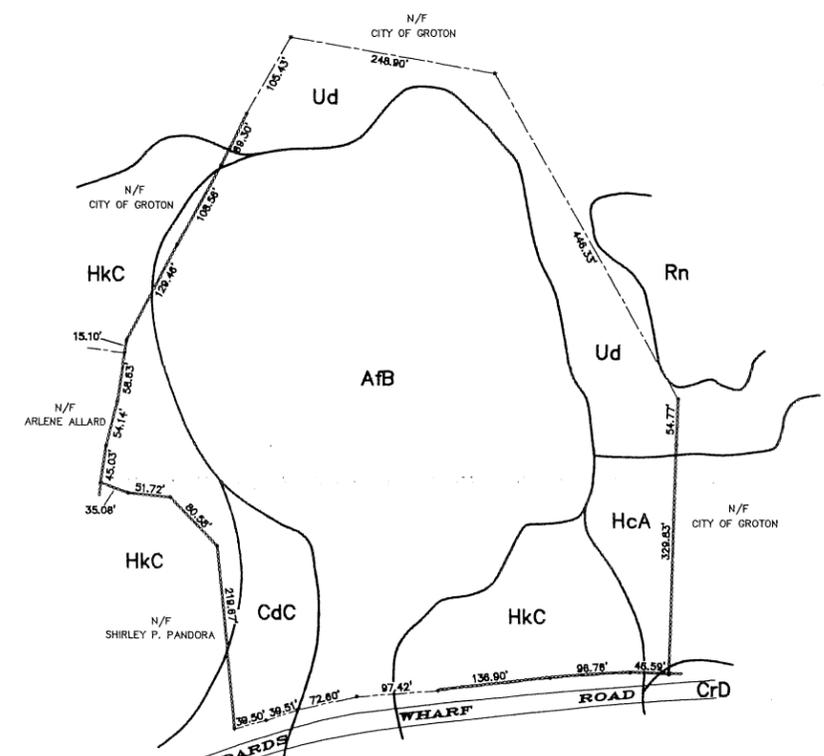


LEGEND

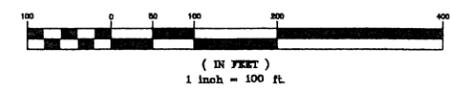
	STONE WALL
	PROPERTY LINE
	STREET LINE
	EXISTING CONTOUR
	PROPOSED CONTOUR
	UTILITY POLE

**SIGHTLINE
 DEMONSTRATION PLAN
 PROPERTY OF
 AVERY BROOK HOMES LLC
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT
 SCALE: 1"=40' HORIZ.
 1"=4' VERT.
 JULY 2022**

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BOUNDARY AND SOILS MAP
THIS IS NOT A SURVEY
TOTAL AREA = 9.21 ACRES
GRAPHIC SCALE



APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE
CHAIRMAN OR SECRETARY _____ DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE
LOT NUMBERS ASSIGNED BY THE ASSessor
ASSESSOR _____ DATE
TWFC APPLICATION# _____
APPROVED _____
NO FENCE NECESSARY. (NOT WITHIN A REGULATED AREA)
NOT APPLICABLE AT THIS TIME. (REVIEW A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)
WETLAND OFFICER _____ DATE
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.
PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION
ZONING ENFORCEMENT OFFICER _____ DATE

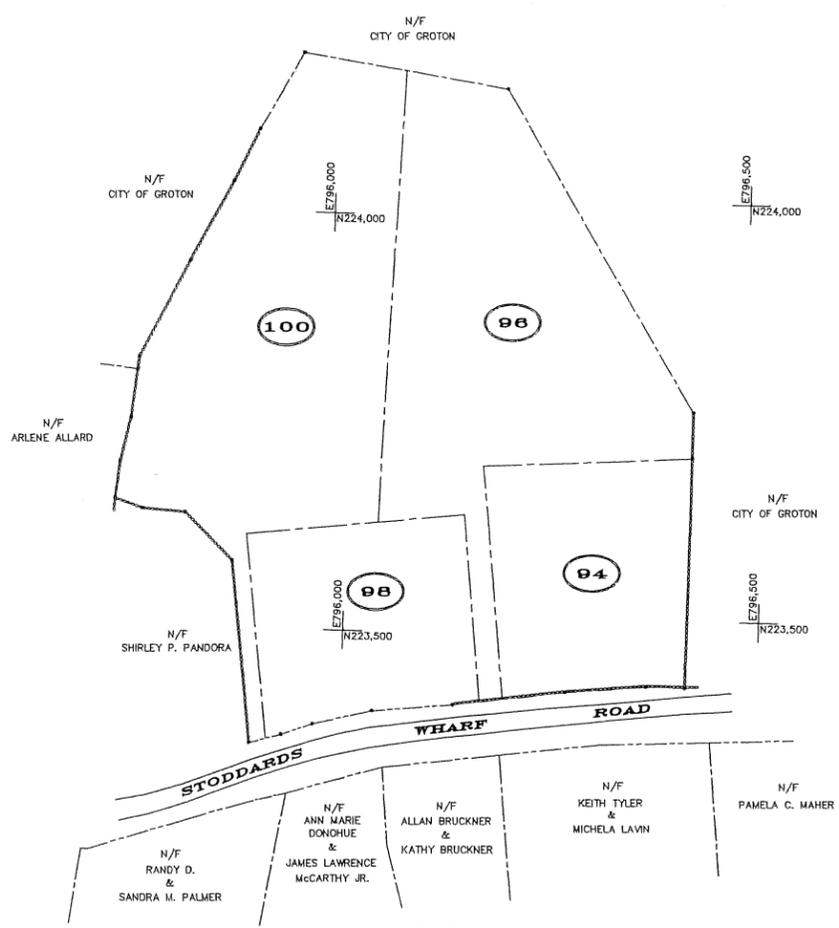
LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- 98 STREET NUMBER

SOILS LEGEND

- A1B - AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- CdC - CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
- CrD - CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
- HcA - HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
- HkC - HINCKLEY GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES
- Rn - RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
- Ud - UDORTHTENTS-URBAN LAND COMPLEX

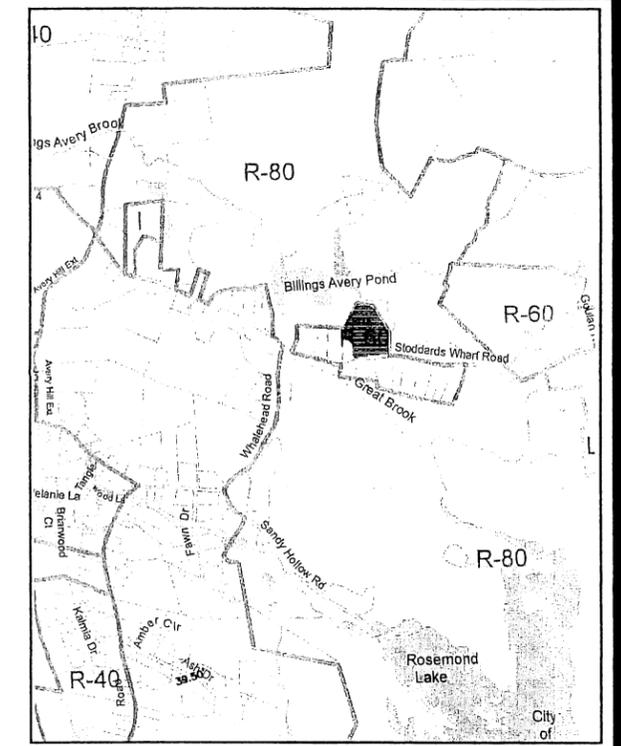
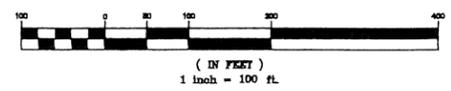
- GENERAL NOTES:
- MAP REFERENCES:
 - SUBDIVISION PLAN PREPARED FOR AMER JAVAD 88 STODDARDS WHARF ROAD - (CONN. RTE #214) LEDYARD, CONNECTICUT BOUNDARY SURVEY MAP DATE: 9/12/71 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
 - LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 88 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
 - CALL BEFORE YOU DIG AT 1-800-922-4455 BEFORE ANY CONSTRUCTION ACTIVITY.
 - ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
 - THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
 - HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
 - ZONING SETBACKS: LOTS SUBMITTED AS A SET-ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8-30g.
 - MINIMUM FRONT YARD SETBACK 12'
 - MINIMUM SIDE YARD SETBACK 8'
 - MINIMUM REAR YARD SETBACK 15'
 - PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.



PARCEL HISTORY MAP
THIS IS NOT A SURVEY

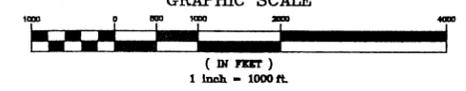
PARCEL HISTORY
TOTAL AREA ON MARCH 22, 1982 = 9.21 ACRES
TOTAL NUMBER OF LOTS CREATED FROM ORIGINAL TRACT = 4

GRAPHIC SCALE



LOCATION MAP
ZONING DISTRICT: R-60

GRAPHIC SCALE



SHEET INDEX

- SHEET 1 - 100 SCALE BOUNDARY MAP; PARCEL HISTORY MAP; LOCATION MAP AND GENERAL NOTES
- SHEET 2 - 40 SCALE A-2 PLAN
- SHEET 3 - 40 SCALE CONCEPTUAL LAYOUT PLAN
- SHEET 4 - DEEP TEST PIT DATA
- SHEET 5 - PERCOLATION TEST RESULTS AND SEPTIC SYSTEM DESIGN CRITERIA
- SHEET 6 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 7 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 8 - 40 SCALE SIGHTLINE DEMONSTRATION PLAN
- SHEET 9 - EROSION AND SEDIMENT CONTROL NARRATIVE AND DETAILS
- SHEET 10 - CONSTRUCTION DETAILS

PLAN SHOWING
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
SCALES AS SHOWN

JULY 2022
REVISED: OCTOBER 31, 2022

SHEET 1 OF 10

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS 1D. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
DATE: JULY 7, 2022



DIETER & GARDNER
LAND SURVEYORS - PLANNERS
P.O. BOX 335
1841 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN.
JOB# 22-007.DWG FBKJ527



DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 1841 CONNECTICUT ROUTE 12
 P.O. BOX 335
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 EMAIL: DIETER.GARDNER@YAHOO.COM

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

MEMORANDUM AND RESOLUTION CONTROL PLAN CHECKED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE APPLICANT _____

APPLICANT _____ DATE _____

TWP: APPLICATION# _____
 APPROVED _____
 NO PERMIT NECESSARY (NOT WITHIN A REGULATED AREA)
 NOT APPLICABLE AT THIS TIME (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME)

WETLANDS OFFICER _____ DATE _____

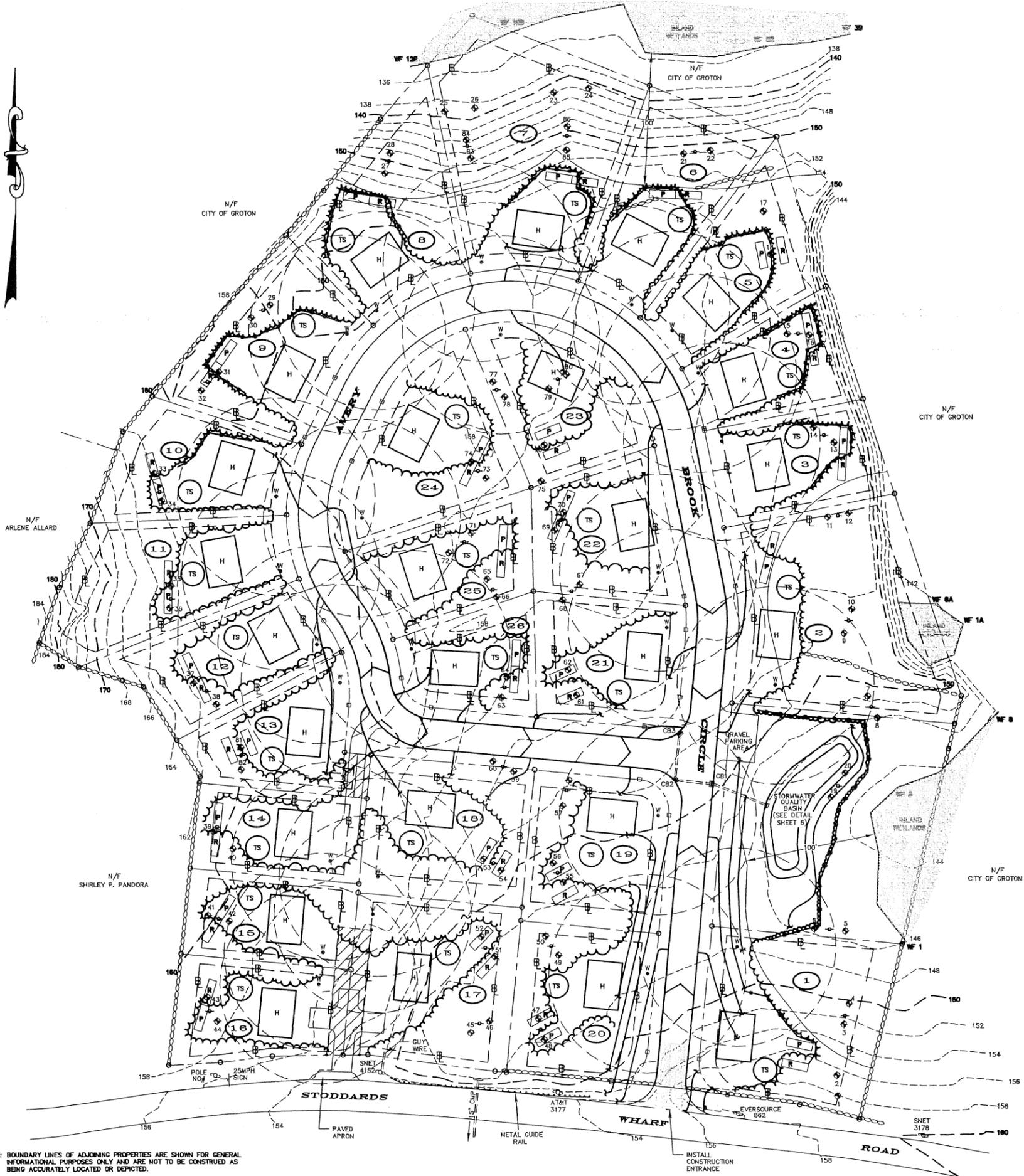
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.
 PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

MEMORANDUM AND RESOLUTION CONTROL PLAN CHECKED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____

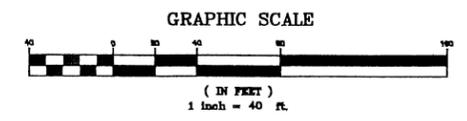
ZONING ENFORCEMENT OFFICER _____ DATE _____



LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EDGE OF WETLANDS & FLAG NUMBER
- BUILDING SETBACK LINE
- LIMITS OF DISTURBANCE
- APPROXIMATE DEEP TEST PIT
- APPROXIMATE PERC TEST LOCATION
- UTILITY POLE
- CONCEPTUAL HOME
- CONCEPTUAL PRIMARY SEPTIC
- CONCEPTUAL RESERVE AREA
- CONCEPTUAL WELL
- TOPSOIL STOCKPILE
- HAYBALES/SILT FENCE/WOODCHIPS

NOTE: FOOTING DRAINS NOT REQUIRED OR PROPOSED.



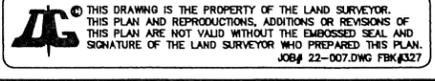
**PLAN SHOWING
 RESUBDIVISION
 PROPERTY OF
 AVERY BROOK HOMES LLC
 94, 96, 98 AND 100
 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT
 SCALE: 1"=40'
 JULY 2022
 REVISED: OCTOBER 31, 2022**

I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

Ian Cole
 IAN COLE
 SOIL SCIENTIST

THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF. AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY.

THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.



NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATION PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

TITLE: LAND SURVEYOR CT No. 14208
 DATE: JULY 7, 2022

SHEET 3 OF 10

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT, AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS 1 AND TOPOGRAPHIC ACCURACY T-2. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

APPROVED BY THE LEYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

REASON AND ELEMENTS CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____

THE LEYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSHOE _____ DATE _____

ASSHOE _____ DATE _____

ENVC APPLICATION# _____ APPROVED _____ NO PRESENT EMBODIMENT (NOT WITHIN A REGULATED AREA) NOT APPLICABLE AT THIS TIME (WITHIN A REGULATED AREA) NO REGULATED ACTIVITY PROPOSED AT THIS TIME

VEYARDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

REASON AND ELEMENTS CONTROL PLAN CERTIFIED BY VOTE OF THE LEYARD PLANNING AND ZONING COMMISSION _____ DATE _____

CHAIRMAN OR SECRETARY OF THE LEYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEYARD PLANNING COMMISSION _____ DATE _____

ZONING ENFORCEMENT OFFICER _____ DATE _____

TP 1
0-45" FILL-DISTURBED
LOAM, ROCKS, BRICK
NO MOTTLING
NO WATER
LEDGE @ 45"

TP 2
0-16" DISTURBED SOIL & FILL
16-50" LIGHT TAN FINE SAND
W/GRAVEL & ROCKS
NO MOTTLING
NO WATER
LEDGE @ 50"

TP 3
0-10" TOPSOIL
10-28" LIGHT BROWN FINE SANDY LOAM
28-87" LIGHT TAN FINE SAND W/GRAVEL
COBBLES, LARGE STONES
NO MOTTLING
NO WATER
NO LEDGE

TP 4
0-11" TOPSOIL
11-34" LIGHT BROWN FINE SANDY LOAM
34-90" LIGHT TAN/GRAY FINE SAND W/
GRAVEL, SOME COBBLES
MOTTLING @ 84"
WATER @ 80"
NO LEDGE

TP 5
0-16" TOPSOIL
16-45" LIGHT BROWN SILT LOAM, SOME FINE SAND
45-94" TAN/GRAY FINE TO MED. SAND W/
GRAVEL
MOTTLING @ 337"
WATER @ 33"
NO LEDGE

TP 6
0-9" TOPSOIL
9-37" BROWN FINE TO VERY FINE SANDY LOAM
37-84" TAN/GRAY FINE TO MED. SAND W/
GRAVEL, FEW COBBLES
MOTTLING @ 46"
WATER @ 50"
NO LEDGE

TP 7
0-7" TOPSOIL
7-30" BROWN FINE TO MED. SANDY LOAM
30-77" TAN COARSE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 8
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-84" ORANGE/TAN COARSE SAND
W/GRAVEL
64-95" TAN/GRAY FINE TO MED. SAND
MOTTLING @ 73"
WATER @ 83"
NO LEDGE

TP 9
0-15" TOPSOIL
15-31" BROWN FINE SANDY LOAM
31-98" TAN MED. TO COARSE SAND AND
GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 10
0-11" TOPSOIL
11-23" BROWN FINE SANDY LOAM
23-84" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 11
0-11" TOPSOIL
11-34" BROWN FINE TO MED. SANDY LOAM
34-98" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 12
0-12" TOPSOIL
12-29" BROWN FINE TO MED. SANDY LOAM
29-95" BROWN TO TAN MED. TO COARSE SAND W/
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 13
0-13" TOPSOIL
13-25" BROWN FINE TO MED. SANDY LOAM
25-91" TAN TO BROWN MED. TO COARSE SAND AND
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 14
0-8" TOPSOIL
8-25" BROWN FINE TO MED. SANDY LOAM
25-91" TAN MED. TO FINE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 15
0-10" TOPSOIL
10-39" BROWN FINE SANDY LOAM
39-99" TAN TO OLIVE MED. TO COARSE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 16
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-98" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 17
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-89" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 18
0-9" TOPSOIL
9-29" YELLOW TO BROWN FINE SANDY LOAM
29-103" TAN TO OLIVE MED. TO COARSE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 19
0-14" TOPSOIL
14-36" BROWN FINE SANDY LOAM
36-84" TAN/GRAY COARSE SAND
W/GRAVEL
MOTTLING @ 40"
WATER @ 43"
NO LEDGE

TP 20
0-17" TOPSOIL
17-31" BROWN FINE SANDY LOAM
31-83" TAN/GRAY COARSE SAND
W/GRAVEL AND FEW COBBLES
MOTTLING @ 43"
WATER @ 46"
NO LEDGE

TP 21
0-17" SANDY FILL & DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN/BROWN FINE MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 22
0-18" FILL
18-32" TOPSOIL
32-53" BROWN MED. SANDY LOAM
53-103" TAN TO BROWN MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 23
0-17" SANDY FILL AND DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN TO BROWN MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 24
0-6" TOPSOIL
6-46" BROWN FINE TO MED. SANDY LOAM,
SOME COBBLES
46-92" TAN TO GRAY COARSE SAND
W/GRAVEL AND COBBLES
MOTTLING @ 60"
WATER 64" UPHILL, 32" DOWNHILL
NO LEDGE

TP 25
0-10" TOPSOIL
10-29" BROWN FINE TO MED. SANDY LOAM,
SOME SILT
29-75" BROWN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES
MOTTLING @ 33"
WATER 33", 30" DOWNHILL
NO LEDGE

TP 26
0-2" TOPSOIL
2-36" YELLOW TO BROWN FINE TO MED.
SILTY LOAM W/TRACE FINE SAND
36-82" BROWN TO GRAY FINE TO MED.
SAND W/GRAVEL AND COBBLES, SOME SILT
MOTTLING @ 26"
WATER @ 26"
NO LEDGE

TP 27
0-11" TOPSOIL
11-24" BROWN FINE TO MED. SANDY LOAM
24-39" TAN FINE TO MED. SAND
39-87" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 28
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO MED. SANDY LOAM
32-98" LIGHT TAN FINE TO MED. SAND W/
GRAVEL AND COBBLES STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 29
0-12" TOPSOIL
12-32" BROWN FINE TO MED. SANDY LOAM
32-99" TAN TO GRAY MED. TO FINE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 30
0-14" TOPSOIL
14-34" BROWN FINE SANDY LOAM (DEPTH VARIES)
34-98" TAN TO MED. TO FINE SAND W/GRAVEL AND
GRAVEL STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 31
0-13" TOPSOIL
13-23" BROWN FINE TO VERY FINE SANDY LOAM
23-37" GRAY TO TAN VERY FINE SAND W/SILT
37-93" BROWN TO GRAY COARSE SAND W/
GRAVEL AND SOME COBBLES
MOTTLING @ 37"
NO WATER
NO LEDGE

TP 32
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-82" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 33
0-10" TOPSOIL
10-34" BROWN FINE SANDY LOAM
34-75" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 34
0-12" TOPSOIL
12-44" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
44-89" TAN TO BROWN MED. SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 35
0-9" TOPSOIL
9-21" BROWN FINE SANDY LOAM
21-47" TAN TO BROWN MED. SAND W/GRAVEL,
FEW COBBLES
47-110" TAN TO BROWN, MED. SAND W/GRAVEL,
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 36
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-94" TAN TO GRAY MED. TO
FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 37
0-18" TOPSOIL
18-39" LIGHT BROWN TO TAN,
FINE TO VERY FINE, SANDY LOAM
39-100" LIGHT TAN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 38
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-90" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 39
0-5" TOPSOIL
5-41" LIGHT BROWN FINE SANDY LOAM
41-83" TAN TO MED. SAND W/
GRAVEL AND COBBLES
83"-104" OLIVE TO BROWN FINE SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 40
0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-58" TAN TO GRAY SILT WITH
PATCHY ORANGE REDOX INCONSISTENT AROUND
58-99" TAN TO GRAY MED. TO FINE SAND
NO MOTTLING
NO WATER
NO LEDGE

TP 41
0-9" TOPSOIL
9-29" BROWN FINE TO MED. SANDY LOAM
29-52" TAN TO GRAY SILT FINE SAND,
SOME SILT
52-101" TAN TO GRAY, FINE TO MED. SAND
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 42
0-5" TOPSOIL
5-14" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
14-50" ORANGE TO GRAY SILT, STAINED
50-103" TAN TO BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 43
0-8" TOPSOIL
8-33" BROWN FINE SANDY LOAM
33-45" TAN TO GRAY SILT INCONSISTENT
AROUND HOLE
45-83" TAN TO MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 44
0-6" TOPSOIL
6-14" BROWN FINE TO MED. SANDY LOAM
14-42" TAN TO GRAY SILT INCONSISTENT AROUND HOLE
42-102" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 45
0-13" TOPSOIL
13-23" BROWN FINE TO VERY FINE SANDY LOAM
23-37" GRAY TO TAN VERY FINE SAND W/SILT
37-93" BROWN TO GRAY COARSE SAND W/
GRAVEL AND SOME COBBLES
MOTTLING @ 37"
NO WATER
NO LEDGE

TP 46
0-10" TOPSOIL
10-39" GRAY TO TAN VERY FINE SANDY W/SILT
39-51" GRAY FINE TO MED. SAND W/SILT & HEAVILY
MOTTLED THROUGHOUT
51-108" BROWN TO TAN COARSE SAND W/
GRAVEL AND SOME COBBLES
OLD FILTER FABRIC AND GRAVEL @ 20"
MOTTLING @ 39"
WATER @ 96"
NO LEDGE

TP 47
0-10" TOPSOIL
10-22" BROWN FINE TO MED. SANDY LOAM W/SILT
22-41" LIGHT BROWN TO ORANGE SILTY LOAM,
TRACE FINE SAND
41-98" BROWN TO GRAY COARSE SAND W/GRAVEL
AND SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 48
0-12" TOPSOIL
10-28" BROWN FINE TO VERY FINE SANDY LOAM TO SILT
28-108" BROWN TO GRAY MED. TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER-WET AT BOTTOM
NO LEDGE

TP 49
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-52" LIGHT YELLOW TO BROWN VERY
FINE SAND W/SILT
52-99" BROWN TO GRAY COARSE SAND WITH
GRAVEL, FEW COBBLES
POSSIBLE MOTTLING @ 52"
WATER @ 90"
NO LEDGE

TP 50
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-41" LIGHT YELLOW TO TAN VERY FINE SAND,
W/SILT
41-111" TAN TO BROWN COARSE SAND W/GRAVEL
AND SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 51
0-10" TOPSOIL
10-20" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM
20-42" LIGHT YELLOW TO BROWN VERY FINE
SAND W/RACE SILT
42-101" BROWN TO TAN COARSE SAND WITH
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 52
0-13" TOPSOIL
13-38" BROWN FINE TO VERY FINE SANDY LOAM
38-90" BROWN TO TAN COARSE TO MED. SAND
WITH SOME GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 53
0-13" TOPSOIL
13-32" BROWN FINE TO MED. SANDY LOAM
32-92" BROWN TO TAN COARSE TO
MED. SAND W/GRAVEL AND MANY COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 54
0-11" TOPSOIL
11-32" BROWN FINE TO VERY FINE SANDY LOAM
32-95" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 55
0-14" TOPSOIL
14-22" BROWN FINE TO VERY FINE SANDY LOAM
22-37" LIGHT BROWN FINE TO VERY FINE SAND W/SILT
37-110" TAN MED. SAND W/GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 56
0-15" TOPSOIL
15-43" LIGHT BROWN SILT LOAM, SOME FINE SAND
43-110" TAN MED. SAND SOME GRAVEL
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 57
0-8" TOPSOIL
8-27" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
27-104" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 58
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
32-98" TAN TO BROWN MED. TO COARSE
SAND WITH GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 59
0-11" TOPSOIL
11-23" BROWN FINE TO VERY FINE SANDY LOAM
23-93" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 60
0-10" TOPSOIL
10-23" BROWN FINE TO VERY FINE SANDY LOAM
23-97" BROWN TO TAN COARSE TO MED.
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 61
0-8" TOPSOIL
8-28" BROWN VERY FINE SANDY LOAM
28-99" TAN TO BROWN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 62
0-9" TOPSOIL
9-24" LIGHT BROWN VERY FINE SANDY LOAM
24-95" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 63
0-9" TOPSOIL
9-26" BROWN FINE TO MED. SANDY LOAM
26-91" BROWN TO TAN COARSE TO MED. SAND,
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 64
0-10" TOPSOIL
10-31" BROWN FINE SANDY LOAM
31-91" BROWN TO TAN COARSE TO MED.
SAND W/SOME SILT GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 65
0-13" TOPSOIL
13-30" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
30-100" TAN TO BROWN COARSE SAND
WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 66
0-10" TOPSOIL
10-28" BROWN FINE SANDY LOAM
28-90" TAN TO GRAY MED. TO COARSE
SAND W/SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 67
0-14" TOPSOIL
14-25" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
25-108" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 68
0-12" TOPSOIL
12-36" YELLOW TAN FINE TO VERY FINE SANDY LOAM
36-93" TAN TO BROWN MED. TO FINE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 69
0-12" TOPSOIL
12-36" YELLOW TAN FINE TO VERY FINE SANDY LOAM
36-93" TAN TO BROWN MED. TO FINE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 70
0-14" TOPSOIL
14-36" BROWN FINE TO MED. SANDY LOAM
36-91" TAN MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 71
0-8" TOPSOIL
8-36" BROWN FINE TO MED. SANDY LOAM
36-98" TAN TO GRAY MED. TO FINE
SAND W/ GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 72
0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-91" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 73
0-13" TOPSOIL
13-28" BROWN FINE SANDY LOAM
28-37" YELLOW TAN FINE TO VERY FINE
SANDY LOAM
37-90" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 74
0-6" TOPSOIL
6-39" BROWN FINE SANDY LOAM
39-99" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 75
0-10" TOPSOIL
10-29" LIGHT BROWN FINE SANDY LOAM
29-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 76
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-98" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 77
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 78
0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-108" BROWN TO TAN MED. FINE SAND
W/ SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 79
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-90" TAN TO GRAY MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 80
0-12" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 81
0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 82
0-5" SAND AND GRAVEL FILL
5-18" TOPSOIL
18-52" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM, SOME SILT
52-101" TAN TO BROWN FINE TO MED.
SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 83
0-9" TOPSOIL
9-31" BROWN FINE SANDY LOAM
31-104" TAN-BROWN COARSE SAND
WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 104"

TP 84
0-11" TOPSOIL
11-38" BROWN FINE SANDY LOAM
38-92" TAN TO BROWN MED-COARSE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 92"

TP 85
0-12" TOPSOIL
12-33" BROWN FINE SANDY LOAM
33-98" TAN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 98"

TP 86
0-8" TOPSOIL
8-30" BROWN FINE SANDY LOAM
30-89" TAN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 89"

TP 87
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-98" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 88
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 89
0-12" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 90
0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 91
0-14" TOPSOIL
14-36" BROWN FINE TO MED. SANDY LOAM
36-91" TAN MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 92
0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-108" BROWN TO TAN MED. FINE SAND
W/ SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

PLAN SHOWING
DEEP TEST PIT DATA
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022


DIETER & GARDNER
LAND SURVEYORS - PLANNERS
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JOB#22-007.DWG FBK#327

PERCOLATION TESTS PERFORMED ON MAY 28 & 27, JUNE 3 AND JUNE 10, 2022 BY DIETER & GARDNER, INC. (JODY TERRY AND MATT EMILYTA)

LOT 1		WATER QUALITY BASIN		WATER QUALITY BASIN		LOT 2		LOT 2		LOT 3		LOT 4		LOT 5	
TIME	READING														
8:59	2"	8:51	4"	9:00	2 1/2"	9:56	2 1/4"	1:30	4"	1:34	4"	1:41	5"	1:41	4"
9:04	8 3/4"	8:56	10"	9:05	7 1/2"	9:07	13 1/2"	10:00	20"	1:37	13"	1:38	9 1/2"	1:46	10"
9:09	11"	9:06	13 3/4"	9:10	11"	9:12	19"	10:05	17"	1:40	23"	1:44	13"	1:51	13"
9:14	11"	9:06	16"	9:15	13 1/2"	9:17	22 1/2"	10:10	17"	1:45	24 1/2"	1:49	15 1/2"	1:56	15 1/2"
9:19	12 1/2"	9:11	18"	9:20	16"	9:22	24 1/2"	10:15	17"	1:50	25 1/2"	1:54	18"	2:01	17 1/2"
9:24	14"	9:16	20"	9:25	17 1/2"	9:27	26"	10:20	22"	1:55	26 1/2"	1:59	20"	2:06	18"
9:29	15 1/2"	9:21	21"	9:30	18 1/2"	9:32	DRY	10:25	24"	2:00	27 1/2"	2:02	25"	2:11	20 1/2"
9:34	17"	9:26	22"	9:35	20 1/2"			10:30	25"	2:05	28 1/2"	2:09	23"	2:16	22"
9:39	18 1/4"	9:31	23"	9:40	21 1/2"			10:35	26"	2:10	DRY	2:12	26 3/4"	2:21	23 1/2"
9:44	19 1/4"	9:36	24"	9:45	22 1/2"			10:40	DRY			2:17	27 3/4"	2:26	25"
9:49	20 1/4"	9:41	25"									2:19	28"	2:31	26 1/2"
PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/3 MINS.	

LOT 6		LOT 7		LOT 7		LOT 8		LOT 9		LOT 9		LOT 10		LOT 11	
TIME	READING														
8:13	4"	9:10	4"	9:18	3"	11:28	4"	11:24	3 1/2"	10:41	9"	10:39	7"	10:45	3"
8:18	11 1/2"	9:15	14 1/2"	9:23	7"	11:33	10"	11:29	17 1/2"	10:46	12 1/2"	10:44	11"	10:50	12"
8:23	18"	9:20	17 1/2"	9:28	10"	11:38	12 1/2"	11:34	21"	10:51	15"	10:49	15"	10:55	14 1/4"
8:28	18"	9:25	21"	9:33	11 3/4"	11:43	14 1/2"	11:39	23 1/2"	10:56	17"	10:54	19 1/2"	11:00	15 1/4"
8:33	20"	9:30	22"	9:38	13"	11:48	18 1/2"	11:44	25 1/2"	11:01	18"	10:59	20 1/2"	11:05	17 1/4"
8:38	21 1/2"	9:35	23"	9:43	14 1/4"	11:53	17 1/4"	11:49	27 1/2"	11:06	19 1/2"	11:04	22"	11:10	19 1/4"
8:43	22"	9:40	24"	9:48	15 1/2"	11:58	19"	11:54	29"	11:11	20 1/2"	11:09	23"	11:15	21"
8:48	23 1/2"	9:45	25"	9:53	16 1/2"	12:03	20 1/2"	11:59	30 1/2"	11:16	21 1/2"	11:14	24"	11:20	22 1/4"
8:53	24 1/2"	9:50	26"	9:58	17 7/8"	12:08	21 1/8"	11:21	22 1/2"	11:19	25"	11:25	25"	11:25	23 1/4"
8:58	25 1/2"	9:55	DRY	10:03	19 1/2"			11:26	23 1/2"	11:24	25 3/4"	11:30	24 1/2"	11:35	25 3/4"
10:03	DRY														
PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/4 MINS.	

LOT 12		LOT 13		LOT 14		LOT 15		LOT 16		LOT 17		LOT 18		LOT 19		LOT 19	
TIME	READING																
10:37	3"	8:48	3"	8:46	4"	8:43	5"	8:40	4 1/4"	1:50	4 1/4"	1:30	2 1/2"	10:40	3"	1:27	2 1/2"
10:42	8 3/4"	8:53	9"	8:46	8 1/4"	8:48	10 3/4"	8:45	9 1/2"	1:55	11 7/8"	1:35	9 1/2"	10:54	11"	1:32	8 1/4"
10:47	9 1/4"	8:58	14"	8:51	10 1/4"	8:53	15"	8:50	11 1/2"	2:00	15 1/2"	1:40	13 1/2"	10:59	15"	1:37	13"
10:52	12 1/2"	9:03	18"	8:58	12 1/2"	8:58	17 1/2"	8:55	14"	2:05	18"	1:45	15"	11:04	18 1/2"	1:42	15 1/2"
10:57	15"	9:08	20"	9:01	15"	9:03	19 1/2"	9:00	16 1/2"	2:10	19"	1:50	17 1/2"	11:09	20 1/2"	1:47	18"
11:02	17"	9:13	22"	9:06	17"	9:08	21"	9:05	18 1/2"	2:15	23"	1:55	20"	11:14	22"	1:52	19 1/2"
11:07	19"	9:18	23"	9:11	18"	9:13	22"	9:10	17 3/4"	2:20	25"	2:00	21 1/2"	11:19	23 1/2"	1:57	21 1/2"
11:12	20"	9:23	24"	9:16	19"	9:18	23"	9:15	18 1/2"	2:25	27"	2:05	22 1/2"	11:24	25"	2:02	23"
11:17	21"	9:28	25"	9:21	20"	9:23	23 3/4"	9:20	19 1/2"	2:30	28 7/8"	2:10	23 1/2"	11:29	26 1/2"	2:07	24 1/2"
11:22	22 1/8"	9:33	26"	9:26	21"	9:28	24 1/2"	9:25	21 1/2"	2:35	DRY	2:15	24 1/2"			2:12	25"
11:27	23 1/8"	9:38	DRY	9:31	22"	9:33	25 1/2"	9:30	21 1/2"								
PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/2 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/3 MINS.	

LOT 20		LOT 21		LOT 22		LOT 22		LOT 23		LOT 23		LOT 24		LOT 25		LOT 28	
TIME	READING																
1:38	5"	10:18	2 1/2"	11:46	3"	11:23	3"	11:45	3"	11:27	3"	12:27	3"	12:30	3"	11:43	3 1/2"
1:43	11"	10:23	12"	11:51	6 1/2"	11:28	11 1/2"	11:50	7 3/4"	11:32	7 1/2"	12:32	7 1/2"	12:35	12"	11:48	8"
1:48	13 1/2"	10:28	15 1/2"	11:56	9"	10:25	16 1/2"	11:33	15"	11:35	11 1/2"	12:37	11 1/2"	12:40	17 1/2"	11:53	10"
1:53	16"	10:33	19 1/2"	12:01	12"	10:30	21"	11:38	18"	12:00	13 3/4"	12:42	14"	12:45	20"	11:58	13"
1:58	18"	10:38	21"	12:06	13 1/2"	10:35	24"	11:43	21 1/2"	12:05	16"	12:47	16"	12:50	23"	12:03	14 1/2"
2:03	19"	10:43	22 1/2"	12:11	14 1/2"	10:40	25 1/2"	11:48	24"	12:10	18"	12:52	18"	12:55	25"	12:08	16"
2:08	20 1/8"	10:48	24"	12:16	16"	10:45	27"	11:53	26"	12:15	20"	12:57	19"	1:00	26 1/2"	12:13	17"
2:13	21 1/2"	10:53	25"	12:21	17 1/2"	10:50	DRY	11:58	DRY	12:20	21"	1:02	20"	1:05	28"	12:18	18 1/2"
2:18	22 1/2"	10:58	26 3/4"	12:26	18 1/2"			12:25	22 1/4"	1:07	21"	1:07	21"	1:10	DRY	12:23	20"
2:23	23 1/2"	11:03	28 3/4"	12:31	19 1/2"			12:30	23 1/2"	1:12	22"					12:28	21"
2:28	24 1/2"			12:36	20 1/2"			12:35	25"								
PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/2 MINS.		PERC RATE: 1 1/4 MINS.		PERC RATE: 1 1/5 MINS.		PERC RATE: 1 1/3 MINS.		PERC RATE: 1 1/5 MINS.	

SANITARY DESIGN CRITERIA

- A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.
- B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/INCH OR LESS REQUIRES 485 S.F. OF EFFECTIVE LEACHING AREA.
- C. GST 8236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN. MINIMUM REQUIRED AREA IS 485 S.F./ 28.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.
- HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
- FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
- PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/INCH.

MLSS TABLE								
LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	HF	FF	PF	MLSS	SYSTEM
1	1, 2, 3 & 4	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
2	9, 10, 11 & 12	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
3	13 & 14	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
4	15 & 16	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
5	17 & 18	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
6	21 & 22	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
7	85 & 86	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
8	27 & 28	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
9	29, 30, 31 & 32	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
10	33 & 34	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
11	35 & 36	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
12	37 & 38	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
13	81 & 82	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
14	39 & 40	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
15	41 & 42	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
16	43 & 44	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
17	51 & 52	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
18	53 & 54	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
19	55 & 56	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
20	47 & 48	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
21	61 & 62	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
22	69 & 70	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
23	75 & 76	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
24	73 & 74	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
25	65, 66, 67 & 72	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
26	63 & 64	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND.

ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

ENGINEER AND SURVEYOR CERTIFY PLAN CERTIFIED BY VOTE OF _____ DATE _____

THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSUROR _____ DATE _____

ASSUROR _____ DATE _____

TWC APPLICATION _____

APPROVED _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PERFORMED AT THIS TIME.)

VEGETATION OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE

EROSION & SEDIMENT CONTROL PLAN

NARRATIVE:
PURPOSE AND DESCRIPTION OF PROJECT:
 THE PURPOSE OF THIS PROJECT IS TO SUBDIVIDE 0.21 ACRES OF LAND TO CREATE 28 RESIDENTIAL BUILDING LOTS. EACH LOT WILL BE SERVED BY ON SITE WELL AND SEPTIC SYSTEM. APPROXIMATELY 1330 LINEAR FEET OF ROAD WILL BE CONSTRUCTED. THE PAVEMENT WIDTH IS 22 FEET. THE TOTAL AREA OF NEW PAVEMENT ASSOCIATED WITH THE ROAD CONSTRUCTION WILL BE 30,400 SQUARE FEET. ROAD DRAINAGE HAS BEEN DESIGNED BY A PROFESSIONAL ENGINEER, AND INCLUDES IN PLACES CURBED PAVEMENT AND CATCH BASINS WITH 2 FOOT SLUMP DEPTHS. THE UPLANDS ARE GENTLY SLOPING AND MOSTLY OLD PASTURE. THE UPLAND SOILS ON THE PROJECT SITE INCLUDE WELL DRAINED CANTON HINCKLEY AND AGAWAM SOILS.

IT IS ANTICIPATED THAT ONCE WORK ON THE PUBLIC IMPROVEMENTS BEGINS, IT WILL CONTINUE UNTIL THE PROJECT IS COMPLETED. IT IS ANTICIPATED THAT THE ROAD CONSTRUCTION WILL BE COMPLETED WITHIN ONE YEAR OF COMMENCEMENT.

PETER GARDNER 860-464-7455 (OR OWNER AT TIME OF CONSTRUCTION) SHALL BE RESPONSIBLE FOR OVERSEEING THE INSTALLATION AND PROPER MAINTENANCE OF ANY EROSION & SEDIMENT CONTROL MEASURES EMPLOYED IN IMPLEMENTING THIS PLAN.

TOTAL AREA OF THE PROJECT SITE AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY ROAD AND DRAINAGE CONSTRUCTION ACTIVITIES:
 THE TOTAL PROJECT AREA IS 0.21 ACRES OF WHICH 0.02 ACRES WILL BE DISTURBED TO FACILITATE THE CONSTRUCTION OF THE ROAD AND DRAINAGE.
 ESTIMATE OF TOTAL AREA TO BE DISTURBED 3.0± ACRES FOR HOME/DRIVE AND SEPTIC CONSTRUCTION.

PLANNED START AND COMPLETION DATES FOR THE PROJECT:
 IT IS ANTICIPATED THAT THE PROJECT WILL COMMENCE DURING FALL/WINTER OF 2022/2023 AND BE COMPLETED IN THE FALL OF 2023.

DESIGN CRITERIA, CONSTRUCTION DETAILS AND MAINTENANCE PROGRAM FOR THE EROSION & SEDIMENT CONTROL MEASURES TO BE USED:
 SILT FENCE AND SILT FENCE BACKED WITH HAY BALES FOR STRUCTURAL SUPPORT WILL BE USED. ALL SILT FENCE SEDIMENT BARRIERS SHALL BE MAINTAINED SUCH THAT SEDIMENTS WILL BE REMOVED WHEN REACHING A HEIGHT OF 0.5 FEET. BREACHES IN SILT FENCE SHALL BE REPAIRED IMMEDIATELY. THE SILT FENCE SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 0.5 INCH IN A 24 HOUR PERIOD.

CONSTRUCTION ENTRANCE DESIGN AND MAINTENANCE CRITERIA FROM 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL: ENTRANCE TO CONSTRUCTION ENTRANCES WILL BE CONSTRUCTED OF ANGULAR STONE IN A SIZE AND GRADATION CORRESPONDING TO ASTM C-33, SIZE NO. 2 OR 3, OR DOT STANDARD SPECIFICATIONS SECTION M.01.01 SIZE #3. THE CONSTRUCTION ENTRANCE WILL BE 12 FEET WIDE AND 50 FEET LONG.

CONSTRUCTION: CONSTRUCTION ENTRANCES AREA WILL BE CLEARED AND GRUBBED. AREAS WILL THEN BE ROUGH GRADED. A 4-INCH LAYER OF CRUSHED STONE WILL BE SPREAD AS DEPICTED IN THE DETAILS.

MAINTENANCE: THE CONSTRUCTION ENTRANCE WILL BE MAINTAINED IN A CONDITION THAT WILL MITIGATE TRACKING AND WASHING OF SEDIMENT ONTO PAVED SURFACES. THE CONSTRUCTION ENTRANCE WILL BE TOP DRESSED AS NEEDED TO PROVIDE FUNCTIONALITY. ADDITIONAL LENGTH MAY BE ADDED IF ON-SITE CONDITIONS WARRANT SUCH EXTENSION. ANY ACCUMULATED OR SPILLED SEDIMENTS WILL BE CLEARED IMMEDIATELY, AND DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THIS EROSION & SEDIMENT CONTROL PLAN.

STOCKPILE MANAGEMENT: WILL BE DONE IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL (CHAPTER 4). TOPSOIL STOCKPILES WILL BE LOCATED AS DEPICTED ON THE PLANS, AND WILL BE TREATED AS DISTURBED GROUND, I.E. SURROUNDED BY SILT FENCE, AND SEEDED TO GRASS. AFTER ALL THE TOPSOIL TO BE STRIPPED IS PLACED IN THE STOCKPILE, STOCKPILE SLOPES SHALL NOT EXCEED 2:1.

TOPSOILING: SHALL TAKE PLACE AS AREAS ARE BROUGHT TO GRADE. THE TOPSOIL THAT SHALL BE SPREAD IS OF NATURAL ORIGIN AND WILL BE TAKEN FROM THE TOPSOIL STOCKPILE(S) REFERRED TO ABOVE. STONES LARGER THAN 2 INCHES IN DIAMETER AND OTHER DEBRIS WILL BE REMOVED FROM THE TOPSOIL WITH A RAKE. TOPSOIL SHALL BE SPREAD AT A MINIMUM DEPTH OF 4 INCHES OVER ALL DISTURBED AREAS, IN ORDER TO "BOND" THE TOPSOIL TO THE SUBSOIL. THE SUBGRADE WILL BE LOOSENEED BY "TRACKING" WITH A BULLDOZER IMMEDIATELY BEFORE APPLYING TOPSOIL. TOPSOIL WILL NOT BE PLACED IF THE SUBGRADE OR THE TOPSOIL IS FROZEN OR TOO WET. HEAVY RUBBER-TIRED VEHICLES WILL BE EXCLUDED FROM THE NEWLY TOPSOILED AREAS TO PREVENT EXCESSIVE COMPACTION WHICH COULD HINDER SEED GERMINATION AND SEEDLING GROWTH.

PERMANENT SEEDING: WILL BE DONE AS DISTURBED AREAS ARE BROUGHT TO GRADE AND TOPSOILED AS LONG AS SUCH SEEDING IS DONE BETWEEN APRIL 1 AND JULY OR AUGUST 15 THROUGH OCTOBER 31. WITHIN 7 DAYS AFTER TOPSOIL IS APPLIED THE APPROPRIATE SEED MIX WILL BE BROADCAST AT THE PRESCRIBED RATE FOR THAT PARTICULAR MIX. THE SELECTED SEED MIX WILL BE FROM THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, FIGURE PS-3. PRIOR TO SEEDING, FERTILIZER WILL BE APPLIED AT THE RATE OF 7.5 PER 1,000 SQUARE FEET (10-10-10 OR EQUIVALENT), AND GROUND LIMESTONE WILL BE APPLIED AT THE RATE OF 200 POUNDS PER 1,000 SQUARE FEET. THE LIME AND FERTILIZER WILL BE LIGHTLY WORKED TO A DEPTH OF 3 TO 4 INCHES. SEED SHALL BE APPLIED UNIFORMLY USING A CYCLONE SEEDER (HYDROSEEDING MAY BE USED IN LIEU OF CONVENTIONAL SEEDING METHODS). HAY MULCH WILL BE APPLIED AT THE RATE OF 100 POUNDS (APPROXIMATELY 2 BALES) PER 1,000 SQUARE FEET. WHERE SLOPES EXCEED 10 PERCENT, JUTE NETTING SHALL BE USED TO ANCHOR THE HAY MULCH IN PLACE. ANY SUCH NETTING WILL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE: THE SEEDBED WILL BE INSPECTED AT LEAST ONCE PER WEEK, AND WITHIN 24 HOURS OF A RAINFALL IN AN AMOUNT EXCEEDING 0.5 INCHES IN 24 HOURS. IN ANY AREAS THAT SUSTAIN DAMAGE, THE TOPSOIL WILL BE REAPPLIED AND SMOOTHED, AND RESEED AS DESCRIBED ABOVE. THE NEWLY ESTABLISHED GRASS WILL NOT BE MOWN UNTIL IT REACHES A HEIGHT OF 8 INCHES. MOWING WILL NOT TAKE PLACE WHEN THE GROUND SURFACE IS WET. THE FIRST MOWING WILL TAKE 33 TO 50 PERCENT OF THE GRASS HEIGHT (I.E. NOT BELOW 3 INCHES). MULCH MATERIALS WILL NOT BE REMOVED, BUT WILL BE ALLOWED TO DISINTEGRATE OVER TIME.

WHERE BARE GROUND NEEDS TO BE PROTECTED FOR RELATIVELY SHORT PERIODS, OR WHERE THE SEEDING SEASONS FOR PERMANENT SEEDINGS CAN NOT BE ADHERED TO, TEMPORARY SEEDING MAY BE USED. THE RECOMMENDED SEED MIX WILL VARY UPON CIRCUMSTANCES, BUT SHALL BE IN COMPLIANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, FIGURE TS-2. TEMPORARY SEEDING RATES AND DATES, WHERE THE SEASON PRECLUDES ANY TYPE OF SEEDING, AN ANCHORED MULCH WILL BE EMPLOYED TO PROTECT BARE SOIL AREAS.

CONSTRUCTION SEQUENCE: PRIOR TO THE COMMENCEMENT OF ANY EARTH DISTURBANCES, THE DEVELOPER AND HIS CONTRACTOR SHALL MEET WITH TOWN STAFF FOR A PRECONSTRUCTION CONFERENCE.

- 1) INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON PLAN.
- 2) INSTALL EROSION AND SEDIMENT CONTROL.
- 3) CONSTRUCT THE STORMWATER QUALITY BASIN. TOPSOIL WILL BE APPLIED TO THE BASIN SIDESLOPES IMMEDIATELY AFTER CONSTRUCTION, AND THE SIDESLOPES WILL BE SEEDED. INSTALL SEDIMENT BARRIERS ALONG THE ROAD AND IN THE AREA OF THE BASIN AS DEPICTED ON THE PLANS.
- 4) STRIP TOPSOIL FROM THE ROADWAY AND STOCKPILE TOPSOIL ACCORDING TO THE PLAN. SEED STRIPPED AREAS THAT ARE NOT TO BE WORKED FOR 30 DAYS IMMEDIATELY WITH PERENNIAL RYEGRASS AT THE RATE OF 40 LBS./ACRE.
- 5) GRADE THE ROAD TO ATTAIN THE PLANNED SUBGRADE PROFILE AND GRADE SIDESLOPES TO PLAN.
- 6) APPLY TOPSOIL AND PERMANENT SEED MIX AND APPLY AND ANCHOR MULCH TO ALL FINISHED SLOPES.
- 7) INSTALL ALL DRAINAGE STARTING AT THE OUTFALL AND PROCEEDING UPGRADIENT. THE CONTRACTOR WILL ENSURE THAT ADEQUATE PROTECTION IS PROVIDED AT THE OUTLET OF THE DRAINAGE SYSTEM SO THAT SEDIMENTS WILL BE PREVENTED FROM MIGRATING OFF THE SITE. NO WATER WILL BE ALLOWED TO ENTER THE DRAINAGE SYSTEM UNTIL THE OUTLET IS PROTECTED. ALL DRAINAGE COMPONENTS WILL BE CHECKED ON A REGULAR BASIS AND CLEANED AS NEEDED TO MAINTAIN PROPER FUNCTION.
- 8) PLACE, GRADE AND COMPACT THE SUBGRADE AGGREGATE TO ESTABLISH THE ROADWAY BASE. TOPSOIL AND GRADE ALL SLOPES/DISTURBED AREAS WITHIN 2 FEET OF THE OUTSIDE OF THE PROPOSED CURBS.
- 9) LAY DOWN FIRST COURSE OF BITUMINOUS PAVEMENT.
- 10) INSTALL CURBING (WHERE REQUIRED).
- 11) APPLY TOP COURSE OF BITUMINOUS PAVEMENT.
- 12) REMOVE SILT FENCE AFTER TOPSOIL STABILIZED.

DISPOSAL OF SEDIMENTS: ANY SEDIMENT REMOVED FROM ANY EROSION AND SEDIMENT CONTROL MEASURE AS PART OF SITE MAINTENANCE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH THE INTENT OF THIS PLAN. NO SEDIMENT SHALL BE DEPOSITED IN ANY WETLAND AREA.

FIELD CHANGES: IF FIELD MODIFICATIONS OF PLANNED MEASURES ARE NEEDED TO PROPERLY ADDRESS ANY EROSION OR SEDIMENTATION SITUATION, SUCH CHANGES MAY BE MADE ONLY AFTER NOTIFYING TOWN STAFF. ADDITIONAL NON-STRUCTURAL MEASURES MAY BE ADDED WITHOUT PRIOR NOTIFICATION.

STORMWATER QUALITY BASIN CONSTRUCTION NOTES:

1. STORMWATER QUALITY BASIN EMBANKMENTS SHALL BE CONSTRUCTED OF SILTY SAND AND/OR CLAYEY MATERIALS. ON-SITE BORROW MATERIAL MAY BE USED IF SUITABLE DEPOSITS ARE FOUND.
2. EMBANKMENT FILL SHALL CONTAIN AT LEAST 15% BY WEIGHT OF MATERIAL PASSING THE #200 SIEVE AND NOT MORE THAN 50% PASSING THE #60 SIEVE.
3. EMBANKMENT FILL SHALL HAVE NO STONES LARGER THAN 6" IN THEIR GREATEST DIMENSION. NO STONES LARGER THAN 3" IN THEIR GREATEST DIMENSION SHALL BE ALLOWED WITHIN 2 FEET OF STRUCTURES OR PIPES.
4. ALL FILL MATERIAL SHALL BE FREE OF TOPSOIL, ROOTS, STUMPS, ORGANICS, FROZEN MATERIAL AND OTHER DELETERIOUS MATTER.
5. ALL EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% MINIMUM RELATIVE COMPACTIONS DETERMINED BY ASTM D1557 - MOOPROF PROCTOR. THE MAXIMUM LOOSE LIFT THICKNESS OF EMBANKMENT FILL SHALL BE 12".
6. ALL TOPSOIL, ORGANICS, ROOTS AND OTHER DELETERIOUS MATTER SHALL BE REMOVED FROM THE EXISTING GROUND SURFACE PRIOR TO CONSTRUCTION OF THE PROPOSED EMBANKMENTS.
7. ALL EMBANKMENTS AND DISTURBED AREAS OF THE STORMWATER QUALITY BASIN SHALL BE PERMANENTLY STABILIZED WITH 4" LOAM, SEED AND MULCH. SUITABLE HYDROSEEDING EQUIPMENT MAY BE USED FOR APPLICATION OF SEED, MULCH AND/OR FERTILIZER. THE FOLLOWING SEED MIX SHALL BE USED IN THESE AREAS.

VARIETY	LIBS/ACRE
CREeping RED FESCUE	20
REDDTOP	2
BENT GRASS	15
TOTAL	37

- STORMWATER QUALITY BASIN OPERATION AND MAINTENANCE NOTES:**
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS PRIOR TO COMPLETION OF THE ROADWAY.
 2. DURING THE FIRST YEAR OF OPERATION, THE BASIN SHALL BE INSPECTED ON WEEKLY BASIS.
 3. AFTER THE BASIN HAS BEEN IN OPERATION FOR ONE YEAR, INSPECTIONS SHALL BE PERFORMED QUARTERLY OR WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCH OR GREATER. ANY EROSION OF EMBANKMENTS OR OUTLET AREAS SHALL BE REPAIRED PROMPTLY. ANY DEBRIS SHALL BE REMOVED AND DISPOSED OF. SEDIMENTATION THAT WOULD INTERFERE WITH PROPER OPERATION OF THE BASIN SHALL BE REMOVED AND DISPOSED OF AND THE AREA RESTORED AND STABILIZED AS REQUIRED.
 4. AFTER THE BASIN HAS BEEN IN OPERATION FOR ONE YEAR, INSPECTIONS SHALL BE PERFORMED QUARTERLY OR WITHIN 24 HOURS AFTER A STORM EVENT OF 2.0 INCHES OR GREATER. QUARTERLY INSPECTIONS SHALL INCLUDE THE FOLLOWING ITEMS:
 - NOXIOUS WEEDS SHALL BE REMOVED. PERFORM ANY MOWING OPERATIONS REQUIRED.
 - INSPECT EMBANKMENTS FOR ANY WOODY GROWTH. ALL TREES, VINES AND OTHER WOODY PLANTS SHALL BE REMOVED AND VOIDS LEFT FROM THEIR REMOVAL SHALL BE REPAIRED.
 - INSPECT EMBANKMENTS FOR ANY ANIMAL BURROWS. ALL BURROWS AND VOIDS SHALL BE REPAIRED IMMEDIATELY.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN FOREBAY AND OTHER AREAS TO RESTORE ORIGINAL DESIGN GRADES. DISTURBED AREAS SHALL BE RESTABILIZED AS REQUIRED AFTER REMOVAL OF SEDIMENT.
 - INLETS AND OUTLETS SHALL BE INSPECTED FOR SCOUR DAMAGE AND EROSION AND REPAIRED AS REQUIRED.
 - ANY EVIDENCE OF PIPING OR SEEPAGE AT THE TOE OF EMBANKMENTS OR AROUND INLET/OUTLET STRUCTURES SHALL BE INVESTIGATED BY A QUALIFIED PROFESSIONAL ENGINEER AND REPORTED TO THE TOWN. REQUIRED REPAIRS TO MAINTAIN THE PROPER FUNCTION OR REPAIR POTENTIAL STRUCTURAL DEFICIENCIES IN THE BASIN SHALL BE IMPLEMENTED WITHIN ONE MONTH OF DISCOVERY OF THE PROBLEM OR AT DISCRETION OF THE RESPONSIBLE PROFESSIONAL ENGINEER PERFORMING THE INVESTIGATION OR DESIGNING SUCH REPAIRS. THE ENGINEER SHALL CERTIFY THAT ALL REPAIRS ARE PERFORMED TO HIS/HER SATISFACTION AND SHALL PROVIDE SUCH CERTIFICATION TO THE TOWN.

- STORMWATER SYSTEM OPERATION AND MAINTENANCE NOTES:**
- PROVIDE ANNUAL STREET SWEEPING, PREFERABLY AFTER FINAL SNOW MELT TO ALLEVIATE SEDIMENT BUILDUP IN CATCH BASIN SUMPS AND TO INSURE EFFICIENT TSS REMOVAL FROM STORMWATER.
 - REMOVE SEDIMENT FROM CATCH BASIN SUMPS WHEN SEDIMENT REACHES HALF THE DEPTH OF THE SUMP.
 - INSPECT CATCH BASINS FOR TRASH AND DEBRIS BI-ANNUALLY. REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM PIPE INLETS AND OUTLETS TO PREVENT CLOGGING.
 - REMOVE ACCUMULATED TRASH AND LEAVES FROM CATCH BASIN GRATES TO INSURE ADEQUATE GRATE INFLOW CAPACITIES.

APPROVED BY THE LAYARD PLANNING AND BORING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOICE OF THE LAYARD PLANNING AND BORING COMMISSION OF _____ DATE _____

LOT WITHNESS ASSURED BY THE ASSUROR _____ DATE _____

ASSUROR _____ DATE _____

TWC APPLICATION# _____

APPROVED _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLAND OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS ON THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

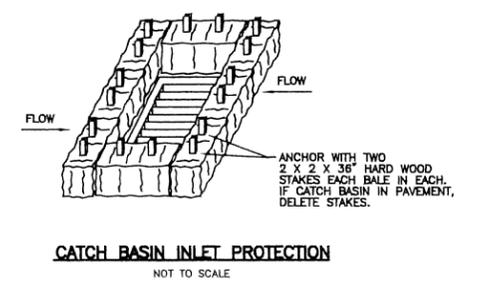
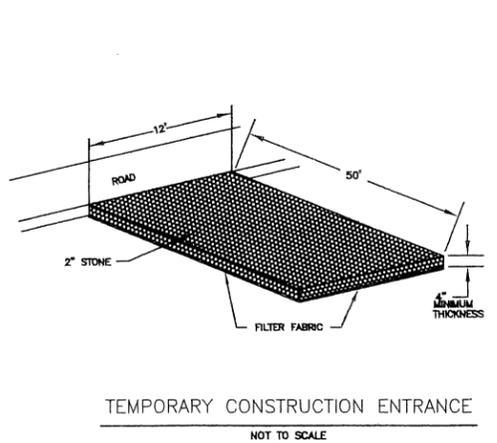
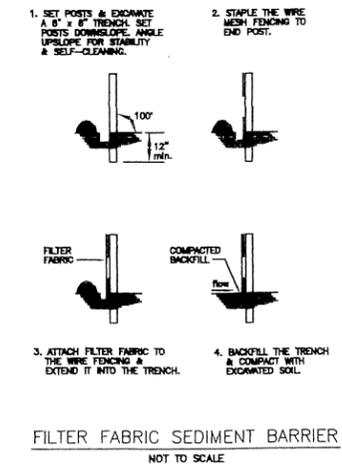
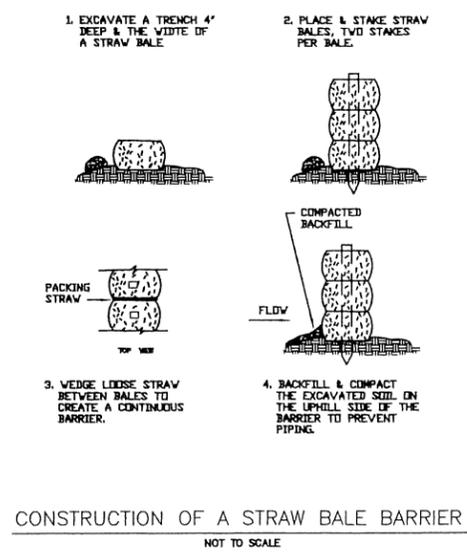
PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOICE OF THE LAYARD PLANNING AND BORING COMMISSION

CHAIRMAN OR SECRETARY OF THE LAYARD PLANNING AND BORING COMMISSION _____ DATE _____

APPROVED BY THE BORING IMPROVEMENT OFFICER OF THE LAYARD PLANNING COMMISSION _____ DATE _____

BORING IMPROVEMENT OFFICER _____ DATE _____

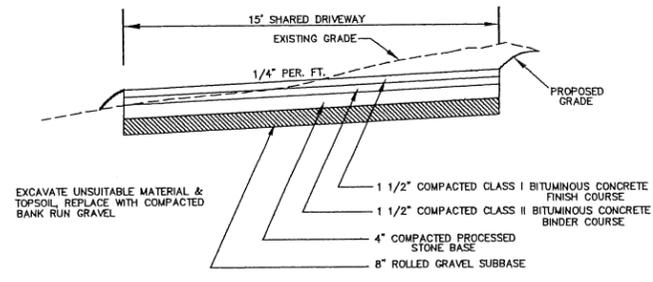


PLAN SHOWING
EROSION AND SEDIMENT CONTROL
NARRATIVE AND DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT

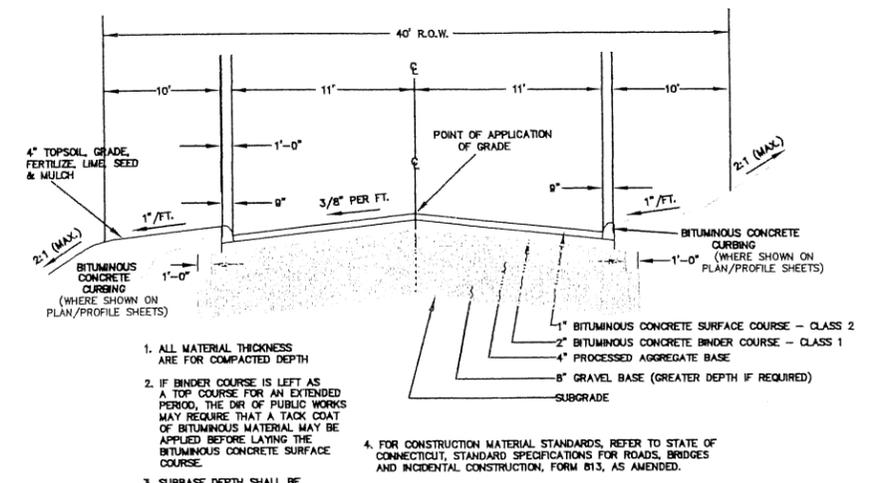
JULY 2022
 REVISED: OCTOBER 31, 2022

DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
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 1641 CONNECTICUT ROUTE 12
 GALES FERRY, CT. 06335
 (860) 464-7455
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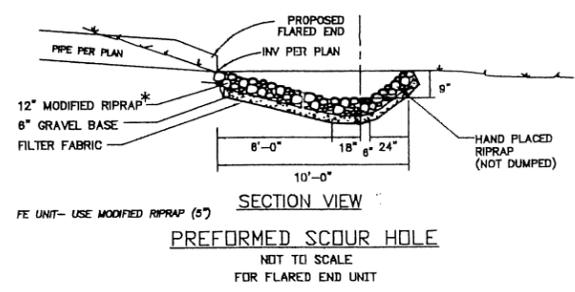
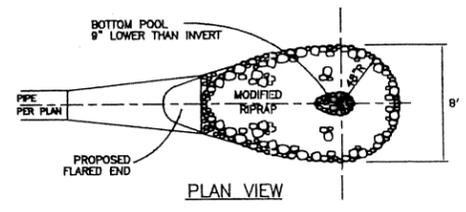


TYPICAL PAVED COMMON DRIVEWAY CROSS-SECTION
NOT TO SCALE

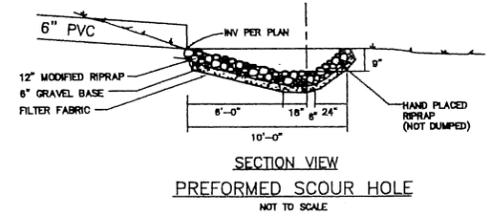
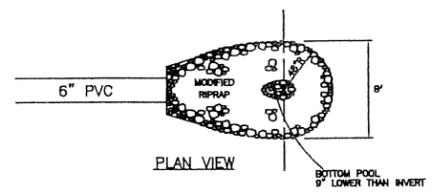


- ALL MATERIAL THICKNESS ARE FOR COMPACTED DEPTH
- IF BINDER COURSE IS LEFT AS A TOP COURSE FOR AN EXTENDED PERIOD, THE DIR OF PUBLIC WORKS MAY REQUIRE THAT A TACK COAT OF BITUMINOUS MATERIAL BE APPLIED BEFORE LAYING THE BITUMINOUS CONCRETE SURFACE COURSE.
- SUBGRADE DEPTH SHALL BE INCREASED TO 18\"/>
- FOR CONSTRUCTION MATERIAL STANDARDS, REFER TO STATE OF CONNECTICUT, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM B13, AS AMENDED.

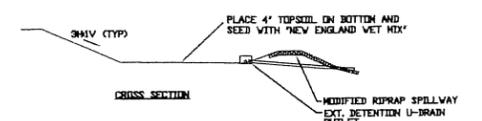
AVERY BROOK CIRCLE CROSS SECTION
(N.T.S.)



SECTION VIEW
PREFORMED SCOUR HOLE
NOT TO SCALE
FOR FLARED END UNIT

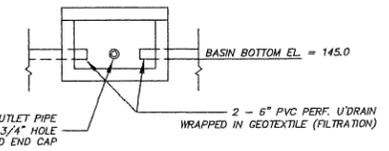


SECTION VIEW
PREFORMED SCOUR HOLE
NOT TO SCALE

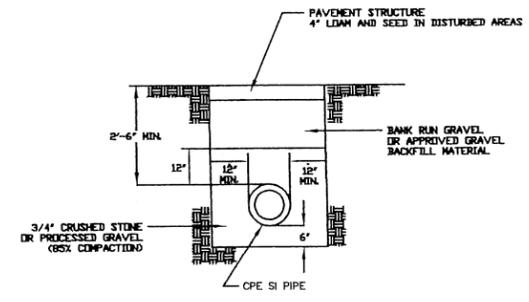


NOTES:
THE PURPOSE OF THE WATER QUALITY BASIN IS TO REMOVE SEDIMENT FROM THE WATER QUALITY VOLUME (WQV). THE BASIN IS SIZED TO HOLD THE WQV (600 CUBIC FEET) WHICH WILL BE FILTERED THROUGH THE SURFACE DRAIN AND SLOWLY RELEASED INTO THE WETLANDS.
STORMS THAT EXCEED THE WATER QUALITY VOLUME WILL FLOW OUT THE SPILLWAY.

WATER QUALITY BASIN
(N.T.S.)



D-BOX OUTLET
EXTENDED DETENTION
UNDERDRAIN OUTLET
NOT TO SCALE



NOTE:
1. IF PIPE IS PLACED IN OR ON LEDGE, ALL LEDGE WITHIN 12\"/>

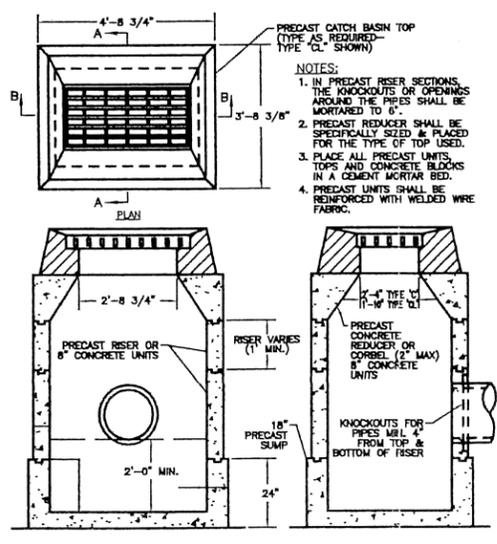
DRAINAGE PIPE TRENCH
NOT TO SCALE



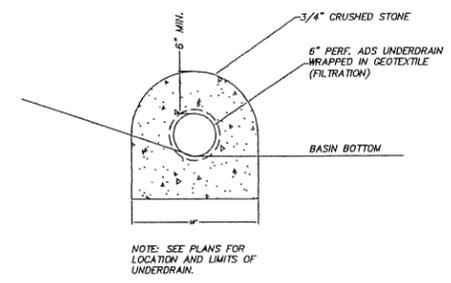
STOP SIGN
NOT TO SCALE

SECURE TO 1 1/2\"/>

NOTE:
SIGN TO BE INSTALLED IN ACCORDANCE WITH STATE OF CONNECTICUT D.B.T. STANDARDS



SECTION B-B
SECTION A-A
PRECAST CATCH BASIN
NOT TO SCALE



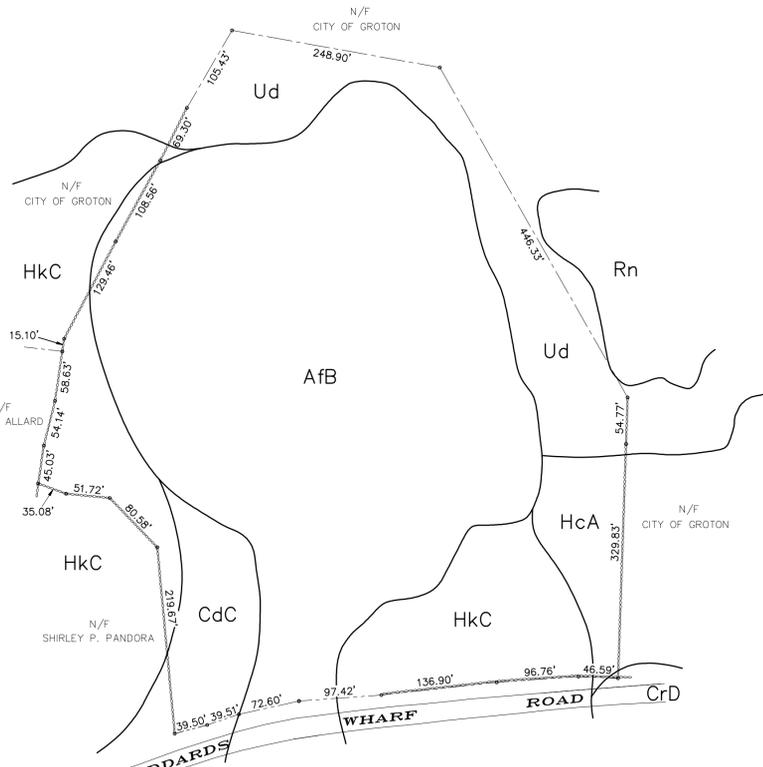
EXTENDED DETENTION UNDERDRAIN
NOT TO SCALE

THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG

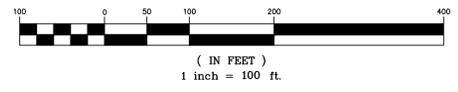
DIETER & GARDNER
LAND SURVEYORS - PLANNERS
P.O. BOX 335
1841 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 484-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

PLAN SHOWING
CONSTRUCTION DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT

JULY 2022
REVISED: OCTOBER 31, 2022



BOUNDARY AND SOILS MAP
THIS IS NOT A SURVEY
TOTAL AREA = 9.21 ACRES
GRAPHIC SCALE



APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____	
CHAIRMAN OR SECRETARY	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____	
LOT NUMBERS ASSIGNED BY THE ASSESSOR	
ASSESSOR	DATE
IWVC APPLICATION#	
APPROVED,	
NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)	
NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)	
WETLANDS OFFICER	DATE
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.	
PUBLIC WORKS DIRECTOR/TOWN ENGINEER	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION	
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION	DATE
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION	
ZONING ENFORCEMENT OFFICER	DATE

LEGEND

- STONE WALL
- - - PROPERTY LINE
- - - STREET LINE
- 98 STREET NUMBER

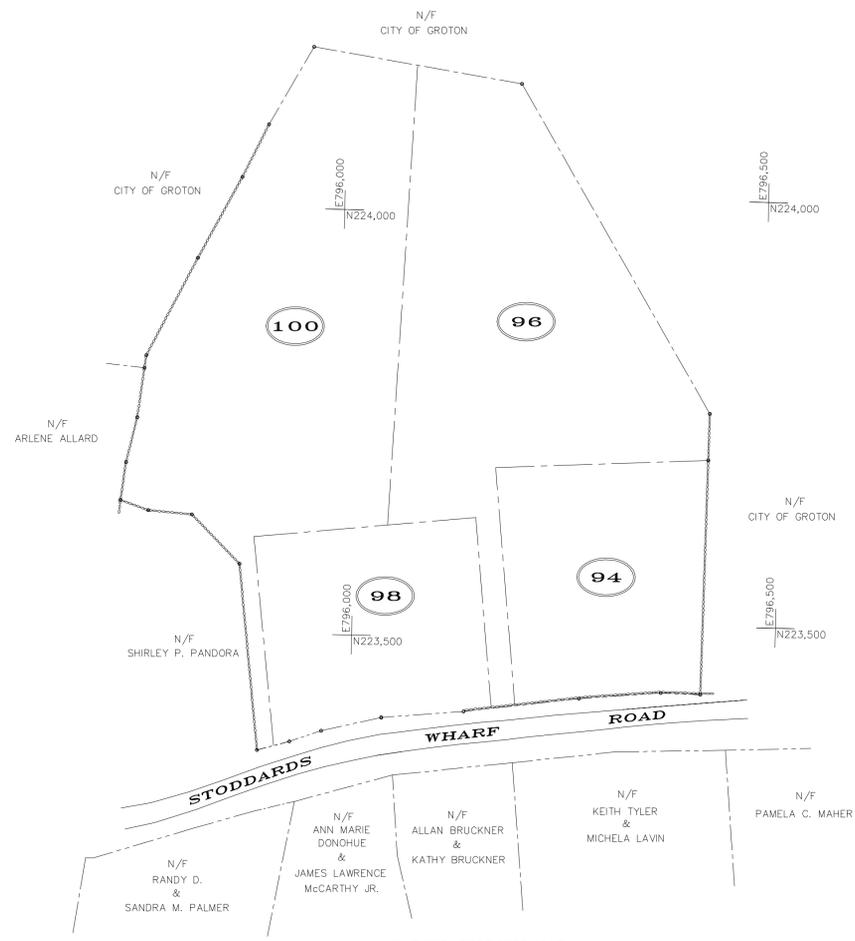
SOILS LEGEND

- Afb - AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- CdC - CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
- CrD - CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
- HcA - HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
- HkC - HINCKLEY GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES
- Rn - RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
- Ud - UDORTENTS-URBAN LAND COMPLEX

THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF, AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY.
THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED

THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG FBK#327

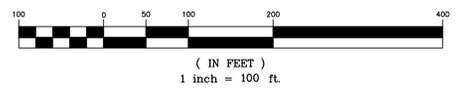
NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATION PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.



PARCEL HISTORY MAP
THIS IS NOT A SURVEY

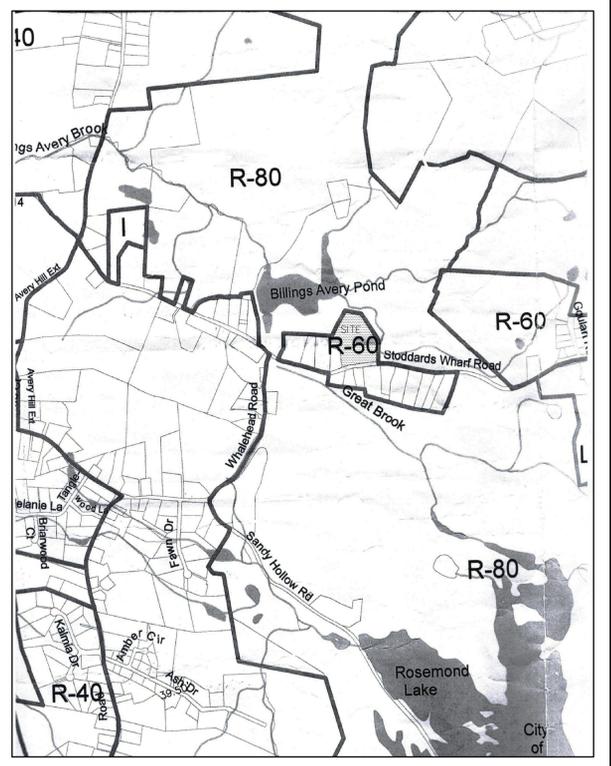
PARCEL HISTORY
TOTAL AREA ON MARCH 22, 1962 = 9.21 ACRES
TOTAL NUMBER OF LOTS CREATED FROM ORIGINAL TRACT = 4

GRAPHIC SCALE



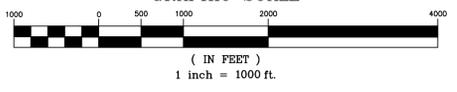
DIETER & GARDNER
LAND SURVEYORS • PLANNERS
P.O. BOX 335
1641 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

- GENERAL NOTES:**
1. MAP REFERENCES:
A) SUBDIVISION PLAN PREPARED FOR AMER JAVAD 98 STODDARDS WHARF ROAD - (CONN. RTE #214) LEDYARD, CONNECTICUT BOUNDARY SURVEY. MAP DATE: 9/12/11 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
B) LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 98 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
 2. CALL BEFORE YOU DIG AT 1-800-922-4455 BEFORE ANY CONSTRUCTION ACTIVITY.
 3. ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
 4. THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
 5. HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
 6. ZONING SETBACKS: LOTS SUBMITTED AS A SET-ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8-30g.
MINIMUM FRONT YARD SETBACK 12'
MINIMUM SIDE YARD SETBACK 6'
MINIMUM REAR YARD SETBACK 15'
 7. PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.



LOCATION MAP
ZONING DISTRICT: R-60

GRAPHIC SCALE



SHEET INDEX

- SHEET 1 - 100 SCALE BOUNDARY MAP; PARCEL HISTORY MAP; LOCATION MAP AND GENERAL NOTES
- SHEET 2 - 40 SCALE A-2 PLAN
- SHEET 3 - 40 SCALE CONCEPTUAL LAYOUT PLAN
- SHEET 4 - DEEP TEST PIT DATA
- SHEET 5 - PERCOLATION TEST RESULTS AND SEPTIC SYSTEM DESIGN CRITERIA
- SHEET 6 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 7 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 8 - 40 SCALE SIGHTLINE DEMONSTRATION PLAN
- SHEET 9 - EROSION AND SEDIMENT CONTROL NARRATIVE AND DETAILS
- SHEET 10 - CONSTRUCTION DETAILS

PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT SCALES AS SHOWN

JULY 2022
REVISED: OCTOBER 31, 2022

SHEET 1 OF 10

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D". TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
DATE: JULY 7, 2022

DEEP TEST PIT DATA

WITNESSED AND RECORDED BY WENDY BROWN-ARNOLD RS,REHS AND ALEX WILBOUR LEDGE LIGHT HEALTH DISTRICT ON 5/2/22, 5/5/22 AND 5/23/2022 AND WENDY BROWN-ARNOLD RS,REHS ON JUNE 14, 2022.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR _____ DATE _____

ASSESSOR _____ DATE _____

ITWC APPLICATION# _____ APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA, NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____

ZONING ENFORCEMENT OFFICER _____ DATE _____

TP 1
0-45" FILL-DISTURBED
LOAM, ROCKS, BRICK
NO MOTTLING
NO WATER
LEDGE @ 45"

TP 2
0-16" DISTURBED SOIL & FILL
16-50" LIGHT TAN FINE SAND
W/GRAVEL & ROCKS
NO MOTTLING
NO WATER
LEDGE @ 50"

TP 3
0-10" TOPSOIL
10-28" LIGHT BROWN FINE SANDY LOAM
28-87" LIGHT TAN FINE SAND W/GRAVEL
COBBLES, LARGE STONES
NO MOTTLING
NO WATER
NO LEDGE

TP 4
0-11" TOPSOIL
11-34" LIGHT BROWN FINE SANDY LOAM
34-90" LIGHT TAN/GRAY FINE SAND W/
GRAVEL, SOME COBBLES
MOTTLING @ 64"
WATER @ 80"
NO LEDGE

TP 5
0-16" TOPSOIL
16-45" LIGHT BROWN SILT LOAM, SOME FINE SAND
45-94" TAN/GRAY FINE TO MED. SAND W/
GRAVEL
MOTTLING @ 33"
WATER @ 33"
NO LEDGE

TP 6
0-9" TOPSOIL
9-37" BROWN FINE TO VERY FINE SANDY LOAM
37-84" TAN/GRAY FINE TO MED. SAND W/
GRAVEL, FEW COBBLES
MOTTLING @ 46"
WATER @ 50"
NO LEDGE

TP 7
0-7" TOPSOIL
7-30" BROWN FINE TO MED. SANDY LOAM
30-77" TAN COARSE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 8
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-64" ORANGE/TAN COARSE SAND
W/GRAVEL
64-95" TAN/GRAY FINE TO MED. SAND
MOTTLING @ 73"
WATER @ 83"
NO LEDGE

TP 9
0-15" TOPSOIL
15-31" BROWN FINE SANDY LOAM
31-96" TAN MED. TO COARSE SAND AND
GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 10
0-11" TOPSOIL
11-23" BROWN FINE SANDY LOAM
23-84" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 11
0-11" TOPSOIL
11-34" BROWN FINE TO MED. SANDY LOAM
34-96" TAN TO GRAY MED. TO COARSE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 12
0-12" TOPSOIL
12-29" BROWN FINE TO MED. SANDY LOAM
29-95" BROWN TO TAN MED. TO COARSE SAND W/
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 13
0-13" TOPSOIL
13-26" BROWN FINE TO MED. SANDY LOAM
26-91" TAN TO GRAY MED. TO FINE SAND
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 14
0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" TAN MED. TO FINE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 15
0-10" TOPSOIL
10-39" BROWN FINE SANDY LOAM
39-99" TAN TO OLIVE MED. TO COARSE SAND/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 16
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-96" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 17
0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-89" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 18
0-9" TOPSOIL
9-29" YELLOW TO BROWN FINE SANDY LOAM
29-103" TAN TO OLIVE MED. TO COARSE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 19
0-14" TOPSOIL
14-36" BROWN FINE SANDY LOAM
36-84" TAN/GRAY COARSE SAND
W/GRAVEL
MOTTLING @ 40"
WATER @ 45"
NO LEDGE

TP 20
0-17" TOPSOIL
17-31" BROWN FINE SANDY LOAM
31-83" TAN/GRAY COARSE SAND
W/GRAVEL AND FEW COBBLES
MOTTLING @ 43"
WATER @ 46"
NO LEDGE

TP 21
0-17" SANDY FILL & DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN/BROWN FINE MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 22
0-19" FILL
19-32" TOPSOIL
32-53" BROWN MED. SANDY LOAM
53-103" TAN TO BROWN MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 23
0-17" SANDY FILL AND DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN TO BROWN MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 24
0-8" TOPSOIL
8-46" BROWN FINE TO MED. SANDY LOAM,
SOME COBBLES
46-92" TAN TO GRAY COARSE SAND
W/GRAVEL AND COBBLES
MOTTLING @ 60"
WATER 64" UPHILL, 32" DOWNHILL
NO LEDGE

TP 25
0-10" TOPSOIL
10-29" BROWN FINE TO MED. SANDY LOAM,
SOME SILT
29-75" BROWN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES
MOTTLING @ 33"
WATER 33", 30" DOWNHILL
NO LEDGE

TP 26
0-7" TOPSOIL
7-36" YELLOW TO BROWN FINE TO MED.
SILTY LOAM W/TRACE FINE SAND
36-82" BROWN TO GRAY FINE TO MED.
SAND W/GRAVEL AND COBBLES, SOME SILT
MOTTLING @ 26"
WATER @ 26"
NO LEDGE

TP 27
0-11" TOPSOIL
11-24" BROWN FINE TO MED. SANDY LOAM
24-39" TAN FINE TO MED. SAND
39-87" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 28
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO MED. SANDY LOAM
32-96" LIGHT TAN FINE TO MED. SAND W/
GRAVEL AND COBBLES STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 29
0-12" TOPSOIL
12-32" BROWN FINE TO MED. SANDY LOAM
32-99" TAN TO GRAY MED. TO FINE SAND W/
GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 30
0-12" TOPSOIL
12-34" BROWN FINE SANDY LOAM (DEPTH VARIES)
34-98" TAN TO MED. TO FINE SAND W/GRAVEL AND
GRAVEL, STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 31
0-7" TOPSOIL
7-31" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
31-100" TAN FINE TO MED. SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 32
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-82" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 33
0-10" TOPSOIL
10-34" BROWN FINE SANDY LOAM
34-75" TAN TO GRAY MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 34
0-12" TOPSOIL
12-44" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
44-89" TAN TO BROWN MED. SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 35
0-9" TOPSOIL
9-21" BROWN FINE SANDY LOAM
21-47" TAN TO BROWN MED. SAND W/GRAVEL,
FEW COBBLES
47-110" TAN TO BROWN, MED. SAND W/GRAVEL,
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 36
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-94" TAN TO GRAY MED. TO
FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 37
0-9" TOPSOIL
9-39" LIGHT BROWN TO TAN,
FINE TO VERY FINE, SANDY LOAM
39-100" LIGHT TAN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 38
0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-90" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 39
0-5" TOPSOIL
5-41" LIGHT BROWN FINE SANDY LOAM
41-83" TAN TO MED. SAND W/
GRAVEL AND COBBLES
83"-104" OLIVE TO BROWN FINE SAND,SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 40
0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-58" TAN TO GRAY SILT WITH
PATCHY ORANGE REDOX INCONSISTENT AROUND
58-99" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 41
0-9" TOPSOIL
9-29" BROWN FINE TO MED. SANDY LOAM
29-57" TAN TO GRAY SILT FINE SAND,
STAINED
52-101" TAN TO GRAY, FINE TO MED. SAND
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 42
0-5" TOPSOIL
5-14" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
14-50" ORANGE TO GRAY SILT, STAINED
50-105" TAN TO BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 43
0-8" TOPSOIL
8-33" BROWN FINE SANDY LOAM
33-45" TAN TO GRAY SILT INCONSISTENT
AROUND HOLE
45-83" TAN TO MED. TO FINE SAND W/GRAVEL
AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 44
0-6" TOPSOIL
6-14" BROWN FINE TO MED. SANDY LOAM
14-42" TAN TO GRAY SILT INCONSISTENT AROUND HOLE
42-102" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 45
0-13" TOPSOIL
13"-23" BROWN FINE TO VERY FINE SANDY LOAM
23-37" GRAY FINE TO MED. SAND W/SILT
37-93" BROWN TO GRAY COARSE SAND W/
GRAVEL AND SOME COBBLES
MOTTLING @ 37"
NO WATER
NO LEDGE

TP 46
0-15" TOPSOIL
15-39" GRAY TO TAN VERY FINE SANDY W/SILT
39-51" GRAY FINE TO MED. SAND W/SILT & HEAVILY
MOTTLED THROUGHOUT
51-108" BROWN TO TAN COARSE SAND W/
GRAVEL AND SOME COBBLES
MOTTLING @ 39"
WATER @ 96"
NO LEDGE

TP 47
0-10" TOPSOIL
10-22" BROWN FINE TO MED. SANDY LOAM W/SILT
22-41" LIGHT BROWN TO ORANGE SILTY LOAM,
TRACE FINE SAND
41-98" BROWN TO GRAY COARSE SAND W/GRAVEL
AND SOME COBBLES
NO MOTTLING
WATER @ 96"
NO LEDGE

TP 48
0-10" TOPSOIL
10-28" BROWN FINE TO VERY FINE SANDY LOAM TO SILT
28-106" BROWN TO GRAY MED. TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER-WET AT BOTTOM
NO LEDGE

TP 49
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-52" LIGHT YELLOW TO BROWN VERY
FINE SAND W/SILT
52-99" BROWN TO GRAY COARSE SAND WITH
GRAVEL, FEW COBBLES
POSSIBLE MOTTLING @ 52"
WATER @ 90"
NO LEDGE

TP 50
0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-41" LIGHT YELLOW TO TAN VERY FINE SAND,
W/SILT
41-111" TAN TO BROWN COARSE SAND W/GRAVEL
AND SOME COBBLES
NO MOTTLING
WATER @ 106"
NO LEDGE

TP 51
0-10" TOPSOIL
10-20" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM
20-42" LIGHT YELLOW TO BROWN VERY FINE
SAND W/TRACE SILT
42-101" BROWN TO TAN COARSE SAND WITH
GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 52
0-13" TOPSOIL
13-38" BROWN FINE TO VERY FINE SANDY LOAM
38-90" BROWN TO TAN COARSE TO MED. SAND
WITH SOME GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 53
0-13" TOPSOIL
13-32" BROWN FINE TO MED. SANDY LOAM
W/GRAVEL AND COBBLES
32-92" BROWN TO TAN COARSE TO
MED. SAND W/GRAVEL AND MANY COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 54
0-11" TOPSOIL
11-32" BROWN FINE TO VERY FINE SANDY LOAM
32-95" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 55
0-14" TOPSOIL
14-22" BROWN FINE TO VERY FINE SANDY LOAM
22-37" LIGHT BROWN FINE TO VERY FINE SAND W/SILT
37-110" TAN MED. SAND W/GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 56
0-15" TOPSOIL
15-43" LIGHT BROWN SILTY LOAM, SOME FINE SAND
43-110" TAN MED. SAND SOME GRAVEL
FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 57
0-8" TOPSOIL
8-27" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
27-104" TAN TO GRAY MED. TO COARSE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 58
0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
32-98" TAN TO BROWN MED. TO COARSE
SAND WITH GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 59
0-11" TOPSOIL
11-23" BROWN FINE TO VERY FINE SANDY LOAM
23-93" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 60
0-10" TOPSOIL
10-23" BROWN FINE TO VERY FINE SANDY LOAM
23-97" BROWN TO TAN COARSE TO MED.
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 61
0-8" TOPSOIL
8-28" BROWN VERY FINE SANDY LOAM
28-99" TAN TO BROWN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 62
0-9" TOPSOIL
9-24" LIGHT BROWN VERY FINE SANDY LOAM
24-96" BROWN TO TAN COARSE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 63
0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" BROWN TO TAN COARSE TO MED. SAND,
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 64
0-10" TOPSOIL
10-31" BROWN FINE SANDY LOAM
31-91" BROWN TO TAN COARSE TO MED.
SAND W/SOME SILT GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 65
0-13" TOPSOIL
13-30" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
30-100" TAN TO BROWN COARSE SAND
WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 66
0-10" TOPSOIL
10-28" BROWN FINE SANDY LOAM
28-90" TAN TO GRAY MED. TO COARSE
SAND W/SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 67
0-14" TOPSOIL
14-25" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
25-108" TAN TO BROWN MED. TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 68
0-11" TOPSOIL
11-29" BROWN FINE TO MED. SANDY LOAM
29-80" TAN TO GRAY MED. TO COARSE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 69
0-12" TOPSOIL
12-36" YELLOW TAN FINE TO VERY FINE SANDY LOAM
36-93" TAN TO BROWN MED. TO FINE SAND
W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 70
0-14" TOPSOIL
14-36" BROWN FINE TO MED. SANDY LOAM
36-91" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 71
0-8" TOPSOIL
8-36" BROWN FINE TO MED. SANDY LOAM
36-96" TAN TO GRAY MED. TO FINE
SAND W/ GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 72
0-8" TOPSOIL
8-37" LIGHT BROWN FINE TO MED. SANDY LOAM
37-91" TAN TO GRAY MED. TO FINE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 73
0-11" TOPSOIL
11-23" BROWN FINE SANDY LOAM
23-93" YELLOW TAN FINE TO VERY FINE
SANDY LOAM
37-90" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 74
0-6" TOPSOIL
6-39" BROWN FINE SANDY LOAM
39-99" TAN TO BROWN FINE TO MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 75
0-10" TOPSOIL
10-29" LIGHT BROWN FINE SANDY LOAM
29-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 76
0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-96" TAN TO OLIVE/BROWN FINE TO MED.
SAND W/GRAVEL AND COBBLES
STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE

TP 77
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 78
0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-106" BROWN TO TAN MED. FINE SAND
W/ SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 79
0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
38-90" TAN TO GRAY MED. TO FINE
SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 80
0-13" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 81
0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 82
0-9" SAND AND GRAVEL FILL
9-18" TOPSOIL
18-52" LIGHT BROWN FINE TO VERY FINE
SANDY LOAM, SOME SILT
52-101" TAN TO BROWN FINE TO MED.
SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 83
0-9" TOPSOIL
9-31" BROWN FINE SANDY LOAM
31-104" TAN-BROWN COARSE SAND
WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 104"

TP 84
0-11" TOPSOIL
11-38" BROWN FINE SANDY LOAM
38-92" TAN TO BROWN MED-COARSE
SAND W/GRAVEL AND COBBLES
NO MOTTLING
WATER @ 79"
LEDGE-NONE TO 92"

TP 85
0-12" TOPSOIL
12-33" BROWN FINE SANDY LOAM
30-98" TAN TO COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 98"

TP 86
0-8" TOPSOIL
8-30" BROWN FINE SANDY LOAM
30-89" TAN COARSE SAND
W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 89"

PLAN SHOWING
DEEP TEST PIT DATA
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022



THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB#22-007.DWG FBK#327

SANITARY DESIGN CRITERIA

- A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.
 - B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/INCH OR LESS REQUIRES 495 S.F. OF EFFECTIVE LEACHING AREA.
 - C. GST 6236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN. MINIMUM REQUIRED AREA IS 495 S.F./ 26.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.
- HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
 FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
 PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/INCH.

MLSS TABLE								
LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	HF	FF	PF	MLSS	SYSTEM
1	1, 2, 3 & 4	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
2	9, 10, 11 & 12	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
3	13 & 14	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
4	15 & 16	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
5	17 & 18	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
6	21 & 22	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
7	85 & 86	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
8	27 & 28	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
9	29, 30, 31 & 32	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
10	33 & 34	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
11	35 & 36	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
12	37 & 38	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
13	81 & 82	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
14	39 & 40	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
15	41 & 42	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
16	43 & 44	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
17	51 & 52	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
18	53 & 54	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
19	55 & 56	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
20	47 & 48	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
21	61 & 62	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
22	69 & 70	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
23	75 & 76	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
24	73 & 74	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
25	65, 66, 67 & 72	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
26	63 & 64	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236

LOT 1 27" DEEP		WATER QUALITY BASIN 29" DEEP		WATER QUALITY BASIN 30" DEEP		LOT 2 26" DEEP		LOT 2 26" DEEP		LOT 2 29" DEEP		LOT 3 30" DEEP		LOT 4 30" DEEP		LOT 5 29" DEEP	
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING
8:59	2"	8:51	4"	9:00	2 1/2"	9:02	2 1/4"	9:55	2"	1:30	4"	1:32	4"	1:34	3"	1:41	4"
9:04	6 3/4"	8:56	10"	9:05	7 1/2"	9:07	13 1/2"	10:00	8 1/2"	1:35	20"	1:37	13"	1:39	9 1/2"	1:46	10"
9:09	9"	9:01	13 3/4"	9:10	11"	9:12	19"	10:05	13"	1:40	23"	1:42	18"	1:44	13"	1:51	13"
9:14	11"	9:06	16"	9:15	13 1/2"	9:17	22 1/2"	10:10	17"	1:45	24 1/2"	1:47	20 1/2"	1:49	15 1/2"	1:56	15 1/2"
9:19	12 1/2"	9:11	18"	9:20	16"	9:22	24 1/2"	10:15	19 1/2"	1:50	25 1/2"	1:52	23"	1:54	18"	2:01	17 1/2"
9:24	14"	9:16	20"	9:25	17 1/2"	9:27	26"	10:20	22"	1:55	26 1/2"	1:57	24"	1:59	20"	2:06	18"
9:29	15 1/2"	9:21	21"	9:30	19 1/2"	9:32	DRY	10:25	24"	2:00	27 1/2"	2:02	25"	2:04	21 1/2"	2:11	20 1/2"
9:34	17"	9:26	22"	9:35	20 1/2"	9:37	DRY	10:30	25"	2:05	28 1/2"	2:07	25 3/4"	2:09	23"	2:16	22"
9:39	18 1/4"	9:31	23"	9:40	21 1/2"	9:42	DRY	10:35	26"	2:10	DRY	2:12	26 3/4"	2:14	24 1/2"	2:21	23 1/2"
9:44	19 1/4"	9:36	24"	9:45	22 1/2"	9:47	DRY	10:40	DRY	2:15	DRY	2:17	27 3/4"	2:19	26"	2:26	25"
9:49	20 1/4"	9:41	25"													2:31	26 1/2"

LOT 6 27" DEEP		LOT 7 27" DEEP		LOT 7 27" DEEP		LOT 8 30" DEEP		LOT 9 32" DEEP		LOT 9 30" DEEP		LOT 10 30" DEEP		LOT 11 28" DEEP			
TIME	READING	TIME	READING	TIME	READING												
9:13	4"	9:10	4"	9:18	3"	11:28	4"	10:41	9"	10:39	7"	10:45	3"	10:45	3"		
9:18	11 1/2"	9:15	14 1/2"	9:23	7"	11:33	10"	10:46	12 1/2"	10:44	11"	10:44	12"	10:44	12"		
9:23	16"	9:20	17 1/2"	9:28	10"	11:38	12 1/2"	10:51	15"	10:49	15"	10:55	14 1/4"	10:55	14 1/4"		
9:28	18"	9:25	19 1/2"	9:33	13 3/4"	11:43	14 1/2"	10:56	17"	10:54	19 1/2"	11:00	15 1/4"	11:00	15 1/4"		
9:33	20"	9:30	22"	9:38	13"	11:48	16 1/2"	11:01	19"	10:59	20 1/2"	11:05	17 1/4"	11:05	17 1/4"		
9:38	21 1/2"	9:35	23"	9:43	14 1/4"	11:53	17 1/4"	11:06	19 1/2"	11:04	22"	11:10	19 1/4"	11:10	19 1/4"		
9:43	22"	9:40	24"	9:48	15 1/4"	11:58	19"	11:11	20 1/2"	11:09	23"	11:15	21"	11:15	21"		
9:48	23 1/2"	9:45	25"	9:53	16 1/2"	12:03	20 1/2"	11:16	21 1/2"	11:14	24"	11:20	22 1/4"	11:20	22 1/4"		
9:53	24 1/2"	9:50	26"	9:58	17 7/8"	12:08	21 1/8"	11:21	22 1/2"	11:19	25"	11:25	23 1/4"	11:25	23 1/4"		
9:58	25 1/2"	9:55	DRY	10:03	19 1/2"			11:26	23 1/2"	11:24	25 3/4"	11:30	24 1/2"	11:30	24 1/2"		
10:03	DRY											11:35	25 3/4"				

LOT 12 28" DEEP		LOT 13 27" DEEP		LOT 14 27" DEEP		LOT 15 29" DEEP		LOT 16 26" DEEP		LOT 17 29" DEEP		LOT 18 30" DEEP		LOT 19 29" DEEP		LOT 19 30" DEEP	
TIME	READING																
10:37	3"	8:48	2"	8:41	4"	8:43	5"	8:40	5 1/2"	1:50	4 1/4"	1:30	2 1/2"	1:27	2 1/2"	1:27	2 1/2"
10:42	6 3/4"	8:53	9"	8:46	8 1/4"	8:48	10 3/4"	8:45	9 1/2"	1:55	11 7/8"	1:35	9 1/2"	1:32	8 1/4"	1:32	8 1/4"
10:47	9 1/4"	8:58	14"	8:51	10 1/4"	8:53	15"	8:50	15 1/2"	2:00	15 1/2"	1:40	13 1/2"	1:59	15"	1:37	13"
10:52	12 1/2"	9:03	18"	8:56	12 1/2"	8:58	17 1/2"	8:55	14"	2:05	18"	1:45	15"	1:42	18 1/2"	1:42	15 1/2"
10:57	15"	9:08	20"	9:01	15"	9:03	19 1/2"	9:00	15 1/2"	2:10	21"	1:50	17 1/2"	1:09	20 1/2"	1:47	18"
11:02	17"	9:13	22"	9:06	17"	9:08	21"	9:05	16 1/2"	2:15	23"	1:55	20"	1:14	22"	1:52	19 1/2"
11:07	18"	9:18	23"	9:11	18"	9:13	22"	9:10	17 3/4"	2:20	25"	2:00	21 1/2"	1:19	23 1/2"	1:57	21 1/2"
11:12	20"	9:23	24"	9:16	19"	9:18	23"	9:15	18 1/2"	2:25	27"	2:05	22 1/2"	11:24	25"	2:02	23"
11:17	21"	9:28	25"	9:21	20"	9:23	23 3/4"	9:20	19 1/2"	2:30	28 7/8"	2:10	23 1/2"	11:29	26 1/2"	2:07	24 1/2"
11:22	22 1/8"	9:33	26"	9:26	21"	9:28	24 1/2"	9:25	20 1/2"	2:35	DRY	2:15	24 1/2"			2:12	26"
11:27	23 1/8"	9:38	DRY	9:31	22"	9:33	25 1/2"	9:30	21 1/2"								

LOT 20 28" DEEP		LOT 21 30" DEEP		LOT 22 29" DEEP		LOT 22 28" DEEP		LOT 23 28" DEEP		LOT 23 29" DEEP		LOT 24 28" DEEP		LOT 25 29" DEEP		LOT 26 30" DEEP	
TIME	READING																
1:38	5"	10:18	2 1/2"	11:46	3"	10:15	3"	11:23	3"	11:45	3"	12:27	3"	12:30	3"	11:43	3 1/2"
1:43	11"	10:23	12"	11:51	6 1/2"	10:20	11 1/2"	11:28	11 3/4"	11:50	7 3/4"	12:32	7 1/2"	12:35	12"	11:48	8"
1:48	13 1/2"	10:28	15 1/2"	11:56	9"	10:25	16 1/2"	11:33	15"	11:55	11 1/2"	12:37	11 1/2"	12:40	17 1/2"	11:53	10"
1:53	16"	10:33	19 1/2"	12:01	12"	10:30	21"	11:38	18"	12:00	13 3/4"	12:42	14"	12:45	20"	10:58	13"
1:58	16"	10:38	21"	12:06	13 1/2"	10:35	24"	11:43	21 1/2"	12:05	16"	12:47	16"	12:50	23"	12:03	14 1/2"
2:03	19"	10:43	22 1/2"	12:11	14 1/2"	10:40	25 1/2"	11:48	24"	12:10	18"	12:52	18"	12:55	25"	12:08	16"
2:08	20 1/8"	10:48	24"	12:16	16"	10:45	27"	11:53	26"	12:15	20"	12:57	19"	1:00	26 1/2"	12:13	17"
2:13	21 1/2"	10:53	25"	12:21	17 1/2"	10:50	DRY	11:58	DRY	12:20	21"	1:02	20"	1:05	28"	12:18	18 1/2"
2:18	22 1/2"	10:58	25 3/4"	12:26	18 1/2"					12:25	22 1/4"	1:07	21"	1:10	DRY	12:23	20"
2:23	23 1/2"	11:03	26 3/4"	12:31	19 1/2"					12:30	23 1/2"	1:12	22"			12:28	21"
2:28	24 1/2"			12:36	20 1/2"					12:35	25"						

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

I/FWC APPLICATION# _____

APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____

PLAN SHOWING
 PERCOLATION TEST DATA,
 SEPTIC SYSTEM DESIGN CRITERIA
 AND
 MINIMUM LEACHING SYSTEM SPREAD
 RESUBDIVISION
 PROPERTY OF
 AVERY BROOK HOMES LLC
 94, 96, 98 AND 100
 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT

DIETER & GARDNER
 LAND SURVEYORS + PLANNERS
 1641 CONNECTICUT ROUTE 12
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JULY 2022
 REVISED: OCTOBER 31, 2022

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____
THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

IWVC APPLICATION# _____
APPROVED. _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA. NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

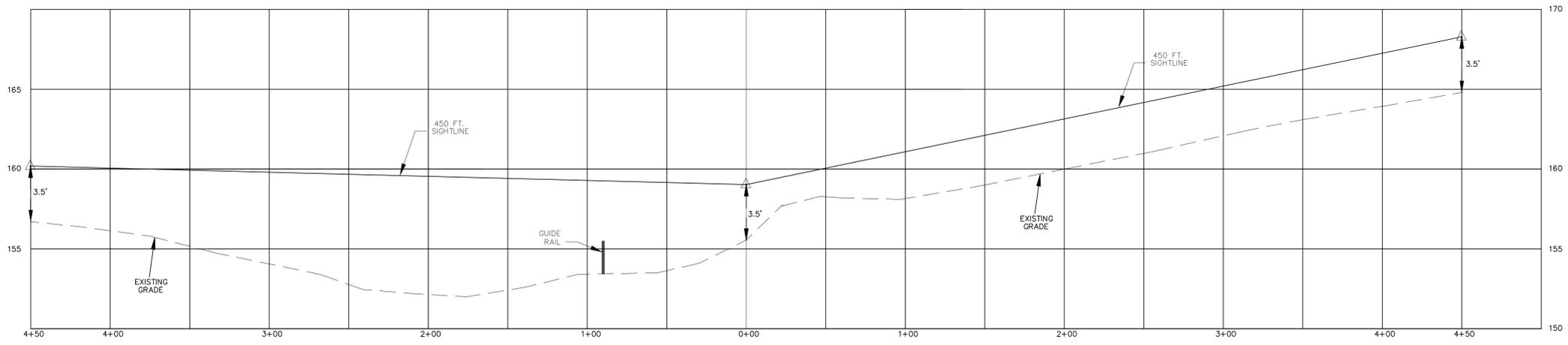
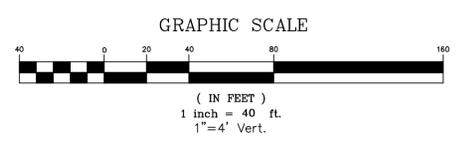
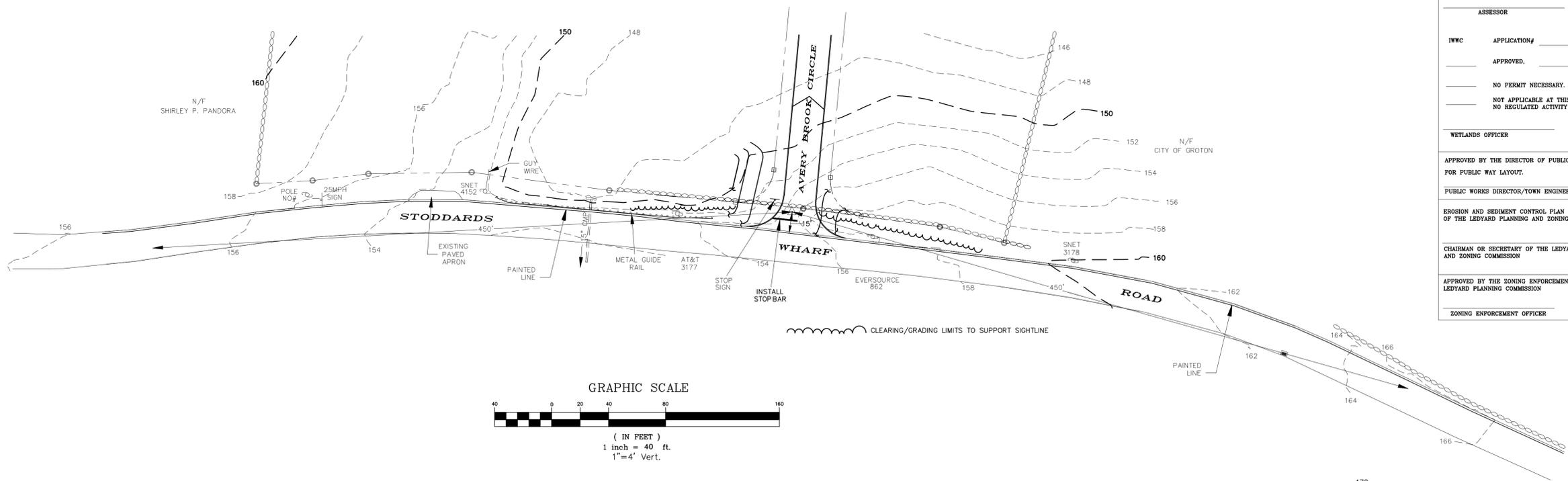
PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION

ZONING ENFORCEMENT OFFICER _____ DATE _____



LEGEND

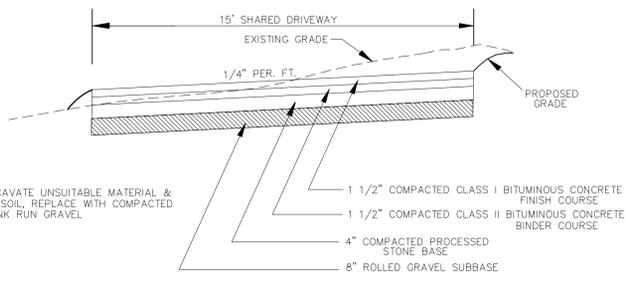
○○○○○○○○	STONE WALL
— — — — —	PROPERTY LINE
— — — — —	STREET LINE
- - - - -	EXISTING CONTOUR
— — — — —	PROPOSED CONTOUR
⊙	UTILITY POLE

SIGHTLINE
DEMONSTRATION PLAN
PROPERTY OF
AVERY BROOK HOMES LLC
STODDARDS WHARF ROAD
LEDYARD, CONNECTICUT
SCALE: 1"=40' HORIZ.
1"=4' VERT.
JULY 2022
REVISED: OCTOBER 31, 2022

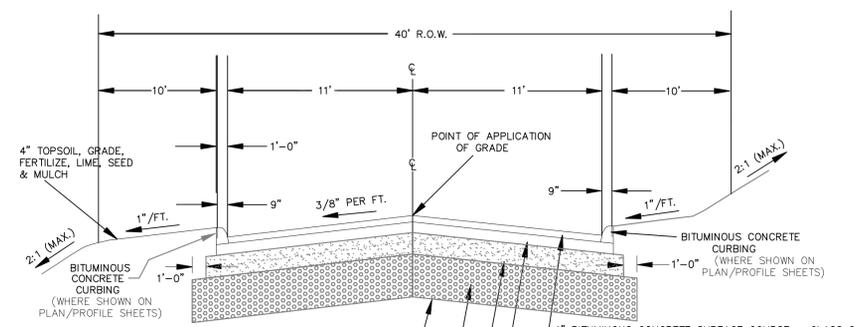
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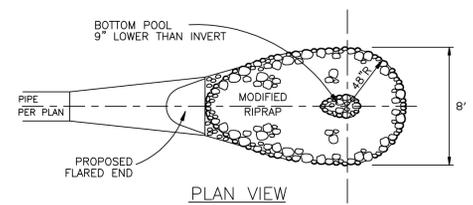
APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____	
CHAIRMAN OR SECRETARY _____	DATE _____
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____	
LOT NUMBERS ASSIGNED BY THE ASSESSOR _____	
ASSESSOR _____	DATE _____
IWVC APPLICATION# _____	APPROVED, _____
NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)	
NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)	
WETLANDS OFFICER _____	DATE _____
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____	
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CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____	DATE _____
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____	
ZONING ENFORCEMENT OFFICER _____	DATE _____



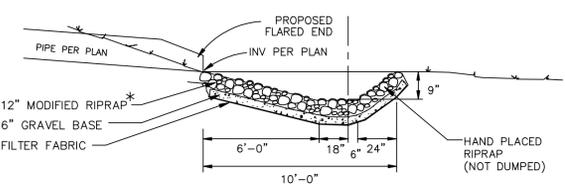
TYPICAL PAVED COMMON DRIVEWAY CROSS-SECTION
NOT TO SCALE



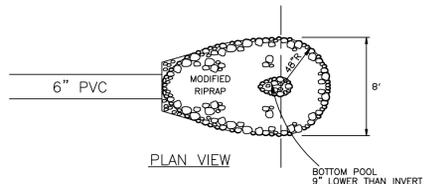
- ALL MATERIAL THICKNESS ARE FOR COMPACTED DEPTH
- IF BINDER COURSE IS LEFT AS A TOP COURSE FOR AN EXTENDED PERIOD, THE DIR OF PUBLIC WORKS MAY REQUIRE THAT A TACK COAT OF BITUMINOUS MATERIAL MAY BE APPLIED BEFORE LAYING THE BITUMINOUS CONCRETE SURFACE COURSE.
- SUBBASE DEPTH SHALL BE INCREASED TO 18" WHERE LEDGE ROCK IS ENCOUNTERED.
- FOR CONSTRUCTION MATERIAL STANDARDS, REFER TO STATE OF CONNECTICUT, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 613, AS AMENDED.



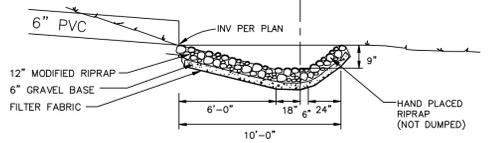
PLAN VIEW



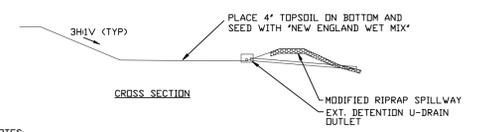
SECTION VIEW
PREFORMED SCOUR HOLE
NOT TO SCALE
FOR FLARED END UNIT



PLAN VIEW

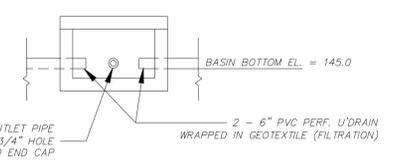


SECTION VIEW
PREFORMED SCOUR HOLE
NOT TO SCALE

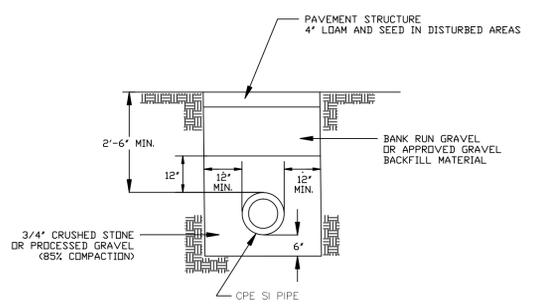


NOTES:
THE PURPOSE OF THE WATER QUALITY BASIN IS TO REMOVE SEDIMENT FROM THE WATER QUALITY VOLUME (WQV). THE BASIN IS SIZED TO HOLD THE WQV (3,600 CUBIC FEET) WHICH WILL BE FILTERED THROUGH THE SURFACE DRAIN AND SLOWLY RELEASED INTO THE WETLANDS.
STORMS THAT EXCEED THE WATER QUALITY VOLUME WILL FLOW OUT THE SPILLWAY.

WATER QUALITY BASIN
(N.T.S.)

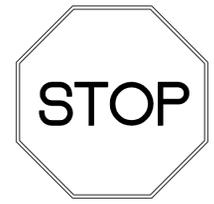


D-BOX OUTLET
EXTENDED DETENTION
UNDERDRAIN OUTLET
NOT TO SCALE



DRAINAGE PIPE TRENCH
NOT TO SCALE

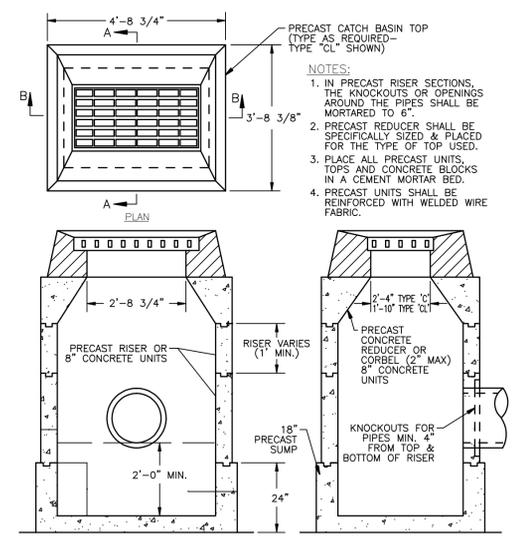
NOTE:
1. IF PIPE IS PLACED IN OR ON LEDGE, ALL LEDGE WITHIN 12\"/>



SECURE TO 1 1/2\"/>

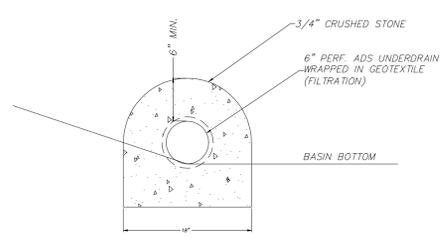
NOTE:
SIGN TO BE INSTALLED IN ACCORDANCE WITH STATE OF CONNECTICUT D.D.T. STANDARDS

STOP SIGN
NOT TO SCALE



- NOTES:
- IN PRECAST RISER SECTIONS, THE KNOCKOUTS OR OPENINGS AROUND THE PIPES SHALL BE MORTARED TO 6\"/>
 - PRECAST REDUCER SHALL BE SPECIFICALLY SIZED & PLACED FOR THE TYPE OF TOP USED.
 - PLACE ALL PRECAST UNITS, TOPS AND CONCRETE BLOCKS IN A CEMENT MORTAR BED.
 - PRECAST UNITS SHALL BE REINFORCED WITH WELDED WIRE FABRIC.

SECTION B-B SECTION A-A
PRECAST CATCH BASIN
NOT TO SCALE



EXTENDED DETENTION UNDERDRAIN
NOT TO SCALE

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EMAIL: DIETER.GARDNER@YAHOO.COM

PLAN SHOWING
CONSTRUCTION DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT

JULY 2022
REVISED: OCTOBER 31, 2022

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EROSION & SEDIMENT CONTROL PLAN

NARRATIVE:

PURPOSE AND DESCRIPTION OF PROJECT.

THE PURPOSE OF THIS PROJECT IS TO SUBDIVIDE 9.21 ACRES OF LAND TO CREATE 26 RESIDENTIAL BUILDING LOTS. EACH LOT WILL BE SERVICED BY ON SITE WELL AND SEPTIC SYSTEM. APPROXIMATELY 1330 LINEAR FEET OF ROAD WILL BE CONSTRUCTED. THE PAVEMENT WIDTH IS 22 FEET. THE TOTAL AREA OF NEW PAVEMENT ASSOCIATED WITH THE ROAD CONSTRUCTION WILL BE 30,400± SQUARE FEET. ROAD DRAINAGE HAS BEEN DESIGNED BY A PROFESSIONAL ENGINEER, AND INCLUDES IN PLACES CURBED PAVEMENT AND CATCH BASINS WITH 2 FOOT SUMP DEPTHS. THE UPLANDS ARE GENTLY SLOPING AND MOSTLY OLD PASTURE. THE UPLAND SOILS ON THE PROJECT SITE INCLUDE WELL DRAINED CANTON HINCKLEY AND AGAWAM SOILS.

IT IS ANTICIPATED THAT ONCE WORK ON THE PUBLIC IMPROVEMENTS BEGINS, IT WILL CONTINUE UNTIL THE PROJECT IS COMPLETED. IT IS ANTICIPATED THAT THE ROAD CONSTRUCTION WILL BE COMPLETED WITHIN ONE YEAR OF COMMENCEMENT.

PETER GARDNER 860-464-7455 (OR OWNER AT TIME OF CONSTRUCTION) SHALL BE RESPONSIBLE FOR OVERSEEING THE INSTALLATION AND PROPER MAINTENANCE OF ANY EROSION & SEDIMENT CONTROL MEASURES EMPLOYED IN IMPLEMENTING THIS PLAN.

TOTAL AREA OF THE PROJECT SITE AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY ROAD AND DRAINAGE CONSTRUCTION ACTIVITIES.

THE TOTAL PROJECT AREA IS 9.21 ACRES OF WHICH 0.9± ACRES WILL BE DISTURBED TO FACILITATE THE CONSTRUCTION OF THE ROAD AND DRAINAGE. ESTIMATE OF TOTAL AREA TO BE DISTURBED 3.9± ACRES FOR HOME/DRIVE AND SEPTIC CONSTRUCTION.

PLANNED START AND COMPLETION DATES FOR THE PROJECT.

IT IS ANTICIPATED THAT THE PROJECT WILL COMMENCE DURING FALL/WINTER OF 2022/2023 AND BE COMPLETED IN THE FALL OF 2023.

DESIGN CRITERIA, CONSTRUCTION DETAILS AND MAINTENANCE PROGRAM FOR THE EROSION & SEDIMENT CONTROL MEASURES TO BE USED.

SILT FENCE AND SILT FENCE BACKED WITH HAY BALES FOR STRUCTURAL SUPPORT WILL BE USED. ALL SILT FENCE SEDIMENT BARRIERS SHALL BE MAINTAINED SUCH THAT SEDIMENTS WILL BE REMOVED WHEN REACHING A HEIGHT OF 0.5 FEET. BREACHES IN SILT FENCE SHALL BE REPAIRED IMMEDIATELY. THE SILT FENCE SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 0.5 INCH IN A 24 HOUR PERIOD.

CONSTRUCTION ENTRANCE DESIGN AND MAINTENANCE CRITERIA FROM 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL. ENTRANCE. THE CONSTRUCTION ENTRANCES WILL BE CONSTRUCTED OF ANGULAR STONE IN A SIZE AND GRADATION CORRESPONDING TO ASTM C-33, SIZE NO. 2 OR 3, OR DOT STANDARD SPECIFICATIONS SECTION M.01.01 SIZE #3. THE CONSTRUCTION ENTRANCE WILL BE 12 FEET WIDE AND 50 FEET LONG.

CONSTRUCTION: CONSTRUCTION ENTRANCES AREA WILL BE CLEARED AND GRUBBED. AREAS WILL THEN BE ROUGH GRADED. A 4-INCH LAYER OF CRUSHED STONE WILL BE SPREAD AS DEPICTED IN THE DETAILS.

MAINTENANCE: THE CONSTRUCTION ENTRANCE WILL BE MAINTAINED IN A CONDITION THAT WILL MITIGATE TRACKING AND WASHING OF SEDIMENT ONTO PAVED SURFACES. THE CONSTRUCTION ENTRANCE WILL BE TOP DRESSED AS NEEDED TO PROVIDE FUNCTIONALITY. ADDITIONAL LENGTH MAY BE ADDED IF ON-SITE CONDITIONS WARRANT SUCH EXTENSION. ANY ACCUMULATED OR SPILLED SEDIMENTS WILL BE CLEANED IMMEDIATELY, AND DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THIS EROSION & SEDIMENT CONTROL PLAN.

STOCKPILE MANAGEMENT WILL BE DONE IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL. (CHAPTER 4). TOPSOIL STOCKPILES WILL BE LOCATED AS DEPICTED ON THE PLANS, AND WILL BE TREATED AS DISTURBED GROUND, I.E.: SURROUNDED BY SILT FENCE, AND SEEDED TO GRASS AFTER ALL THE TOPSOIL TO BE STRIPPED IS PLACED IN THE STOCKPILE. STOCKPILE SLOPES SHALL NOT EXCEED 2:1.

TOPSOILING SHALL TAKE PLACE AS AREAS ARE BROUGHT TO GRADE. THE TOPSOIL THAT SHALL BE SPREAD IS OF NATURAL ORIGIN AND WILL BE TAKEN FROM THE TOPSOIL STOCKPILE(S) REFERRED TO ABOVE. STONES LARGER THAN 2 INCHES IN DIAMETER AND OTHER DEBRIS WILL BE REMOVED FROM THE TOPSOIL WITH A RAKE. TOPSOIL SHALL BE SPREAD AT A MINIMUM DEPTH OF 4 INCHES OVER ALL DISTURBED AREAS. IN ORDER TO "BOND" THE TOPSOIL TO THE SUBSOIL, THE SUBGRADE WILL BE LOOSENEED BY "TRACKING" WITH A BULLDOZER IMMEDIATELY BEFORE APPLYING TOPSOIL. TOPSOIL WILL NOT BE PLACED IF THE SUBGRADE OR THE TOPSOIL IS FROZEN OR TOO WET. HEAVY RUBBER-TIRED VEHICLES WILL BE EXCLUDED FROM THE NEWLY TOPSOILED AREAS TO PREVENT EXCESSIVE COMPACTION WHICH COULD HINDER SEED GERMINATION AND SEEDLING GROWTH.

PERMANENT SEEDING WILL BE DONE AS DISTURBED AREAS ARE BROUGHT TO GRADE AND TOPSOILED AS LONG AS SUCH SEEDING IS DONE BETWEEN APRIL 1 AND JULY OR AUGUST 15 THROUGH OCTOBER 31. WITHIN 7 DAYS AFTER TOPSOIL IS APPLIED THE APPROPRIATE SEED MIX WILL BE BROADCAST AT THE PRESCRIBED RATE FOR THAT PARTICULAR MIX. THE SELECTED SEED MIX WILL BE FROM THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, FIGURE PS-3. PRIOR TO SEEDING, FERTILIZER WILL BE APPLIED AT THE RATE OF 7.5 PER 1,000 SQUARE FEET (10-10-10 OR EQUIVALENT), AND GROUND LIMESTONE WILL BE APPLIED AT THE RATE OF 200 POUNDS PER 1,000 SQUARE FEET. THE LIME AND FERTILIZER WILL BE LIGHTLY WORKED TO A DEPTH OF 3 TO 4 INCHES. SEED SHALL BE APPLIED UNIFORMLY USING A CYCLONE SEEDER (HYDROSEEDING MAY BE USED IN LIEU OF CONVENTIONAL SEEDING METHODS). HAY MULCH WILL BE APPLIED AT THE RATE OF 100 POUNDS (APPROXIMATELY 2 BALES) PER 1,000 SQUARE FEET. WHERE SLOPES EXCEED 10 PERCENT, JUTE NETTING SHALL BE USED TO ANCHOR THE HAY MULCH IN PLACE. ANY SUCH NETTING WILL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE: THE SEEDBED WILL BE INSPECTED AT LEAST ONCE PER WEEK, AND WITHIN 24 HOURS OF A RAINFALL IN AN AMOUNT EXCEEDING 0.5 INCHES IN 24 HOURS. IN ANY AREAS THAT SUSTAIN DAMAGE, THE TOPSOIL WILL BE REAPPLIED AND "SMOOTHED," AND RESEED AS DESCRIBED ABOVE. THE NEWLY ESTABLISHED GRASS WILL NOT BE MOWN UNTIL IT REACHES A HEIGHT OF 6 INCHES. MOWING WILL NOT TAKE PLACE WHEN THE GROUND SURFACE IS WET. THE FIRST MOWING WILL TAKE 33 TO 50 PERCENT OF THE GRASS HEIGHT (I.E.: NOT BELOW 3 INCHES). MULCH MATERIALS WILL NOT BE REMOVED, BUT WILL BE ALLOWED TO DISINTEGRATE OVER TIME.

WHERE BARE GROUND NEEDS TO BE PROTECTED FOR RELATIVELY SHORT PERIODS, OR WHERE THE SEEDING SEASONS FOR PERMANENT SEEDINGS CAN NOT BE ADHERED TO, TEMPORARY SEEDING MAY BE USED. THE RECOMMENDED SEED MIX WILL VARY UPON CIRCUMSTANCES, BUT SHALL BE IN COMPLIANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, FIGURE TS-2, TEMPORARY SEEDING RATES AND DATES. WHERE THE SEASON PRECLUDES ANY TYPE OF SEEDING, AN ANCHORED MULCH WILL BE EMPLOYED TO PROTECT BARE SOIL AREAS.

CONSTRUCTION SEQUENCE. PRIOR TO THE COMMENCEMENT OF ANY EARTH DISTURBANCES, THE DEVELOPER AND HIS CONTRACTOR SHALL MEET WITH TOWN STAFF FOR A PRECONSTRUCTION CONFERENCE.

- INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON PLAN.
- INSTALL EROSION AND SEDIMENT CONTROL.
- CONSTRUCT THE STORMWATER QUALITY BASIN. TOPSOIL WILL BE APPLIED TO THE BASIN SIDESLOPES IMMEDIATELY AFTER CONSTRUCTION, AND THE SIDESLOPES WILL BE SEEDED INSTALL SEDIMENT BARRIERS ALONG THE ROAD AND IN THE AREA OF THE BASIN AS DEPICTED ON THE PLANS.
- STRIP TOPSOIL FROM THE ROADWAY AND STOCKPILE TOPSOIL ACCORDING TO THE PLAN. SEED STRIPPED AREAS THAT ARE NOT TO BE WORKED FOR 30 DAYS IMMEDIATELY WITH PERENNIAL RYEGRASS AT THE RATE OF 40 LBS./ACRE.
- GRADE THE ROAD TO ATTAIN THE PLANNED SUBGRADE PROFILE AND GRADE SIDESLOPES TO PLAN.
- APPLY TOPSOIL AND PERMANENT SEED MIX AND APPLY AND ANCHOR MULCH TO ALL FINISHED SLOPES.
- INSTALL ALL DRAINAGE STARTING AT THE OUTFALL AND PROCEEDING UPGRADIENT. THE CONTRACTOR WILL ENSURE THAT ADEQUATE FLOW IS PROVIDED AT THE OUTLET OF THE DRAINAGE SYSTEM SO THAT SEDIMENTS WILL BE PREVENTED FROM MIGRATING OFF THE SITE. NO WATER WILL BE ALLOWED TO ENTER THE DRAINAGE SYSTEM UNTIL THE OUTLET IS PROTECTED. ALL DRAINAGE COMPONENTS WILL BE CHECKED ON A REGULAR BASIS AND CLEANED AS NEEDED TO MAINTAIN PROPER FUNCTION.
- PLACE, GRADE AND COMPACT THE SUBGRADE AGGREGATE TO ESTABLISH THE ROADWAY BASE. TOPSOIL AND GRADE ALL SLOPES/DISTURBED AREAS WITHIN 2 FEET OF THE OUTSIDE OF THE PROPOSED CURBS.
- LAY DOWN FIRST COURSE OF BITUMINOUS PAVEMENT.
- INSTALL CURBING (WHERE REQUIRED).
- APPLY TOP COURSE OF BITUMINOUS PAVEMENT.
- REMOVE SILT FENCE AFTER TOPSOIL STABILIZED.

DISPOSAL OF SEDIMENTS - ANY SEDIMENT REMOVED FROM ANY EROSION AND SEDIMENT CONTROL MEASURE AS PART OF SITE MAINTENANCE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH THE INTENT OF THIS PLAN. NO SEDIMENT SHALL BE DEPOSITED IN ANY WETLAND AREA.

FIELD CHANGES - IF FIELD MODIFICATIONS OF PLANNED MEASURES ARE NEEDED TO PROPERLY ADDRESS ANY EROSION OR SEDIMENTATION SITUATION, SUCH CHANGES MAY BE MADE ONLY AFTER NOTIFYING TOWN STAFF. ADDITIONAL NON-STRUCTURAL MEASURES MAY BE ADDED WITHOUT PRIOR NOTIFICATION.

STORMWATER QUALITY BASIN CONSTRUCTION NOTES:

- STORMWATER QUALITY BASIN EMBANKMENTS SHALL BE CONSTRUCTED OF SILTY SAND AND/OR CLAYEY MATERIALS. ON-SITE BORROW MATERIAL MAY BE USED IF SUITABLE DEPOSITS ARE FOUND. EMBANKMENT FILL SHALL CONTAIN AT LEAST 15% BY WEIGHT OF MATERIAL PASSING THE #200 SIEVE AND NOT MORE THAN 50% PASSING THE #20 SIEVE.
- EMBANKMENT FILL SHALL HAVE NO STONES LARGER THAN 6" IN THEIR GREATEST DIMENSION. NO STONES LARGER THAN 2" IN THEIR GREATEST DIMENSION SHALL BE ALLOWED WITHIN 2 FEET OF STRUCTURES OR PIPES.
- ALL FILL MATERIAL SHALL BE FREE OF TOPSOIL, ROOTS, STUMPS, ORGANICS, FROZEN MATERIAL AND OTHER DELETERIOUS MATTER.
- ALL EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% MINIMUM RELATIVE COMPACTIONS DETERMINED BY ASTM D1557 - MODIFIED PROCTOR. THE MAXIMUM LOOSE LIFT THICKNESS OF EMBANKMENT FILL SHALL BE 12".
- ALL TOPSOIL, ORGANICS, ROOTS AND OTHER DELETERIOUS MATTER SHALL BE REMOVED FROM THE EXISTING GROUND SURFACE PRIOR TO CONSTRUCTION OF THE PROPOSED EMBANKMENTS.
- ALL EMBANKMENTS AND DISTURBED AREAS OF THE STORMWATER QUALITY BASIN SHALL BE PERMANENTLY STABILIZED WITH 4" LOAM. SEED AND MULCH, SUITABLE HYDROSEEDING EQUIPMENT MAY BE USED FOR APPLICATION OF SEED, MULCH AND/OR FERTILIZER. THE FOLLOWING SEED MIX SHALL BE USED IN THESE AREAS.

VARIETY	LBS./ACRE
CREeping RED FESCUE	20
REDTOP	2
BENT GRASS	15
	TOTAL 37

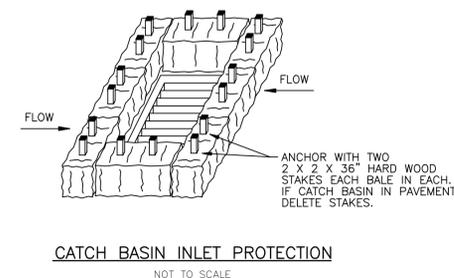
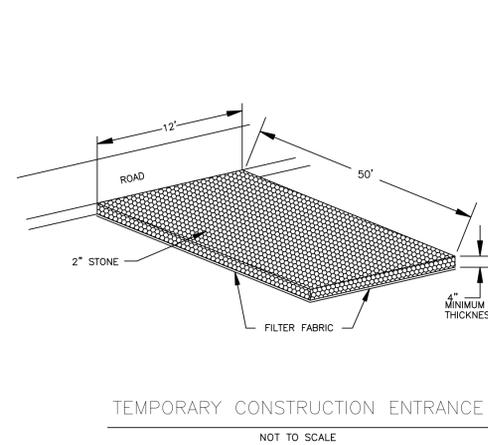
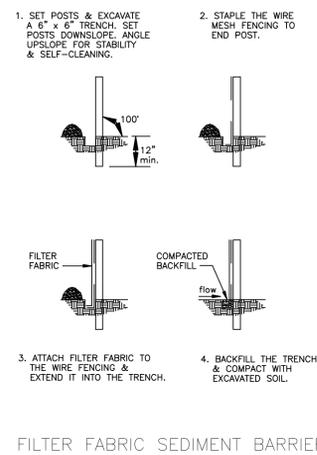
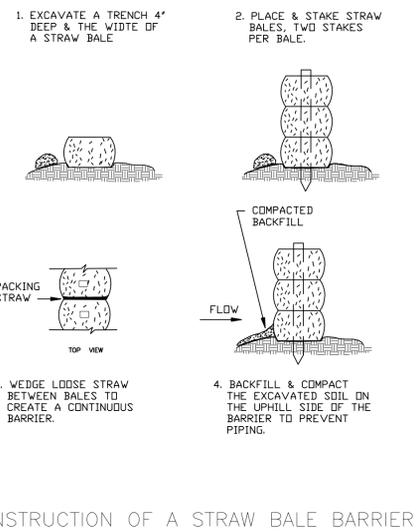
STORMWATER QUALITY BASIN OPERATION AND MAINTENANCE NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS PRIOR TO COMPLETION OF THE ROADWAY.
- DURING THE FIRST YEAR OF OPERATION, THE BASIN SHALL BE INSPECTED ON WEEKLY BASIS OR WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCH OR GREATER. ANY EROSION OF EMBANKMENTS OR OUTLET AREAS SHALL BE REPAIRED PROMPTLY. ANY DEBRIS SHALL BE REMOVED AND DISPOSED OF. SEDIMENTATION THAT WOULD INTERFERE WITH PROPER OPERATION OF THE BASIN SHALL BE REMOVED AND DISPOSED OF AND THE AREA RESTORED AND STABILIZED AS REQUIRED.
- AFTER THE BASIN HAS BEEN IN OPERATION FOR ONE YEAR, INSPECTIONS SHALL BE PERFORMED QUARTERLY OR WITHIN 24 HOURS AFTER A STORM EVENT OF 2.0 INCHES OR GREATER. QUARTERLY INSPECTIONS SHALL INCLUDE THE FOLLOWING ITEMS:
 - NOXIOUS WEEDS SHALL BE REMOVED. PERFORM ANY MOWING OPERATIONS REQUIRED.
 - INSPECT EMBANKMENTS FOR ANY WOODY GROWTH. ALL TREES, VINES AND OTHER WOODY PLANTS SHALL BE REMOVED AND VOIDS LEFT FROM THEIR REMOVAL SHALL BE REPAIRED.
 - INSPECT EMBANKMENTS FOR ANY ANIMAL BURROWS. ALL BURROWS AND VOIDS SHALL BE REPAIRED IMMEDIATELY.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN FOREBAY AND OTHER AREAS TO RESTORE ORIGINAL DESIGN GRADES. DISTURBED AREAS SHALL BE RESTABILIZED AS REQUIRED AFTER REMOVAL OF SEDIMENT.
 - INLETS AND OUTLETS SHALL BE INSPECTED FOR SCOUR DAMAGE AND EROSION AND REPAIRED AS REQUIRED.
 - ANY EVIDENCE OF PIPING OR SEEPAGE AT THE TOE OF EMBANKMENTS OR AROUND INLET/OUTLET STRUCTURES SHALL BE INVESTIGATED BY A QUALIFIED PROFESSIONAL ENGINEER AND REPORTED TO THE TOWN. REQUIRED REPAIRS TO MAINTAIN THE PROPER FUNCTION OR REPAIR POTENTIAL STRUCTURAL DEFICIENCIES IN THE BASIN SHALL BE IMPLEMENTED WITHIN ONE MONTH OF DISCOVERY OF THE PROBLEM OR AT DISCRETION OF THE RESPONSIBLE PROFESSIONAL ENGINEER PERFORMING THE INVESTIGATION OR DESIGNING SUCH REPAIRS. THE ENGINEER SHALL CERTIFY THAT ALL REPAIRS ARE PERFORMED TO HIS/HER SATISFACTION AND SHALL PROVIDE SUCH CERTIFICATION TO THE TOWN.

STORMWATER SYSTEM OPERATION AND MAINTENANCE NOTES:

- PROVIDE ANNUAL STREET SWEEPING, PREFERABLY AFTER FINAL SNOW MELT TO ALLEVIATE SEDIMENT BUILDUP IN CATCH BASIN SUMPS AND TO INSURE EFFICIENT TSS REMOVAL FROM STORMWATER.
- REMOVE SEDIMENT FROM CATCH BASIN SUMPS WHEN SEDIMENT REACHES HALF THE DEPTH OF THE SUMP.
- INSPECT CATCH BASINS FOR TRASH AND DEBRIS BI-ANNUALLY. REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM PIPE INLETS AND OUTLETS TO PREVENT CLOGGING.
- REMOVE ACCUMULATED TRASH AND LEAVES FROM CATCH BASIN GRATES TO INSURE ADEQUATE GRATE INFLOW CAPACITIES.

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____	
CHAIRMAN OR SECRETARY	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____	
LOT NUMBERS ASSIGNED BY THE ASSESSOR	
ASSESSOR	DATE
IWC	APPLICATION#
	APPROVED.
NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)	
NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)	
WETLANDS OFFICER	DATE
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.	
PUBLIC WORKS DIRECTOR/TOWN ENGINEER	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION	
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION	DATE
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION	
ZONING ENFORCEMENT OFFICER	DATE



PLAN SHOWING
EROSION AND SEDIMENT CONTROL
NARRATIVE AND DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT

JULY 2022
REVISED: OCTOBER 31, 2022

© THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-077.DWG

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
P.O. BOX 335
1641 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 464-7455
EMAIL: DIETER.GARDNER@YAHOO.COM

TOWN OF LEDYARD REVISED NOVEMBER 21, 2022
INLAND WETLANDS AND WATERCOURSES COMMISSION (IWWC)
APPLICATION FOR PERMIT (Or Commission ruling that a permit is not needed)

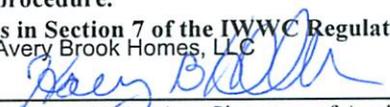
Street No./ Name: _____

Application No. _____
Receipt Date _____

Date Submitted _____

Applicant/Agent Avery Brook Homes, LLC Owner (if different) Avery Brook Homes, LLC
Address 1641 Connecticut Route 12, Gales Ferry, Connecticut 06335 Address of Owner Same as Applicant
Phones (860) 464-7455 / (860) 334-0081 cell Phone (860) 464-7455

- I have received information on the Army Corps of Engineers permit procedure.
- I have read and have included all the application and site plan requirements in Section 7 of the IWWC Regulations

Avery Brook Homes, LLC

Harry B. Heller, its Signature of Applicant/ Agent
Authorized Agent

Location of Property 94, 96, 98 and 100 Stoddards Wharf Road

Tax Assessor's Map No. 65 Zoning District R-60* *Affordable housing subdivision

Written Description of Proposed Activity Upland review area activities in conjunction with the siting of primary and reserve septic areas, grading and/or dwelling houses on proposed Lots 2, 3, 4, 5, 6 and primary and reserve septic areas on proposed lots 10, 11, 12 and 13 in upland review areas, all as depicted on a plan entitled "Property of Avery Brook Homes LLC"

94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1" = 40' June 2022 Sheet 3 of 8" prepared by Dieter & Gardner, Inc. No direct impacts to inland wetlands or watercourses are proposed. See attached Narrative.

Proposed Erosion/ Sediment Control Measures: See attached Narrative

Total Area of Site 9.21 acres Total Area of Wetlands per Official Inventory Map 5,600
Amount of Fill, in Cubic Yards 0 Disturbed Area, in Square Feet 13,100 or in Acres 0.30

Area Increase/Decrease in Wetlands _____ (For Map Amendment Only*)

Soil Types from USDA Soil Survey See attached Narrative

General Description of Vegetative Cover Successional growth.

Name and Address of Adjacent Property Owners
See attached list

Anticipated Start Date 4/2023 Completion Date 10/2027

List previous IWWC application #'s Unknown

IWW Commission Disposition: IWWC Regulations; Section _____ Classification _____

Signature of Chair _____

FEE: _____ + \$60.00 State Fee = _____ DATE PAID _____ RECEIPT # _____

**APPLICATION OF AVERY BROOK HOMES, LLC TO
TOWN OF LEDYARD INLAND WETLANDS AND WATERCOURSES COMMISSION**

**NARRATIVE DESCRIPTION AND CONSTRUCTION SEQUENCE RELATIVE TO
THE DEVELOPMENT OF A PROPOSED THIRTY-SIX (36) LOT RESIDENTIAL
AFFORDABLE HOUSING SUBDIVISION AT 94, 96, 98 AND 100 STODDARDS
WHARF ROAD A.K.A. CONNECTICUT ROUTE 214**

REVISED: NOVEMBER 21, 2022

PROJECT OVERVIEW:

The Applicant is the owner of four (4) certain contiguous tracts or parcels of land located on the northerly side of Stoddards Wharf Road A.K.A. Connecticut Route 214 in the Town of Ledyard, Connecticut comprising 9.21 acres, more or less. The properties are designated as 94, 96, 98 and 100 Stoddards Wharf Road and are more particularly delineated on Ledyard Assessor's Map 65. The Applicant's properties (hereinafter collectively referred to as the "Property") is abutted to the northwest, north, northeast and east by land of the City of Groton. The Property is comprised of well-drained soils as depicted on the "Boundary and Soils Map" (and as hereinafter described in the Soils section of this Narrative) as depicted on a plan entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown July 2022 Revised: October 31, 2022 Sheet 1 of 10 Dieter & Gardner Land Surveyors – Planners P.O. Box 335 1641 Connecticut Route 12 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".

The Applicant originally proposed to develop the Property for a thirty-six (36) lot single family residential subdivision under the Affordable Housing Act, Connecticut General Statutes §8-30g. The original development scheme for the Property contemplated the development of a private loop road with two (2) access points on the northerly side of Stoddards Wharf Road. Due to the free draining nature of the soils prevalent throughout the site, no closed drainage system was proposed in the roadway system with the anticipation that stormwater runoff from improved portions of the project site would infiltrate into the existing well-drained soils throughout the site; thereby eliminating any point source discharges resulting from the proposed development.

After receiving and reviewing initial review comments with respect to the development initiative, the Applicant, in an October 31, 2022 revision of the affordable housing subdivision initiative, has revised the development proposal by (i) eliminating ten (10) proposed building lots (ii) revising the infrastructure design of the roadway system for the project to provide a municipal street system within the development and by eliminating one street access point to and from Stoddards Wharf Road and limiting the second (westerly) access point to serve three (3) lots; i.e. Lots 15, 16 and 17 and (iii) incorporating into the infrastructure vernacular a partially closed drainage system which will capture and treat for stormwater quality purposes, a substantial portion of the improved site stormwater runoff. In addition, all proposed primary and reserve septic system areas have been removed from the one hundred (100') foot upland review area.

There are only peripheral areas of regulated inland wetlands located on the Property as depicted by Wetland Flags 1 – 8 (along the easterly periphery of Proposed Lot 1), Wetland Flags 1A – 6A (along the easterly periphery of Lot 2) and Wetland Flags 10B – 12B (along the northerly periphery of Lot 7) all as shown on a plan entitled “Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1” = 40’ July 2022 Revised: October 31, 2022 Sheet 2 of 10 Dieter & Gardner Land Surveyors – Planners 1641 Connecticut Route 12 P.O. Box 335 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com”.

Each of the proposed building lots in the affordable housing subdivision will contain a drilled potable water supply well and a subsurface sewage disposal system. The development scheme for the project is depicted on a plan entitled “Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scale: 1” = 40’ July 2022 Revised: October 31, 2022 Sheet 3 of 10 Dieter & Gardner Land Surveyors – Planners 1641 Connecticut Route 12 P.O. Box 335 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com” (hereinafter, the “Plan”).

As depicted on the Plan, the Applicant is not proposing any direct impacts to inland wetlands and watercourses. However, the Applicant is proposing construction activities, including the placement of the water quality basin, grading and a portion of the dwelling house on Lot 2 in upland review areas adjacent to inland wetlands. Upland review area activities on the revised subdivision proposal are limited to the installation of the water quality basin on the water quality basin parcel and the placement of a portion of the dwelling house and associated grading on Proposed Lot 2.

An evaluation of the wetland systems located along the periphery of the project site, the characteristics of those wetland systems and an evaluation of the lack of adverse impacts to those systems as a result of the proposed development is contained in a separate report submitted with this application to the Town of Ledyard Inland Wetlands and Watercourses Commission prepared by Ian Cole, Certified Soil Scientist and Wetland Ecologist.

SOILS:

UPLAND SOILS

Upland soils found on the Project site consist of the following:

Charlton-Hollis Soils (CrD). This series consists of well drained to somewhat excessively well drained, non-stony to extremely stony soils that formed in loamy glacial till. Charlton-Hollis Soils are found on upland hills, ridges and glacial till plains. Slopes range from 3 to 45 percent. Charlton-Hollis Soils are found in a drainage sequence on the landscape with moderately well drained Sutton Soils and poorly drained Leicester Soils. They are near well drained Canton, Narragansett, Agawam and Paxton Soils. These soils have finer textures in the C horizon than

Canton and Narragansett Soils and a more friable C horizon than Paxton Soils. Soil characteristics are as follows:

- 0" – 2" Very dark brown, fine sandy loam; weak medium granular structure; very friable; many fine roots; 5 percent rock fragment; strongly acid, clear wavy boundary.
- 2" – 5" Dark brown, fine sandy loam; weak medium granular structure; very friable; common fine roots; 5 percent rock fragment; strongly acid; gradual wavy boundary.
- 5" – 12" Dark yellowish-brown, fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 5 percent rock fragment; strongly acid; gradual wavy boundary.
- 12" – 17" Dark yellowish-brown, fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; 5 percent rock fragment; strongly acid.
- 17" – 24" Yellowish-brown, fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; clear wavy boundary.
- 24" – 29" Light olive-brown, fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent rock fragment; medium acid; clear wavy boundary.
- 29" – 60" Grayish-brown, fine sandy loam; massive; friable; 15 percent rock fragment; medium acid.

Canton and Charlton Very Stony Fine Sandy Loams 3 – 15 Percent Slopes (CdC). These gently sloping and sloping well-drained soils are found on glacial till upland hills, plains and ridges. Stones and boulders cover 8 – 25 percent of the surface. Mapped areas are dominantly irregular in shape and mostly 2 to 40 acres. The mapped acreage of this undifferentiated group is about 55 percent Canton soil, 25 percent Charlton soil and 20 percent other soils. Mapped areas consist of Canton soil or Charlton soil, or both. These soils were mapped together because there are no major differences in use or management. Canton soils are found near somewhat excessively drained Merrimack and Hollis soils, well-drained Charlton and Montauk soils, moderately well-drained Sutton soils and poorly drained Leicester soils.

The soil stratification of the Canton soil is as follows:

- 0" – 1" Black fine sandy loam; weak fine granular structure; very friable; common fine roots and medium; strongly acid; abrupt wavy boundary.

- 1" – 5" Dark yellowish-brown fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; 10 percent rock fragment; strongly acid; gradual wavy boundary.
- 5" – 15" Dark yellowish-brown sandy loam; weak medium granular structure; very friable; common fine and medium roots; 15 percent rock fragment; strongly acid; gradual wavy boundary.
- 15" – 24" Dark yellowish-brown sandy loam; weak medium granular structure; very friable; few fine roots; 15 percent rock fragment; strongly acid; gradual wavy boundary.
- 24" – 60" Grayish brown gravelly sand; massive; friable; 20 percent rock fragment; strongly acid.

The Charlton soils are found in the drainage sequence on the landscape with moderately well-drained Sutton soils and poorly drained Leicester soils. They are near somewhat excessively drained Hollis soils and well-drained Canton, Narragansett, Agawam and Paxton soils. The soil stratification of the Charlton soil is as follows:

- 0" – 8" Very dark grayish-brown fine sandy loam; weak medium granular structure; friable; common fine and medium roots; 10 percent rock fragment; strongly acid; abrupt wavy boundary.
- 8" – 15" Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; gradual wavy boundary.
- 15" – 24" Yellowish-brown fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragment; medium acid; clear wavy boundary.
- 24" – 29" Light olive brown fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent rock fragment; medium acid; clear wavy boundary
- 29" – 60" Grayish brown fine sandy loam; massive; friable; 15 percent rock fragment; medium acid.

Agawam Fine Sandy Loam, 3 – 8 Percent Slopes (AfB). The Agawam soil consists of well-drained soils that formed in glacial outwash. Agawam soils are found on stream terraces and outwash plains. Slopes range from 0 to 8 percent. The Agawam soils are found in the drainage sequence on the landscape with moderately well-drained Ninigret soils. They are near excessively drained Hinckley soils, somewhat excessively drained Merrimack soils, well-drained Haven,

Canton and Charlton soils and poorly drained Raypol and Walpole soils. The soil stratification of the Agawam soil is as follows:

- 0" – 9" Dark brown fine sandy loam; weak medium granular structure; very friable; few fine roots; 5 percent coarse fragment; strongly acid; abrupt wavy boundary.
- 9" – 19" Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent coarse fragment; strongly acid; gradual wavy boundary.
- 19" – 24" Dark yellowish-brown fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent coarse fragment; medium acid; abrupt wavy boundary.
- 24" – 32" Light olive brown sand; massive; very friable; few fine roots; 15 percent coarse fragment; medium acid; abrupt wavy boundary
- 32" – 60" Light olive brown very gravelly coarse sand; single grain; loose; 55 percent coarse fragment; medium acid.

Haven Silt Loam, 0 to 3 Percent Slopes (HcA). The Haven soil consists of well-drained soils that formed in glacial outwash. Haven soils are found on stream terraces and outwash plains. Slopes range from 0 to 3 percent. Haven soils are found in the drainage sequence on the landscape with moderately well-drained Tisbury soils and poorly drained Raypol soils. They are found near excessively drained Hinckley soils, well-drained Canton, Charlton, Narragansett and Agawam soils, and moderately well-drained Ninigret soils. The soil stratification of the Haven soil is as follows:

- 0" – 7" Dark brown silt loam; weak fine granular structure; very friable; common fine and medium roots; 5 percent coarse fragment; strongly acid; abrupt wavy boundary.
- 7" – 11" Brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent coarse fragment; strongly acid; gradual wavy boundary.
- 11" – 15" Dark yellowish-brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent coarse fragment; strongly acid; gradual wavy boundary.
- 15" – 23" Yellowish-brown silt loam; weak medium subangular blocky structure; friable; few fine roots; 15 percent coarse fragment; strongly acid; clear wavy boundary
- 23" – 60" Light yellowish-brown very gravelly sand; single grain; loose; 55 percent coarse fragment; medium acid.

Hinckley Gravelly Sandy Loam, 3 to 15 Percent Slopes (HkC). This gently sloping and sloping, excessively drained soil is found on stream terraces, outwash plains, kames and eskers. Mapped areas are dominantly irregular in shape and mostly 2 to 25 acres. The Hinckley soils are found near excessively drained Windsor soils, somewhat excessively drained Merrimack soils, well-drained Agawam and Haven soils, moderately well-drained Sudbury soils, poorly drained Walpole soils and very poorly drained Scarboro soils. The soils stratification of the Hinckley soil is as follows:

- 0" – 7" Dark brown gravelly sandy loam; weak fine granular structure; very friable; many fine roots; 20 percent coarse fragment; medium acid; abrupt wavy boundary.
- 7" – 14" Yellowish-brown gravelly loamy sand; single grain; loose; few fine roots; 25 percent coarse fragment; medium acid; gradual wavy boundary.
- 14" – 22" Yellowish-brown gravelly loamy sand; single grain; loose; few fine roots; 40 percent coarse fragment; strongly acid; clear wavy boundary.
- 22" –60" Brownish-yellow very gravelly coarse sand; single grain; loose; 60 percent coarse fragment; medium acid.

Udorthents Urban Land Complex (Ud). Udorthents soils consist of excessively drained to moderately well-drained soils found on glacial till upland hills, ridges, till plans, drumlins and outwash plains and on stream terraces. They are found in areas where more than two feet of the upper part of the original soil has been removed, or in areas that have been covered by more than two feet of fill material. Udorthents are found in loamy or sandy glacial till and gravelly or very gravelly outwash. Slopes range from 0 to 15 percent. Mapped areas are mostly 5 to 40 acres. Included within this complex in mapping are small, intermingled areas of undisturbed soils. Due to the disturbed nature of this soil, this soil complex is not assigned to a capability subclass.

WETLAND SOILS:

Ridgebury-Leicester-Whitman Soils (3). These poorly drained and very poorly drained soils are found in drainageways and depressions on glacial till, upland hills, ridges, plains and drumloidal landforms. Stones and boulders cover 8-25% of the surface. Slopes range from 0-30%. The mapped acreage of this undifferentiated group is about 35% Ridgebury soil, 30% Leicester soil, 20% Whitman soil and 15% other soils. Some mapped areas consist of one of these soils, and other areas consist of two or three. These soils were mapped together because there are no major differences in use and management.

The soil stratification for the Ridgebury soil is as follows:

- 0" – 1" Partly decomposed leaves.

- 0" – 4" Black, fine sandy loam; weak medium granular structure; friable; common fine roots; 5% rock fragments; strongly acid; clear wavy boundary.
- 4" – 13" Gray fine sandy loam; common medium distinct strong brown mottles and common, medium faint yellowish brown mottles; massive; friable; 5% rock fragments; strongly acid; gradual wavy boundary.
- 13" – 20" Brown fine sandy loam; many medium distinct yellowish brown mottles and few fine faint grayish brown mottles; massive; friable; firm in place; 10% rock fragments; slightly acid; clear wavy boundary.
- 20" – 60" Grayish brown sandy loam; few fine faint yellowish brown mottles; massive; very firm, brittle; 5% rock fragment; slightly acid.

The soil stratification of the Leicester soil is as follows:

- 0" – 2" Decomposed leaves.
- 2" – 6" Very dark gray fine sandy loam; weak fine granular structure; very friable; few fine and medium roots; 5% rock fragments; very strongly acid; abrupt smooth boundary.
- 6" – 12" Dark grayish brown, fine sandy loam; few fine faint yellowish-brown mottles and many medium distinct light brownish gray mottles; weak medium subangular blocky structure; very friable; few medium roots; 5% rock fragments; strongly acid; clear wavy boundary.
- 12" – 24" Grayish brown, fine sandy loam; few medium distinct yellowish-brown and dark grayish brown mottles; weak medium subangular blocky structure; friable; 10% rock fragments; strongly acid; gradual wavy boundary.
- 24" – 32" Pale olive fine sandy loam; many coarse distinct yellowish brown mottles; weak medium subangular blocky structure; friable; 15% rock fragments; strongly acid; gradual wavy boundary.
- 32" – 60" Light olive gray gravelly fine sandy loam; many medium distinct yellowish-brown mottles; massive; friable; 25% rock fragment; strongly acid.

The soil stratification of the Whitman soil is as follows:

- 0" – 1" Decomposed leaf litter.

1" – 9"	Black fine sandy loam; weak medium granular structure; friable; common fine and medium roots; strongly acid; abrupt wavy boundary.
9" – 16"	Dark grayish brown fine sandy loam; few fine faint yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; 5% rock fragments; medium acid; clear wavy boundary.
16" – 22"	Grayish brown, fine sandy loam; common medium distinct strong brown mottles and few medium light brownish gray mottles; moderate medium platy structure; very firm, brittle; 5% rock fragments; slightly acid; gradual wavy boundary.
22" – 60"	Grayish brown fine sandy loam; common medium distinct strong brown mottles and few medium faint light brownish gray mottles; massive; firm, brittle; 5% rock fragments; slightly acid.

Included with these soils in mapping are small areas of moderately well drained Rainbow, Sutton and Woodbridge soils and very poorly drained Adrian and Palms soils. The Ridgebury soil has a seasonal high water table at a depth of about 6". Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The Leicester soil has a seasonal high water table at a depth of about 6". Permeability is moderate or moderately rapid. The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum.

GENERAL PROCEDURES:

1. Prior to commencing construction of the Project, the Developer and the Developer's contractor shall meet with the Ledyard Wetlands Enforcement Officer (the "Preconstruction Meeting") to agree upon the method of installation and maintenance of erosion and sediment control measures during the development of the Project.
2. Subsequent to the Preconstruction Meeting, the Developer shall install all erosion and sediment control measures in accordance with the Plan. As development occurs on each individual building lot within the Project, additional erosion and sediment control measures as depicted on the Plan shall be installed to mitigate erosion and sediment migration on the particular lot being developed.
3. The Developer's contractor shall install an anti-tracking pad in accordance with the "Temporary Construction Entrance" detail depicted on Sheet 9 of 10 of the Plan at each point of access to the project site from Stoddards Wharf Road A.K.A. Connecticut Route 214.
4. Prior to conducting any construction activities at the Project, the Developer shall notify the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer that

erosion and sediment control measures have been installed and request that the same be inspected and approved by the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer. This procedure shall be repeated as the development of each lot in the residential subdivision progresses.

5. All activities in conjunction with the development of the Project shall be conducted in accordance with the terms and provisions of the Plan and this Narrative. The Ledyard Wetlands Enforcement Officer shall have authority to modify any construction details or procedures hereinafter contained as warranted by field conditions during the duration of the development of the Project.
6. All erosion and sediment control measures shall be inspected at least weekly while construction is ongoing on each lot, and after every storm event resulting in a discharge, and repaired and maintained as necessary.
7. During the stabilization period (after the completion of development, but prior to the certification of approval by the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer for the removal of erosion and sediment control measures), all erosion and sediment control measures shall be maintained in proper working order. Prior to the commencement of construction on each lot in the subdivision, the Developer shall certify, in writing, to the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer the name, address, telephone number and facsimile number of the person who will be primarily responsible for the installation and maintenance of sediment and erosion control measures on each lot in the subdivision. Such person shall be the designated representative of the Developer responsible for compliance with all erosion and sediment control measures in conjunction with the development of each lot. All erosion and sediment control measures shall be inspected and maintained and/or repaired, as necessary, on a weekly basis during the stabilization period and after each storm occurrence resulting in a discharge. Until notified otherwise, in writing, "Peter C. Gardner, a member of the Developer, 1641 Connecticut Route 12, Gales Ferry, Connecticut 06335; Telephone: (860) 464-7455; E-mail: dieter.gardner@yahoo.com" shall be the party responsible for compliance with the terms and provisions of the erosion and sediment control plan for the development of the Project.
8. At such time as stabilization has been achieved, and certification thereof received from the Ledyard Wetlands Enforcement Officer and the Ledyard Zoning Enforcement Officer, erosion control measures shall be removed.
9. During the stabilization period, any erosion which occurs shall be immediately repaired by the Developer, reseeded with the seeding mixes set forth in the Construction Sequencing Section of this Narrative, and re-stabilized.
10. If any erosion and sediment control measures fail, or are not installed or maintained in accordance with this Narrative, the Plan, or the directives of the Ledyard Wetlands Enforcement Officer, the Developer, or its successors, shall be required to cease all

development activities on such lot until such time as said erosion and sediment control measures have been installed in accordance with this Narrative, the Plan and the directives of the Ledyard Wetlands Enforcement Officer and approval of the same has been certified by the Ledyard Wetlands Enforcement Officer, in writing.

CONSTRUCTION SEQUENCING

LOT DEVELOPMENT (TYPICAL):

1. The Developer shall install erosion and sediment control measures in the location delineated on the Plan and in accordance with the detail depicted on the Plan.
2. An anti-tracking pad construction entrance shall be installed at the intersection of the driveway for each lot with Avery Brook Circle. The construction entrance shall be constructed in accordance with the “Temporary Construction Entrance” detail delineated on Sheet 9 of 10 of the Plan.
3. That portion of the lot designated for development for a single-family dwelling house and appurtenant facilities shall be cleared, grubbed and rough graded. All vegetated material shall be removed from the lot. Stumps shall either be (i) ground in place or (ii) removed to a location approved in advance by the Town of Ledyard Wetlands Enforcement Officer and the Town of Ledyard Zoning Enforcement Officer. No stumps shall be buried on the Project site.
4. The driveway serving the lot shall be installed at rough grade.
5. The foundation hole shall be excavated. Any stored or stockpiled material shall be encompassed by a single row of silt fence in the “Proposed Stockpile Area” for each lot. All topsoil on the project site shall be retained for the post-construction stabilization of the project area.
6. Footings and foundations shall be poured; and, after the application of water proofing and the passing of the curing period, backfilled with stockpiled material. Due to the pervious nature of the soils on the project site, footing drains are not required.
7. House construction shall commence and proceed to completion, including the installation of the onsite septic system.
8. The finished course, bearing surface, of the driveway shall be installed.
9. Final grading of the lot shall be completed.
10. Disturbed areas of the lot shall be stabilized by spreading surface soil over the same at a thickness of not less than 6 inches. Areas to be seeded will be prepared by spreading ground limestone equivalent to 50 percent calcium plus magnesium oxide applied at a rate of 100

pounds per 1,000 square feet. Fertilizer (10-10-10) is to be applied at a rate of 15 pounds per 1,000 square feet. All areas shall then be seeded with a seeding mix of Creeping Red Fescue applied at a rate of 20 pounds per acre, Kentucky Bluegrass applied at a rate of 20 pounds per acre and Perennial Ryegrass applied at a rate of 5 pounds per acre, for a total application of 45 pounds per acre. After the seeding, the area seeded shall be stabilized with hay mulch applied at a rate of 2 bales per 1,000 square feet, and anchored immediately after spreading by tracking. In the alternative, disturbed areas may be hydroseeded using a hydroseed mix containing similar cultivars. Seeding shall only occur between April 1 and June 15 and August 15 and October 1.

11. Once all seeded areas have been thoroughly stabilized and mowed with a minimum of two mowings, erosion control measures shall be removed.

CONSTRUCTION SEQUENCING – AVERY BROOK CIRCLE

In conjunction with the development of the Avery Brook Homes Affordable Subdivision, the Applicant will construct Avery Brook Circle, a proposed municipal street located on the northerly side of Stoddards Wharf Road in the Town of Ledyard, Connecticut, including its associated infrastructure which consists of a partially closed drainage system and the construction of a stormwater quality basin on the stormwater quality basin parcel in an upland review area.

1. The Applicant shall install an anti-tracking construction entrance at the intersection of proposed Avery Brook Circle with Stoddards Wharf Road.
2. The Applicant shall clear, but not grub, the area for the installation of the stormwater quality basin on the stormwater quality basin parcel; and, if any clearing is required, the area for road construction for Avery Brook Circle.
3. Marketable timber shall be removed from the property. Tree tops shall be chipped and wood chip berms may be substituted for other forms of erosion control delineated on the Plan. Wood chips may be utilized for erosion control on any embankment areas during construction.
4. Erosion control measures shall be installed in the locations delineated on the Plan.
5. Once all erosion control measures have been installed, the Applicant shall request an inspection of the installation of erosion and sediment control measures by the Town of Ledyard Wetlands Enforcement Officer and the Town of Ledyard Zoning Enforcement Officer. In no event shall grubbing or any soil disturbance occur until such time as the installation of erosion and sediment control measures has been approved by the Town of Ledyard Wetlands Enforcement Officer and the Town of Ledyard Zoning Enforcement Officer.
6. Stumps (if any) shall either be removed or ground in place. In the event that stumps are removed, they shall be removed to a location approved in advance by the Town of Ledyard

Wetlands Enforcement Officer and the Town of Ledyard Zoning Enforcement Officer. In no event shall stumps be buried on site.

7. Surface soil shall be stripped in the area for the installation of the stormwater quality basin and shall be stockpiled in a surface soil stockpile location delineated on the Plan.
8. Surface soil shall be retained on site for eventual use in the stabilization of all disturbed areas of the property. Surface soil stockpiles shall be stabilized by installing a single row of silt fence (or a wood chip berm) around each stockpile location. The stockpile shall be constructed at a slope not to exceed 3:1 and shall be stabilized by seeding with an annual rye grass mix and mulch. The annual rye grass mix shall be applied at a rate of 40 pounds per acre. Mulch shall be applied at a rate of 80 pounds per 1,000 square feet and shall be spread by hand or with a mulch blower.
9. The area of the stormwater quality basin on the stormwater quality basin parcel shall be excavated to grade. The stormwater quality basin shall be utilized as a temporary sediment trap during construction of the infrastructure improvements for the project.
10. When the temporary sediment trap has become filled to 50% of its capacity, it shall be excavated to return it to its design capacity and the excavated material shall be utilized as site fill outside of any upland review area.
11. The road shall be “boxed out” and trenches excavated for the installation of stormwater drainage structures and culverts in locations where Avery Brook Circle contains a closed drainage system.
12. Upon completion of culverting, not less than one (1’) foot of clean bedding material shall be installed in each utility trench.
13. Subsequent to the installation of bedding, stormwater drainage pipes and culvers where required, shall be installed as delineated on the Plan.
14. Once stormwater drainage structures and culverts have been installed, each trench shall be backfilled with clean bedding material compacted to a depth of one (1’) foot over the utility installation.
15. The flared end section and modified rip rap plunge pool shall be installed together with the 15 inch HDPE culvert from Catch Basin 1 to the temporary sediment trap.
16. During construction, all pipe and catch basin inlets will be protected with haybale filters and/or silt fence which shall be maintained in place until such time as all disturbed areas have been thoroughly stabilized. Basin protection shall be installed in accordance with the “Catch Basin Inlet Protection” detail delineated on Sheet 9 of 10 of the Plan.

17. Avery Brook Circle shall be constructed in accordance with the “Avery Brook Circle Cross Section” detail delineated on Sheet 10 of 10 of the Plan.
18. Disturbed areas shall be stabilized by spreading stockpiled surface soil over these areas at a thickness of not less than four (4”) inches. Areas to be seeded will be prepared by spreading ground limestone equivalent to 50 percent calcium plus magnesium oxide applied at a rate of 50 pounds per 1,000 square feet. Fertilizer (10-10-10) is to be applied at a rate of 7.5 pounds per 1,000 square feet. Following the initial application of lime and fertilizer, there are to be not periodic applications of lime and fertilizer. Disturbed areas will be seeded with a seeding mix of Kentucky Bluegrass applied at a rate of 20 pounds per acre, Creeping Red Fescue applied at a rate of 20 pounds per acre and Perennial Ryegrass applied at a rate of 5 pounds per acre, for a total application of 45 pounds per acre. A hydroseed mix utilizing comparable cultivars shall be a suitable substitute. In the event that a hydroseed mix is not utilized, after seeding, the area seeded shall be seeded with hay mulch immediately applied at a rate of 70 pounds per 1,000 square feet and anchored by tracking. Seeding shall only occur between April 1 and June 15 and August 15 and October 1.
19. Any accumulated sediment in the temporary sediment trap shall be removed in order to return the sediment trap to its design specifications. The stormwater quality basin outlet structure and modified rip rap spillway shall be installed in accordance with the details delineated on Sheets 6 of 10 and 10 of 10 of the Plan. The stormwater quality basin shall be stabilized by installing not less than eight (8”) inches of enriched organic topsoil containing not less than seven (7%) percent organic content. The stormwater quality basin shall be planted in accordance with the “Stormwater Quality Basin Landscape Plan” and the “Landscape Schedule” delineated on Sheet 6 of 10 of the Plan. Planting shall only occur between April 1 to June 15 and August 15 to October 1.
20. Once all seeded areas have been thoroughly stabilized, erosion and sediment control measures shall be removed.

DELINEATION OF NO FEASIBLE AND PRUDENT ALTERNATIVE

The Applicant is the owner of four (4) tracts or parcels of land, comprising 9.21 acres, in total, located on the northerly side of Stoddards Wharf Road in Ledyard, Connecticut, designated as 94, 96, 98 and 100 Stoddards Wharf Road. The property is located in an R-60 zoning district. However, the Applicant is proposing to develop the combined properties as an affordable housing subdivision pursuant to the provisions of Section 8-30g of the Connecticut General Statutes. As evidenced by the “Boundary and Soil Map” depicted on Sheet 1 of 10 of the Plan, and as delineated in the “Soil Characteristics” section of this Narrative, the project site is blessed with well-drained soils facilitating the development of this parcel for affordable housing at a higher density than allowed by the Ledyard Zoning Regulations with the installation of on-site septic systems and wells, all in compliance with the requirements of the Connecticut Public Health Code. The revised plans submitted for consideration acknowledge the fact that there are wetland systems located along the easterly and northerly periphery of the property. The modified density formulated by the

Applicant's professional consultants recognizes the peripheral limiting factors to the development of the property for 36 or more individual single family building lots and the revised development scheme accommodates the preservation and protection of the wetland ecosystems. In the formulation of the subdivision design for the project, all direct impacts to wetlands and watercourses have always been avoided. In addition, the modified development initiative removes the installation of all on-site primary and reserve septic areas from the 100 foot upland review area adjacent to wetlands and watercourses. The revised development plan now limits upland review area activities to the siting of a portion of the dwelling house on Proposed Lot 2 with associated grading and the construction of the stormwater quality basin on the stormwater quality basin parcel as the only upland review area activities within the project.

As defined in Connecticut General Statutes §22a-38(17), "feasible" means able to be constructed or implemented consistent with sound engineering principles. Section 18 of that Statute defines "prudent" as economically and otherwise reasonable in light of the social benefits to be derived from the proposed regulated activity provided cost may be considered in deciding what is prudent and further provided a mere showing of expense will not necessarily show an alternative is imprudent.

In this instance, the Applicant is proposing a subdivision containing affordable housing units within the Town of Ledyard which will further the laudable goal of providing affordable workforce housing to community constituents who would otherwise be unable to afford and enjoy the privileges of home ownership.

The Applicant has reviewed a number of options for the development of the Property. The initial formulation for the affordable housing subdivision contemplated forty-one (41) single family residential building lots. A subdivision plan was developed with a private road system at that density which would accommodate the proposed forty-one (41) building lots.

A preliminary review of the initial project formulation by regulatory authorities raised concerns with respect to the density of the project and the ability of the project to support both on-site wells and septic systems, notwithstanding the fact that a hydrogeologic investigation performed by GEI Consultants evidences the fact that there is sufficient groundwater recharge to support forty-one (41) potable water supply wells; and the fact that the proposed septic systems on the forty-one (41) lots complied with the requirements of the Connecticut Public Health Code.

Prior to submission of the initial subdivision application for consideration to both the Ledyard Inland Wetlands and Watercourses Commission and the Ledyard Planning and Zoning Commission, the development initiative was scaled back to thirty-six (36) building lots which would be served by a private road system maintained by a homeowner's association with two (2) access points on Stoddards Wharf Road. Again, through the regulatory process, concerns were raised with respect to the proximity of proposed on-site sewage disposal systems located in upland review areas adjacent to the three (3) designated wetland systems located along the easterly and northerly periphery of the project site.

As a result of the comments received to date, the Applicant has re-formulated the development initiative by eliminating ten (10) lots from the submission proposal and modifying the design of the project to accommodate the installation of a public street to provide access to the currently proposed twenty-six (26) building lots. It should be noted that the current formulation of the development proposal (i) has no direct impacts to inland wetlands and watercourses (ii) has incorporated a partially closed drainage system in order to provide stormwater renovation in accordance with the 2004 Stormwater Quality Manual prior to the release of stormwater runoff to the environment (iii) has removed all primary and reserve septic system areas from the 100 foot upland review area adjacent to wetlands and watercourses and (iv) has reduced proposed upland review area activity in conjunction with the development of the project from 37,700 square feet to 13,100 square feet. The Applicant submits that these modifications remove the likelihood of any indirect impacts to wetlands or watercourses as a result of the development of this project as currently formulated.

The statutory definition of the word “prudent” necessarily requires a balancing act to be performed in the administration of a municipal wetland application between the development parameters required to insure a successful project and the protection of the wetland and watercourse resources within the permitting jurisdiction of a municipal inland wetlands and watercourses agency. As indicated above, the Avery Brook Homes Affordable Housing Subdivision has been formulated pursuant to the provisions of Section 8-30g of the Connecticut General Statutes. As such, the developer is required to offer fifteen (15%) of the proposed homes in the project at a purchase price which is affordable to a family which is at or below sixty (60%) percent of the lower of the area or statewide median income and an additional fifteen (15%) percent of the homes in the project at a purchase price which is affordable to families who are at or below eighty (80%) percent of the lower of the area or statewide median income. In order to provide this societal benefit which meets the statewide goal of providing affordable housing to workforce residents, as enunciated by the Connecticut legislature, it is necessary to achieve a certain project density in order to develop and sell the affordable homes at a substantial loss. In considering the feasible and prudent alternatives which have been presented by the Applicant, the municipal inland wetlands and watercourses commission is required to balance these goals in determining whether or not the Applicant, in revising its formulation for the project, has satisfied the feasible and prudent alternative analysis required when a municipal inland wetlands and watercourses commission holds a public hearing as a result of a determination that the development of the project is reasonably likely to have a significant impact on wetlands and watercourses.

The Applicant submits that the modifications to the project plans which have resulted in an elimination of ten (10) building lots as well as the incorporation of stormwater renovation measures into the project vernacular now satisfy this standard. In fact, the Applicant submits that the development proposal, as currently constituted, is not likely to result in any significant adverse impacts to the wetland systems located along the periphery of the project parcel.

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike

Uncasville, Connecticut 06382

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Harry B. Heller (hheller@hellermccoy.com)
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Mary Gagne O'Donal (mgodonal@hellermccoy.com)
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Telephone: (860) 848-1248
Facsimile: (860) 848-4003

November 22, 2022

Town of Ledyard Inland Wetlands and Watercourses Commission
Attn: Mr. Len Johnson, Wetlands Enforcement Officer
741 Colonel Ledyard Highway
Ledyard, CT 06339

RE: Avery Brook Homes, LLC
Wetland application to conduct regulated activities at 94, 96, 98 and 100 Stoddards
Wharf Road, Ledyard, Connecticut

Dear Len:

Enclosed herewith please find the following with respect to the above referenced application currently pending before the Town of Ledyard Inland Wetlands and Watercourses Commission:

1. Three (3) copies of the November 21, 2022 revision of the Wetland Application.
2. Three (3) copies of the November 21, 2022 revised Project Narrative.
3. Three (3) copies of October 31, 2022 revision of the subdivision plan resulting in, inter alia, the elimination of ten (10) proposed building lots and the incorporation of stormwater quality renovation measures into the infrastructure design entitled "Plan Showing Resubdivision Property of Avery Brook Homes LLC 94, 96, 98 and 100 Stoddards Wharf Road A.K.A. Connecticut Route 214 Ledyard, Connecticut Scales As Shown July 2022 Revised October 31, 2022 Sheets 1 of 10 to 10 of 10 Dieter & Gardner Land Surveyors – Planners 1641 Connecticut Route 12 P.O. Box 335 Gales Ferry, CT. 06335 (860) 464-7455 Email: dieter.gardner@yahoo.com".
4. Two (2) copies of the "Engineering Report For Land Use Commission Submittals Avery Brook Homes Subdivision, Stoddards Warf Road Ledyard, Connecticut November 13, 2022" prepared by LBM Engineering, LLC.

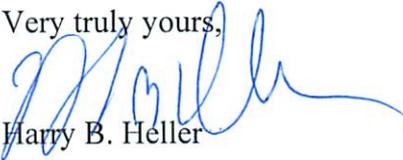
Z:\Avery Brook Homes, LLC\Wetlands\ltr.Town re revised documents.docx

Town of Ledyard Inland Wetlands and Watercourses Commission
November 22, 2022
Page 2 of 2

Please enter the submittals forwarded herewith into the record of the proceedings before the Town of Ledyard Inland Wetlands and Watercourses Commission with respect to the Avery Brook Homes application.

Should you have any questions or need anything further, please feel free to contact the undersigned.

Very truly yours,



Harry B. Heller

HBH/rmb
Enclosures

Cc: Avery Brook Homes, LLC
Mr. Peter C. Gardner
Mr. Conrad C. Gardner, Jr.
Mr. Anthony Bonafine

HELLER, HELLER & McCOY

Attorneys at Law

***736 Norwich-New London Turnpike
Uncasville, Connecticut 06382***

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Telephone: (860) 848-1248
Facsimile: (860) 848-4003

December 2, 2022

VIA FEDERAL EXPRESS

Town of Ledyard Inland Wetlands and Watercourses Commission
Attn: Mr. Len Johnson, Wetlands Enforcement Officer
741 Colonel Ledyard Highway
Ledyard, CT 06339

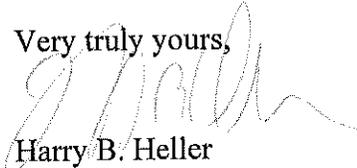
Re: Application of Avery Brook Homes, LLC for licenses to conduct regulated activities in conjunction with the development of an affordable housing subdivision (C.G.S. §8-30g) on properties located at 94, 96, 98 and 100 Stoddards Wharf Road, Ledyard, Connecticut

Dear Len:

Enclosed herewith please find copies of the notices that were mailed to all property owners owning property that either abuts or is located directly across the street from the above referenced application parcel which have been sent pursuant to Section 9.3 of the Ledyard Inland Wetlands and Watercourses Regulations. Attached to each letter is the certified receipt evidencing that the notices were mailed on November 21, 2022.

Should you have any questions, please feel free to contact the undersigned.

Very truly yours,


Harry B. Heller

HBH/rmb
Enclosures

Exhibit 23

KARL F. ACIMOVIC, P.E. & L.S.
CONSULTING ENGINEER

588 Stonehouse Road · Coventry, CT 06238-3138 · TEL (860) 742-9019 · e-Mail: kari26535@outlook.com

Groton Utilities / Statement on Proposed Avery Brook Subdivision
December 2, 2022

=====

Re: Application of Avery Brook Homes, LLC for a permit to conduct regulated activities in upland review areas with respect to properties located at 94, 96, 98 and 100 Stoddards Wharf Road, Ledyard, Connecticut

To date, Groton Utilities has prepared review comments pertinent to the above project. These review comments were originally prepared for a proposed subdivision of 36 lots with a private road, individual septic systems, individual wells and no provision for stormwater management. To date these plans have been revised to a 26-lot subdivision with a proposed Town-owned road and partial stormwater facilities, but still with individual septic systems and individual wells. While downsized in scope, our concerns remain the same, in that there is insufficient data provided by the applicant to ensure that this subdivision, with its density of housing, its individual on-site subsurface sewage disposal systems, its individual well layout and the limited stormwater treatment will not have a deleterious impact on the quality of water to the directly adjacent drinking water supply reservoir.

To reiterate our previous points, to which additional reference and inclusion is hereby made:

(1) **Soils** – The data provided on the plans indicates a high degree of permeability for soils throughout the site, as evidenced by the test pit data and percolation rates for the site of each proposed lot. This points to a relatively rapid discharge and migration of effluent to the underlying water table and to areas immediately surrounding the subsurface sewage disposal system, resulting in significant nutrient loadings detrimental to a safe drinking water supply.

(2) **Water Supply** – A study had been previously prepared by GEI Consultants examining the adequacy of water supply for the number of lots and the anticipated number of individuals expected to inhabit the area. This study was prepared for greater than 30 lots, the previous submittals, but no revised report has been submitted with respect to the current proposal. The study did point out that the amount of required water for supply could not be met from onsite groundwater alone, but would have to rely on drawdown from properties adjacent to this site. Since Groton Utilities is a major abutter to the site, we assume that, without more specificity, the drawdown would impact the Groton property as well as other abutting and nearby landowners. Again, it is important to note that the study addressed only adequacy of supply, but not

the quality of existing groundwater, nor the potential impact of drawdown from multiple wells in close proximity to other lots and to the adjacent neighborhood. Nor does it address, as previously pointed out, the potential issue of drawing water from a water table that has significant effluent dispersal from multiple subsurface sewage disposal systems in close proximity to each other.

(3) Subsurface Sewage Disposal Systems – The concentration of the proposed subsurface sewage disposal systems, although less in number than the previous proposal, still represents a dense layout with a hydraulic profile that includes effluent discharge from multiple systems combined along the same slope and outflow directions. All effluent is discharged toward Groton Utilities property from these systems, with wetlands and open water in close proximity to a drinking water supply reservoir. **We ask that an in-depth study of the water table’s hydraulics and the ability of the soils to treat or renovate the wastewaters prior to dispersal onto Groton Utilities property be provided.** Though lots have been tested, designed and reviewed on an individual basis, it is critical to consider this type of dense layout as a cumulative impact that must meet certain standards at the property line – particularly because that property line and underlying groundwater and surrounding wetlands are directly linked to a drinking water supply that affects adjacent towns¹ as well as the Town of Ledyard.

(4) Stormwater – This issue has been partially addressed with the proposed stormwater quality basin, but still maintains runoff without pretreatment or detention before reaching the Groton Utilities’ reservoir area. We find this unacceptable, particularly with respect to the high percolation rates and the gravelly soils encountered and documented in the test hole information included with this latest proposal. With such high permeability, we feel that the proposal has not adequately addressed the potential impact of directing non-treated stormwater runoff to our reservoir system.

In addition, due to the increase in paved and landscaped (lawn) areas, there is a risk of increased runoff of pollutants and nutrients that could directly impact the adjacent wetlands and open water areas. The applicant has indicated that sheet flow over pervious areas would decrease or, in this case, eliminate the need for any detention facilities and referred to a Town Ordinance that implies runoff without detention to the Groton Utilities reservoir system. We have addressed this ordinance in previous reviews and are in disagreement with the concept. We know that runoff water will reach us in any case, but we ask that it be as clean as possible when it reaches us. Our wetlands and open bodies of surface waters, where adjacent to residential or commercial lands, should not be regarded as pretreatment for a drinking water supply.

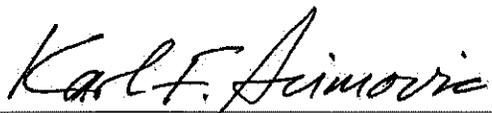
(5) Town Road – The change has been made to now consider the interior road as a Town road, in which case we presume that it will be given to and maintained by the Town in the future. As the treatment of roads for wintertime maintenance has now changed, it is our understanding that the road will be treated only with sodium related

¹ Note that Groton Utilities is a regional supplier to other area towns, in addition to Groton and Ledyard.

products. We have been tracking both sodium and chlorides in our reservoir system for many years and have analyses that indicate an increase in sodium levels since 2013, the year that Connecticut DOT, as well as most Towns, changed over to the use of sodium products rather than using sand or a combination of the two. Our processes at the Water Treatment Plant, as with most drinking water purveyors in the State, are not set up for the treatment of sodium. As such, any increase in the amount of sodium detected in the raw water supply must be considered as a potential treatment issue that could incur additional costs to the consumers within the surrounding communities.

(6) CDR Maguire 2014 Report – A sample issue identified in the CDR Maguire report included a reference to the Avery Hill and Aljen Heights areas of the Town of Ledyard, approximately 2 to 3 miles west of the currently proposed location, where lots were in the range of 0.25 to 1.0 acre in size. These areas required a public water supply in order to address “..... *groundwater contamination and limitations in capacity of private wells and small community systems*”. We feel this is an apt comparison due to the density of the housing and the proximity of the sewage disposal systems and wells to each other without further analysis.

In summary, there is no question of the certainty of the direction of both surface and groundwater flows, in that it will reach our reservoir surface and groundwater within a short distance and short period of time. We have previously asked for and now reiterate the need, based on the above points and the previously submitted comments, to prepare a study, a renovation analysis, to ascertain the impact of the proposed development to our drinking water supply reservoir. This should include, specifically because of the density of the proposed lots, the guidelines for renovation and hydraulic analysis found in the DEEP’s “*GUIDANCE FOR DESIGN OF LARGE-SCALE ON-SITE WASTEWATER RENOVATION SYSTEMS*” and the DPH’s “*Design Manual - Subsurface Sewage Disposal Systems for Households and Small Commercial Buildings*”. We feel strongly that this type of analysis is necessary to make an informed decision as to the impact to our reservoir system, as well as to the impact on lots adjacent to each other within the proposed subdivision.



Prepared by Karl F. Acimovic, P.E. & L.S.
Dec. 2, 2022

Karl F. Acimovic, P.E. & L.S.

Education: Mathematics, BA
Civil Engineering, BS
Graduate Courses in Engineering (Water Related, Hydraulics,
Geotechnical)

Professional Licensing / Registration:

Professional Engineer, Connecticut
Professional Land Surveyor, Connecticut

Professional Membership Affiliations:

American Water Works Association (Also New England & CT Sections)
American Society of Civil Engineers (Also CT Section)
Water Environment Federation
American Association of Dam Safety Officials
Connecticut Association of Land Surveyors
American Concrete Institute

Karl Acimovic, P.E. & L.S. – Project Descriptions / Consultant to Groton Utilities

Permitting:

Prepare permit applications for environmental and water related projects to the Department of Environmental Protection, Department of Public Health and other Local, State and Federal Agencies as required. This includes mainly water and sewer related projects, but on occasion also electric facilities.

Update and keep permits current, particularly annual diversion permit reports to satisfy permit conditions for metering and other activity monitoring.

Examples: Diversion Permits (DEP), Change-In-Use Permits (DPH), Marine Facilities at the PAF (DEP), Air Quality Permits for Generators (DEP), Underground and Aboveground Fuel Storage Containers (DEP and Federal), Inland Wetland Permits (Local), etc.

Design Projects:

Assist Project Management with preparation of design plans, technical specifications and contract documents for both permitting and bidding, related to water sewer and electric projects.

Examples: Water & Sewer Pump Station Construction, Modifications and Upgrades; Pump Replacements at Various Facilities (Water Treatment Plant Low Lift & High Lift); Project Management Building, Performance Specifications for

be addressed, work on background data is continually being analyzed and compiled in a timely fashion in order to be prepared for required updates. In my capacity of assisting Project Management, I periodically review the current plans, identify the need for sections to be updated, categorize the work that we could accomplish with in-house staff, and draw up an RFP for those items requiring outside consulting services. Groton Utilities then compiles the final report to be submitted to the DPH and DEEP.

Conservation Plans & Emergency Operations Plans – These plans, again mandated by the State of Connecticut Department of Public Health and the Department of Energy & Environmental Protection, are required as appendices to the Water Supply Plan and to DEEP Diversion permitting. Both of these were prepared in-house for the most recent WSP submittals. To assist Project Management staff, I continue to provide assistance in updating these two plans.

Minimum Stream Flow Requirements – The State of Connecticut, Department of Environmental Protection, has instituted into law new minimum standards for stream flows throughout the State. These rules have a significant impact upon the water industry – particularly those (e.g., Groton Utilities) that rely on surface water resources. I have been working with Project Management and Water Treatment Plant staff over many years in analyzing flows from influent streams such as Great Brook and Thompson Brook and continue to contribute toward a working management plan that meets current and future DEEP requirements.

Karl Acimovic, P.E. & L.S. – Consulting Engineer in Private Practice

For the past 36 years, I have been an independent consultant providing services to a varied clientele. Previous to that, work included professional services to both surveying and engineering firms over a 20-year period. Current and past work has included a wide spectrum of projects in the civil engineering field with municipal, State and Federal clients with respect to water resources, dams, infrastructure and other various fields.

RECEIVED

DEC 06 2022

LAND USE DEPARTMENT

Memorandum:

To: Juliet Hodge, Director of Land Use & Planning
From: Steve Masalin, Public Works Director/Town Engineer *sm*
Date: December 6, 2022
Re: Avery Brook Homes, 94/96/98/100 Stoddards Wharf Rd (Appl. IWWC #22-18URA, PZ #22-18SUB)

I have reviewed the plans and stormwater management report for the subject application. I have the following comments.

1. General

- a. I find that the application and stormwater management system meet the requirements of the Drainage Ordinance (#300-017).
- b. Through extensive discussions with the applicant and in light of the nature of the application, including transition from private to public roadway, an exception regarding road width was considered and accepted. An allowance for a 22' width was granted beyond the Road Ordinance (#300-025) limit of a road serving up to eight (8) lots.

Notwithstanding, I continue to have reservations, based on experience, about the practical realities of a minimum-width road. Though we have robust enforcement provisions for parking violations, the likelihood remains of at least periodic issues with necessary routine access of large vehicles, such as curbside collection trucks, delivery trucks, plow trucks, etc,

On the other hand, as regulations have generally been progressively revised to accommodate mandates and best management practices (BMPs) associated with minimizing the impacts of development-related stormwater, reduction of the width of roadways is a measure that is finding more widespread adoption. Thus, I would see this as a relevant consideration here.

To offset the lack of access to on-street parking, the applicant has included a small public parking area for overflow parking in the parcel to be conveyed to the Town. The Town should not be required to maintain this public parking lot, even though on Town property. There should be a formal agreement that the maintenance needs of this lot, whether general or snow-removal-related, are the responsibility of the residents. In the absence of such agreement, the Town should not bear this responsibility.

Also, In keeping with stormwater impacts mitigation, elimination of curbing where practicable in allowing sheet in lieu of concentrated flow is another BMP. The applicant

has proposed a substantial stretch of the roadway without curbing. Again, though I have reservations about the eventualities of this based on some prior experiences, I feel that the grades of the affected area appear suitable for this approach.

2. Plans

- a. No Parking Signs: Part V, Section 2, Para E (Minor Local Streets) requires "No Parking" signs every 125' on both sides of the road for 22'-wide streets. This is contemplated in conjunction with a street that serves only 8 lots (for which an aforementioned exception has been afforded). If applied to this subdivision, this would calculate out to about 20 individual signs. This clearly seems excessive and would not be in the interests of the residents or the Town (from a maintenance standpoint). I recommend working out a more reasonable, tailored spacing/number of signs for this subdivision.
- b. Sheet 1: The following general notes should be added:
 - 1) "Actual conditions that develop or are more clearly assessed during construction may dictate that field adjustments, including additional drainage and sightline measures, may be necessary for adequate stormwater management. Additional design effort for and installation of such measures shall be undertaken in accordance with direction from the Town."
 - 2) "The Town will install the required road signage and markings, the cost of which will be backcharged to the applicant/owner."
- c. Sheet 6
 - 1) There is a curbing gap between stations 12+80 and 13+50 on the west side of the road that should be annotated for curbing.
 - 2) The discharge invert of 144.75 for the basin is wrong. It should be revised to provide the correct pitch to meet the calculations of the drainage analysis. Also, appropriate grading should be depicted to integrate this within the downgrade sloped area.
- d. Sheet 7: The pipe inverts associated with CBs 2 and 3 appear to be reversed.
- e. Sheet 10
 - 1) For clarity, invert elevations should be added to the D-Box detail.
 - 2) There appear to be duplicate details for the preformed scour hole.
- f. Disparities exist between the Engineering Report Storm Sewer System Design tabulations and the inverts shown on the plans:
 - 1) Pipe length of CB 1 discharge pipe: 42' on plan, 48' in report.
 - 2) Pipe slopes:
 - a) Pipe from CB 3 to CB 2: .020 in report, calculated at .0125 from plan elevations.
 - b) Pipe from CB 2 to CB 1: .017 in report, calculated at .0125 from plan elevations.
 - c) Pipe from CB 1 to discharge: .170 in report, calculated at .048 from plan elevations.

This doesn't seem to necessarily present a problem based on the reserve of pipe capacity indicated in the report, but since the construction slopes are less, the analysis should be rerun to confirm adequacy.



Ian T. Cole, LLC

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December 5, 2022

Mr. Peter Gardner P.L.S.
Dieter & Gardner, Inc.
Land Surveying Planning Engineering
P.O. Box 335
Gales Ferry, CT 06335

RE: IWWC 22-18URA- UPDATED WETLAND ASSESSMENT REPORT – AVERY BROOK HOMES, LLC; RESUBDIVISION OF 94,96, 98 and 100 STODDERS WHARF ROAD (aka ROUTE 214), LEDYARD, CONNECTICUT.

Dear Mr. Gardner:

On behalf of the applicant Avery Brook Homes, LLC I have revised the wetland assessment report dated August 22, 2022, in response to modifications of the Project design which now calls for the construction of twenty-six (26) new single family affordable residential lots at 94, 96, 98, and 100 Stodders Wharf Road. I offer the following updated comments relative to assessing impacts to the inland wetlands and watercourses due to the proposed activities.

EXISTING CONDITIONS

The site combines 4-parcels totaling approximately 9.2 acres of vacant land. A home site previously occupied the 1.37-acre parcel 98. Parcels 94, 96 and 100 are abandoned agricultural lands that have reverted into unmanaged xeric early successional habitat dominated by dry upland grasses and eastern red cedar (Photo 1). The bulk of the property was used as agricultural crop and pasture lands and can be seen in various stages of use in CTDEEP's Historic Air Photos for 1934 (Figure 2), 1951 and 1970. Post agriculture abandonment the site has been idle for several decades and has subsequently revegetated with early successional colonizers that favor the dry sandy soil conditions and open canopy habitat.

Three wetland resources were identified at the periphery of the property positioned in the low-lying lands to the north and east. Billings-Avery Pond is located off-site to the north; single family residential lots are found to the west and south along the road frontage of Route 214; and vacant woodlands occupy the bulk of the undeveloped lands east and north of the site which a substantial portion is located within the Groton Utilities owned Billings-Avery Pond watershed.



Photo 1: Typical upland conditions that characterize the property – abandoned agricultural lands



Figure 1: 2019 AIR PHOTO – TOWN GIS PARCEL DATA & GENERAL REFERENCE LOCATIONS OF FLAGGED WETLANDS



Figure 2: CTDEEP 1934 AIR PHOTO – Documenting past agricultural land use practices – Note Billings Avery Pond north of site has not yet been constructed.

In March 2022, I completed a field delineation of the jurisdictional freshwater inland wetland and watercourses boundaries of the above referenced properties.

DELIEATION METHODOLOGY

The second order soil survey and wetland delineation were completed in accordance with the standards of the Natural Resources Conservation Services (NRCS) National Cooperative Soil Survey and the definitions of inland wetlands and watercourses as found in the Connecticut General Statutes, Chapter 440, Sections 22a-36 through 22a-45 as amended. Wetlands, as defined by the Statute, are those soil types designated as poorly drained, very poorly drained, floodplain or alluvial in accordance with the NRCS National Cooperative Soil Survey. Such areas may also include disturbed areas that have been filled, graded, or excavated and which possess an aquic (saturated) soil moisture regime.

Watercourses means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, vernal, or intermittent, public, or private, which are contained within, flow through or border upon the Town of Ledyard or any portion thereof not regulated pursuant to sections 22a-28 through 22a-35, inclusive, of the Connecticut General Statutes. Intermittent watercourses are defined permanent channel and bank and the occurrence of two or more of the following characteristics: (a) evidence of scour or deposits of recent alluvium or detritus, (b) the presence of standing or flowing water for duration longer than a particular storm incident, and (c) the presence of hydrophytic vegetation.

WETLAND DELINEATION RESULTS

The on-site wetland delineation examined the upper 20" of the soil profile for the presence of hydric soil conditions. The watercourse referenced below was delineated based upon its characteristics as an intermittent watercourse as defined in the preceding paragraph. Those areas meeting the wetland criteria noted above were marked in the field with sequentially numbered pink and blue wetland flagging and are correctly illustrated on the subject site development plans revised 10/31/2022

Wetland Resources

Three wetland/watercourse boundaries were identified on the property. The wetlands/watercourse partly have their origin tied to past agricultural and land management practices.

Wetland #1 is an unnamed intermittent watercourse that flows across the eastern property line (Photo 2). The watercourse is well-defined and is confined to the banks of the stream and its associated low-lying and level poorly drained soils. As the watercourse flows across the property line the channel takes an abrupt 90 degree turn to the north and exits the property. Alder, dogwood, spicebush, sweet pepperbush, and high bush blueberry shrubs characteristically define the shrub layer that line the banks of the stream channel. A thick herbaceous growth of tussock sedge, cinnamon fern and skunk cabbage carpets the wetland forest floor. These wetland conditions quickly give rise to upland vegetation and well-drained sandy soil conditions that define the adjacent fallow fields.

Wetland #2 is a wetland pocket that formed in the bottom of an excavated borrow pit (Photo 3). Material was excavated to a point where it intercepted the groundwater table creating seasonal ponding that supported the development of ephemeral wetland conditions.

Wetland #3 is associated with the wetted perimeter and forested fringe of Billings-Avery Brook (Photo 4). The wetland boundary is well-defined and closely follows a distinct break in slope. The wetlands exhibit classic seasonally flooded palustrine forested red maple swamp vegetation common to the area.

Wetland Functions and Values

The assessment of wetland functions and values is based on the US Army Corps of Engineers' (USACE) Descriptive Approach (1995) methodology, and on best professional judgment.

The principal function of the regulated wetlands is groundwater discharge and recharge. Secondary functions include flood flow alteration (storage and desynchronization), water quality renovation properties (nutrient and sediment uptake and retention), and general wildlife habitat properties typically associated with undeveloped lands. Additionally, the short section of the intermittent watercourse channel adjacent to the development primarily functions to convey surface runoff down slope during the high seasonal water table period and after heavy rains.

Other wetland functions and services are somewhat limited due to the private ownership of the property, overall site setting, relatively small size (*specifically the wetland pocket on Lot #5*), association with an open channel, landscape position, intermittent hydro-period, lack of open standing deep-water habitat, and presence of invasive and non-native species.



PHOTO 2: WETLAND #1 – Denoted by wetland flags 1 through 8 – Watercourse and Wetland that flows across eastern property line onto proposed lots #2 & #3.



Photo 3: Wetland Pocket in rear of proposed Lot #5. The ephemeral wetland is located in the bottom of a previously graveled-out “borrow pit”.



Photo 4: Typical early emergent conditions along Billings-Avery Brook in early March 2022. Generally, the watercourse channel and adjacent wetland boundary is well-defined.

SOIL SURVEY

The soils identified on-site are a refinement of the Natural Resources Conservation Service (NRCS) Websoil Soil Survey. The site occurs at the interface of the dense glacial till and bedrock-controlled landscape that characterizes the high elevations on the extreme westerly side of the site with the opposing glacial meltwater outwash sands and gravels that cover the Avery Brook watershed.

Wetland Soils

The primary wetlands soil series along the flagged wetland boundaries are classified as (3) Ridgebury, Leicester, and Whitman fine sandy loams. The poorly drained soils along the wetland boundary belong to the Ridgebury and Leicester soil series. Ridgebury and Leicester soils are found within drainageways and depressions on glacial till landscapes. Ridgebury and Leicester soils have a seasonal high-water table at a depth of about 6 inches. Very poorly drained Whitman soils are found in the lowest lying areas within the interior of the wetlands where the water table is at the surface throughout most of the growing season.

A typical soil profile along the wetland boundary consists of approximately 2"-0" of intermediately decomposed organic material (Oi), followed by 0"-8" of a thick dark topsoil horizon (A), underlain by 8-20" of a wet weakly developed grayish subsoil horizon (Bg) with common redoximorphic features (Common medium distinct strong brown mottles, masses) ranging from fine sandy loam to very fine sandy loam. This subsoil is underlain by a saturated sandy loam to fine sandy loam gray substratum (2Cg).

Upland Soils

The upland soils are located on a transition from the higher elevation till soils west and south of the proposed development to outwash material lower on the landscape. The bulk of the uplands are mapped as well drained – Agawam fine sandy loams. These stratified, water sorted sands and gravels are well suited for development and are generally unrestricted. Along the property boundaries are notable pockets of excessively well-drained Hinckley loamy sands. These deep sands and gravels have rapid permeability and high infiltration rates. Surrounding the property are notable bands of mapped Udorthent soils. These mapping units occur in areas where material was previously mined, evidence of how useful the sandy soil material at the site is for building purposes.

PROPOSED ACTIVITIES

In response to review comments, the modified development proposal calls for the construction of 26 individual single-family residential homes consistent with the standards and guidelines for affordable subdivisions under the Affordable Housing Act, Connecticut General Statutes §8-30g. This is a reduction of 15 lots from the original concept project and a reduction of 10 lots from the originally submitted development initiative. Lots are to be serviced by health department approved private well water and private on-site septic systems. The homes will be accessible by a municipality owned and maintained loop road with a single access point to be named Avery Brook Circle. Stormwater generated from the entire road surface will be directed into a stormwater quality basin which will renovate and treat the first one inch of stormwater (90% of storm events) prior to its release as non-erosive sheet flow.

IMPACT ASSESSMENT

There are no direct impacts to the wetlands due to the proposed development activities.

Wetlands and/or the 100' Upland Review Area are found on 5 of the 26 lots.

1. The 100' upland review area associated Billings Avery Brook's forested wetland fringe (Photo 4) encroaches onto the northern limits of Lots, #6, 7 & 8. The 100' upland review area on these lots will remain undisturbed and will be preserved in their existing vegetated state.
2. A wetland pocket (Photo 3) is found in the rear of Lot #2. Activities proposed within 100' of the subject wetlands include grading and construction of a portion of the house.
3. The perimeter of an intermittent watercourse (Photo 2) flows along the easterly property boundary and onto the easterly portion of the of the lot that will host the stormwater quality basin which is proposed within the upland review area.

The development and associated activities will maintain the holistic functions and value of the wetlands. The wetlands including their existing functions as well as the on-site drainage patterns will be maintained. The beneficial and functional service of the neighboring wetlands is the conveyance of seasonal flow and groundwater recharge, which the development will be preserving by maintaining overall existing drainage patterns and flow dynamics.

INDIRECT IMPACTS

Indirect or secondary impacts to a wetland or watercourse can occur as a result of activities outside of the wetlands or watercourses. These impacts can be either short-term (*construction phase*) or long-term (*i.e., change in drainage patterns / whole-sale clear cutting*) and are typically associated with erosion and sedimentation during construction, removal or disturbance of vegetation in adjacent upland areas, alteration of ground / drainage patterns that could affect the flow regime of a watercourse, and the discharge of

degraded or insufficiently treated surface or groundwater, which may adversely impact the water quality of the regulate resource.

The potential for any of these indirect impacts to occur at the site as a result of the development depends on the quality of the regulated resources, the sensitivity to said resources, the resource's physical and ecological characteristics, and the degree to which those resources provide recognized functions and values and the nature of the activities proposed in areas surrounding or which contribute flow (either surface water or groundwater to the regulated resource). These potential impacts are described in detail below:

EROSION AND SEDMIENTATION

To minimize potential impacts, the design incorporates industry standard best management practices (BMPs) and guidelines for residential developments. A detailed construction sequence has been provided as part of the application. Additional construction notes include details on the proposed earthwork and grading, site stabilization, and best management practices (BMPs) for protecting the environment have been incorporated into the Project requirements. All construction activities will be completed in compliance with the standards and guidelines provided by the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. These controls as well as compliance with permit approvals will ensure that no permanent adverse effects will impact the receiving wetlands.

The site risk or potential for adverse impacts from erosion and sedimentation is considered low-moderate because 1.) A detailed erosion and sediment control plan has been prepared and submitted, and 2) the site's in-situ undistrubed soils are for the most part low to moderately erosive. 3) the site is generally level and topography is easily managed, and 4) there is no need for large scale tree removal as the bulk of the land is open field habitat. Therefore, it is my professional opinion that with coordination and watchful monitoring and maintenance of erosion and sediment controls until construction is completed and restoration activities have stabilized the ground conditions there will be no anticipated adverse impacts to the regulated resources resulting from the development of the Project.

VEGETATION REMOVAL AND HABITAT LOSS

Habitat loss associated with land clearing is a consequence of land development which has the potential of impacting wetlands and watercourses. The proposed development will keep clearing limits to a minimum by clearing what is physically needed for facilitating the construction of the homes and associated appurtenances. The proposed plans have been updated to show the limits of clearing. The past agricultural uses of the properties have maintained and promoted open conditions for a long time which will result in a reduction of whole-sale land clearing requirements to facilitate construction of the proposed development. The conversion of the vegetation cover within the development envelope will not change or diminish the ecological integrity of the surrounding forest and wetland communities.

POTENTIAL IMPACTS TO WETLAND HYDROLOGY AND STREAM DYNAMICS

The hydrologic and flow regime of Billings Avery Brook and the intermittent watercourse along the eastern property line are supported by off-site contributions from groundwater and surface water inputs. The proposed development will not impact drainage patterns either on-site or off-site. The wetlands baseflow will be recharged from the natural high infiltration rates as stormwater runoff freely drains back into the underlying sandy soil.

The Projects design engineer has provided an engineering analysis and stormwater management system to support the development. LBM Engineering LLC's stormwater report states and supporting calculations demonstrate that the proposal will not increase the potential for downstream flooding. The non-erosive sheet flow runoff from the development will precede the peak flow in Billings Avery Brook, thereby having no effect on downstream flooding.

POTENTIAL WATER QUALITY IMPACTS

The proposed development has been reviewed by the Ledge Light Health District (LLHD) for the suitability of the development to support 26 on-site septic service and provide adequate water supply. In the original proposal LLHD recommended that the proposed 36 Lots were suitable for development with the caveat that no footing drains are required (*which given the demonstrated high soil permeability and high percolation test rates (generally > 5min/inch) footing drains are not needed and should not be required*). The revised plans have substantially reduced the number of lots down to 26 and moved all proposed septic systems a minimum of 100' away from any inland wetland or watercourse boundary. This increase in separation distance to the wetland resource will improve maximizing pollutant removal.

The maintained minimum 100' setback with regards to the on-site septic treatment system areas is also consistent with CTDEEP's recommended 100' buffer to a wetland resource area. The CTDEEP Scientific Basis for Protecting Riparian & Wetland Buffer Zones (REMA Ecological Services) indicates the following removal rates can generally be provided by a 100-foot buffer:

- 81 percent of total suspended solids
- 89 percent of sediment
- 89.5 percent of nitrogen
- 82 percent of phosphorous

Wide buffers (e.g., 100 feet or greater in width) provide the best protection for water quality by moderating temperature changes and improving control of erosion, sediment and pollution and provide the widest range of wildlife values. It can be concluded that wider buffers also provide more overall benefits such as reducing human disturbance, maintaining wildlife habitat and providing improved flood protection.

The revised plans have been updated to include an engineered stormwater management system. The stormwater quality basin is situated between Lots 1 and 2 and is sized to

receive and renovate the first 1 inch of rainfall, which in the northeastern U.S. equates to approximately 90 percent of rainfall events and is consistent with the design standards recommended in CTDEEPs 2004 Stormwater Quality Manual.

The proposed development will not create any new point discharges. The site will be graded so stormwater runoff will sheet flow across the landscape to promote infiltration into the surrounding well drained soils. This infiltration into the ground will recharge the nearby wetland resource baseflow.

CONCLUSION

After receiving and reviewing initial review comments with respect to the development initiative, the Applicant has revised the development proposal by (1) eliminating 10 building lots (2) revising the infrastructure design of the roadway system for the project to provide a municipal street system within the development and by eliminating one street access point from Stoddards Wharf Road and (3) incorporating a stormwater quality treatment system that provides a partially closed drainage system which will capture and treat for stormwater quality purposes, a substantial portion of the improved site stormwater runoff. In addition, all proposed primary and reserve septic system areas have been removed from the one hundred (100') foot upland review area. With the exception of a portion of 1 house and the stormwater quality basin the bulk of the development is outside any regulated areas under the Ledyard Inland Wetlands and Watercourses Regulations.

In considering the feasible and prudent alternatives which have been presented by the Applicant, the current proposal of 26 residential lots (*on a site that has been demonstrated to support up to 41 homes*) with no direct wetland impacts and includes BMP measures that will protect the resource areas is the most feasible and prudent alternative for residential development of this property giving due consideration to balancing the protection of the inland wetlands and watercourses and fostering of the economic development of the site, particularly when that development is to provide workforce housing which is a required State mandate.

Alterations within the URA will have some minor conversion of habitat. The activities in the uplands required to facilitate the development will not result in any loss of wetland function. Post development the wetlands and watercourse will still have the same ability to perform the existing functions they currently provide. As a result, environmental effects will be minor and highly localized. The applicant will mitigate such impacts by implementing standard construction BMPs and conforming to permit conditions.

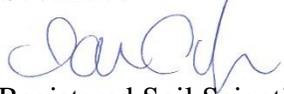
There will be no significant adverse impacts to the wetlands and watercourses resulting from the development of the Avery Brook project as currently proposed. The design has minimized wetland impacts by:

1. Avoidance of any direct wetland disturbance.
2. Providing and maintaining erosion and sediment controls during construction.
3. Commitment to adhering to permit conditions and construction industry standard best management practices (BMPs).

4. Compliance with all regulatory standards, including but not limited to, The Connecticut Public Health Code.

Please do not hesitate to contact me at; (860) 514-5642 or itcole@gmail.com if you have any questions or need any additional information.

Respectfully Submitted.

Ian T. Cole 
Professional Registered Soil Scientist
Professional Wetland Scientist #2006

KARL F. ACIMOVIC, P.E. & L.S.
CONSULTING ENGINEER

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Groton Utilities / Statement on Proposed Avery Brook Subdivision
December 2, 2022

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Re: Application of Avery Brook Homes, LLC for a permit to conduct regulated activities in upland review areas with respect to properties located at 94, 96, 98 and 100 Stoddards Wharf Road, Ledyard, Connecticut

To date, Groton Utilities has prepared review comments pertinent to the above project. These review comments were originally prepared for a proposed subdivision of 36 lots with a private road, individual septic systems, individual wells and no provision for stormwater management. To date these plans have been revised to a 26-lot subdivision with a proposed Town-owned road and partial stormwater facilities, but still with individual septic systems and individual wells. While downsized in scope, our concerns remain the same, in that there is insufficient data provided by the applicant to ensure that this subdivision, with its density of housing, its individual on-site subsurface sewage disposal systems, its individual well layout and the limited stormwater treatment will not have a deleterious impact on the quality of water to the directly adjacent drinking water supply reservoir.

To reiterate our previous points, to which additional reference and inclusion is hereby made:

(1) **Soils** – The data provided on the plans indicates a high degree of permeability for soils throughout the site, as evidenced by the test pit data and percolation rates for the site of each proposed lot. This points to a relatively rapid discharge and migration of effluent to the underlying water table and to areas immediately surrounding the subsurface sewage disposal system, resulting in significant nutrient loadings detrimental to a safe drinking water supply.

(2) **Water Supply** – A study had been previously prepared by GEI Consultants examining the adequacy of water supply for the number of lots and the anticipated number of individuals expected to inhabit the area. This study was prepared for greater than 30 lots, the previous submittals, but no revised report has been submitted with respect to the current proposal. The study did point out that the amount of required water for supply could not be met from onsite groundwater alone, but would have to rely on drawdown from properties adjacent to this site. Since Groton Utilities is a major abutter to the site, we assume that, without more specificity, the drawdown would impact the Groton property as well as other abutting and nearby landowners. Again, it is important to note that the study addressed only adequacy of supply, but not

the quality of existing groundwater, nor the potential impact of drawdown from multiple wells in close proximity to other lots and to the adjacent neighborhood. Nor does it address, as previously pointed out, the potential issue of drawing water from a water table that has significant effluent dispersal from multiple subsurface sewage disposal systems in close proximity to each other.

(3) Subsurface Sewage Disposal Systems – The concentration of the proposed subsurface sewage disposal systems, although less in number than the previous proposal, still represents a dense layout with a hydraulic profile that includes effluent discharge from multiple systems combined along the same slope and outflow directions. All effluent is discharged toward Groton Utilities property from these systems, with wetlands and open water in close proximity to a drinking water supply reservoir. **We ask that an in-depth study of the water table’s hydraulics and the ability of the soils to treat or renovate the wastewaters prior to dispersal onto Groton Utilities property be provided.** Though lots have been tested, designed and reviewed on an individual basis, it is critical to consider this type of dense layout as a cumulative impact that must meet certain standards at the property line – particularly because that property line and underlying groundwater and surrounding wetlands are directly linked to a drinking water supply that affects adjacent towns¹ as well as the Town of Ledyard.

(4) Stormwater – This issue has been partially addressed with the proposed stormwater quality basin, but still maintains runoff without pretreatment or detention before reaching the Groton Utilities’ reservoir area. We find this unacceptable, particularly with respect to the high percolation rates and the gravelly soils encountered and documented in the test hole information included with this latest proposal. With such high permeability, we feel that the proposal has not adequately addressed the potential impact of directing non-treated stormwater runoff to our reservoir system.

In addition, due to the increase in paved and landscaped (lawn) areas, there is a risk of increased runoff of pollutants and nutrients that could directly impact the adjacent wetlands and open water areas. The applicant has indicated that sheet flow over pervious areas would decrease or, in this case, eliminate the need for any detention facilities and referred to a Town Ordinance that implies runoff without detention to the Groton Utilities reservoir system. We have addressed this ordinance in previous reviews and are in disagreement with the concept. We know that runoff water will reach us in any case, but we ask that it be as clean as possible when it reaches us. Our wetlands and open bodies of surface waters, where adjacent to residential or commercial lands, should not be regarded as pretreatment for a drinking water supply.

(5) Town Road – The change has been made to now consider the interior road as a Town road, in which case we presume that it will be given to and maintained by the Town in the future. As the treatment of roads for wintertime maintenance has now changed, it is our understanding that the road will be treated only with sodium related

¹ Note that Groton Utilities is a regional supplier to other area towns, in addition to Groton and Ledyard.

products. We have been tracking both sodium and chlorides in our reservoir system for many years and have analyses that indicate an increase in sodium levels since 2013, the year that Connecticut DOT, as well as most Towns, changed over to the use of sodium products rather than using sand or a combination of the two. Our processes at the Water Treatment Plant, as with most drinking water purveyors in the State, are not set up for the treatment of sodium. As such, any increase in the amount of sodium detected in the raw water supply must be considered as a potential treatment issue that could incur additional costs to the consumers within the surrounding communities.

(6) CDR Maguire 2014 Report – A sample issue identified in the CDR Maguire report included a reference to the Avery Hill and Aljen Heights areas of the Town of Ledyard, approximately 2 to 3 miles west of the currently proposed location, where lots were in the range of 0.25 to 1.0 acre in size. These areas required a public water supply in order to address “..... *groundwater contamination and limitations in capacity of private wells and small community systems*”. We feel this is an apt comparison due to the density of the housing and the proximity of the sewage disposal systems and wells to each other without further analysis.

In summary, there is no question of the certainty of the direction of both surface and groundwater flows, in that it will reach our reservoir surface and groundwater within a short distance and short period of time. We have previously asked for and now reiterate the need, based on the above points and the previously submitted comments, to prepare a study, a renovation analysis, to ascertain the impact of the proposed development to our drinking water supply reservoir. This should include, specifically because of the density of the proposed lots, the guidelines for renovation and hydraulic analysis found in the DEEP’s “*GUIDANCE FOR DESIGN OF LARGE-SCALE ON-SITE WASTEWATER RENOVATION SYSTEMS*” and the DPH’s “*Design Manual - Subsurface Sewage Disposal Systems for Households and Small Commercial Buildings*”. We feel strongly that this type of analysis is necessary to make an informed decision as to the impact to our reservoir system, as well as to the impact on lots adjacent to each other within the proposed subdivision.



Prepared by Karl F. Acimovic, P.E. & L.S.
Dec. 2, 2022

KARL F. ACIMOVIC, P.E. & L.S.

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GRADUATE STUDY, UNIVERSITY OF CONNECTICUT

REGISTRATIONS: PROFESSIONAL ENGINEER, STATE OF CONNECTICUT
PROFESSIONAL LAND SURVEYOR, STATE OF CONNECTICUT

AFFILIATIONS: American Society of Civil Engineers (Member)
American Water Works Association (Member)
New England Water Works Association (Member)
Connecticut Association of Land Surveyors (Member)
Assoc. of State Dam Safety Officials (Assoc. Member)
American Concrete Institute (Member)
Water Environment Federation (Member)
PADI Diving Society (Certified Open Water Diver)

EXPERIENCE:

1986 to Present: KARL F. ACIMOVIC, P.E. & L.S., Consulting Engineer

Currently providing a variety of engineering services to various clients in water resources, sewers, commercial and residential site development, dam design, drainage improvements and land surveying.

REPRESENTATIVE PROJECTS:

Dams and Reservoirs:

NATIONAL DAM INSPECTION PROGRAM, Phase I Reports, U.S. Army Corps of Engineers - Site inspections, preparation of hydrologic and hydraulic analyses, including use of the HEC-1 computer program, preparation of final reports and presentation of final reports to the Corps.

PHASE II AND PHASE III DAM INSPECTION REPORTS, PLANS AND DOCUMENTS - These projects included in-depth hydraulic, hydrologic and structural analyses using HEC and SCS computer programs. It also involved the preparation of construction plans, subsequent construction inspection and supervision, and contract administration. Some representative dam sites include the Poquonnock Reservoir Dam, Morgan Pond Dam, Ledyard Reservoir Dam and Poheganut Dam in Groton, Connecticut (Groton Utilities Dept.); Holbrook Pond Dam in Hebron, Connecticut (Water Resources Unit, Conn. DEP); Bashan Lake Dam in East Haddam, Connecticut (Water Resources Unit, Conn. DEP); Gorton Pond Dam in East Lyme, Connecticut (Water Resources Unit, Conn. DEP); Eagleville Lake Dam in Mansfield and Coventry, Connecticut (Inland Water Resources, Conn. DEP); Morey Pond Dam in Ashford, Connecticut (Inland Water Resources, Conn. DEP); Hatch Pond Dam in Kent, Connecticut (Inland Water Resources, Conn. DEP); and Babcock Pond Wildlife Management Area Dams in Colchester and East Haddam, Connecticut (Inland Water Resources, Conn. DEP).

KARL F. ACIMOVIC, P.E. & L.S.

INSPECTION AND DESIGN WORK FOR CT DEEP / INLAND WATER RESOURCES - Over the last 33 years, work for the department has included inspections of dams requiring repair, assistance with review of submittals to the department and preparation of design plans and specifications for repairs. Through 2022, this has included over 260 dams located throughout the State of Connecticut.

CURRENT AND RECENT MUNICIPAL RELATED ENGINEERING WORK:

Consulting Town Engineer for the Town of Willington, Connecticut - Advisor to the Board of Selectmen and Public Works Department. Work since 1991 includes preparation of plans, specifications and contract documents for public works drainage, road and bridge projects.

Consultant to the City of Groton, Connecticut - As an in-house consultant to the City and its Dept. of Utilities and Public Works, work includes design of new facilities and repair work for the Water Dept. and Water Pollution Control Authority. Current and past projects include dam inspection and rehabilitation; water and sewer system improvements; water and sewer system pump station construction and rehabilitation; inventory, maintenance and replacement of underground fuel storage tanks; hydraulic analyses for fire flows; planning and feasibility reports; preparation of State and Federal permits; and other miscellaneous work.

Windham Water Works – Work for the Willimantic Water Department's Windham Water Works over the past 15 years has included design and contract administration for projects on repairs to Willimantic Reservoir Dam, raw water intake structures, construction of residuals drying lagoons, building addition installation, and dam inspections.

City of New London – Projects over the past 19 years for the New London WWPCA have included dam inspections for the City's drinking water system, preparation of their Water Supply Plan and Conservation Plan, water tank construction, improvements and repairs to various dams in the system, and property acquisition and feasibility studies

Town of Vernon – Projects over the last 12 years have included dam inspections, preparation of plans, specifications, permits and contract documents for dam rehabilitation.

Town of East Windsor – Projects over the last 5 years have included dam inspections, preparation of plans, specifications, permits and contract documents for drainage projects and dam rehabilitation.

DAM BREACH PROJECTS:

Preparation of dam breach plans for East Brass Mill Dam in Waterbury, CT, prepared for the Dam Safety Section of the DEEP, including removal of a concrete structure and earth embankment sections, as well as rerouting of the Mad River to its original location; removal of a portion of the earth embankment of Painter Pond Dam, including rerouting of Mill Brook, in Woodstock; and removal of Bulkley Pond Dam on Sasco Creek, adjacent to Route 1, on the Fairfield - Westport Town Line. Current breach projects include Red Mill Pond Dam and Mohegan Brook Dam, both in Uncasville, CT, and Spaulding Pond Dam in Norfolk, CT.

OTHER:

Town of Coventry, CT – Public Works Facility Study Committee & Public Works Building Committee (2001 – 2012, Chairman). Member of Town Committee for duration of a study of location siting and facility requirements for a new Public Works Garage, selection of design-build contractor, and coordination with Public Works Dept. and Contractor for design and construction of the new garage.

Karl F. Acimovic, P.E. & L.S.

Education: Mathematics, BA, University of Connecticut
Civil Engineering, BS, University of Connecticut
Graduate Courses in Engineering (Water Related, Hydraulics,
Geotechnical), University of Connecticut

Professional Licensing / Registration:

Professional Engineer, Connecticut
Professional Land Surveyor, Connecticut

Professional Membership Affiliations:

American Water Works Association (Also New England & CT Sections)
American Society of Civil Engineers (Also CT Section)
Water Environment Federation
American Association of Dam Safety Officials
Connecticut Association of Land Surveyors
American Concrete Institute

Karl Acimovic, P.E. & L.S. – Project Descriptions / Consultant to Groton Utilities

Permitting:

Prepare permit applications for environmental and water related projects to the Department of Energy & Environmental Protection, Department of Public Health and other Local, State and Federal Agencies as required. This includes mainly water and sewer related projects, but on occasion also electric facilities.

Update and keep permits current, particularly annual diversion permit reports to satisfy permit conditions for metering and other activity monitoring.

Examples: Diversion Permits (DEEP), Change-In-Use Permits (DPH), Marine Facilities at the PAF (DEEP), Air Quality Permits for Generators (DEEP), Underground and Aboveground Fuel Storage Containers (DEEP and Federal), Inland Wetland Permits (Local), etc.

Design Projects:

Assist Project Management with preparation of design plans, technical specifications and contract documents for both permitting and bidding, related to water sewer and electric projects.

Examples: Water & Sewer Pump Station Construction, Modifications and Upgrades; Pump Replacements at Various Facilities (Water Treatment Plant Low Lift & High Lift); Project Management Building, Performance Specifications for

Bidding and Site Plans for Local and State DPH Review; Electrical Substation Foundation Design, Site Plans, Security Enhancements and Spill Containment; Gravity and Force Main Sewer Installations; Water Main Installations; GIS (ESRI) and AutoCAD Mapping and Drafting; Dam Repair and Rehabilitation Projects, including hydrologic and hydraulic assessments of the Groton Utilities watershed areas; etc.

Dams & Reservoirs:

Perform dam inspections, including structural evaluations of embankments, spillways, gatehouses and associated facilities; evaluate toe drain discharges and piezometric water grade lines at earth embankments; design improvements, modifications and repairs to dams, including plans, technical specifications and contract documents; prepare emergency action plans for high and significant hazard dams for potential storm events that could impact downstream infrastructure and built-up areas; etc.

Inspections, Contract Administration, Troubleshooting:

Assist Project Management staff with daily problematic situations as they occur.

Reports & Studies, Miscellaneous:

Assist staff with long range analyses and studies such as preparation of information dealing with hydraulic modeling, water supply plans, conservation plans, emergency plans, drinking water quality management plan, stream flow analyses, etc.

Assist Project management in review of site plans, designs, calculations and reports / studies from other consultants, both for in-house submittals and those from local land use agencies.

Past & Ongoing Special Projects:

Drinking Water Quality Management Plan (DWQMP) – This plan drew together various stakeholders from Southeastern Connecticut communities in promoting a clean source water program, while protecting the existing economic base and promoting growth in trade and industry through a wise use of natural resources within our watershed. For the past many years, I have been working with Management to promote and maintain a concern for watershed resources through the development of a plan specifically designed for Groton Utilities. While the plan has now been completed, I continue to act as a liaison between Groton Utilities, stakeholders and regulators.

Water Supply Plans (WSP) – These plans, mandated by the State of Connecticut Department of Public Health (DPH), are dynamic plans requiring periodic updates to satisfy regulatory obligations. Past plans, adopted and approved by the Department of Energy & Environmental Protection (DEEP) and the Department of Health (DPH), included those prepared for both Groton Utilities and the Town of Ledyard WPCA. Because of the substantial amount of information required to

be addressed, work on background data is continually being analyzed and compiled in a timely fashion in order to be prepared for required updates. In my capacity of assisting Project Management, I periodically review the current plans, identify the need for sections to be updated, categorize the work that we could accomplish with in-house staff, and draw up an RFP for those items requiring outside consulting services. Groton Utilities then compiles the final report to be submitted to the DPH and DEEP.

Conservation Plans & Emergency Operations Plans – These plans, again mandated by the State of Connecticut Department of Public Health and the Department of Energy & Environmental Protection, are required as appendices to the Water Supply Plan and to DEEP Diversion permitting. Both of these were prepared in-house for the most recent WSP submittals. To assist Project Management staff, I continue to provide assistance in updating these two plans.

Minimum Stream Flow Requirements – The State of Connecticut, Department of Energy & Environmental Protection, has instituted into law minimum standards for stream flows throughout the State. These rules have a significant impact upon the water industry – particularly those (e.g., Groton Utilities) that rely on surface water resources. I have been working with Project Management and Water Treatment Plant staff over many years in analyzing flows from influent streams such as Great Brook and Thompson Brook and continue to contribute toward a working management plan that meets current and future DEEP requirements.

Karl Acimovic, P.E. & L.S. – Consulting Engineer in Private Practice

For the past 36 years, I have been an independent consultant providing services to a varied clientele. Previous to that, work included professional services to both surveying and engineering firms over a 20-year period. Current and past work has included a wide spectrum of projects in the civil engineering field with municipal, State and Federal clients with respect to water resources, dams, infrastructure and other various fields.

VERIFIED NOTICE OF INTERVENTION

TO: Town of Ledyard Planning and Zoning Commission

RE: Application for 26 lot, Section 8-30g Affordable Housing Development on Stoddard's Wharf Road (the "Proceeding")

APPLICANT: Avery Brook Homes, LLC

PREMISES: Assessor's Map 65, Lots 94, 96, 98 & 100, Ledyard, Connecticut (collectively, the "Subject Premises")

The City of Groton (the "Intervenor") is a municipal corporation with an address at 295 Meridian Street, Groton, CT 06340. The Intervenor owns and operates a public drinking water supply reservoir (the "Billings-Avery Reservoir") on approximately 144 acres of land at 70 Stoddards Wharf Road which adjoins the Subject Property. The Intervenor hereby intervenes in the above referenced Proceeding pursuant to Section 22a-19 of the Connecticut General Statutes and represents as follows:

1. The Intervenor, through its Department of Utilities ("Groton Utilities") is a water company as defined in CGS § 25-32a providing public drinking water to various municipalities in southern Connecticut, including Ledyard.
2. The northerly property line of the Subject Premises is approximately 100 ft. from the high-water line of the Billings-Avery Reservoir, and inland wetlands situated on, or adjacent to, the Subject Property connect directly to the Billings-Avery Reservoir.
3. Section 22a-19 of the Connecticut General Statutes states, in pertinent part, that "[i]n any administrative...proceeding, and in any judicial review thereof made available by law,...any person,...corporation...or other legal entity may intervene as a party on the filing of a verified pleading asserting that the proceeding or action for judicial review involves conduct which has, or which is reasonably likely to have, the effect of unreasonably polluting, impairing or destroying the public trust in the air, water or other natural resources of the state." *Conn. Gen. Stat. § 22a-19.*
4. The Intervenor has submitted information from Karl F. Acimovic, a professional engineer licensed in Connecticut with extensive experience in watershed protection and management. A copy of Mr. Acimovic's current report is attached to this Verified Notice of Intervention. Upon information and belief, the Application is missing critical information and analysis without which the Intervenor believes the activities presently proposed to be conducted by the Applicant are reasonably likely to have one or more of the following results:
 - a. The Application, with its significant increase in intensity of use on the Subject Premises (including the proposed addition of 26 new single family building lots, 26 new drinking water wells and 26 new underground sanitary septic systems) and inadequate management, treatment and detention of stormwater runoff from 26 proposed new homes, roadway and other impervious surfaces, is reasonably likely to have the effect of unreasonably polluting and impairing the Billings-Avery Reservoir, and associated wetlands, which are a source of public drinking water, including, without limitation, a diminution of existing water quality (i) through the loss of existing wooded areas on the Subject Premises (ii) through the discharge and introduction of insufficiently treated septic effluent and bacteria, and (iii) through the discharge and introduction of lawn chemicals, and salt from roadways, driveways and home sites on the Subject Premises;

b. The Application, with its significant increase in intensity of use on the Subject Premises and inadequate management and detention of stormwater runoff, is reasonably likely to unreasonably contribute to, and exacerbate, downgradient flooding within the Intervenor's water-supply watershed during increasingly frequent major storm events;

c. The Application, with its significant increase in intensity of use on the Subject Premises, including 26 proposed new sanitary septic systems, and the use of fertilizers, herbicides and pesticides on 26 proposed single-family building lots of approximately 1/3 acre each, is reasonably likely to unreasonably pollute and impair the shallow ground water on the Subject Premises and to pollute and adversely impact the water quality of the Billings-Avery Reservoir and its associated wetlands;

d. The Application, with its significant increase in the intensity of use of the Subject Premises and inadequate management, detention and treatment of stormwater runoff is reasonably likely to unreasonably pollute and impair the public drinking water supply, including associated wetlands, on the Intervenor's property through the discharge and introduction of sediments, salts and other non-point sources of pollutants from proposed roadways, driveways and home sites on the Subject Premises.

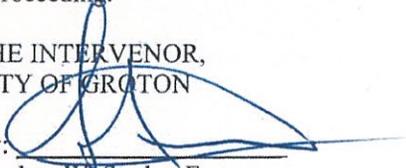
5. The activities proposed to be conducted by the Applicant upon the Subject Premises, as described above and in its application to this agency, are reasonably likely to have the effect of unreasonably polluting, impairing and/or destroying the public trust in the ground water, surface water, wetlands and watercourses on both the Subject Premises and on the Intervenor's adjacent land or other natural resources of the State of Connecticut.

6. There are feasible and prudent alternatives to the proposed development including a significantly smaller development which incorporates and preserves more of the existing woodlands on the Subject Premises, with fewer proposed on-site drinking water wells, fewer on-site sanitary septic systems, less impervious surface, a more efficient and effective system for the treatment, management and detention of stormwater runoff and less total site disturbance.

7. The Intervenor, pursuant to Section 1-227 of the Connecticut General Statutes, also requests written notice by mail of all meetings and/or hearings to be held, conducted or issued in connection with the Proceeding. Such notices should be sent to counsel for the Intervenor: Stephen W. Studer Esq., Berchem Moses PC, 75 Broad Street, Milford, CT 06460, ssuder@berchemmoses.com and Peter Gelderman, Esq., 1221 Post Road East, Suite 301, Westport, CT 06880, pgelderman@berchemmoses.com.

WHEREFORE, on this 6th day of December, 2022, the Intervenor hereby intervenes in this Proceeding pursuant to this Verified Notice of Intervention and requests notice of any and all meetings and/or hearings conducted in connection with this Proceeding.

THE INTERVENOR,
CITY OF GROTON

By: 
Stephen W. Studer, Esq.
Berchem Moses PC
75 Broad Street
Milford, CT 06460
Telephone No.: (203) 783-1200
Email: ssuder@berchemmoses.com

Verification

STATE OF CONNECTICUT :
 : ss: Groton
COUNTY OF NEW LONDON :

I, Ron Gaudet, being duly sworn, do depose and say that:

1. I am the Director of the City of Groton, Department of Utilities (aka Groton Utilities).
2. The City of Groton owns the premises located at 70 Stoddards Wharf Road, Ledyard, Connecticut and operates it as part of its public drinking water supply watershed.
3. I have read the foregoing Verified Notice of Intervention and the allegations contained therein are true to the best of my knowledge, information and belief.



Ron Gaudet, Director

Subscribed and sworn to before me this 4th day of December, 2022



Notary Public
Commissioner of the Superior Court

NOEMI LYNN WALENCEWICZ
NOTARY PUBLIC
MY COMMISSION EXPIRES JAN. 31, 2025



KARL F. ACIMOVIC, P.E. & L.S.
CONSULTING ENGINEER

588 Stonehouse Road · Coventry, CT 06238-3138 · TEL (860) 742-9019 · e-Mail: karl26535@outlook.com

Groton Utilities / Statement on Proposed Avery Brook Subdivision
December 2, 2022

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Re: Application of Avery Brook Homes, LLC for a permit to conduct regulated activities in upland review areas with respect to properties located at 94, 96, 98 and 100 Stoddards Wharf Road, Ledyard, Connecticut

To date, Groton Utilities has prepared review comments pertinent to the above project. These review comments were originally prepared for a proposed subdivision of 36 lots with a private road, individual septic systems, individual wells and no provision for stormwater management. To date these plans have been revised to a 26-lot subdivision with a proposed Town-owned road and partial stormwater facilities, but still with individual septic systems and individual wells. While downsized in scope, our concerns remain the same, in that there is insufficient data provided by the applicant to ensure that this subdivision, with its density of housing, its individual on-site subsurface sewage disposal systems, its individual well layout and the limited stormwater treatment will not have a deleterious impact on the quality of water to the directly adjacent drinking water supply reservoir.

To reiterate our previous points, to which additional reference and inclusion is hereby made:

(1) **Soils** – The data provided on the plans indicates a high degree of permeability for soils throughout the site, as evidenced by the test pit data and percolation rates for the site of each proposed lot. This points to a relatively rapid discharge and migration of effluent to the underlying water table and to areas immediately surrounding the subsurface sewage disposal system, resulting in significant nutrient loadings detrimental to a safe drinking water supply.

(2) **Water Supply** – A study had been previously prepared by GEI Consultants examining the adequacy of water supply for the number of lots and the anticipated number of individuals expected to inhabit the area. This study was prepared for greater than 30 lots, the previous submittals, but no revised report has been submitted with respect to the current proposal. The study did point out that the amount of required water for supply could not be met from onsite groundwater alone, but would have to rely on drawdown from properties adjacent to this site. Since Groton Utilities is a major abutter to the site, we assume that, without more specificity, the drawdown would impact the Groton property as well as other abutting and nearby landowners. Again, it is important to note that the study addressed only adequacy of supply, but not

the quality of existing groundwater, nor the potential impact of drawdown from multiple wells in close proximity to other lots and to the adjacent neighborhood. Nor does it address, as previously pointed out, the potential issue of drawing water from a water table that has significant effluent dispersal from multiple subsurface sewage disposal systems in close proximity to each other.

(3) Subsurface Sewage Disposal Systems – The concentration of the proposed subsurface sewage disposal systems, although less in number than the previous proposal, still represents a dense layout with a hydraulic profile that includes effluent discharge from multiple systems combined along the same slope and outflow directions. All effluent is discharged toward Groton Utilities property from these systems, with wetlands and open water in close proximity to a drinking water supply reservoir. **We ask that an in-depth study of the water table's hydraulics and the ability of the soils to treat or renovate the wastewaters prior to dispersal onto Groton Utilities property be provided.** Though lots have been tested, designed and reviewed on an individual basis, it is critical to consider this type of dense layout as a cumulative impact that must meet certain standards at the property line – particularly because that property line and underlying groundwater and surrounding wetlands are directly linked to a drinking water supply that affects adjacent towns¹ as well as the Town of Ledyard.

(4) Stormwater – This issue has been partially addressed with the proposed stormwater quality basin, but still maintains runoff without pretreatment or detention before reaching the Groton Utilities' reservoir area. We find this unacceptable, particularly with respect to the high percolation rates and the gravelly soils encountered and documented in the test hole information included with this latest proposal. With such high permeability, we feel that the proposal has not adequately addressed the potential impact of directing non-treated stormwater runoff to our reservoir system.

In addition, due to the increase in paved and landscaped (lawn) areas, there is a risk of increased runoff of pollutants and nutrients that could directly impact the adjacent wetlands and open water areas. The applicant has indicated that sheet flow over pervious areas would decrease or, in this case, eliminate the need for any detention facilities and referred to a Town Ordinance that implies runoff without detention to the Groton Utilities reservoir system. We have addressed this ordinance in previous reviews and are in disagreement with the concept. We know that runoff water will reach us in any case, but we ask that it be as clean as possible when it reaches us. Our wetlands and open bodies of surface waters, where adjacent to residential or commercial lands, should not be regarded as pretreatment for a drinking water supply.

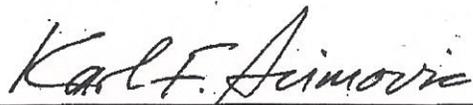
(5) Town Road – The change has been made to now consider the interior road as a Town road, in which case we presume that it will be given to and maintained by the Town in the future. As the treatment of roads for wintertime maintenance has now changed, it is our understanding that the road will be treated only with sodium related

¹ Note that Groton Utilities is a regional supplier to other area towns, in addition to Groton and Ledyard.

products. We have been tracking both sodium and chlorides in our reservoir system for many years and have analyses that indicate an increase in sodium levels since 2013, the year that Connecticut DOT, as well as most Towns, changed over to the use of sodium products rather than using sand or a combination of the two. Our processes at the Water Treatment Plant, as with most drinking water purveyors in the State, are not set up for the treatment of sodium. As such, any increase in the amount of sodium detected in the raw water supply must be considered as a potential treatment issue that could incur additional costs to the consumers within the surrounding communities.

(6) CDR Maguire 2014 Report – A sample issue identified in the CDR Maguire report included a reference to the Avery Hill and Aljen Heights areas of the Town of Ledyard, approximately 2 to 3 miles west of the currently proposed location, where lots were in the range of 0.25 to 1.0 acre in size. These areas required a public water supply in order to address “..... *groundwater contamination and limitations in capacity of private wells and small community systems*”. We feel this is an apt comparison due to the density of the housing and the proximity of the sewage disposal systems and wells to each other without further analysis.

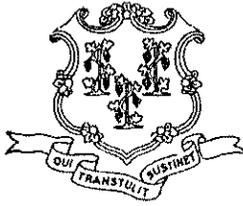
In summary, there is no question of the certainty of the direction of both surface and groundwater flows, in that it will reach our reservoir surface and groundwater within a short distance and short period of time. We have previously asked for and now reiterate the need, based on the above points and the previously submitted comments, to prepare a study, a renovation analysis, to ascertain the impact of the proposed development to our drinking water supply reservoir. This should include, specifically because of the density of the proposed lots, the guidelines for renovation and hydraulic analysis found in the DEEP’s “*GUIDANCE FOR DESIGN OF LARGE-SCALE ON-SITE WASTEWATER RENOVATION SYSTEMS*” and the DPH’s “*Design Manual - Subsurface Sewage Disposal Systems for Households and Small Commercial Buildings*”. We feel strongly that this type of analysis is necessary to make an informed decision as to the impact to our reservoir system, as well as to the impact on lots adjacent to each other within the proposed subdivision.



Prepared by Karl F. Acimovic, P.E. & L.S.
Dec. 2, 2022

Received 12/6/22

Exhibit # 37



CONNECTICUT PUBLIC HEALTH CODE

**On-site Sewage Disposal Regulations and
Technical Standards for Subsurface Sewage Disposal Systems**

PHC Section 19-13-B100a (Building Conversions, Changes in Use, Building Additions)

Effective August 3, 1998

PHC Sections 19-13-B103a through 19-13-B103f (Design Flows 5,000 Gallons per Day or Less*)

Effective August 16, 1982

Technical Standards for Subsurface Sewage Disposal Systems

Effective August 16, 1982

Revised January 1, 2018

PHC Sections 19-13-B104a through 19-13-B104d (Design Flows Greater than 5,000 Gallons per Day*)

Effective August 16, 1982

*Note: The 5,000 gallons per day jurisdictional design flow was increased to 7,500 gallons per day by Public Act No. 17-146, Section 30 effective July 1, 2017.

State of Connecticut
Department of Public Health
Environmental Engineering Program
410 Capitol Avenue - MS #12SEW
P.O. Box 340308
Hartford, Connecticut 06134
(860) 509-7296

www.ct.gov/dph/subsurfacesewage

January 2018

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PUBLIC HEALTH CODE

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*Appendices may be updated prior to the publication of the next *Technical Standards for Subsurface Sewage Disposal Systems*. Updated appendices shall be posted on the Department of Public Health's website.

Former revisions to the *Technical Standards for Subsurface Sewage Disposal Systems*:
January 1st 1986, 1989, 1992, 1994, 1997, 2000, 2004, 2007, 2009, 2011, and 2015.

PUBLIC HEALTH CODE B100a REGULATION

Sec. 19-13-B100a. Building Conversions/Changes in Use, Building Additions, Garages/Accessory Structures, Swimming Pools, Sewage Disposal Area Preservation

- (a) **Definitions.** As used in this section:
- (1) "Accessory structure" means a permanent non-habitable structure which is not served by a water supply and is used incidental to residential or non-residential buildings. Accessory structures include, but are not limited to, detached garages, open decks, tool and lawn equipment storage sheds, gazebos, and barns.
 - (2) "Building conversion" means the act of winterizing a seasonal use building into year round use by providing one or more of the following: (A) a positive heating supply to the converted area; or, (B) a potable water supply which is protected from freezing; or, (C) energy conservation in the form of insulation to protect from heat loss.
 - (3) "Change in use" means any structural, mechanical or physical change to a building which allows the occupancy to increase; or the activities within the building to expand or alter such that, when the building is fully utilized, the design flow or required effective leaching area will increase.
 - (4) "Code-complying area" means an area on a property where a subsurface sewage disposal system can be installed which meets all requirements of Section 19-13-B103 of the Regulations of Connecticut State Agencies, and the Technical Standards except for the one hundred percent reserve leaching area referred to in Section VIII A of the Technical Standards.
 - (5) "Design flow" means the anticipated daily discharge from a building as determined in accordance with Sections IV and VIII F of the Technical Standards.
 - (6) "Potential repair area" means an area on a property which could be utilized to repair or replace an existing or failed septic system and includes areas on the property where exceptions to Section 19-13-B103 of the Regulations of Connecticut State Agencies could be granted by the local director of health or the Commissioner of Public Health but does not include areas beyond those necessary for a system repair and areas of exposed ledge rock.
 - (7) "Technical Standards" means those standards established by the Commissioner of Public Health in the most recent revision of the publication entitled "Technical Standards for Subsurface Sewage Disposal Systems" prepared pursuant to Section 19-13-B103d (d) of the Regulations of Connecticut State Agencies. These standards can be obtained from the Department of Public Health, 410 Capitol Avenue, MS #51SEW, P.O. Box 340308, Hartford, CT 06134-0308, or by calling (860) 509-7296.
- (b) **Building conversion, change in use.** If public sewers are not available, no building or part thereof shall be altered so as to enable its continuous occupancy by performing any building conversion, nor shall there be a change in use unless the local director of health has determined that after the conversion or change in use, a code-complying area exists on the lot for installation of a subsurface sewage disposal system. The determination by the local director of health of whether a code-complying area exists on the property shall be based upon analysis of existing soil data. If soil data is not available, the property owner shall perform soil testing. The property owner or the owner's authorized agent shall submit design plans or a sketch to demonstrate how the property contains a code-complying area that can accommodate a sewage disposal system. The local director of health may require expansion of the existing sewage disposal system or installation of a new sewage disposal system at the time of the change in use for those properties whenever the proposed change in use results in a more than 50% increase in the design flow.
- (c) **Building additions.** If public sewers are not available, no addition to any building shall be permitted unless the local director of health has determined that after the building addition a code-complying area exists on the lot for the installation of a subsurface sewage disposal system. Once a code-complying area is identified, portions of the property outside this designated area may be utilized for further development of the property. This determination by the local director of health shall be based upon analysis of existing soil data to determine if a code-complying area exists. If soil data is not available, the property owner shall perform soil testing. The property owner or the owner's authorized agent shall submit design plans or a sketch to demonstrate how the property contains a code-complying area that can accommodate a sewage disposal system. If the applicant submits soil test data, design plans or a sketch and is unable to demonstrate a code-complying area, the building addition shall be permitted, provided:

- (1) The size of the replacement system shown on design plans or sketch provides a minimum of 50% of the required effective leaching area per the Technical Standards,
- (2) The replacement system shown on the plans or sketch provides a minimum of 50% of the required Minimum Leaching System Spread (MLSS) per the Technical Standards,
- (3) The proposed design does not require an exception to Section 19-13-B103d (a)(3) of the Regulations of Connecticut State Agencies, regarding separation distances to wells,
- (4) The addition does not reduce the potential repair area, and
- (5) The building addition does not increase the design flow of the building.

The local director of health may require expansion of the existing sewage disposal system or installation of a new sewage disposal system at the time of building addition whenever the proposed addition results in a more than 50% increase in the design flow. The separation distance from an addition to any part of the existing sewage disposal system shall comply with Table 1 in Section II of the Technical Standards.

- (d) **Attached or detached garages, accessory structures, below or above ground pools.** If public sewers are not available, no attached garage, detached garage, accessory structure, below or above ground pool shall be permitted unless the local director of health has determined that after construction of the attached garage, detached garage, accessory structure, below or above ground pool, a code-complying area exists on the lot for installation of a subsurface sewage disposal system. This determination by the local director of health shall be based upon analysis of existing soil data. If soil data is not available, the property owner shall perform soil testing. The property owner or the owner's authorized agent shall submit design plans or a sketch to demonstrate how the property contains a code-complying area that can accommodate a sewage disposal system. If the applicant submits soil test data, design plans or a sketch and is unable to demonstrate a code-complying area, the attached or detached garage, below or above ground pool, or accessory structure shall be permitted, provided the structure does not reduce the potential repair area. The separation distance from the attached or detached garage, below or above ground pool, or accessory structure to any part of the existing sewage disposal system shall comply with Table 1 in Section II of the Technical Standards.
- (e) **Sewage disposal area preservation.** If public sewers are not available, no lot line shall be relocated or any other activity performed that affects soil characteristics or hydraulic conditions so as to reduce the potential repair area, unless the local director of health has determined that after the lot line relocation or disturbance of soils on the lot a code-complying area exists for the installation of a subsurface sewage disposal system. This determination by the local director of health shall be based upon analysis of existing soil data. If soil data is not available, the property owner shall perform soil testing. The property owner or the owner's authorized agent shall submit design plans or a sketch to demonstrate how the property contains a code-complying area that can accommodate a sewage disposal system. In no case shall a relocated lot line violate Subsection (d) of Section 19-13-B103d of the Regulations of Connecticut State Agencies that requires that each subsurface sewage disposal system shall be located on the same lot as the building served.
- (f) **Decision by Director of Health.** Any final decision of the local director of health made in regard to this section shall be made in writing and sent to the applicant. Any decision adverse to the applicant or which limits the application shall set forth the facts and conclusions upon which the decision is based. Such written decision shall be deemed equivalent to an order, and may be appealed pursuant to Section 19a-229 of the Connecticut General Statutes.

STATEMENT OF PURPOSE

The regulations up-date and clarify existing requirements for maintaining subsurface sewage disposal areas on lots which are served by on-site subsurface sewage disposal systems. The purpose is to regulate building conversions; activities which would potentially increase the water usage discharged to a subsurface sewage disposal system; construction activities or lot line changes which would reduce the area available for sewage disposal purposes.

Effective August 3, 1998

PUBLIC HEALTH CODE B103 REGULATIONS*

On-Site Sewage Disposal Systems with Design Flows of 5,000 Gallons per Day or Less** and Non-Discharging Toilet Systems

*The reference to the Commissioner of Health Services was changed to the Commissioner of Public Health in the below printing of the B103 regulations (Sections 19-13-B103a through 19-13-B103f) to be consistent with the language in the *Technical Standards for Subsurface Sewage Disposal Systems*.

**Note: The 5,000 gallons per day jurisdictional design flow was increased to 7,500 gallons per day by Public Act No. 17-146, Section 30 effective July 1, 2017.

Sec. 19-13-B103a. Scope

These regulations establish minimum requirements for household and small commercial subsurface sewage disposal systems with a capacity of 5,000 gallons per day or less, non-discharging toilet systems and procedures for the issuance of permits or approvals of such systems by the director of health or registered sanitarian, as required by Section 25-54i(g) of the General Statutes.

(Effective August 16, 1982)

Sec. 19-13-B103b. Definitions

The following definitions shall apply for the purposes of Sections 19-13-B103c to 19-13-B103f, inclusive:

- (a) **Sewage** means domestic sewage consisting of water and human excretions or other waterborne wastes incidental to the occupancy of a residential building or a non-residential building, as may be detrimental to the public health or the environment, but not including manufacturing process water, cooling water, waste water from water softening equipment, blow down from heating or cooling equipment, water from cellar or floor drains or surface water from roofs, paved surface or yard drains.
- (b) **Septic tank** means a water-tight receptacle which is used for the treatment of sewage and is designed and constructed so as to permit the settling of solids, the digestion of organic matter by detention and the discharge of the liquid portion to a leaching system.
- (c) **Subsurface sewage disposal system** means a system consisting of a house sewer; a septic tank followed by a leaching system, any necessary pumps and siphons, and any groundwater control system on which the operation of the leaching system is dependent.
- (d) **Residential building** means any house, apartment, trailer or mobile home, or other structure occupied by individuals permanently or temporarily as a dwelling place but not including residential institutions.
- (e) **Residential institution** means any institutional or commercial building occupied by individuals permanently or temporarily as a dwelling, including dormitories, boarding houses, hospitals, nursing homes, jails, and residential hotels or motels.
- (f) **Nonresidential building** means any commercial, industrial, institutional, public or other building not occupied as a dwelling, including transient hotels and motels.
- (g) **Impervious soil** means soil that has a minimum percolation rate slower than one inch in sixty minutes when the groundwater level is at least eighteen inches below the bottom of the percolation test hole.
- (h) **Suitable soil** means soil having a minimum percolation rate of one inch in one to sixty minutes when the groundwater level is at least eighteen inches below the bottom of the percolation test hole.
- (i) **Maximum groundwater level** means the level to which groundwater rises for a duration of one month or longer during the wettest season of the year.
- (j) **Open watercourse** means a well defined surface channel, produced wholly or in part by a definite flow of water and through which water flows continuously or intermittently and includes any ditch, canal, aqueduct or other artificial channel for the conveyance of water to or away from a given place, but not including gutters for storm drainage formed as an integral part of a paved roadway; or any lake, pond, or other surface body of water, fresh or tidal; or other surface area intermittently or permanently covered with water.
- (k) **Local director of health** means the local director of health or his authorized agent.
- (l) **Technical Standards** means the standards established by the Commissioner of Public Health in the most recent revision of the publication entitled "Technical Standards for Subsurface Sewage Disposal Systems" available from the State Department of Public Health.
- (m) **Department** means the State Department of Public Health.
- (n) **Gray water** means domestic sewage containing no fecal material or toilet wastes.
- (o) **Drawdown area** means that area adjacent to a well in which the water table is lowered by withdrawal of water from the well by pumping at a rate not exceeding the recharge rate of the aquifer.

(Effective August 16, 1982)

Sec. 19-13-B103c. General Provisions

- (a) All sewage shall be disposed of by connection to public sewers, by subsurface sewage disposal systems, or by other methods approved by the Commissioner of Public Health, in accordance with the following requirements.
- (b) All sewers, subsurface sewage disposal systems, privies and toilet or sewage plumbing systems shall be kept in a sanitary condition at all times and be so constructed and maintained as to prevent the escape of odors and to exclude animals and insects.
- (c) The contents of a septic tank, subsurface sewage disposal system or privy vault shall only be disposed of in the following manner.
 - (1) If the contents are to be disposed of on the land of the owner, disposal shall be by burial or other method which does not present a health hazard or nuisance; or
 - (2) If the contents are to be disposed of on land of other than the owner;
 - (A) The contents shall be transferred and removed by a cleaner licensed pursuant to Connecticut General Statutes § 20-341, and
 - (B) Only on the application for and an issuance of a written permit from the local director of health in accordance with the provisions of this section;
 - (3) If the contents are to be dispersed on a public water supply watershed, only on the application and issuance of a written permit by the Commissioner of Public Health in accordance with the provisions of this section.

Each application for a permit under (c) (2) and (3) shall be in writing and designate where and in what manner the material shall be disposed of.

- (d) All material removed from any septic tank, privy, sewer, subsurface sewage disposal system, sewage holding tank, toilet or sewage plumbing system shall be transported in water-tight vehicles or containers in such a manner that no nuisance or public health hazard is presented. All vehicles used for the transportation of such material shall bear the name of the company or licensee and shall be maintained in a clean exterior condition at all times. No defective or leaking equipment shall be used in cleaning operations. All vehicles or equipment shall be stored in a clean condition when not in use. Water used for rinsing such vehicles or equipment shall be considered sewage and shall be disposed of in a sanitary manner approved by the local director of health.
- (e) Septic tanks shall be cleaned by first lowering the liquid level sufficiently below the outlet to prevent sludge or scum from overflowing to the leaching system where it could cause clogging and otherwise damage the system. Substantially all of the sludge and scum accumulation shall be removed whenever possible, and the inlet and outlet baffles shall be inspected for damage or clogging. Cleaners shall use all reasonable precaution to prevent damaging the sewage disposal system with their vehicle or equipment. Accidental spillage of sewage, sludge or scum shall be promptly removed or otherwise abated so as to prevent a nuisance or public health hazard.
- (f) No sewage shall be allowed to discharge or flow into any storm drain, gutter, street, roadway or public place, nor shall such material discharge onto any private property so as to create a nuisance or condition detrimental to health. Whenever it is brought to the attention of the local director of health that such a condition exists on any property, he shall investigate and cause the abatement of this condition.

(Effective August 16, 1982)

Sec. 19-13-B103d. Minimum Requirements

- (a) Each subsurface sewage disposal system shall be constructed, repaired, altered or extended pursuant to the requirements of this section unless an exception is granted in accordance with the following provisions:
 - (1) A local director of health may grant an exception, except with respect to the requirements of Section 19-13-B103d (d) and Technical Standard IIA, for the repair, alteration, or extension of an existing subsurface sewage disposal system where he determines the repair, alteration or extension cannot be effected in compliance with the requirements of this section and upon a finding that such an exception is unlikely to cause a nuisance or health hazard. All exceptions granted by the local director of health shall be submitted to the Commissioner of Public Health within thirty days after issuance on forms provided by the Department.
 - (2) The Commissioner of Public Health may grant an exception to the requirements of Section 19-13-B103d (d) upon written application and upon a finding that:
 - (A) A central subsurface sewage disposal system serving more than one building is technically preferable for reasons of site limitations, or to facilitate construction, maintenance or future connection to public sewers, or;
 - (B) A subsurface sewage disposal system not located on the same lot as the building served is located on an easement attached thereto. Such easement shall be properly recorded on the land records and

shall be revocable only by agreement of both property owners and the Commissioner of Public Health.

- (3) The Commissioner of Public Health may grant an exception to the requirements of Technical Standard IIA, upon written application and upon a finding that such an exception is unlikely to pollute the well in such a manner as to cause a health hazard.
- (b) **Technical Standards.**

Subsurface sewage disposal systems within the scope of this regulation shall be designed, installed and operated in accordance with the technical standards established in the "Technical Standards for Subsurface Sewage Disposal Systems" published by the Commissioner of Public Health. The Technical Standards shall be reviewed annually and changes to the Technical Standards shall be available on January 1st of each year.
- (c) **Large Subsurface Disposal Systems.**

The Commissioner of Public Health shall approve plans for subsurface sewage disposal systems serving a building with a designed sewage flow of two thousand gallons per day or greater, and no such systems shall be constructed, repaired, altered or extended unless the plans for such systems are approved by the Commissioner in accordance with the following:

 - (1) Plans for the system are submitted at least twenty days prior to approval to construct by the local director of health.
 - (2) The plans are designed by a professional engineer registered in the State of Connecticut.
 - (3) The plans submitted contain:
 - (A) The basis of design,
 - (B) Soil conditions and test pit locations,
 - (C) Maximum groundwater and ledge rock elevations,
 - (D) Original and finished surface contours and elevations,
 - (E) Property lines, and
 - (F) Locations of buildings, open watercourses, ground and surface water drains, nearby wells and water service lines.
- (d) **Location.**

Each building shall be served by a separate subsurface sewage disposal system. Each such system shall be located on the same lot as the building served.
- (e) **Disposal of Sewage in Areas of Special Concern.**
 - (1) Disposal systems for areas of special concern shall merit particular investigation and special design, and meet the special requirements of this subsection. The following are determined to be areas of special concern:
 - (A) A minimum soil percolation rate faster than one inch per minute, or
 - (B) Slower than one inch in thirty minutes, or
 - (C) Maximum groundwater less than three feet below ground surface, or
 - (D) Ledge rock less than five feet below ground surface, or
 - (E) Soils with slopes exceeding twenty-five per cent, or
 - (F) Consisting of soil types interpreted as having severe limitations for on-site sewage disposal by most recent edition of the National Cooperative Soil Survey of the Soil Conservation Service, or
 - (G) Designated as wetland under the provisions of Sections 22a-36 through 22a-45 of the Connecticut General Statutes, as amended, or
 - (H) Located within the drawdown area of an existing public water supply well with a withdrawal rate in excess of fifty gallons per minute, or within five hundred feet of land owned by a public water supply utility and approved for a future well site by the Commissioner of Public Health.
 - (2) In such areas of special concern, the local director of health may require investigation for maximum groundwater level to be made between February 1 and May 31, or such other times when the groundwater level is determined by the Commissioner of Public Health to be near its maximum level.
 - (3) (A) Plans for new subsurface systems in areas of special concern shall:
 - (i) Be prepared by a professional engineer registered in the State of Connecticut;
 - (ii) Include all pertinent information as to the basis of design, and soil conditions, test pit locations, groundwater and ledge rock elevations, both original and finished surface contours and elevation, property lines, building locations, open watercourses, ground and surface water drains, nearby wells and water service lines;
 - (iii) Demonstrate an ability to solve the particular difficulty or defect associated with the area of special concern and which caused its classification. The Commissioner or local director of health, as the case may be, may require a study of the capacity of the surrounding natural soil

absorb or disperse the expected volume of sewage effluent without overflow, breakout, or detrimental effect on ground or surface waters if in their opinion such may occur.

- (B) The plans for new subsurface disposal systems in areas of special concern shall be submitted to the local director of health and the Commissioner of Public Health for a determination as to whether the requirements of the subsection have been met, except that such submission need not be made to the Commissioner of Public Health if the local director or authorized agent has been approved to review such plans by the Commissioner of Public Health in accordance with Section B103e (b). All submissions to the Commissioner of Public Health shall be made at least 20 days prior to issuance of an approval to construct by the local director of health.
- (4) If application is made for the repair, alteration or extension of an existing subsurface disposal system in an area of special concern, the local director of health may require that the applicant comply with the requirement of Subdivision (3) if he determines that the contemplated repair, alteration or extension involves technical complexities which cannot reasonably be addressed by himself, his authorized agent or the system installer.
- (5) While a sewage disposal system in an area of special concern is under construction, the local director of health may require that the construction be supervised by a professional engineer registered in the State of Connecticut, if in the opinion of the local director of health it is necessary to insure conformance to the plans approved or because of the difficulties likely to be encountered. The engineer shall make a record drawing of the sewage disposal system, as installed, which he shall submit to the local director of health prior to issuance of a discharge permit.
- (6) In such areas of special concern, the Commissioner of Public Health or the local director of health who has been approved by the Commissioner to review engineering plans in areas of special concern pursuant to Section 19-13-B103e (b) may require a study of the capacity of the surrounding natural soil to absorb or disperse the expected volume of sewage effluent without overflow, breakout, or detrimental effect on ground or surface waters.
- (f) **Gray Water Systems.**
Disposal systems for sinks, tubs, showers, laundries and other gray water from residential buildings, where no water flush toilet fixtures are connected, shall be constructed with a septic tank and leaching system at least one-half the capacity specified for the required residential sewage disposal system.

(Effective August 16, 1982)

Sec. 19-13-B103e. Procedures and Conditions for the Issuance of Permits and Approvals

No subsurface sewage disposal system shall be constructed, altered, repaired or extended without an approval to construct issued in accordance with this section. No discharge shall be initiated to a subsurface sewage disposal system without a discharge permit issued in accordance with this section. Such permits and approvals shall be issued and administered by the local director of health.

(a) **No Permit or Approval Shall be Issued:**

- (1) For any subsurface sewage disposal system which is designed to discharge or overflow any sewage or treated effluent to any watercourse;
- (2) For any new subsurface sewage disposal system until it is demonstrated to the satisfaction of the local director of health that there is a public water supply available or a satisfactory location for a water supply well complying with Sections 19-13-B51a through 19-13-B51m of the Public Health Code;
- (3) For any new subsurface sewage disposal system where the soil conditions in the area of the leaching system are unsuitable for sewage disposal purposes at the time of the site investigation made pursuant to this section. Unsuitable conditions occur where the existing soil is impervious, or where there is less than four feet depth of suitable existing soil over ledge rock, two feet of which is naturally occurring soil, or where there is less than 18 inches depth of suitable existing soil over impervious soil, or where the groundwater level is less than 18 inches below the surface of the ground for a duration of one month or longer during the wettest season of the year;
- (4) For any new subsurface sewage disposal system where the surrounding naturally occurring soil cannot adequately absorb or disperse the expected volume of sewage effluent without overflow, breakout or detrimental effect on ground or surface water.

(b) **Approval of Agents by Commissioner of Public Health**

- (1) A local director of health shall authorize only persons approved by the Commissioner of Public Health to investigate, inspect and approve plans relating to subsurface sewage disposal systems.
- (2) The Commissioner of Public Health shall approve agents of the local director of health whose qualifications to investigate, inspect and approve plans relating to subsurface sewage disposal systems have been established by attending training courses and passing examinations given by the Department of Public Health, as follows:

- (A) Agents who have attended training courses and passed examinations relative to Sections 19-13-B100, 19-13-B103 and 19-13-B104 of the Public Health Code and the Technical Standards shall be approved to investigate, inspect and approve all plans for subsurface sewage disposal systems except those prepared by a professional engineer registered in the State of Connecticut pursuant to Section 19-13-B103d (c) or (e).
 - (B) Agents who have attended training courses and passed examinations relative to the engineering design of subsurface sewage disposal systems shall be approved to investigate, inspect and approve plans for such systems prepared by a professional engineer registered in the State of Connecticut pursuant to Section 19-13-B103d (e).
- (c) **Application for Permit or Approval.**
- (1) No investigation, inspection or approval of a subsurface sewage disposal system shall be made, or permit issued without an application by the owner in accordance with the following requirements.
 - (2) Applications for permits shall:
 - (A) Be on forms identical to Form #1 in the Technical Standards; or
 - (B) Be on forms prepared by the local director of health and deemed by the Commissioner of Public Health as equivalent to Form #1 in the Technical Standards; and
 - (C) Have attached a plot plan of the lot, which shall be a surveyor's plan if available or one prepared from information on the deed or land records.
 - (3) All the requested information shall be provided. If the information is not provided, it shall be indicated why it is not available or the application may be determined incomplete, and be rejected.
- (d) **Site Investigation.**
- (1) The local director of health or a professional engineer registered in the State of Connecticut representing the applicant shall make an investigation of the site proposed for the subsurface sewage disposal system and report the findings and recommendations of the investigations on a form identical to Form #2 in the Technical Standards to include:
 - (A) A record of soil test location, measures and observations.
 - (B) Soil percolation results.
 - (C) Observations of groundwater and ledge rock.
 - (D) A conclusion as to the suitability of the site for subsurface sewage disposal.
 - (E) Special requirements for design of the system, or further testing which shall be in accordance with the most recent edition of the Technical Standards.
 - (2) Prior to the site investigation, the applicant shall:
 - (A) Provide for the digging of a suitable number of percolation test holes and deep observation pits in the area of the proposed leaching system and extending at least four feet below the bottom of the proposed leaching system, at the direction of the local director of health;
 - (B) Provide water for performing the percolation tests;
 - (C) If required by the local director of health, locate by field stakes or markers the sewage disposal system, house, well or property lines.
 - (3) The site investigation shall be made within ten working days of application unless otherwise required by subsection 19-13-B103d (e).
 - (4) The local director of health shall:
 - (A) Assure the accuracy of the findings of soil tests and deep observation pits; and
 - (B) When the maximum groundwater level is in doubt the local director of health shall investigate pursuant to Section 19-13-B103d (e).
 - (5) The size of the leaching system shall be based on the results of soil percolation tests made in the area of the proposed leaching system or on other methods of determining the soil absorption capacity in accordance with the Technical Standards.
 - (6) In areas of special concern, or for leaching systems with a design sewage flow of 2,000 gallons per day or greater, the local director of health may require from the applicant whatever further testing or data necessary to assure that the sewage disposal system will function properly. Further testing may be required prior to or subsequent to issuance of the approval to construct. Such tests may include permeability tests, sieve analysis or compaction tests of natural soil or fill materials, and the installation of groundwater level monitoring wells, or pipes, as well as additional observation pits and soil percolation tests.
- (e) **Submission of Plan.**
- (1) Every plan for a subsurface sewage disposal system shall be submitted to the local director of health.
 - (2) Every plan for a subsurface sewage disposal system shall include all information necessary to assure compliance with the requirements of Section 19-13-B103d of these regulations, and contain as a

minimum the following information: the location of the house sewer, the location and size of the septic tank, the location and description of the leaching system, property lines, building locations, watercourses, ground and surface water drains, nearby wells and water service lines.

- (3) Where required by the local director of health under subsections 19-13-B103d (c) and (e) of these regulations, the plan shall be prepared by a professional engineer, registered in the State of Connecticut, and shall be forwarded by the local director to the Commissioner of Public Health, together with his comments and recommendations.
 - (4) No plan shall be submitted directly by the applicant or engineer to the Commissioner of Public Health, unless requested by the local director of health.
- (f) **Approval to Construct.**
- (1) Upon determination that the subsurface sewage disposal system has been designed in compliance with the requirements of Section 19-13-B103d of these regulations, the local director of health shall issue an approval to construct. Approvals to construct shall be valid for a period of one year from the date of their issuance and shall terminate and expire upon a failure to start construction within that period. Approvals to construct may be renewed for an additional one year period by the local director of health upon a demonstration of reasonable cause for the failure to start construction within the one year period.
 - (2) Each subsurface sewage disposal system shall be constructed by a person licensed pursuant to Chapter 393a of the General Statutes. Such person shall notify the local director of health at least twenty-four hours prior to commencement of construction.
 - (3) The Commissioner of Public Health shall approve in accordance with Subsection 19-13-B103d (c) plans for a subsurface sewage disposal system to serve a building, the design sewage flow from which is two thousand gallons a day or greater prior to issuance of an approval to construct by the local director of health.
 - (4) Approval to construct a subsurface sewage disposal system in an area of special concern shall not be issued until twenty days following submission of the plans to the Commissioner of Public Health in accordance with subsection 19-13-B103d (e), unless earlier approved by the Commissioner.
- (g) **Inspection.**
- (1) The local director of health shall inspect all subsurface sewage disposal systems for compliance with Subsection 19-13-B103d and the approved plans for construction prior to covering and at such other times as deemed necessary.
 - (2) After construction, and prior to covering, the subsurface sewage disposal system installer shall notify the local director of health the site is prepared for inspection. Such inspection shall take place as soon thereafter as feasible, but not later than two (2) working days after receipt of the request unless the owner agrees to an extension.
 - (3) A final inspection report shall be prepared by the local director of health on forms deemed by the Commissioner of Public Health as equivalent to Form #3 in the Technical Standards.
 - (4) A record plan of the sewage disposal system, as built, shall be required by the local director of health.
- (h) **Permit to Discharge.**
- (1) Upon determination that the subsurface sewage disposal system has been installed in compliance with the requirements of Section 19-13-B103d of these regulations and the approved plans, the local director of health shall issue a permit to discharge. A copy of such permit shall be sent to the local building official. No permit to discharge shall be issued until all required forms are completed and an approved as-built plan or record drawing is received.
 - (2) Any permit to discharge issued by the Commissioner of Public Health or a local director of health for a household or small commercial subsurface sewage disposal system with a capacity of five thousand gallons per day or less shall be deemed equivalent to a permit issued under Subsection 25-54i(b) of the Connecticut General Statutes. Such permits shall:
 - (A) Specify the manner, nature and volume of discharge;
 - (B) Require proper operation and maintenance of any pollution abatement facility required by such permit;
 - (C) Be subject to such other requirements and restrictions as the Commissioner deems necessary to comply fully with the purposes of this chapter and the Federal Water Pollution Control Act; and
 - (D) Be issued on forms approved by the Commissioner of Public Health.
 - (3) The local director of health shall record the granting of an exception from any requirement of Section 19-13-B103d on the permit to discharge.
- (i) **Enforcement.**
- (1) A permit to discharge to a subsurface sewage disposal system shall not be construed to permit any sewage overflow, nuisance, or similar condition or the maintenance thereof.

- (2) If such a condition is found to exist, the permit to discharge may be revoked, suspended, modified or otherwise limited and any such condition is subject to an order to abate the condition pursuant to Connecticut General Statutes Section 19-79.

(j) **Records.**

Copies of completed applications, investigation reports, review and inspection forms and as-built plans or record drawings of each sewage disposal system, certified as complying with this Section, shall be kept in the files of the town or health district for a minimum of ten years.

(k) **Rights of Applicant.**

- (1) All site investigations, inspections, review of plans and issuance of permits or approvals by the local director of health shall be made without unreasonable delay.
- (2) When requested in writing by the applicant, the local director of health shall designate in writing within 20 working days the requirement(s) of Section 19-13-B103d or 19-13-B103e of these regulations which prevents such investigation, inspection, review, permit or approval.
- (3) Any final decision of the local director of health made in regard to these sections shall be made in writing and sent to the applicant. Any decision adverse to the applicant or which limits the application shall set forth the facts and conclusions upon which the decision is based. Such written decision shall be deemed equivalent to an order, and may be appealed pursuant to Section 19-103 of the General Statutes.

(Effective August 16, 1982)

Sec. 19-13-B103f. Non-discharging Sewage Disposal Systems

- (a) All non-discharging sewage disposal systems shall be designed, installed and operated in accordance with the Technical Standards and the requirements of this section, unless an exception is granted by the Commissioner upon a determination that system shall provide for the proper and complete disposal and treatment of toilet wastes or gray water.
- (b) **Composting Toilets.**
 - (1) The local director of health may approve the use of a large capacity composting toilet or a heat-assisted composting toilet for replacing an existing privy or failing subsurface sewage disposal system, or for any single-family residential building where application is made by the owner and occupant, and the lot on which the building will be located is tested by the local director of health and found suitable for a subsurface sewage disposal system meeting all the requirements of Section 19-13-B103d of these regulations.
 - (2) All wastes removed from composting toilets shall be disposed of by burial or other methods approved by the local director of health.
- (c) **Incineration Toilets.**

The local director of health may approve the use of incineration toilets for non-residential buildings or for existing single-family residential dwellings for the purpose of abating existing sewage problems or replacing the existing non-water carriage toilets.
- (d) **Chemical Flush Toilets and Chemical Privies.**
 - (1) The local director of health may approve chemical flush toilets or chemical privies for nonresidential use where they are located outside of buildings used for human habitation. Chemical flush toilets or chemical privies located inside human habitations shall be approved by the Commissioner of Public Health and the local director of health.
 - (2) Liquid waste from chemical flush toilets or chemical privies shall be disposed of in a location and manner approved by the local director of health. Such liquid shall not be disposed of on a public water supply watershed or within five hundred feet of any water supply well unless approved by the Commissioner of Public Health.
- (e) **Dry Vault Privies.**
 - (1) The local director of health may approve dry vault privies for nonresidential use where they are located outside of buildings used as human habitation.
 - (2) Wastes removed from dry privy vaults shall be disposed of by burial or other methods approved by the local director of health.

STATEMENT OF PURPOSE:

These regulations up-date existing Public Health Code requirements for the design of subsurface sewage disposal with design flows of 5,000 gallons per day or less and non-discharge toilet systems. Sewage disposal systems conforming to this regulation and designed in compliance with published Technical Standards will provide for the preservation and improvement of public health.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ABS	Acrylonitrile butadiene styrene
AGRU	Automatic grease recovery unit
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
C to C	Center to center
D-box	Distribution box
DOH	Local Director of Health
ELA	Effective leaching area
FDM	Free draining material
FF	Flow factor
GIT	Grease interceptor tank
GPD	Gallons per day
GPM	Gallons per minute
HF	Hydraulic factor
Hg	Mercury
Large SSDS	Large subsurface sewage disposal system (2,000 to 7,500 gallons per day)
lbs	Pounds
LF	Linear feet
LPD	Low pressure distribution
MLSS	Minimum leaching system spread
NCR	Non-compliant repair
O & M	Operation and maintenance
OSHA	Occupational Safety and Health Administration
P.E.	Professional Engineer licensed in Connecticut
PE	Polyethylene
PF	Percolation factor
PHC	Public Health Code
PNR	Passive nitrogen reduction
PP	Polypropylene
PPD	Proprietary pressure-dosed dispersal
psi	Pounds per square inch
PVC	Polyvinyl chloride
QC/QA	Quality Control/Quality Assurance
RS Depth	Receiving soil depth
SDR	Standard Dimension Ratio
SF	Square feet
SSDS	Subsurface sewage disposal system
SWIS	Storm water infiltration system
UL	Underwriters Laboratories
WTW	Water treatment wastewater

Technical Standards for Subsurface Sewage Disposal Systems

Effective August 16, 1982

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Disclaimer: The listing of any proprietary product, technology or system in these Technical Standards shall not be considered an endorsement of the product, technology or system, nor does it convey intellectual property rights.

I. DEFINITIONS

- A. Accessory structure** means a permanent non-habitable structure that is not served by a water supply or sewage system, and is used incidental to residential or non-residential buildings. Accessory structures include, but are not limited to attached and detached garages, screened and enclosed 3-season (non-winterized) porches/sunrooms, open decks, tool and lawn equipment storage sheds, covered entryways, gazebos, barns, etc. Small (<200 square feet) portable structures (e.g., sheds) without permanent foundations (concrete slab, piers, footings) are not considered permanent structures, except for decks.
- B. Approved aggregate** means stone aggregate, or other product approved by the Commissioner of Public Health for use in leaching system construction.
- C. Bedroom** means those areas within a residential building that are, or have the potential to be, utilized as a sleeping area on a consistent basis. In order to be deemed a bedroom the room shall meet all of the following criterion:
1. Be habitable space, or planned habitable space that has “roughed- in” mechanicals (e.g., heating ducts, electrical wiring, water lines, plumbing waste lines), but is not currently “finished” for Building Code certificate of occupancy purposes. Small rooms with a floor area less than seventy (70) square feet (SF) are not considered bedrooms, unless the room has been historically designated a bedroom in an existing home. The Building Code stipulates that habitable rooms (except kitchens) shall have a floor area not less than 70 SF, therefore, bedrooms in new residential buildings are required to have a minimum floor area of 70 SF.
 2. Provides privacy to the occupants. Large (minimum 5 foot width) openings or archways may be utilized to eliminate room privacy.
 3. Full bathroom facilities (containing either a bathtub or shower) are conveniently located to the bedroom served. Convenience in this case means on the same floor as the bedroom, or directly accessed from a stairway.
 4. Entry is from a common area, not through a room already deemed a bedroom.
- D. Building served** means the physical structure that contains the habitable/interior portion of the building and the associated plumbing that discharges sewage to a sewage system. The building served includes any portion of the habitable structure permanently attached to the structure including, but not limited to, basements and 4-season (winterized) porches/sunrooms. The building served does not include attached accessory structures.
- E. Building sewer** (a.k.a., house sewer) means the pipe extending from the building served to the septic tank, grease interceptor tank, holding tank, or exterior raw sewage pump vault. Pipes approved for use under this classification are listed in Table 2.
- F. Commissioner** means Commissioner of Public Health.
- G. Effective leaching area (ELA)** means a measure in square feet of the relative size of a leaching system that takes into account the amount of infiltrative area and type of infiltrative interface. ELA does not apply to the dispersal component of a proprietary pressure-dosed dispersal system. ELA criterion, leaching system ratings and sizing requirements are included in Section VIII.
- H. Foundation drain** means a drainage system, consisting of stone or other free draining material, with or without piping, which is intended to collect and redirect groundwater in order to protect below grade portions of a building.
- I. Free draining material** (e.g., gravel, broken stone, rock fragments) means backfill that meets Connecticut Department of Transportation Form 817 Specification M.02.07 (or latest specification) and is more coarse than the surrounding excavation material.

- J. Leaching gallery** means a hollow structure with an open bottom (minimum 40-inch width) and with perforated walls surrounded by approved aggregate in a 6 foot wide level excavation.
- K. Leaching pit** means a hollow, covered structure with perforated sides and surrounded by approved aggregate.
- L. Leaching system** means a structure, excavation, or product designed to allow effluent to disperse into the receiving soil. Leaching systems include leaching trenches, leaching galleries, leaching pits, proprietary leaching systems, and dispersal components of proprietary pressure-dosed dispersal systems.
- M. Leaching trench** means a level excavation with vertical sides and flat bottoms filled with approved aggregate, and equipped with an effluent distribution pipe running the entire length of the excavation.
- N. Outbuilding** means an ancillary structure served by a water supply and sewage system that is located on a lot with an associated primary residential building, which cannot be split off and sold separately from the primary building. Outbuildings include, but are not limited to plumbed (water & sewage system plumbing) detached garages, workshops, barns, pool houses, game rooms, guest houses, and in-law apartments.
- O. Proprietary leaching system** means a manufactured product approved by the Commissioner of Public Health to be used as a leaching system, excluding the dispersal component of a proprietary pressure-dosed dispersal system.
- P. Proprietary pressure-dosed dispersal system** means a manufactured dosing and dispersal system that uniformly applies effluent into the receiving soil via small diameter holes in small diameter distribution piping, and has been approved by the Commissioner of Public Health to be used as a leaching system.
- Q. Receiving soil** means the soil in the leaching system area and surrounding soil that is available to disperse effluent. Receiving soil characteristics (e.g., depth, percolation rate) determine the configuration and sizing of a leaching system.
- R. Select fill** means clean bank run sand, clean bank run sand and gravel, or approved manufactured fill each having a gradation which conforms to the specifications stipulated in Section VIII A or ASTM C 33. Note: See Section VIII A for additional manufactured fill approval requirements.
- S. Solid pipe** means pipe that has no loose or open joints, perforations, slots or porous openings that would allow liquid to leak into or out of the pipe.
- T. Stone aggregate** means crushed or broken stone, or crushed and uncrushed gravel meeting the gradation requirements for No. 4 or No. 6 coarse aggregate (See Section VIII A) in Table M.01.02-2 and the coarse aggregate criteria by pit/quarry source in Table M.01.02.1 per Connecticut Department of Transportation Form 817 (or latest revision). The above noted criteria concerns Loss of Abrasion, Soundness by Magnesium Sulfate, and fines (material passing No. 200 sieve: 1% maximum).
- U. Tight pipe** means a solid pipe that exhibits both acceptable wall strength and watertight joints. Pipes approved for use under this designation are listed in Table 3.
- V. Watertight tank seal** means a pipe to tank connection (inlet & outlet pipe seal) that meets ASTM C 1644, ASTM C 923, or is accepted by the Commissioner of Public Health as an approved equal based on review of a company's submission of specifications and supporting documentation.
- W. Water Treatment Wastewater** is wastewater generated by a device used for the treatment of well water that enhances the quality of water and/or provides for the removal of iron, manganese, radionuclides or other substances.
- X. Water Treatment Wastewater Dispersal System** means a system of a solid conveyance pipe, followed by a structure designed to receive water treatment wastewater and allow it to percolate into the underlying soil. Such systems may include a filter or an intermediate settling structure. Receiving structures include stone filled excavations, drywells, galleries, pits, plastic chambers, or other structures approved by the Commissioner of Public Health.

II. LOCATION OF SEWAGE SYSTEMS

A. Separating Distances

Table 1 separating distances are the minimum distances for subsurface sewage disposal system (SSDS) installations, except for approved SSDS piping, unless an exception is granted in accordance with Public Health Code (PHC) Section 19-13-B103d (a). Exceptions to the distances for water supply wells (Item A) can only be granted by the Commissioner. The minimum separating distances shall be maintained for existing sewage systems (SSDSs, cesspools, holding tanks, privies), except for the replacement of a legally existing item at a distance no closer to the sewage system. Cesspools have the same separating distances as leaching systems for Table 1 purposes. Cesspools are antiquated sewage systems that do not have a septic tank. Cesspool abandonment is recommended and typically occurs at the time of a real estate transaction. The Federal Underground Injection Control program required large capacity cesspools that serve multi-family residential building(s) or non-residential buildings serving 20 or more persons per day to be abandoned by April 5, 2005.

Tables 2, 2-A, and 2-B list approved SSDS piping for building sewers, effluent distribution pipes, and force mains, and the tables specify minimum separation distances to water supply wells and other items. SSDS groundwater control systems need only to comply with the distances cited in Items E and G. Proposed relocation of lot lines governed by PHC Section 19-13-B100a (e) shall comply with the distances cited in Item J. Separating distance compliance shall be based on horizontal measurements except for non-vertical closed loop geothermal bore holes that utilize measurements taken from the closest point of the bore hole. References to sewage tanks in the special provision column in Table 1 include septic tanks, grease interceptor tanks, pump chambers, and holding tanks.

Item H specifies the minimum separating distances between a storm water infiltration system (SWIS) and a sewage system, however there are certain instances where increased separation may be warranted. SWISs that receive large quantities of water collected from impervious cover areas on sites that have hydraulic limitations may represent a concern for the proper operation of nearby SSDSs. SWISs shall not create localized groundwater mounding in the vicinity of SSDSs in order to maintain unsaturated soil conditions beneath the leaching systems for wastewater renovation purposes. SWISs may impact hydraulic conditions, and installation of these systems may be subject to a DOH review pursuant to PHC Section 19-13-B100a (e). DOHs may require an evaluation of a proposed SWIS on groundwater mounding to ensure the SWIS will not affect the operation of a nearby SSDS. Evaluations must demonstrate the receiving soil in the leaching system area is not hydraulically overloaded and that unsaturated soil conditions beneath the leaching system shall be maintained for 1-inch rain events. Municipal low impact development and storm water management programs should be coordinated with the DOH for new lot creation, new construction, and SWIS retrofits on developed sites in areas utilizing SSDSs.

B. Benchmarks and Plan Adherence

SSDS plans shall provide benchmarks with both vertical and horizontal controls, unless field staking is required and confirmed by the DOH. SSDS plans shall include information about the placement of the SSDS relative to restrictive layers and fixed reference points. Licensed installers are responsible to construct the SSDS in accordance with the plans approved by the DOH in accordance with PHC Section 19-13-B103e (f). Modifications to an approved plan shall be authorized by the plan designer and approved by the DOH.

C. Record Plans

Following a SSDS installation and final inspection, a record plan of the SSDS, as built, shall be submitted to the DOH in accordance with PHC Section 19-13-B103e (g) (4). The record plan shall identify the building sewer exit location from the building, sewage system access points (tank cleanouts, distribution boxes, etc.) and leaching system ends. The as-built drawing can be a plan to scale or a tie-plan from two or more permanent reference points. Tie-plans shall note the distance between reference points. A licensed installer shall prepare and submit the record plan, unless an engineered record drawing is required by the DOH in accordance with PHC Section 19-13-B103d (e) (5) or the DOH accepts a record plan from another individual (e.g., licensed land surveyor). Record plans shall be submitted in a timely manner to avoid delays in permit issuance by the DOH in accordance with PHC Section 19-13-B103e (k).

D. System Abandonment

Abandonment of any hollow SSDS component (e.g., septic tank, pump chamber, leaching chamber) or cesspool shall be performed in a manner to eliminate the danger of an inadvertent collapse. It is the property owner's responsibility to make arrangement for abandonment of any hollow SSDS component or cesspool. Hollow structures shall be emptied of all septage prior to abandonment. Structures shall be filled with sand or gravel, crushed in place, or removed from the site for disposal as approved by the DOH.

Table 1

Item	Separating Distance (Feet)	Special Provisions
A. Water supply well (potable, open loop geothermal, irrigation, spring) with a required withdrawal rate in gallons per minute (GPM) : < 10 GPM 10 to 50 GPM > 50 GPM	75 150 200	Distance from a water supply well to a leaching system shall be doubled if the receiving soil percolation rate is faster than 1.0 minute per inch and the bottom of the leaching system is less than 8 feet above ledge rock.
B. Building served	10	See Item G for buildings with groundwater control drains.
C. Open watercourse	50	For lots in existence prior to 8/16/82 that are not on a public water supply watershed, the distance shall be reduced to not less than 25 feet. In coastal areas, the Coastal Jurisdiction Line shall be considered the open watercourse limit, unless site specific information on high tide elevations on a property establishes the open watercourse limit.
D. Public water supply reservoir	100	
E. Solid piping for the conveyance of surface or groundwater drainage	25	Distance to tight pipe (See Table 3) shall be reduced to 5 feet as long as the pipe excavation is not backfilled with free draining material (FDM).
F. Storm water structure (e.g., catch basins, manholes)	25	Distance to sewage tank shall be reduced to 10 feet if storm water structure is watertight and constructed with rubber joint seals and watertight pipe connection seals (e.g., ASTM C 923). Storm water structures shall not be designed to collect groundwater (See Item G).
G. Groundwater drain (e.g., curtain, foundation, sumps) Up-gradient or on sides Down-gradient	25 50 ⁽¹⁾	No drain shall be constructed near a sewage system for the purpose of collecting partly treated sewage regardless of the distance. 1. Distance to sewage tank shall be reduced to 25 feet if tank is verified to be watertight.
H. Storm water infiltration system (SWIS) Single-family residential building lots Other lots (e.g., commercial, multi-family)	50 ⁽¹⁾ 75 ^{(2)/(3)}	Distance shall be reduced to 25 feet to sewage tank. 1. Distance shall be reduced to 25 feet to a leaching system if MLSS is not applicable or the SWIS is not up-gradient or down-gradient. Distances may be further reduced to 10 feet for minor SWIS (e.g., rain gardens) with the approval from the DOH if demonstrated that the leaching system or sewage tank shall not be adversely impacted. 2. Distance shall be reduced to 50 feet to a leaching system if MLSS is not applicable or the SWIS is not up-gradient or down-gradient, or with the approval from the DOH if demonstrated that the leaching system or sewage tank shall not be adversely impacted. 3. The DOH may require increased distances or an engineered assessment on the operation of the leaching system if localized groundwater mounding is a concern.
I. Top of embankment (i.e., fill package around perimeter of leaching system)	10	See Figure 13. Distance does not apply to sewage tank.

J. Property line	Distance to sewage tank and reserve leaching area shall be reduced to 10 feet. 1. Distance shall be reduced to 10 feet if the top of the leaching system is below original grade, grading rights from affected property owner are secured, or retaining walls are utilized (See Section VIII A for retaining wall provisions). 2. Separating distance between the leaching system and down-gradient property line shall be reduced to 15 feet if MLSS is not applicable or on flat groundwater table lots; further reduction may be allowed as cited in footnote 1 if either condition exists.	15 ⁽¹⁾ 25 ⁽²⁾	
K. Water Piping	1. Water line trench excavations less than 25 feet from leaching system shall not be backfilled with FDM.	10 ⁽¹⁾ 75 ⁽²⁾	
Pressure (e.g., potable, irrigation) Water supply suction	2. Distance between water suction pipe and sewage tank shall be reduced to 25 feet if tank is verified to be watertight.	25	
L. Below ground swimming pool	See Item G for down-gradient pools with groundwater control drains.	10	
M. Above ground swimming pool	Includes hot tubs (except on decks).	10	
N. Accessory structure	Distance to structure without full-wall, frost protected footings shall be reduced to 5 feet. See Item G if drains provided.	5	
O. Utility service trench (e.g., electric, gas)	Utility trench excavations less than 25 feet from leaching system shall not be backfilled with FDM.	25	
P. Buried fuel tanks	Distance to sewage tank shall be reduced to 10 feet. Distance to leaching system shall be reduced to 10 feet if not down-gradient of leaching system. See Item G if drains provided.	25 ⁽¹⁾ 50 ⁽²⁾ 75 ⁽³⁾	
Q. Water treatment wastewater (WTW) dispersal system	Distance to sewage tank shall be reduced to 10 feet. Distance to WTW dispersal system non-discharging settling or filtration structures and solid piping shall be reduced to 10 feet; however solid piping excavations shall not be backfilled with FDM.		
Small discharge (<150 GPD)	1. Distance to leaching system shall be reduced to 10 feet if MLSS is not applicable or the WTW dispersal system does not discharge up-gradient or down-gradient of the leaching system.		
Med. discharge (150 – 500 GPD)	2. Distance to leaching system shall be reduced to 25 feet if MLSS is not applicable or the WTW dispersal system does not discharge up-gradient or down-gradient of the leaching system.		
Large discharge (>500 GPD)	3. The DOH may require an increased distance or an engineered assessment on the impacts of localized groundwater mounding in the vicinity of a SSDS.		
R. Closed loop geothermal system	Distance to leaching system shall be reduced to 25 feet as long as geothermal system is not down-gradient of leaching system.	50	
Bore hole, Trench	Distance to sewage tank shall be reduced to 25 feet. Geothermal piping excavations less than 25 feet from leaching system shall not be backfilled with FDM.	10	
S. Grade cuts or soil disturbance down-gradient of leaching system	A soil cut within 50 feet down-gradient of a leaching system shall not be allowed if bleed-out from cut is a concern. Distance may be reduced with the approval of the DOH if it is demonstrated the cut/soil disturbance preserves the leaching system's receiving soil (See MLSS Appendix A).	50	

III. PIPING

A. Building Sewers

Building sewers shall be a minimum 4 inches in diameter, and shall be approved piping per Table 2. A minimum grade of 1/4-inch per foot (approximately 2.1 percent) shall be provided for 4-inch diameter building sewers, and 1/8-inch per foot for 6 and 8-inch diameter building sewers. The minimum grade requirement shall be provided for the entire building sewer. Building sewers shall have tight joints to the septic tank or grease interceptor tank, and be in a straight line with uniform grade wherever possible. Accessible manholes or surface cleanouts shall be provided at one or more cumulative changes of directions exceeding 45° (Figure 1), unless a 90° sweep approved in Table 2 is utilized. Accessible manholes or surface cleanouts shall be provided for each 75-foot length of building sewer from the foundation wall to the septic tank or grease interceptor tank. Long building sewer lines shall be avoided to reduce the danger of groundwater infiltration and sewer blockages. Approved building sewer piping located within the sanitary radius of a water supply well shall provide the minimum separation distances specified in Table 2. Building sewer foundation penetrations shall comply with the plumbing code, which is under the purview of the local building official.

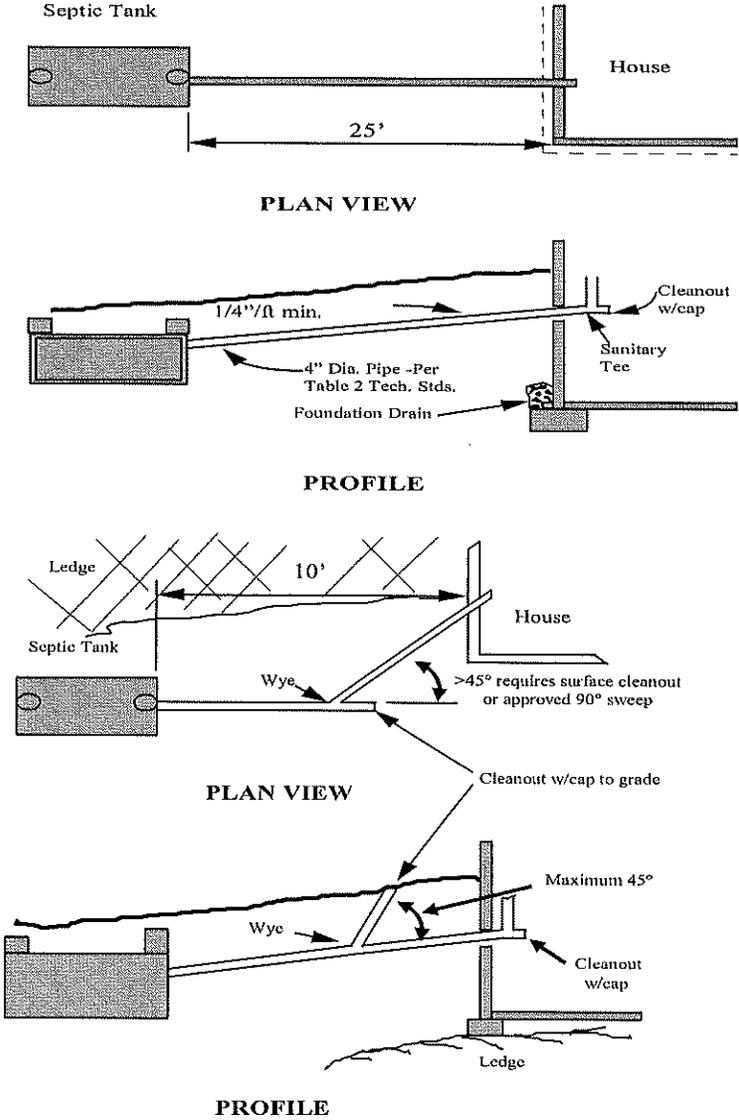


Figure 1 - Building Sewers

B. Effluent Distribution Piping

No cast iron or ductile iron piping shall be allowed following the septic tank or grease interceptor tank due to the corrosive nature of the effluent. Table 2-A lists approved effluent distribution piping. All solid effluent distribution piping located within 25 feet of a drain or open watercourse, or within the sanitary radius of a water supply well shall be higher grade piping (e.g., ASTM 3034, SDR 35) with tight joints (rubber gaskets or glued connections) per Table 2-A, and shall provide the minimum separation distances specified in Table 2-A. Solid effluent distribution piping between a septic tank and a leaching system shall not have negative pitch. Perforated distribution piping shall only be used within the footprint of the leaching system.

C. Force Main Piping

Force main piping subject to pressure from a pump or other dosing system shall have a pressure rating higher than the anticipated operating pressure for the particular application. Metal pipe (e.g., cast or ductile iron) shall not be used as a force main. Approved force main pipes are listed in Table 2-B. Approved force main piping located within the sanitary radius of a water supply well shall provide the minimum separation distances specified in Table 2-B.

D. Drainage & Water Supply Piping

Table 1 (Item E) specifies the minimum separating distances for groundwater and surface water drainage piping. As noted in the special provisions, approved tight pipes allowed within 25 feet of a sewage system are listed in Table 3; leakage testing may be requested to verify water tightness. ASTM standards specify leakage test procedures for various types of pipe. A low-pressure air test for plastic (PVC, PP, & PE) non-pressure piping is specified in ASTM F 1417, and concrete pipe testing is covered by ASTM C 924.

Table 1 (Item K) specifies the minimum separating distances for water piping. SSDS pipes shall be located a minimum of 25 feet from water supply suction pipes, and shall be approved piping (Tables 2, 2-A, & 2-B). Pressurized water lines and SSDS piping shall be located in separate trenches at least 10 feet apart whenever possible. When installed in the same trench, the water pipe shall be laid on a trench bench at least 18 inches above the top of the SSDS pipe and at least 12 inches (preferably 18 inches) from the side of the SSDS pipe trench (See Figure 2). When necessary to cross a pressurized water line with a solid effluent distribution pipe, the distribution pipe shall be approved piping (Table 2 or Table 2-A). Table 2 shall apply when the water line is located below the distribution pipe. Table 2-A shall apply when the water line is located above the distribution pipe. Building sewer pipes listed in Table 2, and force main pipes listed in Table 2-B may cross over or under pressurized water lines. Placement of pipe joints on pressurized water supply pipe and SSDS pipe at crossing points shall be avoided.

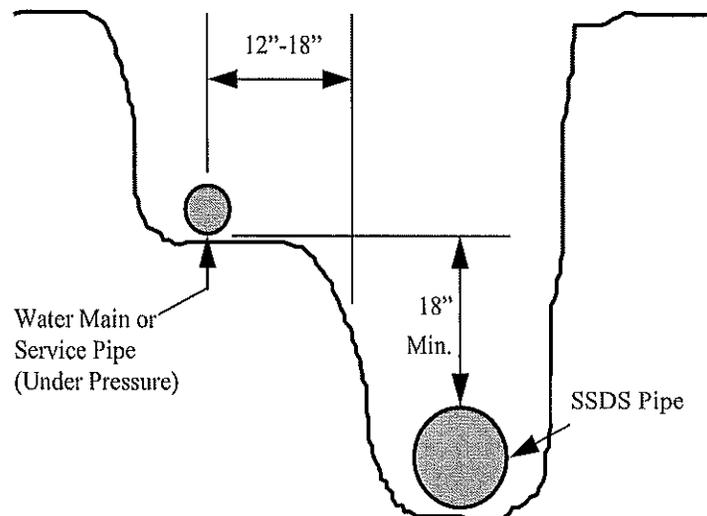


Figure 2 - Pressurized Water Pipe and SSDS Pipe Trenches

**Table 2
Approved Building Sewer Pipe from Building Served to Septic Tank or Grease Interceptor Tank**

NOTE: The DOH shall inspect all building sewer piping and joints prior to covering

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
<p>Building sewer from foundation wall to septic tank or grease interceptor tank.</p> <p>Building sewer within the sanitary radius of a water supply well, but no closer than the following minimum distances based on withdrawal rates: <10 gpm: 25 feet 10 – 50 gpm: 75 feet >50 gpm: 100 feet</p>	<p>Cast iron hubless ASTM A 888</p>	<p>Cast iron split sleeve bolted joint with rubber gasket, MG Coupling or equal OR 3"-wide, heavy -duty, stainless steel banded coupling with rubber gasket; Clamp-All, ANACO SD 4000 Coupling, or equal</p>	<p>Roll-on "donut type" gaskets not acceptable if connection is within 25 feet of foundation wall. Pipe shall be properly bedded, laid in straight line on uniform grade</p>
<p>Building sewers no less than 25 feet from a water suction pipe.</p>	<p>Cast iron bell and spigot ASTM A 74</p>	<p>Rubber compression gaskets</p>	<p>Stainless steel 3" wide shear band coupling required for connection of dissimilar piping materials</p>
<p>Building sewers and pressurized water lines shall be installed in accordance with Section III D.</p> <p>Building sewers shall be kept a minimum of 10 feet from closed loop geothermal bore holes and trenches.</p>	<p>PVC Schedule 40 or 80, ASTM D 1785 or ASTM D 2665</p>	<p>Rubber compression gasket couplings, Harco Mfg., ASTM D 3139 or equal* OR Solvent weld couplings/ fittings using proper two step PVC solvent solution procedure</p>	<p>*Use of 3"-wide approved stainless steel banded couplings on PVC, ASTM D 1785 or 2665 is acceptable UL (gray) Piping - Schedule 40 or 80- 36" min. radius sweep piping (90°) may be utilized without a cleanout. ABS Schedule 40 is not acceptable</p>
<p>There are no minimum distances between building sewers and other items listed in Table 1. However items placed near building sewers shall not damage or compromise the integrity of the pipe.</p>	<p>Ductile iron ANSI A 21.51</p>	<p>Rubber compression gaskets</p>	<p>Connection to cast iron building sewer shall be made with compression gaskets.</p>
	<p>PVC AWWA C900 (PC 100 psi min.)</p>	<p>Rubber compression gaskets</p>	<p>"O"-ring gasket is not acceptable</p>
	<p>PVC ASTM F 1760, Schedule 40</p>	<p>Rubber compression gaskets</p>	<p>Only 4" pipe approved Minimum 1' cover in vehicular loaded traffic areas</p>

Table 2-A
Approved Effluent Distribution Pipe

USE	PIPE DESCRIPTION	TYPE OF JOINT	REMARKS
<p>Solid and perforated effluent distribution pipe used after the septic tank. Solid non-metal piping listed in Table 2 may also be utilized as effluent distribution piping, and shall be allowed at the below distances to wells, drains, etc.</p> <p>*Solid distribution pipe within the sanitary radius of a water supply well, but no closer than the following minimum distances based on withdrawal rates: <10 gpm: 25 feet 10 - 50 gpm: 75 feet >50 gpm: 100 feet</p> <p>*Solid distribution pipe no less than 25 feet from a water suction pipe.</p> <p>*Solid distribution piping within 25 feet of an open watercourse, surface or groundwater drains (curtain/foundation).</p> <p>*Solid distribution pipe and pressurized water lines shall be installed in accordance with Section III D.</p> <p>*Solid distribution pipe should be kept a minimum of 10 feet from closed loop geothermal bore holes and trenches.</p> <p>There are no minimum distances between solid distribution pipe and other items listed in Table 1. However items placed near distribution piping shall not damage or compromise the integrity of the pipe.</p>	<p>*PVC ASTM D 3034, SDR 35 *PVC ASTM F 789, PS-46 *PVC ASTM F 891, PS-50 or PS-100 *PVC ASTM F1760, SDR35</p> <p>PVC ASTM D 2729 - only 3" diameter pipe (see remarks for use of 4" pipe)</p>	<p>*Rubber compression gasket, or solvent weld couplings/fitings w/ 2-step PVC solvent solution procedure. Bell and spigot with no gasket</p>	<p>Heavy duty plastic pipe for shallow pipe installation</p>
	<p>PVC ASTM D 2729 - only 3" diameter pipe (see remarks for use of 4" pipe)</p>	<p>Bell and spigot, no gaskets</p>	<p>4" diameter pipes can be used but shall be bedded in 6" min. of approved aggregate and covered with 2" min. of aggregate or with other special bedding requirements to protect against crushing</p>
	<p>PE ASTM F 810 (Perf. Spec.), SDR 38/ ASTM D 3350 - only 3" diameter pipe (see remarks for use of 4" pipe)</p>	<p>Bell and spigot, no gaskets</p>	<p>4" diameter corrugated smooth interior wall polyethylene leaching</p>
	<p>PE corrugated rigid pipe: ASTM 1248 (coil pipe not acceptable) - only 3" diameter pipe (see remarks for use of 4" pipe)</p>	<p>Sleeve joints</p>	<p>pipe meeting ASTM D 3350 and performance specification ASTM F 405 may be used without bedding</p>
	<p>*PE ADS N-12, ASTM F 667, AASHTO M-294</p>	<p>*Series 35 ADS coupling, o-ring gasket or WT Pipe/joint (Gasketed bell/spigot) Snap on sleeve joint</p>	<p>*Coupling: ASTM D 3034/F 1336. Joints (Coupling and WT) meet ASTM D 3212</p>

**Table 2-B
Approved Force Main (Pressure) Piping for Specific Applications**

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
<p>Force main piping within the sanitary radius of a water supply well, but no closer than the following minimum distances based on withdrawal rates: <10 gpm: 25 feet 10 – 50 gpm: 75 feet >50 gpm: 100 feet</p> <p>Force main piping no less than 25 feet from a water suction pipe.</p>	<p>PVC pressure pipe ASTM D 2241: SDR 21, 17, or 13.5</p>	<p>Bell and spigot with compression rubber gaskets</p>	
<p>Force main piping within 25 feet of an open watercourse, surface or groundwater drains (curtain/foundation).</p>	<p>PVC pressure water pipe AWWA C900 (PC 200 psi minimum)</p>		
<p>Force mains and pressurized water lines shall be installed in accordance with Section III D.</p>	<p>PVC ASTM D 1785 / ASTM D 2665, Schedule 40 or Schedule 80</p>	<p>Solvent welded, threaded joints or gasketed couplings</p>	
<p>Force mains should be kept a minimum of 10 feet from closed loop geothermal bore holes and trenches.</p> <p>There are no minimum distances between force mains and other items listed in Table 1. However items placed near force mains shall not damage or compromise the integrity of the pipe.</p>	<p>PE ASTM D 2239 PE ASTM D 2737 PE ASTM D 3035, SDR 11 or lower</p>	<p>No joints within 75 ft. of well or 25 ft. of open watercourse, ground or surface water drains No joints, Heat butt fused connections ok</p>	<p>Pipe available in 100-ft. and longer coiled lengths</p>

**Table 3
Approved Tight Pipe for Groundwater or Surface Water Piping within 25 Feet of a Sewage System**

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
Solid groundwater and surface water drainage pipes within 25 feet of a sewage system.	Cast iron hubless pipe ASTM A-888	Cast iron split sleeve bolted connector with rubber gasket MG Coupling or 3"-wide, heavy duty stainless steel banded coupling with rubber gasket; Clamp-All, ANACO SD 4000 Coupling or equal	Roll-on "donut type" gaskets not acceptable if used within 25 ft. of watercourse or drain. Pipe shall be properly bedded in accordance with manufacturer's specifications, laid in a straight line on a uniform grade
	Cast iron bell and spigot ASTM A-74	Rubber compression gaskets	
	Ductile iron ANSI A21.51	Rubber compression gaskets	
	Extra strength PVC pressure water pipe AWWA C900 (PC 100 psi min.)	Rubber compression gaskets	
	Reinforced Concrete Pipe ASTM C 76	Rubber compression gaskets, ASTM C 443	
	Reinforced concrete water pipe, steel cylinder type, AWWA C300/ C-301	Rubber compression gaskets	
	Schedule 40 or 80, PVC ASTM D 1785 or ASTM D 2665	Rubber compression gasketed couplings, Harco Mfg., ASTM D3139 or equal* or Solvent weld couplings/fittings using proper two step PVC solvent solution procedure	*Use of 3"-wide approved stainless steel banded couplings on PVC ASTM D 1785 is acceptable
	PVC ASTM D 2241: SDR 21, 17 or 13.5		ABS Schedule 40 is not acceptable
	PVC ASTM F1760, SDR 35 PVC ASTM D 3034, SDR 35 PVC ASTM F 789 PVC ASTM F 679	Rubber compression gaskets or Solvent weld couplings/fittings using proper two step PVC solvent solution procedure	Joint shall meet ASTM D 3212 specifications.
	PVC, CONTECH A-2026, ASTM F 949	Elastomeric gasket meets ASTM F 477	Joint meets ASTM D 3212
PVC, CONTECH A-2000, ASTM F 949	Gaskets meet ASTM F 477	Joint meets ASTM D 3212	
PE, ADS N-12, ASTM F 667, AASHTO M-294, 24-inch maximum diameter	Series 35 ADS coupling, o-ring gasket or WT Pipe/joint (Gasketed bell/spigot)	Coupling: ASTM D 3034/F 1336 Joints (Coupling and WT) meet ASTM D 3212	
PE, Hancor Blue Seal, ASTM F 667, AASHTO M-294, 24-inch maximum diameter	Blue Seal coupling/rubber compression gasket	Joint meets ASTM D 3212	
PP, ADS HP Storm Pipe, ASTM F2736, AASHTO M330, 12" - 30" diameters	Gasketed bell and spigot joint	Joint meets ASTM D 3212	
PP, ADS SaniTite HP Sanitary Pipe, AASHTO M330, ASTM F2736 (12" -30" diameters), ASTM F2764 (30" - 60" diameters)	Gasketed bell and spigot joint	Joint meets ASTM D 3212	

IV. DESIGN FLOWS

A. Residential buildings

Design flows for residential buildings shall be based on the number of bedrooms (refer to Section I). The design flow per bedroom is 150 GPD, except for bedrooms beyond three in single-family homes that have a design flow of 75 GPD for each additional bedroom.

B. Nonresidential buildings and residential institutions

Table 4 shall be used to determine design flows for nonresidential buildings and residential institutions unless specific water use data (minimum 1 year period) is available from the building or similar facilities. Whenever water use data is utilized to calculate the design flow, data shall be accompanied with additional information (e.g., building size, plumbing fixture information, hours of operation) in support of the design. Design flows based on metered flows shall use a minimum 1.5 safety factor applied to the average daily water use.

The required effective leaching area (ELA) for SSDSs serving restaurants, bakeries, food service establishments, residential institutions, laundromats, beauty salons, and other nonresidential buildings with problematic sewage is based on the design flow and the application rates in Table 7. Such buildings or discharges are designated in Table 4 with a notation that Table 7 application rates are to be utilized. Problematic sewage is wastewater that is a concern due to the nature or strength of the sewage. The required ELA for SSDSs serving nonresidential buildings with non-problematic sewage is based on the design flow and the application rates in Table 8.

For nonresidential buildings that are not specifically listed in Table 4, the strength and nature of the wastewater shall be used to determine the appropriate application rate. The strength of the wastewater can be correlated to the 5-day biochemical oxygen demand (BOD5). For reference purposes, a wastewater BOD5 concentration of 110 mg/l is weak, 220 mg/l is medium, and 400 mg/l is strong per Metcalf and Eddy, Inc. *Wastewater Engineering-Treatment, Disposal, and Reuse Third Edition* (McGraw-Hill, Inc., 1991), table 3-16, p. 109. Weak strength wastewater shall utilize Table 8 application rates whereas strong wastewater shall utilize Table 7 application rates. Medium strength wastewater shall utilize Table 7 for a conservative design unless otherwise approved by the Commissioner.

Table 4

Building Type	Design Flow (GPD)
Schools, per pupil	
Base Flow (Excludes Kitchen & Showers)	
High School	12
Junior High/Middle School	9
Kindergarten/Elementary School	8
Day Care Center	10
Additional Flows for Kitchen & Showers	
Kitchen (Table 7 App. Rate)	3
Showers	3
Residential	100
Commercial Buildings**	
Office (Average 200 SF gross area/person), per employee	20
Retail/Supermarket Building*, per SF gross area	0.1
*Supermarkets shall increase design flow to account for delis and bakeries	
Deli and bakery flow: (Table 7 App. Rate)	
Industrial Building, per SF of gross area	0.1
Factory (Average 200 SF gross area/person), per employee	25
(Add 10 GPD for showers)	
**Design flows may be reduced if documentation (building/floor plans, statement of use, etc.) supports the reduction	
Camps/Family Campgrounds	
Residential Camp (Semi permanent), per person	50
Campground with Central Sanitary Facilities, per person	35
Campground per Camp Space (Water and sewer hook-ups)	75
Day Camp, per person	15

Residential Institutions (Table 7 App. Rate)	
Hospital, per bed	250
Rest Home, per bed	150
Convalescent Home, per bed	150
Institution, per resident	100
Residential motels/hotels, per room	150
Group Home/Community Living Arrangement, per client*	100-150**
*Use maximum occupancy unless state license restricts occupancy & requires DOH approval per PHC Section 19-13-B100a for occupancy increases	
**Use higher flow for large tub/on-site laundry.	
Restaurants, Food Service Establishments and Bars (Table 7 App. Rate)	
Restaurant (Public toilets provided), per seat	30*
Restaurant (No public toilets), per seat	20*
*Design flow shall be increased by 50% if breakfast, lunch & dinner are provided	
Take-out Food Service, per meal served	5
Bar/Cocktail Lounge (No meals), per seat (Table 8 App. Rate)	15
Recreational Facilities	
Swimming pool, per bather	10
Tennis Court, per court: indoor/outdoor	400/150
Theater, Sport Complex, per seat	3.5
Church/Religious Building	
Worship Service, per seat	1
Sunday School, per pupil	2
Social Event (Meals served), per person (Table 7 App. Rate)	5
Miscellaneous	
Auto Service Station, per car serviced	5
Salon, (Table 7 App. Rate)	
Per styling chair/station (hair)	200
Per pedicure chair/spa (5 gallon maximum basin)	100
Per manicure chair/station	50
Barber Shop, per chair	50
Dental/Medical Office with Examination Rooms, per SF of gross area	0.2
Dog Kennel, per run (Roof shall be provided) (Table 7 App. Rate)	25
Pet Grooming, per station (Table 7 App. Rate)	250
Laundromat (Non-DEEP Regulated), per machine (Table 7 App. Rate)	400
Motel (Transient, No Food Service, Kitchenette or Laundry Facilities), per room	75
Motel (Transient, With Kitchenette but no Laundry Facilities), per room	100
Marina (Bath-house & Showers Provided), per boat slip	20

C. Water usage monitoring and Permits to Discharge

Plans for large SSDSs (2,000 to 7,500 GPD) shall include provisions to monitor domestic sewage generation via the use of water meters or other available means (e.g., pump cycling and dose volume documentation). Permits to discharge issued by the DOH shall be on approved forms (Form #4 or approved equal) as required by PHC Section 19-13-B103e (h). Permits to discharge for limited SSDS repairs (e.g., septic tank or leaching system replacement only) shall document which SSDS components were and were not replaced. The discharge permits shall specify the design flow and permitted flow. The design flow shall equal the permitted flow, except for leaching system repairs that do not provide the required ELA or MLSS. The permitted flow for these leaching systems shall be prorated by using the most limited percentage of the required ELA or MLSS provided. The discharge permit shall recommend the average daily discharge not exceed 2/3 of the permitted flow in order to allow the SSDS to operate with a sufficient factor of safety and to accommodate peak flow conditions.

D. Management programs

DOHs and municipalities implementing decentralized sewage system management programs (e.g., Sewer Avoidance and Pump-out Ordinances, Decentralized Wastewater Management Districts) shall submit proposed or revised ordinances and regulations to the Commissioner for review prior to adoption.

V. SEPTIC TANKS AND GREASE INTERCEPTOR TANKS

A. General

1. Septic Tank Standards

SSDSs shall be provided with a septic tank made of concrete or other durable material. Septic tanks and grease interceptor tanks, including the riser and cover assemblies, located under vehicular travel areas shall be rated for H-20 wheel loadings. It is recommended that any single compartment septic tank be replaced in conjunction with leaching system repairs. If they are to remain in use they shall be evaluated to confirm they are in satisfactory condition and properly baffled. Proprietary leaching system companies may not support use of their products with single compartment septic tanks. The company should be consulted if a repair plan includes their leaching system product with a single compartment septic tank.

a) Concrete Septic Tanks

Concrete septic tanks shall be produced with a minimum 4,000-psi concrete with 4 to 7 percent air entrainment. Concrete septic tanks shall not be shipped until the concrete has reached the 4,000-psi compressive strength. Concrete septic tanks shipped prior to 14 days from the date of manufacture shall include documentation that the tank reached minimum strength prior to shipping. Concrete septic tank construction shall conform to the most current ASTM C 1227 standard with the following exceptions:

- There shall be no maximum liquid depth.
- The air space above the liquid level shall be a minimum of 8 inches.
- Inspection ports over the compartment wall shall be optional.
- The mid-depth connection can utilize a minimum 4-inch diameter pipe or mid-depth T-baffle connection.
- Inlet & outlet pipe connections shall be watertight tank seals whenever the plan designer specifies use of such seals.
- Effluent filters do not have to meet the performance criteria of NSF/ANSI Standard 46.

Concrete septic tank pre-casters shall file tank specifications and drawings with the Commissioner along with certifications by a P.E. stating the tanks meet ASTM C 1227 specifications and the requirements of this section prior to distribution of tanks in Connecticut. The Commissioner shall maintain a list of approved concrete septic tank pre-casters that have met this requirement, which shall be posted on the Department of Public Health's website.

b) Non-Concrete Septic Tanks

Non-concrete septic tanks shall meet all of the applicable requirements set forth in subsections 2, 3, and 4 of Section V A regarding tank configuration, access, and cleaning. Non-concrete tanks shall be marked with the manufacturer's name, tank designation number, size, and a "dangerous gas warning". Non-concrete septic tanks shall be installed with strict adherence to the manufacturer's installation instructions in order to avoid tank damage or deformation. Proper bedding and backfilling shall be confirmed with each tank installation. Shallow groundwater conditions may prohibit installation of certain tanks due to tank design limitations or warranty restrictions. Tank bottoms located below maximum groundwater levels shall be provided with anti buoyancy/floatation provisions (check with manufacturer). Non-concrete septic tanks shall meet the IAPMO/ANSI (International Association of Plumbing and Mechanical Officials/American National Standards Institute) Prefabricated Septic Tank Standard, unless otherwise approved by the Commissioner. Manufacturers of non-concrete septic tanks shall file and keep up-to-date specifications, technical support documentation, and dated installation instructions with the Commissioner. The Commissioner shall maintain a list of approved non-concrete septic tanks (Appendix D) that may be updated prior to the next publication of these standards.

2. Septic Tank Configuration

Septic tanks shall have an inlet baffle submerged to a depth of 8 to 18 inches. Septic tanks shall have an outlet baffle submerged to a depth of at least 10 inches but no lower than 40 percent of the liquid depth, or an approved effluent filter. Connection of piping and baffles made out of dissimilar materials (e.g., PVC and PE) require use of multi-purpose 2-step solvent cement meeting ASTM D 3138. The inlet baffle shall encompass not more than 48 square inches of liquid surface area. All baffles shall extend a minimum of 5 inches above the tank's liquid level and provide a minimum 1/2-inch air gap above the baffle. Inlet and outlet piping entering and exiting the septic tank shall be as level as possible with a pitch no greater than 1/4-inch per foot. All newly installed tanks shall have an approved non-bypass effluent filter that is rated for the design flow of the SSDS. Effluent filters shall provide a minimum of 45 square inches of total opening area. The Commissioner shall maintain a list of approved effluent filters (Appendix B) that may be updated prior to the next publication of these standards.

The outlet invert of the septic tank shall be 3 inches lower than the inlet invert. Tanks shall be installed with the inlet invert between 2 and 4 inches above the outlet invert. Septic tanks (except tanks in series) shall have two compartments with

approximately 2/3 of the required capacity in the first compartment (Figure 4). No compartment wall shall extend to the interior roof without providing for venting. The transfer port shall be at mid-depth (opening in middle 25 percent of liquid depth). Mid-depth T-baffles similar to those shown in Figure 5 may be used as the mid-depth connection. Inlet and outlet piping shall be sealed with a sealed flexible joint connector. Inlet and outlet pipe seals shall be watertight tank seals when specified on the approved plan. The minimum liquid depth of septic tanks shall be 36 inches.

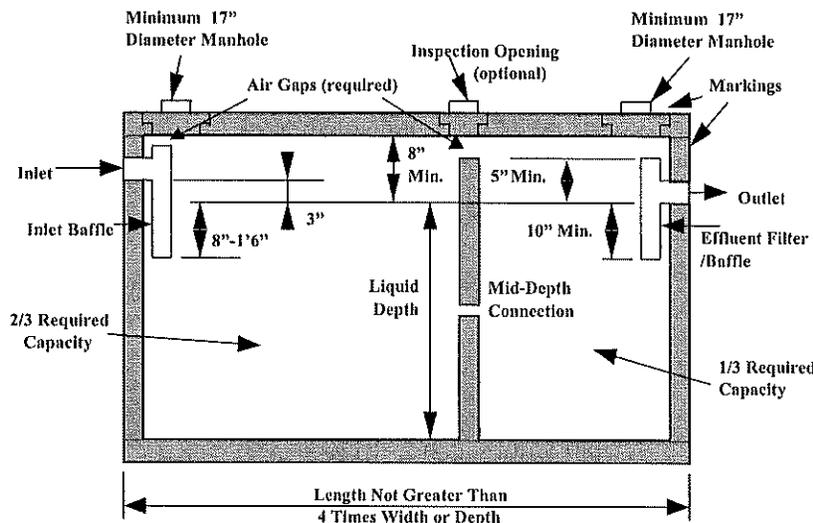


Figure 4 – Typical Septic Tank

Additional septic tank capacity may be obtained by utilizing a maximum of two tanks in series. When two septic tanks are placed in series, each tank shall be of single compartment design. The minimum volume of the first tank shall be twice the required minimum volume of the second. Mid-depth baffles shall be provided at the connection of the two tanks and an effluent filter shall be provided for the outlet of the second tank (Figure 5).

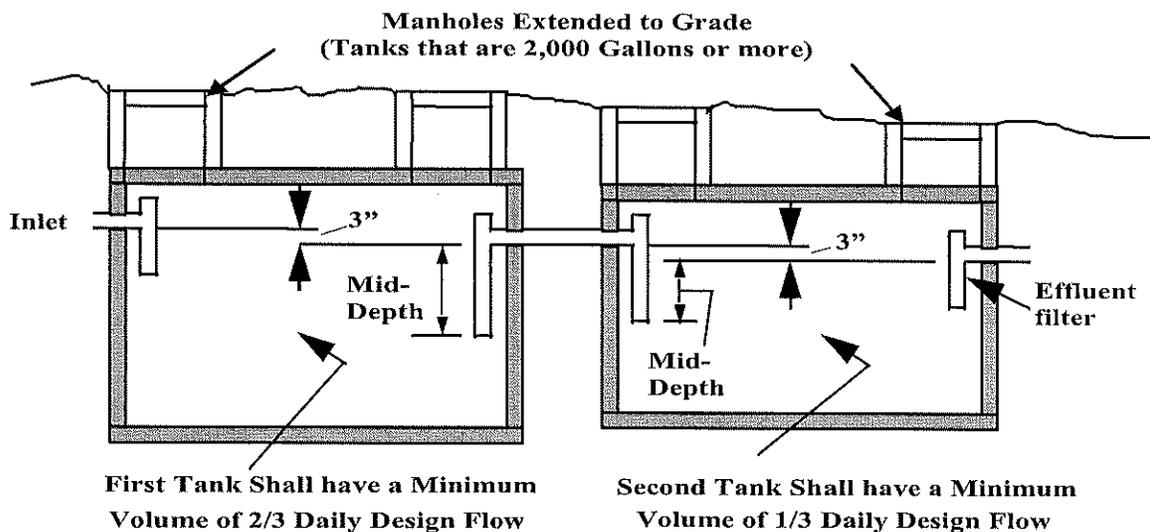


Figure 5 – Septic Tanks in Series

3. Septic Tank Access

Septic tanks shall have removable manhole covers to provide access for inspection and cleaning. Septic tanks shall have a minimum of 6 inches of cover. Cleanout manholes shall be located at a depth not greater than 12 inches below final grade. Existing septic tanks that exceed the 12-inch depth shall be retrofitted with a cleanout riser(s); riser retrofits are not required for non-cleanout openings (e.g., baffle openings) unless the opening provides access to an effluent filter. New tanks and existing tanks deeper than 24 inches below finish grade shall be provided with 24-inch minimum inside diameter access risers over each cleanout manhole opening. Riser cover assemblies shall be concrete or other durable material. Cleanouts

shall consist of a minimum 17-inch inside diameter opening and shall be located directly over the inlet baffle and effluent filter (Figure 6). If riser assemblies are utilized over cleanout openings, it is recommended that the covers be left on the tank for safety reasons, and to avoid potential odor problems. If a riser cover weighs less than 59 lbs then the tank cover shall remain in place or a secondary safety lid or device shall be provided. Secondary safety lids or devices are recommended to be utilized for safety reasons even if the riser cover weighs more than 59 lbs and the tank cover is removed.

If a tank provides side inlets, the maximum distance between the interior wall surface and the cleanout manhole shall be 15 inches unless heavy-duty piping (Schedule 40, ASTM D 1785/2665) is used or the pipe inside the tank is supported. Baffle extensions shall not have more than a 1/4-inch per foot pitch. Septic tank covers shall be stepped and provided with handles consisting of 3/8-inch coated rebar or approved plastic handles. Below ground plastic handles and plastic riser covers cannot be used unless provisions are made to allow for manhole location with a metal detector. Septic tanks in paved areas, and large (2,000 gallons or greater) septic tanks except for single-family residential buildings, shall have manholes extended to grade. Where covers are flush with or above grade, the lid shall weigh a minimum of 59 lbs or the cover shall be provided with a lock system to prevent unauthorized entrance. Riser and manhole extensions to grade shall be designed and constructed to prevent storm water infiltration. Positive drainage away from manhole covers in paved areas shall be provided. Tanks that exceed 15 feet in length shall provide a minimum of 3 manholes. The overall length shall not be greater than 4 times either the width or the depth.

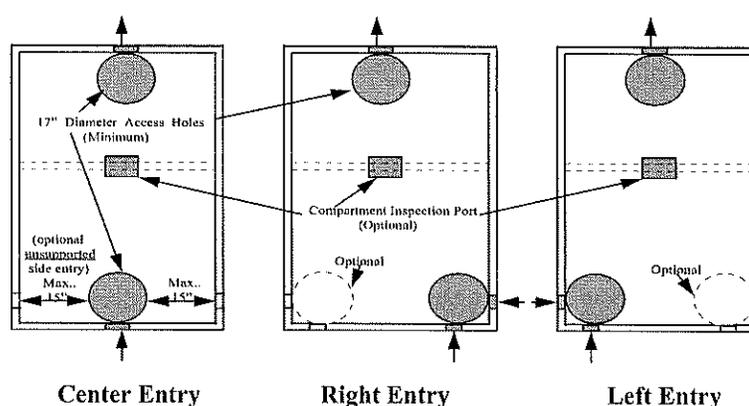


Figure 6 – Standard Septic Tank Configurations

4. Septic Tank Cleaning

Septic tanks shall be cleaned as often as necessary to prevent a buildup of sludge, grease and scum that will adversely affect the performance of the SSDS. In a properly functioning system, wastewater should not backflow from the leaching system into the septic tank at the time of pumping under normal use conditions (not as a result of large volume flood tests). Backflow indicates the leaching system is surcharged, and unless otherwise required by the DOH, tank pump-out reports shall note the backflow conditions and state the system was “malfunctioning” at the time of the septic tank pump-out. As with other malfunctioning system signs (e.g., effluent overflowing outlet baffle, back-up into building sewer or riser), a recommendation should be made for a more in-depth assessment of system operation by a licensed installer unless the condition is a result of a clogged effluent filter. SSDSs that discharge sewage onto the ground surface, into an open watercourse, or otherwise cause health hazards or nuisance conditions shall be identified as “failing”. The DOH shall investigate the failure and take necessary action pursuant to PHC Section 19-13-B103c (f) to abate the conditions.

Inlet and outlet baffles shall be inspected for damage or clogging at the time of tank pumping. If provided, effluent filters shall be properly cleaned by rinsing the filter off with water directed back into the septic tank, or if water is not available, exchanged with a new effluent filter with the property owner’s permission. Used effluent filters contain sewage and shall be handled in a sanitary manner during the cleaning or exchange process.

5. Septic Tank Markings

Tank information (size, date manufactured, name of manufacturer, and indication of limit of external loads/cover depths required by Section 13 of ASTM C 1227) shall be located on the top of the tank between the outlet access hole and outlet wall, or on the vertical outlet wall between the top of the tank and the top of the outlet opening. All septic tanks shall be manufactured with manhole covers or risers that have been placarded with notification of its two-compartment construction and a warning that “Entrance into the tank could be fatal”.

6. Performance Testing

Watertight tank seals shall be specified whenever tank water-tightness is critical such as when infiltration into a pump chamber is a concern, or when a replacement septic tank is within the sanitary radius of a water supply well. Plans or approvals requiring tank leakage testing shall utilize a vacuum test or water-pressure test in accordance with the following, unless otherwise specified by the design P.E.:

Vacuum Test: Assemble empty tank including temporary sealing of inlet and outlet pipes and all access openings. Attach a vacuum device that is capable of drawing a minimum vacuum pressure of 7 inches (175 mm) of mercury (Hg). To measure negative pressure drawn, the vacuum device shall utilize a calibrated gauge (range no greater than 0-10 inches/Hg), mercury manometer, or water manometer accurate to within 0.2 inches/Hg. Apply a vacuum to 4 inches (100 mm)/Hg. Tank passes leakage test once the tank holds the negative pressure for 5 minutes without loss of pressure. If the tank is unable to hold the required pressure for 5 minutes then the tank can be repaired per manufacturer’s recommendations and retested.

Water-Pressure Test: Seal the tank. Fill with water and let stand for 24 hours. Refill the tank. The tank passes the leakage test if the water level is held for 1 hour.

B. Septic tank capacities

1. Residential Buildings

The minimum liquid capacities/volumes of septic tanks serving residential buildings shall be based on Table 5.

Table 5

	Single-family	Multi-family
1-3 bedrooms	1,000 gallons	1,250 gallons
For Each Bedroom Beyond 3	Add 125 gallons per bedroom	Add 250 gallons per bedroom

2. Non-residential Buildings & Residential Institutions

The liquid capacity of a septic tank serving a non-residential building or a residential institution shall be a minimum of 1,000 gallons or the 24-hour design flow (Section IV), whichever is greater. A building generating a high peak flow shall have a septic tank providing a minimum detention time of 2 hours under peak flow conditions. The detention time is the tank liquid volume divided by the flow rate through the tank. The required septic tank capacity shall be increased by a minimum of 50 percent at a food service establishment or restaurant for a repair of an existing SSDS where it is determined that it is not feasible to install a grease interceptor tank or internal automatic grease recovery unit (AGRU).

3. Raw Sewage Pumps

Whenever more than 25 percent of the building’s design flow will be pumped into the septic tank, the size of the tank shall be increased 50 percent beyond the minimum capacity required per Section V B.

4. Garbage Grinders, Large Bathtubs, & Water Treatment Wastewater

Garbage grinders are not recommended for use with SSDSs. Only certain water treatment wastewater (WTW) is authorized to discharge to a SSDS (refer to Section X and Appendix E for WTW discharge requirements). The minimum liquid capacity of a septic tank shall be increased whenever a building contains a garbage grinder, large capacity bathtub, or WTW is discharged to the SSDS in accordance with the following:

Garbage grinder: Add 250 gallons.

Large bathtub: Add 250 gallons for 100 to 200 gallon bathtubs.
Add 500 gallons for bathtubs over 200 gallons.

WTW: Add 250 gallons for discharges of 50 to 150 gallons per cycle.
Add 500 gallons for discharges greater than 150 gallons per cycle.

C. Grease Interceptor tanks

Grease interceptor tanks (GITs) shall be provided for restaurants and food service establishments with design flows of 500 GPD or greater for new construction and repairs of existing SSDSs where feasible. If it is not feasible to install a GIT for a food service/restaurant SSDS repair, an internal AGRU is recommended for the wastewater piping in the kitchen. If a GIT or an internal AGRU is not included in a food service/restaurant SSDS repair, then the required septic tank capacity shall be increased by 50 percent (Section V B).

GITs shall receive wastewater from the kitchen waste lines only. Effluent discharged from the GIT shall be directed to the inlet end of the septic tank. The liquid capacity of GITs shall be a minimum of 1,000 gallons or the 24-hour design flow, whichever is greater. For restaurants and food service establishments with design flows of 2,000 GPD or greater, two GITs in series shall be provided with a combined liquid volume meeting or surpassing the 24-hour design flow. GITs shall have inlet and outlet baffles that extend to a depth of 6 to 12 inches above the tank bottom (Figure 7) and extend at least five inches above the liquid level. Effluent filters are not required on GITs, but they can be used if the manufacturer of the filter specifies that it is suitable for such use. All manholes over GIT cleanouts shall be watertight and extended to grade to facilitate cleaning. Positive drainage away from manhole covers in paved areas shall be provided. Tanks deeper than 24 inches below finish grade shall be provided with large (24-inch minimum inside diameter) access risers over each cleanout manhole opening. GITs shall be provided with manhole covers that have been placarded with notification as to the danger of entering the tank due to noxious gases. Covers to grade shall weigh a minimum of 59 lbs or the cover shall be provided with a lock system to prevent unauthorized entrance. If riser assemblies are utilized over cleanout openings, it is recommended that the tank covers be left on the GIT for safety reasons, and to avoid potential odor problems. If a riser cover weighs less than 59 lbs then the tank cover shall remain in place or a secondary safety lid or device shall be provided. Secondary safety lids or devices are recommended to be utilized for safety reasons even if the riser cover weighs more than 59 lbs and the tank cover is removed.

GITs can be single or two compartment tanks and shall be constructed out of concrete or other durable material. Concrete GITs shall meet all structural and access requirements for concrete septic tanks. This includes applicable configuration (pipe seals, inlet/outlet differential, etc) and access requirements (riser sizes, stepped covers, etc.) consistent with the requirements for concrete septic tanks. Concrete GITs shall be marked with tank information (size, name of manufacturer, date manufactured, loading limits), and be subject to other applicable septic tank provisions (performance testing, cleaning, tank abandonment, etc). Non-concrete GITs shall also meet the requirements for concrete GITs excluding the structural and marking requirements. Non-concrete GITs shall be marked with the manufacturer's name, designation number, size, and a "dangerous gas warning". The Commissioner shall approve non-concrete GITs. Some manufacturers of plastic septic tanks do not authorize their tanks be used as GITs due to the high temperature of the wastewater.

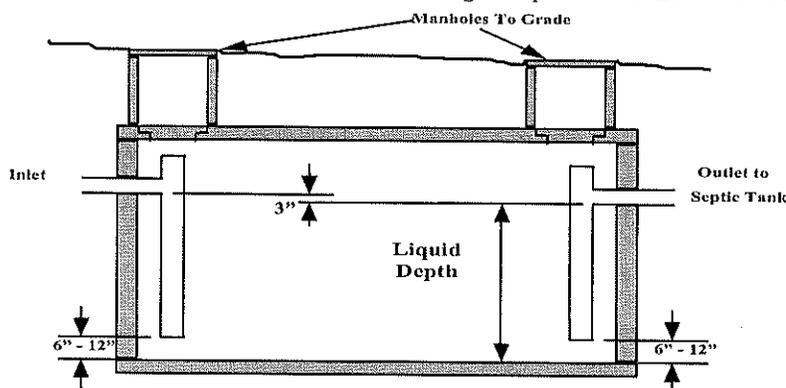


Figure 7 - Grease Interceptor Tank

VI. EFFLUENT DISTRIBUTION, PUMP SYSTEMS & AIR INJECTION PROCESSES

A. General

Distribution of septic tank effluent to a leaching system shall promote uniform distribution and full utilization of the system, and can be accomplished by gravity, pump, siphon, or dosing method approved by the Commissioner. Approved dosing methods include the Rissy Plastics Floating Outlet Distribution Chamber, Premier Plastics Flout Dosing Tanks, and the Geomatrix HyAir Pump System. Leaching systems shall be designed to prevent effluent backflow into the septic tank. The septic tank outlet invert shall be at a higher elevation than the top of all leaching structures (except in pump systems), or in the case of leaching systems utilizing serial distribution, higher than the high-level overflow elevation of the upper most leaching system row. It is recommended that SSDS be designed to allow for gas and air transfer from the leaching system back through the septic tank and building vents. Fully flooded distribution boxes should be avoided, and it is recommended that distribution piping/boxes be designed so that there is an air space in all pipes during normal leaching system operation. Leaching systems designed for serial distribution shall be designed so that the high-level overflow invert elevations are within the top 3 inches (0.25 feet) of the leaching structure. It is noted that gas and air transfer can be limited in serial distribution systems. Providing holes in the top portion of perforated effluent distribution pipe above the high-level overflow elevation can promote gas transfer.

Leaching systems shall include access points consisting of distribution boxes, cleanouts (galleries, pits), or capped sanitary tees. Leaching system access points on large and non-residential SSDS in paved areas shall be provided with H-20 load rated risers to grade. At least one access point shall be provided for each leaching system row. A single distribution box feeding row segments at the same elevation on either side of the distribution box shall constitute access points for both row segments. Leaching systems with rows at the same elevation shall have ends connected wherever feasible (Figure 8). Non-level leaching systems may apply effluent by dosing (pump, siphon, approved method), serial distribution with high-level overflow (Figures 9 and 10), or by approved effluent splitting devices (e.g., Polylok Dipper D-Box, Equalizer pipe inserts, Zoeller Tru Flow D-box).

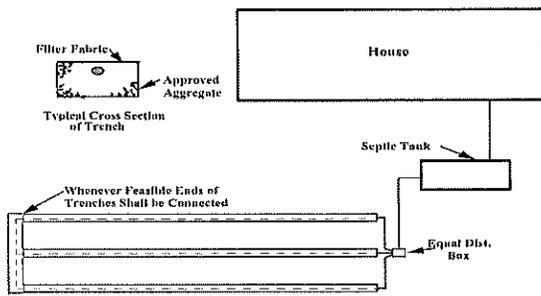


Figure 8 - Level Leaching Systems

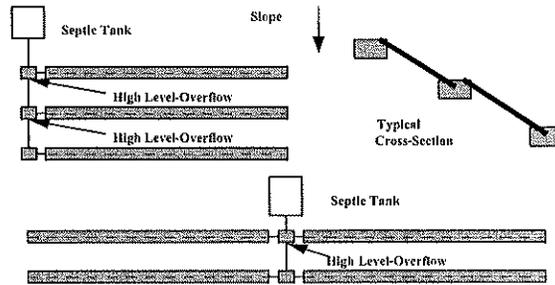
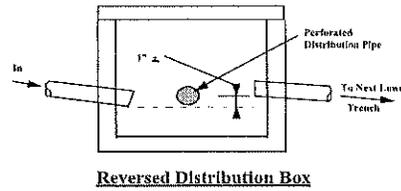
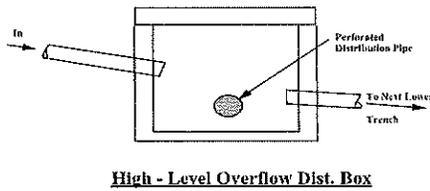


Figure 9 - Serial Distribution Systems



Note: The high-level overflow invert elevation shall be set within the top 3 inches of the upper leaching system row. The use of reversed distribution boxes should be avoided if gas venting is restricted.

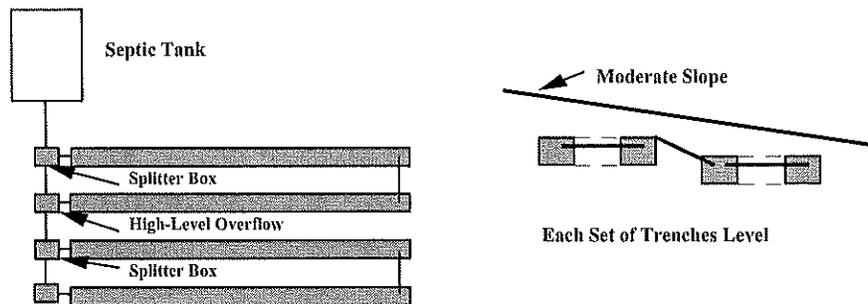


Figure 10 - Alternative Distribution Systems & D-Boxes

B. Mandatory Dosing

Large SSDS with more than 600 LF of leaching system shall utilize intermittent dosing arrangements. Dosing can be accomplished by pump, siphon, or other approved method. Dosing systems shall be designed to dose the leaching system at a frequency of 3 to 6 cycles per day unless timed dosing is utilized. Dosing chambers shall have access manholes to grade. Large SSDS utilizing pump systems shall be designed with duplicate alternating pumps. Alternating pump and siphon systems shall be designed to provide full leaching system utilization in the event one pump or siphon fails to operate.

C. Pump Systems

Effluent pump chambers shall be provided with watertight risers/manholes to grade and high-level alarms. The alarm shall be both audible and visual, unless otherwise approved by the DOH, and be located so that it readily alerts building occupants when activated. Existing pump chambers shall be retrofitted with risers to grade if not currently provided. Pump chambers shall provide 24-inch minimum inside diameter risers over access manholes. Covers to grade shall weigh a minimum of 59 lbs or the cover shall be provided with a lock system to prevent unauthorized entrance. When riser assemblies are utilized over an access opening, it is recommended that the tank cover be left on the chamber for safety reasons, and to avoid potential odor problems. If a riser cover weighs less than 59 lbs then the chamber cover shall remain in place or a secondary safety lid or device shall be provided. Secondary safety lids or devices are recommended to be utilized for safety reasons even if the riser cover weighs more than 59 lbs and the chamber cover is removed.

Effluent pumps shall be approved by the manufacturer for use in SSDSs. Force mains shall be freeze protected by burying the pipe below the frost line, allowing back drainage into the pump chamber through a weep hole, or other acceptable means (e.g., insulation). Back siphonage from the leaching system and/or excessive pump cycling shall be avoided when a weep hole is provided. Pump chambers in shallow groundwater areas shall utilize watertight tank seals and should be tested for leakage to ensure water tightness.

When a pump chamber is utilized for a small SSDS (< 2,000 GPD), it shall be provided with either duplicate alternating pumps, or a single pump and have a minimum emergency storage volume equal to the daily design flow. Emergency storage volume is measured from the alarm level to the inlet pipe invert (Figure 11).

Specifications shall be provided for all the internal components of the pump chamber (e.g., pumps, piping, floats, transducers, alarms, disconnect chain, valves). Pump on/off levels and alarm level shall be specified along with the dose volume and emergency storage provided. Pump systems can utilize pressure transducers, mechanical float switches, or other acceptable controls. The sale of mercury float switches is banned in Connecticut. The pump shall be rated to handle the design flow rate at the total dynamic head for the installation. A check valve shall be provided on the pump discharge line unless the pump manufacturer does not require one. Check valve and weep hole locations shown in Figure 11 are for illustrative purposes only; actual locations shall be established by the SSDS designer. Pipe unions, lift chain and manhole location shall allow for convenient pump removal for routine maintenance, and electrical and pump connections shall be readily accessible from the ground surface. Piping attached to the pump shall be set close enough to the top of the chamber under the manhole to allow for servicing, and a quick-disconnect device shall be utilized to allow for easy removal of the pump for maintenance. Internal pump chamber appurtenances shall be non-corrosive and suitable for the corrosive effluent environment. Electrical work for pump systems and alarms requires a permit from the local building official.

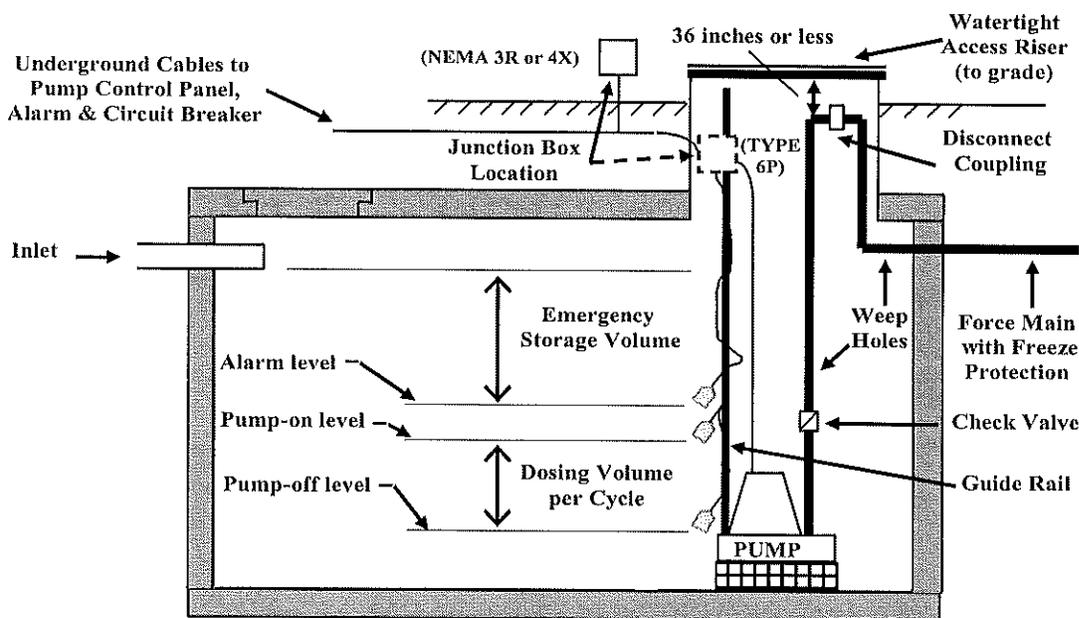


Figure 11 - Pump Chamber

Pump systems can utilize timed-dosed or volume-dosed systems. Pump systems shall avoid dosing large volumes of effluent into proprietary leaching systems with limited storage capacities. It is recommended that the dosed volume not exceed 20 percent of the internal storage volume unless otherwise approved by the proprietary leaching system company.

Pump chambers shall be made out of concrete or other durable material. The Commissioner shall approve non-concrete pump chambers. The inlet of the pump chamber shall be no higher than the septic tank outlet. Pump chambers, including the riser and cover assemblies, located under vehicular travel areas shall be rated for H-20 wheel loadings. Non-concrete pump chambers shall be installed in accordance with the manufacturers' instructions (refer to Section V A 1 b for other requirements). Concrete pump chambers shall meet all structural requirements for concrete septic tanks, marked with tank information (size, manufacturer, date made, loading limits), and are subject to other applicable concrete septic tank provisions (e.g., performance testing).

Low-pressure distribution (LPD) used in conjunction with leaching trenches, leaching galleries, and proprietary leaching systems require a design by a P.E., unless the leaching system manufacturer applies for and receives approval from the Commissioner for non-P.E. designed LPD arrangements that can be used with their systems. Leaching system manufacturers requesting such approval shall file supporting documentation with the Commissioner that details their standardized LPD design, and approval for a leaching system manufacturer's non-P.E. LPD design can be granted if a determination is made that the dosing system is sufficiently detailed and designed so that a P.E. design is not warranted. P.E. designs of LPD systems shall include access and flushing provisions for the purpose of routine maintenance and checking pressure in the lines, and provisions shall be provided for flow adjustment to the distribution lines. LPD designs shall provide system details on pressure filters, orifice shields, manifold access and pipe (size, specifications, diameter & spacing of piping holes) and pump information. The LPD designer shall specify O & M requirements for the system (e.g., flushing of the lines, checking pressure heads).

Passive nitrogen reduction (PNR) technology may be utilized in conjunction with a SSDS installation that utilizes LPD or a proprietary pressure-dosed dispersal (PPD) system. PNR technology does not aerate the contents of the septic tank and only uses a single pump or dual alternating pumps for LPD or the PPD system. PNR technology uses a clean subsurface wood product (e.g., sawdust, wood chips, mulch) through which partly treated sewage effluent flows. The wood product may be installed within a saturated or unsaturated soil treatment environment. The wood product provides a carbon source for denitrification of nitrified wastewater below or downgradient of a leaching system.

Successful use of PNR technology requires strict design and installation controls to ensure it doesn't interfere with the proper operation of the SSDS. PNR technology is relatively new and its use should be limited until such time that standardized design criterion is established. PNR technology use shall be limited to areas where nitrogen pollution from on-site sewage systems is a concern, such as high density residential development areas under community pollution abatement orders. PNR technology should only be permitted if the DOH has determined that its usage is appropriate, and the DOH has sufficient resources to ensure the systems are properly designed and installed.

SSDS designs that include PNR technology must have detailed plans that include information and specifications on the dosing system, wood product, and soil treatment horizons. Typically PNR technology mixes wood product with a specified category of clean soil (e.g., sand, loamy sand). Plans must provide a plan view and cross sections detailing the leaching system, wood product, added soil, restrictive layers, and all pertinent depths and elevations. Plans must include media placement and construction requirements, and information on any monitoring mechanisms. The DOH shall require the plan designer of a SSDS that includes PNR technology to supervise installation of the system and provide a written certification that the system was installed in conformance with the approved plan.

The use of PNR technology requires that the DOH provide the Commissioner notice of proposed installations on small SSDSs prior to issuance of an approval to construct. This will allow for a determination to be made if the system may be classified as an alternative treatment system, which can only be permitted by the Department of Energy and Environmental Protection. Notice is not required for large SSDSs as plans for these systems require approval from the Commissioner.

Raw sewage pumps are not recommended for use with SSDSs; however when they are necessary, solids handling pumps (ejector) are preferred over grinder pumps. If raw sewage pumps are needed for basement fixtures, upper floor flows should be directed to the septic tank by gravity where feasible. In the event more than 25 percent of the design flow is pumped to the septic tank, the required septic tank capacity shall be increased by 50 percent (Section V B 3). Force main foundation penetrations shall comply with the plumbing code, which is under the purview of the local building official. A raw sewage pump located outside a building is considered part of the SSDS, and shall be installed in compliance with the separation distances in Table 1. Raw sewage pumps/vaults below a building's slab elevation are considered outside the building unless they are installed in a sealed pit or otherwise designed to contain potential leakage inside the building. Exterior raw sewage pump vaults shall have an access opening to grade and be equipped with a malfunction alarm. Exterior raw sewage pump vaults that serve buildings, other than outbuildings, shall have dual alternating pumps or provide

24-hour emergency storage for the design flow they handle if the building's occupants only have access to bathroom facilities that rely on the raw sewage pump vault for its operation.

Combination septic tank/pump systems may be utilized in instances where space constraints, site limitations or other technical justification make it advantageous to install a single tank/pump unit. Combination septic tank/pump systems shall utilize a screened pump vault designed for that application, which is installed in the second compartment of an oversized two-compartment septic tank. The combination tank shall be sized to provide 24-hour emergency storage if a single pump is utilized. The tank liquid level should only draw down in the second compartment; however limited draw down in both chambers may be included in the SSDS design if the pump manufacturer authorizes such practice. Use of mid-liquid depth tee baffles with a compartment connection pipe at the liquid level shall be utilized to draw down effluent in second compartment only (Figure 12). The required septic tank capacity shall be provided below the "pump-off" level.

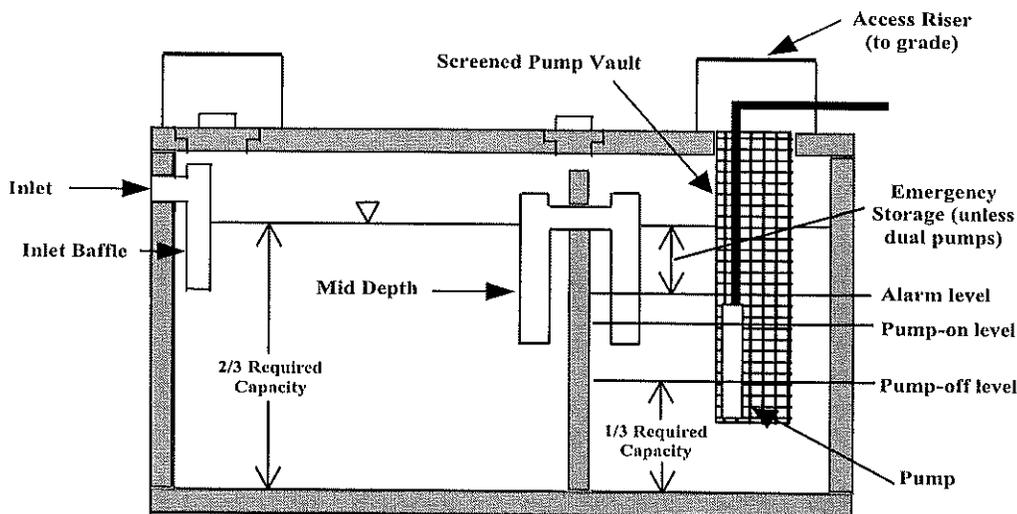


Figure 12 - Combination Septic Tank/Pump System with Tee Baffle Connection

D. Leaching System Enhancement/Rejuvenation

The patented Soil Air System provided by Geomatrix, LLC may be utilized on new SSDSs, or on existing SSDSs that are not at risk of hydraulically overloading the receiving soil and provide the required minimum separation distance above ledge rock and maximum groundwater. Utilization of the Soil Air System requires a permit from the DOH. A site investigation shall be required to gather soil test information if the data is not available.

Existing SSDSs that are determined to be candidates for the Soil Air System shall be evaluated to determine the extent of current code compliance. A repair plan shall be prepared identifying the location of the existing system and a code-complying area. Sites that cannot support a code-complying area shall have a potential repair area identified. Large SSDSs require engineered plans that shall be approved by the Commissioner as required by PHC Section 19-13-B103d (c). The DOH may require a P.E. plan for small (< 2,000 GPD) SSDSs in areas of special concern in accordance with PHC Section 19-13-B103d (e)(4).

The Soil Air System shall not be utilized on cesspools, or excessively undersized leaching systems unless determined that it is not feasible to expand the leaching system. Leaching systems are considered to be excessively undersized if they provide less than 50 percent of the required ELA. The DOH may require further upgrades to existing SSDSs in conjunction with implementation of the Soil Air System. Upgrades may include leaching system expansion or the installation of additional tanks (septic, grease interceptor). Soil Air Systems may be installed with the placement of a plastic membrane over the leaching system. Placement of such a membrane over a proprietary leaching system requires authorization from the proprietary leaching system company.

Soil Air Systems shall be periodically evaluated and monitored to verify satisfactory system operation. The permit to discharge shall stipulate that the DOH be notified in writing in the event the Soil Air System is removed. A standard tee baffle can only be utilized in place of an effluent filter on the septic tank outlet if Geomatrix, LLC and the system designer are in agreement that it is acceptable. The effluent filter shall be re-installed if the Soil Air System is removed.

E. Leaching System Clogging Break-up

EarthBuster and Terra-lift are separate patented processes each utilizing air injection into the soil as a method intended to help rejuvenate an existing leaching system's soil interface. These processes may be used on leaching systems that provide the required minimum separation distance above ledge rock and maximum groundwater, and that have historically operated satisfactorily but have experienced declining capacity due to infiltrative surface clogging. The depth of air injection shall not exceed the depth of the leaching system bottom and locations shall be no closer than 2 feet horizontally to the leaching system sidewall. Use of either process requires a permit from the DOH. A site investigation shall be required to gather soil test information if the data is not available.

Existing SSDSs that are determined to be candidates for either process shall be evaluated to determine the extent of current code compliance. A repair plan shall be prepared identifying the location of the existing system and a code-complying area. Sites that cannot support a code-complying area shall have a potential repair area identified. Large SSDSs require engineered plans that shall be approved by the Commissioner as required by PHC Section 19-13-B103d (c). The DOH may require a P.E. plan for small (< 2,000 GPD) SSDSs in areas of special concern in accordance with PHC Section 19-13-B103d (e)(4).

EarthBuster and Terra-lift shall not be utilized on cesspools, or excessively undersized leaching systems unless it is determined that it is not feasible to expand the leaching system. Leaching systems are considered to be excessively undersized if they provide less than 50 percent of the required ELA. The DOH may require further upgrade of existing SSDSs in conjunction with implementation of either process. Upgrades may include leaching system expansion or the installation of additional tanks (septic, grease interceptor).

VII. PERCOLATION TESTS

A percolation test consists of three steps: 1) presoaking the percolation hole, 2) refilling and allowing the hole to saturate under certain conditions, and 3) determining the minimum uniform percolation rate after saturation. The purpose of the presoak is to allow sufficient soil-water contact time. During the presoak, swelling clays that may be present in the soil will expand thereby reducing the void space. Sufficient presoaking allows the advancing capillary wetting front, which controls the water flow rate in unsaturated soils, to move away from the test hole so that a uniform flow rate is reached. Percolation tests should be avoided when the ground is saturated from heavy rain/flooding or a frost layer exists.

Percolation tests shall be performed in 6 to 12 inch diameter holes dug into the receiving soil in order to establish the percolation factor for MLSS purposes (Appendix A). Percolation holes should be at the depth of the proposed leaching system to establish the percolation rate for sizing purposes. If fill material or disturbed naturally occurring soil is the receiving soil, numerous percolation tests must be conducted to establish the percolation rate as the rate may vary widely, and to determine whether soil replacement is necessary. Leaching systems that are to be elevated in select fill require additional percolation tests after select fill placement to confirm the percolation rate of the select fill is not slower than the design rate. When receiving soil contains distinct soil strata of different texture or structure, each stratum shall be tested separately with holes at relative depths. In calculating the required leaching area (primary and reserve), only representative test results in the area and at the depth of the proposed leaching system shall be used, but all tests shall be reported.

Presoaking shall be started by filling the hole with a 12-inch depth of water. If the water seeps away in less than 2 hours, the hole may be refilled to a 12-inch depth and the percolation test begun. If water remains after 2 hours, the hole shall be refilled to a 12-inch depth and allowed to presoak for 2 additional hours before starting the percolation test, unless the soil contains little clay. Holes that contained water for at least 4 hours shall be considered adequately presoaked. Tests performed immediately after the presoak period yield more accurate results. If more than 30 hours have elapsed following the initial presoak, the test hole shall be presoaked once again. Following the presoak, the hole shall be refilled with 12-inch depth of water to begin percolation test. Water level readings shall be recorded at regular intervals and shall continue until there is 2 to 3 inches of water remaining in the hole. Additional readings may not accurately reflect the percolation rate as fine soil particles may accumulate at the bottom portion of the hole. The minimum uniform percolation rate following saturation shall be used to calculate the size of the leaching system.

If a leaching system is constructed entirely in select fill and the bottom of the system is above existing grade, then the required ELA can be determined based on the percolation rate of the select fill. Using a percolation rate faster than 10.1 minutes per inch may be problematic if the percolation rate in the select fill is determined to be slower; it is suggested to use a conservative design percolation rate of 10.1 to 20.0 minutes per inch. Although the required ELA can be determined by the percolation rate of the select fill, the MLSS shall be based on the percolation rate of the receiving soil that may be considerably slower.

VIII. LEACHING SYSTEMS

A. General

Leaching systems shall not be constructed in areas where high groundwater, surface flooding or ledge rock will interfere with its operation. Leaching systems should be installed as shallow as possible and preferably not under parking or vehicular travel areas. The maximum depth of the bottom of a leaching system below finished grade shall be 8 feet. The maximum width of leaching products (e.g., trenches, galleries, proprietary systems) is 6.5 feet, except for leaching pits. Entering deep test pits above the waist can result in bodily harm or death in the event of cave in. Use of shallow shelves is recommended to allow for assessment of the soil in the upper profile of the pit. Refer to OSHA standards for pit safety measures and restrictions. Site investigation documentation shall be recorded on Form #2 or Form #2 Alternate.

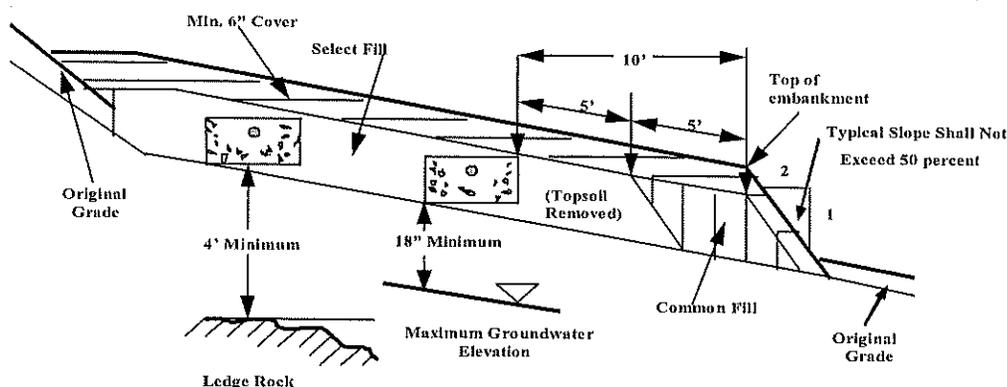


Figure 13 - Minimum Separating Distances above Ledge Rock and Maximum Groundwater

The bottom of a leaching system shall be a minimum 18 inches above maximum groundwater and 4 feet above ledge rock. Additional separation shall be provided as follows:

- If the receiving soil percolation rate is faster than 5.0 minutes per inch, the minimum separation to maximum groundwater shall be increased to 24 inches.
- If the receiving soil percolation rate is faster than 1.0 minute per inch, the minimum separation above ledge rock shall be increased to 8 feet or the distances shall be doubled from any water supply well in accordance with the special provisions in Table 1 (Item A).
- Large SSDSs shall provide a minimum 24 inch separation above maximum groundwater.
- SSDSs in coastal areas on sites with tidally impacted groundwater tables shall provide a minimum 24 inch separation above maximum groundwater. Maximum groundwater determinations in coastal areas shall take into account water level rise associated with tide changes.

The ground surface over the entire SSDS shall be graded and maintained to lead surface water away from the system. SSDSs shall be protected from siltation and erosion during and after construction. Leaching systems (including distribution pipes on top of system) shall be covered with a minimum of 6 inches of soil, and finished in a condition that will prevent erosion. Proprietary leaching systems shall be covered with additional soil in conformance with the manufacturer's installation instructions. Licensed installers shall properly cover leaching systems within 2 working days following the DOH's final inspection and approval, and prior to heavy precipitation events.

Plans for new SSDSs, code-complying areas, designated leaching system areas for proposed lots, and repairs of existing leaching systems shall demonstrate compliance with the Minimum Leaching System Spread (MLSS) requirements in Appendix A. Exceptions to MLSS compliance can only be granted for SSDS repairs, and a reduced flow per Section IV C shall be cited on the Permit to Discharge for non-compliant repairs. MLSS is not applicable on sites with more than 60 inches of receiving soil, or when a P.E. has conducted an assessment of the hydraulic capacity of the receiving soil, or for reserve leaching areas. It is recommended that reserve leaching areas comply with MLSS. SSDSs on sites with a receiving soil depth (RS Depth) of less than 18 inches shall require a P.E. hydraulic analysis of the receiving soil.

New SSDSs require naturally occurring receiving soil native to a site. Naturally occurring soil is formed from natural processes independent of human actions, and does not include fill placed by humans or deposited as a result of human actions. Repairs of existing SSDSs may use fill material as receiving soil if sufficient naturally occurring soil is not available. Plans for a new SSDS shall not be denied upon MLSS non-compliance, but shall be denied if compliance with PHC Section 19-13-B103e (a) (4) is not demonstrated. This regulation prohibits approval of a new SSDS when the surrounding naturally occurring soil cannot adequately absorb or disperse the expected volume of sewage effluent without

overflow, breakout, or detrimental effect on ground or surface water. Approval of new SSDSs on sites with less than 18 inches of naturally occurring soil cannot be considered unless a P.E. satisfactorily demonstrates through a hydraulic analysis or loading test that the naturally occurring soil can disperse the design flow. Sites without any unsaturated naturally occurring soil are not candidates for a hydraulic assessment since the naturally occurring soil is already in an overflowed/saturated condition.

DOHs should advise against the creation of new lots that have unsuitable soil conditions pursuant to PHC Section 19-13-B103e (a) in the primary or reserve leaching system area. Leaching system areas for new SSDSs and code-complying area designations shall not contain unsuitable soil conditions. Leaching system areas includes soil within 10 feet in all directions around the perimeter of the leaching system. Unsuitable soil conditions include areas with less than 18 inches of soil above maximum groundwater or less than 4 feet of soil above ledge rock.

New SSDSs constructed in areas where there is no definite schedule for the extension of public sewers within 5 years shall be laid out in such a manner to provide an acceptable reserve leaching area of suitable soil, or in the case of existing single-family residential building lots created prior to January 1, 2007, potentially suitable soil. An area with potentially suitable soil contains less than 4 feet of existing soil above ledge rock but at least 2 feet of which is naturally occurring soil. Reserve areas shall be sized based on its percolation rate and have the feasibility to be constructed in conformance with all aspects of the PHC and Technical Standards, except MLSS, for the purpose of expansion or replacement of the primary leaching system. Reserve areas are not required for repairs of existing leaching systems, or for outbuildings with a design flow of 150 GPD or less on single-family residential building lots. Single-family residential building lots are not required to prepare a reserve area with any select fill at the time of installation of the primary system. Reserve areas for multi-family dwellings and commercial buildings do not have to be prepared with select fill unless the designated reserve area is located under asphalt pavement or poured concrete (parking or vehicular travel areas).

Non-linear level leaching systems (e.g., interconnecting end sections, L-shaped, U-shaped, Box shaped) may be credited in certain instances. However, the length of the main row(s) shall only be measured to the center of the interconnecting segment or extension. Leaching systems shall not receive credit for such configurations unless MLSS is not applicable, or the groundwater hydraulic gradient is level (essentially 0 percent slope). Non-linear leaching system configurations may present a concern for non-uniform effluent loading on MLSS applicable sites with sloped hydraulic gradients.

Leaching systems located in vehicular travel areas shall be capable of handling H-20 wheel loads as follows:

- Precast concrete structures (galleries, pits) shall be H-20 load rated.
- Leaching trenches shall have a minimum 1-foot cover.
- Proprietary leaching systems shall only be used in vehicular travel areas if authorized by the manufacturer, and shall be H-20 load rated. Proprietary leaching system companies authorizing placement of their systems in vehicular travel areas shall file supporting documentation with the Commissioner.

SSDS designs that include retaining walls shall provide information and specifications for the retaining wall including its foundation, and any associated groundwater control mechanisms (drains, weep holes). A cross-section of the wall showing existing and proposed grades should be provided. Retaining wall groundwater drains shall comply with the minimum separating distances listed in Table 1 (Item G). Retaining walls within 50 feet down-gradient of a leaching system shall not act as a hydraulic barrier to groundwater and wastewater movement in the receiving soil. The inner edge of the retaining wall shall be at least 10 feet from the leaching system. Retaining walls shall be designed to prevent seepage from occurring through the above grade portions of the wall.

Whenever two different types of leaching products are utilized side-by-side, the average of the required minimum center to center (C to C) spacing shall be maintained. The specified C to C spacing is also applicable for the primary system relative to the reserve system. Leaching system products with ELA of 7.4 SF/LF and higher shall not be utilized where the receiving soil has a percolation rate slower than 30 minutes per inch. The length of leaching trench, gallery or proprietary leaching system row segments shall not exceed 75 feet measured from the inlet. In installations where intermittent dosing (e.g., pumping) exceeding 25 gallons/cycle is used a maximum length of 100 feet may be utilized.

A layer of non-woven filter fabric shall be placed over leaching system approved aggregate, and over exposed leaching gallery section joints prior to backfilling. Minimum average roll values for fabric used for covering stone aggregate shall have a unit weight of 1.5 oz./yd² (per ASTM D 5261), a permittivity of 1.0 sec⁻¹ (per ASTM D 4491) and a trapezoid tear strength of 15 lbs. (per ASTM D 4533). Filter fabric covering approved aggregate, except fabric with a P.E. certification, shall bear the appropriate manufacturer's label specifying the product's name and identification number. Labeling shall be affixed in such a manner to be readily visible to facilitate inspection. The Commissioner shall maintain a list of approved filter fabrics (Appendix C) that may be updated prior to the next publication of these standards. P.E. certification of unlabeled fabric shall be made only by the plan designer, and fabric information and specifications shall be included on the

design plan. The P.E. shall certify the fabric meets the above noted minimum average roll values, and shall inspect the leaching system before covering and confirm in a written statement to the DOH that the specified fabric was utilized.

Stone aggregate must be of uniform consistency and only contain clean, hard, tough, durable fragments that meet the specifications cited in the stone aggregate definition (Section I), which includes a fines standard of a maximum of 1% passing the No. 200 sieve at the pit/quarry source. This standard should also be met at the SSDS installation site; however in no case shall the fines exceed 1.5%. Stone aggregate utilized in leaching system installations shall meet the following gradations for either No. 4 stone aggregate or No. 6 stone aggregate, respectively:

SIEVE SIZE	No. 4 Stone Aggregate (A.K.A., 1 & 1/4" Stone)	No. 6 Stone Aggregate (A.K.A., 3/4" Stone)
	PERCENT PASSING (by weight)	PERCENT PASSING (by weight)
2-inch	100	N/A
1.5-inch	90 - 100	N/A
1-inch	20 - 55	100
3/4-inch	0 - 15	90 - 100
1/2-inch	N/A	20 - 55
3/8-inch	0 - 5	0 - 15
#4	N/A	0 - 5

Select fill placed within and adjacent to leaching system areas shall be a clean material comprised of sand, or sand and gravel, free from organic matter and foreign substances. The select fill shall meet the following requirements unless otherwise approved by the design P.E. Select fill exceeding 6 percent passing the #200 sieve based on a wet sieve analysis cannot be approved by the design P.E.

1. The select fill shall not contain any material larger than the three (3) inch sieve.
2. Up to 45% of the dry weight of the representative sample may be retained (gravel portion) on the #4 sieve.
3. The material that passes the #4 sieve is then reweighed and the sieve analysis started.
4. The remaining sample shall meet the following gradation criteria:

SIEVE SIZE	PERCENT PASSING	
	WET SIEVE	DRY SIEVE
#4	100	100
#10	70 - 100	70 - 100
#40	10 - 50 *	10 - 75
#100	0 - 20	0 - 5
#200	0 - 5	0 - 2.5

* Percent passing the #40 sieve can be increased to no greater than 75 if the percent passing the #100 sieve does not exceed 10 and the #200 sieve does not exceed 5.

Select fill that does not meet the dry sieve gradation criteria but meets the wet sieve gradation criteria is acceptable. Sieve testing of select fill is required for large SSDSs whenever the leaching system is located entirely in select fill. The DOH may require sieve testing of select fill on small SSDSs in accordance with PHC Section 19-13-B103e (d) (6).

The licensed installer is responsible for preparing the leaching area with acceptable select fill. Topsoil in the leaching system area shall be removed and the subsoil scarified prior to select fill placement, unless otherwise directed by the design P.E. The installer shall take the necessary steps to protect the underlying receiving soil from over compaction/damage. The installer is responsible for properly compacting select fill to facilitate construction and to prevent settling. Select fill shall extend a minimum of 5 feet laterally in all directions beyond the outer perimeter of the leaching system.

The Commissioner shall approve manufactured fill. Rock or other product used to produce manufactured fill shall have a loss of abrasion of not more than 50 percent using AASHTO Method T-96, and when tested for soundness using AASHTO Method T 104 not have a loss of more than 15 percent at the end of 5 cycles. The suggested minimum permeability of manufactured fill is 15 feet per day; however the minimum average permeability must be at least 10 feet per day. The Commissioner may require additional testing and documentation on manufactured fill with an average permeability between 10 and 15 feet per day. Suppliers of manufactured fill shall make application for approval to the Commissioner. Documentation shall be submitted on the manufactured fill operation and production process. Fill specifications/test results (e.g., loss of abrasion, soundness, gradation, permeability) and a narrative of the supplier's quality control/quality assurance (QC/QA) program shall be included for all active production sites. Approved manufactured fill producers shall provide an annual registration to the Commissioner by July 1st of each year, which includes updated test results and QC/QA narratives. Manufactured fill approval applications and annual registrations shall include a signed statement attesting that the test results submitted to the Commissioner are typical of routine QC/QA test results.

B. Leaching Trenches

Leaching trench rows shall be installed level and follow ground contours. Leaching trenches shall be filled with approved aggregate. Stone aggregate shall meet the No. 4 or No. 6 stone aggregate gradation in Section VIII A. Perforated effluent distribution pipe of acceptable material (Table 2-A) with perforations in a downward direction shall be laid the entire length of the trench near the top layer of aggregate with a minimum 6 inches (for 48-inch wide trenches) or 12 inches (for 36-inch or less wide trenches) of aggregate under the pipe. Perforated distribution pipes shall be laid level or on a grade not exceeding 3 inches per 100 feet. Additional ELA credit of 0.6 SF/LF shall be given to the leaching trench credits below if the distribution pipe is installed on top of the leaching trench aggregate. Perforated distribution pipe placed on top of approved aggregate shall be 4-inch heavy duty pipe (Table 2-A). Filter fabric must cover the aggregate and distribution pipe, and aggregate must be cradled around the bottom portion of the pipe to prevent the filter fabric from obstructing the perforated pipe openings.

For the purposes of Section VIII F & G, the ELA of leaching trenches and corresponding minimum C to C spacing between trench rows shall be as follows:

Trench Depth (inches)	Trench Width (inches)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
18	18	2.1	7
18	24	2.4	7
18	30	2.7	7
18	36	3.0	7
12	48	3.0	8

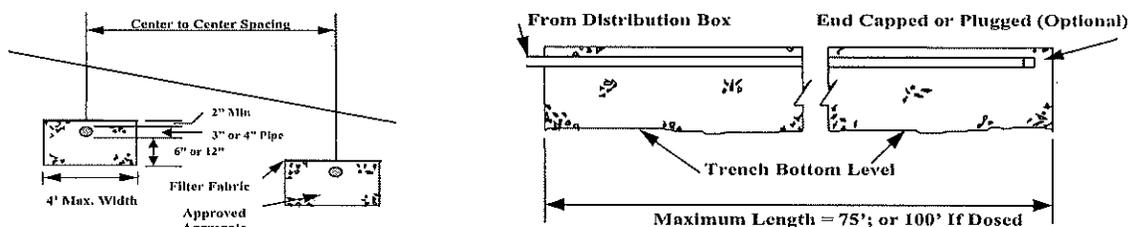


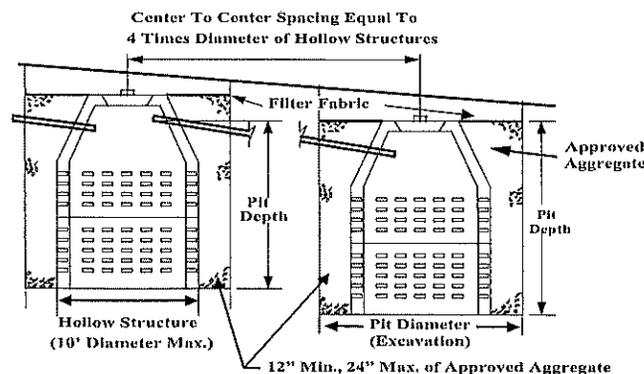
Figure 14 - Leaching Trenches

C. Leaching Pits

Leaching pits shall be hollow structures with perforated walls and solid covers. The side walls shall be surrounded by 12 to 24 inches of approved aggregate, and the hollow structure shall be 5 to 10 feet in diameter. Stone aggregate shall meet the No. 4 stone aggregate gradation in Section VIII A. Covers shall be equipped with a cleanout manhole. Center to center spacing of leaching pits shall be at least 4 times the diameter of the hollow structure. No more than 2 leaching pits shall be connected in series. The bottom of leaching pits shall not be more than 8 feet below grade. Leaching pits shall not be used where the percolation rate is slower than 20 minutes per inch.

For the purposes of Section VIII F & G, the ELA of leaching pits shall consist of only the side area of the usable aggregate-filled excavation. The maximum utilization of a leaching pit cannot be higher than the septic tank outlet elevation or the high-level overflow elevation of the serial distribution box.

ELA = Excavation Diameter X π X Pit Depth (Note: π equals approximately 3.14)



**Figure 15
Leaching Pits**

D. Leaching Galleries

Leaching gallery rows shall be installed level and follow ground contours. Leaching galleries shall be hollow structures with perforated or open joint sides and solid covers. Leaching galleries shall provide a minimum 40 inches of open bottom width. The sidewalls shall have a minimum depth of 12 inches and a maximum depth of 4 feet, including up to 6 inches of approved aggregate above the top of the structure. If approved aggregate is placed on top of the structure for additional credit, then perforated distribution pipe should be located above the top of the gallery if feasible. Twelve inches of approved aggregate shall be placed on the sides of concrete galleries and ends of the gallery rows. Stone aggregate backfill for concrete galleries shall meet the No. 4 stone aggregate gradation in Section VIII A. The width of the trench excavation shall not be less than 6 feet and the width of the hollow structure(s) shall be not less than 4 feet. The total length of excavated gallery row shall be utilized to calculate ELA. Four-inch heavy duty perforated distribution pipe (Table 2-A) may be installed on top of the gallery aggregate to receive an additional ELA credit of 0.6 SF/LF for 12-inch high galleries, and 0.8 SF/LF for all other galleries. Filter fabric must cover the aggregate and distribution pipe, and aggregate must be cradled around the bottom portion of the pipe to prevent the filter fabric from obstructing the perforated pipe openings.

For the purposes of Section VIII F & G, the ELA of leaching galleries rows and corresponding minimum C to C spacing between gallery rows shall be as follows:

Gallery Height (inches)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
48	9.2	12
36	8.0	12
30	7.4	12
27	7.1	12
24	6.8	12
18	6.2	12
12	5.9	12

Single plastic chambers (e.g., Infiltrator ISI 3050, Cultec Recharger 330XL HD) or multiple plastic chambers (e.g., Infiltrator Quick4 Plus Standard) can be utilized in a gallery configuration (Figure 16) as long as the minimum open bottom width of 40 inches is provided, and the proprietary leaching system company authorizes such installation practice. Stone aggregate backfill for plastic chambers shall meet the No. 4 or No. 6 stone aggregate gradation in Section VIII A.

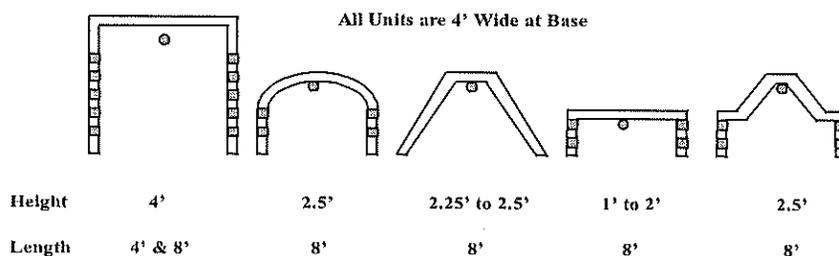
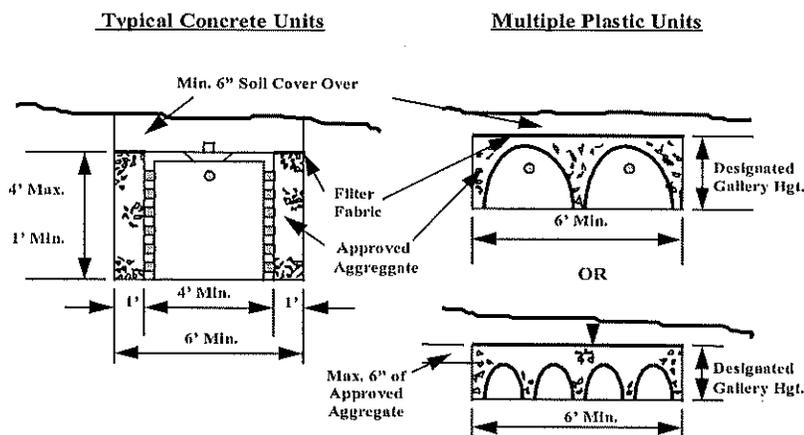


Figure 16 - Typical Leaching Gallery Structures



E. Proprietary Leaching Systems & Proprietary Pressure-Dosed Dispersal Systems

1. Proprietary Leaching Systems

Installation procedures, including the minimum depth of cover, shall be per manufacturer's specifications. It is the responsibility of proprietary leaching system companies to ensure that installers are properly trained on installation protocols and procedures. Proprietary leaching system rows shall be installed level and follow ground contours. Proprietary leaching systems that require placement of soil at the infiltrative interface shall be backfilled with select fill unless otherwise noted. Several proprietary leaching products require use of ASTM C 33 sand or washed sand meeting Department of Transportation (DOT) Form 817 Table M.01.03-01 for fine aggregate. ASTM C 33 sand and DOT washed sand contains no medium and large (3/8" to 3") gravel, and limited (less than 5 percent) small (#4 sieve to 3/8") gravel. Sand specified for the infiltrative interface shall meet select fill gradation specifications for the #100 and #200 sieves. Stone aggregate utilized in proprietary leaching systems shall meet stone aggregate requirements, and the No. 4 or No. 6 stone aggregate gradation in Section VIII A.

Plastic Leaching Chambers

Plastic Leaching Chambers Backfilled with Select Fill or Approved Aggregate: For the purpose of Section VIII F & G, the ELA of the products listed below and corresponding minimum C to C spacing between product rows shall be as follows; however a 0.4 SF/LF ELA reduction shall be assessed if the chambers are not backfilled with select fill:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
Infiltrator - Equalizer 24	15" x 11"	2.3	7
Infiltrator - Equalizer 36	22" x 13.5"	2.7	7

Plastic Leaching Chambers Backfilled with Approved Aggregate: For the purpose of Section VIII F & G, the ELA of the products listed below and corresponding minimum C to C spacing between product rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
Cultec - Contactor EZ-24	16" x 12"	1.9	7
Cultec - Contactor EZ-24 (PDS)	16" x 12"	2.5	7
Cultec - Contactor 100	36" x 12.5"	3.7	7
Cultec - Contactor 100 (PDS)	36" x 12.5"	4.3	7
Cultec - Recharger 180	36" x 20.5"	4.4	7
Cultec - Recharger 180 (PDS)	36" x 20.5"	5.1	9
Cultec - Recharger 280	46" x 26.5 "	6.5	10
Cultec - Recharger 280 (PDS)	46" x 26.5 "	7.1	10
Cultec - Recharger 330XLHD	52" x 30"	5.6	11
Infiltrator Quick4 Equalizer 24	16" x 11"	2.0	7
Infiltrator Quick4 Equalizer 36	22" x 12"	2.6	7
Infiltrator Quick4 Standard	34" x 12"	3.6	7
Infiltrator Quick4 High Capacity	34" x 16"	4.1	7
Infiltrator Arc 36	34.5" x 13"	3.7	7
Infiltrator Arc 36HC	34.5" x 16"	4.1	7
Infiltrator Quick4 Plus Equalizer 36 Low Profile	22" x 8"	2.4	7
Infiltrator Quick4 Plus Standard Low Profile	34" x 8"	3.4	7
Infiltrator Quick4 Plus Standard	34" x 12"	3.8	7
Infiltrator Quick4 Plus High Capacity	34" x 14"	3.9	7
Infiltrator Arc 24	22" x 12"	2.6	7
Infiltrator Arc 36 LP	34" x 8"	3.4	7

Corrugated Leaching Systems Lined/Covered with Filter Fabric: Filter fabric lined products shall be backfilled with select fill. Lined products backfilled with non-select fill may be approved by the Commissioner at reduced ELA credits upon application by the proprietary leaching system company. For the purpose of Section VIII F & G, the ELA of the products listed below and corresponding minimum C to C spacing between rows shall be as follows:

Product Name	Dimensions (Diameter / W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
GEO-FLOW	12" Diameter	2.3	7
Presby Env. - ENVIRO-SEPTIC	12" Diameter	2.3	7
Presby Env. - SIMPLE-SEPTIC	12" Diameter	1.5	7

ADS - SB2	10" Diameter	0.9	7
Cultec - Contactor EZ-24	16" x 12"	1.9	7
Cultec - Contactor EZ-24 (PDS)	16" x 12"	2.5	7
Cultec - Contactor 100	36" x 12.5"	3.7	7
Cultec - Contactor 100 (PDS)	36" x 12.5"	4.3	7
Cultec - Recharger 180	36" x 20.5"	4.4	7
Cultec - Recharger 180 (PDS)	36" x 20.5"	5.1	9
Cultec - Recharger 280	46" x 26.5"	6.5	10
Cultec - Recharger 280 (PDS)	46" x 26.5"	7.1	10
Cultec - Recharger 330XLHD	52" x 30"	5.6	11
Infiltrator Quick4 Equalizer 24	16" x 11"	2.0	7
Infiltrator Quick4 Equalizer 36	22" x 12"	2.4	7
Infiltrator Quick4 Standard	34" x 12"	3.3	7
Infiltrator Quick4 High Capacity	34" x 16"	3.7	7
Infiltrator Arc 36	34.5" x 13"	3.9	7
Infiltrator Arc 36HC	34.5" x 16"	4.5	7
Infiltrator Quick4 Plus Equalizer 36 Low Profile	22" x 8"	2.3	7
Infiltrator Quick4 Plus Standard Low Profile	34" x 8"	3.4	7
Infiltrator Quick4 Plus Standard	34" x 12"	3.9	7
Infiltrator Quick4 Plus High Capacity	34" x 14"	4.1	7
Infiltrator Arc 24	22" x 12"	2.4	7
Infiltrator Arc 36 LP	34" x 8"	3.3	7

GreenLeach Filter: GreenLeach Filter (GLF) units shall be bedded on the bottom and sides with sand fill meeting both the manufacturer's specifications and select fill specifications. The standard GLF units include a filter fabric/cardboard interface. An alternative non-filter fabric option (GLF-NF) that includes a cardboard interface without a fabric lining has been approved for all GLF products with the same ELA ratings. For the purpose of Section VIII F & G, the ELA of the listed products and corresponding minimum C to C spacing between rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
GLF 12.62	62" x 12"	7.9	12
GLF 15.62	62" x 15"	9.4	12
GLF 18.62	62" x 18"	11.0	14
GLF 21.62	62" x 21"	12.5	14
GLF 24.62	62" x 24"	14.0	14
GLF 27.62	62" x 27"	15.5	14
GLF 30.62	62" x 30"	17.0	14
GLF 33.62	62" x 33"	18.5	14
GLF 36.62	62" x 36"	20.0	14
GLF 12.37	37" x 12"	4.7	9
GLF 15.37	37" x 15"	5.6	9
GLF 18.37	37" x 18"	6.5	9
GLF 21.37	37" x 21"	7.3	9
GLF 24.37	37" x 24"	8.2	9
GLF 27.37	37" x 27"	9.1	9
GLF 30.37	37" x 30"	9.9	9
GLF 33.37	37" x 33"	10.8	12
GLF 36.37	37" x 36"	11.7	12

Cur-Tech Systems: Cur-Tech units shall be backfilled on the sides with sand fill meeting both the manufacturer's specifications and select fill specifications. For the purpose of Section VIII F & G, the ELA of the products listed below and the corresponding minimum C to C spacing between product rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
CTL-12	72" x 14"	8.3	12
CTL-18	72" x 20"	10.7	14
CTL-24	72" x 26"	13.0	14
CTL-48	72" x 50"	21.9	14

Ruck A Fins: Ruck A Fins units shall be bedded on the bottom and sides with sand fill meeting both the manufacturer's specifications and select fill specifications. For the purpose of Section VIII F & G, the ELA of the product listed below and corresponding minimum C to C spacing between product rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
Ruck A Fins - R1032C	32" x 7"	7.0	9

FORM CELL Living Filter: Living Filter units shall be bedded on the bottom and sides with sand fill meeting both the manufacturer's specifications and select fill specifications. For the purpose of Section VIII F & G, the ELA of the products listed below and the corresponding minimum C to C spacing between rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
Living Filter- LF1210	29" x 18"	3.9	7
Living Filter- LF1810	29" x 24"	5.5	9
Living Filter- LF2410	29" x 30"	7.0	9
Living Filter- LF3010	29" x 36"	8.6	9
Living Filter- LF3610	29" x 42"	10.1	12
Living Filter- LF1224	60" x 18"	7.4	11
Living Filter- LF1826	64" x 24"	11.0	12
Living Filter- LF2426	64" x 30"	14.2	14
Living Filter- LF3026	64" x 36"	17.3	14
Living Filter- LF3626	64" x 42"	20.4	14

Eljen: Eljen products shall be bedded on the bottom and sides with sand fill meeting both the manufacturer's specifications and select fill specifications. For the purpose of Section VIII F & G, the ELA of the products listed below and the corresponding minimum C to C spacing between rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
Eljen B43	36" x 7"	4.7	7
Mantis 536-8	36" x 18"	11.0	12
Mantis 536-8 LowPro	36" x 12"	6.5	9
Mantis Double-Wide 58	72" x 12"	11.6	14
Mantis Double-Wide 100	72" x 18"	20.0	14

Geomatrix: For the purpose of Section VIII F & G, the ELA of the products listed below and the corresponding minimum C to C spacing between product rows shall be as follows:

Product Name	Dimensions (W x H)	Effective Leaching Area (SF/LF)	Center to Center Spacing (feet)
GeoMat 1200	12" x 1"	1.0	7
GeoMat 3900	39" x 1"	3.0	8
GeoMat 7800	78" x 1"	5.9	13
LowPro WE 1200	72" x 1"	5.2	12
LowPro WE 3900	72" x 1"	5.6	12
GeoMat Edge ST 600	72" x 6"	14.0	14
GeoMat Edge ST 1200	72" x 14"	27.2	14
GeoMat Edge WE 1200	72" x 13"	27.2	14
GST 6206	62" x 6"	5.9	12
GST 6212	62" x 12"	10.0	12
GST 6218	62" x 18"	14.0	13
GST 6224	62" x 24"	18.1	13
GST 6230	62" x 30"	22.1	13
GST 6236	62" x 36"	26.2	13
GST 3706	37" x 6"	3.6	8
GST 3712	37" x 12"	5.9	10
GST 3718	37" x 18"	8.2	10
GST 3724	37" x 24"	10.5	12
GST 3730	37" x 30"	12.9	12
GST 3736	37" x 36"	15.2	12
GeoU636	36" x 6.5"	8.0	9

GeoU672	72" x 6.5"	15.5	14
GeoU1236	36" x 12.5"	14.8	12
GeoU1272	72" x 12.5"	28.8	14
GeoU1836	36" x 18.5"	21.7	12
GeoU1846	46" x 18.5"	27.4	12
GeoU1851	51" x 18.5"	29.9 (max. allowed)	13
GeoU3921	21" x 39"	27.4	12
GeoU3926	26" x 39"	29.9 (max. allowed)	12
SB1-3.5-36	36" x 3.5"	4.4	7
SB1-7-36	36" x 7"	8.2	9
SB1-13-36	36" x 13"	14.7	13
SB1-26-36	36" x 26"	28.7	13
SB1-3.5-72	72" x 3.5"	8.5	12
SB1-7-72	72" x 7"	15.9	14
SB1-13-72	72" x 13"	28.5	14
GCS848	48" x 8"	6.2	10
GCS872	72" x 8"	9.8	12
GCS1248	48" x 12"	10.8	12
GCS1272	72" x 12"	17.1	14
GCS1848	48" x 18"	17.6	12
GCS1872	72" x 18"	28.2	14

In accordance with the stipulations of Geomatrix Systems, LLC, unless otherwise authorized by Geomatrix Systems, LLC, all GeoMat Edge and GeoU leaching systems shall be installed in conjunction with a Soil Air System approved for use by Geomatrix Systems, LLC, and S-Box (SB1 series) leaching systems shall be configured for use with a Soil Air System that entails installing an air supply line for possible future use. See Section VI D for additional information on use of the Soil Air System.

2. Proprietary Pressure-Dosed Dispersal Systems

The Commissioner may approve proprietary pressure-dosed dispersal (PPD) systems, and system sizing shall be correlated to an equivalent area needed for a conventional 3-foot wide leaching trench system. New SSIDS plans specifying a PPD system shall identify an area that can accommodate a conventional 3-foot wide leaching trench system including any fill and extensions necessary to construct the system. PPD systems are not required to be installed within the designated conventional leaching trench system area.

Companies requesting approval of their PPD system shall submit detailed specifications and installation requirements for their package systems, which includes dosing and dispersal system components, as well as operation and monitoring information. Dispersal system sizing requirements and tubing/piping spacing of laterals shall be approved by the Commissioner based on a review of supporting documentation from the company.

Installation procedures, including the minimum depth of cover, shall be per manufacturer's specifications. It is the responsibility of the PPD system company to ensure that installers are properly trained on installation protocols and procedures. Operation and maintenance (O & M) requirements for PPD systems shall be specified by the company, and shall be listed on the permit to discharge. Property owners that receive approval for a PPD system shall be required to have O & M on the system by a vendor-trained and authorized individual. Service contracts for routine O & M is typically a requirement for these systems.

Perc Rite Drip Dispersal System

The Perc Rite Drip Dispersal System (Vendor: American Manufacturing Company, Inc., New England Distributor: Oakson Inc.) has three models (ASD-15, ASD-25, & ASD-40) that are approved for use. The ASD-15 model is typically utilized for single-family applications, and the ASD-25 model is typically used for design flows exceeding 1,000 GPD. The ASD-40 model would normally not be utilized for systems governed by these standards as it is for flows exceeding the 5,000 GPD. The total linear footage of the Perc Rite Drip Dispersal System shall be at least 4 times the calculated linear footage of a standard conventional 3-foot wide leaching trench system that would be required for the particular building served. The drip dispersal tubing shall have a minimum C to C spacing of 1.5 feet, although minor deviations to the C to C spacing is allowed for small portions of the system if warranted (e.g., drip lines around trees).

F. Leaching System Sizing

1. Residential Buildings

The required effective leaching area (ELA) for a SSDS serving a residential building shall be based on the number of bedrooms and the percolation rate in accordance with Table 6, except for the following:

- A separate SSDS for a one bedroom residential outbuilding on a single-family residential building lot shall have a required ELA equal to 50 percent of that required for a 2-bedroom building.
- The required ELA for a multi-family residential building shall be based on a minimum of 4-bedrooms.
- A central SSDS serving a residential outbuilding and a single-family residential building shall base the outbuilding's required ELA on a multi-family classification unless the outbuilding doesn't have additional plumbing fixtures (e.g., kitchen sink, dishwasher, washing machine) beyond a full bathroom.

Table 6

Percolation Rate (Minutes to Drop One Inch)	Square Feet of Required Effective Leaching Area (ELA)			
	2-Bedroom Building	3-Bedroom Building	For Each Bedroom Above 3	
			Single Family	Multi-family
LESS THAN 10.1	375	495	82.5	165
10.1-20.0	500	675	112.5	225
20.1-30.0	565	750	125	250
30.1-45.0	675	900	150	300
45.1-60.0	745	990	165	330

2. Restaurants, Residential Institutions, and Nonresidential Buildings with Problematic Sewage

The required ELA for a SSDS serving a restaurant, bakery, food service establishment, residential institution, laundromat, beauty salon, or other nonresidential building with problematic sewage shall be determined by dividing the design flow by the application rate listed in Table 7. See Section IV for design flow and problematic sewage information.

Table 7

Percolation Rate (Minutes to Drop One Inch)	Application Rate (GPD per square foot of ELA)
LESS THAN 10.1	0.8
10.1 to 20.0	0.7
20.1 to 30.0	0.6
30.1 to 45.0	0.5
45.1 to 60.0	0.4

3. Nonresidential Buildings with Non-problematic Sewage

The required ELA for a SSDS for a nonresidential building, other than those covered by Table 7, shall be sized on the design flow and application rates listed in Table 8. See Section IV for design flow and problematic sewage information.

Table 8

Percolation Rate (Minutes to Drop One Inch)	Application Rate (GPD per square foot of ELA)
LESS THAN 10.1	1.5
10.1 to 20.0	1.2
20.1 to 30.0	0.9
30.1 to 45.0	0.7
45.1 to 60.0	0.6

FOR TABLES 7 & 8: REQUIRED ELA = $\frac{\text{DESIGN FLOW}}{\text{APPLICATION RATE}}$

G. Leaching System Product Approvals, ELA Ratings, Center to Center (C to C) Spacing

Approved leaching systems are assigned an ELA rating in square feet per linear foot (SF/LF) except for leaching pits (Section VIII C) and the dispersal system component of PPD systems (Section VIII E 2). Approved leaching systems with assigned ELA ratings are listed in Section VIII, or in a leaching system approval issued by the Commissioner. Proprietary leaching system companies shall submit new product approval requests to the Commissioner along with product specifications, drawings, cross-sections, and dated installation instructions. The Commissioner may require third party/independent test data in conjunction with proprietary leaching system reviews/approvals that are deemed substantially different than those currently approved.

Approved leaching systems (except for the dispersal system component of PPD systems) are assigned an ELA rating that is calculated based on the amount and type of leaching system interface that the biologically active layer (bio-mat) forms upon the routine application of septic tank effluent. Interface factors for various leaching system interfaces are as follows:

Open:	2.0	
Filter Fabric (No Stone):	1.5	Note: Factor reduced by percent obstructed.
Stone:	1.0	
Filter Fabric & Stone:	0.75	

For the purpose of the ELA ratings, the factors noted for stone are used also for other approved aggregate, and the filter fabric interface factors also apply to cardboard and cardboard/filter fabric interfaces. Three types of leaching system interfaces are credited: sidewall interfaces, bottom interfaces, and internal interfaces. Sidewall interfaces discharge wastewater that does not pass through the product footprint area, which is the horizontal area within a rectangular boundary around the outermost perimeter of the leaching system interface. Bottom interfaces discharge wastewater from the bottom of the product. Internal interfaces are non-bottom leaching surfaces that discharge wastewater from within and through the product footprint area. No credit is given for bottom interfaces that include cardboard. Horizontal measurements are used for bottom interfaces, except for corrugated pipes. Vertical measurements are utilized for sidewall and internal leaching interfaces, except for corrugated pipes. Corrugated pipes have measurements taken along the perimeter of the pipe. Sidewall and internal interfaces are credited up to the leaching system's pipe invert unless otherwise established by the Commissioner. No ELA rating shall exceed 29.9 SF/LF.

The Commissioner may establish crediting limitations that are applicable to competing bio-mats (overlapping bio-mats of specified thickness), and internal interfaces. Proprietary leaching systems approved after January 1, 2015 shall receive no credit for competing bio-mats less than ½ inch apart and 50 percent credit for competing bio-mats ½ to 2 inches apart, and internal interfaces less than 4 inches apart shall not be credited unless the proprietary leaching system company satisfactorily demonstrates there is sufficient bottom sand area available to transmit the partly treated septic tank effluent while maintaining low soil moisture content in the sand column, and such assessments shall discount the sand area within 1-inch of internal interfaces. The Commissioner may require a re-evaluation of ELA credits for currently approved leaching systems relative to the credit given for competing bio-mats and internal interfaces following the adoption of criterion for crediting limitations. As part of any re-evaluation of ELA credits, the Commissioner may require proprietary leaching system companies that have products approved prior to January 1, 2015 to submit product information (e.g., specifications, drawings, cross-sections) in order for the systems to remain approved.

Leaching system C to C minimum spacing, except for leaching pits (Section VIII C) and the dispersal system utilized in PPD systems (Section VIII E 2), is determined based on the following:

- ELA rating of 5.0 SF/LF or less: 7 feet minimum and at least 4 feet leaching row edge to edge.
- ELA rating from 5.1 to 10.0 SF/LF: 9 feet minimum and at least 6 feet leaching row edge to edge.
- ELA rating exceeding 10.0 SF/LF: 12 feet minimum and at least 8 feet leaching row edge to edge.

The Commissioner may approve reduced C to C spacing reductions for shallow leaching systems in LPD applications. No consideration for reduced spacing shall be given to leaching systems receiving internal interface credits until criterion for crediting limitations for internal interfaces are established by the Commissioner. Approvals for reduced leaching system spacing shall provide a minimum of six inches leaching row edge to edge for each 1 SF, or part thereof, per linear foot ELA credit. Reduced spacing will only be considered if it is satisfactorily demonstrated that a licensed installer can reasonably install the particular leaching product without compromising the installation of the leaching system.

IX. GROUNDWATER AND SURFACE WATER DRAINAGE

Storm water swales shall be constructed to lead storm water away from SSDSs. Minimum separating distances between storm water collection/drainage/infiltration systems and SSDSs are stipulated in Table I (Item E, F & H). See Section II A for SSDS separating distance considerations for SWISs. Refer to Section III D and Table 3 for storm water drainage piping requirements.

Impervious cover storm water that discharges via sheet flow or through minor leak-offs is not considered a drainage system. Pervious pavement material is not considered a SWIS. SWISs should not concentrate large quantities of water in close proximity of SSDSs as they can create localized groundwater mounding that can interfere with the operation of the SSDS and diminish wastewater renovation. See Section II for additional storm water system separation distance requirements.

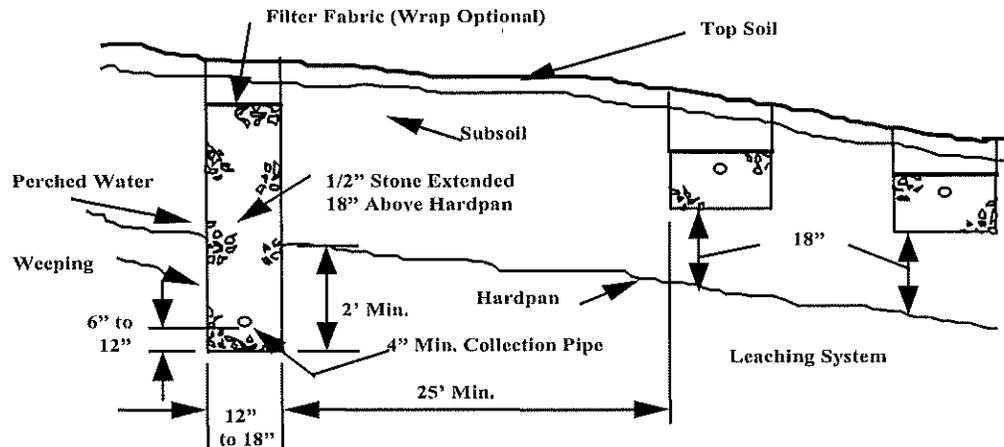


Figure 17 - Typical Curtain Drain Construction

Groundwater control drains (when utilized) shall be located up-gradient of the leaching system, and on the sides if necessary. The depth of these drains shall be designed to lower the groundwater at least 2 feet below the bottom of the entire leaching system (Figure 17). Drains shall be equipped with a collection pipe located 6 to 12 inches above the bottom of the trench to collect and discharge groundwater away from the leaching system area. This collection pipe shall have a minimum diameter of 4 inches and shall consist of open-joint tile, porous or perforated pipe. Perforated collection pipes are typically installed with holes on the bottom of the pipe and surrounded by clean stone or gravel to a depth necessary to control groundwater. Groundwater control drains shall be designed similar to Figure 17, or as otherwise designed by a P.E.

Minimum separation distances for all groundwater drainage systems (e.g., curtain, foundation) are stipulated in Table I (Items E & G). Groundwater drainage shall not discharge into or within 25 feet of a SSDS, and increased separation distance may be needed if the discharge location may impact the operation of the leaching system.

X. WATER TREATMENT WASTEWATER

The Commissioners of the Department of Energy and Environmental Protection and the Department of Public Health entered into a delegation agreement in July 2017 that provides the authority for the DOH to approve and permit discharges of water treatment wastewater (WTW) on properties governed by PHC Sections 19-13-B103a through f. The agreement authorizes WTW discharges to approved WTW disposal systems which include (1) WTW dispersal systems, (2) SSDSs, and (3) holding tanks. All WTW disposal systems shall prevent the discharge of WTW to the ground surface, wetlands, or open watercourse, and shall comply with the following requirements and any future regulations promulgated by the Department of Public Health:

1. The applicant (property owner or duly authorized agent) shall submit to the DOH a design plan/sketch of the proposed WTW dispersal system, WTW holding tank, or connection to the SSDS. The submittal shall also include the name and contact information of the installer.
2. If warranted, the applicant shall demonstrate compliance with PHC Section 19-13-B100a (e).
3. The applicant shall specify the type of water treatment device, name and model number, and its anticipated WTW discharge volume per cycle and frequency.

4. WTW solid conveyance piping shall have a minimum separating distance of 25 feet, 75 feet, and 100 feet, respectively, to public and private water supply wells with required withdrawal rates of <10 GPM, 10 to 50 GPM, and >50 GPM. The DOH may further reduce the distance to no less than 10 feet to private wells on existing developed properties if compliance cannot be met due to site limitations. WTW solid conveyance pipe shall be approved by the DOH and protected from freezing. Solid pipe listed in Table 2-A is acceptable for gravity WTW conveyance pipe, and pipe listed in Table 2-B is acceptable for pressure WTW conveyance pipe.
5. Non-discharging WTW disposal system components (e.g., WTW holding tanks, WTW dispersal system settling or filtration structures) shall meet the minimum separation distances cited in Table 9, unless otherwise authorized by the Commissioner.
6. WTW dispersal systems shall meet the separation distances cited in Table 1 (Item Q), and WTW dispersal system receiving structures shall meet the minimum separation distances cited in Table 9. Air gaps/breaks in WTW conveyance pipes that are outside of the building foundation shall meet the minimum separation distances cited in Table 9, unless otherwise authorized by the Commissioner.
7. WTW holding tanks, including piping, shall be located at least 10 feet from SSDSs.
8. WTW dispersal systems and WTW holding tanks shall be H-20 load rated in vehicular travel areas.
9. The bottom of the WTW dispersal system shall be located a minimum 12 inches above maximum groundwater and 24 inches above ledge rock.
10. WTW dispersal systems shall have a minimum storage volume of 1.5 times of either the anticipated discharge per cycle or daily average, whichever is greater.
11. Stone aggregate used shall be free of silt, dirt and debris and covered with approved filter fabric.
12. WTW holding tanks shall provide an access cleanout to grade and be equipped with a high-level alarm.
13. The DOH or registered sanitarian licensed pursuant to Chapter 395 shall approve the design of a WTW dispersal system or WTW holding tank prior to installation. Approval is not required from the Commissioner for WTW holding tanks; however approval from the Commissioner is required for WTW discharges directed to sewage holding tanks (See Section XI).
14. The installer shall provide twenty-four (24) hour minimum notice to the DOH prior to commencement of installation, unless otherwise agreed upon.
15. All applicable permits (electrical, plumbing, etc.) shall be obtained from the local building official.
16. An as-built drawing shall be submitted to the DOH that includes distances from two or more permanent reference points to the WTW disposal system.

The DOH may require an inspection of the WTW disposal system. In areas where well water treatment is anticipated, plans for new SSDSs should designate an area where a WTW dispersal system can be installed in accordance with Table 9. The Commissioner may authorize WTW discharge to a SSDS if it is determined that the nature and volume is unlikely to cause problems with the SSDS. WTW cannot be discharged to a cesspool. WTW from ion exchange systems, either cationic (e.g., water softener) or anionic (e.g., radionuclide treatment), cannot be discharged to a SSDS. WTWs approved to discharge to a SSDS are listed in Appendix E, which may be updated prior to the next publication of these standards.

Table 9

Item	Separation Distance (feet)	Special Provisions
Public or private water supply well with required withdrawal rate of:		The DOH may allow certain separation distance reductions on existing developed properties if compliance cannot be met due to site limitations. ⁽¹⁾⁽²⁾⁽³⁾
< 10 GPM	75	
10 to 50 GPM	150	
> 50 GPM	200	
Open watercourse	25	
Public water supply reservoir	100	
Property line	10	
Subsurface sewage disposal system	See Table 1 (Item Q)	

- (1) Reductions cannot be granted to public water supply reservoirs or public water supply wells.
- (2) Reductions to private wells shall not be reduced to less than 25 feet. WTW discharges less than 75 feet up-gradient of a private well shall be avoided, whenever possible.
- (3) The DOH may not allow reduced setback distances if there is a concern that the WTW may negatively impact the quality of the groundwater.

XI. NON-DISCHARGING TOILET & SEWAGE DISPOSAL SYSTEMS

A. Large Capacity Composting Toilets

Large capacity composting toilets shall have separate receiving, composting and storage compartments, arranged so that the contents are moved from one compartment to another without spillage, or escape of odors within the building. No large capacity composting toilets shall have an interior volume of less than 64 cubic feet. All toilet wastes shall be deposited in the receiving chamber, which shall be furnished with a tight self-closing toilet lid. Food waste or other materials necessary to the composting action shall be deposited in the composting compartment through a separate opening with a tight fitting lid. The final composting material shall be removed from the storage compartment through a cleanout opening fitted with a tight door or lid. The cleanout shall not be located in a food storage or preparation area. The receiving and composting compartments shall be connected to the outside atmosphere by a screened vent. The vent diameter shall be a minimum of 6 inches and extend at least 20 feet above the openings in the receiving and composting compartments, unless mechanical ventilation is provided. Air inlets shall be connected to the storage compartment only, and shall be screened.

B. Heat Assisted Composting Toilets

Heat assisted composting toilets shall have a single compartment furnished with a tight, self-closing toilet lid. The compartment shall be connected to the outside atmosphere by a screened vent. There shall be a mechanical ventilation fan arranged to control the humidity in the compartment and provide positive venting of odors to the outside at all times. A heating unit shall be provided to maintain temperature in the optimum range for composting.

C. Incineration Toilets

Gas or oil fired or electrical incineration toilets shall meet applicable fire and building codes. No ignition or incineration shall occur unless the toilet lid is closed, and the blower shall operate continuously during incineration. A combustion temperature of 1,400°F or higher shall be maintained during incineration.

D. Chemical Flush Toilets

Chemical flush toilets shall have toilet bowls that may be flushed when required by chemicals or chemical solutions. The liquid shall be discharged to a holding tank for removal of solids by settlement or other means prior to recirculation. The toilet bowl shall be trapped or otherwise constructed to exclude odors, and the toilet's holding tank shall be vented to the outside atmosphere. The toilet's holding tank shall be emptied or additional chemicals added when odors or other objectionable conditions occur.

E. Dry Vault Privies (a.k.a., outhouses)

Dry vault privies shall be constructed with adequate storage space for excreta, and a fly-tight vault with a screened vent to the outside atmosphere. Self-closing, fly tight doors shall be provided. Dry vault privies shall be constructed so as to permit ready cleaning. Separating distances shall comply with Table 1, and the bottom of earthen vaults shall be at least 18 inches above maximum groundwater and 48 inches above ledge rock.

F. Chemical Privies (a.k.a., porta-potties)

Chemical privies shall be constructed with a watertight vault with a screened vent to the outside atmosphere. Self-closing, fly tight doors shall be provided. Separating distances shall comply with Table 1. The vault shall be emptied, or additional chemicals added, when odors or other objectionable conditions occur.

G. Sewage Holding Tanks

Pursuant to PHC Section 19-13-B103c (a), the Commissioner shall approve sewage holding tanks for buildings governed by PHC Sections 19-13-B103a through 19-13-B103f. Sewage holding tank proposals shall be submitted through the DOH to the Commissioner. Sewage holding tanks must comply with the separating distances cited in Table 1, unless an exception is granted pursuant to PHC Section 19-13-B103d. Sewage holding tanks shall include cleanout manholes to grade to facilitate routine pumping, and be provided with a high-level indicator alarm. The alarm shall be both audible and visual, unless otherwise approved by the DOH, and be located so that it readily alerts building occupants when activated.

Cleanout manhole covers shall weigh a minimum of 59 lbs or the cover shall be provided with a lock system to prevent unauthorized entrance. It is recommended that tank covers be left on the tank for safety reasons and to avoid potential odor problems when manhole riser assemblies are utilized over cleanout openings. However, in no case shall a cover be left off a holding tank cleanout opening when a riser cover weighs less than 59 lbs unless a secondary safety lid or device is provided below the riser cover. Secondary safety lids or devices are recommended to be utilized for safety reasons even if the riser cover weighs more than 59 lbs and the tank cover is removed.

Form #1 Technical Standards for Subsurface Sewage Disposal Systems

APPLICATION FOR APPROVAL TO CONSTRUCT A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #: _____

To the Director of Health, Town of: _____ Date: _____

Application is hereby made for an approval to construct a subsurface sewage disposal system for a:

_____ (Residential Building, Restaurant, Retail Building, etc.)

located at: _____ (Street Address, Lot Number, Subdivision Name, Map, Block, Lot, etc.)

New System _____ Addition _____ Repair _____ Other _____

Owner _____ Address _____ Tel.No. _____

Installer _____ Address _____ Tel.No. _____

Installer License No. _____

In accordance with detailed information stated below:

Application fee paid _____ Signed _____ (Owner or duly authorized representative)

GENERAL INFORMATION

Soil Tests Conducted (Date): _____ Lot size _____ sq.ft.

Area of Special Concern (Y/N): _____ If yes, Reason(s): _____

Basis of Design (# of Bedrooms, Restaurant Seats, Building Size, etc): _____

Professional Engineer (P.E.) Plan Required (Y/N): _____

If yes, Name of P.E.: _____

Address of P.E.: _____

Design Plan Approved (Y/N): _____ Date of Approved Plan: _____ Revision Date: _____

Type of Water Supply _____ If well, has location been approved (Y/N): _____

Well Driller's Name: _____ Address: _____

OFFICE USE ONLY

Approval to Construct is hereby issued by: _____ Date: _____

(Print Name)

Signature: _____ Title: _____

Note: Approvals to Construct shall be issued by the DOH or Registered Sanitarian

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Property Owner _____ Location _____ Application/Permit #: _____

DEEP TEST PIT DATA/SOIL DESCRIPTIONS

DATE: _____ (Record all Test Pits)

TEST PIT:	TEST PIT:	TEST PIT:	TEST PIT:
Mottles:	Mottles:	Mottles:	Mottles:
GW:	GW:	GW:	GW:
Ledge:	Ledge:	Ledge:	Ledge:
Roots:	Roots:	Roots:	Roots:
Restrictive:	Restrictive:	Restrictive:	Restrictive:

COMMENTS: _____

GROUNDWATER TABLE (Near max., below max., etc.) _____
 SOIL MOISTURE (High, medium, low, etc): _____

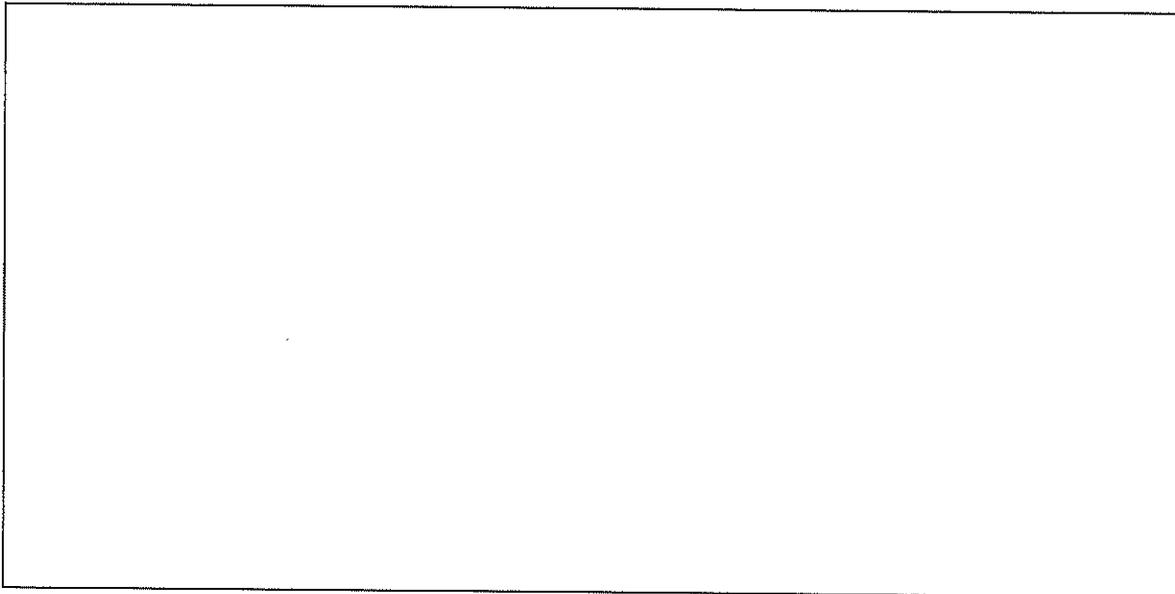
PERCOLATION TEST DATA

DATE: _____ (Record all Perc Tests)

PERC:		PERC:		PERC:		PERC:	
DEPTH:		DEPTH:		DEPTH:		DEPTH:	
PRESOAK:		PRESOAK:		PRESOAK:		PRESOAK:	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
PERC RATE:		PERC RATE:		PERC RATE:		PERC RATE:	

COMMENTS: _____

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM



LOCATION DRAWING INCLUDING ALL TEST PITS AND PERCOLATION HOLES

SPECIAL CONDITIONS		CONCLUSIONS	
Design Flow > 2000 GPD		Suitable for Sewage Disposal	
Public Water Supply Watershed		Unsuitable for Sewage Disposal	
Probable High Groundwater		Additional Investigation Req'd	
Slope > 25 percent		Wet Season Monitoring Req'd	
Perc Rate < 1 min/inch		Retest During Wet Season	
Perc Rate > 30 min/inch		Professional Engineer Plan Required	
Ledge < 5 feet below grade		Other:	
Limited Suitable Area			
Open Watercourse or Wetlands			
Flood Plain / Seasonal Flooding			
Max. G.W. < 36 inches below grade			

DESIGN RECOMMENDATIONS/COMMENTS

Form completed by: _____
 (Local Health Agent or Professional Engineer)

Accuracy assured by (If Professional Engineer completed form): _____
 (Local Health Agent)

Others present for site investigation (e.g., engineer, soil scientist, installer): _____

Application/Permit #: _____

Subsurface Sewage Disposal System Final Inspection Report

Local Health Department: _____

Property Owner: _____

Property Address: _____ Town: _____

Licensed Installer: _____ License #: _____ Expiration Date: _____

Check one: New System Repair/Replacement System

Residential Building: _____ bedrooms _____ Large Bathtub (Y/N): _____ Garbage Disposal (Y/N): _____

Non residential Building/Residential Institution: _____ GPD _____ Type of Use: _____

Water Treatment Wastewater (WTW) Generated (Y/N): _____ WTW Dispersal System (Y/N): _____

Inspection Information

Type	Date	Licensed Installer Present? Yes/No	Pass or Fail	Additional Comments
Field Stake Inspection (house, well, property lines, system, benchmark, etc.)				Benchmark:
Strip/Scarification				Dimensions:
Select Fill Placement				Sieve required (Y/N)
Other:				
Final Inspection				Completed by:

Building Sewer Information

Pipe Type and ASTM Specification: _____ Pipe Size: _____ in.

Pipe Invert Elevations at: Foundation Wall: _____ Pipe Length: _____ ft.

Septic Tank In: _____ Pitch Required: _____

Septic Tank Out: _____ Pitch Provided: _____

Final Inspection Report (cont'd)
Sewage Tank Information

Septic Tank Size : _____ Gallons Risers Needed (Y/N): _____

Tank Manufacturer: _____ Secondary Safety Device (Y/N): _____

Date Manufactured: _____ Effluent Filter
Manufacturer: _____

Pump Chamber Size: _____ Gallons Pump Alarm Checked (Y/N): _____

Pump Chamber
Manufacturer: _____ Float Control Elevation Verified (Y/N): _____

Grease Interceptor
Tank Size: _____ Gallons Grease Interceptor
Tank Manufacturer: _____

Leaching System Information

Stone Aggregate: Free of silt, dirt and debris (Y/N): _____ Sieve Required (Y/N): _____

Filter Fabric Present (Y/N): _____ Type: _____ Stone Meets Specifications (Y/N): _____

Select Fill (Y/N): _____ Sieve Required (Y/N): _____ Sieve Information on File (Y/N): _____

Leaching System Description (product, size, length, number of rows, level or serial, etc.): _____

Effective Leaching Area Required: _____ sq. ft. Reserve Area Provided (Y/N): _____

Effective Leaching Area Provided: _____ sq. ft. Center to Center Spacing: _____ ft.

System Installed Per Approved Plan Elevations (Y/N): _____ Elevations Field Verified (Y/N): _____

Elevations	Row 1	Row 2	Row 3		Row 1	Row 2	Row 3
D-box in				Top of system			
D-box out				Bottom of system			
High Level Overflow				Other			

Separation Distances

Separation Distances Conform with Approved Plan (Y/N): _____ Field Verified (Y/N): _____

PERMIT TO DISCHARGE

Approval is hereby given to _____, in accordance with Public
(Property Owner)

Health Code Section 19-13-B103e (h) to discharge to a subsurface sewage disposal system located at

(Street Address)

in the town of _____, CT that will receive domestic sewage from a:

Residential building containing _____ bedrooms. Single family (Y/N): _____

Restaurant containing _____ seats.

Commercial/Office building providing _____ square feet.

Other structure as described: _____

Design Flow = _____ gallons per day. Permitted Flow = _____ gallons per day.
The design flow shall equal the permitted flow, except for non-compliant repairs (See Section IV D).

In order to provide a sufficient factor of safety it is recommended that the average daily discharge not exceed 2/3 of the permitted flow or _____ gallons per day.

Operation and Maintenance: Septic tank shall be inspected regularly and pumped as needed but not less frequently than every five years. The septic tank has an effluent filter (Y/N)_____. Effluent filters require periodic cleaning. Failure to clean filters can result in sewage backup into the building or effluent breakout. Restaurants serviced by external grease interceptor tank(s) require quarterly inspections and cleaning as necessary. Tank pump-outs tracked by local health department (Y/N)_____. If yes, stipulate pump-out requirements: _____

Special Requirements and Restrictions: _____

Exceptions (Repairs Only): _____

File Information: Construction Permit No. _____. Approved as-built on file (Y/N) _____

Date of Final Inspection: _____ Inspected By: _____

Permit Issuance: Issued by: _____ Title: _____
(Director of Health or Registered Sanitarian)

Signature: _____ Date: _____

Permit expiration date (5 years from issuance date): _____

APPENDIX A: MINIMUM LEACHING SYSTEM SPREAD (MLSS)

Section VIII A includes stipulations for leaching system compliance with MLSS for new and repair SSDSs, and the necessity for new SSDSs to have sufficient naturally occurring soil (a.k.a., natural soil) to disperse effluent from the leaching system. Code-complying areas identified pursuant to PHC Section 19-13-B100a (B100a) are also required to be laid out in an area with sufficient naturally occurring soil to accommodate MLSS compliant leaching systems. Receiving soil utilized for a leaching system repair can consider fill material if sufficient naturally occurring soil is not available.

Separate leaching systems that rely on the same receiving soil for the dispersal of effluent shall be evaluated collectively as a single leaching system. This applies to leaching systems on sloped lots less than 50 feet apart within the same hydraulic window, and leaching systems less than 25 feet apart on radial flow lots. A single leaching system row shall contain leaching units with similar ELA ratings (within 10 percent) or shall be analyzed to ensure no portion of the receiving soil is overloaded, unless MLSS is not applicable.

MLSS Formula

- MLSS (feet) = HF x FF x PF
- HYDRAULIC FACTOR (HF) = Factor based on the hydraulic gradient and receiving soil depth.
- FLOW FACTOR (FF) = Factor based on the design flow of the building served.
- PERCOLATION FACTOR (PF) = Factor based on the percolation rate of the receiving soil.

Definitions & Factor Information

Hydraulic gradient means the percent slope of the naturally occurring grade, or when demonstrated, the percent slope of the restrictive layer. The hydraulic gradient on a lot with radial flow over a flat groundwater table shall be confirmed to be level (essentially 0 percent) by evaluating groundwater elevations in the leaching system area and surrounding soil. The hydraulic gradient on a lot that utilizes the slope of the naturally occurring soil as the gradient shall evaluate the naturally occurring grade within and at least 25 feet down-gradient of the leaching system.

Leaching system spread means the leaching system length of effluent application to the receiving soil. The leaching system spread for a leaching system that disperses effluent via radial flow over a flat groundwater table shall be measured around the perimeter of the leaching system. The leaching system spread for a leaching system that disperses effluent along a hydraulic gradient shall be measured perpendicular to the hydraulic gradient, and shall take into account converging and diverging contours at least 25 feet down-gradient of the leaching system.

Restrictive layer means the first layer beneath the receiving soil that impedes downward movement of effluent. Restrictive layers include ledge rock, maximum groundwater, and impervious soil (percolation rate slower than 60 minutes per inch). The depth to maximum groundwater shall be determined by field verification of redoximorphic features or groundwater monitoring. Standpipe readings used for groundwater monitoring shall utilize the average of at least 5 consecutive weekly readings taken during the most restrictive 30-day period of the wet season.

Receiving soil (per Section I) means the soil in the leaching system area and surrounding soil that is available to disperse effluent. Surrounding soil for a leaching system that disperses effluent via radial flow over a flat groundwater table includes the soil within 25 feet around the perimeter of the leaching system. Surrounding soil for a leaching system that disperses effluent along a hydraulic gradient includes the soil within 50 feet down-gradient of a large (2,000 to 7,500 GPD) system, and at least 25 feet down-gradient of a small system.

Receiving soil depth (RS Depth) means the average depth of receiving soil (soil in a leaching system area and surrounding soil) measured down to the restrictive layer.

RS Depth Calculations and Factor Tables

RS Depth shall be determined based on criteria in the applicable category (1, 2, or 3).

$$RS\ Depth = \frac{A + B}{2}$$

A = Receiving soil in the leaching system (LS) area.

B = Receiving soil surrounding the LS. Surrounding soil is soil down-gradient of the LS on lots with sloped restrictive layers, and soil around the perimeter of the LS on lots with flat groundwater tables.

Category 1 - Conceptual B100a Areas (Code-Complying & Potential Repair), and SSDS Layouts for New Lots: Leaching system spreads shall equal or surpass the MLSS. The RS Depth shall only include naturally occurring soil in both the leaching system area and the surrounding soil area (e.g., down-gradient of leaching system, around perimeter of leaching system).

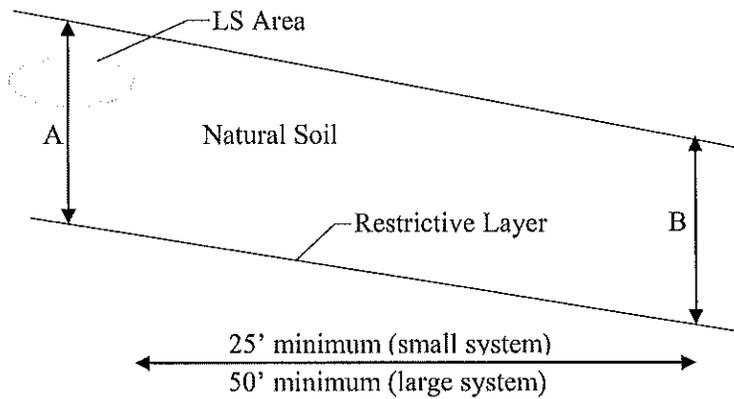


Diagram 1 - Sloped Restrictive Layer

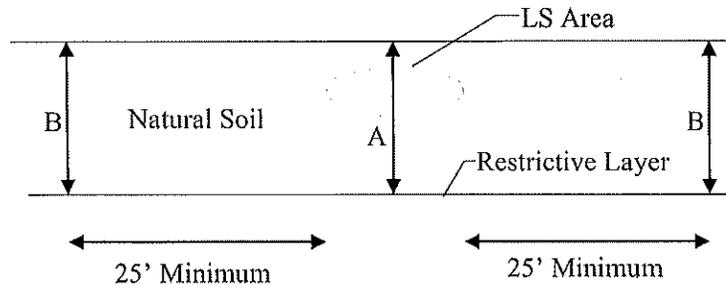
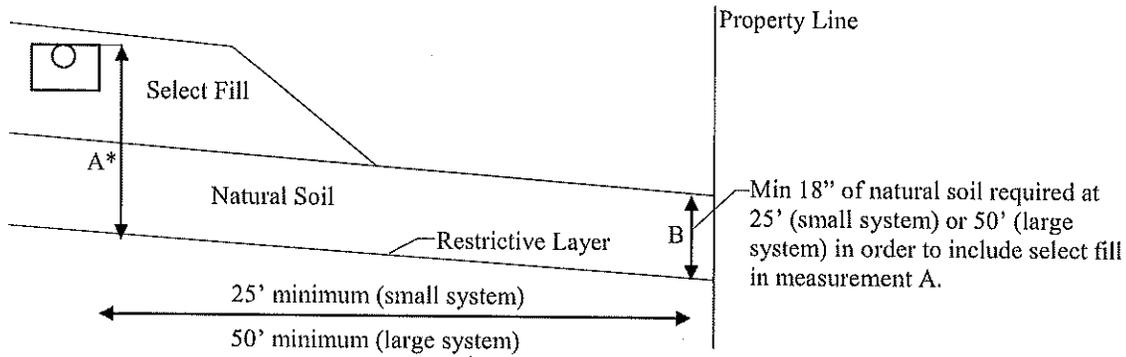


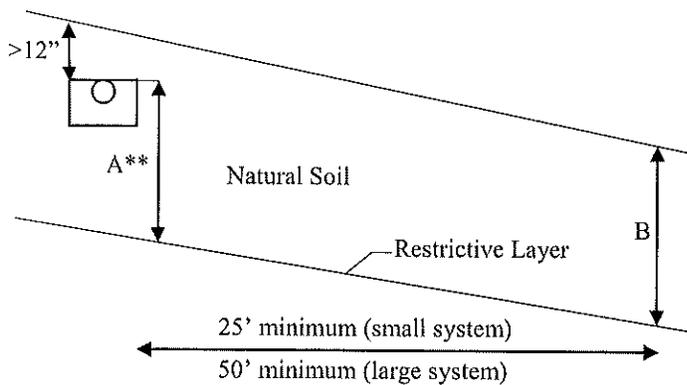
Diagram 2 - Flat Groundwater Table

Category 2 - New SSDSs and MLSS Compliant Repairs: Leaching system spreads shall equal or surpass the MLSS. A leaching system that is designed with the top of the system more than 12 inches below natural grade shall have receiving soil in the leaching system area measured from the top of the system to the restrictive layer (see Diagram 4). Receiving soil may include select fill (maximum of 24 inches) measured to the top of the system in the leaching system area if all the receiving soil is on the property and there is at least 18 inches of naturally occurring receiving soil (see Diagram 3); a maximum RS depth of 60 inches is allowed when select fill is included in receiving soil measurement in leaching system area.



*Receiving soil in LS area may include up to 24" of select fill measured from top of system if all receiving soil is on property and there is at least 18" of natural soil throughout the receiving soil.

Diagram 3 – LS in Select Fill (Sloped Restrictive Layer)



**Receiving soil in the LS area is measured from natural grade; if the top of system is more than 12" below natural grade then it is measured from the top of the system.

Diagram 4 – LS in Natural Soil (Sloped Restrictive Layer)

Category 3 - MLSS Non-compliant Repairs and B100a MLSS Non-compliant Potential Repair Areas: If there is less than 18 inches of naturally occurring receiving soil, or when the leaching system cannot meet the MLSS or hydraulic analysis, an exception from the DOH shall be required, and a non-compliant repair (NCR) MLSS assessment shall be conducted. The NCR MLSS takes into account the hydraulic capacity of existing receiving soil, both fill and naturally occurring, and additional fill included in the SSDS design. The following criterion shall be utilized in calculating the NCR MLSS:

1. Receiving soil fill shall have a percolation rate of 30 minutes per inch or faster, and shall be clean material relatively free of debris and foreign objects.
2. Receiving soil in the leaching system area shall be measured from the top of the system to the restrictive layer (see Diagram 5).
3. Receiving soil on a flat groundwater table lot shall have a minimum depth of 6 inches. Receiving soil on a sloped lot shall have a minimum depth of 12 inches. (See Diagrams 5 & 6).
4. RS Depth may include both naturally occurring soil and fill, and shall have a minimum depth of 18 inches and a maximum of depth 60 inches.
5. Select fill used as receiving soil shall require percolation tests after placement to confirm the basis of design. Percolation rates of different receiving soil layers shall be applied proportionately.

Leaching systems shall provide the maximum percent possible of the NCR MLSS calculated based on a RS Depth of 18.0 - 22.0 inches, or based on the depth of existing receiving soil if greater. Additional fill shall be considered to reduce the calculated NCR MLSS when compliance cannot be achieved. Leaching systems that provide less than 25 percent of the NCR MLSS, or do not comply with items 3 or 4 above, shall require a SSDS designed by a P.E. and a study of the receiving soil's ability to absorb or disperse the permitted flow in accordance with PHC Section 19-13-B103d (e) (4).

For the purposes of PHC Section 19-13-B100a (c) (2) and Section IV C, the required MLSS shall be equivalent to the NCR MLSS. The permitted flow noted on the Permit to Discharge shall be based on the most limited percentage of the required ELA or NCR MLSS provided. The Permit to Discharge shall clearly state that the system is non-compliant relative to MLSS, and that an exception has been granted.

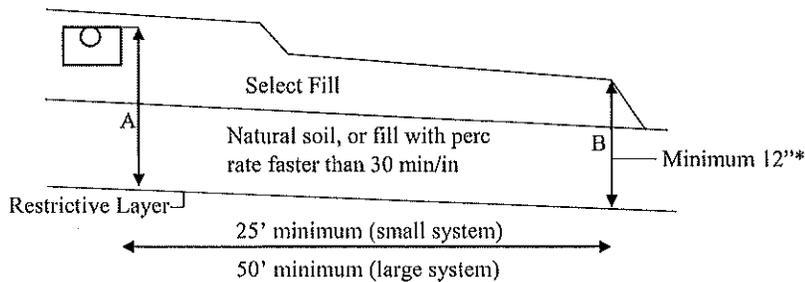


Diagram 5 – Select Fill, and Natural Soil or Fill as Receiving Soil (Sloped Restrictive Layer)

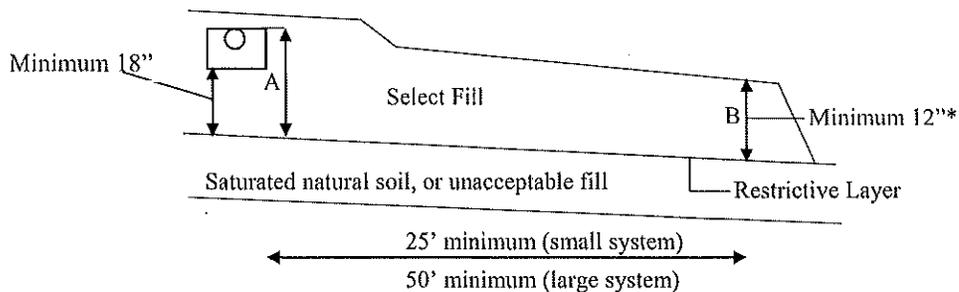


Diagram 6 – Select Fill Receiving Soil (Sloped Restrictive Layer)

*On flat groundwater table lots there shall be a minimum of 6" of receiving soil 25' around the perimeter of the leaching system.

HYDRAULIC FACTORS (HF)

Hydraulic Gradient (% Slope)

	<1.0	1.0-2.0	2.1-3.0	3.1-4.0	4.1-6.0	6.1-8.0	8.1-10.0	10.1-15.0	>15.0
0.1 - 17.9	See Comments in Section VIII A								
18.0 - 22.0	72	62	54	48	42	34	30	28	26
22.1 - 26.0	66	56	48	42	34	30	28	26	24
26.1 - 30.0	56	49	42	34	30	28	26	24	20
30.1 - 36.0	48	42	34	30	28	26	24	20	18
36.1 - 42.0	42	36	30	28	26	24	20	18	16
42.1 - 48.0	36	32	28	26	24	20	18	16	14
48.1 - 60.0	30	28	24	22	20	18	16	14	10
>60.0	MLSS Need Not be Considered								

Receiving
Soil Depth
(Inches)

FLOW FACTORS (FF)

Flow Factor = Design Flow/300	
Residential: Design Flow for each bedroom is 150 GPD except for bedrooms beyond 3 in single-family residential buildings, which have a 75 GPD per bedroom design flow.	
Single-family lots:	FF
1 Bedroom = 150/300	0.5
2 Bedroom = 300/300	1.0
3 Bedroom = 450/300	1.5
4 Bedroom = 525/300	1.75 Increase FF by 0.25 for each additional bedroom
Multi-family buildings:	
Minimum FF is 2.0 (4 bedrooms) and each additional bedroom increases FF by 0.5.	
Non-Residential:	Design Flow (GPD) / 300

PERCOLATION FACTORS (PF)

Percolation Rate	Percolation Factor (PF)
Up to 10.0 Minutes/Inch	1.0
10.1 to 20.0 Minutes/Inch	1.25
20.1 to 30.0 Minutes/Inch	1.5
30.1 to 45.0 Minutes/Inch	3.0, or 2.0*
45.1 to 60.0 Minutes/Inch	5.0, or 3.0*

*If leaching system is entirely in select fill and the bottom of system is above existing grade and at least 24 inches above maximum groundwater.

APPENDIX B: APPROVED SEPTIC TANK EFFLUENT FILTERS

MANUFACTURER	MODEL
BEAR ONSITE	ML2-416, ML2-920, ML3-910, ML3-916, ML3-925, ML3-932,
BIO-MICROBICS	SANITEE Series: ST 416, ST 418, ST 818, ST 838, ST 1618, ST 1638
BOWCO INDUSTRIES	EF-235
GAG-SIMTECH	STF-110, STF-110-7R, STF-110-6W, STF-110-8B
NORWECO	BIO-KINETIC BK2000
ORENCO SYSTEMS	FT0444-36, FT0854-36, FT1254-36, FT1554-36, FTJ0418
POLYLOK	PL-68, PL-122, PL-250, PL-525, PL-625, GF10-8, GF10-16
PREMIER TECH	EFT-080
RISSY PLASTICS	45 – CLIK N' STICK
TUF-TITE	EF-4, EF-6
ZABEL	A100, A300, A1800, A1801, A100-HIP, A300-HIP A1800-HIP, A1801-HIP, A600-12, A600-8
ZOELLER/CLARUS	WW1 (170-0078), WW4 (5000-0007)

APPENDIX C: APPROVED FILTER FABRICS FOR COVERING STONE AGGREGATE

MANUFACTURER/ DISTRIBUTOR	DESIGNATION NUMBER
AMERICAN ENGINEERING FABRICS	AEF-480
BRADLEY INDUSTRIAL TEXTILE	PHOENIX LIJOMA
CARTHAGE MILLS	M35
CULTEC	410
DUPONT	SF20
ENGINEERED SYNTHETIC PRODUCTS	TNS R020
GEO FABRICS	GF 150
L&M SUPPLY COMPANY	L&M 231
MIRAFI	65304 (4' WIDE) 65303 (3' WIDE)
SKAPS INDUSTRIES	SKAPS GT 120
SRW PRODUCTS	SRW PRODUCTS DF1 SRW PRODUCTS DF2
TERRA TEX	S01.5, P01.5
TYPAR	3151, 3201
US FABRIC INC	US 1.5 CT

APPENDIX D: APPROVED NON-CONCRETE SEPTIC TANKS

MANUFACTURER	DESIGNATION/ID NUMBER	GALLONS
NORWESCO Note: STD (Standard Tank) BSR (Bruiser Tank)	STD 1000	1000
	STD 1250	1250
	STD 1500	1500
	BSR 1000	1000
	BSR 1250	1250
	BSR 1500	1500
SNYDER INDUSTRIES Plumbed tanks are provided with inlet & outlet piping whereas unplumbed tanks are not.	Dominator Tanks (Plumbed)	
	1001010W95314	1000
	1001411W95304	1250
	1001511W95303	1500
	Dominator Tanks (Unplumbed)	
	1001010W95306	1000
1001411W95306	1250	
1001511W95307	1500	
NORWESCO/SNYDER (Dual Marked Tanks)	CT 1000 LP	1000
	CT 1250 LP	1250
	CT 1500 LP	1500
DEN HARTOG INDUSTRIES (Ace Roto-Mold)	AST 1000-2	1000
	AST 1250-2	1250
	AST 1500-2	1500
ROTH GLOBAL PLASTICS RMT = Roth Multi-Tank Model	RMT-1000E	1000
	RMT-1060	1060
	RMT-1250	1250
	RMT-1500	1500
INFILTRATOR WATER TECHNOLOGIES	IM-1060	1070
	IM-1530	1512

APPENDIX E: WATER TREATMENT WASTEWATER DISCHARGES TO SSDS**Authorized WTW Sources**

WTW shall only be from a calcite filter, granular activated carbon filter, or a Point of Use (POU) reverse osmosis unit.

WTW Discharge Limits

Single-family residential buildings: WTW discharge is less than 150 gallons per backwash cycle, and cannot exceed a daily average of 50 GPD.

Other buildings: WTW discharge is less than 150 gallons per backwash cycle or less than 10 percent of the building's SSDS daily design flow, whichever is greater. Additionally, discharges cannot exceed a daily average of 50 GPD or 2 percent of the buildings SSDS daily design flow, whichever is greater.

Existing SSDS Requirements

Septic tanks must have two compartments, an effluent filter, and be properly sized for the daily design flow of the building. Single compartment tanks can remain only if receiving WTW from a POU reverse osmosis unit that discharges less than 50 GPD. Septic tanks must have been cleaned and inspected within three years with no reported signs of malfunctioning.

Leaching systems must provide at least 50 percent of the required ELA and be in good operating condition with no signs of malfunction or at risk of hydraulically overloading the receiving soil.

Proprietary Leaching Systems

Proprietary leaching system companies may not support the discharge of WTW into their SSDS products. Therefore the applicant should consult with the proprietary company to determine if use of their leaching system product is suitable with WTW discharge.

PUBLIC HEALTH CODE B104 REGULATIONS*

On-Site Sewage Disposal Systems with Design Flows Greater than 5,000 Gallons per Day**

*The reference to the Commissioner of Health Services was changed to the Commissioner of Public Health in the below printing of the B104 regulations (Sections 19-13-B104a through 19-13-B104d) to be consistent with the language in the *Technical Standards for Subsurface Sewage Disposal Systems*.

**Note: The 5,000 gallons per day jurisdictional design flow was raised to 7,500 gallons per day by Public Act No. 17-146, Section 30 effective July 1, 2017.

Sec. 19-13-B104a. Scope

These regulations set standards for domestic sewage disposal systems receiving flows greater than 5,000 gallons per day; community sewage systems as defined in Section 7-245, Connecticut General Statutes, which utilize land treatment and disposal, alternative on-site sewage treatment systems; and septage disposal systems which utilize land treatment and disposal.

(Effective August 16, 1982)

Sec. 19-13-B104b. Definitions

- (a) **Alternative on-site sewage treatment systems** means a system serving one or more buildings on one property which utilizes a method of treatment other than a subsurface sewage disposal system and which involves a discharge to the waters of the state.
- (b) **Domestic sewage** means sewage that consists of water and human excretions or other waterborne wastes incidental to the occupancy of the residential buildings or a nonresidential building but not including manufacturing process water, cooling water, wastewater from water softening equipment, commercial laundry wastewater, blowdown from heating or cooling equipment, water from cellars or floor drains or surface water from roofs, paved surfaces or yard drains.
- (c) **House sewer** means a tight sewer pipe extending from the building served by a subsurface sewage disposal system.
- (d) **Land treatment and disposal** means a system which utilizes soil materials for the treatment of domestic sewage and disposes of the treated effluent by percolation into underlying soil and mixing with the groundwater.
- (e) **Local Director of Health** means the local director of health or his authorized agent.
- (f) **Person** means any individual, partnership, association, firm, corporation or other entity, except a municipality, and includes the federal government, the state or any instrumentality of the state and any officer or governing or managing body of any partnership, association, firm or corporation.
- (g) **Septage** means any water of material withdrawn from a septic tank used to treat domestic sewage.
- (h) **Subsurface sewage disposal system** means a system consisting of a house or collection sewer, a septic tank followed by a leaching system, any necessary pumps or siphons, and any groundwater control system on which the operation of the leaching system is dependent.

(Effective August 16, 1982)

Sec. 19-13-B104c. General Provisions

- (a) All sewers, sewage disposal systems, toilets, or sewage plumbing systems shall be kept in a sanitary condition at all times and be so constructed and maintained as to prevent the escape of odors and to exclude animals and insects. All such systems shall adhere to the requirements set forth in Section 25-54i of the Connecticut General Statutes.
- (b) The contents of the septic tank, subsurface sewage disposal system or privy vault shall only be disposed of in the following manner.
 - (1) If the contents are to be disposed of on the land of the owner, disposal shall be by burial or other method which does not present a health hazard or nuisance; or
 - (2) If the contents are to be disposed of on land of other than the owner;
 - (A) The contents shall be transferred and removed by a cleaner licensed pursuant to Connecticut General Statutes § 20-341, and
 - (B) Only on the application for and an issuance of a written permit from the local director of health in accordance with the provisions of this section;

- (3) If the contents are to be disposed of on a public water supply watershed, only on the application and issuance of a written permit by the Commissioner of Public Health in accordance with the provisions of this section.

Each application for a permit under subdivisions (2) and (3) of subsection (b) shall be in writing and designate where and in what manner the material shall be disposed of.

- (c) All material removed from any septic tank, privy, sewer, subsurface sewage disposal system, sewage holding tank, toilet or sewage plumbing system shall be transported in watertight vehicles or containers in such a manner that no nuisance or public health hazard is presented. All vehicles used for transportation of such material shall bear the name of the company or licensee and shall be maintained and clean exterior conditions at all times. No defective or leaking equipment shall be used in cleaning operations. All vehicles or equipment shall be stored in a clean condition when not in use. Water used for rinsing such vehicles or equipment shall be considered sewage and shall be disposed of in a sanitary manner approved by the local director of health.
- (d) Septic tanks shall be cleaned by first lowering the liquid level sufficiently below the outlet to prevent sludge or scum from overflowing to the leaching system where it could cause clogging or otherwise damage the system. Substantially all of the sludge or scum accumulation shall be removed whenever possible, and the inlet and outlet baffles shall be inspected for damage or clogging. Cleaners shall use all reasonable precautions to prevent damaging the sewage disposal system with vehicles or equipment. Accidental spillage of sewage, sludge, or scum be promptly removed or otherwise abated so as to prevent a nuisance or public health hazard.
- (e) No sewage shall be allowed to discharge or flow into any storm drain, gutter, street, roadway or public place, nor shall such material discharge onto any private property so as to create a nuisance or condition detrimental to health. Whenever it is brought to the attention of the local director of health that such a condition exists on any property, he shall investigate and cause the abatement of this condition.
- (f) Persons who intend to conduct site investigations for the purpose of designing or constructing any septage or sewage disposal system within the scope of these regulations shall notify the local director of health of the time and place of such site investigations. Notice shall be provided to the local director of health in a timely manner to allow attendance at such site investigations by the director of health.
- (g) Persons who propose sewage or septage disposal systems within the scope of this regulation shall submit plans for such systems to the Commissioner of Public Health and the local director of health. Plans shall be submitted in a timely manner to allow review and comment on such plans to be directed to the Commissioner of Environmental Protection. Such plans shall be prepared by a professional engineer registered in the State of Connecticut and shall include a report of the findings of all site investigations, the basis of design, a preliminary or final design and other information necessary for the preservation and improvement of public health.
- (h) Persons who intend to construct sewage or septage disposal systems within the scope of these regulations shall file final construction plans with the local director of health at least two working days prior to the start of construction. All such systems shall be inspected during construction by the local director of health. Persons constructing such systems shall give prior notification to the local director of health of any changes which are proposed or required during construction. Persons constructing such systems shall provide the local director of health with a record drawing of the system, as-built, prior to utilizing the system.

(Effective August 16, 1982)

Sec. 19-13-B104d. Minimum Requirements

- (a) All sewage or septage disposal systems under the scope of these regulations shall meet the following minimum requirements necessary for the preservation and improvement of public health, unless an exception is granted by the Commissioner of Public Health upon his determination that public health shall not be impaired by such exception.
- (b) All structures or facilities for the treatment or disposal of sewage or septage shall be located at least 50 feet from any open water source and 100 feet from any public supply reservoir, unless designed and constructed to prevent the leakage or overflow of raw or treated sewage to the ground or surface water.
- (c) All structures, facilities or locations containing sewage or septage which is exposed to the atmosphere shall be located at least 150 feet from any school, residential building or institution, and shall be fenced or otherwise made inaccessible to the public.
- (d) The following minimum separating distances shall be maintained between any discharge or overflow of raw or treated sewage or septage to the ground waters and any drinking water supply well or spring.

Required Withdrawal Rate	Minimum Separation Distance
Under 10 gallons per minute	75 feet
10 to 50 gallons per minute	150 feet
Over 50 gallons per minute	200 feet

- (e) The following minimum separating distances shall be maintained between any sewer, structure or facility for the conveyance or treatment of sewage or septage and any drinking water supply well or spring.

Required Withdrawal Rate	Minimum Separation Distance
Under 10 gallons per minute	25 feet
10 to 50 gallons per minute	75 feet
Over 50 gallons per minute	100 feet

(Effective August 16, 1982)

Statement of Purpose

The regulations update existing Public Health Code requirements for the design and installation of large subsurface sewage disposal systems, the design flow of which exceed 5,000 gallons per day. Sewage disposal systems conforming to this regulation and designed to include the latest state-of-the-art technology will provide for the preservation and improvement of public health.

RECEIVED

12/03/02

Received 12/6/02

Exhibit #32

AVERY BROOK HOMES, LLC

LAND USE DEPARTMENT

SEPARATING DISTANCES LEACHING TO WETLANDS

LOT	DISTANCE (IN FEET)	NEAREST WETLAND
1	105	1
2	102	2
3	130	2*
4	210	3*
5	145	3*
6	103	3
7	108	3
8	104	3
9	560	2
10	580	2
11	560	1
12	522	1
13	470	1*
14	500	1*
15	490	1*
16	505	1*
17	296	1*
18	292	1*
19	235	1*
20	261	1*
21	250	1
22	262	2
23	290	2
24	400	1
25	340	1
26	290	1

* - Hydraulic gradient is not in the direction of the nearest wetland

Hydraulic Gradient to Wetland 1 - 7 Lots
 Hydraulic Gradient to Wetland 2 - 5 Lots
 Hydraulic Gradient to Wetland 3 - 3 Lots

Read into the Record 12/6/22

Exhibit # 33

Waterbury v. Washington

RECEIVED

JUL 06 2002

LAND USE DEPARTMENT

Having determined that the term "unreasonable" as used in the context of an independent action under CEPA does *not* mean something more than de minimis, we next turn to the question of what it *does* mean, at least in the context of this case. We conclude that when, as in the present case, as we discuss in more detail later in this opinion, the legislature has enacted an environmental legislative and regulatory scheme specifically designed to govern the particular conduct that is the target of the action, that scheme gives substantive content to the meaning of the word "unreasonable" as used in the context of an independent action under CEPA. Put another way, when there is an environmental legislative and regulatory scheme in place that specifically governs the conduct that the plaintiff claims constitutes an unreasonable impairment under CEPA, whether the conduct is unreasonable under CEPA will depend on whether it complies with that scheme.

We draw this conclusion from the overriding principle that statutes should be construed, where possible, so as to create a rational, coherent and consistent body of law. See, e.g., *Doe v. Doe*, 244 Conn. 403, 428, 710 A.2d 1297 (1998) ("we read related statutes to form a consistent, rational whole, rather than to create irrational distinctions"); *In re Valerie D.*, 223 Conn. 492, 524, 613 A.2d 748 (1992) ("[s]tatutes are to be interpreted with regard to other relevant statutes because the legislature is presumed to have created a consistent body of law' "). It would be inconsistent with that principle to

circumstances and factors, there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety and welfare." *Id.*, 109, quoting General Statutes § 22a-19 (b). We note that this language applies to *agency determinations* in "administrative, licensing or other proceedings" General Statutes § 22a-19 (b). Today's holding does nothing more than ensure that, when a court remands an issue to an agency, the agency examines relevant statutes as part of its examination of "relevant surrounding circumstances and factors" General Statutes § 22a-19 (b).

ssion of evidence
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conclude, absent some clear indication to the contrary, that the legislature intended that the same conduct that complies with an environmental legislative and regulatory scheme specifically designed to govern it, nonetheless could be deemed by a court to be an unreasonable impairment of the environment. Put still another way, it would be anomalous to conclude that the legislature has, as a general matter, enacted an environmental regulatory scheme that runs on two different tracks with respect to the same conduct: one that requires compliance with specific criteria promulgated by a regulatory agency pursuant to a specific legislative enactment; and a second that lodges in a court the determination of whether the same conduct comes within the very general standard of reasonableness, irrespective of whether it is in compliance with those specific criteria. Thus, in the present case, because we conclude, as the following discussion indicates, that, because the trial court found in effect that the Shepaug River is a stocked watercourse, and because both the defendants and the department have in this appeal assumed the propriety of that finding, the minimum flow statute and the regulations adopted pursuant to it apply to the Shepaug River. Therefore, the question of whether the impairment of the Shepaug River is unreasonable depends on whether its impaired flow meets the requirements of that statute and those regulations.

In this connection, we acknowledge that, as our previous discussion regarding the legislative rejection under CEPA of the exhaustion doctrine demonstrates, when CEPA was enacted there was significant legislative skepticism regarding the efficacy of the environmental regulatory agencies and, therefore, the legislature evinced an attitude favoring initial judicial, as opposed to initial regulatory, determinations of whether specific questioned conduct constituted unreasonable pollution, impairment or destruction of a natural resource.

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Concurrent with and subsequent to that enactment, however, the legislature also has enacted numerous environmental regulatory programs, and it can hardly be said that our environmental regulatory agencies have lain dormant in implementing those programs.³³ In order to read our environmental protection statutes so as to form a consistent and coherent whole, we infer a legislative purpose that those other enactments are to be read together with CEPA, and that, when they apply to the conduct questioned in an independent action under CEPA, they give substantive content to the meaning of the word "unreasonable" in the context of such an independent action.

Furthermore, a contrary conclusion would also mean that, in defending against what a court deems to be a prima facie case of unreasonable conduct under CEPA, the only defense that could be offered would be the affirmative defense that there was no feasible and prudent alternative to the defendant's conduct. As will be

³³ For example, General Statutes §§ 26-141a through 26-141c, regulating the minimum stream flow for stocked rivers, was enacted during the 1971 legislative session, when CEPA was enacted. Furthermore, since the passage of CEPA in 1971, the legislature has enacted numerous environmental statutes that purport to regulate certain activities and set various compliance standards. See, e.g., General Statutes §§ 22a-36 through 22a-45 (Inland Wetlands and Watercourses Act, initially enacted in 1972); General Statutes §§ 22a-67 through 22a-76 (establishing state policy on noise pollution control, initially enacted in 1974); General Statutes §§ 22a-90 through 22a-112 (Coastal Management Act, initially enacted in 1978); General Statutes §§ 22a-114 through 22a-134q (state policy on handling of hazardous waste, initially enacted in 1980); General Statutes §§ 22a-163 through 22a-165g (creation of low-level radioactive waste facility, initially enacted in 1987); General Statutes §§ 22a-227 through 22a-229 (municipal solid waste management plan, initially enacted in 1985); General Statutes §§ 22a-257 through 22a-265 (Connecticut Solid Waste Management Services Act, initially enacted in 1973); General Statutes §§ 22a-354g through 22a-354bb (establishment of aquifer protection areas, initially enacted in 1989); General Statutes §§ 22a-365 through 22a-378 (Water Diversion Policy Act, initially enacted in 1982); General Statutes §§ 23-65f through 23-65qv (forest practices, initially enacted in 1986).

seen in our subsequent discussion of the minimum flow statute, however, in numerous areas the legislature has chosen to enact detailed regulatory schemes circumscribing a party's conduct. There is nothing in CEPA, or in its legislative history, to suggest that CEPA was intended to trump more specific statutes reflecting the legislature's environmental policy in a specific area. It is reasonable to conclude, therefore, that when the legislature has enacted a specific statutory scheme concerning conduct that is later complained of, it also intended that a party be able to offer evidence of compliance with that statute which, if believed, would rebut a prima facie showing under CEPA. Therefore, we do not interpret the term "unreasonable" in such a way as to relegate defendants in CEPA actions to the sole affirmative defense that there was no feasible and prudent alternative to their conduct.

3

The Minimum Flow Statute

Having concluded that whether a watercourse has been unreasonably impaired may depend on a relevant regulatory scheme established by the legislature, we turn to Waterbury's claim regarding the minimum flow statute. Waterbury claims that flow in the Shepaug River is regulated by the minimum flow statute. Therefore, Waterbury asserts, as long as it was in compliance with that statute and its accompanying regulations, it could not be in violation of CEPA. The defendants argue that, assuming that the minimum flow statute applies to the Shepaug River, the trial court correctly concluded that the minimum flow statute was not intended to define "unreasonable impairment" of the river, because the minimum flow statute is concerned only with the protection of fish. We agree with Waterbury, and conclude that the minimum flow statute is the standard by which

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APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR _____

ASSESSOR _____ DATE _____

TWFC APPLICATION# _____ APPROVED _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION ZONING ENFORCEMENT OFFICER _____ DATE _____



DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 1641 CONNECTICUT ROUTE 12
 P.O. BOX 335
 GALES FERRY, CT. 06335
 (860) 464-7455
 EMAIL: DIETER.GARDNER@YAHOO.COM



LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WF 1 EDGE OF WETLANDS & FLAG NUMBER
- BUILDING SETBACK LINE
- LIMITS OF DISTURBANCE
- APPROXIMATE DEEP TEST PIT
- APPROXIMATE PERC TEST LOCATION
- UTILITY POLE
- H CONCEPTUAL HOME
- P CONCEPTUAL PRIMARY SEPTIC
- R CONCEPTUAL RESERVE AREA
- W CONCEPTUAL WELL
- TS TOPSOIL STOCKPILE
- HAYBALES/SILT FENCE/WOODCHIPS

I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

Ian Cole
 IAN COLE
 SOIL SCIENTIST

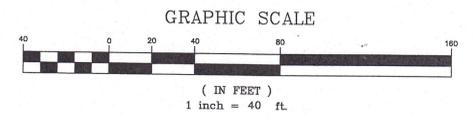
THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF, AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY.

THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

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NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

NOTE: FOOTING DRAINS NOT REQUIRED OR PROPOSED.



PLAN SHOWING
 RESUBDIVISION
 PROPERTY OF
 AVERY BROOK HOMES LLC
 94, 96, 98 AND 100
 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT
 SCALE: 1"=40'

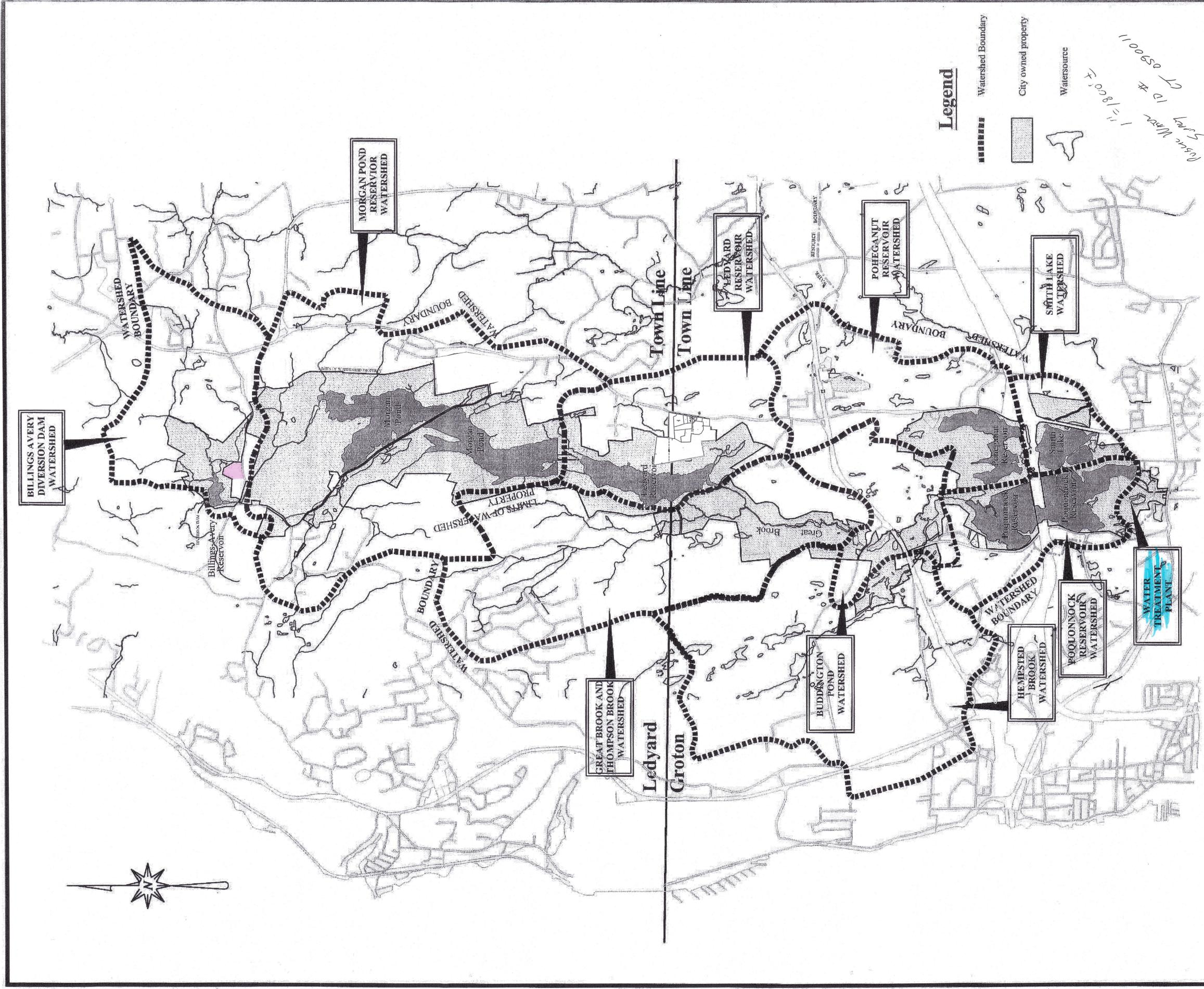
JULY 2022
 REVISED: OCTOBER 31, 2022
 REVISED: DECEMBER 5, 2022

Exhibit #31

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D" AND TOPOGRAPHIC ACCURACY 1-2. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
 DATE: JULY 7, 2022

Revised - 12/6/22



GROTON UTILITIES WATERSHED PROPERTY

Watershed Boundary - 15.56 sq. miles
 City Owned Property - 4.53 sq. miles

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY DATE

TP 1 0-45" FILL-DISTURBED LOAM, ROCKS, BRICK
CHAIRMAN OR SECRETARY DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON DATE
LOT NUMBERS ASSIGNED BY THE ASSESSOR
ASSESSOR DATE
IWWC APPLICATION#
APPROVED.
NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)
NOT APPLICABLE AT THIS TIME (WITHIN A REGULATED AREA; NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)
WETLANDS OFFICER DATE
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.
PUBLIC WORKS DIRECTOR/TOWN ENGINEER DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION DATE
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION
ZONING ENFORCEMENT OFFICER DATE

TP 16 0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-96" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 17 0-11" TOPSOIL
11-37" BROWN FINE TO MED. SANDY LOAM
37-89" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 18 0-9" TOPSOIL
9-29" YELLOW TO BROWN FINE SANDY LOAM
29-103" TAN TO OLIVE MED. TO COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 19 0-14" TOPSOIL
14-36" BROWN FINE SANDY LOAM W/SILT
36-84" TAN/GRAY COARSE SAND W/GRAVEL
MOTTLING @ 40" WATER @ 43" NO LEDGE
TP 20 0-17" TOPSOIL
17-31" BROWN FINE SANDY LOAM W/SILT
31-83" TAN/GRAY COARSE SAND W/GRAVEL AND FEW COBBLES
MOTTLING @ 43" WATER @ 46" NO LEDGE
TP 21 0-17" SANDY FILL & DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN/BROWN FINE MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 22 0-19" FILL
19-32" TOPSOIL
32-53" BROWN MED. SANDY LOAM
53-103" TAN TO BROWN MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 23 0-17" SANDY FILL AND DISTURBED
17-24" TOPSOIL
24-33" BROWN MED. SANDY LOAM
33-88" TAN TO BROWN MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 24 0-8" TOPSOIL
8-46" BROWN FINE TO MED. SANDY LOAM, SOME COBBLES
46-92" TAN TO GRAY COARSE SAND W/GRAVEL AND COBBLES
MOTTLING @ 60" WATER 64" UPHILL, 32" DOWNHILL NO LEDGE
TP 25 0-10" TOPSOIL
10-29" BROWN FINE TO MED. SANDY LOAM, SOME SILT
29-75" BROWN TO GRAY MED. TO COARSE SAND W/GRAVEL AND COBBLES
MOTTLING @ 33" WATER 33", 30" DOWNHILL NO LEDGE
TP 26 0-7" TOPSOIL
7-36" YELLOW TO BROWN FINE TO MED. SILTY LOAM W/TRACE FINE SAND
36-82" BROWN TO GRAY FINE TO MED. SAND W/GRAVEL AND COBBLES, SOME SILT
MOTTLING @ 26" WATER @ 26" NO LEDGE
TP 27 0-11" TOPSOIL
11-24" BROWN FINE TO MED. SANDY LOAM
24-39" TAN FINE TO MED. SAND
39-87" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 28 0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO MED. SANDY LOAM
32-96" LIGHT TAN FINE TO MED. SAND W/GRAVEL AND COBBLES STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE
TP 29 0-12" TOPSOIL
12-32" BROWN FINE TO MED. SANDY LOAM
32-99" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 30 0-15" TOPSOIL
12-34" BROWN FINE SANDY LOAM (DEPTH VARIES)
34-98" TAN TO MED. TO FINE SAND W/GRAVEL AND GRAVEL, STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE
TP 31 0-7" TOPSOIL
7-31" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
31-100" TAN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 32 0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-82" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 33 0-10" TOPSOIL
10-34" BROWN FINE SANDY LOAM
34-75" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 34 0-12" TOPSOIL
12-44" YELLOW TO BROWN FINE TO VERY FINE SANDY LOAM
44-89" TAN TO BROWN MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 35 0-9" TOPSOIL
9-21" BROWN FINE SANDY LOAM
21-47" TAN TO BROWN MED. SAND W/GRAVEL, FEW COBBLES
47-110" TAN TO BROWN, MED. SAND W/GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 36 0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-94" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 37 0-9" TOPSOIL
9-39" LIGHT BROWN TO TAN FINE TO VERY FINE SANDY LOAM
39-100" LIGHT TAN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 38 0-8" TOPSOIL
8-34" BROWN FINE SANDY LOAM
34-90" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 39 0-5" TOPSOIL
5-41" LIGHT BROWN FINE SANDY LOAM
41-83" TAN TO MED. SAND W/GRAVEL AND COBBLES
83"-104" OLIVE TO BROWN FINE SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE
TP 40 0-6" TOPSOIL
6-32" BROWN FINE TO MED. SANDY LOAM
32-58" TAN TO GRAY SILT WITH PATCHY ORANGE REDOX INCONSISTENT AROUND
58-99" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 41 0-9" TOPSOIL
9-29" BROWN FINE TO MED. SANDY LOAM
29-52" TAN TO GRAY SILT FINE SAND, STAINED
52-101" TAN TO GRAY, FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 42 0-5" TOPSOIL
5-14" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
14-50" ORANGE TO GRAY SILT, STAINED
50-105" TAN TO BROWN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 43 0-8" TOPSOIL
8-33" BROWN FINE SANDY LOAM
33-45" TAN TO GRAY SILT INCONSISTENT AROUND HOLE
45-83" TAN TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 44 0-6" TOPSOIL
6-14" BROWN FINE TO MED. SANDY LOAM
14-42" TAN TO GRAY SILT INCONSISTENT AROUND HOLE
42-102" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 45 0-7" TOPSOIL
13"-23" BROWN FINE TO VERY FINE SANDY LOAM
23-37" GRAY TO TAN VERY FINE SAND W/SILT
37-93" BROWN TO GRAY COARSE SAND W/GRAVEL AND SOME COBBLES
MOTTLING @ 37" NO WATER NO LEDGE
TP 46 0-15" TOPSOIL
15-39" GRAY TO TAN VERY FINE SANDY W/SILT
39-51" GRAY FINE TO MED. SAND W/SILT & HEAVILY MOTTLLED THROUGHOUT
51-108" BROWN TO TAN COARSE SAND W/GRAVEL AND SOME COBBLES
OLD FILTER FABRIC AND GRAVEL @ 20" MOTTLING @ 59" WATER @ 96" NO LEDGE
TP 47 0-10" TOPSOIL
10-22" BROWN FINE TO MED. SANDY LOAM W/SILT
22-41" LIGHT BROWN TO ORANGE SILTY LOAM, TRACE FINE SAND
41-98" BROWN TO GRAY COARSE SAND W/GRAVEL AND SOME COBBLES
NO MOTTLING
WATER @ 96" NO LEDGE
TP 48 0-10" TOPSOIL
10-28" BROWN FINE TO VERY FINE SANDY LOAM TO SILT
28-106" BROWN TO GRAY MED. TO COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER-WET AT BOTTOM
NO LEDGE
TP 49 0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-52" LIGHT YELLOW TO BROWN VERY FINE SAND W/SILT
52-99" BROWN TO GRAY COARSE SAND WITH GRAVEL, FEW COBBLES
POSSIBLE MOTTLING @ 52" WATER @ 90" NO LEDGE
TP 50 0-10" TOPSOIL
10-24" BROWN FINE TO VERY FINE SANDY LOAM
24-41" LIGHT YELLOW TO TAN VERY FINE SAND, W/SILT
41-111" TAN TO BROWN COARSE SAND W/GRAVEL AND SOME COBBLES
NO MOTTLING
WATER @ 106" NO LEDGE
TP 51 0-10" TOPSOIL
10-20" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
20-42" LIGHT YELLOW TO BROWN VERY FINE SAND W/TRACE SILT
42-101" BROWN TO TAN COARSE SAND WITH GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 52 0-13" TOPSOIL
13-38" BROWN FINE TO VERY FINE SANDY LOAM
38-90" BROWN TO TAN COARSE TO MED. SAND WITH SOME GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 53 0-13" TOPSOIL
13-32" BROWN FINE TO MED. SANDY LOAM
32-92" BROWN TO TAN COARSE TO MED. SAND W/GRAVEL AND MANY COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 54 0-11" TOPSOIL
11-32" BROWN FINE TO VERY FINE SANDY LOAM
32-95" BROWN TO TAN COARSE TO MED. SAND W/GRAVEL AND SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 55 0-14" TOPSOIL
14-22" BROWN FINE TO VERY FINE SANDY LOAM
22-37" LIGHT BROWN FINE TO VERY FINE SAND W/SILT
37-110" TAN MED. SAND W/GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 56 0-15" TOPSOIL
15-43" LIGHT BROWN SILTY LOAM, SOME FINE SAND
43-110" TAN MED. SAND SOME GRAVEL, FEW COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 57 0-8" TOPSOIL
8-27" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
27-104" TAN TO BROWN MED. TO COARSE SAND W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 58 0-12" TOPSOIL
12-32" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
32-98" TAN TO BROWN MED. TO COARSE SAND WITH GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 59 0-11" TOPSOIL
11-23" BROWN FINE TO VERY FINE SANDY LOAM
23-93" BROWN TO TAN COARSE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 60 0-10" TOPSOIL
10-23" BROWN FINE TO VERY FINE SANDY LOAM
23-97" BROWN TO TAN COARSE TO MED. SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 61 0-8" TOPSOIL
8-28" BROWN VERY FINE SANDY LOAM
28-99" TAN TO BROWN COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 62 0-9" TOPSOIL
9-24" LIGHT BROWN VERY FINE SANDY LOAM
24-96" BROWN TO TAN COARSE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 63 0-8" TOPSOIL
8-26" BROWN FINE TO MED. SANDY LOAM
26-91" BROWN TO TAN COARSE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 64 0-10" TOPSOIL
10-31" BROWN FINE SANDY LOAM
31-91" BROWN TO TAN COARSE TO MED. SAND W/SOME SILT GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 65 0-13" TOPSOIL
13-30" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
30-100" TAN TO BROWN COARSE SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 66 0-10" TOPSOIL
10-28" BROWN FINE SANDY LOAM
28-90" TAN TO GRAY MED. TO COARSE SAND W/SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE
TP 67 0-14" TOPSOIL
14-25" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
25-108" TAN TO BROWN MED. TO COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 68 0-11" TOPSOIL
11-29" BROWN FINE TO MED. SANDY LOAM
29-80" TAN TO GRAY MED. TO COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 69 0-12" TOPSOIL
12-36" YELLOW TAN FINE TO VERY FINE SANDY LOAM
36-93" TAN TO BROWN MED. TO FINE SAND W/GRAVEL, SOME COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 70 0-14" TOPSOIL
14-36" BROWN FINE TO MED. SANDY LOAM
36-91" TAN MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 71 0-8" TOPSOIL
8-36" BROWN FINE TO MED. SANDY LOAM
36-96" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE

TP 72 0-8" TOPSOIL
8-32" BROWN FINE TO MED. SANDY LOAM
32-91" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 73 0-13" TOPSOIL
13-28" BROWN FINE SANDY LOAM
28-37" YELLOW TAN FINE TO VERY FINE SANDY LOAM
37-90" TAN TO BROWN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 74 0-6" TOPSOIL
6-39" BROWN FINE SANDY LOAM
39-99" TAN TO BROWN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 75 0-10" TOPSOIL
10-29" LIGHT BROWN FINE SANDY LOAM
29-96" TAN TO OLIVE/BROWN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 76 0-10" TOPSOIL
10-34" LIGHT BROWN FINE SANDY LOAM
34-96" TAN TO OLIVE/BROWN FINE TO MED. SAND W/GRAVEL AND COBBLES STRATIFIED
NO MOTTLING
NO WATER
NO LEDGE
TP 77 0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 78 0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-106" BROWN TO TAN MED. FINE SAND W/ SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE
TP 79 0-13" TOPSOIL
13-30" LIGHT BROWN FINE TO VERY FINE SANDY LOAM
30-100" TAN TO BROWN COARSE SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 80 0-12" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 81 0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 82 0-9" SAND AND GRAVEL FILL
9-18" TOPSOIL
18-52" LIGHT BROWN FINE TO VERY FINE SANDY LOAM, SOME SILT
52-101" TAN TO BROWN FINE TO MED. SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

TP 83 0-9" TOPSOIL
9-31" BROWN FINE SANDY LOAM
31-104" TAN-BROWN COARSE SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 104"
TP 84 0-11" TOPSOIL
11-38" BROWN FINE SANDY LOAM
38-92" TAN TO BROWN MED-COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
WATER @ 79" LEDGE-NONE TO 92"
TP 85 0-12" TOPSOIL
12-33" BROWN FINE SANDY LOAM
30-98" TAN COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 98"
TP 86 0-8" TOPSOIL
8-30" BROWN FINE SANDY LOAM
30-89" TAN COARSE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
LEDGE-NONE TO 89"
TP 87 0-10" TOPSOIL
10-29" LIGHT BROWN FINE SANDY LOAM
29-96" TAN TO OLIVE/BROWN FINE TO MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 88 0-11" TOPSOIL
11-36" BROWN FINE TO MED. SANDY LOAM
36-101" BROWN TO TAN MED. TO FINE SAND WITH GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 89 0-15" TOPSOIL
15-46" BROWN FINE TO MED. SANDY LOAM
46-106" BROWN TO TAN MED. FINE SAND W/ SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE
TP 90 0-12" TOPSOIL
12-33" BROWN FINE TO MED. SANDY LOAM
33-95" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 91 0-13" TOPSOIL
13-40" BROWN FINE TO MED. SANDY LOAM
40-96" TAN TO GRAY MED. SAND W/GRAVEL AND COBBLES
NO MOTTLING
NO WATER
NO LEDGE
TP 92 0-9" SAND AND GRAVEL FILL
9-18" TOPSOIL
18-52" LIGHT BROWN FINE TO VERY FINE SANDY LOAM, SOME SILT
52-101" TAN TO BROWN FINE TO MED. SAND, SOME GRAVEL
NO MOTTLING
NO WATER
NO LEDGE

PLAN SHOWING
DEEP TEST PIT DATA
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022



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LOT 1		WATER QUALITY BASIN		WATER QUALITY BASIN		LOT 2		LOT 2		LOT 2		LOT 3		LOT 4		LOT 5	
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING
27" DEEP		29" DEEP		30" DEEP		26" DEEP		26" DEEP		29" DEEP		30" DEEP		30" DEEP		29" DEEP	
8:59	2"	8:51	4"	9:00	2 1/2"	9:02	2 1/4"	9:55	2"	1:30	4"	1:32	4"	1:34	3"	1:41	4"
9:04	6 3/4"	8:56	4"	9:05	7 1/2"	9:07	13 1/2"	10:00	8 1/2"	1:35	20"	1:37	13"	1:39	9 1/2"	1:41	4"
9:09	9"	9:01	13 3/4"	9:10	11"	9:12	19"	10:05	13"	1:40	23"	1:42	18"	1:44	13"	1:51	13"
9:14	11"	9:06	15"	9:15	13 1/2"	9:17	22 1/2"	10:10	17"	1:45	24 1/2"	1:47	20 1/2"	1:49	15 1/2"	1:56	15 1/2"
9:19	12 1/2"	9:11	18"	9:20	16"	9:22	24 1/2"	10:15	19 1/2"	1:50	25 1/2"	1:52	23"	1:54	18"	2:01	17 1/2"
9:24	14"	9:16	20"	9:25	17 1/2"	9:27	26"	10:20	22"	1:55	26 1/2"	1:57	24"	1:59	20"	2:06	19"
9:29	15 1/2"	9:21	21"	9:30	19 1/2"	9:32	DRY	10:25	24"	2:00	27 1/2"	2:02	25"	2:04	21 1/2"	2:11	20 1/2"
9:34	17"	9:26	22"	9:35	20 1/2"			10:30	25"	2:05	28 1/2"	2:07	25 3/4"	2:09	23"	2:16	22"
9:39	18 1/4"	9:31	23"	9:40	21 1/2"			10:35	26"	2:10	DRY	2:12	26 3/4"	2:14	24 1/2"	2:21	23 1/2"
9:44	19 1/4"	9:36	24"	9:45	22 1/2"			10:40	DRY			2:17	27 3/4"	2:19	26"	2:26	25"
9:49	20 1/4"	9:41	25"												26 1/2"	2:31	26 1/2"
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/3.3 MINS.	

LOT 6		LOT 7		LOT 7		LOT 8		LOT 9		LOT 9		LOT 10		LOT 11	
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING
27" DEEP		27" DEEP		27" DEEP		30" DEEP		30" DEEP		30" DEEP		30" DEEP		30" DEEP	
9:13	4"	9:10	4"	9:18	3"	11:28	4"	11:24	3 1/2"	10:41	9"	10:39	7"	10:45	3"
9:18	11 1/2"	9:15	14 1/2"	9:23	7"	11:33	10"	11:29	17 1/2"	10:46	12 1/2"	10:44	11"	10:50	12"
9:23	16"	9:20	17 1/2"	9:28	10"	11:38	12 1/2"	11:34	21"	10:51	15"	10:49	15"	10:55	14 1/4"
9:28	18"	9:25	21"	9:33	11 3/4"	11:43	14 1/2"	11:39	23 1/2"	10:56	17"	10:54	19 1/2"	11:00	15 1/4"
9:33	20"	9:30	22"	9:38	13"	11:48	16 1/2"	11:44	25 1/2"	11:01	19"	10:59	20 1/2"	11:05	17 1/4"
9:38	21 1/2"	9:35	23"	9:43	14 1/4"	11:53	17 1/4"	11:49	27 1/2"	11:06	19 1/2"	11:04	22"	11:10	19 1/4"
9:43	22"	9:40	24"	9:48	15 1/2"	11:58	19"	11:54	29"	11:11	20 1/2"	11:09	23"	11:15	21"
9:48	23 1/2"	9:45	25"	9:53	16 1/2"	12:03	20 1/2"	11:59	30 1/2"	11:16	21 1/2"	11:14	24"	11:20	22 1/4"
9:53	24 1/2"	9:50	26"	9:58	17 7/8"	12:08	21 1/8"	11:21	22 1/2"	11:19	25"	11:25	23 1/4"	11:29	24 1/2"
9:58	25 1/2"	9:55	DRY	10:03	19 1/2"			11:26	23 1/2"	11:24	25 3/4"			11:30	24 1/2"
10:03	DRY													11:35	25 3/4"
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3 MINS.		PERC RATE: 1"/3 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/6.7 MINS.		PERC RATE: 1"/4 MINS.	

LOT 12		LOT 13		LOT 14		LOT 15		LOT 16		LOT 17		LOT 18		LOT 19		LOT 19	
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING								
28" DEEP		27" DEEP		30" DEEP		29" DEEP		26" DEEP		29" DEEP		30" DEEP		29" DEEP		30" DEEP	
10:37	3"	8:48	2"	8:41	4"	8:43	5"	8:40	5 1/2"	1:50	4 1/4"	1:30	2 1/2"	10:49	3"	1:27	2 1/2"
10:42	6 3/4"	8:53	9"	8:46	8 1/4"	8:48	10 3/4"	8:45	9 1/2"	1:55	11 7/8"	1:35	9 1/2"	10:54	11"	1:32	8 1/4"
10:47	9 1/4"	8:58	14"	8:51	10 1/4"	8:53	15"	8:50	11 1/2"	2:00	15 1/2"	1:40	13 1/2"	10:59	15"	1:37	13"
10:52	12 1/2"	9:03	18"	8:56	12 1/2"	8:58	14"	8:55	14"	2:05	18"	1:45	15"	11:04	18 1/2"	1:42	15 1/2"
10:57	15"	9:08	20"	9:01	15"	9:03	19 1/2"	9:00	15 1/2"	2:10	21"	1:50	17 1/2"	11:09	20 1/2"	1:47	18"
11:02	17"	9:13	22"	9:06	17"	9:08	21"	9:05	16 1/2"	2:15	23"	1:55	20"	11:14	22"	1:52	19 1/2"
11:07	19"	9:18	23"	9:11	18"	9:13	22"	9:10	17 3/4"	2:20	25"	2:00	21 1/2"	11:19	23 1/2"	1:57	21 1/2"
11:12	20"	9:23	24"	9:16	19"	9:18	23"	9:15	18 1/2"	2:25	27"	2:05	22 1/2"	11:24	25"	2:02	23 1/2"
11:17	21"	9:28	25"	9:21	20"	9:23	23 3/4"	9:20	19 1/2"	2:30	28 7/8"	2:10	23 1/2"	11:29	26 1/2"	2:07	24 1/2"
11:22	23 1/8"	9:33	26"	9:26	21"	9:28	24 1/2"	9:25	20 1/2"	2:35	DRY	2:15	24 1/2"			2:12	24 1/2"
11:27	23 1/8"	9:38	DRY	9:31	22"	9:33	25 1/2"	9:30	21 1/2"								26"
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/2.7 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/3.3 MINS.	

LOT 20		LOT 21		LOT 22		LOT 22		LOT 23		LOT 23		LOT 24		LOT 25		LOT 26	
TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING
28" DEEP		30" DEEP		29" DEEP		28" DEEP		28" DEEP		28" DEEP		28" DEEP		29" DEEP		30" DEEP	
1:38	5"	10:18	2 1/2"	11:46	3"	11:23	3"	11:45	3"	11:45	3"	12:27	3"	12:30	3"	11:43	3 1/2"
1:43	11"	10:23	12"	11:51	6 1/2"	11:28	11 3/4"	11:50	7 3/4"	11:50	7 3/4"	12:32	7 1/2"	12:35	12"	11:48	8"
1:48	13 1/2"	10:28	15 1/2"	11:56	9"	11:33	15"	11:55	11 1/2"	11:55	11 1/2"	12:37	11 1/2"	12:40	17 1/2"	11:53	10"
1:53	16"	10:33	19 1/2"	12:01	12"	11:38	18"	12:00	13 3/4"	12:00	13 3/4"	12:42	14"	12:45	20"	10:58	13"
1:58	18"	10:38	21"	12:06	13 1/2"	11:43	21 1/2"	12:05	16"	12:05	16"	12:47	16"	12:50	23"	12:03	14 1/2"
2:03	19"	10:43	22 1/2"	12:11	14 1/2"	11:48	24"	12:10	18"	12:10	18"	12:52	18"	12:55	25"	12:08	16"
2:08	20 1/8"	10:48	24"	12:16	16"	11:53	26"	12:15	20"	12:15	20"	12:57	19"	1:00	26 1/2"	12:13	17"
2:13	21 1/2"	10:53	25"	12:21	17 1/2"	11:58	DRY	12:20	21"	1:02	20"	1:02	20"	1:05	28"	12:18	18 1/2"
2:18	22 1/2"	10:58	26 3/4"	12:26	18 1/2"			12:25	22 1/4"	1:07	21"	1:07	21"	1:10	DRY	12:23	20"
2:23	23 1/2"	11:03	26 3/4"	12:31	19 1/2"			12:30	23 1/2"	1:12	22"					12:28	21"
2:28	24 1/2"			12:36	20 1/2"			12:35	25"								
PERC RATE: 1"/5 MINS.		PERC RATE: 1"/6 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/2.5 MINS.		PERC RATE: 1"/4 MINS.		PERC RATE: 1"/5 MINS.		PERC RATE: 1"/3.3 MINS.		PERC RATE: 1"/5 MINS.	

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EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR _____

ASSESSOR _____ DATE _____

IWWC APPLICATION# _____

APPROVED, _____

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APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

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APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____

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SANITARY DESIGN CRITERIA.

- A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.
- B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/INCH OR LESS REQUIRES 495 S.F. OF EFFECTIVE LEACHING AREA.
- C. GST 6236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN. MINIMUM REQUIRED AREA IS 495 S.F./ 26.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.
 - HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
 - FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
 - PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/INCH.

MLSS TABLE								
LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	HF	FF	PF	MLSS	SYSTEM
1	1, 2, 3 & 4	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
2	9, 10, 11 & 12	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
3	13 & 14	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
4	15 & 16	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
5	17 & 18	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
6	21 & 22	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
7	85 & 86	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
8	27 & 28	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
9	29, 30, 31 & 32	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
10	33 & 34	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
11	35 & 36	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
12	37 & 38	MLSS	NOT	APPLICABLE	1.5	1.0		20 L.F. GST 6236
13	81 & 82	MLSS						

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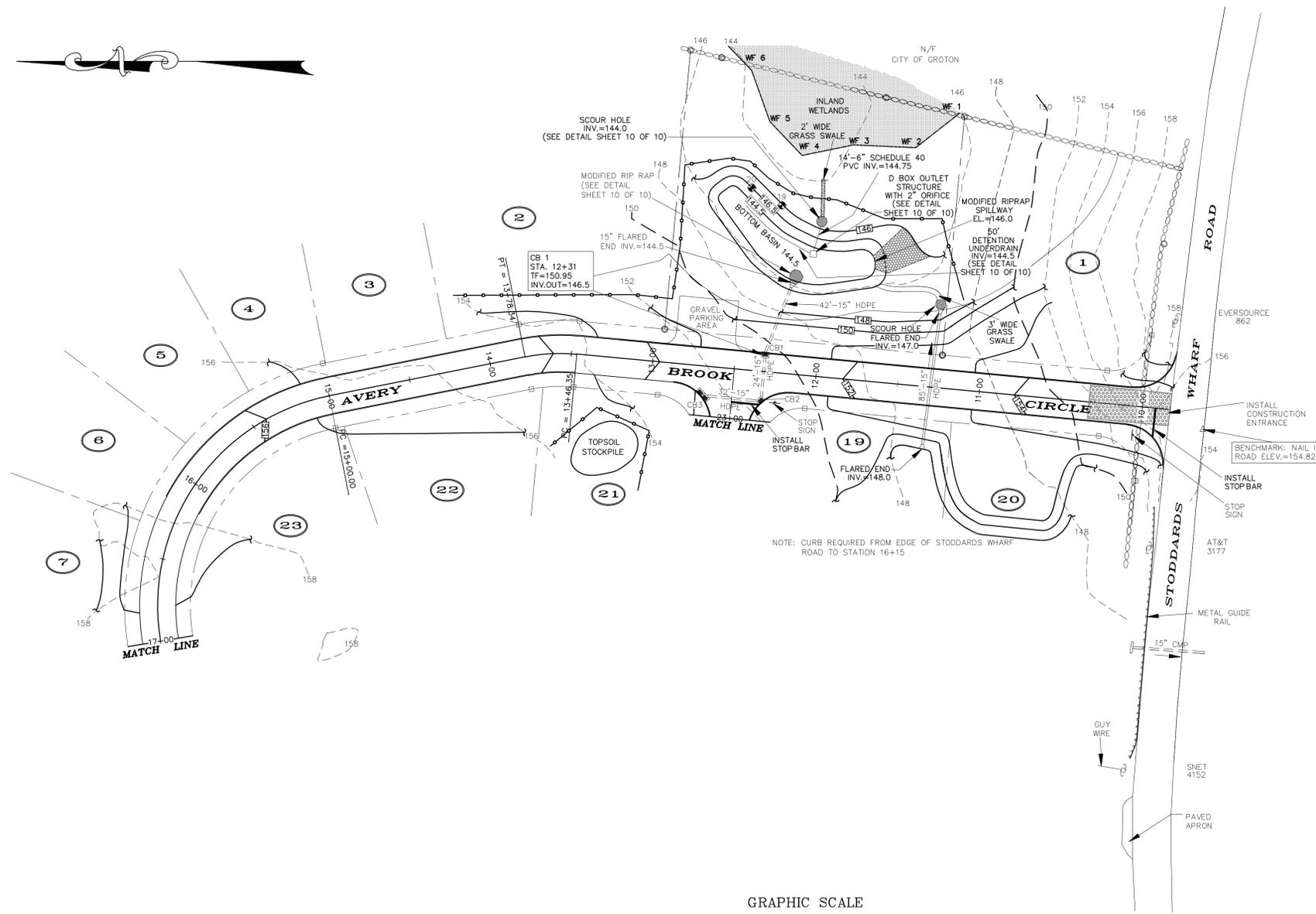
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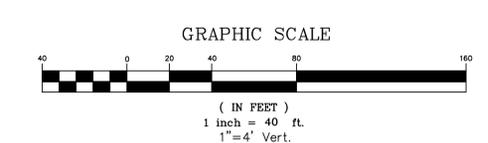
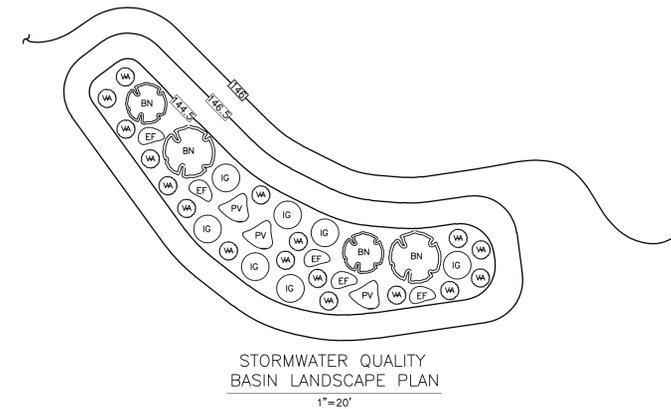


DEEP TEST PIT DATA

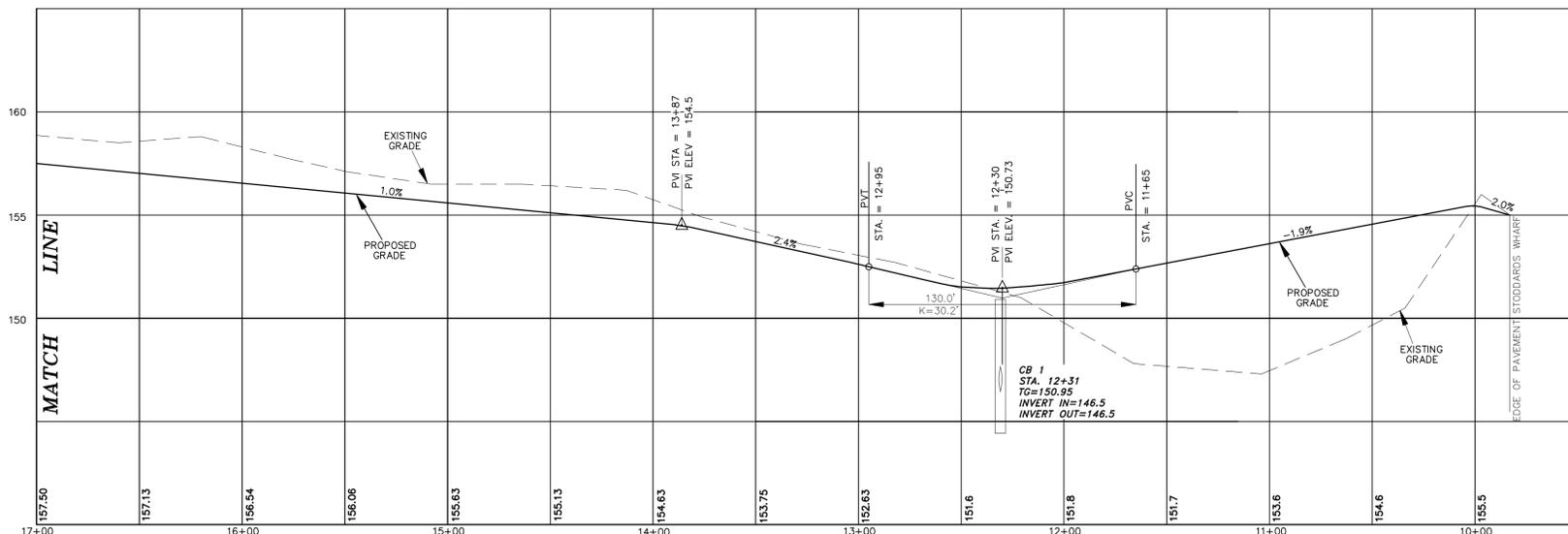
TP 19 0-14" TOPSOIL 14-36" BROWN FINE SANDY LOAM W/SILT 36-84" TAN/GRAY COARSE SAND W/GRAVEL	TP 20 0-17" TOPSOIL 17-31" BROWN FINE SANDY LOAM W/SILT 31-83" TAN/GRAY COARSE SAND W/GRAY AND FEW COBBLES
MOTTLING @ .40" WATER @ .43" NO LEDGE	MOTTLING @ .43" WATER @ .46" NO LEDGE

LANDSCAPE SCHEDULE

TYPE	SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	METHOD	SIZE	REMARKS
PERENNIALS	EF	CLUSTER	EUPATORIUM FISTULOSUM	JOE PYE WEED	CONTAINER	1'-2' HEIGHT	UNIFORM WELL DEVELOPED PLANT 2' ON CENTER
GRASSES	PV	3	PANICUM VIRGATUM	SWITCH GRASS	CONTAINER	2'-3' HEIGHT	UNIFORM WELL DEVELOPED PLANT 2' ON CENTER
SHRUBS	IG	7	ILEX GLABRA	INKBERRY	B&B	3'-4' HEIGHT	AS SHOWN
	VA	17	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	CONTAINER	12"-18" HT	AS SHOWN
TREES	BN	4	BETULA NIGRA	RIVER BIRCH	B&B	2 1/2"-3" CAL	MULTI-STEMMED AS SHOWN



- LEGEND
- ○ ○ ○ ○ ○ ○ ○ ○ ○ STONE WALL
 - — — — — PROPERTY LINE
 - — — — — STREET LINE
 - - - - - EXISTING CONTOUR
 - - - - - PROPOSED CONTOUR
 - ○ ○ ○ ○ UTILITY POLE
 - ① LOT NUMBER
 - PROPOSED CATCH BASIN
 - WF 1 EDGE OF WETLANDS & FLAG NUMBER
 - ○ ○ ○ ○ HAYBALES/SILT FENCE/WOODCHIPS
 - ⊕ APPROXIMATE DEEP TEST PIT



PLAN / PROFILE SHOWING PROPERTY OF AVERY BROOK HOMES LLC STODDARDS WHARF ROAD LEDYARD, CONNECTICUT SCALE: 1"=40' HORIZ. 1"=4' VERT. JULY 2022

REVISED: OCTOBER 31, 2022
 REVISED: DECEMBER 5, 2022

Jan Cole
 JAN COLE
 SOIL SCIENTIST

Jan Gardner
 STATE OF CONNECTICUT
 19494
 LICENSED PROFESSIONAL ENGINEER

I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

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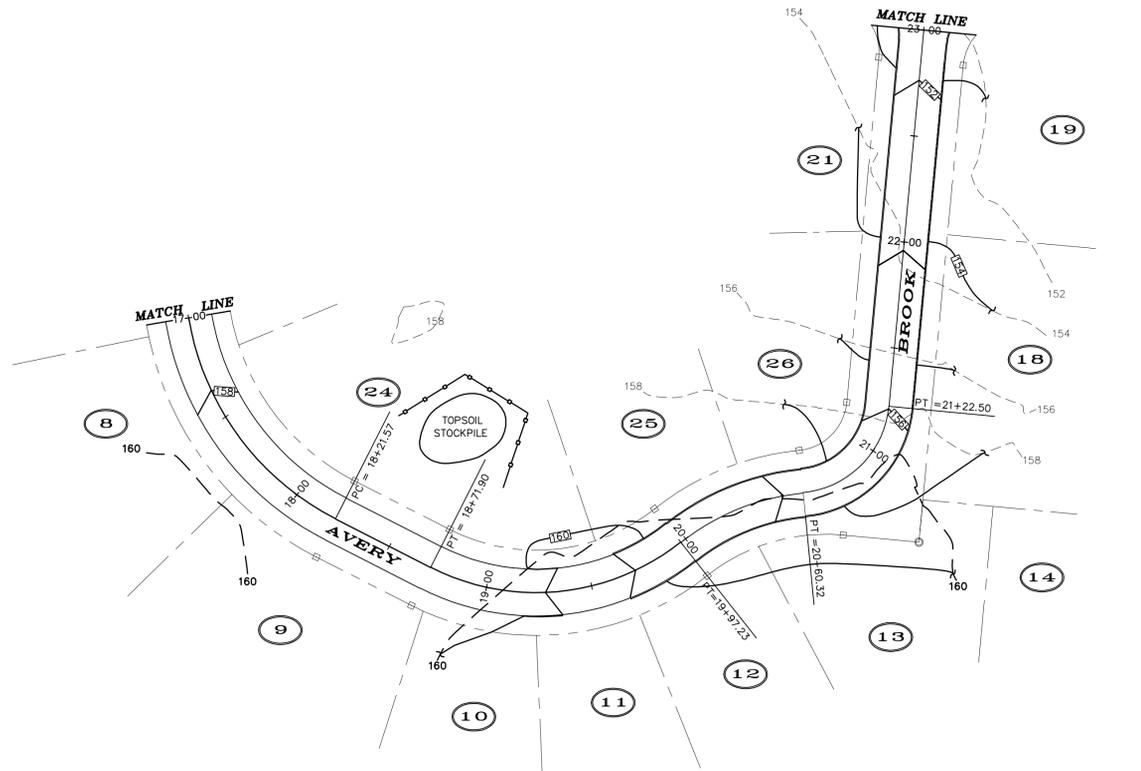
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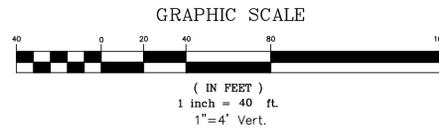
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

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NOTE: CURB REQUIRED FROM STATION 19+65 TO ROAD INTERSECTION

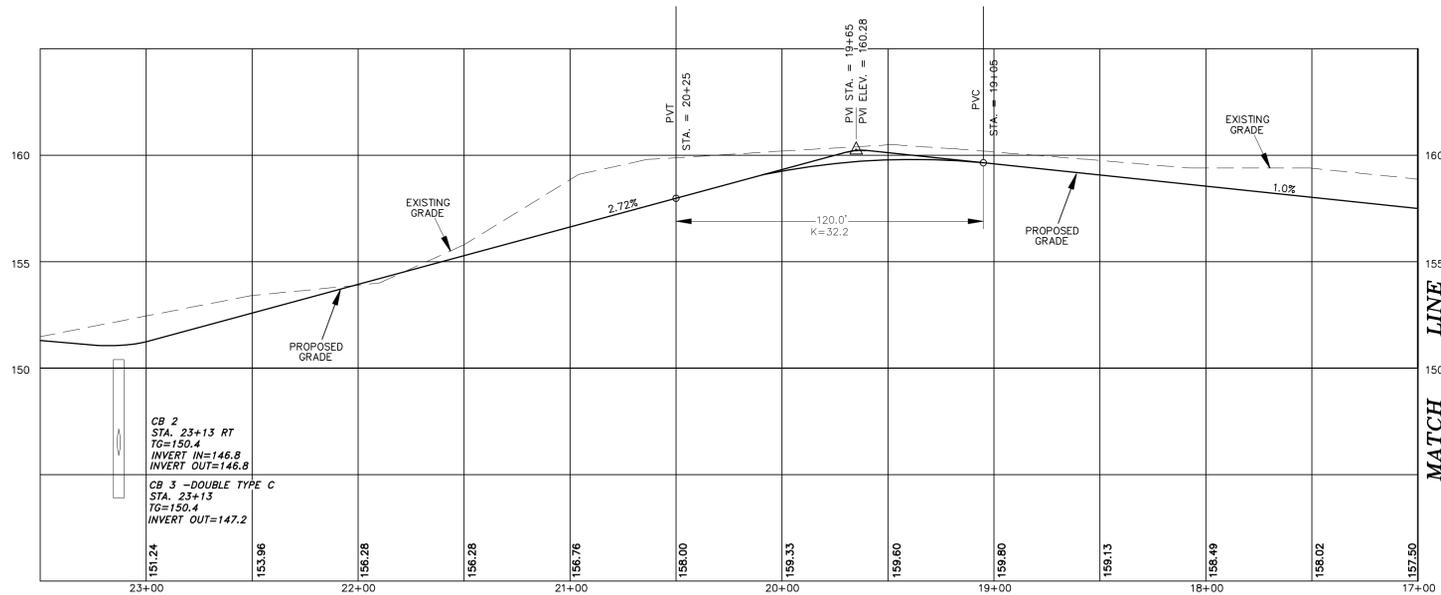


LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- - - - - EXISTING CONTOUR
- - - - - PROPOSED CONTOUR
- UTILITY POLE
- ① LOT NUMBER
- ▣ PROPOSED CATCH BASIN
- WF 1 EDGE OF WETLANDS & FLAG NUMBER
- ○ ○ ○ ○ HAYBALES/SILT FENCE/WOODCHIPS

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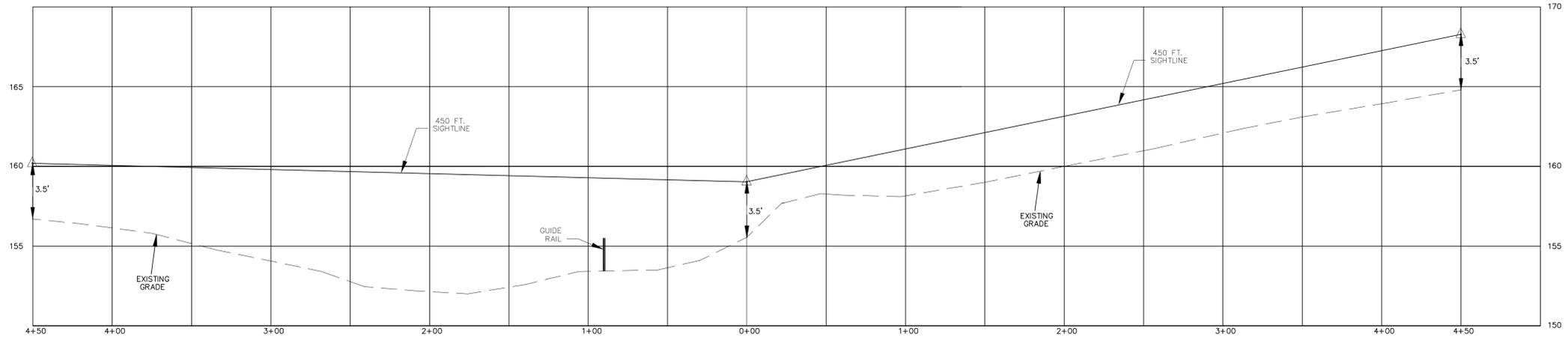
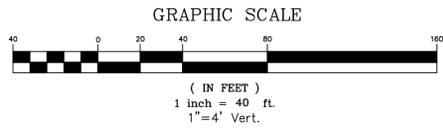
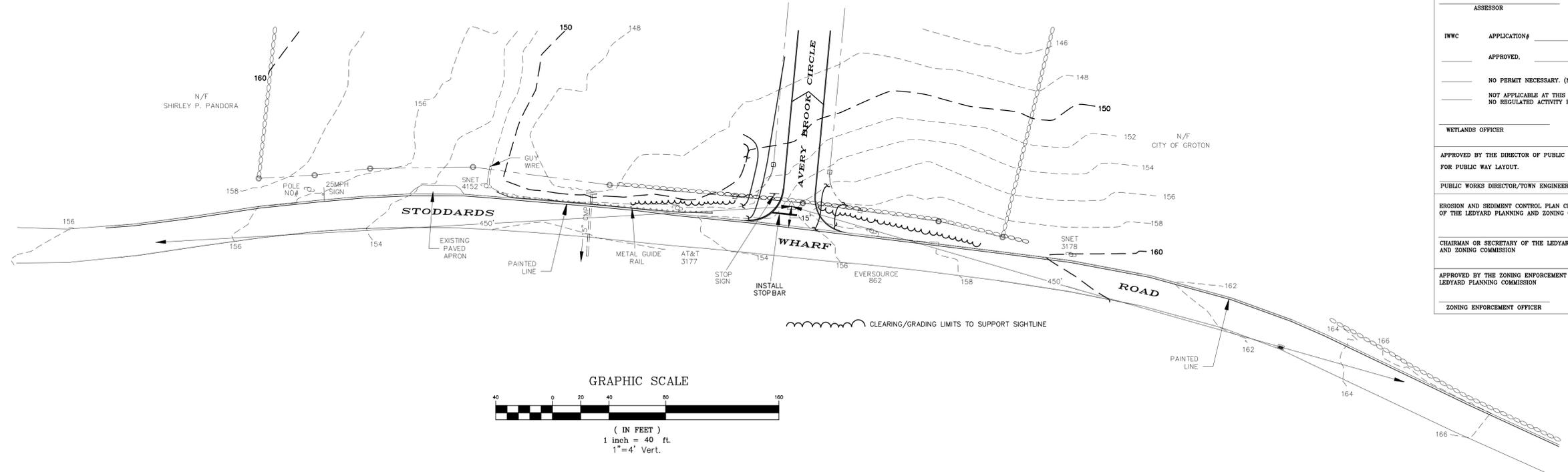
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PLAN / PROFILE
 SHOWING
 PROPERTY OF
 AVERY BROOK HOMES LLC
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT
 SCALE: 1"=40' HORIZ.
 1"=4' VERT.

JULY 2022
 REVISED: OCTOBER 31, 2022
 REVISED: DECEMBER 13, 2022





LEGEND

○○○○○○○○	STONE WALL
— — — — —	PROPERTY LINE
— — — — —	STREET LINE
- - - - -	EXISTING CONTOUR
- - - - -	PROPOSED CONTOUR
⊙	UTILITY POLE


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 EMAIL: DIETER.GARDNER@YAHOO.COM

**SIGHTLINE
 DEMONSTRATION PLAN
 PROPERTY OF
 AVERY BROOK HOMES LLC
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT
 SCALE: 1"=40' HORIZ.
 1"=4' VERT.
 JULY 2022
 REVISED: OCTOBER 31, 2022**

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LOT NUMBERS ASSIGNED BY THE ASSESSOR

ASSESSOR _____ DATE _____

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EROSION & SEDIMENT CONTROL PLAN

NARRATIVE:

PURPOSE AND DESCRIPTION OF PROJECT

THE PURPOSE OF THIS PROJECT IS TO SUBDIVIDE 9.21 ACRES OF LAND TO CREATE 26 RESIDENTIAL BUILDING LOTS. EACH LOT WILL BE SERVICED BY ON SITE WELL AND SEPTIC SYSTEM. APPROXIMATELY 1330 LINEAR FEET OF ROAD WILL BE CONSTRUCTED. THE PAVEMENT WIDTH IS 22 FEET. THE TOTAL AREA OF NEW PAVEMENT ASSOCIATED WITH THE ROAD CONSTRUCTION WILL BE 30,400+ SQUARE FEET. ROAD DRAINAGE HAS BEEN DESIGNED BY A PROFESSIONAL ENGINEER, AND INCLUDES IN PLACES CURBED PAVEMENT AND CATCH BASINS WITH 2 FOOT SUMP DEPTHS. THE UPLANDS ARE GENTLY SLOPING AND MOSTLY OLD PASTURE. THE UPLAND SOILS ON THE PROJECT SITE INCLUDE WELL DRAINED CANTON HINCKLEY AND AGAWAM SOILS.

IT IS ANTICIPATED THAT ONCE WORK ON THE PUBLIC IMPROVEMENTS BEGINS, IT WILL CONTINUE UNTIL THE PROJECT IS COMPLETED. IT IS ANTICIPATED THAT THE ROAD CONSTRUCTION WILL BE COMPLETED WITHIN ONE YEAR OF COMMENCEMENT.

PETER GARDNER 860-464-7455 (OR OWNER AT TIME OF CONSTRUCTION) SHALL BE RESPONSIBLE FOR OVERSEEING THE INSTALLATION AND PROPER MAINTENANCE OF ANY EROSION & SEDIMENT CONTROL MEASURES EMPLOYED IN IMPLEMENTING THIS PLAN.

TOTAL AREA OF THE PROJECT SITE AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY ROAD AND DRAINAGE CONSTRUCTION ACTIVITIES.

THE TOTAL PROJECT AREA IS 9.21 ACRES OF WHICH 0.9± ACRES WILL BE DISTURBED TO FACILITATE THE CONSTRUCTION OF THE ROAD AND DRAINAGE.

ESTIMATE OF TOTAL AREA TO BE DISTURBED: 3.9± ACRES FOR HOME/DRIVE AND SEPTIC CONSTRUCTION.

PLANNED START AND COMPLETION DATES FOR THE PROJECT

IT IS ANTICIPATED THAT THE PROJECT WILL COMMENCE DURING FALL/WINTER OF 2022/2023 AND BE COMPLETED IN THE FALL OF 2023.

DESIGN CRITERIA, CONSTRUCTION DETAILS AND MAINTENANCE PROGRAM FOR THE EROSION & SEDIMENT CONTROL MEASURES TO BE USED.

SILT FENCE AND SILT FENCE BACKED WITH HAY BALES FOR STRUCTURAL SUPPORT WILL BE USED. ALL SILT FENCE SEDIMENT BARRIERS SHALL BE MAINTAINED SUCH THAT SEDIMENTS WILL BE REMOVED WHEN REACHING A HEIGHT OF 0.5 FEET. BREACHES IN SILT FENCE SHALL BE REPAIRED IMMEDIATELY. THE SILT FENCE SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 0.5 INCH IN A 24 HOUR PERIOD.

CONSTRUCTION ENTRANCE DESIGN AND MAINTENANCE CRITERIA FROM 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL. ENTRANCE: THE CONSTRUCTION ENTRANCES WILL BE CONSTRUCTED OF ANGULAR STONE IN A SIZE AND GRADATION CORRESPONDING TO ASTM C-33, SIZE NO. 2 OR 3, OR DOT STANDARD SPECIFICATIONS SECTION M.01.01 SIZE #3. THE CONSTRUCTION ENTRANCE WILL BE 12 FEET WIDE AND 50 FEET LONG.

CONSTRUCTION: CONSTRUCTION ENTRANCES AREA WILL BE CLEARED AND GRUBBED. AREAS WILL THEN BE ROUGH GRADED. A 4-INCH LAYER OF CRUSHED STONE WILL BE SPREAD AS DEPICTED IN THE DETAILS.

MAINTENANCE: THE CONSTRUCTION ENTRANCE WILL BE MAINTAINED IN A CONDITION THAT WILL MITIGATE TRACKING AND WASHING OF SEDIMENT ONTO PAVED SURFACES. THE CONSTRUCTION ENTRANCE WILL BE TOP DRESSED AS NEEDED TO PROVIDE FUNCTIONALITY. ADDITIONAL LENGTH MAY BE ADDED IF ON-SITE CONDITIONS WARRANT SUCH EXTENSION. ANY ACCUMULATED OR SPILLED SEDIMENTS WILL BE CLEANED IMMEDIATELY, AND DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THIS EROSION & SEDIMENT CONTROL PLAN.

STOCKPILE MANAGEMENT WILL BE DONE IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL (CHAPTER 4). TOPSOIL STOCKPILES WILL BE LOCATED AS DEPICTED ON THE PLANS, AND WILL BE TREATED AS DISTURBED GROUND, I.E., SURROUNDED BY SILT FENCE, AND SEEDED TO GRASS AFTER ALL THE TOPSOIL TO BE STRIPPED IS PLACED IN THE STOCKPILE. STOCKPILE SLOPES SHALL NOT EXCEED 2:1.

TOPSOILING SHALL TAKE PLACE AS AREAS ARE BROUGHT TO GRADE. THE TOPSOIL THAT SHALL BE SPREAD IS OF NATURAL ORIGIN AND WILL BE TAKEN FROM THE TOPSOIL STOCKPILE(S) REFERRED TO ABOVE. STONES LARGER THAN 2 INCHES IN DIAMETER AND OTHER DEBRIS WILL BE REMOVED FROM THE TOPSOIL WITH A RAKE. TOPSOIL SHALL BE SPREAD AT A MINIMUM DEPTH OF 4 INCHES OVER ALL DISTURBED AREAS. IN ORDER TO "BOND" THE TOPSOIL TO THE SUBSOIL, THE SUBGRADE WILL BE LOOSENED BY "TRACKING" WITH A BULLDOZER IMMEDIATELY BEFORE APPLYING TOPSOIL. TOPSOIL WILL NOT BE PLACED IF THE SUBGRADE OR THE TOPSOIL IS FROZEN OR TOO WET. HEAVY RUBBER-TIRED VEHICLES WILL BE EXCLUDED FROM THE NEWLY TOPSOILED AREAS TO PREVENT EXCESSIVE COMPACTION WHICH COULD HINDER SEED GERMINATION AND SEEDLING GROWTH.

PERMANENT SEEDING WILL BE DONE AS DISTURBED AREAS ARE BROUGHT TO GRADE AND TOPSOILED AS LONG AS SUCH SEEDING IS DONE BETWEEN APRIL 1 AND JULY OR AUGUST 15 THROUGH OCTOBER 31. WITHIN 7 DAYS AFTER TOPSOIL IS APPLIED THE APPROPRIATE SEED MIX WILL BE BROADCAST AT THE PRESCRIBED RATE FOR THAT PARTICULAR MIX. THE SELECTED SEED MIX WILL BE FROM THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, FIGURE PS-3. PRIOR TO SEEDING, FERTILIZER WILL BE APPLIED AT THE RATE OF 7.5 PER 1,000 SQUARE FEET (10-10-10 OR EQUIVALENT), AND GROUND LIMESTONE WILL BE APPLIED AT THE RATE OF 200 POUNDS PER 1,000 SQUARE FEET. THE LIME AND FERTILIZER WILL BE LIGHTLY WORKED TO A DEPTH OF 3 TO 4 INCHES. SEED SHALL BE APPLIED UNIFORMLY USING A CYCLONE SEEDER (HYDROSEEDING MAY BE USED IN LIEU OF CONVENTIONAL SEEDING METHODS.) HAY MULCH WILL BE APPLIED AT THE RATE OF 100 POUNDS (APPROXIMATELY 2 BALES) PER 1,000 SQUARE FEET, WHERE SLOPES EXCEED 10 PERCENT. JUTE NETTING SHALL BE USED TO ANCHOR THE HAY MULCH IN PLACE. ANY SUCH NETTING WILL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE: THE SEEDBED WILL BE INSPECTED AT LEAST ONCE PER WEEK, AND WITHIN 24 HOURS OF A RAINFALL IN AN AMOUNT EXCEEDING 0.5 INCHES IN 24 HOURS. IN ANY AREAS THAT SUSTAIN DAMAGE, THE TOPSOIL WILL BE REAPPLIED AND SMOOTHED, AND RESEEDED AS DESCRIBED ABOVE. THE NEWLY ESTABLISHED GRASS WILL NOT BE MOWN UNTIL IT REACHES A HEIGHT OF 6 INCHES. MOWING WILL NOT TAKE PLACE WHEN THE GROUND SURFACE IS WET. THE FIRST MOWING WILL TAKE 33 TO 50 PERCENT OF THE GRASS HEIGHT (I.E., NOT BELOW 3 INCHES). MULCH MATERIALS WILL NOT BE REMOVED, BUT WILL BE ALLOWED TO DISINTEGRATE OVER TIME.

WHERE BARE GROUND NEEDS TO BE PROTECTED FOR RELATIVELY SHORT PERIODS, OR WHERE THE SEEDING SEASONS FOR PERMANENT SEEDINGS CAN NOT BE ADHERED TO, TEMPORARY SEEDING MAY BE USED. THE RECOMMENDED SEED MIX WILL VARY UPON CIRCUMSTANCES, BUT SHALL BE IN COMPLIANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, FIGURE TS-2. TEMPORARY SEEDING RATES AND DATES, WHERE THE SEASON PRECLUDES ANY TYPE OF SEEDING, AN ANCHORED MULCH WILL BE EMPLOYED TO PROTECT BARE SOIL AREAS.

CONSTRUCTION SEQUENCE PRIOR TO THE COMMENCEMENT OF ANY EARTH DISTURBANCES, THE DEVELOPER AND HIS CONTRACTOR SHALL MEET WITH TOWN STAFF FOR A PRECONSTRUCTION CONFERENCE.

- 1) INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON PLAN.
- 2) INSTALL EROSION AND SEDIMENT CONTROL.
- 3) CONSTRUCT THE STORMWATER QUALITY BASIN. TOPSOIL WILL BE APPLIED TO THE BASIN SIDESLOPES IMMEDIATELY AFTER CONSTRUCTION, AND THE SIDESLOPES WILL BE SEEDED. INSTALL SEDIMENT BARRIERS ALONG THE ROAD AND IN THE AREA OF THE BASIN AS DEPICTED ON THE PLANS.
- 4) STRIP TOPSOIL FROM THE ROADWAY AND STOCKPILE TOPSOIL ACCORDING TO THE PLAN. SEED STRIPPED AREAS THAT ARE NOT TO BE WORKED FOR 30 DAYS IMMEDIATELY WITH PERENNIAL RYEGRASS AT THE RATE OF 40 LBS./ACRE.
- 5) GRADE THE ROAD TO ATTAIN THE PLANNED SUBGRADE PROFILE AND GRADE SIDESLOPES TO PLAN.
- 6) APPLY TOPSOIL AND PERMANENT SEED MIX AND APPLY AND ANCHOR MULCH TO ALL FINISHED SLOPES.
- 7) INSTALL ALL DRAINAGE STARTING AT THE OUTFALL AND PROCEEDING UPGRADIENT. THE CONTRACTOR WILL ENSURE THAT ADEQUATE PROTECTION IS PROVIDED AT THE OUTLET OF THE DRAINAGE SYSTEM SO THAT SEDIMENTS WILL BE PREVENTED FROM MIGRATING OFF THE SITE. NO WATER WILL BE ALLOWED TO ENTER THE DRAINAGE SYSTEM UNTIL THE OUTLET IS PROTECTED. ALL DRAINAGE COMPONENTS WILL BE CHECKED ON A REGULAR BASIS AND CLEANED AS NEEDED TO MAINTAIN PROPER FUNCTION.
- 8) PLACE, GRADE AND COMPACT THE SUBGRADE AGGREGATE TO ESTABLISH THE ROADWAY BASE TOPSOIL AND GRADE ALL SLOPES/DISTURBED AREAS WITHIN 2 FEET OF THE OUTSIDE OF THE PROPOSED CURBS.
- 9) LAY DOWN FIRST COURSE OF BITUMINOUS PAVEMENT.
- 10) INSTALL CURBING (WHERE REQUIRED).
- 11) APPLY TOP COURSE OF BITUMINOUS PAVEMENT.
- 12) REMOVE SILT FENCE AFTER TOPSOIL STABILIZED.

DISPOSAL OF SEDIMENTS - ANY SEDIMENT REMOVED FROM ANY EROSION AND SEDIMENT CONTROL MEASURE AS PART OF SITE MAINTENANCE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH THE INTENT OF THIS PLAN. NO SEDIMENT SHALL BE DEPOSITED IN ANY WETLAND AREA.

FIELD CHANGES - IF FIELD MODIFICATIONS OF PLANNED MEASURES ARE NEEDED TO PROPERLY ADDRESS ANY EROSION OR SEDIMENTATION SITUATION, SUCH CHANGES MAY BE MADE ONLY AFTER NOTIFYING TOWN STAFF. ADDITIONAL NON-STRUCTURAL MEASURES MAY BE ADDED WITHOUT PRIOR NOTIFICATION.

STORMWATER QUALITY BASIN CONSTRUCTION NOTES:

1. STORMWATER QUALITY BASIN EMBANKMENTS SHALL BE CONSTRUCTED OF SILTY SAND AND/OR CLAYEY MATERIALS. ON-SITE BORROW MATERIAL MAY BE USED IF SUITABLE DEPOSITS ARE FOUND.
 2. EMBANKMENT FILL SHALL CONTAIN AT LEAST 15% BY WEIGHT OF MATERIAL PASSING THE #200 SIEVE AND NOT MORE THAN 50% PASSING THE #100 SIEVE.
 3. EMBANKMENT FILL SHALL HAVE NO STONES LARGER THAN 6" IN THEIR GREATEST DIMENSION. NO STONES LARGER THAN 3" IN THEIR GREATEST DIMENSION SHALL BE ALLOWED WITHIN 2 FEET OF STRUCTURES OR PIPES.
 4. ALL FILL MATERIAL SHALL BE FREE OF TOPSOIL, ROOTS, STUMPS, ORGANICS, FROZEN MATERIAL AND OTHER DELETERIOUS MATTER.
 5. ALL EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% MINIMUM RELATIVE COMPACTIONS DETERMINED BY ASTM D1557 - MODIFIED PROCTOR. THE MAXIMUM LOOSE LIFT THICKNESS OF EMBANKMENT FILL SHALL BE 12".
 6. ALL TOPSOIL, ORGANICS, ROOTS AND OTHER DELETERIOUS MATTER SHALL BE REMOVED FROM THE EXISTING GROUND SURFACE PRIOR TO CONSTRUCTION OF THE PROPOSED EMBANKMENTS.
 7. ALL EMBANKMENTS AND DISTURBED AREAS OF THE STORMWATER QUALITY BASIN SHALL BE PERMANENTLY STABILIZED WITH 4" LOAM, SEED AND MULCH. SUITABLE HYDROSEEDING EQUIPMENT MAY BE USED FOR APPLICATION OF SEED, MULCH AND/OR FERTILIZER. THE FOLLOWING SEED MIX SHALL BE USED IN THESE AREAS.
- | VARIETY | LBS./ACRE |
|---------------------|-----------|
| CREeping RED FESCUE | 20 |
| REDTOP | 2 |
| BENT GRASS | 15 |
| | TOTAL 37 |

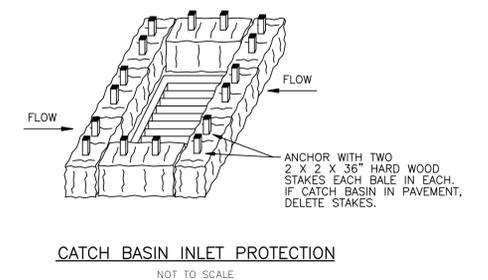
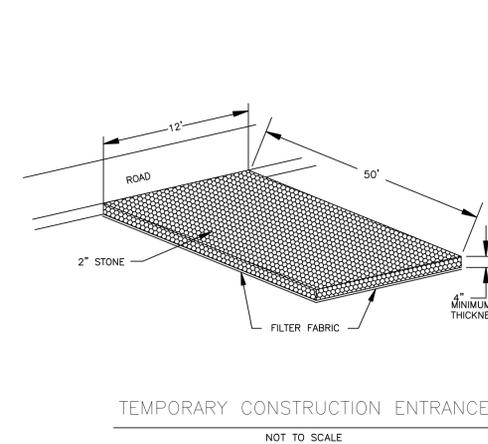
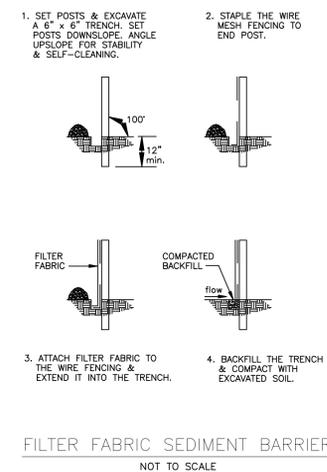
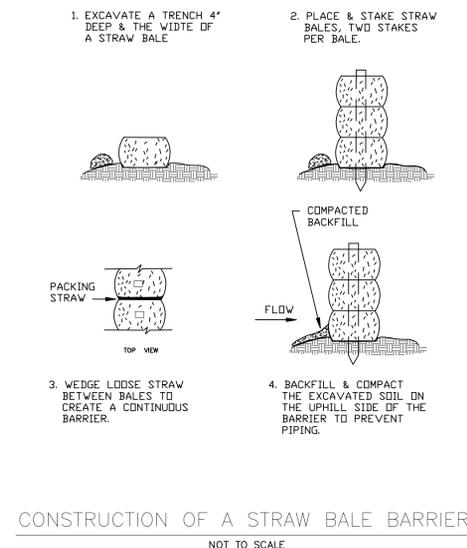
STORMWATER QUALITY BASIN OPERATION AND MAINTENANCE NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS PRIOR TO COMPLETION OF THE ROADWAY.
2. DURING THE FIRST YEAR OF OPERATION, THE BASIN SHALL BE INSPECTED ON WEEKLY BASIS OR WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCH OR GREATER. ANY EROSION OF EMBANKMENTS OR OUTLET AREAS SHALL BE REPAIRED PROMPTLY. ANY DEBRIS SHALL BE REMOVED AND DISPOSED OF. SEDIMENTATION THAT WOULD INTERFERE WITH PROPER OPERATION OF THE BASIN SHALL BE REMOVED AND DISPOSED OF AND THE AREA RESTORED AND STABILIZED AS REQUIRED.
3. AFTER THE BASIN HAS BEEN IN OPERATION FOR ONE YEAR, INSPECTIONS SHALL BE PERFORMED QUARTERLY OR WITHIN 24 HOURS AFTER A STORM EVENT OF 2.0 INCHES OR GREATER. QUARTERLY INSPECTIONS SHALL INCLUDE THE FOLLOWING ITEMS:
 - NOXIOUS WEEDS SHALL BE REMOVED. PERFORM ANY MOWING OPERATIONS REQUIRED.
 - INSPECT EMBANKMENTS FOR ANY WOODY GROWTH. ALL TREES, VINES AND OTHER WOODY PLANTS SHALL BE REMOVED AND VOIDS LEFT FROM THEIR REMOVAL SHALL BE REPAIRED.
 - INSPECT EMBANKMENTS FOR ANY ANIMAL BURROWS. ALL BURROWS AND VOIDS SHALL BE REPAIRED IMMEDIATELY.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN FOREBAY AND OTHER AREAS TO RESTORE ORIGINAL DESIGN GRADES. DISTURBED AREAS SHALL BE RESTABILIZED AS REQUIRED AFTER REMOVAL OF SEDIMENT.
 - INLETS AND OUTLETS SHALL BE INSPECTED FOR SCOUR DAMAGE AND EROSION AND REPAIRED AS REQUIRED.
 - ANY EVIDENCE OF PIPING OR SEEPAGE AT THE TOE OF EMBANKMENTS OR AROUND INLET/OUTLET STRUCTURES SHALL BE INVESTIGATED BY A QUALIFIED PROFESSIONAL ENGINEER AND REPORTED TO THE TOWN. REQUIRED REPAIRS TO MAINTAIN THE PROPER FUNCTION OR REPAIR POTENTIAL STRUCTURAL DEFICIENCIES IN THE BASIN SHALL BE IMPLEMENTED WITHIN ONE MONTH OF DISCOVERY OF THE PROBLEM OR AT DISCRETION OF THE RESPONSIBLE PROFESSIONAL ENGINEER PERFORMING THE INVESTIGATION OR DESIGNING SUCH REPAIRS. THE ENGINEER SHALL CERTIFY THAT ALL REPAIRS ARE PERFORMED TO HIS/HER SATISFACTION AND SHALL PROVIDE SUCH CERTIFICATION TO THE TOWN.

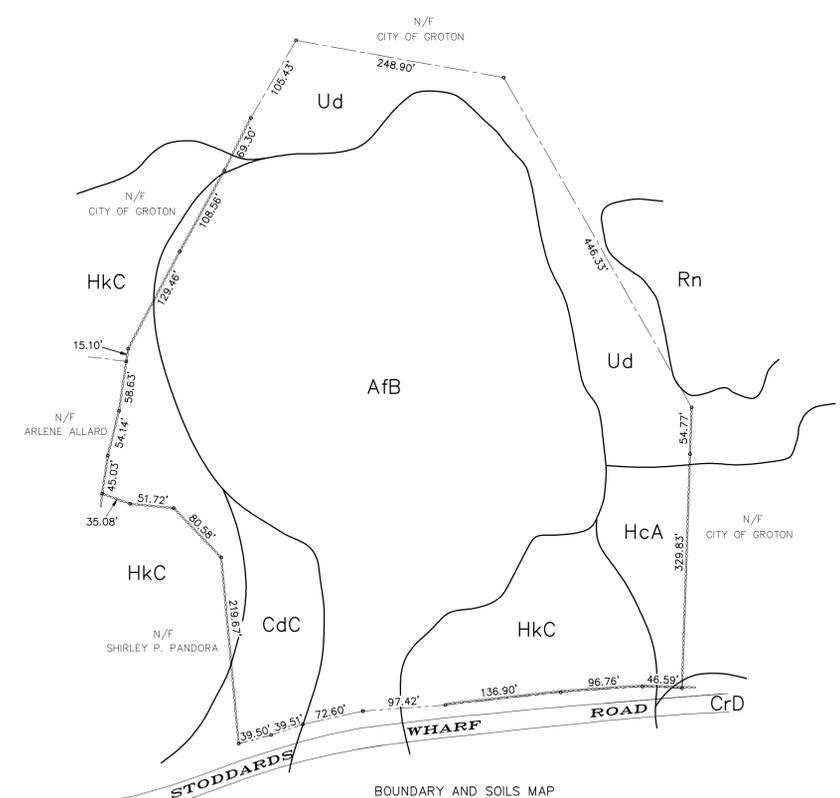
STORMWATER SYSTEM OPERATION AND MAINTENANCE NOTES:

- PROVIDE ANNUAL STREET SWEEPING, PREFERABLY AFTER FINAL SNOW MELT TO ALLEVIATE SEDIMENT BUILDUP IN CATCH BASIN SUMPS AND TO INSURE EFFICIENT TSS REMOVAL FROM STORMWATER
- REMOVE SEDIMENT FROM CATCH BASIN SUMPS WHEN SEDIMENT REACHES HALF THE DEPTH OF THE SUMP.
- INSPECT CATCH BASINS FOR TRASH AND DEBRIS BI-ANNUALLY. REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM PIPE INLETS AND OUTLETS TO PREVENT CLOGGING.
- REMOVE ACCUMULATED TRASH AND LEAVES FROM CATCH BASIN GRATES TO INSURE ADEQUATE GRATE INFLOW CAPACITIES.

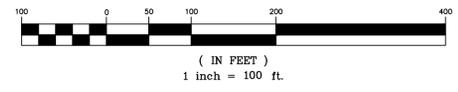
APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____	
CHAIRMAN OR SECRETARY	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____	
LOT NUMBERS ASSIGNED BY THE ASSESSOR	
ASSESSOR	DATE
IWVC	APPLICATION# _____
	APPROVED, _____
NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)	
NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)	
WETLANDS OFFICER	DATE
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT.	
PUBLIC WORKS DIRECTOR/TOWN ENGINEER	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION	
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION	DATE
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION	
ZONING ENFORCEMENT OFFICER	DATE



PLAN SHOWING
EROSION AND SEDIMENT CONTROL
NARRATIVE AND DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
JULY 2022
REVISED: OCTOBER 31, 2022



BOUNDARY AND SOILS MAP
THIS IS NOT A SURVEY
TOTAL AREA = 9.21 ACRES
GRAPHIC SCALE



APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____	
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LOT NUMBERS ASSIGNED BY THE ASSESSOR	
ASSESSOR	DATE
IWWC APPLICATION# _____	APPROVED _____
NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)	
NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA: NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)	
WETLANDS OFFICER	DATE
APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____	
PUBLIC WORKS DIRECTOR/TOWN ENGINEER	DATE
EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION	
CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION	DATE
APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____	
ZONING ENFORCEMENT OFFICER	DATE

LEGEND

- — — — — STONE WALL
- — — — — PROPERTY LINE
- — — — — STREET LINE
- 98 STREET NUMBER

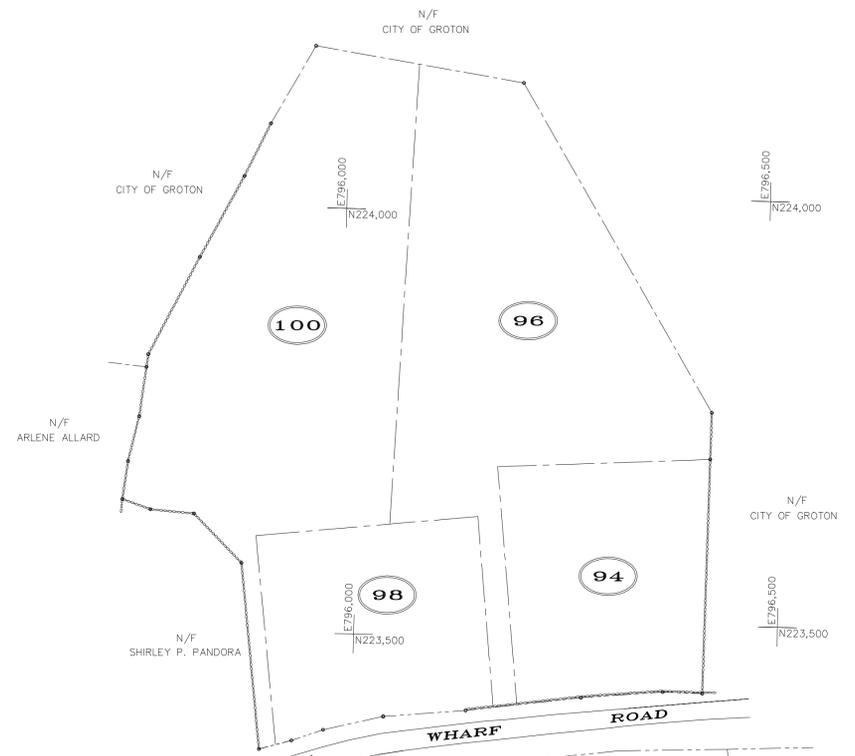
SOILS LEGEND

- AfB - AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- CdC - CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
- CrD - CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
- HcA - HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
- HkC - HINCKLEY GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES
- Rn - RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
- Ud - UDORTHTENS-URBAN LAND COMPLEX

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

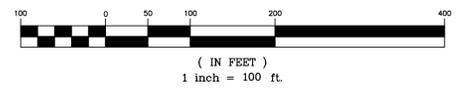
GENERAL NOTES:

1. MAP REFERENCES:
 - A) SUBDIVISION PLAN PREPARED FOR AMER JAVAD 98 STODDARDS WHARF ROAD - (CONN. RTE #214) LEDYARD, CONNECTICUT BOUNDARY SURVEY MAP DATE: 9/12/11 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
 - B) LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 98 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
2. CALL BEFORE YOU DIG AT 1-800-922-4455 BEFORE ANY CONSTRUCTION ACTIVITY.
3. ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
4. THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
5. HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
6. ZONING SETBACKS: LOTS SUBMITTED AS A SET-ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8-30g.
 - MINIMUM FRONT YARD SETBACK 12'
 - MINIMUM SIDE YARD SETBACK 6'
 - MINIMUM REAR YARD SETBACK 15'
7. PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.

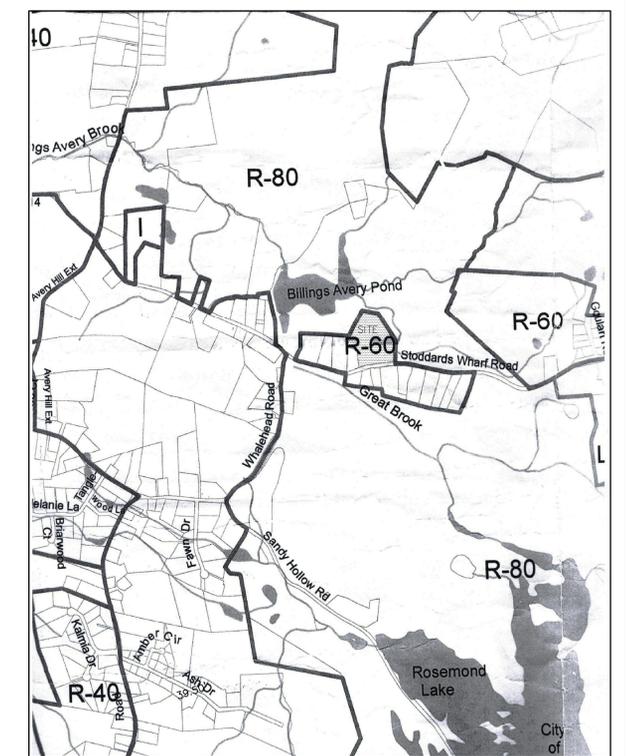


PARCEL HISTORY MAP

THIS IS NOT A SURVEY
PARCEL HISTORY
TOTAL AREA ON MARCH 22, 1962 = 9.21 ACRES
TOTAL NUMBER OF LOTS CREATED FROM ORIGINAL TRACT = 4
GRAPHIC SCALE

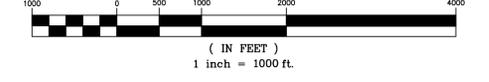


DIETER & GARDNER
LAND SURVEYORS • PLANNERS
P.O. BOX 335
1641 CONNECTICUT ROUTE 12
GALES FERRY, CT, 06335
(860) 484-7455
EMAIL: DIETER.GARDNER@YAHOO.COM



LOCATION MAP

ZONING DISTRICT: R-60
GRAPHIC SCALE



SHEET INDEX

- SHEET 1 - 100 SCALE BOUNDARY MAP; PARCEL HISTORY MAP; LOCATION MAP AND GENERAL NOTES
- SHEET 2 - 40 SCALE A-2 PLAN
- SHEET 3 - 40 SCALE CONCEPTUAL LAYOUT PLAN
- SHEET 4 - DEEP TEST PIT DATA
- SHEET 5 - PERCOLATION TEST RESULTS AND SEPTIC SYSTEM DESIGN CRITERIA
- SHEET 6 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 7 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 8 - 40 SCALE SIGHTLINE DEMONSTRATION PLAN
- SHEET 9 - EROSION AND SEDIMENT CONTROL NARRATIVE AND DETAILS
- SHEET 10 - CONSTRUCTION DETAILS

**PLAN SHOWING
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
SCALES AS SHOWN
JULY 2022
REVISED: OCTOBER 31, 2022**

SHEET 1 OF 10

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D". TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
DATE: JULY 7, 2022

THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG FBK#327



DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 1641 CONNECTICUT ROUTE 12
 P.O. BOX 335
 GALES FERRY, CT. 06335
 (860) 464-7455
 EMAIL: DIETER.GARDNER@YAHOO.COM

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____
 THE LEDYARD PLANNING AND ZONING COMMISSION ON _____

LOT NUMBERS ASSIGNED BY THE ASSESSOR _____

ASSESSOR _____ DATE _____

IWWC APPLICATION# _____
 APPROVED, _____

NO PERMIT NECESSARY. (NOT WITHIN A REGULATED AREA)
 NOT APPLICABLE AT THIS TIME. (WITHIN A REGULATED AREA. NO REGULATED ACTIVITY PROPOSED AT THIS TIME.)

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CERTIFIED BY VOTE OF _____ DATE _____
 THE LEDYARD PLANNING AND ZONING COMMISSION ON _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____

ZONING ENFORCEMENT OFFICER _____ DATE _____



LEGEND

- STONE WALL
- PROPERTY LINE
- STREET LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EDGE OF WETLANDS & FLAG NUMBER
- BUILDING SETBACK LINE
- LIMITS OF DISTURBANCE
- APPROXIMATE DEEP TEST PIT
- APPROXIMATE PERC TEST LOCATION
- UTILITY POLE
- CONCEPTUAL HOME
- CONCEPTUAL PRIMARY SEPTIC
- CONCEPTUAL RESERVE AREA
- CONCEPTUAL WELL
- TOPSOIL STOCKPILE
- HAYBALES/SILT FENCE/WOODCHIPS
- DEEP TEST PIT FOR MONITORING

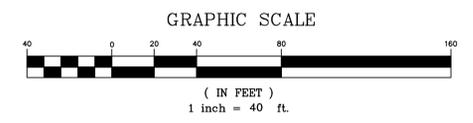
I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

Ian Cole
 IAN COLE
 SOIL SCIENTIST

THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF, AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY. THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

© THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN. JOB# 22-007.DWG FBK#327

NOTE: FOOTING DRAINS NOT REQUIRED OR PROPOSED.



**PLAN SHOWING
 RESUBDIVISION
 PROPERTY OF
 AVERY BROOK HOMES LLC
 94, 96, 98 AND 100
 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT
 SCALE: 1"=40'**

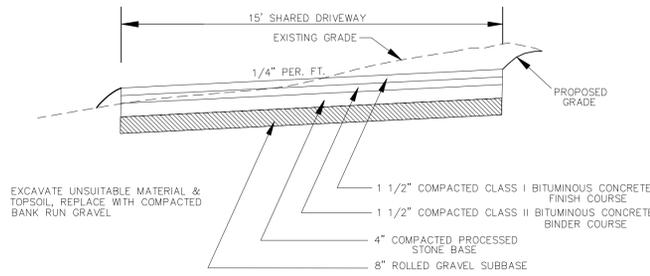
JULY 2022
 REVISED: OCTOBER 31, 2022
 REVISED: DECEMBER 5, 2022
 REVISED: DECEMBER 13, 2022

SHEET 3 OF 10

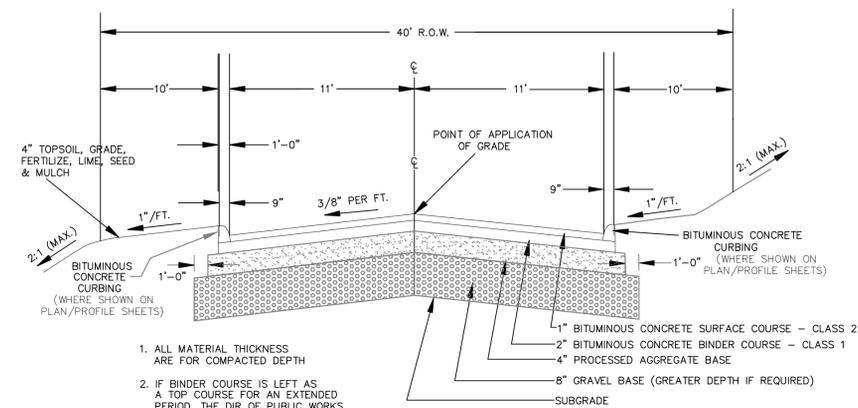
THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D" AND TOPOGRAPHIC ACCURACY T-2. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
 DATE: JULY 7, 2022

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

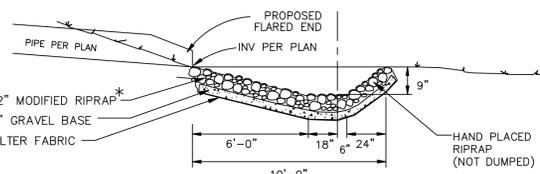
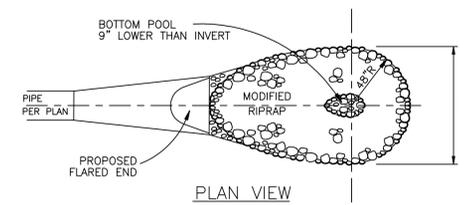


TYPICAL PAVED COMMON DRIVEWAY CROSS-SECTION
NOT TO SCALE

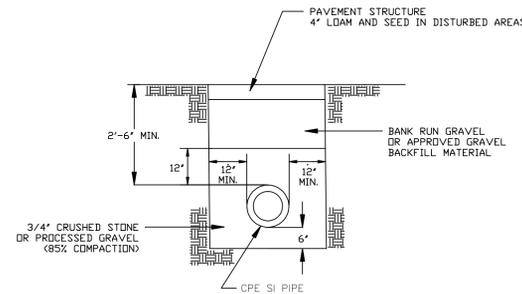


- ALL MATERIAL THICKNESS ARE FOR COMPACTED DEPTH
- IF BINDER COURSE IS LEFT AS A TOP COURSE FOR AN EXTENDED PERIOD, THE DIR OF PUBLIC WORKS MAY REQUIRE THAT A TACK COAT OF BITUMINOUS MATERIAL MAY BE APPLIED BEFORE LAYING THE BITUMINOUS CONCRETE SURFACE COURSE.
- SUBBASE DEPTH SHALL BE INCREASED TO 18" WHERE LEDGE ROCK IS ENCOUNTERED.
- FOR CONSTRUCTION MATERIAL STANDARDS, REFER TO STATE OF CONNECTICUT, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 813, AS AMENDED.

AVERY BROOK CIRCLE CROSS SECTION
(N.T.S.)



SECTION VIEW
PREFORMED SCOUR HOLE
NOT TO SCALE
FOR FLARED END UNIT



NOTE:
1. IF PIPE IS PLACED IN OR ON LEDGE, ALL LEDGE WITHIN 12" OF PIPE SHALL BE REMOVED AND REPLACED WITH PIPE BEDDING.

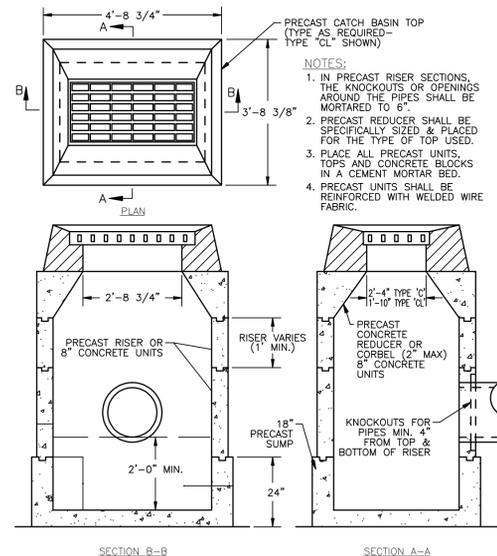
DRAINAGE PIPE TRENCH
NOT TO SCALE



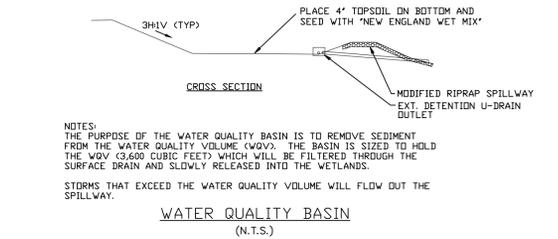
SECURE TO 1 1/2" GALVANIZED STEEL POST WITH (2) 1/4" GALVANIZED BOLTS (1 TOP, 1 BOTTOM)

NOTE:
SIGN TO BE INSTALLED IN ACCORDANCE WITH STATE OF CONNECTICUT D.S.T. STANDARDS

STOP SIGN
NOT TO SCALE

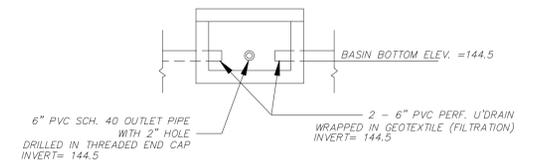


SECTION B-B
SECTION A-A
PRECAST CATCH BASIN
NOT TO SCALE

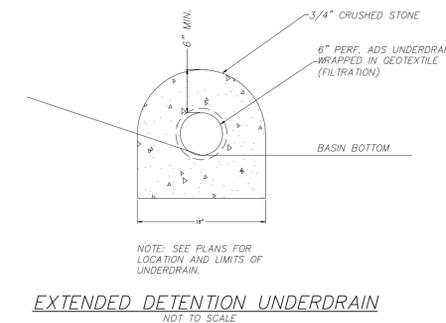


NOTES:
THE PURPOSE OF THE WATER QUALITY BASIN IS TO REMOVE SEDIMENT FROM THE WATER QUALITY VOLUME (WQV). THE BASIN IS SIZED TO HOLD THE WQV (3,600 CUBIC FEET) WHICH WILL BE FILTERED THROUGH THE SURFACE DRAIN AND SLOWLY RELEASED INTO THE WETLANDS.
STORMS THAT EXCEED THE WATER QUALITY VOLUME WILL FLOW OUT THE SPILLWAY.

WATER QUALITY BASIN
(N.T.S.)



D-BOX OUTLET
EXTENDED DETENTION
UNDERDRAIN OUTLET
NOT TO SCALE



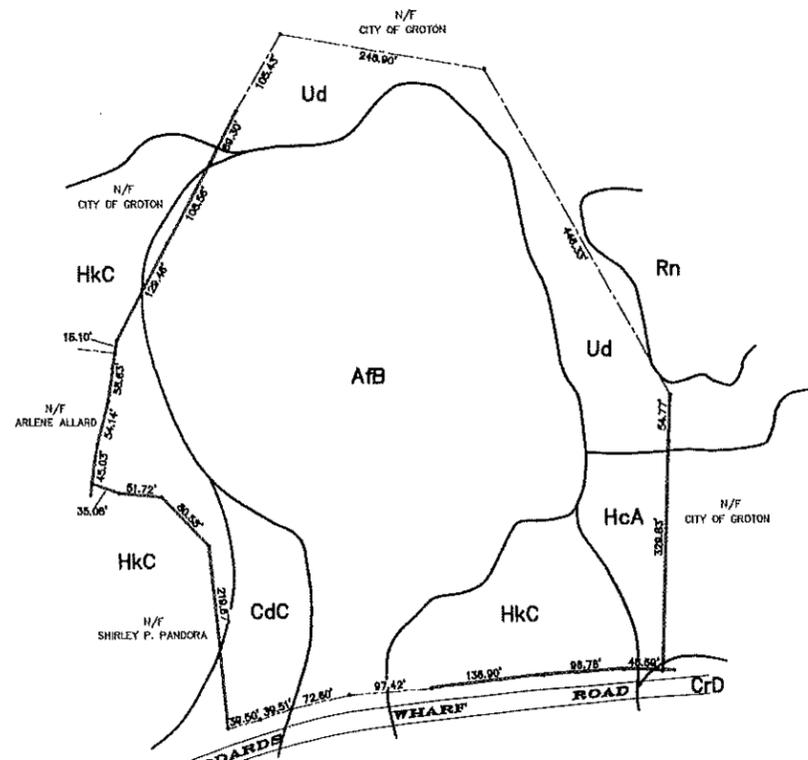
EXTENDED DETENTION UNDERDRAIN
NOT TO SCALE

PLAN SHOWING
CONSTRUCTION DETAILS
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LEDYARD, CONNECTICUT

JULY 2022
REVISED: OCTOBER 31, 2022
REVISED: DECEMBER 13, 2022

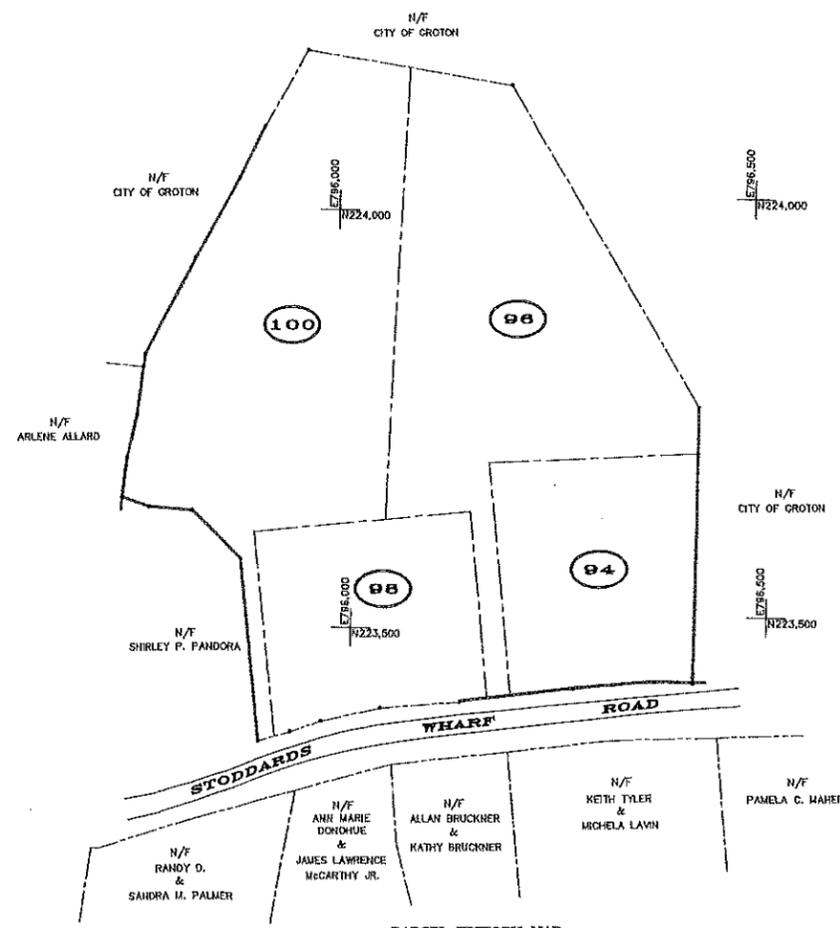
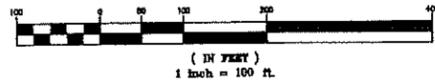
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DIETER & GARDNER
LAND SURVEYORS • PLANNERS
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1641 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
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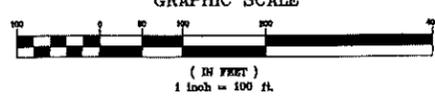
BOUNDARY AND SOILS MAP
THIS IS NOT A SURVEY

TOTAL AREA = 9.21 ACRES
GRAPHIC SCALE

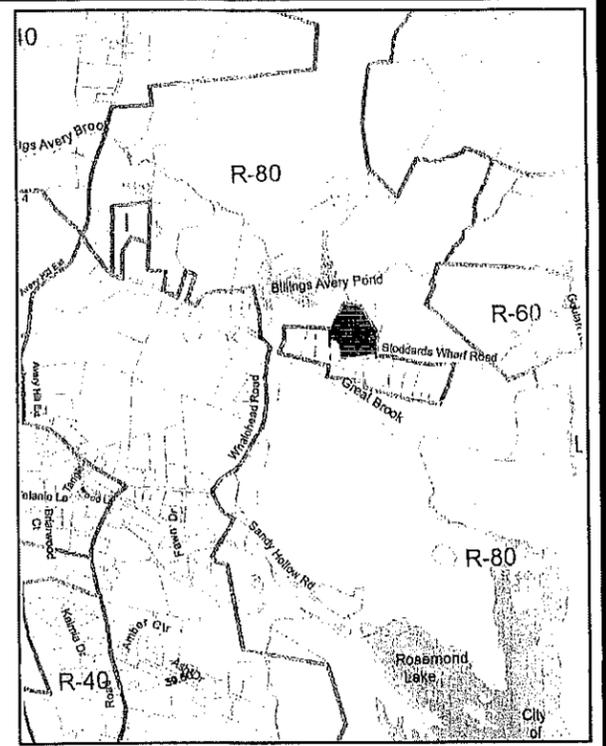


PARCEL HISTORY MAP
THIS IS NOT A SURVEY

TOTAL AREA ON MARCH 22, 1982 = 9.21 ACRES
TOTAL NUMBER OF LOTS CREATED FROM ORIGINAL TRACT = 4
GRAPHIC SCALE

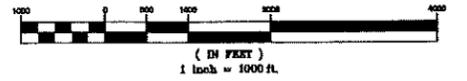


- GENERAL NOTES:
1. MAP REFERENCES:
 - A) SUBDIVISION PLAN PREPARED FOR AMER JAVAD 98 STODDARDS WHARF ROAD - (CONV. RTE 214) LEDYARD, CONNECTICUT BOUNDARY SURVEY, MAP DATE: 9/12/11 SCALE: 1"=40' SHEET 1 OF 4 ADVANCED SURVEYS, LLC.
 - B) LOT DIVISION PLAN PROPERTY OF PANDE HOLDINGS, LLC 98 STODDARDS WHARF (CONNECTICUT ROUTE 214) LEDYARD, CONNECTICUT DATE: MAY 10, 2007 SCALE: 1"=40' SHEET NO. 1 OF 2. REVISIONS DATE: 5/23/07 STREET ADDRESS, LOCATION MAP & NOTE 12 ADDED.
 2. CALL BEFORE YOU DIG AT 1-800-922-4455 BEFORE ANY CONSTRUCTION ACTIVITY.
 3. ELEVATIONS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
 4. THIS SUBDIVISION WILL BE SERVED BY ON SITE WELLS AND ON SITE SEWAGE SYSTEMS.
 5. HOUSES, WELLS, DRIVEWAYS, SEWAGE DISPOSAL SYSTEMS AND EROSION/SEDIMENT CONTROL MEASURES ARE SHOWN CONCEPTUALLY ONLY.
 6. ZONING SETBACKS: LOTS SUBMITTED AS A SET-ASIDE DEVELOPMENT AS DEFINED IN CONNECTICUT GENERAL STATUTES SECTION 8-30g. MINIMUM FRONT YARD SETBACK 12' MINIMUM SIDE YARD SETBACK 8' MINIMUM REAR YARD SETBACK 15'
 7. PASSIVE SOLAR TECHNIQUES AS PRESCRIBED BY LAW HAVE BEEN CONSIDERED IN THE DESIGN OF THIS SUBDIVISION.
 8. NO PARKING SIGNS SHALL BE PLACED AS REQUIRED BY DIRECTOR OF PUBLIC WORKS.
 9. ACTUAL CONDITIONS THAT DEVELOP OR ARE MORE CLEARLY ASSESSED DURING CONSTRUCTION MAY INDICATE THAT FIELD ADJUSTMENTS, INCLUDING ADDITIONAL DRAINAGE AND SIGHTLINE MEASURES, MAY BE NECESSARY FOR ADEQUATE STORMWATER MANAGEMENT. ADDITIONAL DESIGN EFFORT FOR INSTALLATION OF SUCH MEASURES SHALL BE UNDERTAKEN IN ACCORDANCE WITH DIRECTION FROM THE TOWN.
 10. THE TOWN WILL INSTALL THE REQUIRED ROAD SIGNAGE AND MARKINGS, THE COST OF WHICH WILL BE BACKCHARGED TO THE APPLICANT/OWNER.



LOCATION MAP
ZONING DISTRICT: R-60

GRAPHIC SCALE



SHEET INDEX

- SHEET 1 - 100 SCALE BOUNDARY MAP; PARCEL HISTORY MAP; LOCATION MAP AND GENERAL NOTES
- SHEET 2 - 40 SCALE A-2 PLAN
- SHEET 3 - 40 SCALE CONCEPTUAL LAYOUT PLAN
- SHEET 4 - DEEP TEST PIT DATA
- SHEET 5 - PERCOLATION TEST RESULTS AND SEPTIC SYSTEM DESIGN CRITERIA
- SHEET 6 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 7 - 40 SCALE PLAN/PROFILE AVERY BROOK CIRCLE
- SHEET 8 - 40 SCALE SIGHTLINE DEMONSTRATION PLAN
- SHEET 9 - EROSION AND SEDIMENT CONTROL NARRATIVE AND DETAILS
- SHEET 10 - CONSTRUCTION DETAILS

PLAN SHOWING
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT
SCALES AS SHOWN

JULY 2022
REVISED: OCTOBER 31, 2022
REVISED: DECEMBER 13, 2022

SHEET 1 OF 10

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENFORCED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON AN RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS "D". TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
DATE: JULY 7, 2022

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE RECREATION OF LAND. ALL DEFICIENCIES SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

KNOWING AND SECONDLY CONTROL PLAN COUNTERED BY YOUR OF THE LEDYARD PLANNING AND ZONING COMMISSION OF _____ DATE _____

LOT NUMBER ASSIGNED BY THE APPLICANT _____ DATE _____

APPLICANT _____ DATE _____

APPROVED _____ DATE _____

NO FURTHER REQUIREMENT (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME (WITHIN A REGULATED AREA, NO REGULATED ACTIVITY PROPOSED AT THIS TIME)

VEHICLE OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS ON THE YOUR BUSINESS FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

KNOWING AND SECONDLY CONTROL PLAN COUNTERED BY YOUR OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____ DATE _____

- LEGEND
- STONE WALL
 - - - PROPERTY LINE
 - STREET LINE
 - 98 STREET NUMBER

- SOILS LEGEND
- Afb - AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
 - CdC - CANTON AND CHARLTON EXTREMELY STONY FINE SANDY LOAMS, 3 TO 15 PERCENT SLOPES
 - CrD - CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 TO 45 PERCENT SLOPES
 - HcA - HAVEN SILT LOAM, 0 TO 3 PERCENT SLOPES
 - HkC - HINCKLEY GRAVELLY SANDY LOAM, 3 TO 18 PERCENT SLOPES
 - Rn - RIDGEBURY, LEICESTER AND WHITMAN EXTREMELY STONY FINE SANDY LOAM
 - Ud - UDORTENTS-URBAN LAND COMPLEX

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NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

DIETER & GARDNER
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(860) 484-7455
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Exhibit #36

IWWC

RECEIVED
JULY 11 2022
LAND USE DEPARTMENT

APPROVED BY THE LEDYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

KNOWN AND RECORDED CONTROL PLAN DESCRIBED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE APPLICANT _____

APPLICANT _____ DATE _____

TITLE APPLICATIONS _____

APPROVED _____

NO FURTHER EXEMPTION (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME (OTHER A REGULATED AREA; NO REGULATED ACTIVITY PERFORMED AT THIS TIME)

VIOLANCE OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS ON THE TOWN RECORDS FOR PUBLIC WAY LAYOUT.

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

KNOWN AND RECORDED CONTROL PLAN DESCRIBED BY VOTE OF THE LEDYARD PLANNING AND ZONING COMMISSION _____

CHAIRMAN OR SECRETARY OF THE LEDYARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE ZONING ENFORCEMENT OFFICER OF THE LEDYARD PLANNING COMMISSION _____

ZONING ENFORCEMENT OFFICER _____ DATE _____

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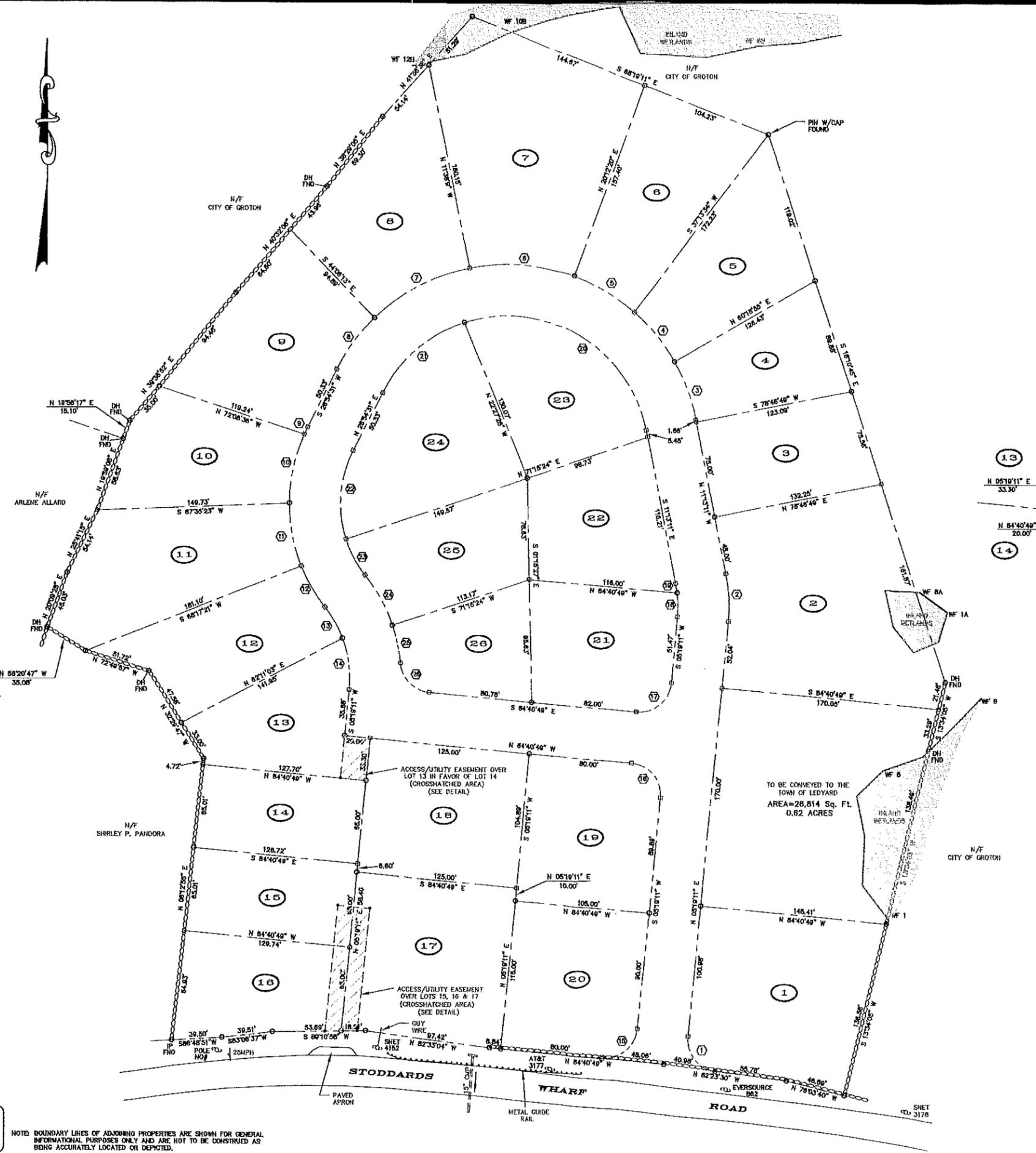
- LEGEND**
- STONE WALL
 - PROPERTY LINE
 - STREET LINE
 - DH FND DRILL HOLE FOUND
 - IP FND IRON PIPE FOUND
 - DRILL HOLE OR REBAR TO BE SET
 - MONUMENT OR DRILL HOLE TO BE SET
 - ⑦ CURVE TABLE NUMBER
 - ⊕ UTILITY POLE
 - WF 1 EDGE OF WETLANDS & FLAG NUMBER
 - ACCESS/UTILITY EASEMENT
 - ② LOT NUMBER

I HAVE REVIEWED THE WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

Ian Cole
 IAN COLE
 SOIL SCIENTIST

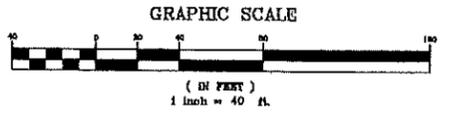
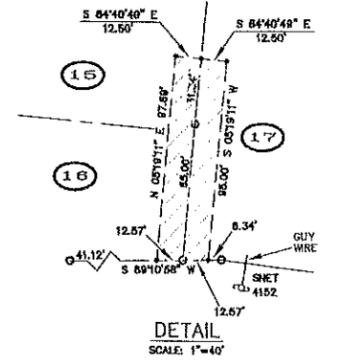
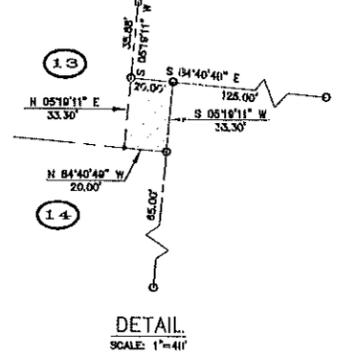
THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF THE PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS OR HER BEST KNOWLEDGE, INFORMATION AND BELIEF, AS SUCH IT CONSTITUTES NEITHER GUARANTEE OR WARRANTY. THE STONE WALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

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LOT NUMBER	TOTAL AREA
1	17,363 Sq. Ft. 0.40 ACRES
2	23,432 Sq. Ft. 0.54 ACRES
3	0.54 ACRES
4	8,525 Sq. Ft. 0.20 ACRES
5	11,471 Sq. Ft. 0.26 ACRES
6	12,788 Sq. Ft. 0.29 ACRES
7	22,377 Sq. Ft. 0.51 ACRES
8	14,059 Sq. Ft. 0.32 ACRES
9	13,372 Sq. Ft. 0.31 ACRES
10	10,516 Sq. Ft. 0.24 ACRES
11	14,339 Sq. Ft. 0.33 ACRES
12	10,984 Sq. Ft. 0.25 ACRES
13	9,439 Sq. Ft. 0.22 ACRES
14	8,334 Sq. Ft. 0.19 ACRES
15	8,400 Sq. Ft. 0.19 ACRES
16	9,663 Sq. Ft. 0.22 ACRES
17	15,400 Sq. Ft. 0.35 ACRES
18	13,112 Sq. Ft. 0.30 ACRES
19	11,830 Sq. Ft. 0.27 ACRES
20	11,841 Sq. Ft. 0.27 ACRES
21	10,539 Sq. Ft. 0.24 ACRES
22	10,565 Sq. Ft. 0.24 ACRES
23	10,970 Sq. Ft. 0.25 ACRES
24	14,014 Sq. Ft. 0.32 ACRES
25	9,830 Sq. Ft. 0.23 ACRES
26	7,501 Sq. Ft. 0.17 ACRES

LOTS CURVE TABLE				
CURVE #	A	R	L	T
1	87°42'41"	25.00'	38.27'	24.02'
2	163°22'	130.00'	37.53'	18.89'
3	162°55'	150.00'	48.34'	24.38'
4	190°01'	150.00'	50.00'	25.24'
5	210°34'	150.00'	55.00'	27.81'
6	315°28'	150.00'	83.38'	42.79'
7	322°01'	150.00'	85.00'	43.88'
8	165°18'	150.00'	49.71'	25.09'
9	02°42'42"	130.00'	6.15'	3.08'
10	241°24'	130.00'	55.00'	27.82'
11	220°18'	130.00'	50.00'	25.31'
12	167°30'	130.00'	36.95'	18.80'
13	173°14'	90.00'	28.04'	14.14'
14	255°01'	80.00'	40.58'	20.64'
15	90°00'00"	25.00'	35.27'	25.00'
16	90°00'00"	25.00'	39.27'	25.00'
17	90°00'00"	25.00'	39.27'	25.00'
18	115°35'	90.00'	18.79'	9.43'
19	043°42'	90.00'	7.19'	3.60'
20	96°54'35"	110.00'	106.25'	124.13'
21	44°57'44"	110.00'	86.32'	45.52'
22	44°58'03"	99.00'	70.83'	37.25'
23	201°41'	90.00'	31.91'	16.12'
24	19°38'21"	130.00'	44.56'	22.50'
25	131°15'	130.00'	30.00'	15.07'
26	79°10'12"	25.00'	34.54'	20.67'



PLAN SHOWING RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT SCALE: 1"=40' JULY 2022 REVISED: OCTOBER 31, 2022

NOTE: BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE LAW ENFORCEMENT STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A BOUNDARY SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2. TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

TITLE: LAND SURVEYOR CT No. 14208
 DATE: JULY 7, 2022

DEEP TEST PIT DATA

WITNESSED AND RECORDED BY WENDY BROWN-ARNOLD RS, R/HS AND ALEX MOURLOU LEDGE LIGHT HEALTH DISTRICT ON 5/2/22, 8/5/22 AND 5/23/2022 AND WENDY BROWN-ARNOLD RS, R/HS ON JUNE 14, 2022.

APPROVED BY THE LEYARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL REQUIREMENTS SHALL BE COMPLETED BY DATE

TP 1 0-45" FILL-DISTURBED LOAM, ROCKS, BRICK NO MOTTLING NO WATER NO LEDGE

TP 16 0-11" TOPSOIL 11-37" BROWN FINE TO MED. SANDY LOAM 37-96" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES

TP 30 0-12" TOPSOIL 12-34" BROWN FINE SANDY LOAM (DEPTH VARIES) 34-98" TAN TO MED. TO FINE SAND W/GRAVEL AND GRAVEL, STRATIFIED

TP 44 0-6" TOPSOIL 6-14" BROWN FINE TO MED. SANDY LOAM 14-42" TAN TO GRAY SILT INCONSISTENT AROUND HOLE 42-102" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES

TP 50 0-12" TOPSOIL 12-32" LIGHT BROWN FINE TO VERY FINE SANDY LOAM 32-98" TAN TO BROWN MED. TO FINE SAND W/GRAVEL AND COBBLES

TP 72 0-8" TOPSOIL 8-32" BROWN FINE TO MED. SANDY LOAM 32-91" TAN TO GRAY MED. TO FINE SAND W/GRAVEL AND COBBLES

TP 83 0-8" TOPSOIL 8-31" BROWN FINE SANDY LOAM 31-104" TAN-BROWN COARSE SAND WITH GRAVEL AND COBBLES

APPROVED BY THE DIRECTOR OF PUBLIC WORKS ON THE TOWN ENGINEERING FOR PUBLIC WAY LAYOUT. PUBLIC WORKS DIRECTOR/TOWN ENGINEER DATE

DIETER & GARDNER LAND SURVEYORS + PLANNERS 1641 CONNECTICUT ROUTE 12 P.O. BOX 333 GALES FERRY, CT. 06435 (860) 464-7455 EMAIL: DIETER.GARDNER@YAHOO.COM

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PLAN SHOWING DEEP TEST PIT DATA RESUBDIVISION PROPERTY OF AVERY BROOK HOMES LLC 94, 96, 98 AND 100 STODDARDS WHARF ROAD A.K.A. CONNECTICUT ROUTE 214 LEDYARD, CONNECTICUT JULY 2022

PERCOLATION TESTS PERFORMED ON MAY 26 & 27, JUNE 3 AND JUNE 10, 2022 BY DIETER & GARDNER, INC. (JOEY TERRY AND MATT EMLYTA)

LOT 1	WATER QUALITY BASIN	WATER QUALITY BASIN	LOT 2	LOT 2	LOT 2	LOT 3	LOT 4	LOT 5
27" DEEP	30" DEEP	30" DEEP	28" DEEP	28" DEEP	28" DEEP	30" DEEP	30" DEEP	28" DEEP
TIME READING								
9:04 0 3/4"	9:05 10"	9:05 7 1/2"	9:07 13 1/2"	9:05 2"	9:07 8 1/2"	9:07 4"	9:07 13"	9:07 4"
9:09 9"	9:06 13 3/4"	9:10 11"	9:12 19"	9:08 20"	9:10 23"	9:08 13"	9:08 18"	9:08 13"
9:14 11"	9:06 18"	9:15 13 1/2"	9:17 24 1/2"	9:10 17"	9:12 24 1/2"	9:10 20 1/2"	9:10 20 1/2"	9:10 15 1/2"
9:19 11 1/2"	9:11 18"	9:20 18"	9:22 24 1/2"	9:15 19 1/2"	9:17 25 1/2"	9:15 23"	9:15 18"	9:15 18"
9:24 14"	9:16 20"	9:25 17 1/2"	9:27 26"	9:20 22"	9:22 16 1/2"	9:17 24"	9:17 20"	9:17 20"
9:29 15 1/2"	9:21 21"	9:30 10 1/2"	9:32 DRY	9:25 20"	9:27 27 1/2"	9:20 25"	9:20 20 1/2"	9:20 20 1/2"
9:34 17"	9:28 22"	9:35 20 1/2"		9:30 20 1/2"	9:32 28 1/2"	9:25 26 3/4"	9:25 23"	9:25 23 1/2"
9:39 18 1/4"	9:31 23"	9:40 21 1/2"		9:35 21 1/2"	9:37 28"	9:27 25 3/4"	9:27 21 1/2"	9:27 21 1/2"
9:44 19 1/4"	9:36 24"	9:45 22 1/2"		9:40 21 1/2"	9:42 DRY	9:27 27 3/4"	9:27 25"	9:27 25"
9:49 20 1/4"	9:41 25"			9:45 22 1/2"				9:31 26 1/2"
PERC RATE: 1 1/8 MINS.	PERC RATE: 1 1/8 MINS.	PERC RATE: 1 1/8 MINS.	PERC RATE: 1 1/3 MINS.	PERC RATE: 1 1/5 MINS.	PERC RATE: 1 1/5 MINS.	PERC RATE: 1 1/8 MINS.	PERC RATE: 1 1/3 MINS.	PERC RATE: 1 1/3 MINS.

SANITARY DESIGN CRITERIA
 A. ALL PRIMARY AND SEPTIC SYSTEM DESIGNS ARE LAYED OUT FOR THREE-BEDROOM HOMES. NO TUBS OVER 100 GALLONS IN SIZE OR GARBAGE DISPOSAL INTO SEPTIC SYSTEM PLANNED.
 B. THREE BEDROOM HOMES AT A PERC RATE OF 10.0 MIN/HCH OR LESS REQUIRES 405 S.F. OF EFFECTIVE LEACHING AREA.
 C. GST 8236 LEACHING SYSTEM SELECTED FOR LEACHING SYSTEM DESIGN.
 MINIMUM REQUIRED AREA IS 405 S.F./ 20.2 S.F./L.F. = 18.9' UNLESS MLSS GOVERNS.
 HF = HYDRAULIC FACTOR BASED ON GRADIENT AND DEPTH TO RESTRICTION
 FF = FLOW FACTOR, 1.5 FOR THREE BEDROOM HOME DESIGN
 PF = PERC FACTOR, 1.0 PERCOLATION RATE UP TO 10.0 MIN/HCH.

MLSS TABLE								
LOT NUMBER	DESIGN PITS	GRADIENT	RESTRICTION	HF	FF	PF	MLSS	SYSTEM
1	1, 2, 3 & 4	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
2	9, 10, 11 & 12	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
3	13 & 14	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
4	15 & 16	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
5	17 & 18	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
6	21 & 22	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
7	25 & 26	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
8	27 & 28	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
9	29, 30, 31 & 32	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
10	33 & 34	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
11	35 & 36	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
12	37 & 38	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
13	39 & 40	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
14	41 & 42	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
15	43 & 44	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
16	45 & 46	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
17	47 & 48	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
18	49 & 50	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
19	51 & 52	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
20	53 & 54	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
21	55 & 56	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
22	57 & 58	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
23	59 & 60	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
24	61 & 62	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236
25	63 & 64	MLSS	HOT	APPLICABLE	1.5	1.0		20 L.F. GST 8236

APPROVED BY THE LEYARD PLANNING AND BORING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

BORING AND RECORD CONTROL PLAN CERTIFIED BY VOTE OF THE LEYARD PLANNING AND BORING COMMISSION ON _____ DATE _____

LOT NUMBER APPROVED BY THE ADDRESSOR _____

ADDRESSOR _____ DATE _____

APPROVED _____ DATE _____

NO PRESENT EMBARRASSMENT (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME (WITHIN A REGULATED AREA NO REGULATED ACTIVITY PROPOSED AT THIS TIME)

WETLANDS OFFENSE _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

BORING AND RECORD CONTROL PLAN CERTIFIED BY VOTE OF THE LEYARD PLANNING AND BORING COMMISSION

CHAIRMAN OR SECRETARY OF THE LEYARD PLANNING AND BORING COMMISSION _____ DATE _____

APPROVED BY THE BORING ENFORCEMENT OFFICER OF THE LEYARD PLANNING COMMISSION _____

BORING ENFORCEMENT OFFICER _____ DATE _____

PLAN SHOWING
 PERCOLATION TEST DATA,
 SEPTIC SYSTEM DESIGN CRITERIA
 AND
 MINIMUM LEACHING SYSTEM SPREAD
 RESUBDIVISION
 PROPERTY OF
 AVERY BROOK HOMES LLC
 94, 96, 98 AND 100
 STODDARDS WHARF ROAD
 A.K.A.
 CONNECTICUT ROUTE 214
 LEDYARD, CONNECTICUT

DIETER & GARDNER
 LAND SURVEYORS • PLANNERS
 1841 CONNECTICUT ROUTE 12
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JULY 2022
 REVISION: OCTOBER 31, 2022

APPROVED BY THE LAYLAND PLANNING AND BOARDING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

ENGINEER AND SURVEYOR CONTROL PLAN CERTIFIED BY VOTE OF THE LAYLAND PLANNING AND BOARDING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSUMER _____ DATE _____

AMENDMENT _____ DATE _____

ITWC APPLICATION _____ DATE _____

APPROVED _____ DATE _____

NO PERMIT NECESSARY, (ONLY WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME, (WITHIN A REGULATED AREA)

NO REGULATED ACTIVITY PROPOSED AT THIS TIME.

WETLANDS OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

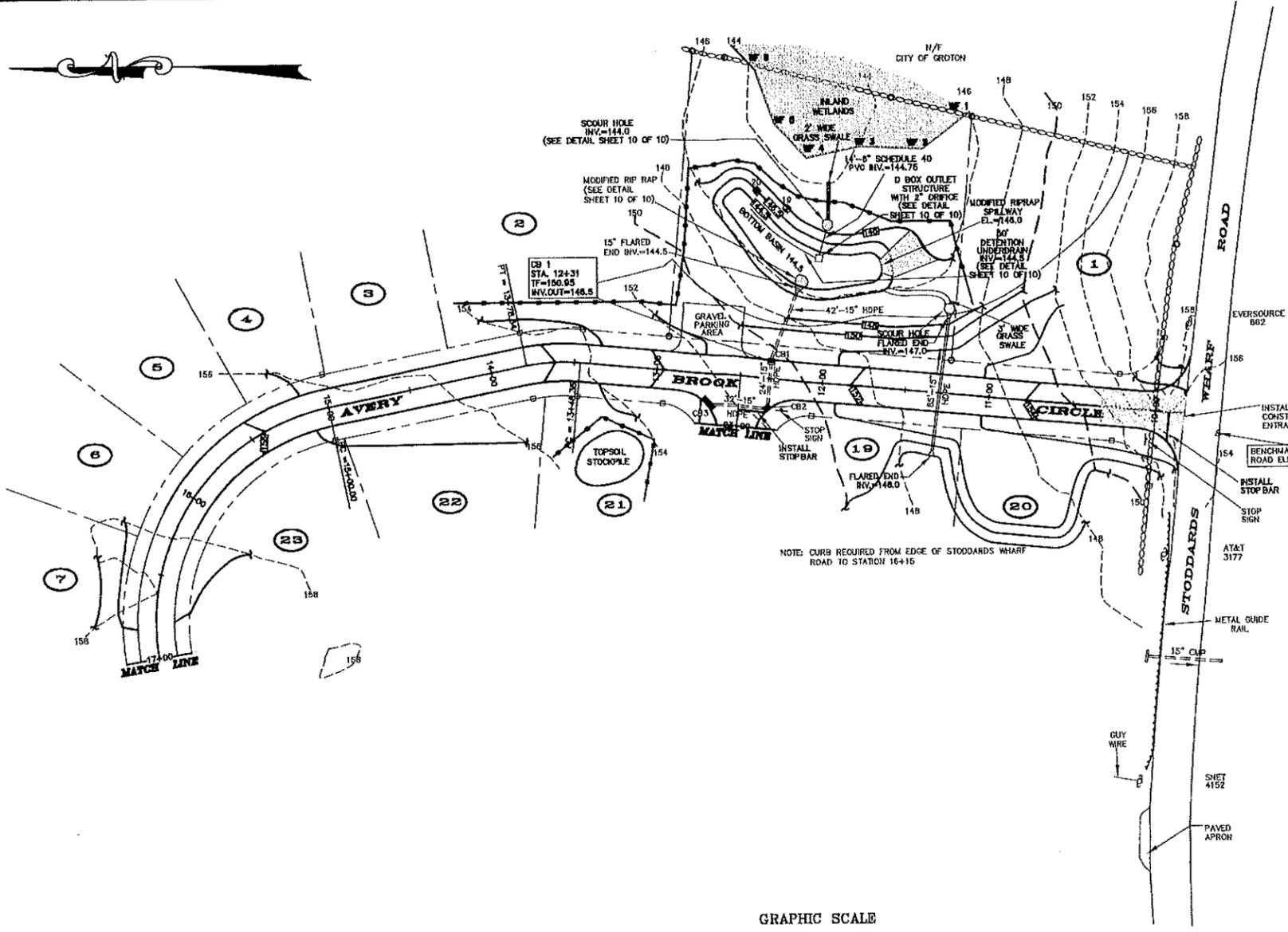
ENGINEER AND SURVEYOR CONTROL PLAN CERTIFIED BY VOTE OF THE LAYLAND PLANNING AND BOARDING COMMISSION _____ DATE _____

CHAIRMAN OR SECRETARY OF THE LAYLAND PLANNING AND BOARDING COMMISSION _____ DATE _____

APPROVED BY THE BOARDING SECRETARY OFFICER OF THE LAYLAND PLANNING COMMISSION _____ DATE _____

BOARDING SECRETARY OFFICER _____ DATE _____

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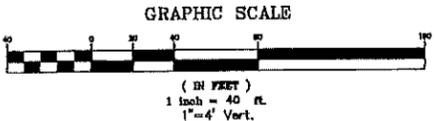
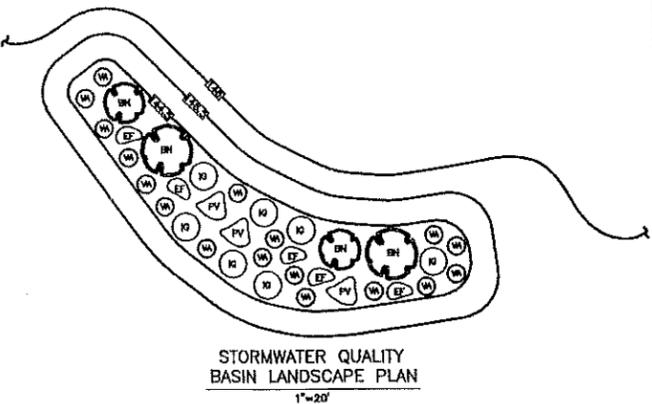


DEEP TEST PIT DATA

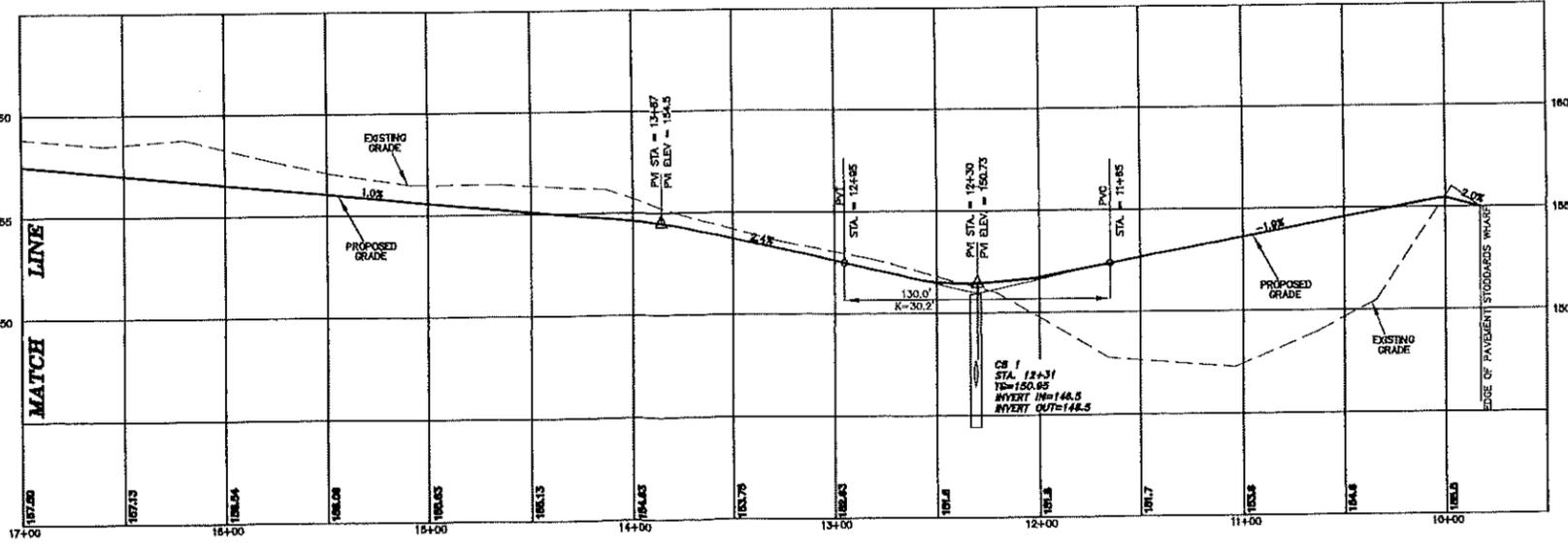
TP 10 0-14" TOPSOIL 14-36" BROWN FINE SANDY LOAM W/SILT 36-84" TAN/GRAY COARSE SAND W/GRAVEL	TP 20 0-17" TOPSOIL 17-31" BROWN FINE SANDY LOAM W/SILT 31-83" TAN/GRAY COARSE SAND W/GRAVEL AND FEW COBBLES
MOTTLING @ 40" WATER @ 43" NO LEDGE	MOTTLING @ 43" WATER @ 46" NO LEDGE

LANDSCAPE SCHEDULE

TYPE	SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	METHOD	SIZE	REMARKS
PERENNIALS	EF	CLUSTER	EUPATORIUM FISTULOSUM	JOE PYE WEED	CONTAINER	1'-2' HEIGHT	UNIFORM WELL DEVELOPED PLANT 2" ON CENTER
GRASSES	PV	3	PANICUM VIRGATUM	SWITCH GRASS	CONTAINER	2'-3' HEIGHT	UNIFORM WELL DEVELOPED PLANT 2" ON CENTER
SHRUBS	RQ	7	ILEX CLAWA	HONEY SUE	DWG	3'-4' HEIGHT	AS SHOWN
	VA	17	VACCINIUM AUGUSTIFOLIUM	LOWBUSH BLUEBERRY	CONTAINER	12"-18" HT	AS SHOWN
TREES	BH	4	BETULA NIGRA	RIVER BIRCH	DWG	2 1/2"-3" CAL	MULTI-STEMMED AS SHOWN



- LEGEND
- STONE WALL
 - PROPERTY LINE
 - STREET LINE
 - EXISTING CONTOUR
 - PROPOSED CONTOUR
 - UTILITY POLE
 - ① LOT NUMBER
 - PROPOSED CATCH BASIN
 - WF 1 EDGE OF WETLANDS & FLAG NUMBER
 - HAYBALES/SILT FENCE/WOODCHIPS
 - ⊕ APPROXIMATE DEEP TEST PIT



PLAN / PROFILE
 SHOWING
 PROPERTY OF
 AVERY BROOK HOMES LLC
 STODDARDS WHARF ROAD
 LEDYARD, CONNECTICUT
 SCALE: 1"=40' HORIZ.
 1"=4' VERT.

JULY 2022
 REVISED: OCTOBER 31, 2022
 REVISED: DECEMBER 5, 2022
 REVISED: DECEMBER 13, 2022



I HAVE REVIEWED THE INLAND WETLAND BOUNDARY I DELINEATED AND I AM OF THE OPINION THAT THE WETLAND BOUNDARY IS SHOWN CORRECTLY ON THIS MAP.

Jan Cole

JAN COLE
 SOIL SCIENTIST

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EROSION & SEDIMENT CONTROL PLAN

PURPOSE AND DESCRIPTION OF PROJECT:
 THE PURPOSE OF THIS PROJECT IS TO SUBDIVIDE 9.21 ACRES OF LAND TO CREATE 26 RESIDENTIAL BUILDING LOTS. EACH LOT WILL BE SERVED BY ON SITE WELL AND SEPTIC SYSTEM. APPROXIMATELY 1330 LINEAR FEET OF ROAD WILL BE CONSTRUCTED. THE PAVEMENT WIDTH IS 22 FEET. THE TOTAL AREA OF NEW PAVEMENT ASSOCIATED WITH THE ROAD CONSTRUCTION WILL BE 30,400± SQUARE FEET. ROAD DRAINAGE HAS BEEN DESIGNED BY A PROFESSIONAL ENGINEER, AND INCLUDES IN PLACES CURBED PAVEMENT AND CATCH BASINS WITH 2 FOOT SUMP DEPTHS. THE UPLANDS ARE CENTRALLY SLOPING AND MOSTLY OLD PASTURE. THE UPLAND SOILS ON THE PROJECT SITE INCLUDE WELL DRAINED CAUTION FRINGLEY AND AGAWAM SOILS.

IT IS ANTICIPATED THAT ONCE WORK ON THE PUBLIC IMPROVEMENTS BEGINS, IT WILL CONTINUE UNTIL THE PROJECT IS COMPLETED. IT IS ANTICIPATED THAT THE ROAD CONSTRUCTION WILL BE COMPLETED WITHIN ONE YEAR OF COMMENCEMENT.

PETER GARDNER 890-484-7455 (OR OWNER AT TIME OF CONSTRUCTION) SHALL BE RESPONSIBLE FOR OVERSEEING THE INSTALLATION AND PROPER MAINTENANCE OF ANY EROSION & SEDIMENT CONTROL MEASURES EMPLOYED IN IMPLEMENTING THIS PLAN.

TOTAL AREA OF THE PROJECT SITE AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY ROAD AND DRAINAGE CONSTRUCTION ACTIVITIES:
 THE TOTAL PROJECT AREA IS 9.21 ACRES OF WHICH 0.9± ACRES WILL BE DISTURBED TO FACILITATE THE CONSTRUCTION OF THE ROAD AND DRAINAGE. ESTIMATE OF TOTAL AREA TO BE DISTURBED 3.9± ACRES FOR HOME/DRIVE AND SEPTIC CONSTRUCTION.

PLANNED START AND COMPLETION DATES FOR THE PROJECT:
 IT IS ANTICIPATED THAT THE PROJECT WILL COMMENCE DURING FALL/WINTER OF 2022/2023 AND BE COMPLETED IN THE FALL OF 2023.

DESIGN CRITERIA, CONSTRUCTION DETAILS AND MAINTENANCE PROGRAM FOR THE EROSION & SEDIMENT CONTROL MEASURES TO BE USED:
 SILT FENCE AND SILT FENCE BACKED WITH HAY BALES FOR STRUCTURAL SUPPORT WILL BE USED. ALL SILT FENCE SEDIMENT BARRIERS SHALL BE MAINTAINED SUCH THAT SEDIMENTS WILL BE REMOVED WHEN REACHING A HEIGHT OF 0.8 FEET. BRACKERS IN SILT FENCE SHALL BE REPAIRED IMMEDIATELY. THE SILT FENCE SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 0.5 INCH IN A 24 HOUR PERIOD.

CONSTRUCTION ENTRANCE DESIGN AND MAINTENANCE CRITERIA FROM 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL: ENTRANCE TO CONSTRUCTION ENTRANCES WILL BE CONSTRUCTED OF AN ANGULAR STONE IN A SIZE AND GRADATION CORRESPONDING TO ASTM C-33, SIZE NO. 2 OR 3, OR DOT STANDARD SPECIFICATIONS SECTION 4.01.01 SIZE #5. THE CONSTRUCTION ENTRANCE WILL BE 12 FEET WIDE AND 50 FEET LONG.

CONSTRUCTION: CONSTRUCTION ENTRANCES AREA WILL BE CLEARED AND GRUBBED. AREAS WILL THEN BE ROUGH GRADED. A 4-INCH LAYER OF CRUSHED STONE WILL BE SPREAD AS DEPICTED IN THE DETAILS.

MAINTENANCE: THE CONSTRUCTION ENTRANCE WILL BE MAINTAINED IN A CONDITION THAT WILL MITIGATE TRACKING AND WASHING OF SEDIMENT ONTO PAVED SURFACES. THE CONSTRUCTION ENTRANCE WILL BE TOP DRESSED AS NEEDED TO PROVIDE FUNCTIONALITY. ADDITIONAL LENGTH MAY BE ADDED IF ON-SITE CONDITIONS WARRANT SUCH EXTENSION. ANY ACCUMULATED OR SPILLED SEDIMENTS WILL BE CLEANED IMMEDIATELY, AND DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THIS EROSION & SEDIMENT CONTROL PLAN.

STOCKPILE MANAGEMENT: WILL BE DONE IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL (CHAPTER 4). TOPSOIL STOCKPILES WILL BE LOCATED AS DEPICTED ON THE PLANS, AND WILL BE TREATED AS DISTURBED GROUND, I.E. SURROUNDED BY SILT FENCE, AND SEEDED TO GRASS AFTER ALL THE TOPSOIL TO BE STRIPPED IS PLACED IN THE STOCKPILE. STOCKPILE SLOPES SHALL NOT EXCEED 2:1.

TOPSOILING: SHALL TAKE PLACE AS AREAS ARE BROUGHT TO GRADE. THE TOPSOIL THAT SHALL BE SPREAD IS OF NATURAL ORIGIN AND WILL BE TAKEN FROM THE TOPSOIL STOCKPILES REFERRED TO ABOVE. STONES LARGER THAN 2 INCHES IN DIAMETER AND OTHER DEBRIS WILL BE REMOVED FROM THE TOPSOIL WITH A RAKE. TOPSOIL SHALL BE SPREAD AT A MINIMUM DEPTH OF 4 INCHES OVER ALL DISTURBED AREAS. IN ORDER TO "BOND" THE TOPSOIL TO THE SUBGRADE, THE SUBGRADE WILL BE LOOSEBED BY "TRACKING" WITH A ROLLER IMMEDIATELY BEFORE APPLYING TOPSOIL. TOPSOIL WILL NOT BE PLACED IF THE SUBGRADE OR THE TOPSOIL IS FROZEN OR TOO WET. HEAVY RAINFALL-TREATED VEHICLES WILL BE EXCLUDED FROM THE NEWLY TOPSOILED AREAS TO PREVENT EXCESSIVE COMPACTION WHICH COULD HINDER SEED GERMINATION AND SEEDLING GROWTH.

PERMANENT SEEDING WILL BE DONE AS DISTURBED AREAS ARE BROUGHT TO GRADE AND TOPSOILED AS LONG AS SUCH SEEDING IS DONE BETWEEN APRIL 1 AND JULY OR AUGUST 15 THROUGH OCTOBER 31. WITHIN 7 DAYS AFTER TOPSOIL IS APPLIED THE APPROPRIATE SEED MIX WILL BE BROADCAST AT THE PRESCRIBED RATE FOR THAT PARTICULAR MIX. THE SELECTED SEED MIX WILL BE FROM THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, FIGURES PS-3. PRIOR TO SEEDING, FERTILIZER WILL BE APPLIED AT THE RATE OF 7.5 PER 1,000 SQUARE FEET (10-10-10 OR EQUIVALENT), AND GROUND LIMESTONE WILL BE APPLIED AT THE RATE OF 200 POUNDS PER 1,000 SQUARE FEET. THE LIME AND FERTILIZER WILL BE LIGHTLY WORKED TO A DEPTH OF 3 TO 4 INCHES. SEED SHALL BE APPLIED UNIFORMLY USING A CYCLOPE SEEDER (HYDROSEEDING MAY BE USED IN LIEU OF CONVENTIONAL SEEDING METHODS). HAY MULCH WILL BE APPLIED AT THE RATE OF 100 POUNDS (APPROXIMATELY 2 BALES) PER 1,000 SQUARE FEET, WHERE SLOPES EXCEED 10 PERCENT. JUTE NETTING SHALL BE USED TO ANCHOR THE HAY MULCH IN PLACE, ANY SUCH NETTING WILL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE: THE SEEDING WILL BE INSPECTED AT LEAST ONCE PER WEEK, AND WITHIN 24 HOURS OF A RAINFALL OF AN AMOUNT EXCEEDING 0.5 INCHES IN 24 HOURS. IN ANY AREAS THAT SUSTAIN DAMAGE, THE TOPSOIL WILL BE REAPPLIED AND SMOOTHED, AND RESEED AS DESCRIBED ABOVE. THE NEWLY ESTABLISHED GRASS WILL NOT BE MOWN UNTIL IT REACHES A HEIGHT OF 8 INCHES. MOWING WILL NOT TAKE PLACE WHEN THE GROUND SURFACE IS WET. THE FIRST MOWING WILL TAKE 33 TO 50 PERCENT OF THE GRASS HEIGHT (I.E. NOT BELOW 3 INCHES). MULCH MATERIALS WILL NOT BE REMOVED, BUT WILL BE ALLOWED TO DISINTEGRATE OVER TIME.

WHERE BARE GROUND NEEDS TO BE PROTECTED FOR RELATIVELY SHORT PERIODS, OR WHERE THE SEEDING SEASONS FOR PERMANENT SEEDINGS CAN NOT BE ADHERED TO, TEMPORARY SEEDING MAY BE USED. THE RECOMMENDED SEED MIX WILL VARY UPON CIRCUMSTANCES, BUT SHALL BE IN COMPLIANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, FIGURES TS-2. TEMPORARY SEEDING RATES AND DATES, WHERE THE SEASON PRECLUDES ANY TYPE OF SEEDING, AN ANCHORED MULCH WILL BE EMPLOYED TO PROTECT BARE SOIL AREAS.

CONSTRUCTION SEQUENCE: PRIOR TO THE COMMENCEMENT OF ANY EARTH DISTURBANCES, THE DEVELOPER AND HIS CONTRACTOR SHALL MEET WITH TOWN STAFF FOR A PRECONSTRUCTION CONFERENCE.

- 1) INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON PLAN.
- 2) INSTALL EROSION AND SEDIMENT CONTROL.
- 3) CONSTRUCT THE STORMWATER QUALITY BASIN. TOPSOIL WILL BE APPLIED TO THE BASIN SIDESLOPES IMMEDIATELY AFTER CONSTRUCTION, AND THE SIDESLOPES WILL BE SEEDED INSTANTLY. SEDIMENT BARRIERS ALONG THE ROAD AND IN THE AREA OF THE BASIN AS DEPICTED ON THE PLANS.
- 4) STRIP TOPSOIL FROM THE ROADWAY AND STOCKPILE TOPSOIL ACCORDING TO THE PLAN. SEED STRIPPED AREAS THAT ARE NOT TO BE WORKED FOR 30 DAYS IMMEDIATELY WITH PERENNIAL RYEGRASS AT THE RATE OF 40 LBS./ACRE.
- 5) GRADE THE ROAD TO ATTAIN THE PLANNED SUBGRADE PROFILE AND GRADE SIDESLOPES TO PLAN.
- 6) APPLY TOPSOIL AND PERMANENT SEED MIX AND APPLY AND ANCHOR MULCH TO ALL FINISHED SLOPES.
- 7) INSTALL ALL DRAINAGE STARTING AT THE OUTFALL AND PROCEEDING UPGRADIENT. THE CONTRACTOR WILL ENSURE THAT ADEQUATE PROTECTION IS PROVIDED AT THE OUTFALL OF THE DRAINAGE SYSTEM SO THAT SEDIMENTS WILL BE PREVENTED FROM MIGRATING OFF THE SITE. NO WATER WILL BE ALLOWED TO ENTER THE DRAINAGE SYSTEM UNTIL THE OUTFALL IS PROTECTED. ALL DRAINAGE COMPONENTS WILL BE CHECKED ON A REGULAR BASIS AND CLEANED AS NEEDED TO MAINTAIN PROPER FUNCTION.
- 8) PLACE, GRADE AND COMPACT THE SUBGRADE AGGREGATE TO ESTABLISH THE ROADWAY BASE. TOPSOIL AND GRADE ALL SLOPES/DISTURBED AREAS WITHIN 2 FEET OF THE OUTSIDE OF THE PROPOSED CURBS.
- 9) LAY DOWN FIRST COURSE OF BITUMINOUS PAVEMENT.
- 10) INSTALL CURBING (WHERE REQUIRED).
- 11) APPLY TOP COURSE OF BITUMINOUS PAVEMENT.
- 12) REMOVE SILT FENCE AFTER TOPSOIL STABILIZED.

DISPOSAL OF SEDIMENTS - ANY SEDIMENT REMOVED FROM ANY EROSION AND SEDIMENT CONTROL MEASURE AS PART OF SITE MAINTENANCE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH THE INTENT OF THIS PLAN. NO SEDIMENT SHALL BE DEPOSITED IN ANY WETLAND AREA.

FIELD CHANGES - IF FIELD MODIFICATIONS OF PLANNED MEASURES ARE NEEDED TO PROPERLY ADDRESS ANY EROSION OR SEDIMENTATION SITUATION, SUCH CHANGES MAY BE MADE ONLY AFTER NOTIFYING TOWN STAFF. ADDITIONAL NON-STRUCTURAL MEASURES MAY BE ADDED WITHOUT PRIOR NOTIFICATION.

STORMWATER QUALITY BASIN CONSTRUCTION NOTES:

1. STORMWATER QUALITY BASIN EMBANKMENTS SHALL BE CONSTRUCTED OF SILTY SAND AND/OR CLAYEY MATERIALS. ON-SITE BORROW MATERIAL MAY BE USED IF SUITABLE DEPOSITS ARE FOUND. EMBANKMENT FILL SHALL CONTAIN AT LEAST 10% BY WEIGHT OF MATERIAL PASSING THE #200 SIEVE AND NOT MORE THAN 50% PASSING THE #100 SIEVE.
 2. EMBANKMENT FILL SHALL HAVE NO STONES LARGER THAN 8" IN THEIR GREATEST DIMENSION, NO STONES LARGER THAN 3" IN THEIR GREATEST DIMENSION SHALL BE ALLOWED WITHIN 2 FEET OF STRUCTURES OR PIPES.
 3. ALL FILL MATERIAL SHALL BE FREE OF TOPSOIL, ROOTS, STUMPS, ORGANICS, FROZEN MATERIAL AND OTHER DELETERIOUS MATTER.
 4. ALL EMBANKMENT MATERIAL SHALL BE COMPACTED TO 90% MINIMUM RELATIVE COMPACTION DETERMINED BY ASTM D1557 -- MODIFIED PROCTOR. THE MAXIMUM LOOSE LIFT THICKNESS OF EMBANKMENT FILL SHALL BE 12".
 5. ALL TOPSOIL, ORGANICS, ROOTS AND OTHER DELETERIOUS MATTER SHALL BE REMOVED FROM THE EXISTING GROUND SURFACE PRIOR TO CONSTRUCTION OF THE PROPOSED EMBANKMENTS.
 6. ALL EMBANKMENTS AND DISTURBED AREAS OF THE STORMWATER QUALITY BASIN SHALL BE PERMANENTLY STABILIZED WITH 4" LOAM, SEED AND MULCH. SUITABLE HYDROSEEDING EQUIPMENT MAY BE USED FOR APPLICATION OF SEED, MULCH AND/OR FERTILIZER. THE FOLLOWING SEED MIX SHALL BE USED IN THESE AREAS.
- | VARIETY | LBS./ACRE |
|--------------------|-----------|
| CRESTED RED FESCUE | 20 |
| REDTOP | 2 |
| BENT GRASS | 15 |
| TOTAL | 37 |

STORMWATER QUALITY BASIN OPERATION AND MAINTENANCE NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS PRIOR TO COMPLETION OF THE ROADWAY.
2. DURING THE FIRST YEAR OF OPERATION, THE BASIN SHALL BE INSPECTED ON WEEKLY BASIS OR WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCH OR GREATER. ANY EROSION OF EMBANKMENTS OR OUTLET AREAS SHALL BE REPAIRED PROMPTLY. ANY DEBRIS SHALL BE REMOVED AND DISPOSED OF. SEDIMENTATION THAT WOULD INTERFERE WITH PROPER OPERATION OF THE BASIN SHALL BE REMOVED AND DISPOSED OF AND THE AREA RESTORED AND STABILIZED AS REQUIRED.
3. AFTER THE BASIN HAS BEEN IN OPERATION FOR ONE YEAR, INSPECTIONS SHALL BE PERFORMED QUARTERLY OR WITHIN 24 HOURS AFTER A STORM EVENT OF 2.0 INCHES OR GREATER. QUARTERLY INSPECTIONS SHALL INCLUDE THE FOLLOWING ITEMS:
 - NOXIOUS WEEDS SHALL BE REMOVED. PERFORM ANY MOWING OPERATIONS REQUIRED.
 - INSPECT EMBANKMENTS FOR ANY WOODY GROWTH. ALL TREES, VINES AND OTHER WOODY PLANTS SHALL BE REMOVED AND VOIDS LEFT FROM THEIR REMOVAL SHALL BE REPAIRED.
 - INSPECT EMBANKMENTS FOR ANY ANIMAL BURROWS. ALL BURROWS AND VOIDS SHALL BE REPAIRED IMMEDIATELY.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN FOREBAY AND OTHER AREAS TO RESTORE ORIGINAL DESIGN GRADES. DISTURBED AREAS SHALL BE RESTABILIZED AS REQUIRED AFTER REMOVAL OF SEDIMENT.
 - INLETS AND OUTLETS SHALL BE INSPECTED FOR SCOUR DAMAGE AND EROSION AND REPAIRED AS REQUIRED.
 - ANY EVIDENCE OF PIPING OR SEEPAGE AT THE TOE OF EMBANKMENTS OR AROUND INLET/OUTLET STRUCTURES SHALL BE INVESTIGATED BY A QUALIFIED PROFESSIONAL ENGINEER AND REPORTED TO THE TOWN. REQUIRED REPAIRS TO MAINTAIN THE PROPER FUNCTION OR REPAIR POTENTIAL STRUCTURAL DEFICIENCIES IN THE BASIN SHALL BE IMPLEMENTED WITHIN ONE MONTH OF DISCOVERY OF THE PROBLEM OR AT DISCRETION OF THE RESPONSIBLE PROFESSIONAL ENGINEER PERFORMING THE INVESTIGATION OR DESIGNING SUCH REPAIRS. THE ENGINEER SHALL CERTIFY THAT ALL REPAIRS ARE PERFORMED TO HIS/HER SATISFACTION AND SHALL PROVIDE SUCH CERTIFICATION TO THE TOWN.

STORMWATER SYSTEM OPERATION AND MAINTENANCE NOTES:

- PROVIDE ANNUAL STREET SWEEPING, PREFERABLY AFTER FINAL SNOW MELT TO ALLEVIATE SEDIMENT BUILDUP IN CATCH BASIN SUMPS AND TO INSURE EFFICIENT TSS REMOVAL FROM STORMWATER
- REMOVE SEDIMENT FROM CATCH BASIN SUMPS WHEN SEDIMENT REACHES HALF THE DEPTH OF THE SUMP.
- INSPECT CATCH BASINS FOR TRASH AND DEBRIS BI-ANNUALLY. REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM PIPE INLETS AND OUTLETS TO PREVENT CLOGGING.
- REMOVE ACCUMULATED TRASH AND LEAVES FROM CATCH BASIN GRATES TO INSURE ADEQUATE GRATE INFLOW CAPACITIES.

APPROVED BY THE LEYDARD PLANNING AND ZONING COMMISSION AS TO THE COMPLIANCE WITH THE REGULATIONS GOVERNING THE SUBDIVISION OF LAND. ALL IMPROVEMENTS SHALL BE COMPLETED BY _____ DATE _____

CHAIRMAN OR SECRETARY _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CHECKED BY VOTE OF THE LEYDARD PLANNING AND ZONING COMMISSION ON _____ DATE _____

LOT NUMBERS ASSIGNED BY THE ASSessor _____

ASSessor _____ DATE _____

TWP _____ APPLICATION# _____

APPROVED _____

NO PERMIT NECESSARY, (NOT WITHIN A REGULATED AREA)

NOT APPLICABLE AT THIS TIME, (WITHIN A REGULATED AREA) NO REGULATED ACTIVITY PROPOSED AT THIS TIME.

VILLAGE OFFICER _____ DATE _____

APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR THE TOWN ENGINEER FOR PUBLIC WAY LAYOUT. _____ DATE _____

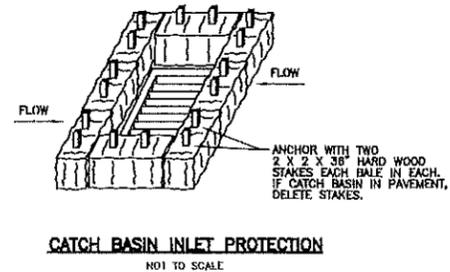
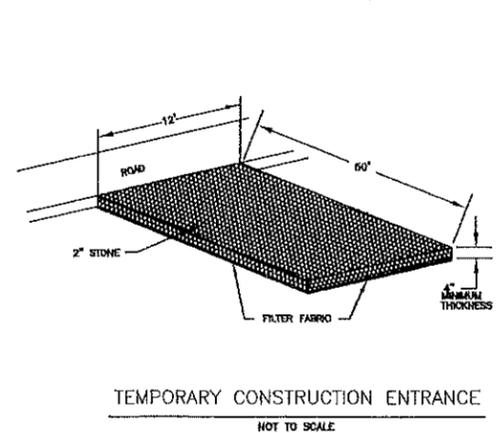
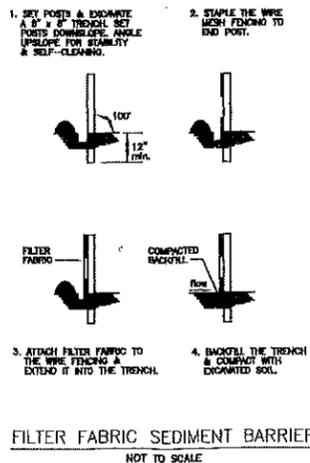
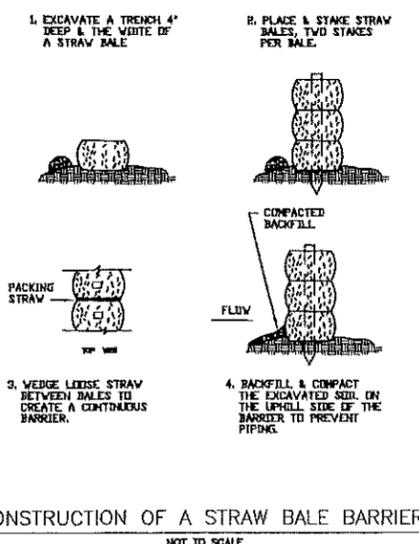
PUBLIC WORKS DIRECTOR/TOWN ENGINEER _____ DATE _____

EROSION AND SEDIMENT CONTROL PLAN CHECKED BY VOTE OF THE LEYDARD PLANNING AND ZONING COMMISSION _____

CHAIRMAN OR SECRETARY OF THE LEYDARD PLANNING AND ZONING COMMISSION _____ DATE _____

APPROVED BY THE BORING SUPERVISOR OFFICER OF THE LEYDARD PLANNING COMMISSION _____ DATE _____

BORING SUPERVISOR OFFICER _____ DATE _____

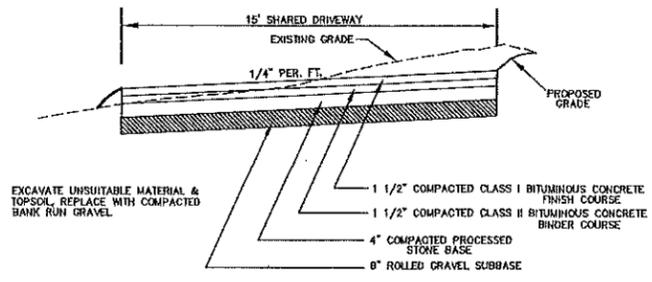


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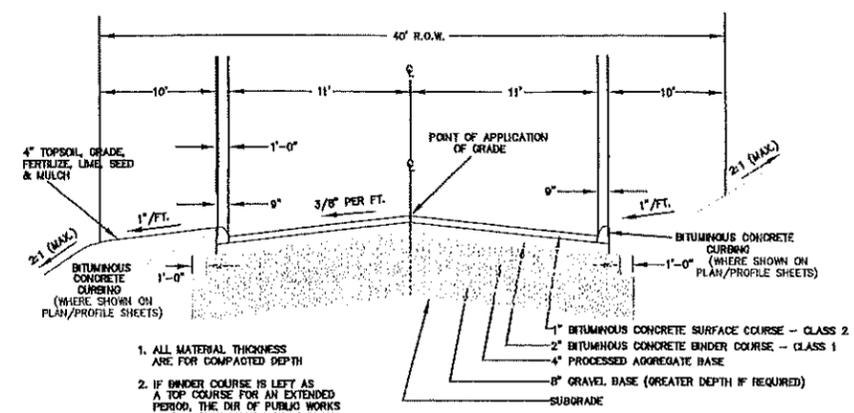
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 (860) 484-7455
 EMAIL: DIETER.GARDNER@YAHOO.COM

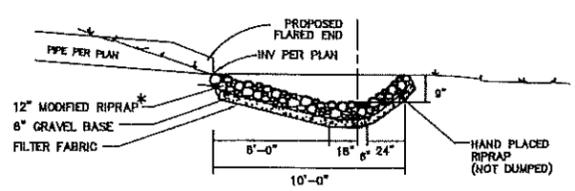
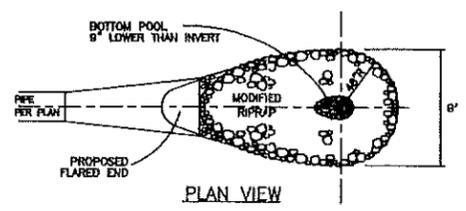


TYPICAL PAVED COMMON DRIVEWAY CROSS-SECTION
NOT TO SCALE

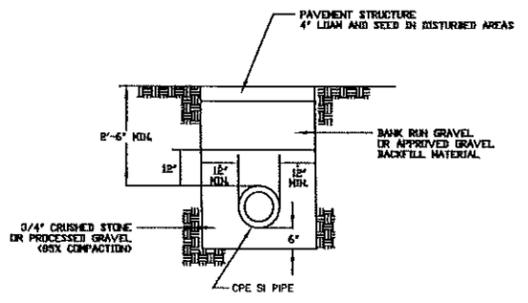


1. ALL MATERIAL THICKNESS ARE FOR COMPACTED DEPTH
 2. IF BINDER COURSE IS LEFT AS A TOP COURSE FOR AN EXTENDED PERIOD, THE DIR. OF PUBLIC WORKS MAY REQUIRE THAT A TACK COAT OF BITUMINOUS MATERIAL MAY BE APPLIED BEFORE LAYING THE BITUMINOUS CONCRETE SURFACE COURSE.
 3. SUBBASE DEPTH SHALL BE INCREASED TO 18\"/>
4. FOR CONSTRUCTION MATERIAL STANDARDS, REFER TO STATE OF CONNECTICUT, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM R13, AS AMENDED.

AVERY BROOK CIRCLE CROSS SECTION
(N.T.S.)

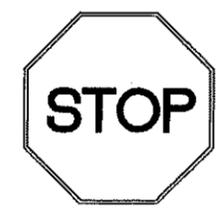


SECTION VIEW
PREFORMED SCOUR HOLE
NOT TO SCALE
FOR FLARED END UNIT



NOTE:
1. IF PIPE IS PLACED IN UR OR LEDGE, ALL LEDGE WITHIN 18\"/>

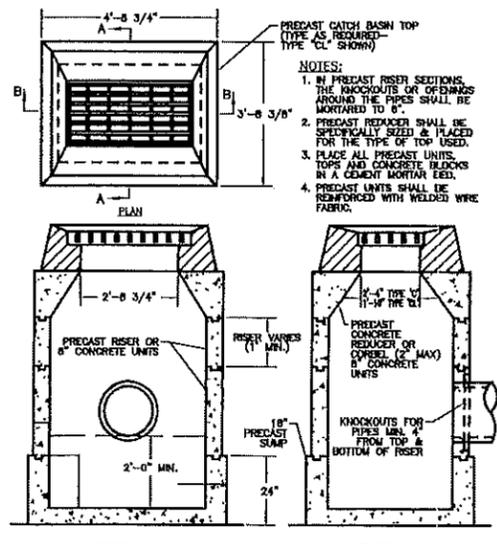
DRAINAGE PIPE TRENCH
NOT TO SCALE



SECURE TO 3 1/2\"/>

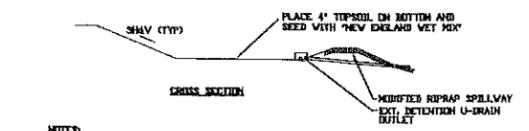
NOTE:
SIGN TO BE INSTALLED IN ACCORDANCE WITH STATE OF CONNECTICUT D.D.T. STANDARDS

STOP SIGN
NOT TO SCALE



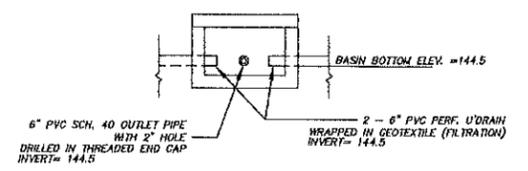
- NOTES:
1. IN PRECAST RISER SECTIONS, THE KNOCKOUTS OR OPENINGS AROUND THE PIPES SHALL BE MORTARED TO 6\"/>
 - 2. PRECAST RISER SHALL BE SPECIFICALLY SIZED & PLACED FOR THE TYPE OF TOP USED.
 - 3. PLACE ALL PRECAST UNITS, TOPS AND CONCRETE BLOCKS IN A CEMENT MORTAR BED.
 - 4. PRECAST UNITS SHALL BE REINFORCED WITH WELDED WIRE FABRIC.

SECTION B-B SECTION A-A
PRECAST CATCH BASIN
NOT TO SCALE

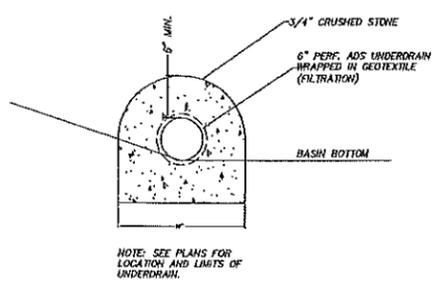


NOTES:
THE PURPOSE OF THE WATER QUALITY BASIN IS TO REMOVE SEDIMENT FROM THE WATER QUALITY VOLUME (WQV). THE BASIN IS SIZED TO HOLD THE WQV (CLASSIFIED FEET) WHICH WILL BE FILTERED THROUGH THE SURFACE DRAIN AND SLOWLY RELEASED INTO THE WETLANDS.

WATER QUALITY BASIN
(N.T.S.)



D-BOX OUTLET
EXTENDED DETENTION UNDERDRAIN OUTLET
NOT TO SCALE



NOTE: SEE PLANS FOR LOCATION AND LIMITS OF UNDERDRAIN.
EXTENDED DETENTION UNDERDRAIN
NOT TO SCALE

PLAN SHOWING
CONSTRUCTION DETAILS
RESUBDIVISION
PROPERTY OF
AVERY BROOK HOMES LLC
94, 96, 98 AND 100
STODDARDS WHARF ROAD
A.K.A.
CONNECTICUT ROUTE 214
LEDYARD, CONNECTICUT

JULY 2022
REVISED: OCTOBER 31, 2022
REVISED: DECEMBER 13, 2022

THIS DRAWING IS THE PROPERTY OF THE LAND SURVEYOR. THIS PLAN AND REPRODUCTIONS, ADDITIONS OR REVISIONS OF THIS PLAN ARE NOT VALID WITHOUT THE EMBOSSED SEAL AND SIGNATURE OF THE LAND SURVEYOR WHO PREPARED THIS PLAN.
JOB# 22-007.DWG

DIETER & GARDNER
LAND SURVEYORS • PLANNERS
P.O. BOX 335
1841 CONNECTICUT ROUTE 12
GALES FERRY, CT. 06335
(860) 464-7453
EMAIL: DIETER.GARDNER@YAHOO.COM

Town Exhibit # 57



DIETER & GARDNER, INC.

LAND SURVEYING • PLANNING • CIVIL ENGINEERING

RECEIVED

DEC 16 2022

From: Peter C. Gardner

To: Steve Masalin, Public Works Director/Town Engineer and Juliet Hodge

LAND USE DEPARTMENT

Date: December 15, 2022

Re: Avery Book Homes, Resubdivision

We have revised plans as follows:

1. Added general note 8) re: parking signs
2. Added general note 9) re: actual conditions
3. Added general note 10: re: signage
4. Sheet 6 added curbing 12+80 – 13+50 west, corrected discharge invert
5. Sheet 7 pipe invert revised
6. Sheet 10 inverts added to D-box detail and removed scour hole detail
- 7. Revision to report to address pipe length CB1 to discharge and pipe slopes (attached)

94, 96, 98 Stoddards
JUL 20 - 18 URA
8-309

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Exhibit # 38

Sidney F. Heller (1903-1986)
Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (hmc coy@hellermccoy.com)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

Mary Gagne O'Donal (mgodonald@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)

December 20, 2022

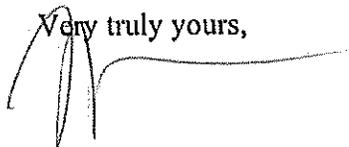
Ms. Arlene Allard
P.O. Box 94
Ledyard, CT 06339

Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96, 98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Dear Ms. Allard:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,

Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike

Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)

Harry B. Heller (hheller@hellermccoy.com)

William E. McCoy (wmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)

Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248

Facsimile: (860) 848-4003

December 20, 2022

Mr. Allan Bruckner
Mrs. Kathy Bruckner
93 Stoddards Wharf Road
Ledyard, CT 06339

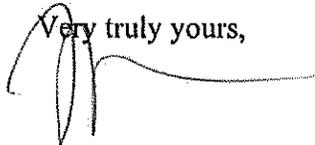
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Dear Mr. and Mrs. Bruckner:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

*736 Norwich-New London Turnpike
Uncasville, Connecticut 06382*

*Sidney F. Heller (1903-1986)
Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (bmccoy@hellermccoy.com)*

*Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)*

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

December 20, 2022

Ms. Ann Marie Donohue
Mr. James Lawrence McCarthy, Jr.
95 Stoddards Wharf Road
Ledyard, CT 06339

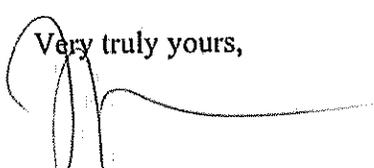
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Dear Ms. Donohue and Mr. McCarthy:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,


Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

*736 Norwich-New London Turnpike
Uncasville, Connecticut 06382*

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Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (wmccoy@hellermccoy.com)*

*Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)*

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

December 20, 2022

City of Groton
c/o Groton Utilities
295 Meridian Street
Groton, CT 06340

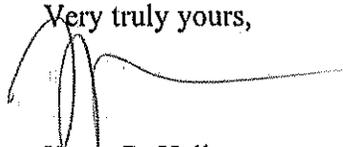
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Gentleperson:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

*736 Norwich-New London Turnpike
Uncasville, Connecticut 06382*

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Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (wmccoy@hellermccoy.com)*

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

*Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (ameccoy@hellermccoy.com)*

December 20, 2022

Ms. Pamela C. Maher
85 Stoddards Wharf Road
Gales Ferry, CT 06335

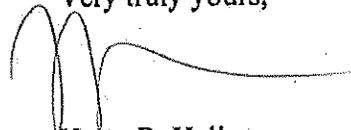
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Dear Ms. Maher:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike

Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)

Harry B. Heller (hheller@hellermccoy.com)

William E. McCoy (wmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)

Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248

Facsimile: (860) 848-4003

December 20, 2022

Mr. Randy D. Palmer
Mrs. Sandra M. Palmer
101 Stoddards Wharf Road
Gales Ferry, CT 06335

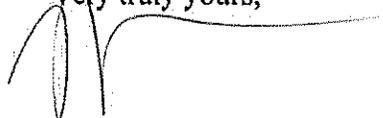
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Dear Mr. and Mrs. Palmer:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

*736 Norwich-New London Turnpike
Uncasville, Connecticut 06382*

*Sidney F. Heller (1903-1986)
Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (bmccoy@hellermccoy.com)*

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

*Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (ameccoy@hellermccoy.com)*

December 20, 2022

Shirley P. Pandora Grantor Retained Income Trust U/A 12/13/2018
102 Stoddards Wharf Road
Ledyard, CT 06339

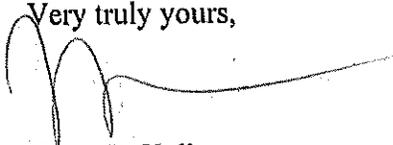
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Gentleperson:

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Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike

Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)

Harry B. Heller (hheller@hellermccoy.com)

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Andrew J. McCoy (ameccoy@hellermccoy.com)

Telephone: (860) 848-1248

Facsimile: (860) 848-4003

December 20, 2022

State of Connecticut Commissioner of Public Health

410 Capitol Avenue

Hartford, CT 06134

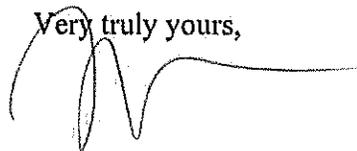
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96, 98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Gentleperson:

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Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

HELLER, HELLER & McCOY

Attorneys at Law

*736 Norwich-New London Turnpike
Uncasville, Connecticut 06382*

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Andrew J. McCoy (amccoy@hellermecoy.com)*

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

December 20, 2022

Mr. Keith Tyler
Ms. Michela Lavin
89 Stoddards Wharf Road
Ledyard, CT 06339

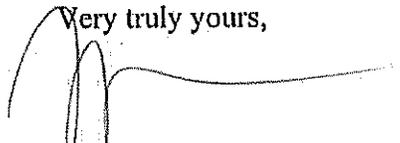
Re: Avery Brook Homes, LLC Affordable Housing Subdivision of properties at 94, 96,
98 and 100 Stoddards Wharf Road (Connecticut 214), Ledyard, Connecticut

Dear Mr. Tyler and Ms. Lavin:

I am writing to advise you that the continued public hearing with respect to the above referenced application before the Town of Ledyard Inland Wetlands and Watercourses Commission will be held at the Ledyard Town Hall Annex, 741 Colonel Ledyard Highway, Ledyard, Connecticut on January 3, 2023 at 7:00 pm. Previous notice with respect to this continued public hearing indicated that the hearing would be continued to January 10, 2023 at 7:00 pm. This was incorrect. The correct date of the continued public hearing is January 3, 2023.

Should you have any questions, you may contact either this office or the Town of Ledyard Land Use Department at (860) 464-3215.

Very truly yours,



Harry B. Heller

HBH/rmb

THE UNIVERSITY OF CHICAGO
LIBRARY

Exhibit #

Memorandum:

To: Juliet Hodge, Director of Land Use & Planning
From: Steve Masalin, Public Works Director/Town Engineer *Sm*
Date: December 22, 2022
Re: Avery Brook Homes, 94/96/98/100 Stoddards Wharf Rd (Appl. IWWC #22-18URA, PZ #22-18SUB)

I have reviewed the revised plans and stormwater management report for the subject application. All my comments have been satisfied by the changes and clarifications.

RECEIVED
DEC 22 2022
LAND USE DEPARTMENT

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Exhibit
40

Sidney F. Heller (1903-1986)
Harry B. Heller (hheller@hellermccoy.com)
William E. McCoy (bmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

December 22, 2022

Town of Ledyard Inland Wetlands and Watercourses Commission
Attn: Mr. Len Johnson, Wetlands Enforcement Officer
741 Colonel Ledyard Highway
Ledyard, CT 06339

Re: Application of Avery Brook Homes, LLC for licenses to conduct regulated activities in conjunction with the development of an affordable housing subdivision (C.G.S. §8-30g) on properties located at 94, 96, 98 and 100 Stoddards Wharf Road, Ledyard, Connecticut

Dear Len:

Enclosed herewith please find the following documents with respect to the above referenced matter:

1. Resume of Ian T. Cole – Delineations Without Delay.
2. Resume of John R. Martucci, P.E. – LBM Engineering, LLC.

Please enter each of the enclosed resumes into the record of the public hearing of the Ledyard Inland Wetlands and Watercourses Commission with respect to this application.

Should you have any questions, please feel free to contact the undersigned.

Very truly yours,


Harry B. Heller

HBH/rmb
Enclosures

Cc: Stephen W. Studer, Esquire (via e-mail)
Peter Gelderman, Esquire (via e-mail)

Z:\Avery Brook Homes, LLC\Wetlands\ltr.Town re resumes.docx

LBM Engineering, LLC

11 Hally Lane, Colchester, CT 06415-2133 Phone: 860-416-9809 Email: John@LBMEngineering.com

CIVIL ENGINEERING - LAND DEVELOPMENT - SITE PLANS - STORMWATER MANAGEMENT

John R. Martucci, P.E.

Civil Engineer

General Qualifications

Mr. Martucci has experience as a civil, highway, and site engineer on numerous private and municipal projects. His responsibilities have included design and supervision of staff engineers and technicians in the design and preparation of studies, construction plans and documents and construction inspection. His expertise includes site development, environmental, drainage and hydraulic analysis and design, sedimentation and erosion control, subdivisions, roadways and utilities, water supply, sanitary sewers, septic system design, state/city/town permit preparation, construction estimates and specs. He has extensive experience working with and for local and state agencies and private developers. He has been responsible for coordination/liaison with clients, government agencies and contractors for schedule and budget controls.

Years Civil Engineering Experience: 45

Degrees

A.S., 1974, Civil Engineering, Hartford St. Technical College

Licenses/Certifications

Professional Engineer - Civil, Connecticut, 1997, 19494

Experience

New Britain-Hartford Bus Rapid Transit Facility Program Management, Engineering, and Design Review Services, CTFSTRAK (Formerly, New Britain and Hartford), Connecticut. *Connecticut Department of Transportation.* Civil Engineer. Responsibilities included Intersection Design, Utilities Design (Including: Cable Plowing, Directional Boring, Auger Boring, Duct Bank), Develop Construction Details, Traffic Signals, Signing, Pavement Markings, Site Investigation, Design Review, Quantities Take-off and Estimating, Writing Specifications, and Special Provisions. The New Britain-Hartford Busway is a bus rapid transit facility connecting New Britain, Newington, West Hartford, and Hartford, Connecticut. The 9.4-mile-long busway, which includes 16 new or rehabilitated bridges, runs along inactive and active railroad corridors and consists of a two-lane, bus-only roadway and 10 stations that include sheltered platforms and other amenities.

New Britain/Hartford Busway CM, Connecticut. *Connecticut Department of Transportation.* Construction Engineer. Responsible for civil engineering design of field changes during construction, including horizontal and vertical alignments, drainage design, utility relocation, and electrical service connections.

I-95 New Haven Corridor Projects. Responsible for plan review, design of waste stockpile site plans. CT D.E.P. Permit Applications. Design of Camera and Variable Message Sign installations from Branford to Westbrook. Fairfield Metro-Center & Third Fairfield Train Station, Fairfield, CT
Triborough Bridge and Tunnel Authority Headquarters, New York, NY
Lowering of Washington Blvd. (4-Lane Urban Arterial under Metro-North Railroad) – Stamford
Transportation Center, Stamford, CT

Metro-North Stamford Rail Yard, Stamford, CT. Responsible for complete civil site design. Baldwin Bridge, Interstate Highways, Interchanges, Local Roadways, I-95 over Connecticut River Old Saybrook – Old Lyme, CT.
Connecticut Department of Environmental Protection Old Saybrook Boat Launch, Old Saybrook, CT
130-Acre, Franklin Business Park, Franklin, CT
Norton's Crossing, 10-Lot Subdivision, East Windsor, CT
Gillette's Crossing, 25-Lot Subdivision, Somers, CT
Somers Crossing 95,000 SF Retail Park, Somers, CT

Somers Sun Estates, 20-Lot Subdivision, Somers, CT
Cherry Wood Estates, 25-Lot Subdivision, Enfield, CT
Hundreds of single-family residential and small business site plans, stormwater management plans, and septic systems.

John Robert Martucci, P.E., M.ASCE

IAN T. COLE, LLC
DELINEATIONS WITHOUT DELAY
Professional Soil Scientist / Professional Wetland Scientist

PO BOX 619
Middletown CT 06457
860-514-5643 • itcole@gmail.com

PROFESSIONAL SUMMARY AND ACCOMPLISHMENTS

I have over 23 years of professional environmental experience throughout New England and the Mid-Atlantic states. I have professional certifications as a Registered Professional Soil Scientist (*Society of Soil Scientists of Southern New England*) and Certified Professional Wetland Scientist (#2006- *Society of Wetland Scientists*). I have over two decades of experience delineating wetlands and developing site-specific soil survey assessments. Skills and experience include the ability to identify resident and migrant avian species by sight and sound, and the ability to locate and identify all New England's native amphibians and reptiles. I have significant experience identifying and mapping vernal pools, including cryptic and range restricted vernal pool indicator species.

Over the course of my career I have assisted and lead hundreds of wildlife studies throughout New England. I routinely support projects with the processes and documentations required to work under Scientific Collectors Permits (including handling and trapping) of state-listed wildlife. I am responsible for the management, coordination and submittal of applications and subsequent state-listed species studies for a range of projects in the Utility industry and various local commercial and residential development projects. I have extensive experience in species research, plant phenology and am familiar with nuances of listed species and close associations with habitat requirements and time of year survey windows.

Delineations without Delay provides consulting services in the areas of biological, wetland, and soil sciences. In addition to the identification, description, and classification of natural resources, the firm also provides functional evaluation of wetlands and other biological systems, guidelines for mitigation of potential adverse impacts, and permit support through expert testimony and public representation. Services provided revolve around the impact of human activities on terrestrial, wetland, aquatic, and marine resources.

In addition to my biological science foundation , I have a strong working knowledge of local, state and federal environmental permitting process including but not limited to: United States of Army Corps of Engineers (ACOE) (404, 408 Section 10), Connecticut Department of Energy and Environmental Protection (CTDEEP)(401, NDDB, SWPCP), Massachusetts Department of Environmental Protection (MassDEP), as well as the review processes of Massachusetts Environmental Policy Act (MEPA), National Historic Preservation Act (NHPA) -Section 106, and Endangered Species Act (ESA) -Section 107, and Tribal consultations (THPO). I am accustomed to the fast-paced working environment and demands of planning and construction schedules and routinely navigate and provide resolution to complex issues that may arise during project planning keeping projects on critical path forward.

PROFESSIONAL EXPERIENCE

Ian Cole, LLC, Middletown, CT

Lead Soil Scientist: May 2015-Present

- Expert in Wetland Delineation and Soil Science
- Rare, Threatened and Endangered species surveys – expert in Botanical, Avian, Amphibian & Reptile focused studies, coordination and participation in invertebrate species.
- Manage multiple licensing and permitting consultants to provide environmental services
- Develops strategies and permitting approach to secure required environmental permits
- Routinely consults with regulatory agencies on a range of permitting (404, 401, 106, 107)
- Oversees environmental compliance and mitigation to support construction projects
- Supports cross discipline project team including engineering, survey, outreach, planning and vegetation management
- Represents projects at public hearings, open houses, conservation meetings.

Kleinschmidt Associates, Essex, CT

Project Scientist: April 2008-May 2015

- Project manager responsible for scope, schedule and budgets
- Technical lead for terrestrial, wetland and RTE studies
- Oversee and mentor junior staff
- Wetland mitigation planning and design
- FERC compliance liaison for relicensing of hydroelectric facilities
- Licensing and permitting specialist

CME Associates, Woodstock, CT

Wetland / Soil Scientist: May 1999 - April 2008

- Wetland delineation & evaluations
- Wildlife, vernal pool, and vegetation surveys
- Soil evaluations and mapping
- Supported environmental remediation, civil engineering and land survey divisions

EDUCATION

University of Rhode Island, Kingstown, RI

Bachelors of Science, Environmental Science and Management 1999

- Focus on wetland and soil science
- Completed additional graduate coursework in wetland studies (24 credits)

TECHNICAL SKILLS

- Proficient in Microsoft Office (Word, Excel, PowerPoint)
- Hands on experience with remote data loggers and software
- CT Safe Boating Certificate & familiarity with a range of off-road vehicles
- Expert in field identification of wetlands, soils, wildlife, botanical, vernal pool resources.

ASSOCIATIONS

- Professional Member Soil Science Society of Southern New England
- Society of Wetland Scientist - Certified Professional Wetland Scientist
- Connecticut Association of Wetland Scientist
- Former commission member of The Town of Ledyard IWWC agency 2005-2012



TOWN OF LEDYARD

741 Colonel Ledyard
Highway
Ledyard, CT 06339-1511

File #: 22-964

Agenda Date: 1/3/2023

Agenda #:

AGENDA REQUEST
GENERAL DISCUSSION ITEM

Subject:

Staff Reports

Background:

(type text here)

Department Comment/Recommendation:

(type text here)



TOWN OF LEDYARD

741 Colonel Ledyard
Highway
Ledyard, CT 06339-1511

File #: 22-951

Agenda Date: 1/3/2023

Agenda #:

AGENDA REQUEST
GENERAL DISCUSSION ITEM

Subject:

Approval of December 6, 2022 Minutes

Background:

(type text here)

Department Comment/Recommendation:

(type text here)



Chairman
Justin DeBrod

TOWN OF LEDYARD

741 Colonel Ledyard Highway
Ledyard, Connecticut 06339

Inland Wetland and Water Courses Commission Meeting Minutes

Regular Meeting

Tuesday, December 6, 2022

7:00 PM

Council Chambers -Hybrid Format

I. CALL TO ORDER

Chairman Debrodt called the Regular meeting of the IWWC to order at 7:00 PM. The meeting was hybrid with some attending in person and others via Zoom.

II. ROLL CALL

Staff present: Juliet Hodge, Director of Planning & Development, Len Johnson, WEO, Makenna Perry, Land Use Administrative Asst. and Attorney Carl Landolina.

Present Chair Justin DeBrod
Vice Chair Paul Maugle
Commissioner Dan Pealer
Commissioner Beth E. Ribe
Alternate Member Gary St. Vil

Excused Commissioner Lynmarie Thompson

III. CITIZENS COMMENTS

No public comment

IV. OLD BUSINESS

- A. Application #IWWC22-18URA of Avery Brook Homes, LLC, 1641 Rte. 12, Gales Ferry, CT 06335 for URA activities associated with the siting of new single-family homes with associated grading and utilities on 9 of 36 lots in a proposed 8-30g Re-Subdivision located on 94,96,98 and 100 Stoddards Wharf Rd, Ledyard CT.

Chairman Debrodt opened the Public hearing for Application #IWWC22-18URA of Avery Brook Homes, LLC for a now 26-lot resubdivision. Attorney Harry Heller and his Associate Andrew McCoy as well as Peter Gardner, LS of Dieter & Gardner were present for the application.

Atty. Heller reviewed Commission action to date and stated that there would be no direct impact to any wetlands or watercourses. He discussed the concerns raised since the last meeting which lead to the revisions of the proposal which he feels is a feasible and prudent alternative. He reviewed the modifications made to the project which included the reduction in the number of proposed lots from 36 to 26; relocation of septic systems that were within the 100ft buffer to a location outside of the buffer area; change in road layout and width (20ft to 22ft) - and now there will be only one main entrance from Stoddards Wharf Rd; change in status of the proposed road

from private to a proposed Town-owned road; addition of curbing and catch basins; addition of a water quality basin designed by LBM Engineering; addition of driveways for individual lots. Atty. Heller described all the drainage systems proposed. The activity occurring within the 100ft buffer area will result in 13,000sf of disturbance.

Attorney Heller introduced the following documents into the record: a revised soil scientist report by Ian Cole, LSS; portion of the CT Public health Code relating to on-site sewage disposal systems; a separating distance chart depicting distance of septic systems and upland review area; an excerpt from *Waterbury v. Washington* case; and revised plan sheets pages 3 & 6.

Atty. Heller reviewed the relevant part of the public health code regarding required separating distances between a potable water well and a septic leaching system; discussed the percolation rates for each lot; the existing hydraulic gradient; and the concerns raised about the clustering of septic systems and their cumulative effect they would have on wetlands or watercourses. He stated that only 15 of the 26 lots have a hydraulic gradient toward any wetlands on site.

He read a portion of the *Waterbury v Washington* case regarding compliance with environmental and regulatory schemes into the record and discussed at length. He reviewed the 2 Regulatory Standards that he feels applies to the project (2004 Stormwater Quality manual and CT Public health Code) and stated that he feels the application applies with both.

Heller discussed section 1.1 of the IWWC Regulations re: balancing economic development needs and protection of wetlands and watercourses. He discussed the CGS 8-30g - Affordable Appeals Act which he feels enters into the "balancing act." He discussed the Substantial Evidence Rule and permitting criteria in Section 10.2 of the IWWC Regulations as they relate to this project and the Commissions' jurisdiction. Heller discussed the flow of water across the site pre and post development and the SE&SC measures proposed and the findings of the LBM Engineering Report with respect to flooding concerns.

A revised project narrative, LBM Engineering Report, review Comments from Steve Masalin, DPW were also incorporated into the record as well as the review from CLA Engineering that was prepared for the PZC.

The Chairman welcomed public comment.

The following people spoke:

Attorney Steven Struder, Berchem & Moses, 75 Broad St. Milford, CT, spoke on behalf of Karl Acimovic from Groton Utilities and his experience with public water supplies. Struder requested that the application be continued to the next meeting and spoke against the application for the following reasons.

Struder explained that the project- specifically the density of houses with individual septic systems, will pose significant threat to the public drinking water supply. Struder requested that the applicant conduct a renovation analysis to determine the cumulative impact of the 26 Septic Systems on GU's water system. He disagreed with Heller that the 8-30G is applicable to this agency. He believed that there will be adverse impacts to this watershed. He also disagrees with Heller on his *Washington v Waterbury* conclusion that there is no regulatory standard sited. Struder defined that they're two separate statutory schemes.

Karl Acimovic, PE representing the Water Division of Groton Utilities agreed with Struder and doubted the feasibility of the project. Acimovic expressed concern about percolation rates. He identified that the water supply study completed by the applicant only addressed water

quantity, not quality. Mr. Acomovic expressed concerns about increased Sodium in the drinking water caused by the Town's practice of using pure salt on the roads in the winter. The project originally showed a private road, but will now be a Town road. He was also expressed concerns about the stormwater going into the water quality basin and eventually making its way to the Wetlands to the east of it. He mentioned the 2014 report by CER McGuire where the town of Ledyard conducted a study 2 miles west of Stoddards Wharf which found that the wells on the .25 acre and 1 acre lots became contaminated by the septic systems and a public water line had to be brought in. The proposed development has even smaller lots.

Commissioners asked questions about the hydraulic gradient and any standards that govern the sub-surface flow of water.

Commissioner St Vil generalized that if the cumulative impact is to be understood, then a special study should be conducted.

Acimovic agreed. Commissioner Pealer asked about soil quality and how the soils in this project compare with those in the development referenced in the McGuire 2014 Report.

Arlene Allard, 106 Stoddards Wharf Rd spoke against the application for the following reasons. She stated that the land was taken from her family in the 1950's by Groton Utilities. She is concerned about the pollution from the density of the subdivision. She explained that the property is wet and often has flooded areas. She stated that water from the property runs directly into the reservoir.

Mauricio Duarte, Groton Utilities commented on the regional significance of the reservoir. He explained that GU is a regional water provider to several surrounding towns. He reiterated the importance of protecting the public drinking water supply.

Attorney Struder, Berchem & Moses, 75 Broad St, Milford, CT, spoke again about the importance of the reservoir and protecting the region's drinking water.

Commissioner St Vil asked about the notice of intervention. Struder explained its importance.

Attorney Carl Landolina, Fehey & Landolina, Windsor Locks (representing the Town of Ledyard IWWC), spoke on his analysis of the legal issues within the application. He disagreed with Heller's argument about regulatory standards and explained that the referenced court case was dated. He referenced Aaron v. The Conservation Commission of the Town of Redding, 1981 supreme court case. He cited the definition of a regulated activity from the Ledyard IWWC Regulations. He spoke about the Connecticut cases related to the application which were Avalon Bay, Simsbury, and Purnell. He spoke in disagreement on Heller's position on Waterbury v. Washington case. He explained that CEPA and IWWC are two separate statutory schemes. He explained that the Waterbury v. Washington case is a CEPA case not an IWWC case. He mentioned that Heller left out a paragraph from the case he quoted. He advised the commission to continue the public hearing.

Juliet Hodge, Planning Director of Ledyard, asked Landolina about notices and continuing the public hearing.

Landolina responded that the 35 days starts on the day the public hearing was opened.

Chairman DeBrodt asked Studer and Acimovic to re-explain the renovation analysis.

Acimovic explained its importance and relevancy.

Juliet Hodge asked if the renovation analysis would fulfill all items requested by the commission in the October 4, 2022 meeting.

Acimovic answered yes.

Peter Gardner, LLS Avery Brooks, LLC, explained that the comments by Acimovic were incorrect. He disagreed with the statement that there will be adverse impact with over lapping wells. He also disagreed with the statements about water quality and probable pollution. He explained that Groton Utilities has done more damage to the watershed lands than any builder could.

James McCarthy, 95 Stoddards Wharf Rd, spoke against the application. He expressed concern about potential pollution to the aquifer. He mentioned his concern about over development of land and the potential impact on drinking water.

Attorney Harry Heller, for the Applicant, spoke again. He believed Mr. Studer misunderstood his comment on the public health code. He disagreed with Landolina about his statement on the Waterbury Vs Washington case. Heller mentioned that Groton tried to shift the blame to Ledyard for impact of Sandy Hollow Road on the resevoir. He mentioned relevancy of section 10.2. He also spoke about the parallels of CEPA and IWWC. He explained relevancy of 8-30G. He mentioned the pricing of homes and development. He spoke about minimum density. Commissioner St Vil asked about the applicability of the renovation analysis. Heller answered that the DEEP study that was referenced was not applicable.

Attorney Landolina commented about the intervention petition. He explained that the notice of intervention has not been filed, it needs to be filed on a verified basis.

Attorney Studer, spoke about CEPA.

Commissioner Ribe asked Heller what the subdivision would look like if it were not an affordable housing development.

Heller answered that the affordable housing act eliminates the zoning requirements regarding density and setbacks etc..

Ribe asked how many houses would be there then. Pete Gardner explained it comes down to lot width and size.

Ribe and staff pointed out that there would be four lots if there were no 8-30g application.

Peter Gardner spoke about the hoops he is being asked to jump through now in comparison to other projects.

Commissioner Maugle requested the applicant complete a renovation analysis to collect more data.

Commissioner Ribe expressed concern for lack of information.

Chairman DeBrodth read a statement of request from Karl Acimovic.
Heller exclaimed that what the commission is asking is not applicable for 26 lots.
Chairman DeBrodth questioned how all of the systems within the lot will function together, and that they need to be looked at cumulatively.
Heller disputed by saying that the criteria from the DEEP publication applies to individual systems only.
Chairman DeBrodth explained that the commission is looking for the cumulative effect. He also asked Acimovic how the cumulative analysis relate to the DEEP standards Heller referenced.
Acimovic explained that he is looking for a cumulative impact of all the septic systems in the subdivision.
Chairman DeBrodth asked how long this analysis would take. Acimovic assumed that the analysis could be done in 30 days. Juliet Hodge asked Acimovic how the analysis is to be conducted.
Acimovic explained they need to look at the direction of flow for each lot and evaluate the percolation rates and soil permeability etc. under average conditions.
Chairman DeBrodth asked if this analysis would be sufficient enough to draw a conclusion on the application.
Chairman Maugle asked about the bacterial analysis and percolation test.
Acimovic answered that it does not impact the analysis significantly.
Heller explained that what Acimovic is asking for is different than the facts they have, but he confirmed that he understood what the commission was asking for.
Peter Gardner asked whether the Commission would deny the application of the analyses requested confirm that some effluent flows into the wetlands. The Commission stated they would look at the information provided and determine the impact to wetlands.
Heller identifies that the impact must be there and be significant.
Landolina explained that the data would be taken into consideration and that's how a decision will be made.
Peter Gardner and Attorney Heller again confirmed that they understood what the commission was asking for.
Struder explained that the engineer they hire will know how to complete the analysis.

Motion made by Commissioner Pealer and seconded by Paul Maugle to continue the Public Hearing to January 3, 2023. Motion passed unanimously.

RESULT: CONTINUE
MOVER: Dan Pealer
SECONDER: Paul Maugle

- B. Application IWWC#22-19 of Steve Masalin, DPW, Town of Ledyard, 741 Colonel Ledyard Hwy. Ledyard CT 06339 to replace the existing Lantern Hill Road Bridge No. 137-001 over Whitford Brook with a 33ft. clear span, precast concrete, 3-sided culvert.

Steve Masalin, 24 Maple Terrace, Director of Public Works and Mike Fanning, PE presented the Application. Masalin stated that the project to replace the bridge on Lantern Hill Rd. over Whitford Brook was fully reviewed and permitted several years ago. That permit expired in August of 2021, thus prompting the resubmission to IWWC. This is a shared bridge between Ledyard and Stonington. It is a narrow bridge which does not allow 2 commercial vehicles to pass. A grant was secured to repair the bridge years ago, but Stonington never provided their

share of the matching funds, and the project was abandoned at the time. The problem still exists despite some repair efforts and an imposed load limit. The DOT has prioritized this project, but a MOU with Stonington is still needed. Stonington's IWWC permit is still active. WMC Engineering have been retained to handle the project. Mike Fanning, PE presented the plans to the Commission. he stated that the plans have not changed with respect to the design except for 2 minor changes to the grade of the road to improve the hydraulics and improve the width of the opening.

He discussed the 800sf of impact to the wetlands and 10,000sf of impact to the Upland Review Area. The project area is entirely within the FEMA Flood Zone A. Storage areas and treatment basins will be provided.

The plan will be revised to reflect the correct property owners.

The Commission members asked questions. Commission members felt that since it was fully permitted by all relevant State Agencies and the IWWC before, that they did not see why it could not be approved now. asked questions. Len Johnson, WEO did not have any concerns.

A Motion was made to classify Application 22-19URA as a non-significant impact activity per Section 6.2 of the Regulations for the following reason: 1. there will be little if any reduction of the natural capacity of the wetlands and 2. the public benefit justifies the anticipated degradation of the regulated area. Motion Passed Unanimously.

MOVER: Pealer

SECONDER: Ribe

RESULT: APPROVED AND SO DECLARED

After considering all of the relevant factors, Commissioner Maugle made a Motion to Approve Application 22-19URA for the following reasons:

There will be no significant impact on the Wetlands

It increases potential flow of water to downstream water bodies

It increases the public safety in the area

Commissioner Ribe Seconded the Motion. Motion Passed unanimously.

RESULT: APPROVED AND SO DECLARED

MOVER: Paul Maugle

SECONDER: Beth E. Ribe

V. NEW BUSINESS

A. Approval of the 2023-24 IWWC Meeting Schedule

Commission members reviewed the 2023 Meeting Schedule.

Motion was made to approve the 2023 Meeting Schedule. Motion Passed unanimously.

RESULT: APPROVED AND SO DECLARED

MOVER: Dan Pealer

SECONDER: Paul Maugle

VI. REPORTS

A. Staff Report

WEO Len Johnson reviewed his submitted report.

VII. APPROVAL OF MINUTES

A. Approval of October 4, 2022 Minutes

Motion was made and seconded to approve the October 4, 2022 minutes with one minor typo correction. Motion passed unanimously.

RESULT: APPROVED AND SO DECLARED

MOVER: Dan Pealer

SECONDER: Paul Maugle

VIII. MEETING REVIEW

Chairman Debrodt provided Commission members with the Meeting Review Checklist and discussed the issues with getting so much information last minute and trying to get it posted or to the Commission members in time to review and digest it.

IX. ADJOURNMENT

Motion was made by Commissioner Pealer and seconded by Commissioner Maugle to adjourn at 10:30PM Motion passed unanimously.

This was Approved and so declared.

RESULT: APPROVED AND SO DECLARED

MOVER: Dan Pealer

SECONDER: Paul Maugle

DISCLAIMER: Although we try to be timely and accurate these are not official records of the Town.

