

TOWN OF VERNON
Inland Wetlands Commission (IWC)
Meeting Notice & Agenda
Tuesday, February 22, 2022, 7:00 PM

Join Zoom Meeting

<https://us02web.zoom.us/j/6149852850?pwd=NUZwVkEwWkRxS1EweC94cFNHVUxBdz09>

Meeting ID: 614 985 2850

Passcode: h72Vs7

Dial by your location:

(646) 876 9923

Meeting ID: 614 985 2850

Passcode: 786221

AGENDA

1. Call to Order & Roll Call

2. Administrative Actions

2.1 Call for filing(s) of Intervener Petitions and Determination of Status

3. New Applications for Receipt and Determination of Significance, if any

4. Public Hearing and Action on New Applications

4.1 IWC 2022-01, 501 Talcottville Rd. An Application by Vernon Development LLC for a Wetlands Re-designation and a Wetlands Permit for activity in a regulated area, in order to develop a child-care facility at 501 Talcottville Rd. (Tax Map 09, Block 007, Parcel 0001D).

5. Status of Cease & Correct Orders, if any

6. Wetlands Enforcement Officer Report, if any

7. Inland Wetlands Agent Approvals, if any

8. Other Business

9. Adjournment

Rachel Stansel, Chairperson Inland Wetlands Commission

APPLICATION 1



January 12, 2022

Vernon Inland Wetlands Commission
56 West Main Street, 2nd Floor
Vernon, CT 06066

Re: The Learning Experience (TLE)
501 Talcottville Road, Vernon

Dear Commissioners,

On behalf of the Vernon Development LLC, I am pleased to submit the attached application for a wetland redesignation and a wetland permit for regulated activities associated with the development of The Learning Experience (TLE) Academy of Early Education at 501 Talcottville Road in Vernon, Connecticut. The subject parcel currently consists of 4.6 acres of undeveloped woodland located at the intersection of Dart Hill Road and Talcottville Road (Rte. 83). A wooded wetland, delineated by REMA Ecological Services, LLC in May of 2021, occupies the southwestern portion of the parcel. In conjunction with the proposed TLE development, the owner is proposing to divide the existing parcel into two lots, including a 2.0 acre lot adjacent to Dart Hill Road to be developed with the TLE facility, and a remaining 2.6 acre lot fronting on Talcottville Road for potential future development. The subdivision application to split the parcel will be submitted to be considered concurrently with the applications for the Wetland Permit and Special Permit/Site Plan approval for the TLE development. However, the permits for the TLE should not be conditioned on the approval of the subdivision, but should be valid regardless of whether the lot is split or remains a single 4.6 acre parcel.

The proposed TLE development will involve the construction of a 10,000 square foot building, 5,000 square foot playground and associated parking. Runoff from the building and parking lot will be directed to a subsurface infiltration system and surface infiltration basin for treatment, groundwater recharge and detention prior to discharge at the edge of the existing on-site wetland. A retaining wall is proposed along the southern edge of the development in order prevent any direct wetland disturbance. However, the project will involve approximately 0.82 acres of work within wetland regulated area associated with the construction of the building, playground, parking lot, and stormwater management system. The plans call for the removal of existing invasive species along the project perimeter and installation of wetland buffer plantings along the existing wetland.

If there are any questions, or you require further information, please call me at (860) 623-0569.

Very truly yours,

Timothy A. Coon, P.E.
J.R. Russo & Associates, LLC

Attachments

cc: Eric Spungin



TOWN OF VERNON

INLAND WETLANDS COMMISSION (IWC)

APPLICATION

This form is to be used to apply to the Vernon Inland Wetlands Commission (IWC) for approval for a redesignation of a wetlands area, a change to the Inland Wetlands and Watercourses Regulations, and/or a permit to conduct a regulated activity in a wetland, watercourse, or upland review area (URA), which are defined as areas within one hundred (100) feet from the boundary of a wetland, watercourse, or intermittent watercourse and areas within two hundred (200) feet from the boundary of Gage's Brook, Hockanum River, Ogden Brook, Railroad Brook, Tankerhoosen River, Valley Falls Pond, Walker Reservoir East, Walker Reservoir West. Any activity that the Commission determines is likely to impact or affect wetlands or watercourses may be considered a regulated activity. **Provide all the information requested.**

The Applicant must be the property owner, the property owner's agent, the Town of Vernon, or someone with a direct financial interest in the subject property. Said interest shall be explained. If the applicant is not the property owner, written permission for this Application must be obtained from the property owner and submitted by letter signed by the property owner authorizing submission of the Application.

The Applicant understands that the Application is complete only when all information and documents required by IWC have been submitted and that any approval by the IWC relies upon complete and accurate information being provided by the Applicant. Incorrect information provided by the Applicant may make the approval invalid. The IWC may require additional information to be provided by the Applicant.

I. APPLICANT (S)

Name: Eric Spungin
Title: Member
Company: Vernon Development LLC
Address: 56 East Main Street, Avon, CT 06001
Telephone: 860-677-5607 Fax: _____
E-mail: espungin@hotmail.com

II. PROPERTY OWNERS

Name: James Basile
Title: _____
Company: 501 Talcottville Road LLC
Address: 43 Ridgecrest Lane, Bristol, CT 06010-2910
Telephone: 860-202-9540 Fax: _____
E-mail: _____

III. PROPERTY

Address: 501 Talcottville Road

Assessor ID Code: Map # 09 Block # 007 Lot/Parcel # 0001D

Land Record Reference to Deed Description: Volume: 2026 Page 51

USGA Location:

Circle the Map Quadrangle Name: Manchester # 38 Rockville #39

Circle the Sub regional Drainage Basin #: 3108 4500 4502 4503

Zoning District: Commercial (C)

IV. PROJECT

Project Name: The Learning Experience

Project Contact Person:

Name: Timothy Coon

Title: Project Engineer

Company: J.R. Russo + Associates LLC

Address: P.O. Box 938, East Windsor, CT 06088

Telephone: 860-623-0569 Fax: 860-623-2485

E-mail: tcoon@jrusso.com

V. PROJECT SUMMARY

Describe the project briefly in regard to the purpose of the project and the activities that will occur. Attach to this application a complete and detailed description with maps and documentation as required by the "The Town of Vernon Inland Wetlands and Watercourses Regulations".

Purpose: Construction of a 10,000 SF Daycare Facility

General Activities: Filling, excavation, and building construction within the upland review area.

Regulated Activities:

Watercourse disturbance (linear feet): 0

Wetlands disturbance (acres or sq. ft.): 0

Upland Review Area (URA) disturbance: 0.82 ± acres

Nonregulated activities & activities outside URA: 0.89 ± acres

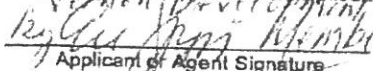
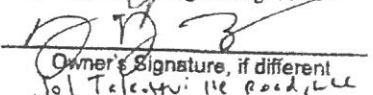
VI. APPLICATION

- ☒ Redesignation of Wetlands
- ☐ Amendment of Inland Wetlands and Watercourses Regulations
- ☐ Modification of a Wetlands Redesignation
- ☒ Wetlands Permit
- ☐ Non-significant activity
- ☐ Significant activity with less than 1/2 acre site disturbance
- ☐ Significant activity with site disturbance from 1/2 acre to and including 2 acres
- ☐ Significant activity with site disturbance greater than 2 acres
- ☐ Commission modification of a wetland permit in effect
- ☐ Modification of a wetland permit by the Wetlands Agent
- ☐ Approval of a license by the Wetlands Agent for activities in an upland
- ☐ Appeal of a decision by the Wetlands Agent
- ☐ Subdivision review per CGS Section 8-26
- ☐ Jurisdictional ruling regarding permitted and nonregulated uses
- ☐ Waiver, reduction, or delayed payment of fees (attach statement of justification)
- ☐ Waiver
- ☐ Reduction to \$ _____
- ☐ Delay of payment to _____

VII. CERTIFICATION AND SIGNATURE

I, the undersigned Applicant or applicant's Agent, hereby certify that I have reviewed the "Town of Vernon Inland Wetlands and Watercourses Regulations" and have prepared this Application with complete and accurate information.

Property Owner, Applicant, or Applicant's Agent:

 Applicant or Agent Signature	<u>Eric Spangin</u> Printed Name	<u>12/22/21</u> Date
 Owner's Signature, if different Sol Tele. 411-116 Road, LLC	<u>James J Dasile</u> Printed Name	<u>12/22/21</u> Date

TO BE FILLED IN BY THE PLANNING DEPARTMENT

DATE APPLICATION SUBMITTED _____

DATE APPLICATION RECEIVED BY COMMISSION _____

IWC FILE: _____



CONNECTICUT DEPARTMENT OF
ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127

GIS CODE #: _____
For DEP Use Only

Gina McCarthy, Commissioner

Statewide Inland Wetlands & Watercourses Activity Reporting Form

Please complete and mail this form in accordance with the instructions. Please print or type.

PART I: To Be Completed By The Inland Wetlands Agency Only

1. DATE ACTION WAS TAKEN: Year _____ Month _____
2. ACTION TAKEN (circle one): A B C D E F G H
3. WAS A PUBLIC HEARING HELD? Yes _____ No _____
4. NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:
(print) _____ (signature) _____

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

5. TOWN IN WHICH THE ACTION IS OCCURRING: Vernon
Does this project cross municipal boundaries? Yes _____ No X
If Yes, list the other town(s) in which the action is occurring: _____
6. LOCATION: USGS Quad Map Name: Rockville AND Quad Number: 39
Subregional Drainage Basin Number: 4500
7. NAME OF APPLICANT, VIOLATOR OR PETITIONER: Vernon Development LLC
8. NAME & ADDRESS/LOCATION OF PROJECT SITE: 501 Talcottville Road
Briefly describe the action/project/activity: Construction of a 10,000 SF Daycare Facility
9. ACTIVITY PURPOSE CODE: D
10. ACTIVITY TYPE CODE(S): 12 14 _____
11. WETLAND / WATERCOURSE AREA ALTERED [must be provided in acres or linear feet as indicated]:
Wetlands: 0 acres Open Water Body: 0 acres Stream: 0 linear feet
12. UPLAND AREA ALTERED [must be provided in acres as indicated]: 0.82 acres
13. AREA OF WETLANDS AND / OR WATERCOURSES RESTORED, ENHANCED OR CREATED: 0 acres
[must be provided in acres as indicated]

DATE RECEIVED:

PART III: To Be Completed By The DEP

DATE RETURNED TO DEP:

FORM COMPLETED: YES NO

FORM CORRECTED / COMPLETED: YES NO

APPLICATION FEES

(Section 19 of the Inland Wetlands and Watercourses Regulations)

19.4 Fee Schedule. Application fees shall be based on the following schedule:

Wetlands redesignation	\$150
Modification of a wetlands redesignation	75
Wetland permits	
Non-significant activity	125
Significant activity with less than ½ acre site disturbance	250
Significant activity with site disturbance from ½ to and including 2 acres	500
Significant activity with site disturbance greater than 2 acres	800
Notification of abutters of public hearings, per abutter	1
Commission modification of a wetlands permit remaining in effect	150
Modification of a wetland permit by the Wetland Agent	75
State mandatory fee (per CGS 22a-27j)	60
Other fees	
Approval by Wetland Agent	75
Appeal of Wetland Agent decision	125
Jurisdictional rulings regarding permitted and nonregulated uses	25
Review of proposed subdivision per CGS 8-26 (e) where no regulated activity is proposed	\$125

335

Complex Application Fee: The Commission may charge an additional fee sufficient to cover the cost of reviewing and acting on complex applications. Such fee may include, but not be limited to, the cost of retaining experts to analyze, review, and report on issues requiring such experts. The Commission or the Wetland Agent shall estimate the complex application fee which shall be paid pursuant to section 20.1 of these regulations within 10 days of the applicant's receipt or notice of such estimate. Any portion of the complex application fee in excess of the actual cost shall be refunded to the applicant no later than 30 days after publication of the Commission's decision.

19.5 Exemption. Boards, commissions, councils and departments of the Town of Vernon are exempt from all fee requirements.

19.6 Waiver. The applicant may petition the Commission to waive, reduce or allow delayed payment of the fee. Such petitions shall be in writing and shall state fully the facts and circumstances the Commission should consider in its determination under this subsection. The Commission may waive all or part of the application fee if the Commission determines that:

Abutters List/Mailing Labels

KAO LLC
192 Talcott Ridge Rd
South Windsor, CT 06074

Gregory Gozzo
C/O Gozzo Estate Homes
190 Spyglass Lane
Jupiter, FL 33477

Independence Realty Group LLC
c/o Webster Bank: Corp RE 203
145 Bank Street
Waterbury, CT 06702

Kenneth Busenbark
32 Worcester Road
Vernon, CT 06066

Richard & Gloria J. Martocchio
36 Worcester Road
Vernon, CT 06066

Nelson J. & Theresa M. Chiasson
42 Worcester Road
Vernon, CT 06066

Brian F. Oulette
& Stephanie M. Brow
46 Worcester Road
Vernon, CT 06066

John Coro
52 Worcester Road
Vernon, CT 06066

James D. & Bonnie R. King
58 Worcester Road
Vernon, CT 06066

Thomas Shirshac
64 Worcester Road
Vernon, CT 06066

Eugene P. & Judith S. Veillette
786 Dart Hill Road
Vernon, CT 06066-2302

Town of Vernon
14 Park Place
Vernon, CT 06066

Vernon Properties LLC
605 Middel Street, No. 15
Braintree, MA 02184-5817

Realty Income Corp
PM Dept 0704
11995 El Camino Real
San Diego, CA 92130

O'Reilly Automotive Store Inc.
P.O. Box 9167
Springfield, MO 65801

New 500 East LLC
44 Caisson Road
Colchester, CT 06415

PLEASE RETURN TO:
M. STIEGEL
86 FAIRMINGTON AVE.
HARTFORD, CT. 06105

VOL 2026 PG 51
INST: 5522

QUITCLAIM DEED

VICTOR J. BASILE ("Releasor"), of 43 Ridgecrest Lane, Bristol, Connecticut, for no consideration paid, grants to 501 TALCOTTVILLE ROAD, LLC of 43 Ridgecrest Lane, Bristol, Connecticut ("Releasee") all that certain piece or parcel of land together with all improvements thereon and appurtenances thereto in the Town of Vernon, Connecticut, as more particularly described on Exhibit A attached hereto and made a part hereof ("Premises"). Releasee herein assumes and agrees to pay all real property taxes attributable to the Premises on the list of October 1, 2006 and thereafter.

SAID PREMISES IS CONVEYED SUBJECT TO, WITHOUT LIMITATION:

1. Taxes of the Town of Vernon on the List of October 1, 2006 now due and payable and thereafter, which Releasee herein assumes and agrees to pay.
2. Any and all provisions of any ordinance, municipal regulation, or public or private law.
3. Declarations, restrictions, covenants, matters and easements of record and any state of facts an accurate survey or personal inspection of the Premises might reveal.

Signed this 7th day of February, 2007

Witnessed by:


MICHAEL S. STIEGEL, as witness


VICTOR J. BASILE


ROBERT A. FIERCE as witness

STATE OF CONNECTICUT)

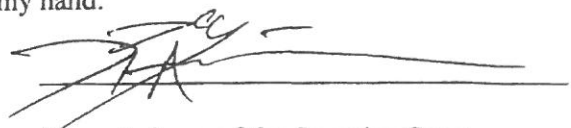
COUNTY OF)

ss:

Hartford
(town)

On this the 7th day of February, 2007, before me, the undersigned officer, personally appeared Victor J. Basile, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained and as his free act and deed.

In witness whereof I hereunto set my hand.


Commissioner of the Superior Court
Notary Public
My Commission Expires:

Grantee's Address: 43 Ridgecrest Lane
Bristol, Connecticut 06010

CONVEYANCE TAX RECEIVED
STATE \$.00
TOWN \$.00
Bernice K. Dixon
TOWN CLERK OF VERNON

Exhibit A

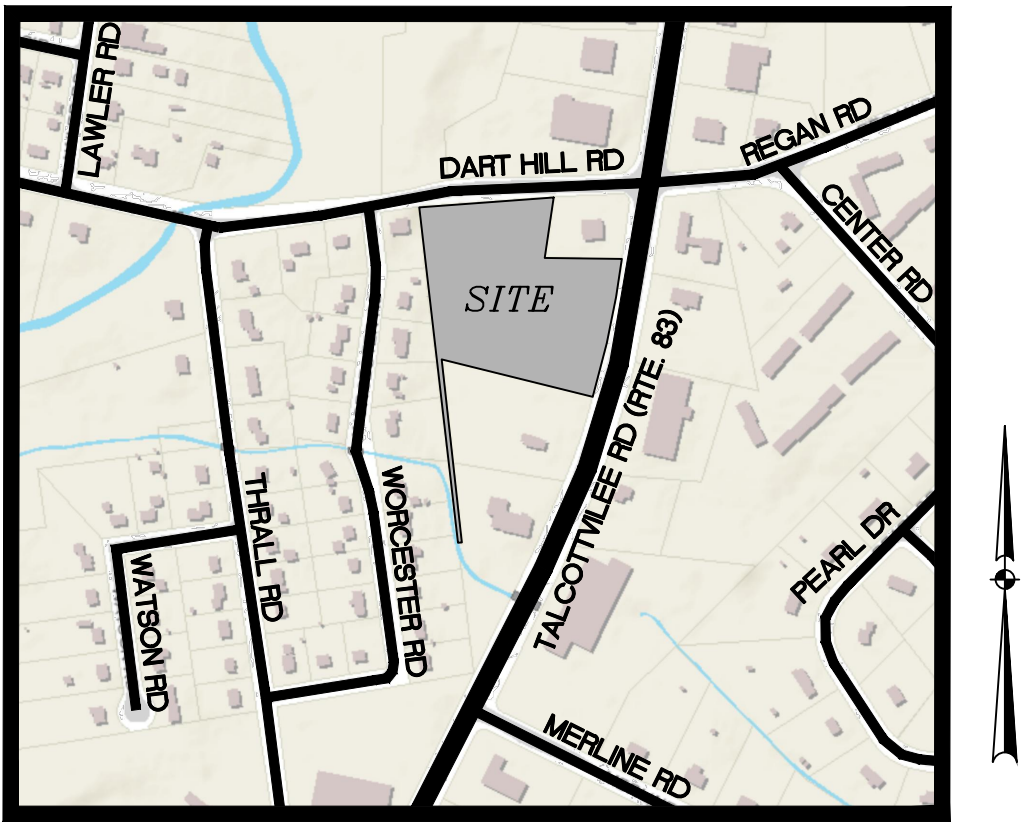
A certain piece or parcel of land situated on the westerly side of Talcottville Road (Route #83) and the southerly side of Dart Hill Road in the Town of Vernon, County of Tolland and State of Connecticut, being shown as "Parcel 3 Parcel contains 200,968 S.F.±, 4.6136 AC±", on a certain map or plan entitled "Sub-division Plan Prepared For John J. Mahr, Sr. Boundary Map Talcottville Rd. & Dart Hill Rd. Vernon, Conn. AR Lombardi Associates, Inc. Consulting Civil and Sanitary Engineers Land Surveyors Vernon Connecticut Comm. No: 84-1091 Date: March 7, 1985 Scale: 1" = 40' Sht. No: 1 of 2", which map or plan is on file or to be filed in the Vernon Town Clerk's Office and to which reference may be had for a more particular description thereof. Said Parcel 3 is more particularly bounded and described as follows:

Commencing at a point in the southerly street line of Dart Hill Road, which point marks the northwesterly corner of the herein-described premises and the northeasterly corner of land now or formerly of Antoine F. Bourcher, as shown on said map; thence proceeding in a southerly direction along said land now or formerly of Antoine F. Bourcher, land now or formerly of Thomas A. & Linda M. Shirshac, and land now or formerly of Eileen M. Strube, partly by each, a distance of 408.91 feet to a point; thence turning an obtuse interior angle of 179° 35' 27" and proceeding along land now or formerly of Alice M. Coro, land now or formerly of Peggy O. Tracy, land now or formerly of Nelson J. and Teresa M. Chiasson, land now or formerly of Paul J. and Linda Jobkowlak and land now or formerly of David M. Glenn Jr. and Sharon L. Glenn, partly by each, as shown on said map, a distance of 470.12 feet to a point; thence turning an obtuse interior angle of 103° 44' 36" and proceeding along Parcel 1, as shown on said map, a distance of 11.73 feet to a point; thence turning an acute interior angle of 76° 53' 42" and proceeding along land now or formerly of Cardinal Industries, Inc., as shown on said map, a distance of 211.66 feet to a point; thence turning an obtuse interior angle of 180° 04' 41" and proceeding along land now or formerly of Gregory Gozzo and David J. Sweeney, as shown on said map, a distance of 268.00 feet to a point; thence turning an obtuse interior angle of 289° 53' 43" and proceeding along said land now or formerly of Gregory Gozzo and David J. Sweeney, a distance of 403.00 feet to a point in the westerly street line of Talcottville Road; thence proceeding along the arc of a curve to the left having a radius of 2,506.67 feet, a distance of 322.92 feet along the westerly street line of Talcottville Road to a Connecticut Highway Department Monument in said westerly street line of Talcottville Road; thence proceeding along said westerly street line of Talcottville Road, a distance of 41.55 feet to a point; thence turning an acute interior angle of 82° 53' 05" and proceeding along Parcel No. 2, as shown on said map, a distance of 200.86 feet to a point; thence turning an interior obtuse angle of 277° 06' 55" and proceeding along Parcel No. 2, as shown on said map, a distance of 159.68 feet to a point; thence turning an interior acute angle of 77° 09' 29" and proceeding along the southerly street line of Dart Hill Road, as shown on said map, a distance of 352.53 feet to the point or place of beginning.

RECORDED IN
VERNON LAND RECORDS
Bernice K. Dixon
VERNON TOWN CLERK
ON Dec 05, 2008 AT 12:30P



501 Talcottville Road
Vernon, Connecticut



KEY PLAN MAP
1"=500'

Applicant
Vernon Development LLC
56 East Main Street
Avon, CT 06001
(860) 677-5607

Owner
501 Talcottville Road LLC
43 Ridgecrest Lane
Bristol, CT 06010-2910

LADA, P.C.

Land Planners

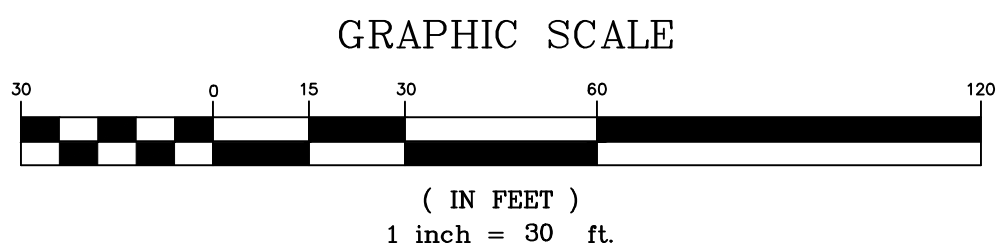
104 West Street
Simsbury, CT 06070 (860) 651-4971
Brewster, NY 10509 (845) 278-7424
Email: ladapc@snet.net

**RUSSO**
SURVEYORS • ENGINEERS
SERVING CT & MA

J.R. Russo & Associates, LLC

1 Shoham Rd East Windsor CT 06088 • CT 860.623.0569 • MA 413.785.1158
www.jrusso.com • info@jrusso.com

DRAWING INDEX		
SHEET TITLE	SHEET NO.	LATEST REVISION
CIVIL		
COVER SHEET	1 of 12	2-14-22
EXISTING CONDITIONS & DEMOLITION PLAN	2 of 12	2-14-22
LAYOUT PLAN	3 of 12	2-14-22
GRADING & EROSION & SEDIMENT CONTROL PLAN	4 of 12	2-14-22
STORM SEWER PLAN	5 of 12	2-14-22
UTILITY PLAN	6 of 12	2-14-22
PLANTING PLAN	7 of 12	2-14-22
EROSION & SEDIMENT CONTROL NOTES	8 of 12	2-14-22
DETAILS	9 of 12	2-14-22
DETAILS	10 of 12	2-14-22
DETAILS	11 of 12	2-14-22
DETAILS	12 of 12	2-14-22

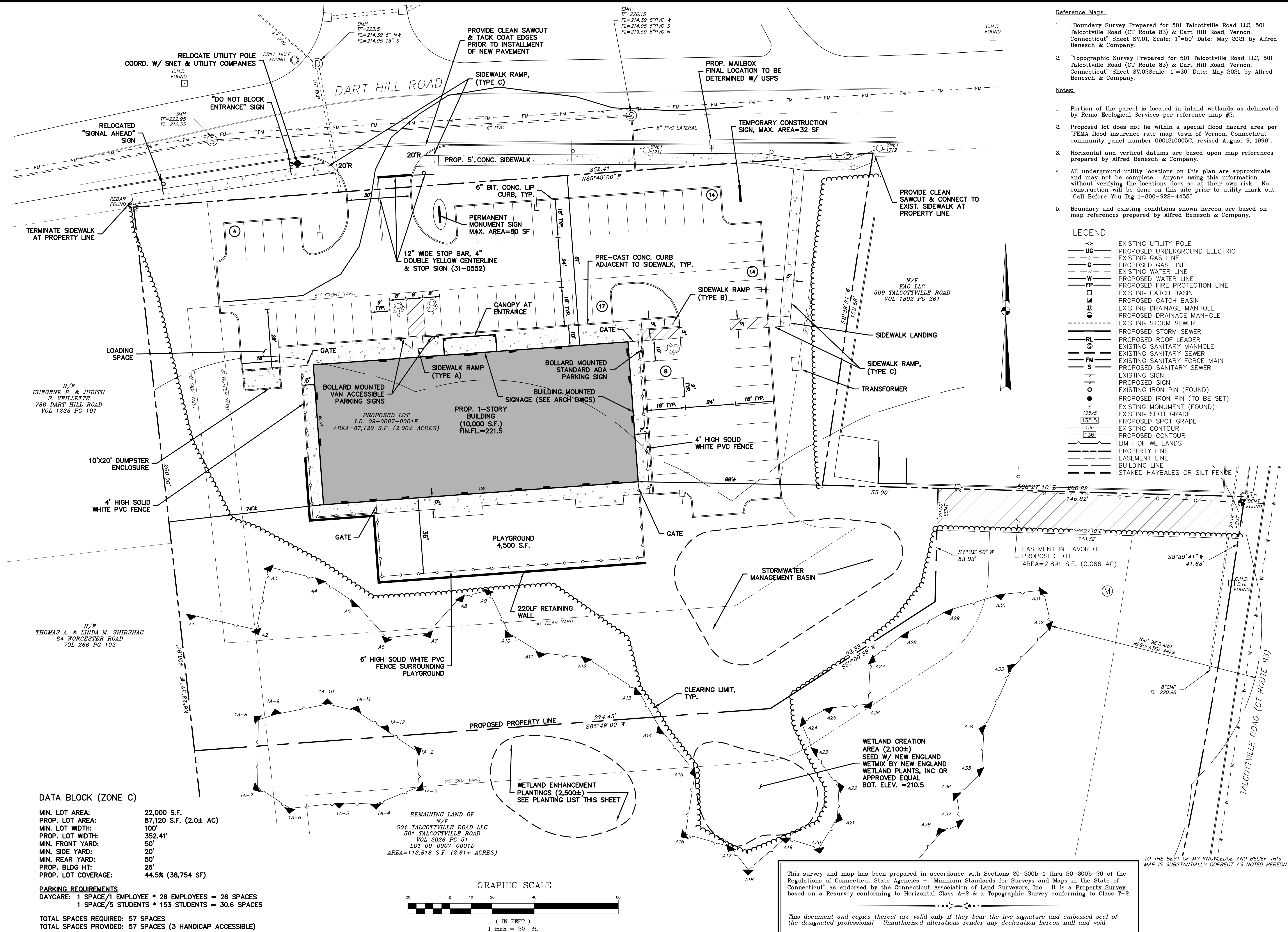


This survey and map has been prepared in accordance with Sections 20-300b-1 thru 20-300b-20 of the Regulations of Connecticut State Agencies - "Minimum Standards for Surveys and Maps in the State of Connecticut" as endorsed by the Connecticut Association of Land Surveyors, Inc. It is a Property Survey based on a Resurvey conforming to Horizontal Class A-2 & a Topographic Survey conforming to Class T-2

• • • • •

This document and copies thereof are valid only if they bear the live signature and embossed seal of the designated professional. Unauthorized alterations render any declaration hereon null and void.

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS
MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.



RUSSO
SURVEYORS-ENGINEERS
SERVING CT & MA

Applicant
Vernon Development LLC
56 East Main Street
Avon, Connecticut 06001

2-14-22	WETLAND MITIGATION, LEAK-OFF, BASIN OUTLET
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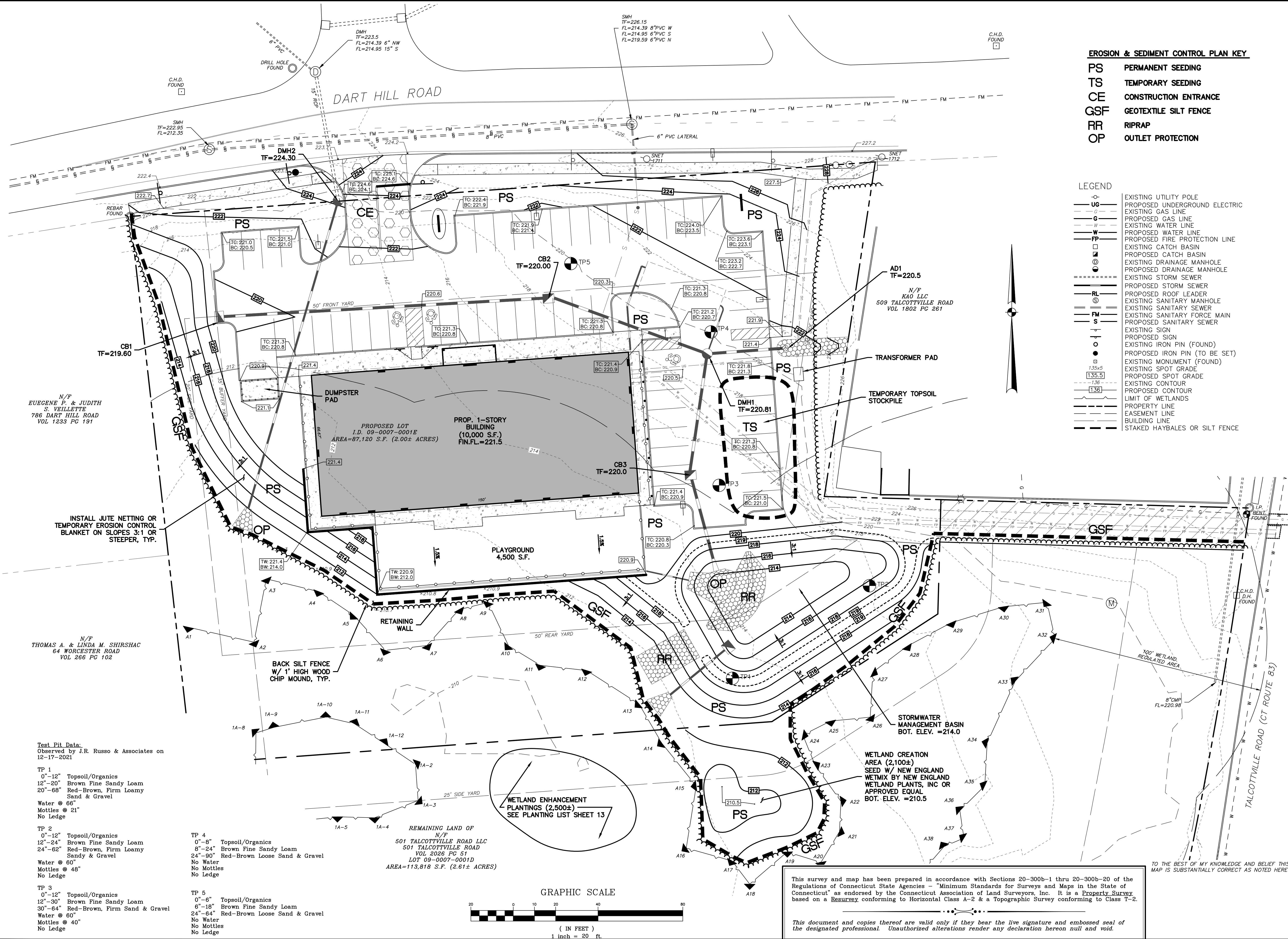
REVISIONS

BY: LF/TAC	CHK: JEU
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The Learning Experience
Property Of
501 Talcottville Road, LLC
501 Talcottville Road
Vernon, Connecticut 06010
Parcel ID: 09-0007-0001D (Zone: C)

Layout Plan

DATE	1-11-22
SCALE	1"=20'
JOB NUMBER	2021-083
SHEET	3 of 12



EROSION & SEDIMENT CONTROL PLAN KEY

- PS PERMANENT SEEDING
TS TEMPORARY SEEDING
CE CONSTRUCTION ENTRANCE
GSF GEOTEXTILE SILT FENCE
RR RIPRAP
OP OUTLET PROTECTION

LEGEND

- U— EXISTING UTILITY POLE
—UG— PROPOSED UNDERGROUND ELECTRIC
—G— EXISTING GAS LINE
—C— PROPOSED GAS LINE
—W— EXISTING WATER LINE
—WP— PROPOSED WATER LINE
—FP— PROPOSED FIRE PROTECTION LINE
—CB— EXISTING CATCH BASIN
—CBP— PROPOSED CATCH BASIN
—DMH— EXISTING DRAINAGE MANHOLE
—DMHP— PROPOSED DRAINAGE MANHOLE
—SS— EXISTING STORM SEWER
—SSP— PROPOSED STORM SEWER
—RL— PROPOSED ROOF LEADER
—SMH— EXISTING SANITARY MANHOLE
—SSM— EXISTING SANITARY SEWER
—SSMP— EXISTING SANITARY FORCE MAIN
—SSSP— PROPOSED SANITARY SEWER
—S— EXISTING SIGN
—SP— PROPOSED SIGN
—IP— EXISTING IRON PIN (FOUND)
—IPB— PROPOSED IRON PIN (TO BE SET)
—M— EXISTING MONUMENT (FOUND)
—S— EXISTING SPOT GRADE
—SP— PROPOSED SPOT GRADE
—C— EXISTING CONTOUR
—CP— PROPOSED CONTOUR
—L— LIMIT OF WETLANDS
—P— PROPERTY LINE
—E— EASEMENT LINE
—B— BUILDING LINE
—S— STAKED HAYBALES OR SILT FENCE

NO.	DATE	DESCRIPTION
1	12-17-2021	ISSUED FOR PERMIT
2	12-17-2021	REVISIONS

BY:	CHK:
LF/TAC	JEU

S:\Acad\2021 Civil 3D\2021-083 Vernon Development - 501 Talcottville Rd\Russos Drawings\2021-083.dwg

Test Pit Data:
Observed by J.R. Russo & Associates on
12-17-2021

TP 1
0"-12" Topsoil/Organics
12"-20" Brown Fine Sandy Loam
20"-68" Red-Brown, Firm Loamy
Sand & Gravel

Water @ 66"
Mottles @ 21"
No Ledge

TP 2
0"-12" Topsoil/Organics
12"-24" Brown Fine Sandy Loam
24"-62" Red-Brown, Firm Loamy
Sandy & Gravel

Water @ 60"
Mottles @ 48"
No Ledge

TP 3
0"-12" Topsoil/Organics
12"-30" Brown Fine Sandy Loam
30"-64" Red-Brown, Firm Sand & Gravel
Water @ 60"
Mottles @ 40"
No Ledge

TP 4
0"-8" Topsoil/Organics
8"-24" Brown Fine Sandy Loam
24"-90" Red-Brown Loose Sand & Gravel

No Water
No Mottles
No Ledge

TP 5
0"-6" Topsoil/Organics
6"-18" Brown Fine Sandy Loam
24"-64" Red-Brown Loose Sand & Gravel

No Water
No Mottles
No Ledge

REMAINING LAND OF
N/F
501 TALCOTTVILLE ROAD LLC
501 TALCOTTVILLE ROAD
VOL 2026 PG 51
LOT 09-0007-0001D
AREA=113,818 S.F. (2.61± ACRES)

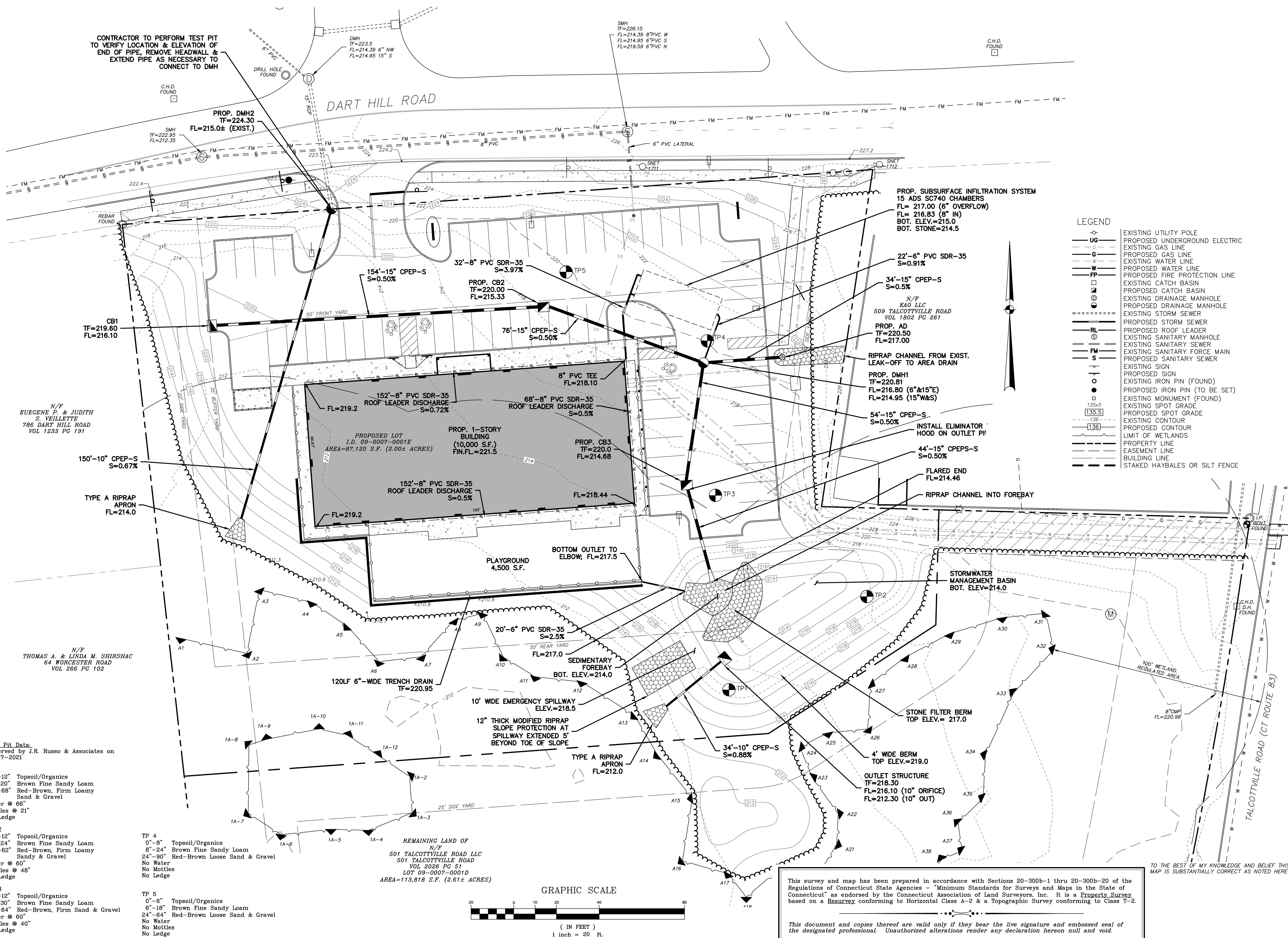
GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

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 **Property Survey** based on a **Resurvey** conforming to Horizontal Class A-2 & a Topographic Survey conforming to Class T-2.

This document and copies thereof are valid only if they bear the live signature and embossed seal of the designated professional. Unauthorized alterations render any declaration hereon null and void.



REVISIONS	
BY: LF/TAC	CHK: JEU

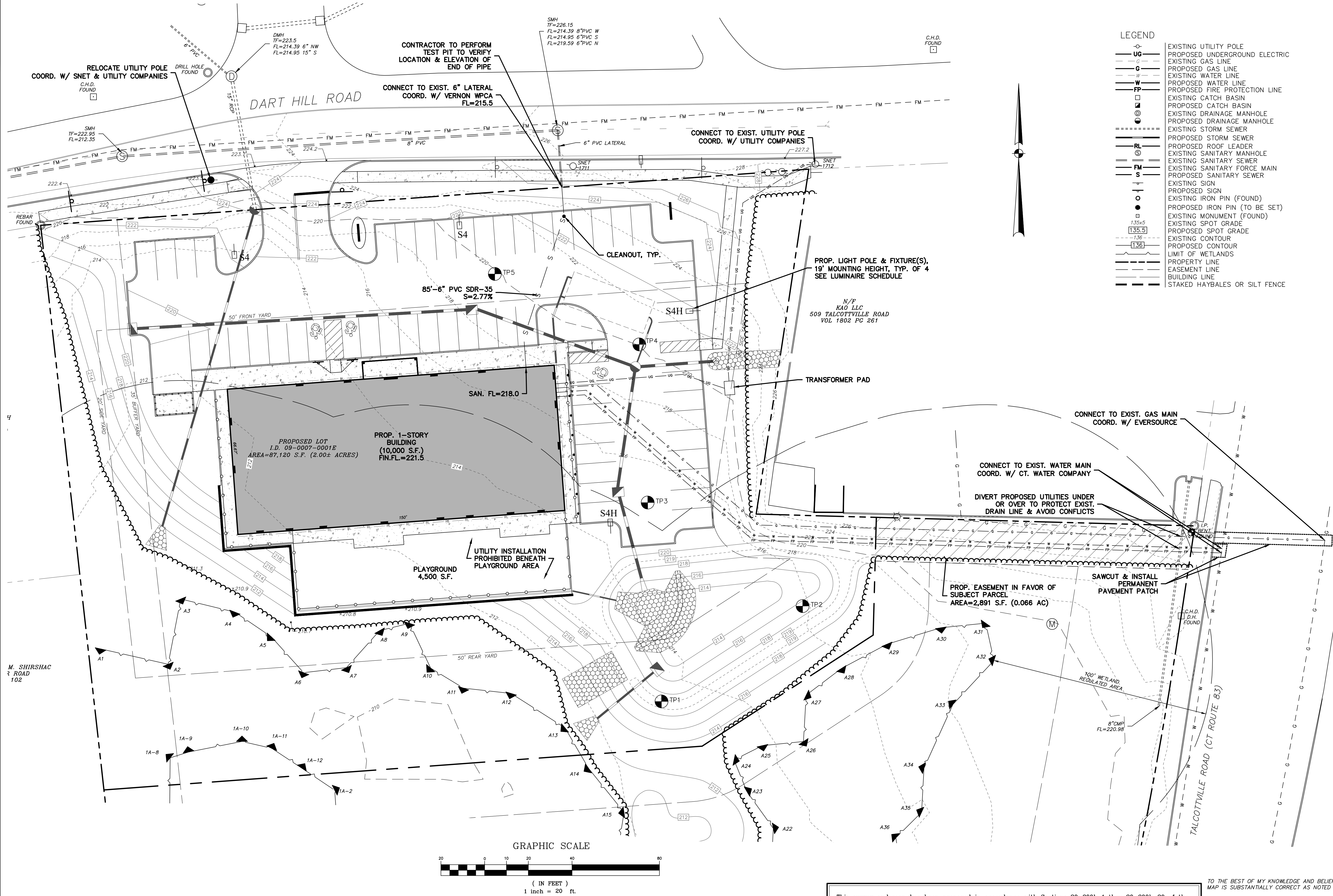
REVISIONS	
BY: LF/TAC	CHK: JEU

REVISIONS	
BY: LF/TAC	CHK: JEU

Storm Sewer Plan

DATE	1-11-22
SCALE	1"=20'
JOB NUMBER	2021-083
SHEET	5 of 12

S:\Acad\2021 Civil 3D\2021-083 Vernon Development - 501 Talcottville Rd\Russos Drawings\2021-083.dwg



Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Luminaire Lumens	Luminaire Watts	LLF	BUG Rating	Mounting Height	Description
	2	S4	Single	12574	102	0.900	B2-U0-G3	19	Lithonia DSX1 LED P3 40K TFTM MVOLT SPA DBLXD - SSS 18 4C DM19A DBLXD 18FT POLE on IFT BASE
	2	S4H	Single	11312	125	0.900	B2-U0-G2	19	Lithonia DSX1 LED P4 40K TFTM MVOLT SPA HS DBLXD - SSS 18 4C DM19AS DBLXD 18FT POLE on IFT BASE

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 **Property Survey** based on a **Resurvey** conforming to Horizontal Class A-2 & a Topographic Survey conforming to Class T-2.

This document and copies thereof are valid only if they bear the live signature and embossed seal of the designated professional. Unauthorized alterations render any declaration hereon null and void.

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.



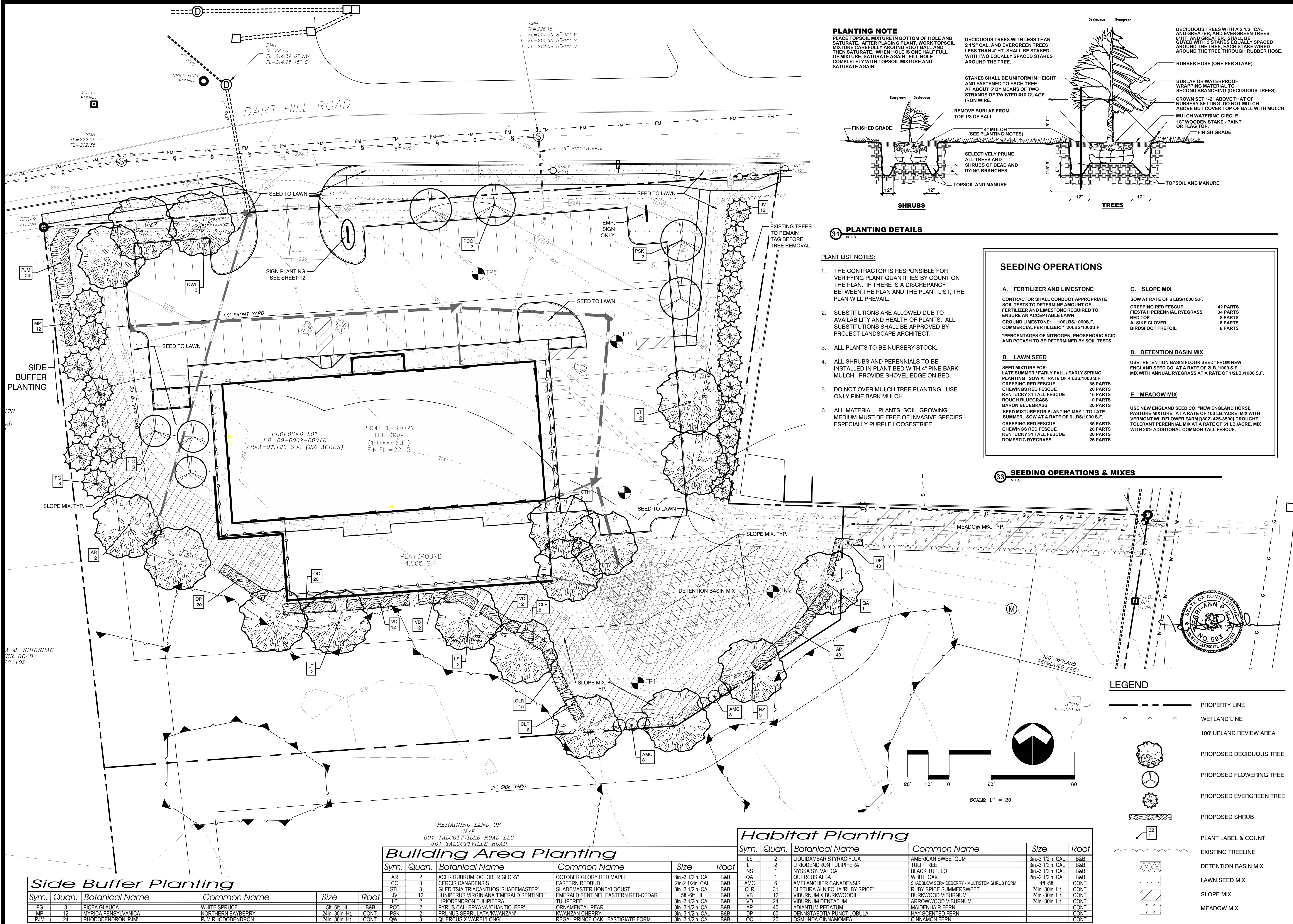
Applicant
Vernon Development LLC
56 East Main Street
Avon, Connecticut 06001

REVISIONS	
BY: LF/TAC	CHK: JEU
2-14-22	WETLAND MITIGATION, LEAK-OFF, BASIN OUTLET

The Learning Experience
Property Of
501 Talcottville Road, LLC
501 Talcottville Road
Vernon, Connecticut 06010
Parcel ID: 09-0007-0001D (Zone: C)

Utility Plan

DATE	1-11-22
SCALE	1"=20'
JOB NUMBER	2021-083
SHEET	6 of 12



RUSSO
SURVEYORS-ENGINEERS
SERVING CT & MA

J.R. Russo & Associates, LLC
150 West Street
Simsbury, CT 06067
(860) 655-4471
www.jrusso.com • info@russo.com

LADA, P.C.
Land Planners

104 West Street
Simsbury, CT 06067
(860) 655-4471
Email: lalapa@met.net

REVISIONS	
BY: DFM	CHK: TPH

The Learning Experience
Property of
501 Talcottville Road, LLC
501 Talcottville Road
Vernon, Connecticut 06010
Parcel ID: 09-0007-0001D (Zone: C)

Planting Plan

DATE
01-06-2022

SCALE
1"=20'

JOB NUMBER
2021-083

SHEET
7 of 12



REPORT DATE: June 6, 2021

PAGE 1 OF 3

REMA ECOLOGICAL SERVICES, LLC

164 East Center Street, Suite 8
Manchester, CT 06040

860.649.REMA (7362)

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT

PROJECT NAME & SITE LOCATION:

(+/- 4.87 acres)

501 Talcotville Road

Vernon, CT

REPORT PREPARED FOR:

Alfred Benesch & Company

120 Hebron Avenue, Floor 2

Glastonbury, CT 06033

REMA Job No.: 21-2390-VER55

Field Investigation Date(s): 5/6 & 5/11/2021

Field Investigation Method(s):

- ☒ Spade and Auger
☐ Backhoe Test Pits
☐ Other: _____

Field Conditions:

Weather: sunny / 70s

Soil Moisture: Moderate to high

Snow Depth: N/A

Frost Depth: N/A

Purpose of Investigation:

- ☒ Wetland Delineation/Flagging in Field
☐ Wetland Mapping on Sketch Plan or Topographic Plan
☐ High Intensity Soil Mapping by Soil Scientist
☒ Medium Intensity Soil Mapping from *The Soil Survey of Connecticut* Maps (USDA-NRCS)
☐ Other: _____

Base Map Source: CT Web Soil Survey; USDA-NRCS (attached); Figure A (attached)

Wetland Boundary Marker Series: RES-A1 to RES-A-51 (open line), and RES-1A-1 to RES-1A-12 (closed loop; upland island)

General Site Description/Comments: The "study area" encompasses roughly 4.87-acres of undeveloped, predominately forested land, on the south side of Dart Hill Road, and to the west of Talcotville Road (Route 83), in Vernon, CT. The study area's soils are both disturbed and undisturbed, with the disturbed soils associated with past fill, particularly within its southeastern section. The study area's soils are derived from glaciofluvial (i.e., stratified sand and gravel), but with a silty mantle. The undisturbed upland soil types are the well-drained Enfield (704) and the moderately well-drained Tisbury (702) soil series. The wetland-type soils are the poorly drained Raypol (12) soil series. The disturbed upland soils are mapped as Udorthents (308). The delineated regulated areas associated with the study area, include seasonally saturated to seasonally flooded wooded swamp, with embedded emergent marsh inclusions. Dominant and common overstory trees include red maple, cottonwood, and American elm. The shrub stratum includes elderberry, spicebush, multiflora rose, silky dogwood, willows, winterberry, arrowwood, sweet pepperbush, Morrow's honeysuckle, alternate-leaved dogwood, and gooseberry. Herbs include sensitive and cinnamon ferns, woodfern, sedges, soft rush, asters, goldenrods, skunk cabbage, jack-in-the pulpit, jewelweed, clearweed, fowl meadow grass, poison ivy, cattails, and Virginia jumpseed.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT (CONTINUED)

PROJECT NAME & SITE LOCATION: (+/- 4.87 acres)
501 Talcotville Road, Vernon, CT

SOIL MAP UNITS**Upland Soils**

Enfield silt loam (704). This series consists of deep, well drained soils formed in a coarse-silty mantle underlain by sandy water deposited glacial outwash materials. They are level to very steep soils on outwash plains and high stream terraces. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from a variety of acid rocks. Typically, these soils have a dark grayish brown silt loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is strong brown and light olive brown silt loam. The substratum from 26 to 60 inches is brown to reddish brown is stratified sand and gravel.

Tisbury silt loam (702). This series consists of deep, moderately well drained soils formed in a coarse-silty mantle underlain by sandy water deposited glacial outwash materials. They are level to gently sloping soils in broad drainage swales and low lying positions on outwash plains and terraces. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from a acid crystalline rocks (granite, gneiss and schist). Typically, these soils have a very dark grayish brown silt loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown and brownish yellow silt loam, with mottles common below 16 inches. The substratum from 26 to 60 inches is grayish brown, mottled stratified sand and gravel.

Udorthents (308). This soil mapping unit consists of well drained to moderately well drained soils that have been altered by cutting, filling, or grading. The areas either have had two feet or more of the upper part of the original soil removed or have more than two feet of fill material on top of the original soil. Udorthents or Made Land soils can be found on any soil parent material but are typically fluvial on glacial till plains and outwash plains and stream terraces.

Wetland Soils

Raypol silt loam (12). This series consists of deep, poorly drained soils formed in a coarse-loamy mantle underlain by sandy water deposited glacial outwash materials. They are nearly level and gently sloping soils on outwash plains and high stream terraces. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from acid rocks. Typically, these soils have very dark brown, silt loam Ap horizons, grayish brown and dark yellowish brown, mottled, silt loam and very fine sandy loam B2 horizons over light olive brown, mottled gravelly sand 11C horizons at a depth of 29 inches.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT (CONTINUED)

PROJECT NAME & SITE LOCATION: (+/- 4.87 acres)
501 Talcotville Road, Vernon, CT

SOIL MAP UNITS

See previous page

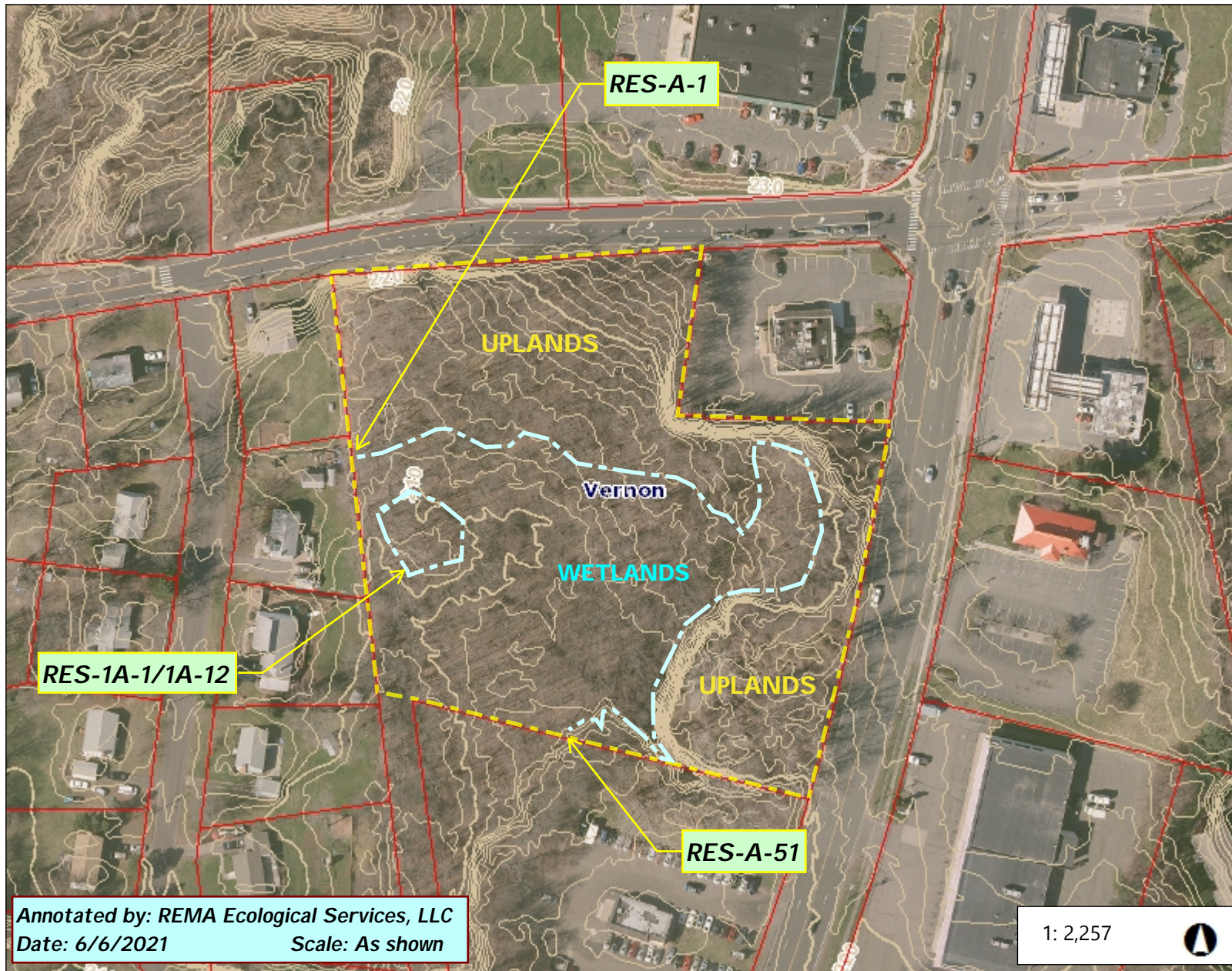
Any accompanying soil logs and soil maps, and the on-site soil investigation narrative are in accordance with the taxonomic classification of the National Cooperative Soil Survey of the USDA Natural Resource Conservation Service, and with the Connecticut Soil Legend (DEP Bulletin No.5, 1983), as amended by USDA-NRCS. Jurisdictional wetland boundaries were delineated pursuant to the Connecticut General Statutes (CGS Sections 22a-36 to 22a-45), as amended. The site investigation was conducted and/or reviewed by the undersigned Registered Soil Scientist(s) [registered with the Society of Soil Scientists of Southern New England (SSSSNE) in accordance with the standards of the Federal Office of Personnel Management].

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC



George T. Logan, MS, PWS, CSE
Registered Soil Scientist
Field Investigator/Senior Reviewer

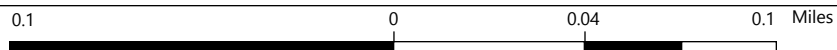


Legend

- Parcels for Protected Open Sp
- Town Boundary
- State Boundary
- Coastline
- Light Gray Canvas Base

Annotated by: REMA Ecological Services, LLC
Date: 6/6/2021 Scale: As shown

1: 2,257



Notes

Soil Map—State of Connecticut
(501 Talctoville Road, Vernon, CT)



Map Scale: 1:1,910 if printed on A landscape (11" x 8.5") sheet.

0 25 50 100 150 Meters

0 50 100 200 300 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

6/6/2021
Page 1 of 3

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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Sep 3, 2019—Oct 22, 2019

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
33B	Hartford sandy loam, 3 to 8 percent slopes	7.6	39.2%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	0.0	0.0%
108	Saco silt loam	1.1	5.6%
306	Udorthents-Urban land complex	9.4	48.4%
307	Urban land	1.3	6.9%
Totals for Area of Interest		19.4	100.0%

DRAINAGE REPORT
The Learning Experience
501 Talcottville Road
Enfield, CT

Revised February 14, 2022

Prepared for:

*Vernon Development, LLC
56 East Main Street
Avon, Connecticut 06001
(860) 677-5607*

Project No. 2021-083

Prepared by:

*J.R. Russo & Associates, LLC
Land Surveyors & Professional Engineers
P.O. Box 938
East Windsor, CT 06088
(860) 623-0569*

I. INTRODUCTION

A. Project Description

Vernon Development, LLC and The Learning Experience are proposing the development of a 10,000 s.f. daycare center on Dart Hill Road near the intersection of Dart Hill Road and Talcottville Road (Rte. 83) in Vernon. The development will result in an impervious area of approximately 0.91 acres. Runoff from the development will be directed to a subsurface infiltration system and infiltration basin designed to provide treatment, ground water recharge, and peak flow attenuation in accordance with the Connecticut Stormwater Quality Manual.

B. Existing Conditions

The proposed 2.0 acre lot for the development will be split off of the existing 4.6 acre parcel at 501 Talcottville Road. The new lot for the development (the project site) will front Dart Hill Road to the north. The site currently consists of undeveloped woodlands, including a wooded wetland on the southern portion of the lot. The wetlands ultimately discharge to Ogden Brook further to the south. Starting at the edge of the road, the site slopes southerly toward the wetland. In addition to runoff from the parcel, stormwater from the building and parking lot at the adjacent Panda Palace to the east, discharges onto the property via a leak-off in the concrete curb at the edge of the parking lot. This runoff flows across the development site into the on-site wetland.

Stormwater overflow from an existing stormwater management basin serving the Walgreens development on the north side of Dart Hill Road is also piped underneath the road to discharge onto the site. The discharge from the stormwater basin consists of a 6" PVC pipe which terminates in an existing manhole in Dart Hill Road. The manhole discharges onto the site via a 15" RCP.

Based on a review of the USDA Soil Survey of Connecticut, the majority of the soil in the area to be developed consists of Hartford sandy loam and the remaining soil on the western portion of the site is Udorthents-Urban land complex. (see Soils Map in Appendix 2). The USDA Soil Survey defines groups of soils into Hydrologic Soil Groups (HSG) according to their runoff-producing characteristics. Soils are assigned to four groups (A, B, C, and D Groups). In group A, are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They typically are deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a hardpan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other nearly impervious material. The classification of the Hartford sandy loam is HSG A and the Udorthents-Urban land complex is HSG B.

On December 17, 2021, a series of 5 test pits were performed in the area of the proposed development to confirm the existing soil conditions. Test pits were excavated to depths ranging from 62-90 inches. Soils encountered included 6-12 inches of topsoil over brown fine sandy loam subsoils to a depth of 18-30 inches, overlying red-brown sand and gravel. Soil mottling indicative of the seasonal high water table was encountered in test pits TP1, TP2, and TP3. The

depths of the mottling indicate a seasonal high water table approximately at the elevation of 212.0. Test pit logs are provided the Site Plans.

Soil samples were collected from test pits 1 through 4 at depths ranging from 30-42 inches. These samples were submitted to New England Materials Testing Lab, LLC for permeability testing by ASTM D2434. Calculated permeabilities ranged from 1.10 in/hr for the sample collected at the bottom of the slope in TP1 to 33.95 in/hr for the sample collected mid-slope in TP4. Permeability test results are also provided in Appendix 3.

II. STORMWATER RUNOFF ANALYSIS

A. Methodology

Peak runoff flow rates were determined for pre- and post-development conditions using Applied Microcomputer System's HydroCAD™ Stormwater Modeling System. This computer software employs the SCS Technical Release 55 and 20 (TR-55 & TR-20) methodology. The potential stormwater impacts downstream were evaluated for the 2-yr, 10-yr, 25-yr, and 100-yr; 24-hour storm events. The rainfall for these storm events was taken from NOAA Atlas 14 provided in Appendix 1. Based on the present drainage patterns, all runoff from the proposed development area flows south into the on-site wetlands. As a result, the edge of the wetlands was selected as the design point. The runoff outlet from across the street will be diverted in order to bypass the on-site drainage system and discharge directly at the edge of the wetland. Thus, it acts independent from the site and was not included in these calculations.

B. Pre-Development Hydrology

The pre-development site was modeled as two subcatchments. Subcatchment PRE includes the approximately 1.86 acres of on-site development area that drains to the design point. Subcatchment PP includes the off-site runoff from the adjacent Panda Palace parcel. The pre-development drainage area map is provided in Appendix 4. The pre-development runoff characteristics of the contributing area is provided on the HydroCAD data sheets in Appendix 5. The pre-development discharge rates from the site during the design storms are summarized in Table 1.

C. Post-Development Hydrology

The proposed project will result in approximately 0.91 acres of new impervious area. The development will include a series of catch basins, trench drains, and piping to collect runoff from the development area and divert it to a new infiltration basin in the southeast corner of the site. This system will include a riprap swale and area drain installed downgradient of the leak-off from the Panda Palace parking lot. This runoff will be collected and diverted to the new infiltration basin as well. In addition, the roof runoff will be collected separately and diverted to a subsurface infiltration system under the parking lot which will overflow to the drainage system and ultimately the surface infiltration basin. The subsurface infiltration system and infiltration

basin have been designed in accordance with the CT Storm Water Quality Manual to provide treatment, groundwater recharge, and peak flow attenuation.

As discussed above, several test pits were completed at the site to verify soil conditions. Test pits TP1, TP2 and TP3 were all located within the vicinity of the proposed surface infiltration basin. Samples collected from these test pits at depths consistent with the proposed bottom of the basin were tested for permeability. The resulting permeabilities were 1.10 in/hr (TP1), 1.97 in/hr (TP2) and 2.34 in/hr (TP3). As a conservative measure, the slowest permeability rate of 1.10 in/hr was used as the basis for the design infiltration rate. This rate was further reduced by 50% to account for potential clogging resulting in a final design infiltration rate for the surface basin of 0.55 inches/hour. The subsurface infiltration basin will be constructed further up the slope to the north in the vicinity of test pits TP4 and TP5. The soils in these test pits at the elevation of the proposed infiltration system included loose, sand and gravel. The resulting permeability for the soil sample collected from TP4 was 33.95 in/hr. As a conservative measure and to account for potential clogging, the design infiltration rate used for the subsurface infiltration system was selected to be 15.0 in/hr.

The infiltration basin will be equipped with a forebay separated from the main part of the basin by a stone filter berm. The bottom of the basin will be set at elevation 214 which allows 2 feet of separation to the seasonal high water table that was encountered in the test pits. The basin will be equipped with a multi-stage outlet structure constructed from a standard Type CL catch basin. The structures primary outlet will consist of a 10" orifice set at an elevation of 216.1. The secondary outlet will consist of the frame and grate to be set at elevation 218.3. The structure will discharge via a 10" outlet pipe at the edge of the wetland. The basin will also be equipped with an emergency 10-foot wide earthen spillway at elevation 218.5. The subsurface infiltration system for the roof runoff will consist of 15 ADS SC740 chambers in stone. Flows from larger storm events exceeding the capacity of the storage and infiltration capacity of the chambers will discharge via an overflow pipe to the on-site drainage system and the surface infiltration basin. The proposed storage capacities of the surface infiltration basin below the primary outlet was sized to exceed the water quality volume. Likewise, the forebay was sized to contain a minimum of 25% of the WQV per the requirements for infiltration basins. WQV calculations are provided in Appendix 6.

The same design point for the pre-development analysis was used for the post development analysis. The post development site was divided into 9 subcatchments. Subcatchments S1, S2, and S3 include the areas that will be collected by the catch basins in the parking lot and discharge to the surface infiltration basin. Subcatchment S4 includes the roof runoff that will be discharged into the subsurface infiltration chambers. Subcatchment S5 includes runoff from the playground area that will be collected in a trench drain and piped directly to the infiltration basin. Subcatchment S6 includes the area that will directly sheet flow into the infiltration basin. Subcatchment S7 includes the area that will continue to drain overland directly to the design point (i.e. wetlands). Subcatchment PP includes the area of the adjacent Panda Palace that discharges to the development area.

The post development drainage area map is provided in Appendix 4. The post development runoff characteristics of the subcatchments are provided on the HydroCAD data sheets in

Appendix 5. As shown in the Table 1, the post-development peak rates of runoff from the site to the design point will be maintained or reduced in comparison to the pre-development rates.

**TABLE 1 – COMPARISON OF PRE- & POST-DEVELOPMENT
DISCHARGE RATES (CFS) TO DESIGN POINT**

	2-year	10-year	25-year	100-year
Pre-Development	0.0	0.0	0.1	0.4
Post Development	0.0	0.0	0.1	0.4

D. Pipe Sizing

The piping proposed at the site consists of smooth bore corrugated high density polyethylene pipe with smooth interior walls (CPEP-S). The roughness coefficient used for this pipe type is 0.012. The analysis provided in Appendix 5 indicates headwater elevation in the structure at each pipe inlet for the design storms and compares it to the flood elevation, which corresponds to the top of frame of the structure. The calculations indicate that all proposed pipes will have sufficient capacity to convey the 10-year storm event without surcharging out of the top of the structures.

E. Outlet Protection

Outfall protection for the pipe discharge from the Walgreens Stormwater Management Basin overflow at the edge of the wetland will consist of a Type A riprap apron. Similarly, a riprap channel will be installed at the inlet to the infiltration basin to convey runoff down the slope into the forebay. Outlet protection for the infiltration's spillway will consist of a 12" thick modified riprap slope extended 5 feet beyond the toe of the slope.

F. Summary of Results

The proposed design and analysis indicates that the proposed development will not result in negative impacts downstream. In addition, the proposed stormwater management system will intercept and divert the untreated runoff from the Panda Palace leak-off to the surface infiltration basin where it will be treated prior to discharge, whereas previously it was discharged to the wetland without treatment.

Appendix 1:
RAINFALL DATA



NOAA Atlas 14, Volume 10, Version 3
Location name: Vernon Rockville, Connecticut,
USA*

Latitude: 41.8502°, Longitude: -72.4855°

Elevation: 224.86 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypeluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

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

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.332 (0.254-0.434)	0.403 (0.308-0.528)	0.519 (0.385-0.684)	0.616 (0.466-0.814)	0.748 (0.551-1.03)	0.849 (0.614-1.20)	0.953 (0.672-1.39)	1.07 (0.718-1.60)	1.24 (0.803-1.92)	1.38 (0.876-2.16)
10-min	0.470 (0.359-0.615)	0.571 (0.436-0.748)	0.736 (0.560-0.967)	0.872 (0.680-1.15)	1.06 (0.780-1.46)	1.20 (0.868-1.69)	1.35 (0.951-1.97)	1.52 (1.02-2.27)	1.76 (1.14-2.72)	1.96 (1.24-3.08)
15-min	0.553 (0.423-0.724)	0.672 (0.513-0.880)	0.866 (0.658-1.14)	1.03 (0.778-1.36)	1.25 (0.918-1.72)	1.41 (1.02-1.99)	1.59 (1.12-2.32)	1.79 (1.20-2.67)	2.07 (1.34-3.20)	2.30 (1.48-3.63)
30-min	0.748 (0.571-0.979)	0.909 (0.694-1.19)	1.17 (0.882-1.54)	1.39 (1.05-1.94)	1.69 (1.25-2.34)	1.92 (1.39-2.71)	2.16 (1.52-3.15)	2.43 (1.63-3.62)	2.81 (1.82-4.34)	3.13 (1.98-4.93)
60-min	0.943 (0.720-1.23)	1.15 (0.876-1.50)	1.48 (1.13-1.95)	1.76 (1.33-2.32)	2.14 (1.57-2.95)	2.42 (1.75-3.42)	2.73 (1.92-3.99)	3.07 (2.05-4.58)	3.56 (2.30-5.49)	3.96 (2.51-6.23)
2-hr	1.21 (0.931-1.58)	1.47 (1.12-1.91)	1.88 (1.44-2.46)	2.23 (1.69-2.93)	2.70 (2.00-3.72)	3.05 (2.22-4.30)	3.43 (2.44-5.03)	3.89 (2.61-5.77)	4.57 (2.98-7.02)	5.15 (3.27-8.08)
3-hr	1.40 (1.08-1.82)	1.69 (1.30-2.19)	2.16 (1.66-2.82)	2.56 (1.95-3.36)	3.10 (2.30-4.26)	3.50 (2.58-4.93)	3.94 (2.82-5.78)	4.47 (3.01-6.62)	5.30 (3.44-8.10)	6.01 (3.82-9.36)
6-hr	1.76 (1.38-2.28)	2.13 (1.65-2.76)	2.74 (2.11-3.58)	3.25 (2.49-4.24)	3.95 (2.95-5.41)	4.46 (3.28-6.26)	5.02 (3.62-7.35)	5.72 (3.98-8.42)	6.82 (4.44-10.4)	7.78 (4.96-12.0)
12-hr	2.17 (1.69-2.80)	2.66 (2.06-3.42)	3.45 (2.67-4.46)	4.10 (3.16-5.33)	5.01 (3.78-6.83)	5.67 (4.19-7.92)	6.40 (4.63-9.32)	7.31 (4.95-10.7)	8.74 (5.71-13.2)	9.98 (6.38-15.3)
24-hr	2.56 (1.99-3.27)	3.16 (2.47-4.06)	4.16 (3.23-5.35)	4.98 (3.85-6.45)	6.12 (4.62-8.32)	6.95 (5.18-9.68)	7.87 (5.74-11.4)	9.04 (6.14-13.1)	10.9 (7.13-16.3)	12.6 (8.03-19.1)
2-day	2.88 (2.26-3.67)	3.61 (2.83-4.61)	4.81 (3.75-6.16)	5.80 (4.50-7.47)	7.17 (5.44-9.72)	8.16 (6.10-11.3)	9.28 (6.82-13.5)	10.7 (7.30-15.5)	13.1 (8.58-19.5)	15.2 (9.77-23.0)
3-day	3.13 (2.46-3.98)	3.94 (3.09-5.01)	5.25 (4.10-6.70)	6.33 (4.93-8.12)	7.83 (5.96-10.6)	8.91 (6.69-12.4)	10.1 (7.48-14.7)	11.7 (8.01-16.9)	14.3 (9.44-21.3)	16.7 (10.8-25.2)
4-day	3.37 (2.65-4.27)	4.22 (3.32-5.38)	5.61 (4.40-7.15)	6.77 (5.28-8.87)	8.36 (6.37-11.3)	9.52 (7.15-13.2)	10.8 (7.99-15.7)	12.5 (8.55-18.0)	15.3 (10.1-22.7)	17.8 (11.5-26.6)
7-day	4.00 (3.16-5.06)	4.96 (3.92-6.28)	6.53 (5.14-8.29)	7.83 (6.13-9.99)	9.62 (7.35-12.9)	10.9 (8.22-15.0)	12.4 (9.15-17.8)	14.3 (9.78-20.4)	17.3 (11.4-25.5)	20.0 (12.9-30.0)
10-day	4.64 (3.68-5.85)	5.68 (4.48-7.14)	7.32 (5.78-9.27)	8.70 (6.83-11.1)	10.8 (8.11-14.2)	12.0 (9.02-16.4)	13.5 (9.88-19.3)	15.5 (10.6-22.1)	18.6 (12.3-27.3)	21.3 (13.8-31.8)
20-day	6.67 (5.31-8.37)	7.75 (6.17-9.74)	9.63 (7.55-12.0)	11.0 (8.67-13.9)	13.0 (9.97-17.2)	14.5 (10.9-19.5)	16.1 (11.8-22.5)	18.0 (12.5-25.5)	20.8 (13.9-30.4)	23.2 (15.1-34.4)
30-day	8.40 (6.70-10.5)	9.51 (7.58-11.9)	11.3 (8.99-14.2)	12.8 (10.1-16.2)	14.8 (11.4-19.5)	16.5 (12.3-21.9)	18.1 (13.2-24.9)	19.9 (13.8-27.9)	22.3 (14.9-32.4)	24.3 (15.9-36.0)
45-day	10.8 (8.45-13.2)	11.7 (9.35-14.8)	13.6 (10.8-17.0)	15.1 (12.0-19.0)	17.2 (13.2-22.4)	18.9 (14.1-24.9)	20.5 (14.8-27.8)	22.1 (15.4-31.0)	24.3 (16.3-35.0)	25.8 (16.9-38.1)
60-day	12.4 (9.92-15.4)	13.6 (10.8-16.8)	15.4 (12.3-19.3)	17.0 (13.5-21.4)	19.2 (14.7-24.8)	20.9 (15.7-27.5)	22.6 (16.3-30.4)	24.1 (16.8-33.6)	26.0 (17.4-37.4)	27.3 (17.8-40.1)

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

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PF graphical

Appendix 2:
NRCS SOILS INFORMATION



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for State of Connecticut



November 19, 2021

Custom Soil Resource Report Soil Map



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
33B	Hartford sandy loam, 3 to 8 percent slopes	3.3	91.3%
308	Udorthents-Urban land complex	0.3	8.7%
Totals for Area of Interest		3.7	100.0%

Map Unit Descriptions

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

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

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

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

State of Connecticut

33B—Hartford sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lmw
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hartford and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hartford

Setting

Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits derived from sandstone and/or basalt

Typical profile

Ap - 0 to 8 inches: sandy loam
Bw1 - 8 to 20 inches: sandy loam
Bw2 - 20 to 26 inches: loamy sand
2C - 26 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Penwood

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Linear

Hydric soil rating: No

Ellington

Percent of map unit: 5 percent

Landform: Terraces, outwash plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Manchester

Percent of map unit: 5 percent

Landform: Terraces, outwash plains, kames, eskers

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Branford

Percent of map unit: 5 percent

Landform: Terraces, outwash plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9img

Elevation: 0 to 2,000 feet

Mean annual precipitation: 43 to 56 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 120 to 185 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent

Urban land: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Drift

Typical profile

A - 0 to 5 inches: loam

C1 - 5 to 21 inches: gravelly loam

C2 - 21 to 80 inches: very gravelly sandy loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)

Depth to water table: About 54 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: Unranked

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent

Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Hydric soil rating: No

Appendix 3:
PERMEABILITY TEST RESULTS



NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE

72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 001

Lab ID: 098-21

Project: 501 Talcottville Road Vernon, CT.

Client ID: TP-1

Technician: Z. A

Date: 12/27/2021

LAB PERMEABILITY TEST

Sample description: Reddish brown silty clayey sand.

Location: Onsite (501 Talcottville Red Vernon, CT).

Sample depth: 30" to 36"

Method: Permeability by ASTM D2434 (Constant Head Method)

$$k = QL/ath$$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q = 800 cm ³
L = length of sample in centimeters	L = 15.24 cm
A = cross sectional area of specimen,	A = 43.10 cm ²
t = total time for discharge, in seconds	t = 5940 sec
h = difference in head manometers,	h = 61.5 cm

$$k = 0.00077435 \text{ cm/sec.}$$

$$k = 1.0975 \text{ inch/hour}$$

Reported To: JR Russo Surveyors Engineers

Submitted By: New England Materials Testing Lab, LLC.

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NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE

72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 002

Lab ID: 099-21

Project: 501 Talcottville Road Vernon, CT.

Client ID: TP-2

Technician: Z. A

Date: 12/27/2021

LAB PERMEABILITY TEST

Sample description: Reddish brown sand bank run gravel and fines.

Location: Onsite (501 Talcottville Red Vernon, CT).

Sample depth: 30" to 36"

Method: Permeability by ASTM D2434 (Constant Head Method)

$$k = QL/ath$$

Where k = coefficient of permeability,

Q = quantity of water discharged,	$Q = 1000 \text{ cm}^3$
L = length of sample in centimeters	$L = 15.24 \text{ cm}$
A = cross sectional area of specimen,	$A = 43.10 \text{ cm}^2$
t = total time for discharge, in seconds	$t = 4140 \text{ sec}$
h = difference in head manometers,	$h = 61.5 \text{ cm}$

$$k = 0.001388776 \text{ cm/sec.}$$

$$k = 1.968 \text{ inch/hour}$$

Reported To: JR Russo Surveyors Engineers

Submitted By: New England Materials Testing Lab, LLC.

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Client: JR Russo Surveyors Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 003

Lab ID: 100-21

Project: 501 Talcottville Road Vernon, CT.

Client ID: TP-3

Technician: Z. A

Date: 12/27/2021

LAB PERMEABILITY TEST

Sample description: Dark brown silty clayey sand and gravel.

Location: Onsite (501 Talcottville Road Vernon, CT).

Sample depth: 36" to 42"

Method: Permeability by ASTM D2434 (Constant Head Method)

$$k = QL/ath$$

Where k = coefficient of permeability,

Q = quantity of water discharged,	$Q =$ 1000 cm ³
L = length of sample in centimeters	$L =$ 15.24 cm
A = cross sectional area of specimen,	$A =$ 43.10 cm ²
t = total time for discharge, in seconds	$t =$ 3480 sec
h = difference in head manometers,	$h =$ 61.5 cm

$$k = 0.001652165 \text{ cm/sec.}$$

$$k = 2.341 \text{ inch/hour}$$

Reported To: JR Russo Surveyors Engineers

Submitted By: New England Materials Testing Lab, LLC.

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Client: JR Russo Surveyors Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 001

Lab ID: 101-21

Project: 501 Talcottville Road Vernon, CT.

Client ID: TP-4

Technician: Z. A

Date: 12/27/2021

LAB PERMEABILITY TEST

Sample description: Reddish brown sand and little gravel.

Location: Onsite (501 Talcottville Road Vernon, CT).

Sample depth: 30" to 36"

Method: Permeability by ASTM D2434 (Constant Head Method)

$$k = QL/ath$$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q = 1000 cm ³
L = length of sample in centimeters	L = 15.24 cm
A = cross sectional area of specimen,	A = 43.10 cm ²
t = total time for discharge, in seconds	t = 240 sec
h = difference in head manometers,	h = 61.5 cm

$$k = 0.023956388 \text{ cm/sec.}$$

$$k = 33.953 \text{ inch/hour}$$

Reported To: JR Russo Surveyors Engineers

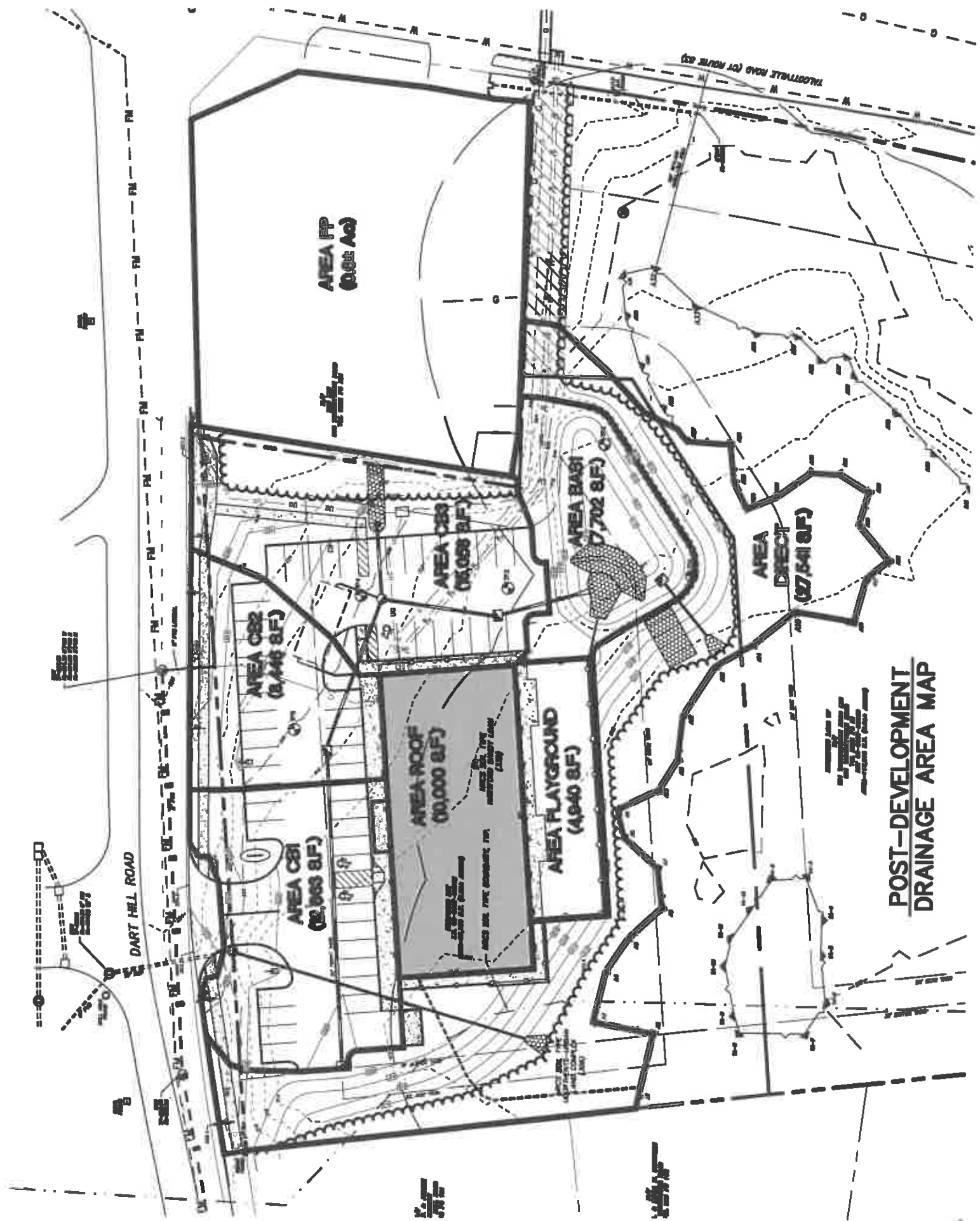
Submitted By: New England Materials Testing Lab, LLC.

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NEMT

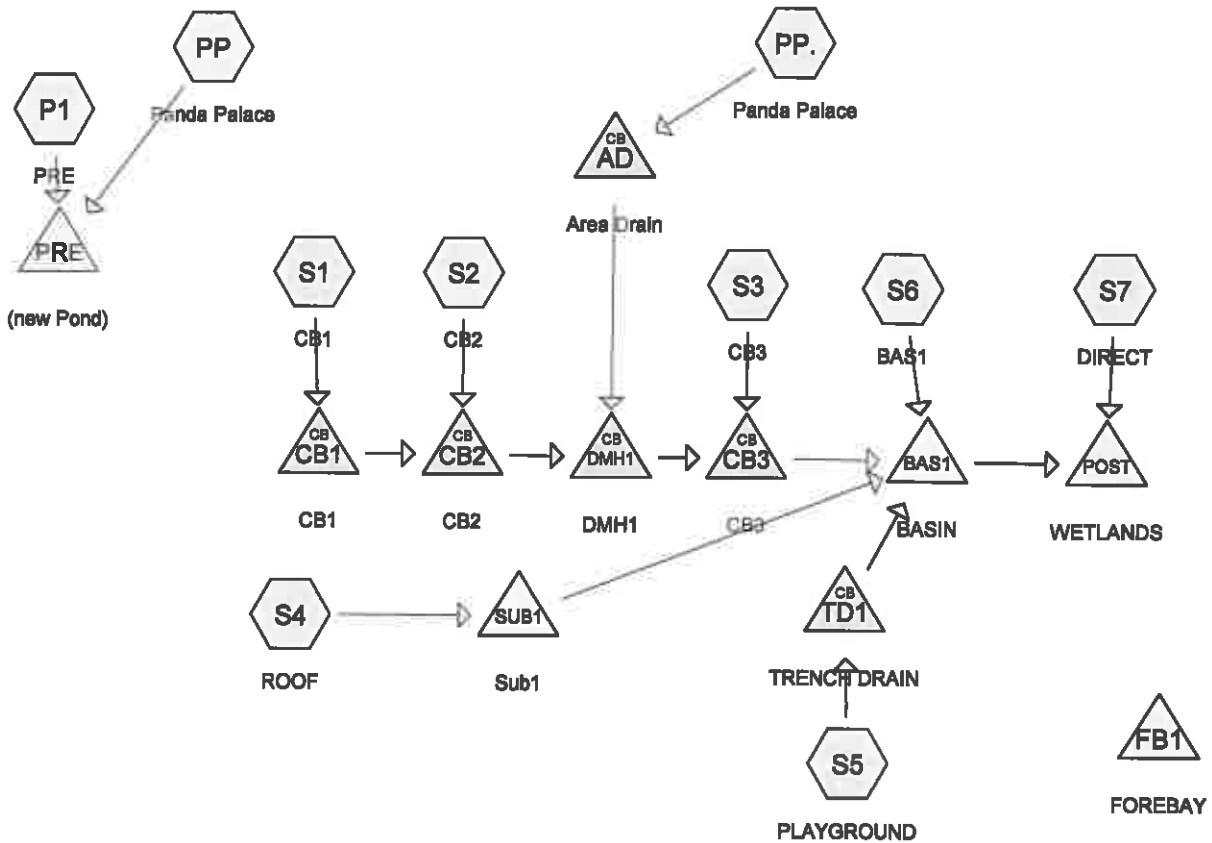
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Appendix 4:
DRAINAGE AREA MAPS



POST-DEVELOPMENT
DRAINAGE AREA MAP

Appendix 5:
HYDROCAD ANALYSES



Routing Diagram for 2021-083 Vernon TLE2
 Prepared by {enter your company name here}, Printed 2/14/2022
 HydroCAD® 10.00-25 s/n 02386 © 2019 HydroCAD Software Solutions LLC

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment P1: PRE	Runoff Area=87,188 sf 0.00% Impervious Runoff Depth=0.02" Flow Length=276' Tc=14.3 min CN=32 Runoff=0.01 cfs 0.004 af
Subcatchment PP: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth>4.74" Tc=5.0 min CN=98 Runoff=3.03 cfs 0.237 af
Subcatchment PP.: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth>4.74" Tc=5.0 min CN=98 Runoff=3.03 cfs 0.237 af
Subcatchment S1: CB1	Runoff Area=12,663 sf 77.95% Impervious Runoff Depth=3.35" Tc=5.0 min CN=85 Runoff=1.17 cfs 0.081 af
Subcatchment S2: CB2	Runoff Area=8,446 sf 70.89% Impervious Runoff Depth=2.97" Tc=5.0 min CN=81 Runoff=0.70 cfs 0.048 af
Subcatchment S3: CB3	Runoff Area=15,058 sf 55.13% Impervious Runoff Depth=2.02" Tc=5.0 min CN=70 Runoff=0.83 cfs 0.058 af
Subcatchment S4: ROOF	Runoff Area=10,000 sf 100.00% Impervious Runoff Depth>4.74" Tc=5.0 min CN=98 Runoff=1.16 cfs 0.091 af
Subcatchment S5: PLAYGROUND	Runoff Area=4,940 sf 100.00% Impervious Runoff Depth>4.74" Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af
Subcatchment S6: BAS1	Runoff Area=7,702 sf 0.16% Impervious Runoff Depth=0.16" Tc=5.0 min CN=38 Runoff=0.00 cfs 0.002 af
Subcatchment S7: DIRECT	Runoff Area=27,541 sf 0.00% Impervious Runoff Depth=0.23" Flow Length=147' Tc=23.0 min CN=40 Runoff=0.03 cfs 0.012 af
Pond AD: Area Drain	Peak Elev=218.68' Inflow=3.03 cfs 0.237 af 15.0" Round Culvert n=0.012 L=50.0' S=0.0050 ' Outflow=3.03 cfs 0.237 af
Pond BAS1: BASIN	Peak Elev=217.27' Storage=8,274 cf Inflow=6.26 cfs 0.472 af Discarded=0.09 cfs 0.197 af Primary=2.27 cfs 0.275 af Outflow=2.37 cfs 0.472 af
Pond CB1: CB1	Peak Elev=218.52' Inflow=1.17 cfs 0.081 af 15.0" Round Culvert n=0.012 L=154.0' S=0.0050 ' Outflow=1.17 cfs 0.081 af
Pond CB2: CB2	Peak Elev=218.48' Inflow=1.87 cfs 0.129 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0050 ' Outflow=1.87 cfs 0.129 af
Pond CB3: CB3	Peak Elev=217.78' Inflow=5.71 cfs 0.424 af 15.0" Round Culvert n=0.012 L=44.0' S=0.0050 ' Outflow=5.71 cfs 0.424 af
Pond DMH1: DMH1	Peak Elev=218.39' Inflow=4.89 cfs 0.366 af 15.0" Round Culvert n=0.012 L=54.0' S=0.0050 ' Outflow=4.89 cfs 0.366 af

Pond FB1: FOREBAY

Peak Elev=0.00' Storage=0 cf

Pond POST: WETLANDS

Inflow=2.28 cfs 0.287 af

Primary=2.28 cfs 0.287 af

Pond PRE: (new Pond)

Inflow=3.03 cfs 0.241 af

Primary=3.03 cfs 0.241 af

Pond SUB1: Sub1

Peak Elev=216.23' Storage=697 cf Inflow=1.16 cfs 0.091 af

Discarded=0.36 cfs 0.236 af Primary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.236 af

Pond TD1: TRENCH DRAIN

Peak Elev=218.12' Inflow=0.57 cfs 0.045 af

6.0" Round Culvert n=0.012 L=20.0' S=0.0250 '/ Outflow=0.57 cfs 0.045 af

Summary for Subcatchment P1: PRE

Runoff = 0.01 cfs @ 21.37 hrs, Volume= 0.004 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
81,137	30	Woods, Good, HSG A
6,051	55	Woods, Good, HSG B
87,188	32	Weighted Average
87,188		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0900	0.14		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.5	176	0.0570	1.19		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
14.3	276	Total			

Summary for Subcatchment PP: Panda Palace

Runoff = 3.03 cfs @ 12.07 hrs, Volume= 0.237 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (ac)	CN	Description
* 0.600	98	Impervious
0.600		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment PP.: Panda Palace

Runoff = 3.03 cfs @ 12.07 hrs, Volume= 0.237 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (ac)	CN	Description
* 0.600	98	Impervious
0.600		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S1: CB1

Runoff = 1.17 cfs @ 12.07 hrs, Volume= 0.081 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
9,871	98	Paved parking, HSG A
2,792	39	>75% Grass cover, Good, HSG A
12,663	85	Weighted Average
2,792		22.05% Pervious Area
9,871		77.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S2: CB2

Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
5,987	98	Paved parking, HSG A
2,459	39	>75% Grass cover, Good, HSG A
8,446	81	Weighted Average
2,459		29.11% Pervious Area
5,987		70.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S3: CB3

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.058 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
8,302	98	Paved parking, HSG A
3,743	39	>75% Grass cover, Good, HSG A
3,013	30	Woods, Good, HSG A
15,058	70	Weighted Average
6,756		44.87% Pervious Area
8,302		55.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S4: ROOF

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.091 af, Depth> 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
10,000	98	Roofs, HSG A
10,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S5: PLAYGROUND

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
4,940	98	Paved parking, HSG A
4,940		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S6: BAS1

Runoff = 0.00 cfs @ 13.67 hrs, Volume= 0.002 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

2021-083 Vernon TLE2

Type III 24-hr 10-year Rainfall=4.98"

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Area (sf)	CN	Description
7,112	39	>75% Grass cover, Good, HSG A
578	30	Woods, Good, HSG A
12	98	Paved parking, HSG A
7,702	38	Weighted Average
7,690		99.84% Pervious Area
12		0.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment S7: DIRECT

Runoff = 0.03 cfs @ 12.73 hrs, Volume= 0.012 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.98"

Area (sf)	CN	Description
* 995	39	Disconnected Sidewalk, HSG A
8,548	30	Woods, Good, HSG A
3,631	55	Woods, Good, HSG B
11,947	39	>75% Grass cover, Good, HSG A
2,420	61	>75% Grass cover, Good, HSG B
27,541	40	Weighted Average
27,541		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0200	0.78		Sheet Flow, IM Smooth surfaces n= 0.011 P2= 3.20"
1.8	22	0.0636	0.20		Sheet Flow, GR Grass: Short n= 0.150 P2= 3.20"
1.2	25	0.2400	0.35		Sheet Flow, GR Grass: Short n= 0.150 P2= 3.20"
1.4	20	0.1000	0.23		Sheet Flow, GR Grass: Short n= 0.150 P2= 3.20"
18.5	74	0.0160	0.07		Sheet Flow, W Woods: Light underbrush n= 0.400 P2= 3.20"
23.0	147	Total			

Summary for Pond AD: Area Drain

Inflow Area = 0.600 ac, 100.00% Impervious, Inflow Depth > 4.74" for 10-year event
 Inflow = 3.03 cfs @ 12.07 hrs, Volume= 0.237 af
 Outflow = 3.03 cfs @ 12.08 hrs, Volume= 0.237 af, Atten= 0%, Lag= 0.6 min
 Primary = 3.03 cfs @ 12.08 hrs, Volume= 0.237 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 218.68' @ 12.12 hrs

Flood Elev= 221.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.50'	15.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 217.50' / 217.25' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.88 cfs @ 12.08 hrs HW=218.54' TW=218.08' (Dynamic Tailwater)

1=Culvert (Outlet Controls 2.88 cfs @ 3.57 fps)

Summary for Pond BAS1: BASIN

Inflow Area = 1.950 ac, 76.81% Impervious, Inflow Depth = 2.90" for 10-year event
 Inflow = 6.26 cfs @ 12.10 hrs, Volume= 0.472 af
 Outflow = 2.37 cfs @ 12.34 hrs, Volume= 0.472 af, Atten= 62%, Lag= 14.3 min
 Discarded = 0.09 cfs @ 12.34 hrs, Volume= 0.197 af
 Primary = 2.27 cfs @ 12.34 hrs, Volume= 0.275 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 217.27' @ 12.34 hrs Surf.Area= 3,671 sf Storage= 8,274 cf
 Flood Elev= 219.00' Surf.Area= 5,027 sf Storage= 15,782 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 388.3 min (1,168.3 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1	214.00'	15,782 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
214.00	1,466	0	0
216.00	2,747	4,213	4,213
216.10	2,814	278	4,491
218.00	4,210	6,673	11,164
219.00	5,027	4,619	15,782

Device	Routing	Invert	Outlet Devices
#1	Discarded	214.00'	0.550 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 212.00'
#2	Primary	218.50'	10.0' long x 7.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Primary	212.30'	10.0" Round Culvert L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 212.30' / 212.00' S= 0.0088 '/ Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#4	Device 3	216.10'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	218.30'	18.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.09 cfs @ 12.34 hrs HW=217.27' (Free Discharge)

1=Exfiltration (Controls 0.09 cfs)

Primary OutFlow Max=2.27 cfs @ 12.34 hrs HW=217.27' TW=0.00' (Dynamic Tailwater)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

3=Culvert (Passes 2.27 cfs of 5.60 cfs potential flow)

4=Orifice/Grate (Orifice Controls 2.27 cfs @ 4.17 fps)

5=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond CB1: CB1

Inflow Area = 0.291 ac, 77.95% Impervious, Inflow Depth = 3.35" for 10-year event
 Inflow = 1.17 cfs @ 12.07 hrs, Volume= 0.081 af
 Outflow = 1.17 cfs @ 12.08 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.6 min
 Primary = 1.17 cfs @ 12.08 hrs, Volume= 0.081 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 218.52' @ 12.13 hrs

Flood Elev= 219.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	216.10'	15.0" Round Culvert L= 154.0' Ke= 0.500 Inlet / Outlet Invert= 216.10' / 215.33' S= 0.0050 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=217.92' TW=218.06' (Dynamic Tailwater)

1=Culvert (Controls 0.00 cfs)

Summary for Pond CB2: CB2

Inflow Area = 0.485 ac, 75.12% Impervious, Inflow Depth = 3.20" for 10-year event
 Inflow = 1.87 cfs @ 12.08 hrs, Volume= 0.129 af
 Outflow = 1.87 cfs @ 12.09 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.6 min
 Primary = 1.87 cfs @ 12.09 hrs, Volume= 0.129 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 218.48' @ 12.12 hrs

Flood Elev= 220.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.33'	15.0" Round Culvert L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 215.33' / 214.95' S= 0.0050 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=218.19' TW=218.23' (Dynamic Tailwater)

1=Culvert (Controls 0.00 cfs)

Summary for Pond CB3: CB3

Inflow Area = 1.430 ac, 80.73% Impervious, Inflow Depth > 3.56" for 10-year event
 Inflow = 5.71 cfs @ 12.09 hrs, Volume= 0.424 af
 Outflow = 5.71 cfs @ 12.10 hrs, Volume= 0.424 af, Atten= 0%, Lag= 0.6 min
 Primary = 5.71 cfs @ 12.10 hrs, Volume= 0.424 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 217.78' @ 12.12 hrs

Flood Elev= 220.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.68'	15.0" Round Culvert L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 214.68' / 214.46' S= 0.0050 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.54 cfs @ 12.10 hrs HW=217.74' TW=216.86' (Dynamic Tailwater)

1=Culvert (Inlet Controls 5.54 cfs @ 4.52 fps)

Summary for Pond DMH1: DMH1

Inflow Area = 1.085 ac, 88.89% Impervious, Inflow Depth > 4.05" for 10-year event
 Inflow = 4.89 cfs @ 12.08 hrs, Volume= 0.366 af
 Outflow = 4.89 cfs @ 12.09 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.6 min
 Primary = 4.89 cfs @ 12.09 hrs, Volume= 0.366 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 218.39' @ 12.11 hrs

Flood Elev= 220.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.95'	15.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 214.95' / 214.68' S= 0.0050 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.53 cfs @ 12.09 hrs HW=218.27' TW=217.68' (Dynamic Tailwater)

1=Culvert (Inlet Controls 4.53 cfs @ 3.69 fps)

Summary for Pond FB1: FOREBAY

Volume	Invert	Avail.Storage	Storage Description
#1	214.00'	1,207 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
214.00	144	0	0
216.00	473	617	617
217.00	707	590	1,207

Summary for Pond POST: WETLANDS

Inflow Area = 2.582 ac, 58.01% Impervious, Inflow Depth = 1.34" for 10-year event
 Inflow = 2.28 cfs @ 12.34 hrs, Volume= 0.287 af
 Primary = 2.28 cfs @ 12.35 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond PRE: (new Pond)

Inflow Area = 2.602 ac, 23.06% Impervious, Inflow Depth > 1.11" for 10-year event
 Inflow = 3.03 cfs @ 12.07 hrs, Volume= 0.241 af
 Primary = 3.03 cfs @ 12.08 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond SUB1: Sub1

Inflow Area = 0.230 ac, 100.00% Impervious, Inflow Depth > 4.74" for 10-year event
 Inflow = 1.18 cfs @ 12.07 hrs, Volume= 0.091 af
 Outflow = 0.36 cfs @ 12.36 hrs, Volume= 0.236 af, Atten= 69%, Lag= 17.3 min
 Discarded = 0.36 cfs @ 12.36 hrs, Volume= 0.236 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 216.23' @ 12.36 hrs Surf.Area= 618 sf Storage= 697 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 10.6 min (757.8 - 747.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	214.50'	589 cf	15.75'W x 39.22'L x 3.50'H Field A
#2A	215.00'	689 cf	2,162 cf Overall - 689 cf Embedded = 1,473 cf x 40.0% Voids
			ADS StormTech SC-740 +Cap x 15 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			15 Chambers in 3 Rows
#3	217.00'	39 cf	Manhole (Prismatic) Listed below (Recalc)
		1,317 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	13	0	0
220.00	13	39	39

Device	Routing	Invert	Outlet Devices
#1	Discarded	214.50'	15.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 212.00'

#2 Primary 217.00' **6.0" Round Culvert** L= 22.0' Ke= 0.500
 Inlet / Outlet Invert= 217.00' / 216.80' S= 0.0091 ' Cc= 0.900
 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.36 cfs @ 12.36 hrs HW=216.23' (Free Discharge)

└1=Exfiltration (Controls 0.36 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=214.50' TW=214.00' (Dynamic Tailwater)

└2=Culvert (Controls 0.00 cfs)

Summary for Pond TD1: TRENCH DRAIN

Inflow Area = 0.113 ac, 100.00% Impervious, Inflow Depth > 4.74" for 10-year event
 Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
 Outflow = 0.57 cfs @ 12.08 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.6 min
 Primary = 0.57 cfs @ 12.08 hrs, Volume= 0.045 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 218.12' @ 12.08 hrs

Flood Elev= 220.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	217.50'	6.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 217.50' / 217.00' S= 0.0250 ' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.57 cfs @ 12.08 hrs HW=218.12' TW=216.74' (Dynamic Tailwater)

└1=Culvert (Inlet Controls 0.57 cfs @ 2.91 fps)

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment P1: PRE	Runoff Area=87,188 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=276' Tc=14.3 min CN=32 Runoff=0.00 cfs 0.000 af
Subcatchment PP: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth=2.93" Tc=5.0 min CN=98 Runoff=1.91 cfs 0.146 af
Subcatchment PP.: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth=2.93" Tc=5.0 min CN=98 Runoff=1.91 cfs 0.146 af
Subcatchment S1: CB1	Runoff Area=12,663 sf 77.95% Impervious Runoff Depth=1.72" Tc=5.0 min CN=85 Runoff=0.61 cfs 0.042 af
Subcatchment S2: CB2	Runoff Area=8,446 sf 70.89% Impervious Runoff Depth=1.44" Tc=5.0 min CN=81 Runoff=0.34 cfs 0.023 af
Subcatchment S3: CB3	Runoff Area=15,058 sf 55.13% Impervious Runoff Depth=0.80" Tc=5.0 min CN=70 Runoff=0.30 cfs 0.023 af
Subcatchment S4: ROOF	Runoff Area=10,000 sf 100.00% Impervious Runoff Depth=2.93" Tc=5.0 min CN=98 Runoff=0.73 cfs 0.056 af
Subcatchment S5: PLAYGROUND	Runoff Area=4,940 sf 100.00% Impervious Runoff Depth=2.93" Tc=5.0 min CN=98 Runoff=0.36 cfs 0.028 af
Subcatchment S6: BAS1	Runoff Area=7,702 sf 0.16% Impervious Runoff Depth=0.00" Tc=5.0 min CN=38 Runoff=0.00 cfs 0.000 af
Subcatchment S7: DIRECT	Runoff Area=27,541 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=147' Tc=23.0 min CN=40 Runoff=0.00 cfs 0.000 af
Pond AD: Area Drain	Peak Elev=218.28' Inflow=1.91 cfs 0.146 af 15.0" Round Culvert n=0.012 L=50.0' S=0.0050 ' Outflow=1.91 cfs 0.146 af
Pond BAS1: BASIN	Peak Elev=216.51' Storage=5,692 cf Inflow=3.49 cfs 0.262 af Discarded=0.07 cfs 0.181 af Primary=0.57 cfs 0.082 af Outflow=0.64 cfs 0.263 af
Pond CB1: CB1	Peak Elev=216.62' Inflow=0.61 cfs 0.042 af 15.0" Round Culvert n=0.012 L=154.0' S=0.0050 ' Outflow=0.61 cfs 0.042 af
Pond CB2: CB2	Peak Elev=216.52' Inflow=0.94 cfs 0.065 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0050 ' Outflow=0.94 cfs 0.065 af
Pond CB3: CB3	Peak Elev=216.52' Inflow=3.14 cfs 0.235 af 15.0" Round Culvert n=0.012 L=44.0' S=0.0050 ' Outflow=3.14 cfs 0.235 af
Pond DMH1: DMH1	Peak Elev=216.52' Inflow=2.84 cfs 0.211 af 15.0" Round Culvert n=0.012 L=54.0' S=0.0050 ' Outflow=2.84 cfs 0.211 af

Pond FB1: FOREBAY

Peak Elev=0.00' Storage=0 cf

Pond POST: WETLANDS

Inflow=0.57 cfs 0.082 af

Primary=0.57 cfs 0.082 af

Pond PRE: (new Pond)

Inflow=1.91 cfs 0.146 af

Primary=1.91 cfs 0.146 af

Pond SUB1: Sub1

Peak Elev=215.35' Storage=294 cf Inflow=0.73 cfs 0.056 af

Discarded=0.29 cfs 0.219 af Primary=0.00 cfs 0.000 af Outflow=0.29 cfs 0.219 af

Pond TD1: TRENCH DRAIN

Peak Elev=217.90' Inflow=0.36 cfs 0.028 af

6.0" Round Culvert n=0.012 L=20.0' S=0.0250 '/' Outflow=0.36 cfs 0.028 af

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment P1: PRE	Runoff Area=87,188 sf 0.00% Impervious Runoff Depth=0.15" Flow Length=276' Tc=14.3 min CN=32 Runoff=0.04 cfs 0.025 af
Subcatchment PP: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth>5.88" Tc=5.0 min CN=98 Runoff=3.73 cfs 0.294 af
Subcatchment PP.: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth>5.88" Tc=5.0 min CN=98 Runoff=3.73 cfs 0.294 af
Subcatchment S1: CB1	Runoff Area=12,663 sf 77.95% Impervious Runoff Depth=4.42" Tc=5.0 min CN=85 Runoff=1.53 cfs 0.107 af
Subcatchment S2: CB2	Runoff Area=8,446 sf 70.89% Impervious Runoff Depth=3.99" Tc=5.0 min CN=81 Runoff=0.93 cfs 0.065 af
Subcatchment S3: CB3	Runoff Area=15,058 sf 55.13% Impervious Runoff Depth=2.90" Tc=5.0 min CN=70 Runoff=1.21 cfs 0.084 af
Subcatchment S4: ROOF	Runoff Area=10,000 sf 100.00% Impervious Runoff Depth>5.88" Tc=5.0 min CN=98 Runoff=1.43 cfs 0.113 af
Subcatchment S5: PLAYGROUND	Runoff Area=4,940 sf 100.00% Impervious Runoff Depth>5.88" Tc=5.0 min CN=98 Runoff=0.70 cfs 0.056 af
Subcatchment S6: BAS1	Runoff Area=7,702 sf 0.16% Impervious Runoff Depth=0.43" Tc=5.0 min CN=38 Runoff=0.03 cfs 0.006 af
Subcatchment S7: DIRECT	Runoff Area=27,541 sf 0.00% Impervious Runoff Depth=0.54" Flow Length=147' Tc=23.0 min CN=40 Runoff=0.12 cfs 0.028 af
Pond AD: Area Drain	Peak Elev=220.12' Inflow=3.73 cfs 0.294 af 15.0" Round Culvert n=0.012 L=50.0' S=0.0050 '/ Outflow=3.73 cfs 0.294 af
Pond BAS1: BASIN	Peak Elev=217.75' Storage=10,130 cf Inflow=8.05 cfs 0.611 af Discarded=0.11 cfs 0.203 af Primary=2.92 cfs 0.408 af Outflow=3.02 cfs 0.611 af
Pond CB1: CB1	Peak Elev=220.05' Inflow=1.53 cfs 0.107 af 15.0" Round Culvert n=0.012 L=154.0' S=0.0050 '/ Outflow=1.53 cfs 0.107 af
Pond CB2: CB2	Peak Elev=219.97' Inflow=2.46 cfs 0.171 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0050 '/ Outflow=2.46 cfs 0.171 af
Pond CB3: CB3	Peak Elev=218.80' Inflow=7.37 cfs 0.549 af 15.0" Round Culvert n=0.012 L=44.0' S=0.0050 '/ Outflow=7.37 cfs 0.549 af
Pond DMH1: DMH1	Peak Elev=219.81' Inflow=6.18 cfs 0.466 af 15.0" Round Culvert n=0.012 L=54.0' S=0.0050 '/ Outflow=6.18 cfs 0.466 af

2021-083 Vernon TLE2*Type III 24-hr 25-year Rainfall=6.12"*

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Pond FB1: FOREBAY

Peak Elev=0.00' Storage=0 cf

Pond POST: WETLANDS

Inflow=3.00 cfs 0.436 af

Primary=3.00 cfs 0.436 af

Pond PRE: (new Pond)

Inflow=3.73 cfs 0.319 af

Primary=3.73 cfs 0.319 af

Pond SUB1: Sub1Peak Elev=216.88' Storage=961 cf Inflow=1.43 cfs 0.113 af
Discarded=0.42 cfs 0.247 af Primary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.247 af**Pond TD1: TRENCH DRAIN**Peak Elev=218.31' Inflow=0.70 cfs 0.056 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0250 '/ Outflow=0.70 cfs 0.056 af

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment P1: PRE	Runoff Area=87,188 sf 0.00% Impervious Runoff Depth=0.53" Flow Length=276' Tc=14.3 min CN=32 Runoff=0.35 cfs 0.088 af
Subcatchment PP: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth>7.63" Tc=5.0 min CN=98 Runoff=4.80 cfs 0.381 af
Subcatchment PP.: Panda Palace	Runoff Area=0.600 ac 100.00% Impervious Runoff Depth>7.63" Tc=5.0 min CN=98 Runoff=4.80 cfs 0.381 af
Subcatchment S1: CB1	Runoff Area=12,663 sf 77.95% Impervious Runoff Depth=6.09" Tc=5.0 min CN=85 Runoff=2.08 cfs 0.147 af
Subcatchment S2: CB2	Runoff Area=8,446 sf 70.89% Impervious Runoff Depth=5.62" Tc=5.0 min CN=81 Runoff=1.30 cfs 0.091 af
Subcatchment S3: CB3	Runoff Area=15,058 sf 55.13% Impervious Runoff Depth=4.35" Tc=5.0 min CN=70 Runoff=1.83 cfs 0.125 af
Subcatchment S4: ROOF	Runoff Area=10,000 sf 100.00% Impervious Runoff Depth>7.63" Tc=5.0 min CN=98 Runoff=1.84 cfs 0.146 af
Subcatchment S5: PLAYGROUND	Runoff Area=4,940 sf 100.00% Impervious Runoff Depth>7.63" Tc=5.0 min CN=98 Runoff=0.91 cfs 0.072 af
Subcatchment S6: BAS1	Runoff Area=7,702 sf 0.16% Impervious Runoff Depth=1.01" Tc=5.0 min CN=38 Runoff=0.13 cfs 0.015 af
Subcatchment S7: DIRECT	Runoff Area=27,541 sf 0.00% Impervious Runoff Depth=1.19" Flow Length=147' Tc=23.0 min CN=40 Runoff=0.40 cfs 0.063 af
Pond AD: Area Drain	Peak Elev=222.87' Inflow=4.80 cfs 0.381 af 15.0" Round Culvert n=0.012 L=50.0' S=0.0050 ' Outflow=4.80 cfs 0.381 af
Pond BAS1: BASIN	Peak Elev=218.38' Storage=12,818 cf Inflow=10.95 cfs 0.833 af Discarded=0.12 cfs 0.212 af Primary=4.24 cfs 0.621 af Outflow=4.36 cfs 0.833 af
Pond CB1: CB1	Peak Elev=222.79' Inflow=2.08 cfs 0.147 af 15.0" Round Culvert n=0.012 L=154.0' S=0.0050 ' Outflow=2.08 cfs 0.147 af
Pond CB2: CB2	Peak Elev=222.64' Inflow=3.37 cfs 0.238 af 15.0" Round Culvert n=0.012 L=76.0' S=0.0050 ' Outflow=3.37 cfs 0.238 af
Pond CB3: CB3	Peak Elev=220.54' Inflow=9.95 cfs 0.745 af 15.0" Round Culvert n=0.012 L=44.0' S=0.0050 ' Outflow=9.95 cfs 0.745 af
Pond DMH1: DMH1	Peak Elev=222.34' Inflow=8.16 cfs 0.620 af 15.0" Round Culvert n=0.012 L=54.0' S=0.0050 ' Outflow=8.16 cfs 0.620 af

Pond FB1: FOREBAY

Peak Elev=0.00' Storage=0 cf

Pond POST: WETLANDS

Inflow=4.60 cfs 0.684 af

Primary=4.60 cfs 0.684 af

Pond PRE: (new Pond)

Inflow=4.80 cfs 0.469 af

Primary=4.80 cfs 0.469 af

Pond SUB1: Sub1

Peak Elev=218.67' Storage=1,300 cf Inflow=1.84 cfs 0.146 af
Discarded=0.58 cfs 0.265 af Primary=0.52 cfs 0.001 af Outflow=1.10 cfs 0.266 af

Pond TD1: TRENCH DRAIN

Peak Elev=218.67' Inflow=0.91 cfs 0.072 af
6.0" Round Culvert n=0.012 L=20.0' S=0.0250 '/ Outflow=0.91 cfs 0.072 af

Appendix 6:
MISCELLANEOUS CALCULATIONS



Water Quality Volume Calculations

$$WQV = (1") RA / 12$$

$$R = 0.05 + 0.009 I$$

where I = percent impervious
 R = volumetric runoff coeff.
 A = contributing area

For Basin: (excludes roof runoff which is infiltrated via subsurface system)

$$A = 74,967 \text{ SF}$$

$$I = 73.72\%$$

$$R = 0.05 + 0.009(73.72\%) = 0.713$$

$$WQV = (1")(0.713)(74,967 \text{ SF}) / 12 = 4,457 \text{ CF}$$

$$\text{Forebay Requirement} = 0.25 WQV = (0.25)(4,457 \text{ CF}) = 1,114 \text{ CF}$$

$$\text{Basin Volume below outlet} = 4,491 \text{ CF} \quad \text{OKAY}$$

$$\text{Forebay Volume} = 1,207 \text{ CF} \quad \text{OKAY}$$

STAFF COMMENTS



OFFICE OF THE
TOWN PLANNER

TOWN OF VERNON

55 West Main St., VERNON, CT 06066-3291
(860) 870-3640
gmcgregor@vernon-ct.gov

MEMORANDUM

TO: Inland Wetlands Commission

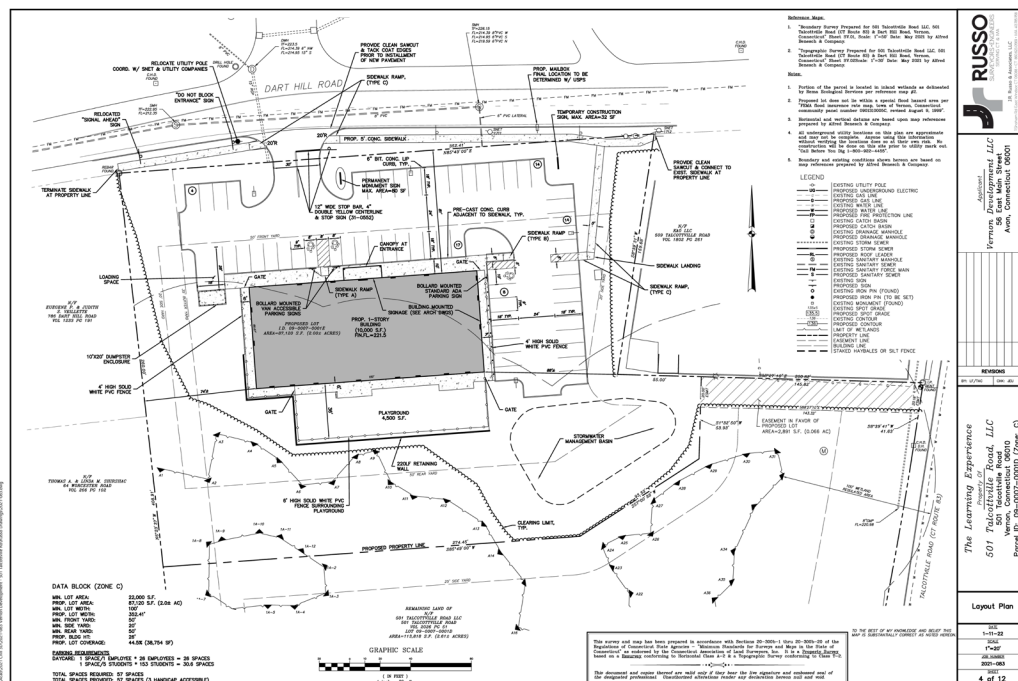
FROM: George K. McGregor, AICP, Town Planner

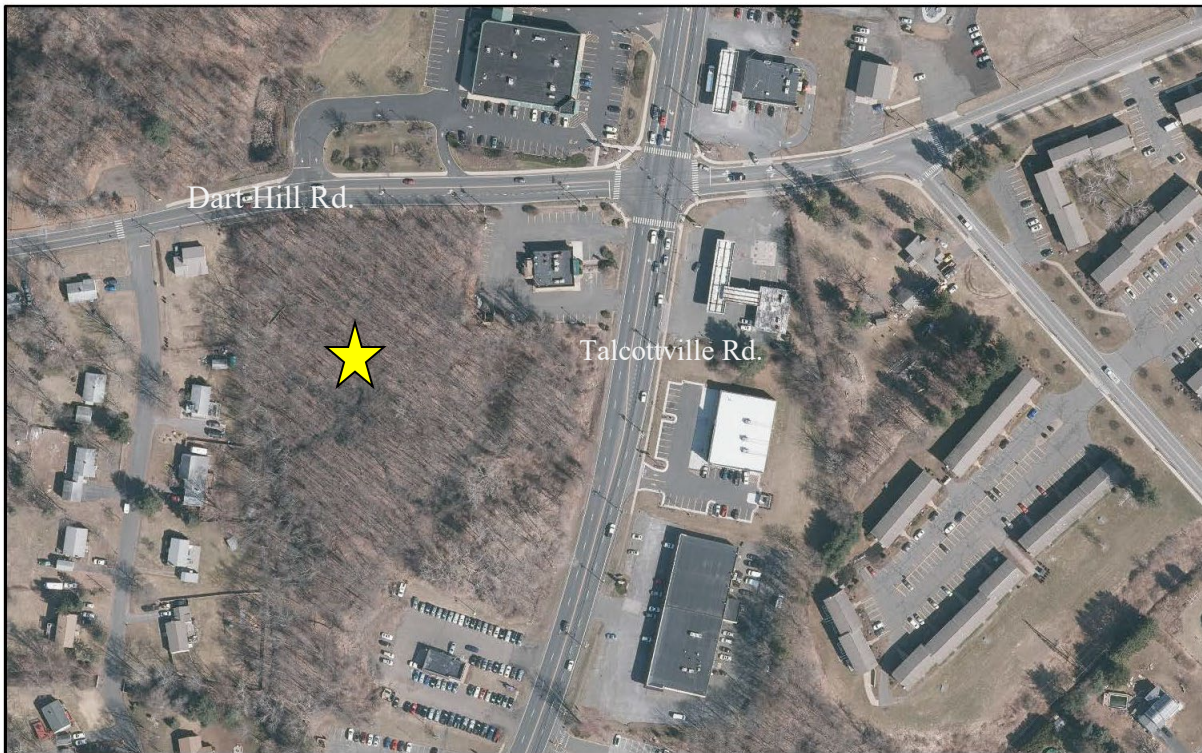
SUBJECT: IWC 2022-01, 501 Talcottville Rd.

DATE: February 22, 2022

Request

IWC 2022-01, 501 Talcottville Rd. An Application by Vernon Development LLC for a Wetlands Re-designation and a Wetlands Permit for activity in a regulated area, in order to develop a child-care facility at 501 Talcottville Rd. (Tax Map 09, Block 007, Parcel 0001D).





Site Location

Summary and Analysis

The Applicant proposes to construct an approximately 10,000 sq. ft. day care facility at 501 Talcottville Rd. Although addressed via parcel number on Talcottville Rd., the access to the site is proposed on Dart Hill Rd., with a proposed drive-way entrance across from the westernmost Walgreens entrance. The development constitutes approximately .82 acres of disturbance in a regulated area.

A Re-Designation is requested, along with a Wetland Permit by Commission. No quorum was available at the regular January meeting for acceptance of the application; under State Law, the application is deemed accepted as of January 25. Staff has also placed the item on the IWC special meeting agenda on February 15, 2022 for a determination of significance. The application has been advertised for a public hearing to include BOTH the re-designation and the wetlands permit.

The Application submission includes a site plan set, a drainage report, a re-designation map, and a wetlands delineation report. As of Tuesday, February 15, no function and values report nor an analysis of habitat impacts has been submitted. The Applicant is working to complete these documents; expect them under a separate, supplemental transmission.

Note: A site plan, special permit, and re-subdivision application is also tracking to the Planning & Zoning Commission with a public hearing scheduled for March 3, 2022.

Staff Review

The Town's Wetland Agent, Mr. Perry has identified several areas where additional information or clarification is needed related to both the re-designation and the permit. His review is attached to this memorandum. He recommends that the Commission direct a third-party expert review of the application due to "the intense disturbance associated with this proposed development¹." This would be an independent Professional Wetlands Scientist who would provide expert review on the Commission's behalf, with the Applicant responsible for the expense.

Assuming the details regarding the re-designation can be resolved, Staff has no other objections to the new wetland boundary and re-designation submitted by the Applicant.

As to the request for a wetland permit for the significant activity, Staff is unable to make a recommendation at this time, due to the delay in obtaining the wetlands assessment report.

To restate, the Wetland Agent recommends outside professional experts review the scope and scale of the request. This can only come at the Commission's direction; Staff will be prepared to explain the steps and process at the time of the hearing.

Draft Motions shall be prepared under separate cover.

GKM

¹ Wetland Agent Letter 2-7-22, p. 2.



OFFICE OF THE
TOWN ENGINEER

TOWN OF VERNON

55 WEST MAIN ST., VERNON, CT 06066

Tel: (860) 870-3638

Fax: (860) 870-3683

E-Mail: cperry@vernon-ct.gov

TO: Town Of Vernon Inland Wetlands Commission
George McGregor - Town Planner

FROM: Craig Perry, Town of Vernon Wetlands Agent

DATE: 02-07-2022

RE: **Staff Review of The Learning Experience (501 Talcottville Road) IWC-2022-01**

I have reviewed the site plans titled The Learning Experience, dated January 11, 2022, prepared by Russo Surveyors / Engineers which consisted of 12 sheets in total.

Regarding the Re-Designation:

- This property was the subject to a prior re-designation. The current request for a second re-designation shows the wetland limits in generally the same locations but it has reduced the size of the wetland in the area between flags A13 and A24. I recommend that the Soil Scientist explains any changes to the previous delineation.
- The newly proposed delineation as shown on the Wetland Redesignation Plan does not reference a Soil Scientist.
- The proposed delineation does not cover the entire property and is open ended. Almost the entire property was flagged with the exception of the southwest corner. A complete survey would help in up-dating the Wetlands Map and understanding the wetlands area.

Regarding the Wetlands Permit:

- In referencing the Grading / Erosion and Sediment Control Plan, there is a significant amount of proposed site disturbance, depositing of fill material, and other construction activities associated with this project that are shown within a few feet of the wetland areas. I do not believe it is realistic to expect the erosion and sedimentation controls to prevent any impacts to the wetlands during heavy rain events when the installation is proposed in such close proximity to the wetland boundary itself. It has been my experience that a single row of silt fence is very limited in preventing impacts to the

wetlands when there is a substantial risk of the fence being over-loaded due to the site grade and/or the amount of fill within the disturbed area.

- There is no proposed erosion control along the south side of the utility corridor that is coming off of Route 83 on the east side of the property.
- A Wetlands Assessment and environmental impacts report has not been submitted.

In summary, there is a significant amount of site disturbance and construction activity proposed in close proximity to the wetland delineation. There have been several studies done regarding the importance of the riparian (or buffer) areas in preserving significant wetland functions. This development, as presented, removes nearly all the riparian area to the north of the existing wetlands.

Due to the intense disturbance associated with this proposed development, my recommendation to the commission is to use your option to request an independent Professional Wetland Scientist that can perform a Complex Review of this application, on your behalf.

C.C.

David Smith, PE – Town Engineer

From: [McGregor, George](#)
To: [McGregor, George](#)
Subject: RE: 501 Talcottville rd- inland Wetlands
Date: Friday, February 11, 2022 10:26:00 AM

-----Original Message-----

From: McGregor, George
Sent: Thursday, February 10, 2022 2:59 PM
To: Tim Coon <tcoon@jrrusso.com>
Cc: Perry, Craig <cperry@vernon-ct.gov>; Smith, David <dsmith@vernon-ct.gov>
Subject: 501 Talcottville rd- inland Wetlands

Tim: please accept this as my comments on iwc 2022-01.

The submission does not appear to include the traditional wetland impact narrative, habitat discussion, or a functions and values analysis.

This makes it quite difficult to review and provide clear insight to the commission.

Please forward the requested analysis as soon as possible.

George

George K. McGregor, aicp
Office: 860-870-3640

From: [Tim Coon](#)
To: [McGregor, George](#)
Cc: [Perry, Craig](#); [Smith, David](#); rema8@aol.com; [Jay Ussery](#); [Eric Spungin](#); [Mark Vertucci](#)
Subject: [EXTERNAL] 501 Talcottville Road
Date: Tuesday, February 15, 2022 3:38:35 PM
Attachments: [image001.png](#)
[TLE Vernon Site Plans 2-14-22.pdf](#)
[Scan22021418220.pdf](#)

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

George,

I am providing this email and its attachments (revised plans and drainage report) in response to the plan review comments received from Craig Parry dated 2-7-22. A response to Craig's comments is provided below:

Craig's Re-designation Comments:

The soil scientist, George Logan from REMA Ecological Services, will be preparing and submitting an Impact Assessment/Function & Values Assessment under separate cover. It is anticipated that Mr. Logan will address Craig's comments 1 and 3 regarding the delineation and re-designation in that report. With regard to comment 2, I would like to point out that Note #1 on the Redesignation Plan identifies REMA Ecological Services as the entity which delineated the wetlands shown on the plans.

Craig's comment Regarding the Wetland Permit:

1. Despite the significant amount of fill required at the site, the runoff across the site will be very limited based on the existing sandy soils and limited distance across the site. It is believed that a single silt fence, if maintained properly, is sufficient to protect the downgradient wetland from sedimentation and erosion. However, based on Mr. Perry's concerns, the plans have been revised to include the placement of a wood chip berm to back up the silt fence installed at the edge of the downgradient wetland.
2. The plans have been revised to extend the sediment barrier (silt fence backed by a wood chip berm) along the utility corridor out to Talcottville Road.
3. As discussed above, a Wetland Impact Assessment/Functions & Values Assessment is being prepared by George Logan of REMA and will be submitted separately. However, in the preparation of his report, George has made a couple of recommendations for wetland enhancement and creation which have been added to these revised plans. In particular, the plans identify a particular area of wetlands to the south of the development area where we are proposing a series of plantings to enhance the existing wetland. In addition, the plans identify an upland area between wetland flags #14 and #24 where we are proposing to create some wetlands by excavating a small pool and seeding with a wetland seed mix. I believe George's report will provide additional discussion regarding these measures.

In addition to the plan revisions noted above, revisions were also made to address the off-site runoff from the adjacent Panda Palace parking lot that is currently directed to the development site through an existing break in the curb line at the western edge of their parking lot. This includes

untreated runoff from approximately 0.6 acres of impervious area at the Panda Palace which currently runs across the proposed development area at the site into the on-site wetland. The plan revisions include the installation of a riprap channel, yard drain and piping to intercept this runoff at the property line and convey it to the new on-site stormwater management basin where it will be treated and some of it recharged prior to discharge into the wetland. The attached plans and Drainage Report have been revised to reflect the interception and treatment of this off-site runoff. As a result, the proposed project will eliminate this discharge of untreated runoff to the wetland from the Panda Palace.

Finally, because I have also received your Town Planner comments dated 2-10-22, I have also separated the Wetland Re-designation Plan from the plan set and added both a fence and a dumpster surround detail, which address your first two comments. The architect will be providing color elevations to address your comment #3. Because your remaining comments (#4-#8) are all traffic related, a separate response is being prepared by the traffic engineer, Mark Vertucci at Fuss & O'Neill.

Also, as I have expressed to many of you on this email, I will be out of town until February 28th. In my absence, Jay Ussery from my office (copied above) will be handling this project and the wetland meeting next Tuesday. Please be sure that any correspondence meant for J.R. Russo & Associates is addressed to Jay during this time frame. Thank you.

Timothy A. Coon, P.E.
Principal Engineer



J.R. RUSSO & ASSOCIATES, LLC

P.O. Box 938, 1 Shoham Road
East Windsor, CT 06088

CT 860.623.0569 **MA** 413.785.1158

tcoon@jrrusso.com | www.jrrusso.com