

**AGENDA PACKET**

**MARCH 15, 2022 MEETING**

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**TOWN OF LEWISBORO**  
**Westchester County, New York**



**Planning Board**  
**79 Bouton Road**  
**South Salem, New York 10590**

**Tel: (914) 763-5592**  
**Fax: (914) 875-9148**  
**Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)**

**AGENDA**

**Tuesday, March 15, 2022**

Via Zoom videoconferencing and live streaming  
to Lewisboro TV YouTube channel

Meeting will start at 7:30 p.m. and end at or before 11:00 p.m.

**I. DECISION**

**Cal #04-19PB, Cal #17-19WP, Cal #06-19SW**

**Pound Ridge Stone, 2 West Road, South Salem, NY 10590, Sheet 49B, Block 9831, Lot 1 (Two West Road LLC, owner of record) – Request for Extension of Site Development Plan, Wetland and Stormwater Permit Approvals.**

**II. EXTENSION OF TIME REQUEST**

**Cal # 1-14PB, Cal# 7-14WP, Cal# 1-14SW**

**Pinheiro Subdivision, 930 Old Post Road (Route 35), Cross River, NY, Sheet 20, Block 10801, Lot 13 (Fernando and Maria Manuela Pinheiro, owners of record) – Applications for Preliminary Subdivision Plat Approval, Final Subdivision Plat Approval, Wetland Activity Permit Approval and Stormwater Permit Approval**

**III. SKETCH PLAN REVIEW**

**Cal #03-22PB**

**Arbor Hills Water System, 0 Brundige Drive, Goldens Bridge, NY 10526, Sheet 12, Block 11152, Lot 200 (Arbor Hill Waterworks, Inc, owner of record) - Application for the construction of a water treatment facility.**

**Cal #05-22PB**

**The Boro Café, 873 Route 35, Cross River, NY 10518, Sheet 20, Block 10800, Lot 8 (GHI Real Estate Corp., owner of record) - Application for change of use from office to restaurant/yoga studio.**

**Cal #06-22PB, Cal #05-22WP, Cal #03-22SW**

**Waccabuc Country Club Snack Bar, 0 Perch Bay Road, Waccabuc, NY, 10597, Sheet 25, Block 11155, Lot 148 & Sheet 25A, Block 10813, Lot 1 (Waccabuc Country Club Co., owner of record for both lots) - Application for beachfront improvements including renovation of the boathouse, construction of a pavilion, replacement of the snack bar, and install of accessible parking and walkways.**

**Cal #07-22PB**

**Waccabuc Country Club/Harder Lot Line Change, 0 Carriage House Road, Waccabuc, NY, 10597, Sheet 22, Block 10802, Lot 36 (Waccabuc Country Club Co., owner of record) and 128 Mead Street, Waccabuc, NY, Sheet 22, Block 10802, Lots 59 & 83 (Donald & Teresa Harder Revocable Trust, owners of record) - Application for a lot line change.**

**IV. SITE DEVELOPMENT PLAN REVIEW**

**Cal #4-21PB, Cal #42-21WP, Cal #08-21SW**

**397 Smith Ridge Road LLC, 397 Smith Ridge Road, South Salem, NY 10590, Sheet 50A, Block 9848, Lot 2 (397 Smith Ridge Road, LLC, owner of record) - Application for an addition to an existing self-storage facility.**

**V. MINUTES OF February 15, 2022.**

**VI. MOTION TO CONVENE EXECUTIVE SESSION.**

**VII. NEXT MEETING DATE: April 19, 2022.**

**VIII. ADJOURN MEETING.**

February 22, 2022

**Via Email**

Chairperson Janet Andersen  
And Members of the Lewisboro Planning Board  
Town of Lewisboro  
79 Bouton Road  
South Salem, NY 10590

***Re: Fernando and Maria Pinheiro (the "Owners")  
930 Rte. 35, Sheet 20, Block 10801, Lot 13 (the "Property")  
Extension Request for Wetland and Stormwater Permits***

Dear Chairperson Andersen and Members of the Planning Board:


We represent Fernando and Maria Pinheiro, the Owners of the Property located at 930 Old Post Road (Route 35) in Cross River, New York. This is a request for a two-year extension of the referenced Property's Wetland Activity Permit (7-14WP) and Stormwater Permit (1-14SW), which are set to expire on May 19, 2022. We respectfully request placement on your Board's March 15, 2022 agenda.

As background, on November 19, 2014, the Planning Board approved a 2-lot subdivision of the Property, together with a Wetland Activity Permit and Stormwater Permit in the Resolution attached hereto as "**Exhibit A**". The approved subdivision plat was filed in the County Clerk's Office on April 28, 2015 (Map # 28871). Lot 1 contains the existing single-family residence and Lot 2 would contain a new residence. The Planning Board previously granted extensions of these permits on November 26, 2018, attached hereto as "**Exhibit B**", and June 17, 2020, attached hereto as "**Exhibit C**".

The approved work on Lot 2 has not commenced and the Owners are in the process of selling the Property to a new owner. Cronin Engineering has advised that the site conditions remain the same at the Property.

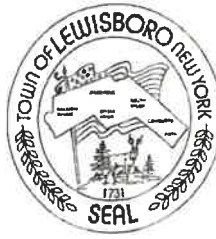
The Applicant respectfully requests placement on the Planning Board's March 15, 2022, meeting agenda. For the reasons above, the Applicant should be granted the requested two-year extension of the Property's Wetland Activity Permit (7-14WP) and Stormwater Permit (1-14SW). We thank you for your consideration and we look forward to discussing this matter with you further.

Respectfully submitted,  
ZARIN & STEINMETZ

By:   
Meredith Black  
Dominique G. Albano

**EXHIBIT A**

**TOWN OF LEWISBORO**  
**Westchester County, New York**



**Planning Board**  
**PO Box 725**  
**Cross River, New York 10518**

**Tel: (914) 763-5592**  
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November 19, 2014

Mr. Keith Staudohar  
Cronin Engineering  
39 Arlo Lane  
Cortlandt Manor, NY 10562

Re: Pinheiro Subdivision  
Block 10801, Lot 13, Sheet 20  
Cal# 1-14PB, Cal# 7-14WP, Cal# 1-14SW

Dear Mr. Staudohar:

Please find enclosed a certified copy of the resolution adopted by the Planning Board at the November 18, 2014 Planning Board meeting for your information and subsequent action.

Very truly yours,

Lisa M. Pisera  
Planning Board Secretary

Enclosure

cc: Planning Board  
Jan Johannessen, AICP, Town Planning/Wetland Consultant  
Judson Siebert, Esq., Planning Board Counsel  
Janet Donahue, Town Clerk  
Peter Barrett, Building Inspector  
Conservation Advisory Board Members  
Fernando Pinheiro

**RESOLUTION**  
**LEWISBORO PLANNING BOARD**  
**PRELIMINARY SUBDIVISION PLAT APPROVAL**  
**FINAL SUBDIVISION PLAT APPROVAL**  
**WETLAND ACTIVITY PERMIT**  
**TOWN STORMWATER PERMIT**  
**PINHEIRO SUBDIVISION**

**Sheet 20, Block 10801, Lot 13**  
**Cal. #1-14 P.B., 7-14W.P. AND 1-14 S.W.**

**November 18, 2014**

**WHEREAS**, the subject property consists of  $\pm 2.9$  acres of land, is located on the north side of NYS Route 35,  $\pm 1,500$  l.f. east of its intersection with NYS Route 121, and is located within the R-1A Zoning District (“the subject property”); and

**WHEREAS**, the subject property abuts the Town-owned Momsen Preserve, located immediately to the north of the subject property; and

**WHEREAS**, the subject property is identified as Sheet 30, Block 10801, Lot 13 on the Town of Lewisboro Tax Maps; and

**WHEREAS**, the subject property is owned by Fernando and Maria Pinheiro (“the owner/applicant”); and

**WHEREAS**, the subject property currently contains a single-family residence, detached garage, paved driveway, pool, septic system and potable water well; and

**WHEREAS**, the owner/applicant is proposing a 2-lot subdivision and the construction of a 3-bedroom residence, driveway, associated drainage improvements, a septic system and a potable water well (“the proposed action”); and

**WHEREAS**, more specifically, the proposed action will result in the following:

- Proposed Lot 1 will consist of  $\pm 1.36$  acres and will contain the existing single-family residence, detached garage, paved driveway, pool, septic system and potable water well; and
- Proposed Lot 2 will consist of  $\pm 1.58$  acres and will contain a proposed 3-bedroom residence, driveway, septic system, potable water well, associated drainage features and proposed wetland mitigation; and

**WHEREAS**, the subject property contains wetlands and wetland buffer areas that are jurisdictional to both the Town of Lewisboro and the New York State Department of Environmental Conservation (NYSDEC); and

**WHEREAS**, the wetland boundary line has been confirmed by the Town of Lewisboro Wetland Inspector and validated by the NYSDEC; and

**WHEREAS**, the proposed action will result in  $\pm 0.57$  acres of land disturbance,  $\pm 0.26$  acres of which will occur within the Town of Lewisboro jurisdictional wetland buffer; and

**WHEREAS**, no disturbance is proposed within the NYSDEC 100-foot wetland adjacent area; and

**WHEREAS**, the majority of the proposed residence, a portion of the driveway and associated stormwater management practices are proposed to be located within the Town's 150-foot wetland buffer, but in no case closer than 100-feet to the wetland boundary line; and

**WHEREAS**, the septic system expansion area associated with the existing residence on Lot 1 has been located within the Town's wetland buffer area; however, this area requires no immediate disturbance and its location within the buffer was practicably unavoidable; and

**WHEREAS**, the owner/applicant has developed a wetland mitigation plan, found acceptable to the Planning Board, which includes removal of invasive species and restoration of a portion of the Town's wetland buffer area with native plant species; and

**WHEREAS**, the proposed wetland mitigation plan provides a 1:1 wetland mitigation ratio, meaning the size of the wetland buffer restoration area equals the area of proposed wetland buffer disturbance; and

**WHEREAS**, in addition, the owner/applicant has proposed the installation of a wood stockade fence along the NYSDEC 100-foot wetland adjacent area to provide a physical demarcation and to prevent further encroachment into the wetland buffer; and

**WHEREAS**, the owner/applicant has developed a wetland buffer monitoring and maintenance program, which establishes protocols to ensure the continued success of the invasive species removal and wetland buffer planting plan; and

**WHEREAS**, in an effort to reduce impacts, the proposed septic system and septic system expansion area on Lot 2 has been located outside of the Town's regulated wetland buffer area, the number of proposed bedrooms has been reduced from four (4) to three (3) bedrooms, and the portion of the proposed driveway located within the wetland buffer is proposed to be surfaced with pervious pavers as oppose to asphalt; and

**WHEREAS**, reference is made to a Wetland Delineation Report, prepared by Stephen W. Coleman Environmental Consulting, LLC, dated November 27, 2013 and supplemented on September 23, 2014; and

**WHEREAS**, reference is made to a letter from the NYSDEC Natural Heritage Program, dated May 20, 2014, which identifies the potential presence of two (2) rare animal species within the vicinity of the subject property and a report prepared by Stephen W. Coleman Environmental

Consulting, LLC, dated July 19, 2014, which evaluates the presence of these species and associated habitat on the subject property; and

**WHEREAS**, the proposed action will have no significant impact on endangered, threatened, rare, or special concern plant or animal species; and

**WHEREAS**, the proposed action will result in  $\pm 0.57$  acres of land disturbance and coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-10-001) is required; and

**WHEREAS**, as the proposed action will result in 5,000 s.f. of land disturbance, a Town Stormwater Permit is required in accordance with Chapter 189, Stormwater Management and Erosion and Sediment Control, of the Town Code; and

**WHEREAS**, the applicant has developed a Stormwater Pollution Prevention Plan (SWPPP), prepared by Cronin Engineering and dated (last revised), September 26, 2014; and

**WHEREAS**, the SWPPP referenced above has been prepared in compliance with Town and NYSDEC standards and requirements; and

**WHEREAS**, site improvements have been designed and located to minimize disturbance necessary to achieve the proposed action; and

**WHEREAS**, the proposed subdivision and installation of the potable water well and septic system on Lot 2 requires approval from the Westchester County Department of Health (WCDH); and

**WHEREAS**, the construction of the proposed driveway to serve Lot 2 will require New York State Department of Transportation (NYSDOT) approval; and

**WHEREAS**, the proposed action will not result in a new street connecting to a State or County road and will not result in a new drainage line connecting to a County drainage channel; therefore, referral to the Westchester County Planning Board is not required; and

**WHEREAS**, the proposed action has been referred to and reviewed by the Conservation Advisory Council (CAC); and

**WHEREAS**, the Town of Lewisboro has an ongoing need for the acquisition of land for parks, playgrounds and recreational facilities; and

**WHEREAS**, the population generated by the proposed action will result in an incremental increased demand for parks, playground and recreation facilities; and

**WHEREAS**, Section 195-26A of the Town's Subdivision Regulations recommends that the minimum acreage of land for parks, playground or recreational facilities be five (5) acres, consisting of relatively level and dry land, not less than 200 feet in width, criteria with which the current application does not comply; and



**WHEREAS**, the Planning Board has determined in accordance with Section 195-26 of the Town's Subdivision Regulations that suitable land for parks, playground or other recreational facilities is limited on the subject property; and

**WHEREAS**, the applicant has submitted the Short Environmental Assessment Form (EAF), last revised September 26, 2014; and

**WHEREAS**, the Planning Board has compared the proposed action with the Criteria for Determining Significance in 6 NYCRR 617.7 (c) and determined that the proposed action will not have a significant adverse impact on the environment; and

**WHEREAS**, the Planning Board has considered all reasonably related long-term, short-term, direct, indirect, and cumulative environmental effects associated with the proposed action including other simultaneous or subsequent actions; and

**WHEREAS**, in addition to the above, the Planning Board has considered the written and verbal comments from the Board's professional consultants, written comments from other involved and interested agencies, the verbal commentary made during Planning Board meetings, testimony of the applicant and observations made at site visits; and

**WHEREAS**, the Planning Board considered the proposed action at a duly noticed public hearing which was opened and closed on October 21, 2014, at which time no public comment was offered.

**NOW THEREFORE BE IT RESOLVED THAT**, the proposed action has been classified as an Unlisted Action pursuant to the State Environmental Quality Review Act; and

**BE IT FURTHER RESOLVED THAT**, the Planning Board hereby issues the attached Negative Declaration of Significance; and

**BE IT FURTHER RESOLVED THAT**, the Planning Board hereby grants Conditional Preliminary Subdivision Plat Approval, subject to the below conditions; and

**BE IT FURTHER RESOLVED THAT**, as no public comment was offered during the public hearing held on the Preliminary Subdivision Plat and Wetland Activity Permit and as the applicant has addressed outstanding comments provided by the Planning Board and its consultants, the Planning Board hereby waives the final public hearing; and

**BE IT FURTHER RESOLVED THAT**, the Planning Board hereby grants Conditional Final Subdivision Plat Approval and approves the Final Subdivision Plat entitled "Subdivision Plat" Sheet P-1.1, prepared by Cronin Engineering and RKW Land Surveying and dated (last revised) September 26, 2014, subject to the below conditions; and

**BE IT FURTHER RESOLVED THAT,** the Planning Board hereby approves the following Final Construction Drawings, prepared by Cronin Engineering and dated (last revised) October 24, 2014, subject to the below conditions:

- Cover Sheet (C-0.1)
- Utility & Grading Plan (UG-2.1)
- Stormwater Pollution Prevention Plan (SWPPP-3.1)
- Wetland Mitigation & Tree Plan (WMTP-4.1)
- Driveway & D.O.T. Plan (DOT-5.1)
- Integrated Plot Plan (UG-2.1)

**BE IT FURTHER RESOLVED THAT,** upon full consideration of the above, the Planning Board hereby finds that the Wetland Activity Permit Application is consistent with the provisions and policies of Chapter 217 of the Code of the Town of Lewisboro and said permit is hereby approved, subject to the below-listed conditions and issuance of a separate Wetland Activity Implementation Permit by the Town of Lewisboro Wetland Inspector; and

**BE IT FURTHER RESOLVED THAT,** all work associated with this Wetland Activity Permit shall be conducted in strict compliance with the Final Subdivision Plat and Final Construction Drawings approved herein; and

**BE IT FURTHER RESOLVED THAT,** this Wetland Activity Permit shall expire without further written notice if the requirements of this Resolution are not completed as set forth herein. As provided pursuant to the Town Wetlands and Watercourses Law, this Wetland Activity Permit is subject to revocation should the owner/applicant not comply with the terms and conditions of this Resolution; and

**BE IT FURTHER RESOLVED THAT,** this Wetland Activity Permit shall expire two (2) years from the date of this Resolution, unless an extension is granted by the Planning Board in accordance with Section 217-9F(5) through (7) of the Town's Wetland and Watercourse Law; and

**BE IT FURTHER RESOLVED THAT,** in consideration of the above and in accordance with Chapter 189-7B of the Town Code, the Planning Board hereby issues a Town Stormwater Permit, subject to the below-listed conditions; and

**BE IT FURTHER RESOLVED THAT,** the Town Stormwater Permit shall expire upon completion of work and shall be valid for a period of two (2) years from the date of this Resolution, unless extended by the Planning Board in accordance with Section 189-7G of the Town Code; and

**BE IT FURTHER RESOLVED THAT,** this Resolution authorizes only the activities approved herein and as shown on the Final Subdivision Plat and Final Construction Drawings. Any alterations or modification to the approved plans or approved facilities shall require the prior review and approval of the Planning Board; and

**BE IT FURTHER RESOLVED THAT**, Condition #'s 1 through #13, outlined below, must be completed within 180 days of the date of this Resolution. Should said Conditions not be completed within the allotted time frame, this Resolution shall become null and void unless a 90 day extension is requested by the owner/applicant (in writing) prior to said 180 day period and granted by the Planning Board; and

**BE IT FURTHER RESOLVED THAT**, this approval shall expire without further notice if the signed Final Subdivision Plat is not filed in the Office of the Westchester County Clerk within 60 days of its endorsement by the Planning Board Chairman.

**Conditions to be Satisfied Prior to the Signing of the Final Subdivision Plat and Final Construction Drawings:**

1. The owner/applicant shall satisfactorily address any outstanding written comments provided by the Planning Board's professional consultants.
2. The owner/applicant shall pay to the Town of Lewisboro, by certified check, a fee in lieu of the reservation of land (recreation fee) in the amount of \$10,000.
3. The owner/applicant shall submit to the Planning Board Secretary an engineering/inspection fee equal to 5% of the estimated cost of construction; said estimate shall be prepared by a NYS Professional Engineer and approved by the Town Engineer.
4. Proposed wetland mitigation plantings shall be bonded in the amount approved by the Town Wetland Inspector, based upon a written cost estimate to be provided by the owner/applicant. Said bond, or other security acceptable to the Planning Board, shall be supplied to the Planning Board and shall be released after a period of five (5) years, as measured from the issuance date of the Wetland Certificate of Compliance, provided that the Town Wetland Inspector verifies that a minimum of 85% of the planted species have survived.
5. Each and every sheet of the Final Subdivision Plat and Final Construction Drawings shall contain a common revision date with notation stating "Final Planning Board Approval," shall contain an original seal and signature of the design professional and shall contain an original signature of the owner/applicant.
6. The owner/applicant shall submit correspondence from the NYSDOT stating, in essence, that work proposed within the NYS right-of-way is acceptable, pending a NYSDOT work permit.
7. The name of the qualified wetland scientist that will be overseeing the implementation of the wetland mitigation plan shall be provided to the Planning Board (see Condition #25).
8. The owner/applicant shall submit the New York State Department of Environmental Conservation (NYSDEC) Notice of Intent (NOI) and the NYSDEC MS4 Acceptance Form for review and approval by the Town Engineer and Town Stormwater Management

Officer. Following review and approval of these documents, the applicant shall submit the completed MS4 Acceptance Form and NOI to the NYSDEC, Division of Water.

9. The owner/applicant shall submit a "check set" of the Final Subdivision Plat and Final Construction Drawings (two (2) sets), prepared in final form and in accordance with the conditions of this Resolution, for review by the Planning Board's consultants.
10. Any revisions required as a result of the consultant's review of the Final Subdivision Plat and Final Construction Drawings shall be made. Following review and revision (if necessary), the owner/applicant shall furnish the Planning Board with two (2) complete mylar sets of the Final Subdivision Plat and Final Construction Drawings, complete with all required original signatures, for final review by the Town Engineer and endorsement by the Town Engineer, Planning Board Secretary and Planning Board Chairman.
11. The owner/applicant shall obtain a Wetland Implementation Permit, as issued by the Town Wetland Inspector.
12. The owner/applicant shall provide a written statement to the Planning Board Secretary acknowledging that he/she has read and will abide by all conditions of this Resolution.
13. The owner/applicant shall pay to the Town of Lewisboro, by certified check, all outstanding professional review fees.

**Conditions to be Satisfied Following the Signing of the Final Subdivision Plat and Final Construction Drawings**

14. Following the endorsement of the Final Subdivision Plat and Final Construction Drawings by the Planning Board Chairman and Secretary, one (1) mylar set will be returned to the owner/applicant for copying and the second mylar set will be retained by the Planning Board as a record copy.
15. Within 10 days after endorsement of the Final Subdivision Plat and Final Construction Drawings by the Planning Board Chairman and Secretary, the owner/applicant shall deliver, to the Planning Board Secretary, nine (9) printed sets of the same, collated and folded.
16. The owner/applicant shall demonstrate proof of filing the Final Subdivision Plat with the Westchester County Clerk's Office. The owner/applicant shall deliver to the Planning Board Secretary three (3) 18" x 24" copies of the Final Subdivision Plat, as filed, and showing all signatures and acknowledgements of filing.

**Conditions to be Satisfied Prior to the Issuance of a Building Permit:**

17. The owner/applicant shall have complied with all of the above conditions.
18. The owner/applicant shall obtain NYSDOT approval and provide a copy of the NYSDOT permit to the Building Department and Planning Board Secretary.

19. The applicant shall demonstrate that coverage has been obtained under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001).
20. Prior to the issuance of a Building Permit for Lot 2, the Town Engineer and Town Wetland Inspector shall review the drawings submitted to the Building Department to confirm compliance with the Final Construction Drawings approved herein.
21. No Building Permit shall be issued absent compliance with Town Code Section 220-75B(3).

**Conditions to be Satisfied Prior to the Commencement of any Site Work:**

22. The owner/applicant shall have complied with all of the above conditions.
23. A site visit shall be conducted with the owner/applicant, Building Inspector, Town Engineer and Town Wetland Inspector. Prior to the site visit, all erosion and sedimentation controls shall be properly installed, a NYS Licensed Land Surveyor shall have stake the applicable disturbance limit lines and all trees to be removed shall be marked in the field with a surveyor's ribbon.

**Conditions of the Wetland Activity Permit:**

24. All plants shall be installed between April 1<sup>st</sup> and October 15<sup>th</sup>; plant substitutions, if any, must be previously approved by the Town Wetland Inspector prior to installation.
25. The owner/applicant shall employ the services of a qualified wetland scientist to oversee and inspect the implementation of the wetland mitigation plan. Said wetland scientist shall be on-site to inspect all phases of work associated with the invasive species removal and wetland buffer replanting program. Prior to the issuance of a Wetland Certificate of Compliance, the qualified wetland scientist shall submit a report to the Planning Board Secretary describing the phases of work completed and certifying that the wetland mitigation plan was implemented in accordance with the approved plan and the conditions of this Resolution.
26. Wetland mitigation areas shall be monitored for the first five (5) growing seasons following construction and planting. Monitoring reports shall detail the success of the plantings (survival rate), success of the invasive species removal program, and shall provide recommendations/action items for the next year (if any). Monitoring reports shall be submitted to the Town Wetland Inspector and Planning Board no later than December 1<sup>st</sup> of each year and shall be based upon site reconnaissance conducted by the qualified wetland scientist prior to October 15<sup>th</sup>. The first year of monitoring will be the first year that the mitigation areas have completed a full growing season. For monitoring purposes, a growing season starts no later than May 31<sup>st</sup>.

**Conditions to be Satisfied During Construction:**

27. A copy of this Resolution, the Final Subdivision Plat and the Final Construction Drawings shall be kept on-site at all times.
28. During construction the Town Engineer and Town Wetland Inspector may require site inspections, as necessary, to determine compliance with the provisions of this Resolution, the Final Subdivision Plat and Final Construction Drawings.

**Conditions to be Satisfied Prior to the Issuance of a Certificate of Occupancy for Lot 2:**

29. A final site inspection shall be conducted by the Town Engineer and Town Wetland Inspector to confirm compliance with the Final Subdivision Plat and Final Construction Drawings approved herein.
30. The owner/applicant shall submit an as-built survey demonstrating compliance with the Final Subdivision Plat and Final Construction Drawings.
31. Submission of an as-built map depicting the location of planted materials (wetland mitigation only) shall be submitted to the Planning Board (two (2) copies) and Building Inspector.
32. Certification by a NYS Professional Engineer that all stormwater management practices and associated improvements have been installed in conformance with the approved Final Subdivision Plat and Final Construction Drawings approved herein.
33. The owner/applicant shall obtain a Wetland Certificate of Compliance from the Town Wetland Inspector.
34. The owner/operator shall submit a completed Notice of Termination (NOT) to the NYSDEC, Division of Water, and to the Planning Board Secretary.
35. The owner/applicant shall pay to the Town of Lewisboro, by certified check, any and all outstanding professional review fees.

**ADOPTION OF RESOLUTION**

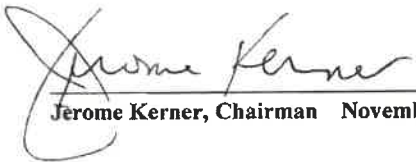
**WHEREUPON**, the Resolution herein was declared adopted by the Planning Board of the Town of Lewisboro as follows:

The motion was moved by: Mr. O'Donnell

The motion was seconded by: Mr. Goett

The vote was as follows:

<b>JEROME KERNER</b>	<u>Aye</u>
<b>JOHN O'DONNELL</b>	<u>Aye</u>
<b>RON TETELMAN</b>	<u>Aye</u>
<b>ROBERT GOETT</b>	<u>Aye</u>
<b>GREG LASORSA</b>	<u>Aye</u>

  
Jerome Kerner, Chairman November 18, 2014

**STATE OF NEW YORK  
COUNTY OF WESTCHESTER  
TOWN OF LEWISBORO**

I, Lisa Pisera, Secretary to the Planning Board of the Town of Lewisboro, County of Westchester, State of New York, do hereby certify that I have compared the preceding copy of a resolution adopted by the Planning Board of the Town Lewisboro, County Westchester at a meeting held on the 18<sup>th</sup> day of November, 2014 and that the same is a true and correct copy of said original and of the whole thereof.

  
Lisa M. Pisera  
Planning Board Secretary

Dated at Cross River, New York  
This 19<sup>th</sup> day of November, 2014

**State Environmental Quality Review  
NEGATIVE DECLARATION  
Notice of Determination of Non-Significance**

**Date:** November 18, 2014

This notice is issued pursuant to Part 617 of the implementing regulations pertaining to Article 8 (State Environmental Quality Review Act) of the Environmental Conservation Law.

The Town of Lewisboro Planning Board has determined that the proposed action described below will not have a significant environmental impact and a Draft Environmental Impact Statement will not be prepared.

**Name of Action:** Pinheiro Subdivision

**SEQRA Status:**   ☐ Type 1

☒ Unlisted

**Conditioned Negative Declaration:**   ☐ Yes

☒ No

**Coordinated Review:**   ☐ Yes

☒ No

**Description of Action:** The subject property consists of ±2.9 acres of land, is located on the north side of NYS Route 35, ±1,500 l.f. east of its intersection with NYS Route 121, and is located within the R-1A Zoning District ("the subject property"). The subject property currently contains a single-family residence, detached garage, paved driveway, pool, septic system and potable water well. The owner/applicant is proposing a 2-lot subdivision and the construction of a 3-bedroom residence, driveway, associated drainage improvements, a septic system and a potable water well ("the proposed action"). The existing residence and associated improvements will be situated on proposed Lot 1; Lot 2 will be the site of the proposed residence, associated improvements and wetland mitigation measures. The subject property contains wetlands and wetland buffer areas that are jurisdictional to both the Town of Lewisboro and the New York State Department of Environmental Conservation (NYSDEC). While no disturbance is proposed within the NYSDEC 100-foot wetland adjacent area, the proposed action will result in ±0.57 acres of land disturbance, ±0.26 acres of which will occur within the Town of Lewisboro jurisdictional wetland buffer.



**Reasons Supporting This Determination:** The Planning Board has compared the proposed action with the Criteria for Determining Significance in 6 NYCRR 617.7 (c). Specifically:

1. The proposed action will not result in a substantial adverse change in the existing air quality, ground or surface water quality or quantity, traffic or noise levels; a substantial increase in solid waste production.

*The subject property consists of ±2.9 acres of land and is currently developed with a single-family residence and associated improvements. The proposed action will result in one (1) additional three (3) bedroom residence and, therefore, will not overburden the aquifer or have an adverse effect on groundwater. Lot 2 will be developed with a septic system and water well that will be reviewed and approved by the Westchester County Department of Health (WCHD). The owner/applicant is proposing a series of rain gardens to collect runoff from the residence and driveway proposed on Lot 2.*

*The proposed action will result in ±0.57 acres of total land disturbance and the owner/applicant has developed a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Town and NYSDEC requirements.*

*The majority of the proposed residence, a portion of the driveway and associated stormwater management practices are proposed to be located within the Town's 150-foot wetland buffer, but in no case closer than 100-feet to the wetland boundary line. The owner/applicant has developed a wetland mitigation plan, which includes removal of invasive species and restoration of a portion of the Town's wetland buffer area with native plant species. In addition, the owner/applicant has proposed the installation of a wood stockade fence along the NYSDEC 100-foot wetland adjacent area to provide a physical demarcation and to prevent further encroachment into the wetland buffer. Further, the owner/applicant has developed a wetland buffer monitoring and maintenance program, which establishes protocols to ensure the continued success of the invasive species removal and wetland buffer planting plan.*

*In an effort to reduce impacts, the proposed septic system and septic system expansion area on Lot 2 has been located outside of the Town's regulated wetland buffer area, the number of proposed bedrooms has been reduced from four (4) to three (3) bedrooms, and the portion of the proposed driveway located within the wetland buffer is proposed to be surfaced with pervious pavers as oppose to asphalt.*

*The proposed action will not impact current traffic conditions. It is anticipated that the proposed new dwelling will generate two (2) vehicle trips per PM peak hour and that the two (2) dwellings will generate a total of four (4) vehicle trips*

*per PM peak hour. Proposed Lot 2 will gain access from NYS Route 35 and a Highway Work Permit will be required from the New York State Department of Transportation (NYSDOT).*

*The proposed action will not adversely affect ambient noise levels. The proposed new dwelling will be located approximately 300 feet away from NYS Route 35 and noise levels will only exceed ambient levels during construction (if at all), which is expected to last no more than 12 months.*

*The proposed action will not generate a significant amount of solid waste. In fact, the proposed new residence will likely generate approximately 0.27 tons of solid waste per month, which will be collected by a local carter.*

2. The proposed action will not result in the removal or destruction of large quantities of vegetation or fauna; substantial interference with the movement of any resident or migratory fish or wildlife species; impact a significant habitat area; result in substantial adverse impacts on a threatened or endangered species of animal or plant, or the habitat of such species; and will not result in other significant adverse impacts to natural resources.

*The proposed action will result in  $\pm 0.57$  acres of land disturbance, most of which will result in some form of vegetation removal; further a total of 50 mature trees will be removed. Reference is made to a letter from the NYSDEC Natural Heritage Program, dated May 20, 2014, which identifies the potential presence of two (2) rare animal species within the vicinity of the subject property and a report prepared by Stephen W. Coleman Environmental Consulting, LLC, dated July 19, 2014, which evaluates the presence of these species and associated habitat on the subject property. As can be summarized from the above-referenced report, the proposed action will have no significant impact on endangered, threatened, rare, or special concern plant or animal species.*

3. The proposed action will not result in the impairment of the environmental characteristics of a Critical Environmental Area as designated pursuant to 6 NYCRR Part 617.14(g).

*The proposed action will have no negative environmental impact on any critical environmental area, the closest of which is the Ward Pound Ridge Reservation located  $\pm 800$  feet south of the subject property.*

4. The proposed action will not result in a material conflict with the Town's officially approved or adopted plans or goals.

*The proposed subdivision is zoning compliant and will result in a total of two (2) dwelling units on  $\pm 2.9$  acres of land. All proposed improvements will take place within the Town's "contiguous buildable area" and the plan has been carefully designed to minimize impacts.*

5. The proposed action will not result in the impairment of the character or quality of important historical, archaeological, architectural, aesthetic resources or the existing character of the community or neighborhood.

*The subject property is not located within an archeologically sensitive area and is not in proximity to a district, site, or structure listed on the State or National Register of Historic Places.*

6. The proposed action will not result in a major change in the use of either the quantity or type of energy.

*While the use of oil and electricity will increase, the increase will be nominal.*

7. The proposed action will not create a hazard to human health.

8. The proposed action will not create a substantial change in the use, or intensity of use, of land including agricultural, open space or recreational resources, or in its capacity to support existing uses.

*The subject property is not located within the County Agricultural District and does not contain open space or recreational uses. As a condition of approval, the applicants will be required to pay a recreation fee to offset the incremental increased demand for parks, playground and recreational facilities.*

9. The proposed action will not encourage or attract a large number of people to a place or place for more than a few days, compared to the number of people who would come to such place absent the action.

10. The proposed action will not create a material demand for other actions that would result in one of the above consequences.

11. The proposed action will not result in changes in two (2) or more elements of the environment, no one of which has a significant impact on the environment, but when considered together result in a substantial adverse impact on the environment.

12. When analyzed with two (2) or more related actions, the proposed action will not have a significant impact on the environment and when considered cumulatively, will not meet one or more of the criteria under 6 NYCRR 617.7(c).

13. The Planning Board has considered reasonably related long-term, short-term, direct, indirect and cumulative impacts, including other simultaneous or subsequent actions.

**For further information contact:**

Lisa Pisera, Planning Board Secretary  
Town Offices @ Orchard Square, Suite L (Lower Level)  
20 North Salem Road, Cross River, NY 10518  
Phone: (914) 763-5592  
Fax: (914) 763-3637

**This notice is being filed with:**

Lisa Pisera, Planning Board Secretary  
Town Offices @ Orchard Square, Suite L (Lower Level)  
20 North Salem Road, Cross River, NY 10518  
Phone: (914) 763-5592  
Fax: (914) 763-3637

**EXHIBIT B**

**TOWN OF LEWISBORO**  
**Westchester County, New York**



**Planning Board**  
**79 Bouton Road**  
**South Salem, New York 10590**

**Tel: (914) 763-5592**  
**Fax: (914) 875-9148**  
**Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)**

November 26, 2018

Mr. Tim Cronin  
Cronin Engineering  
39 Arlo Lane  
Cortlandt Manor, NY 10562

Re: Pinheiro Subdivision  
Block 10801, Lot 13, Sheet 20  
Cal# 1-14PB, Cal# 7-14WP, Cal# 1-14SW

Dear Mr. Cronin:

The Planning Board has acknowledged Brad Schwartz, Esq.'s emailed request dated October 5, 2018 and granted an 18-month extension of time to the Pinheiro Subdivision's Wetlands Activity Permit (7-14WP) and Stormwater Permit (1-14SW).

The new expiration date for both permits is May 19, 2020.

Very truly yours,

Ciorsdan Conran  
Planning Board Administrator

cc: (via email) Planning Board  
Jan Johannessen, AICP, Town Planning/Wetland Consultant  
Judson Siebert, Esq., Planning Board Counsel  
Janet Donohue, Town Clerk  
Joseph Angiello, Building Inspector  
John Wolff, Conservation Advisory Board  
Fernando Pinheiro

**EXHIBIT C**

**TOWN OF LEWISBORO**  
**Westchester County, New York**



**Planning Board**  
**79 Bouton Road**  
**South Salem, New York 10590**

**Tel: (914) 763-5592**  
**Fax: (914) 875-9148**  
**Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)**

June 17, 2020

**Mr. Tim Cronin**  
**Cronin Engineering**  
**39 Arlo Lane**  
**Cortlandt Manor, NY 10562**

**Re: Pinheiro Subdivision**  
**Block 10801, Lot 13, Sheet 20**  
**Cal# 1-14PB, Cal# 7-14WP, Cal# 1-14SW**

**Dear Mr. Cronin:**

At its June 16, 2020 meeting, the Planning Board acknowledged Brad Schwartz, Esq.'s emailed request dated May 11, 2020 and granted a two (2) year extension of time to the Pinheiro Subdivision's Wetlands Activity Permit (7-14WP) and Stormwater Permit (1-14SW).

The new expiration date for both permits is May 19, 2022.

Very truly yours,

**Ciorsdan Conran**  
**Planning Board Administrator**



**cc: (via email) Planning Board**  
**Jan Johannessen, AICP, Town Planning/Wetland Consultant**  
**Judson Siebert, Esq., Planning Board Counsel**  
**Janet Donohue, Town Clerk**  
**Joseph Angiello, Building Inspector**  
**John Wolff, Conservation Advisory Board**  
**Fernando Pinheiro**



**MEMORANDUM**

TO: Chairperson Janet Andersen and  
Members of Lewisboro Planning Board

CC: Ciorsdan Conran  
Judson Siebert, Esq.  
Joseph Angiello

FROM: Jan K. Johannessen, AICP   
Joseph M. Cermele, P.E., CFM   
Town Consulting Professionals

DATE: March 11, 2022

RE: Arbor Hills Water System Improvements  
Brundige Drive  
Sheet 0013, Block 11152, Lot 011

**PROJECT DESCRIPTION**

The subject property consists of 4.63 acres of land and is located on Brundige Drive within the R-2 Zoning District. The subject property is developed with a communal well used to serve the Arbor Hills Subdivision, which serves 67 customers. The applicant, Liberty Utilities, is proposing to upgrade the system to address instances of contaminants exceeding maximum containment levels (MCLs) and is working with the Westchester County Department of Health (WCHD) to provide the required treatment, which requires the addition of a treatment building to house equipment. The additional equipment will be designed for the removal of uranium, combined radium and adjusted gross alpha (AGA), iron and manganese, and per- and polyfluoroalkyl substances (PFAS) from the on-site wells to non-detectable concentrations below permitted MCLs. According to the applicant, the interior of the new treatment building will include several vessels for the removals of contaminants discussed above, as well as necessary pumps and mechanical accessories. Outside of the building, a small, reclaimed water tank and backwash tank will be installed. Other site improvements include minimal site grading, pavement for building access and necessary site piping.

**SEQRA**

The proposed action has been preliminarily identified as a Type II Action and is therefore categorically exempt from the State Environmental Quality Review Act (SEQRA).

Chairperson Janet Andersen

March 11, 2022

Page 2 of 4

#### **REQUIRED APPROVALS**

1. Site Development Plan Approval is required from the Planning Board; unless waived by the Planning Board, a public hearing is required to be held on the Site Development Plan.
2. The subject property is located within the NYC East of Hudson Watershed and proposed land disturbance exceeds 5,000 s.f. Coverage under New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) will be required.
3. The water system requires approval from the Westchester County Department of Health (WCHD).

#### **COMMENTS**

1. Submit an existing conditions boundary and topographic survey.
2. Illustrate the Town's regulated 150-foot buffer on the site plan.
3. Evaluate the visibility of the proposed facility from public roads and surrounding residence.
4. The width of the driveway shall be dimensioned on the plans.
5. Trees to be removed and protected shall be identified on the plan.
6. Regardless of the proposed area of disturbance, provide an Erosion and Sediment Control Plan.
7. Graphically illustrate and calculate the proposed area of land disturbance. Land disturbance is proposed to exceed  $\geq 5,000$  s.f. and will therefore require conformance with New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit (GP-0-20-001) and filing of a Notice of Intent (NOI) and MS4 Acceptance Form with the NYSDEC. Submit draft copies to this office for review.
8. The applicant shall provide stormwater mitigation and design calculations for the runoff generated by the net increase in impervious surface for the 25-year, 24-hour storm event. Provide details of the stormwater mitigation system.
9. Is there any new lighting proposed on the building? The applicant shall provide details of the lighting demonstrating compliance with Sections 220-14 of the Zoning Code and shall illustrate Illuminance levels shall be measured in footcandles. Consider utilizing motion detection for all exterior lighting.

Chairperson Janet Andersen

March 11, 2022

Page 3 of 4

10. The plans shall be revised to identify the correct Tax Parcel Sheet, Block and Lot.
11. The plans shall be signed/sealed by the Design Professional.
12. The owner/applicant name and address shall be identified on the plan.
13. The Planning Board's standard signature blocks shall appear on all sheets.
14. The names of the adjacent property owners and the location of any neighboring driveways, structures, buildings, wells and septic areas shall appear on the plan.
15. Provide fence and gate details, including height, material, color, etc.
16. Provide construction details for all proposed improvements, including but not limited to, driveway, drainage, curbing, fencing, gates, pavement restoration, walkways, landscaping, erosion controls, etc.
17. The applicant shall submit architectural floor plans and elevations of the building, signed and sealed by a NYS Registered Architect or Professional Engineer.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

**PLAN REVIEWED, PREPARED BY H2M ARCHITECTS & ENGINEERS, DATED JANUARY, 2022:**

- Sketch Plan (C 100.00)

**DOCUMENTS REVIEWED:**

- Letter, prepared by H2M Architects & Engineers, dated January 31, 2022
- Planning Board Application
- Full EAF Part 1, dated January 31, 2022
- Location Map

JKJ/dc

Chairperson Janet Andersen  
March 11, 2022  
Page 4 of 4



architects + engineers

2 Executive Boulevard, Suite 401  
Suffern, NY 10901

tel 845.357.7238  
fax 845.357.7267

January 31, 2022

Janet Andersen, Chairperson  
Town of Lewisboro Planning Board  
79 Bouton Road  
South Salem, NY 10590

Re: Liberty Utilities  
Arbor Hills Water System Improvements  
**1 Brundige Road (Tax Map 32.1-2-1)**

Dear Chairperson Andersen,

The subject project proposes a new water treatment building (public utility) on the existing site of a water treatment and supply facility on a 4.635-acre parcel (32.1-2-1) in the R-2A (One Family Residence, 2-acre min. lot area) having frontage on Brundige Road and Waccabuc Road (County Route 138) requiring site plan and special permit approval from your Board.

**Background** – The existing site is a water treatment and supply facility owned by Arbor Hill Waterworks. In March of 2017, Liberty Utilities (previously New York American Water) assumed responsibility for operating the Arbor Hills Water System. Liberty Utilities is currently the acting owner and is in the process of acquiring the system from Arbor Hill Waterworks. Recent water quality sampling noted instances of contaminants exceeding maximum containment levels (MCLs). Liberty Utilities is currently working with the Westchester County Department of Health (WCDOH) to provide required treatment. The proposed treatment building will be designed for the removal of uranium, combined radium and adjusted gross alpha (AGA), iron and manganese, and per- and polyfluoroalkyl substances (PFAS) from the onsite wells to non-detectable concentrations below permitted MCLs.

**A. Materials Submitted:**

1. One (1) copy of the Town of Lewisboro Site Development Plan (Sketch Plan) Application Form;
2. One (1) copy of the Full Environmental Assessment Form, Part 1 and Location Map;
3. Twelve (12) copies of the Sketch Plan, prepared by H2M architects + engineers, dated January 2022.

**B. Zoning:** The project proposes a new water treatment building on the existing site of a water treatment and supply facility on a 4.635-acre parcel (32.1-2-1). The interior of the new treatment building will include several vessels for the removals of contaminants discussed above as well as necessary pumps and mechanical accessories. Outside of the building, a small reclaimed water tank and backwash tank will be installed. Other site improvements include minimal site grading, pavement for building access and necessary site piping (all onsite).

- a) Use – As indicated on the Town of Lewisboro Zoning Map, the project site is located in the R-2A Zoning District. Per §220-23A(11) of Town Code, public utility uses<sup>1</sup> are permitted principal uses subject to site plan and special permit approval from your Board.

---

<sup>1</sup> Any person, firm, corporation or governmental agency duly authorized to furnish to the public, under governmental regulation, electricity, gas, water, sewage treatment, steam or communication service [§220-2].

- b) Public Hearing – We note that the §220-32D.(3) requires public hearing for applications requiring special permit approval. We will coordinate this with the Town as directed.
- c) Dimensional Regulations – As indicated on the Sketch Plan submitted with this application. The proposed project meets all dimensional requirements of the R-2A Zoning District.

**C. Site Plans:** The following provides background information on site plan elements which will be designed in conformance with your Code:

- a) Site Access and Parking – The site features and existing 11.5' wide paved driveway with a 35'x35' (approx.) turnaround/parking area. Where Code does not define off-street parking requirements, these shall be determined as reasonable and appropriate by your Board [§220-56E]. We note that the site is typically unmanned and is periodically inspected by Liberty Utilities Operators. Per Department of Health Standards, the project will likely require security fencing around the treatment building. If requested by the Town, the access gate will provide a Knox box for emergency response.
- b) Lighting – For safety and site access purposes, the new water treatment building will require wall mounted light fixtures above building entrances. In accordance with §220-14, all exterior lighting will be placed or shielded so that no direct light source (i.e., bulb, lamp, tube) shall be visible at any property line at a height of more than four feet above grade. We note that the existing site features are heavily forested and will pose no impact to the adjacent parcels.
- c) Landscaping and Screening – All sides of the project parcel are adjacent to residential districts. The project will meet the required 30-foot minimum buffer area [§220-15B(1)]. As required by §220-15A, the project also proposes minimal tree clearing. All tree clearing has been limited to the maximum extent practical. All areas not scheduled for improvements shall remain in their natural state.
- d) Wetlands and Steep Slopes – The proposed project does not contain any wetlands or watercourses onsite and is not proposing any work within any regulated buffer areas. Pursuant to §220-21B, the project has taken into consideration the location of the proposed building in an area which minimizes the disturbance of any steep slopes. Any disturbed areas which have steep slopes shall feature additional erosion and sediment control measures such as silt fencing and erosion control matting.
- e) Utilities –
  - a. Water and Wastewater – As the project is an existing water supply facility, no water supply is necessary. Both the new and existing building do not have any bathrooms or require connection to sanitary. However, the water treatment vessel media will need to be replaced infrequently. Occurrence of media changeout will depend on the vessel type; however, it is estimated that the most frequent of the vessel changeouts will occur every 450 days.
  - b. Stormwater – The project disturbance will be under one (1) acre and will not require postconstruction stormwater management practices. However, we note that the project lies in the New York City Watershed East of Hudson. In accordance with the NYSDEC SPDES General Permit (GP-0-20-001) the project will require coverage for Erosion & Sediment Control if disturbance exceeds 5,000 square feet.

**D. SEQRA** – A Long Form Environmental Assessment Form (EAF) has been included with this submission. The project does not propose any disturbance to wetlands waterbodies or other environmentally

sensitive areas. It is our opinion that the project meets the definition of a Type II action per 6 CRR-NY 617.5(c)(9)<sup>2</sup>.

Also included are the necessary fees for Sketch Plan Submission and Escrow. With this submission, we are requesting placement on your Planning Board's March 15, 2021 Agenda for presentation of our Sketch Plan. We look forward to further discussion of the project with your Board. Should you have any questions, please advise.

Very truly yours,

H2M architects + engineers



James J. Roberts, P.E.  
Senior Vice President

Enclosures

cc: Christopher Peters, Liberty Utilities (w/ enclosures)  
John Kilpatrick, Liberty Utilities (w/ enclosures)  
Steve Wondrack, Liberty Utilities (w/ enclosures)  
Christopher Wright, Project Manager (w/ enclosures)

---

<sup>2</sup> Construction or expansion of a primary or accessory/appurtenant, nonresidential structure or facility involving less than 4,000 square feet of gross floor area and not involving a change in zoning or a use variance and consistent with local land use controls, but not radio communication or microwave transmission facilities.

**TOWN OF LEWISBORO PLANNING BOARD**79 Bouton Road, South Salem, NY 10590 Tel: (914) 763-5592 Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)**Site Development Plan/Subdivision Plat Application – Check all that apply:**Waiver of Site Development Plan Procedures ☐

Site Development Plan Approval

Special Use Permit Approval

Subdivision Plat Approval

Step I ☒Step I ☒Step I ☐Step II ☐Step II ☐Step II ☐Step III ☐**Project Information**Project Name: Arbor Hills Water System ImprovementsProject Address: 1 Brundige Drive, Goldens Bridge, NY 10526Gross Parcel Area: 4.635 Zoning District: R-2A Sheet(s): 32.1 Block (s): 2 Lot(s): 1Project Description: The project involves the construction of a new water treatment building on the site of an existing water treatment and supply facility to meet Department of Health water quality standards. Additional site work will include necessary utility work and site grading.

Is the site located within 500 feet of any Town boundary?

YES ☐NO ☒

Is the site located within the New York City Watershed?

YES ☒NO ☐

Is the site located on a State or County Highway?

YES ☒NO ☐

Note: Existing site access is along Brundige Drive. However, the site also borders Waccabuc Road (NYS Route 138)

Does the proposed action require any other permits/approvals from other agencies/departments?

Town Board ☐ZBA ☐Building Dept. ☒Town Highway ☐ACARC ☐NYSDEC ☐NYCDEP ☐WCDH ☒NYSDOT ☐Town Wetland ☐Town Stormwater ☒E&SC only, (disturbance < 1 acre)  
no postconstruction stormwater  
management

Other \_\_\_\_\_

**Owner's Information**Name: John T. Kilpatrick, Director of Engineering,  
Liberty UtilitiesEmail: john.kilpatrick@libertyutilities.comAddress: 60 Brooklyn Ave, Merrick, NY 11566Phone: (516) 406-2625**Applicant's Information (if different)**

Name: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

**Authorized Agent's Information**Name: James Roberts, PEEmail: jroberts@h2m.comAddress: 2 Executive Blvd. Suite 401, Suffern, NY 10901Phone: 914-231-8264

THE APPLICANT understands that any application is considered complete only when all information and documents required have been submitted and received by the Planning Board. The applicant further understands that the applicant is responsible for the payment of all application and review fees incurred by the Planning Board.

THE UNDERSIGNED WARRANTS the truth of all statements contained herein and in all supporting documents according to the best of his/her knowledge and belief, and authorizes visitation and inspection of the subject property by the Town of Lewisboro and its agents.

APPLICANT'S SIGNATURE

DocuSigned by:

DATE \_\_\_\_\_

OWNER'S SIGNATURE

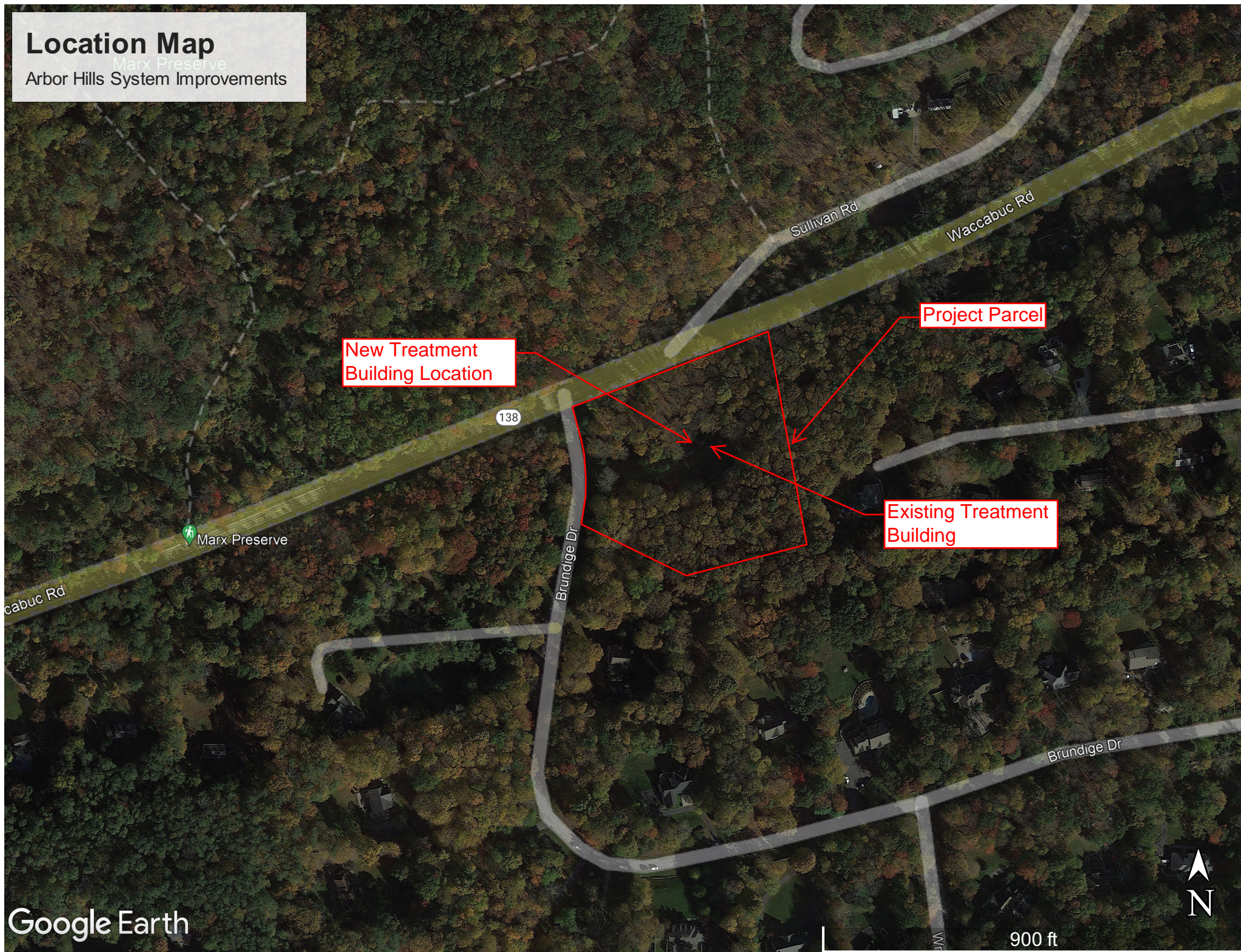
*John Kilpatrick*DATE 1/31/2022

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# Location Map

Marx Preserve  
Arbor Hills System Improvements



Google Earth



**Full Environmental Assessment Form**  
**Part 1 - Project and Setting**

## Instructions for Completing Part 1

**Part 1 is to be completed by the applicant or project sponsor.** Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either “Yes” or “No”. If the answer to the initial question is “Yes”, complete the sub-questions that follow. If the answer to the initial question is “No”, proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1 is accurate and complete.

### A. Project and Applicant/Sponsor Information.

Name of Action or Project: Wellhead Treatment System at Arbor Hills Water System		
Project Location (describe, and attach a general location map): Parcel with frontage on Brundige Drive and Waccabuc Road. Site entrance 150 feet south of street intersection. (SBL 32.1-2-1)		
Brief Description of Proposed Action (include purpose or need): The project involves the construction of a new water treatment building on the site of an existing water treatment and supply facility to meet Department of Health water quality standards. The proposed system will be capable of treating the combined flow from Wells No's. 1-4 and Well No. 6. The new treatment system will be housed in a new treatment building and will serve to remove uranium, radium, iron and manganese, and PFAS from the water and provide disinfection. The new treatment system's influent and effluent lines will tie into the existing site piping that currently conveys the wells' combined flow from the existing WTP building to the existing atmospheric storage tank. Well No. 6 will be placed into service as part of the project and will be piped directly to the new treatment building. Spent media generated by the radionuclide and PFAS removal systems will be hauled off site for disposal. Two small water storage tanks (backwash water supply storage tank and a reclaimed backwash water storage tank) will be installed on site. The site's existing generator may have to be relocated/resized to accommodate the new treatment building. Additional site work will include necessary utility work and site grading.		
Name of Applicant/Sponsor: <div style="text-align: center;">John Kilpatrick</div>	Telephone: (516) 406-2625	
	E-Mail: <div style="text-align: center;">john.kilpatrick@libertyutilities.com</div>	
Address: 60 Brooklyn Ave		
City/PO: Merrick	State: NY	Zip Code: 11709
Project Contact (if not same as sponsor; give name and title/role):	Telephone:	
	E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):	Telephone:	
	E-Mail:	
Address:		
City/PO:	State:	Zip Code:

**B. Government Approvals****B. Government Approvals, Funding, or Sponsorship.** (“Funding” includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No or Village Board of Trustees		
b. City, Town or Village Planning Board or Commission <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Site Plan Approval; Special Use Permit	February 2022
c. City, Town or Village Zoning Board of Appeals <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
d. Other local agencies <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
e. County agencies <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Westchester County DPW Building Approval (Adjacent to County Route 138)	
f. Regional agencies <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
g. State agencies <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	NYSDEC General Permit (Erosion and Sediment Control Only). NYSDOH - 348 Form	
h. Federal agencies <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
i. Coastal Resources.		
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
iii. Is the project site within a Coastal Erosion Hazard Area?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

**C. Planning and Zoning****C.1. Planning and zoning actions.**

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐ Yes ☒ No

- If Yes, complete sections C, F and G.
- If No, proceed to question C.2 and complete all remaining sections and questions in Part 1

**C.2. Adopted land use plans.**

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☒ Yes ☐ No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐ Yes ☒ No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☒ Yes ☐ No

If Yes, identify the plan(s):

NYC Watershed Boundary

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐ Yes ☒ No

If Yes, identify the plan(s):

**C.3. Zoning**

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☒ Yes ☐ No

If Yes, what is the zoning classification(s) including any applicable overlay district?

Site is located in the R-2A (One Family Residence, 2-acre min. lot area)

b. Is the use permitted or allowed by a special or conditional use permit? ☒ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☒ No

If Yes,

i. What is the proposed new zoning for the site? \_\_\_\_\_

**C.4. Existing community services.**

a. In what school district is the project site located? Katonah-Lewisboro

b. What police or other public protection forces serve the project site?

Town of Lewisboro Fire Department

c. Which fire protection and emergency medical services serve the project site?

Goldens Bridge Fire District

d. What parks serve the project site?

Waccabuc Hollow Park, Marx Preserve, Brownell Preserve, Fox Valley Park, Rockshelter Preserve

**D. Project Details****D.1. Proposed and Potential Development**

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Utility Use - Water Supply and Treatment

b. a. Total acreage of the site of the proposed action? 4.635 acres

b. Total acreage to be physically disturbed? 0.15 acres

c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 4.635 acres

c. Is the proposed action an expansion of an existing project or use? ☒ Yes ☐ No

i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % 400% Units: \_\_\_\_\_ sf of building cover Note: Still compliant with zoning for maximum building coverage. 6% of lot area permitted. Proposing increase from 0.2% to 0.9%

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☒ No

If Yes,

i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)

ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No

iii. Number of lots proposed? \_\_\_\_\_

iv. Minimum and maximum proposed lot sizes? Minimum \_\_\_\_\_ Maximum \_\_\_\_\_

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☒ No

i. If No, anticipated period of construction: \_\_\_\_\_ months

ii. If Yes:

• Total number of phases anticipated \_\_\_\_\_

• Anticipated commencement date of phase 1 (including demolition) \_\_\_\_\_ month \_\_\_\_\_ year

• Anticipated completion date of final phase \_\_\_\_\_ month \_\_\_\_\_ year

• Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: \_\_\_\_\_

f. Does the project include new residential uses?

☐ Yes ☒ No

If Yes, show numbers of units proposed.

	<u>One Family</u>	<u>Two Family</u>	<u>Three Family</u>	<u>Multiple Family (four or more)</u>
Initial Phase	_____	_____	_____	_____
At completion	_____	_____	_____	_____
of all phases	_____	_____	_____	_____

g. Does the proposed action include new non-residential construction (including expansions)?

☒ Yes ☐ No

If Yes,

- i. Total number of structures \_\_\_\_\_ 1
- ii. Dimensions (in feet) of largest proposed structure: \_\_\_\_\_ < 35 height; \_\_\_\_\_ 35 width; and \_\_\_\_\_ 48 length
- iii. Approximate extent of building space to be heated or cooled: \_\_\_\_\_ 1,680 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage?

☐ Yes ☒ No

If Yes,

- i. Purpose of the impoundment: \_\_\_\_\_
- ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify: \_\_\_\_\_
- iii. If other than water, identify the type of impounded/contained liquids and their source. \_\_\_\_\_
- iv. Approximate size of the proposed impoundment. Volume: \_\_\_\_\_ million gallons; surface area: \_\_\_\_\_ acres
- v. Dimensions of the proposed dam or impounding structure: \_\_\_\_\_ height; \_\_\_\_\_ length
- vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): \_\_\_\_\_

**D.2. Project Operations**

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)

☐ Yes ☒ No

If Yes:

- i. What is the purpose of the excavation or dredging? \_\_\_\_\_
- ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards): \_\_\_\_\_
  - Over what duration of time? \_\_\_\_\_
- iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. \_\_\_\_\_
- iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No
- If yes, describe. \_\_\_\_\_
- v. What is the total area to be dredged or excavated? \_\_\_\_\_ acres
- vi. What is the maximum area to be worked at any one time? \_\_\_\_\_ acres
- vii. What would be the maximum depth of excavation or dredging? \_\_\_\_\_ feet
- viii. Will the excavation require blasting? ☐ Yes ☐ No
- ix. Summarize site reclamation goals and plan: \_\_\_\_\_

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area?

☐ Yes ☒ No

If Yes:

- i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): \_\_\_\_\_

- ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

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- iii. Will the proposed action cause or result in disturbance to bottom sediments?

☐ Yes ☐ No

If Yes, describe:

- iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation?

☐ Yes ☐ No

If Yes:

- acres of aquatic vegetation proposed to be removed: \_\_\_\_\_
- expected acreage of aquatic vegetation remaining after project completion: \_\_\_\_\_
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): \_\_\_\_\_
- proposed method of plant removal: \_\_\_\_\_
- if chemical/herbicide treatment will be used, specify product(s): \_\_\_\_\_

- v. Describe any proposed reclamation/mitigation following disturbance: \_\_\_\_\_

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- c. Will the proposed action use, or create a new demand for water?

☐ Yes ☒ No

If Yes:

- i. Total anticipated water usage/demand per day: \_\_\_\_\_ gallons/day

- ii. Will the proposed action obtain water from an existing public water supply?

☐ Yes ☐ No

If Yes:

- Name of district or service area: \_\_\_\_\_
- Does the existing public water supply have capacity to serve the proposal? ☐ Yes ☐ No
- Is the project site in the existing district? ☐ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☐ No
- Do existing lines serve the project site? ☐ Yes ☐ No

- iii. Will line extension within an existing district be necessary to supply the project?

☐ Yes ☐ No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: \_\_\_\_\_
- Source(s) of supply for the district: \_\_\_\_\_

- iv. Is a new water supply district or service area proposed to be formed to serve the project site?

☐ Yes ☐ No

If Yes:

- Applicant/sponsor for new district: \_\_\_\_\_
- Date application submitted or anticipated: \_\_\_\_\_
- Proposed source(s) of supply for new district: \_\_\_\_\_

- v. If a public water supply will not be used, describe plans to provide water supply for the project: \_\_\_\_\_

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- vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: \_\_\_\_\_ gallons/minute.

- d. Will the proposed action generate liquid wastes?

☒ Yes ☐ No

If Yes:

- i. Total anticipated liquid waste generation per day: \_\_\_\_\_ 4,770 gallons/day

- ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): \_\_\_\_\_

Up to 4,770 GPD will be generated for Fe/Mn vessel backwashing. The liquid waste will be returned to the system using the reclaimed tank, the remaining solids waste will be hauled off site for disposal 1/month. Approx. 4,600 gal. will be generated upon startup for backwashing of GAC and uranium skids.

- iii. Will the proposed action use any existing public wastewater treatment facilities?

☐ Yes ☒ No

If Yes:

- Name of wastewater treatment plant to be used: \_\_\_\_\_
- Name of district: \_\_\_\_\_
- Does the existing wastewater treatment plant have capacity to serve the project? ☐ Yes ☐ No
- Is the project site in the existing district? ☐ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☐ No

- Do existing sewer lines serve the project site? ☐ Yes ☒ No
- Will a line extension within an existing district be necessary to serve the project? ☐ Yes ☒ No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: \_\_\_\_\_

- iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐ Yes ☒ No

If Yes:

- Applicant/sponsor for new district: \_\_\_\_\_
- Date application submitted or anticipated: \_\_\_\_\_
- What is the receiving water for the wastewater discharge? \_\_\_\_\_

- v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

- vi. Describe any plans or designs to capture, recycle or reuse liquid waste: \_\_\_\_\_

- e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☐ Yes ☒ No

If Yes:

- i. How much impervious surface will the project create in relation to total size of project parcel?

\_\_\_\_\_ Square feet or \_\_\_\_\_ acres (impervious surface)

\_\_\_\_\_ Square feet or \_\_\_\_\_ acres (parcel size)

- ii. Describe types of new point sources. \_\_\_\_\_

- iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: \_\_\_\_\_

- Will stormwater runoff flow to adjacent properties? ☐ Yes ☐ No

- iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐ Yes ☐ No

- f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☒ Yes ☐ No

If Yes, identify:

- i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

Staff currently visit the site as needed for operations and maintenance activities. Deliveries will continue to be consistent with existing conditions.

- ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

- iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

An existing generator is utilized to support continuous operations in the event of unplanned power outages.

- g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐ Yes ☒ No

If Yes:

- i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐ Yes ☐ No

- ii. In addition to emissions as calculated in the application, the project will generate:

- \_\_\_\_\_ Tons/year (short tons) of Carbon Dioxide (CO<sub>2</sub>)
- \_\_\_\_\_ Tons/year (short tons) of Nitrous Oxide (N<sub>2</sub>O)
- \_\_\_\_\_ Tons/year (short tons) of Perfluorocarbons (PFCs)
- \_\_\_\_\_ Tons/year (short tons) of Sulfur Hexafluoride (SF<sub>6</sub>)
- \_\_\_\_\_ Tons/year (short tons) of Carbon Dioxide equivalent of Hydrofluorocarbons (HFCs)
- \_\_\_\_\_ Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐ Yes ☒ No

If Yes:

- i. Estimate methane generation in tons/year (metric): \_\_\_\_\_
- ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): \_\_\_\_\_

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐ Yes ☒ No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust): \_\_\_\_\_

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐ Yes ☒ No

If Yes:

- i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐ Weekend  
☐ Randomly between hours of \_\_\_\_\_ to \_\_\_\_\_.  
 ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): \_\_\_\_\_

iii. Parking spaces: Existing \_\_\_\_\_ Proposed \_\_\_\_\_ Net increase/decrease \_\_\_\_\_

iv. Does the proposed action include any shared use parking? ☐ Yes ☐ No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe: \_\_\_\_\_

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐ Yes ☐ No

vii. Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐ Yes ☐ No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐ Yes ☐ No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☒ Yes ☐ No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: \_\_\_\_\_

approximately 285,000 kWh

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other): \_\_\_\_\_

Via local utility.

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐ Yes ☒ No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: \_\_\_\_\_ 6:30 AM - 6:30 PM
- Saturday: \_\_\_\_\_ 6:30 AM - 6:30 PM
- Sunday: \_\_\_\_\_ 6:30 AM - 6:30 PM
- Holidays: \_\_\_\_\_ 6:30 AM - 6:30 PM

ii. During Operations:

- Monday - Friday: \_\_\_\_\_ 24/7
- Saturday: \_\_\_\_\_ 24/7
- Sunday: \_\_\_\_\_ 24/7
- Holidays: \_\_\_\_\_ 24/7



<p>m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>If yes:</p> <p>i. Provide details including sources, time of day and duration:</p> <p><u>Heavy equipment will operate on-site during construction hours identified above. These operations will be temporary during the construction period only.</u></p>	
<p>ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>Describe: <u>Several trees (0.05 AC of wooded area) will be cleared as a result of construction of the new treatment building and grading.</u></p>	
<p>n. Will the proposed action have outdoor lighting? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>If yes:</p> <p>i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:</p> <p><u>As a security measures, wall mounted light fixtures will be placed over the proposed building at entrances. All lighting will comply with Town of Lewisboro Code.</u></p>	
<p>ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>Describe: <u>Several trees (0.05 AC of wooded area) will be cleared as a result of construction of the new treatment building and grading. Due to the significant amount of wooded area surrounding the project site there is not anticipated lighting impacts.</u></p>	
<p>o. Does the proposed action have the potential to produce odors for more than one hour per day? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____</p> <p>_____</p> <p>_____</p>	
<p>p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes:</p> <p>i. Product(s) to be stored _____</p> <p>ii. Volume(s) _____ per unit time _____ (e.g., month, year)</p> <p>iii. Generally, describe the proposed storage facilities: _____</p> <p>_____</p>	
<p>q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes:</p> <p>i. Describe proposed treatment(s): _____</p> <p>_____</p> <p>_____</p>	
<p>ii. Will the proposed action use Integrated Pest Management Practices? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>	
<p>r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>If Yes:</p> <p>i. Describe any solid waste(s) to be generated during construction or operation of the facility:</p> <ul style="list-style-type: none"> <li>• Construction: _____ TBD tons per _____ TBD (unit of time)</li> <li>• Operation : _____ N/A tons per _____ N/A (unit of time)</li> </ul> <p>ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:</p> <ul style="list-style-type: none"> <li>• Construction: <u>Removal of materials during construction is predominately limited to site grading and minimal tree clearing.</u></li> <li>• Operation: <u>N/A</u></li> </ul> <p>iii. Proposed disposal methods/facilities for solid waste generated on-site:</p> <ul style="list-style-type: none"> <li>• Construction: <u>The contractor will provide facilities for disposal of solid waste.</u></li> <li>• Operation: <u>As the site is typically unstaffed, it is not anticipated that the project will generate any significant solid waste. Occasionally, water treatment system upgrades or change-outs will occur.</u></li> </ul>	

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☒ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): \_\_\_\_\_

ii. Anticipated rate of disposal/processing:

- \_\_\_\_\_ Tons/month, if transfer or other non-combustion/thermal treatment, or
- \_\_\_\_\_ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: \_\_\_\_\_ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☒ Yes ☐ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: \_\_\_\_\_  
GAC with concentrations of PFOS and PFOA will be generated; GAC has historically been tested and determined to be non-hazardous. Non regenerable ion exchange resin with uranium concentrations and nonregenerable ion exchange resin with radium concentrations will be generated

ii. Generally describe processes or activities involving hazardous wastes or constituents: \_\_\_\_\_  
GAC will remove PFOS and PFOA from water supplies. GAC has historically been tested and determined to be non-hazardous. Anion exchange resin will remove uranium from water supplies and cation exchange resin will remove radium from water supplies.

iii. Specify amount to be handled or generated TBD tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: \_\_\_\_\_  
GAC and ion exchange resins will need to be removed and replaced with fresh media periodically. Spent medias will be removed by a private hauler using a vacuum truck and hauled to an off site facility for disposal.

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☒ Yes ☐ No

If Yes: provide name and location of facility: \_\_\_\_\_

Disposal of GAC and ion exchange resins will be handled by the vendor and will be disposed of at a DOH (and NRC for resins) approved disposal site.

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility: \_\_\_\_\_

## E. Site and Setting of Proposed Action

### E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

- ☐ Urban ☐ Industrial ☐ Commercial ☒ Residential (suburban) ☐ Rural (non-farm)  
☒ Forest ☐ Agriculture ☐ Aquatic ☒ Other (specify): Existing Water Supply Facilities

ii. If mix of uses, generally describe:

The site is an existing water treatment and supply facility, the adjacent parcels are residential or forested parks/preserve.

b. Land uses and covertypes on the project site.

Land use or Covertypes	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.13	0.17	+0.04
• Forested	4.36	4.30	-0.06
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0.15	0.17	+0.02
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____			

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☒ No  
 i. If Yes: explain: \_\_\_\_\_

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☒ No  
 If Yes,  
 i. Identify Facilities: \_\_\_\_\_  
 \_\_\_\_\_

e. Does the project site contain an existing dam? ☐ Yes ☒ No  
 If Yes:  
 i. Dimensions of the dam and impoundment:  
 • Dam height: \_\_\_\_\_ feet  
 • Dam length: \_\_\_\_\_ feet  
 • Surface area: \_\_\_\_\_ acres  
 • Volume impounded: \_\_\_\_\_ gallons OR acre-feet  
 ii. Dam's existing hazard classification: \_\_\_\_\_  
 iii. Provide date and summarize results of last inspection: \_\_\_\_\_  
 \_\_\_\_\_

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☒ No  
 If Yes:  
 i. Has the facility been formally closed? ☐ Yes ☐ No  
 • If yes, cite sources/documentation: \_\_\_\_\_  
 ii. Describe the location of the project site relative to the boundaries of the solid waste management facility: \_\_\_\_\_  
 \_\_\_\_\_  
 iii. Describe any development constraints due to the prior solid waste activities: \_\_\_\_\_  
 \_\_\_\_\_

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☒ No  
 If Yes:  
 i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred: \_\_\_\_\_  
 \_\_\_\_\_

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☒ No  
 If Yes:  
 i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No  
☐ Yes – Spills Incidents database Provide DEC ID number(s): \_\_\_\_\_  
☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): \_\_\_\_\_  
☐ Neither database  
 ii. If site has been subject of RCRA corrective activities, describe control measures: \_\_\_\_\_  
 \_\_\_\_\_  
 iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☒ No  
 If yes, provide DEC ID number(s): \_\_\_\_\_  
 iv. If yes to (i), (ii) or (iii) above, describe current status of site(s): \_\_\_\_\_  
 \_\_\_\_\_

v. Is the project site subject to an institutional control limiting property uses? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
<ul style="list-style-type: none"> <li>• If yes, DEC site ID number: _____</li> <li>• Describe the type of institutional control (e.g., deed restriction or easement): _____</li> <li>• Describe any use limitations: _____</li> <li>• Describe any engineering controls: _____</li> <li>• Will the project affect the institutional or engineering controls in place? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></li> <li>• Explain: _____</li> </ul>	
<b>E.2. Natural Resources On or Near Project Site</b>	
a. What is the average depth to bedrock on the project site? _____ 26 feet	
b. Are there bedrock outcroppings on the project site? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span> If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %	
c. Predominant soil type(s) present on project site:	
Paxton fine sandy loam (PnC)	49.3 %
Paxton fine sandy loam (PnD)	25.7 %
Natchaug muck	22 %
d. What is the average depth to the water table on the project site? Average: _____ 4.5 feet	
e. Drainage status of project site soils: <input checked="" type="checkbox"/> Well Drained: _____ 88 % of site <input type="checkbox"/> Moderately Well Drained: _____ % of site <input checked="" type="checkbox"/> Poorly Drained _____ 22 % of site	
f. Approximate proportion of proposed action site with slopes: <input type="checkbox"/> 0-10%: _____ 24.9 % of site <input checked="" type="checkbox"/> 10-15%: _____ 49.3 % of site <input checked="" type="checkbox"/> 15% or greater: _____ 25.7 % of site	
g. Are there any unique geologic features on the project site? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span> If Yes, describe: _____	
h. Surface water features.	
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
ii. Do any wetlands or other waterbodies adjoin the project site? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span>	
If Yes to either <i>i</i> or <i>ii</i> , continue. If No, skip to E.2.i.	
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span> <div style="text-align: right; font-size: small;">No wetlands or waterbodies onsite. Riverine on adjacent parcel but does not appear on NYSDEC Environmental Mapper (FWS Only)</div>	
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:	
• Streams: Name _____ Classification _____	
• Lakes or Ponds: Name _____ Classification _____	
• Wetlands: Name _____ Approximate Size _____	
• Wetland No. (if regulated by DEC) _____	
v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
If yes, name of impaired water body/bodies and basis for listing as impaired: _____	
i. Is the project site in a designated Floodway? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
j. Is the project site in the 100-year Floodplain? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
k. Is the project site in the 500-year Floodplain? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span> If Yes: i. Name of aquifer: _____	

<p>m. Identify the predominant wildlife species that occupy or use the project site:</p> <p>Expected species: <u>eastern gray squirrel</u>      <u>eastern cottontail, common raccoon</u></p> <p><u>chipmunk, opossum, water fowl species</u></p>	<p>_____</p> <p>_____</p> <p>_____</p>
<p>n. Does the project site contain a designated significant natural community? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Describe the habitat/community (composition, function, and basis for designation): _____</p> <p style="margin-left: 20px;">ii. Source(s) of description or evaluation: _____</p> <p style="margin-left: 20px;">iii. Extent of community/habitat:</p> <ul style="list-style-type: none"> <li>• Currently: _____ acres</li> <li>• Following completion of project as proposed: _____ acres</li> <li>• Gain or loss (indicate + or -): _____ acres</li> </ul>	
<p>o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Species and listing (endangered or threatened): _____</p> <p>Northern Long-eared Bat</p> <p>_____</p> <p>_____</p>	
<p>p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Species and listing: _____</p> <p>_____</p> <p>_____</p>	
<p>q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If yes, give a brief description of how the proposed action may affect that use: _____</p> <p>_____</p> <p>_____</p>	
<p><b>E.3. Designated Public Resources On or Near Project Site</b></p>	
<p>a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes, provide county plus district name/number: _____</p>	
<p>b. Are agricultural lands consisting of highly productive soils present? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p style="margin-left: 20px;">i. If Yes: acreage(s) on project site? _____</p> <p style="margin-left: 20px;">ii. Source(s) of soil rating(s): _____</p>	
<p>c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Nature of the natural landmark:      <input type="checkbox"/> Biological Community      <input type="checkbox"/> Geological Feature</p> <p style="margin-left: 20px;">ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____</p> <p>_____</p> <p>_____</p>	
<p>d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span></p> <p>If Yes:</p> <p style="margin-left: 20px;">i. CEA name: _____</p> <p style="margin-left: 20px;">ii. Basis for designation: _____</p> <p style="margin-left: 20px;">iii. Designating agency and date: _____</p>	

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
If Yes: <ul style="list-style-type: none"> <li>i. Nature of historic/archaeological resource: <input type="checkbox"/> Archaeological Site <input type="checkbox"/> Historic Building or District</li> <li>ii. Name: _____</li> <li>iii. Brief description of attributes on which listing is based: _____</li> </ul>	
f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
g. Have additional archaeological or historic site(s) or resources been identified on the project site? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
If Yes: <ul style="list-style-type: none"> <li>i. Describe possible resource(s): _____</li> <li>ii. Basis for identification: _____</li> </ul>	
h. Is the project site within five miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? <span style="float: right;"><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</span>	
If Yes: <ul style="list-style-type: none"> <li>i. Identify resource: <small>Grossman Preserve, Marx preserve, Brownell Preserve, Indian Hill Preserve, Rockshelter Preserve, Fox Valley park, Fredrick P Rose Preserve, Grierson Preserve, Waccabuc Hollow Park, Sawgrass Hill Park, Town of Lewisboro Nature Preserve.</small> _____</li> <li>ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): <u>State Park, County Park or Local Park.</u></li> <li>iii. Distance between project and resource: _____ 5 miles.</li> </ul>	
i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? <span style="float: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</span>	
If Yes: <ul style="list-style-type: none"> <li>i. Identify the name of the river and its designation: _____</li> <li>ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></li> </ul>	

**F. Additional Information**

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

**G. Verification**

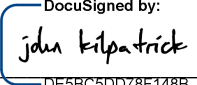
I certify that the information provided is true to the best of my knowledge.

John T. Kilpatrick

1/31/2022

Applicant/Sponsor Name \_\_\_\_\_ Date \_\_\_\_\_

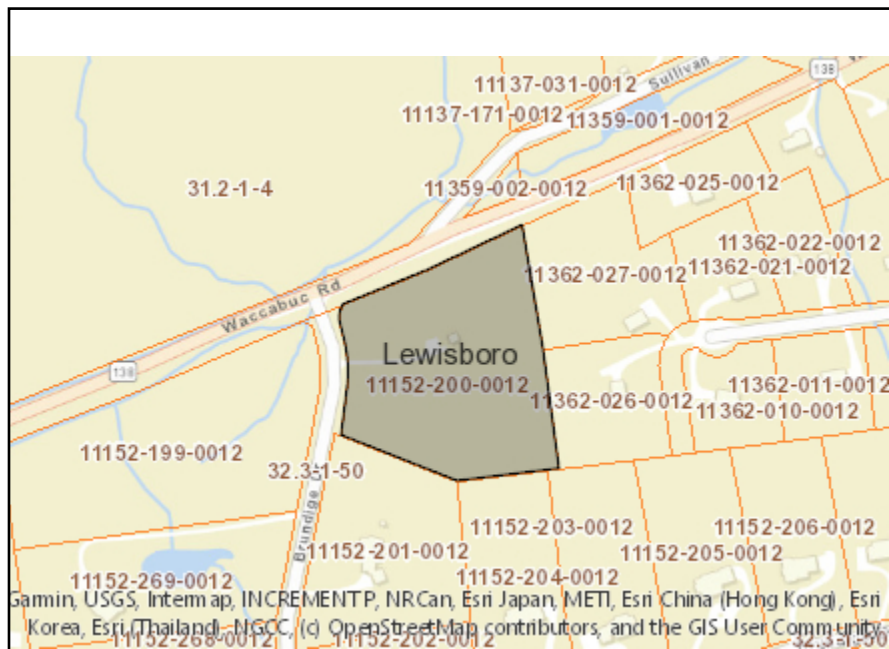
Signature \_\_\_\_\_ Title \_\_\_\_\_

DocuSigned by:  
  
DE5BC5DD78F148B...

Director of Engineering

## EAF Mapper Summary Report

Wednesday, January 26, 2022 3:52 PM



**Disclaimer:** The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYC Watershed Boundary
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes

DocuSign Envelope ID: F9AF9ACE-22EB-4813-80FA-B08CA1997A0B

E.2.g. [Endangered or Threatened Species Name]	Neotoma Long-eared Bat
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No






SYMBOL

\_\_\_\_\_ 240 \_\_\_\_\_

\_\_\_\_\_ 241 \_\_\_\_\_

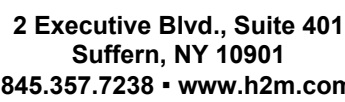
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### BULK REQUIREMENTS (R-2A DISTRICT)

**TOTAL LAND DISTURBANCE = 4,800 SF OR 0.11 ACRES**



CONSULTANTS:

\*ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL.

CLIENT

## Arbor Hills System Improvements



PWS ID: NY 5922910

CONTRACT

## ALL CONTRACTS

STATUS:

## REGULATORY REVIEW

SHEET TITLE

### SKETCH PLAN

DRAWING No.



**C 100.00**



**MEMORANDUM**

TO: Chairperson Janet Andersen and  
Members of Lewisboro Planning Board

CC: Ciorsdan Conran  
Judson Siebert, Esq.  
Joseph Angiello

FROM: Jan K. Johannessen, AICP   
Joseph M. Cermele, P.E., CFM   
Town Consulting Professionals

DATE: March 11, 2022

RE: The Boro Café and Yoga Studio  
Shkelzen Gecaj and John Swertfager  
873 Route 35  
Sheet 20, Block 10800, Lot 8

**PROJECT DESCRIPTION**

The subject property consists of ±0.73 acre and consists of a three (3) story office building, detached garage (formerly approved for indoor recreation), and a parking lot containing 26 parking spaces. The subject parcel is located on the corner of NYS Route 35 and North Salem Road and access is provided from both roadways. The applicant is proposing a change in use and is proposing a café/lounge on the first floor, yoga studio on the second floor, and a loft office on the third floor. A wrap around deck is proposed on the front and west sides of the building, as is proposed accessible ramps.

**SEQRA**

The proposed action has been preliminarily identified as a Type II Action and is therefore categorically exempt from the State Environmental Quality Review Act (SEQRA).

**REQUIRED APPROVALS/REFERRALS**

1. Site Development Plan Approval is required from the Planning Board.

Chairperson Janet Andersen

March 11, 2022

Page 2 of 4

2. The proposed action must be referred to the Architecture and Community Appearance Review Council (ACARC).
3. The proposed change of use requires approval from the Westchester County Department of Health (WCHD).
4. The application must be referred to the Westchester County Planning Board in accordance with Section 239-m of the General Municipal Law. The Planning Board Administrator will coordinate this referral.

#### **COMMENTS**

1. This office defers review of the plan for zoning compliance to the Building Inspector. It is recommended that the application be referred to the Building Inspector for review.
2. The applicant has applied for Waiver of Site Development Plan Procedures; however, given the proposed site improvement (deck and ramps); the project may not qualify for the waiver. A determination should be made by the Building Inspector.
3. The applicant shall provide a business plan for each use, which describes the business operation in detail and shall include hours of operation, number of employees, etc. For the café, please also identify number of total seats, how food/beverages will be prepared/served, how the use falls within the list of permitted uses within the underlying zone, and whether there will be any outdoor seating. For the yoga studio, please also identify the maximum number of participants per class and class schedule. Please identify whether the third floor loft office will be used in conjunction with the café/yoga facilities or whether this would be used by a third entity.
4. The proposed floor plan for the second floor should identify the proposed yoga use.
5. Please identify the current/proposed use associated with the detached garage (formerly approved as a physical training studio). Note the proposed use on the plan.
6. Provide additional information pertaining to the existing septic (location, size, WCHD permit number, septic tank location, etc.). Illustrate the location of the proposed well.
7. Clarify the location of the dumpster. If not already provided, a dumpster enclosure should be incorporated.
8. Please clarify the limits between gravel and asphalt parking and driveways. Dimension the driveway width, as well as the width of the drive aisle. Is the traffic circulation pattern changing?

The plans indicate a one-way pattern entering from North Salem Road to Route 35. Is there a reason why the traffic pattern is limited?

9. If the proposed deck is to be used for outdoor seasonal seating, please show the proposed layout of the seating area. Any proposed outdoor seating must comply with the Town's outdoor seating regulations. Provide details and elevations of the deck.
10. Provide first floor elevations of the building, deck, ramps, landings and parking areas.
11. The applicant shall prepare and submit a landscaping plan demonstrating compliance with Section 220-15 and 220-55E of the Zoning Code. Consideration for screening around the deck and along the northern edge of the parking lot should be considered. The plan shall illustrate the location of all proposed plants and shall include a corresponding plant schedule identifying the specie type, size and quantity of all proposed plant material. Cross-section installation details shall be provided for proposed trees and shrubs, as applicable
12. If new outdoor lighting plan is proposed or changes to existing outdoor lighting is being considered, a detailed lighting plan demonstrating compliance with Sections 220-14 of the Zoning Code shall be submitted for review. Illuminance levels shall be measured in footcandles and shall be depicted via a photometric plan identifying proposed footcandle measurements every 10 feet and extending over the property line by at least 20 feet. The following illuminance measurements shall be provided in tabular form on the plan: maximum, minimum, average during operation and non-operating hours, maximum to minimum ratio, and average to minimum ratio. Unless otherwise approved, all light fixtures shall be full cut-off fixtures and shall direct the light downward toward the ground. Provide construction details and specifications for all proposed light fixtures, poles, pole foundations, and mounting brackets; provide manufacturer catalog cut sheets for all exterior lighting, including building mounted fixtures.
13. It is recommended that the two (2) handicap accessible parking spaces be combined with one (1) code compliant loading zone and that these spaces be located in close proximity to the proposed access ramp. Provide details.
14. Proposed signage should be detailed and locations identified on the plan; signage is subject to ACARC approval.
15. Provide the Existing Conditions Survey which was the basis for the site plan and include an existing conditions and removals plan to the plan set.
16. The owner/applicant name and address shall be identified on the plan.
17. The Planning Board's standard signature blocks shall appear on all sheets.

Chairperson Janet Andersen

March 11, 2022

Page 4 of 4

18. The property shown on the site plan does not match the vicinity map, please revise accordingly.

19. The applicant shall submit the current property deed.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

**PLANS REVIEWED, PREPARED BY THE HELMES GROUP, LLP, DATED FEBRUARY 4, 2022:**

- Site Plan/Zoning Data/Water Usage/Parking Analysis & Photographs (1 of 3)
- Existing/Proposed First Floor Plans & Photographs (2 of 3)
- Existing/Proposed Second/Third Floor Plans & Photographs (3 of 3)

**DOCUMENTS REVIEWED:**

- Letter, prepared by Bibbo Associates, dated February 7, 2022
- Planning Board Application

JKJ/dc

[https://kellardsessionsconsulti.sharepoint.com/sites/Kellard/Municipal/Lewisboro/Correspondence/2022-03-11\\_LWPB\\_Boro Cafe & Yoga Studio\\_873 Rte 35\\_Review Memo.docx](https://kellardsessionsconsulti.sharepoint.com/sites/Kellard/Municipal/Lewisboro/Correspondence/2022-03-11_LWPB_Boro Cafe & Yoga Studio_873 Rte 35_Review Memo.docx)



# THE HELMES GROUP, LLP

ARCHITECTURE • ENGINEERING  
PROJECT MANAGEMENT

Via E-Mail & Hand Delivered

February 7, 2022

Chair Andersen & Members of the Planning Board  
Town of Lewisboro  
79 Bouton Road  
South Salem, NY 10590

**Project:** Proposed Alterations & Change of Use to Existing Building  
For The Boro Café & Yoga Studio  
873 Route 35, Cross River, NY 10518 – Town of Lewisboro  
Sheet 0020, Block 10800, Lot 008, RB Zone District

**Subject:** Waiver of Site Development Plan Approval

Dear Chair Andersen & Members of the Planning Board:

On behalf of our client, Shkelzen Gecaj & John Swertfager, Contract Vendee and as directed by Joseph Angiello, Building Inspector and Jan Johannessen, Town Planner, we are making this submission in order to obtain 'Waiver of Site Development Plan Approval' to permit the "Change of Use" for converting service business and office spaces of existing building into The Boro Café and Yoga Studio, as indicated on drawings.

Please note, this is a permitted use in the RB Retail Business Zone District and there will be no exterior building footprint change with the exception of a handicap ramp for accessing building entrance off the rear south side of building and an outdoor deck at grade level located off front north-east corner. Existing parking and driveway circulation to remain on site as depicted.

With respect to parking, there is ample parking provided on site. Please refer to floor area chart and parking calculations on drawings indicating required and provided parking spaces. There are 26 parking spaces provided on site, whereas, 16 spaces are required for current use and 24 spaces would be required for the "Change of Use" which complies with the Town of Lewisboro Off-Street Parking requirements.

With respect to water usage, please refer to chart on drawings indicating existing water usage verses proposed water usage, which was calculated based upon square foot of existing building spaces, occupant load per 2020 IBC International Building Code and usage/flow rates per New York State Department of Environmental Conservation.

The Boro Café will not have a commercial kitchen and no cooking will be performed on premises, all food to be prepared off-site and brought into the Boro Cafe. There will be ADA compliant unisex bathrooms on first floor level for Café use. The Yoga Studio located on second floor level is considered a business use not assembly due to square feet of space and occupant load. The bathrooms on upper levels do not have showers only water-closet and sinks. Please note, a good portion of the third floor level is being removed as indicated on drawings to maximize ceiling height and volume of the Yoga Studio located on second floor level Refer to existing and proposed floor plans on drawings.

*Accordingly, enclosed herewith please find the following attachments:*

- Waiver of Site Development Plan Approval- (1 original & 3 copies)
- Check #2088 in the amount of \$205 covering the Application Fee made payable to the Town of Lewisboro - (4 copies)
- Check #2091 in the amount of \$2,000 covering the Escrow Fee made payable to the Town of Lewisboro - (4 copies)
- Drawings #1 - #3, including Satellite Photograph, Tax Map, Survey / Site Plan, Existing and Proposed Floor Plans, Water Usage & Parking Analysis & Reference Photographs – dated 2/4/22, as prepared by The Helmes Group, LLP – Architects - (4 copies)
- Authorization Letter dated 1/21/22, allowing The Helmes Group, LLP to act as Contract Vendee / Architect & Agent - (4 copies)

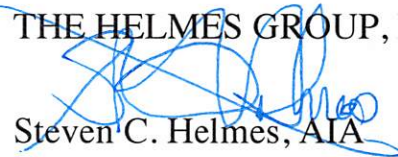
It is my understanding that we will be scheduled to appear before the Planning Board on **Tuesday, March 15, 2022 at 7:30 p.m.** and look forward to presenting this application in order to obtain Waiver of Site Plan Approval for project.

If you have any questions or require any additional information prior to that time, please do not hesitate to contact me.



Very truly yours,

THE HELMES GROUP, LLP

  
Steven C. Helmes, AIA  
Architect

SCH:KA Encl.

cc: The Boro Café & Yoga Studio – Shkelzen Gecaj & John Swertfager – Via E-Mail



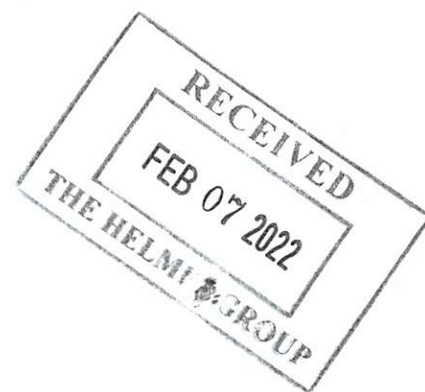
# TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590

Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

Tel: (914) 763-5592

Fax: (914) 875-9148



## Affidavit of Ownership

State of: NEW YORK

County of: WESTCHESTER

WILLIAM SWERTFAGER, being duly sworn, deposes and says that he/she  
resides at 182 ALLISON ROAD, KATONAH, N.Y. 10538

in the County of WESTCHESTER, State of NEW YORK

and that he/she is (check one) ☒ the owner, or ☐ the President  
of GHI REAL ESTATE CORP. Title

*Name of corporation, partnership, or other legal entity*

which is the owner, in fee of all that certain log, piece or parcel of land situated, lying and being in the  
Town of Lewisboro, New York, aforesaid and know and designated on the Tax Map in the Town of  
Lewisboro as:

Block 10800, Lot 008, on Sheet 0020

  
Owner's Signature

Sworn to before me this

7<sup>TH</sup> day of February, 2022



Notary Public – affix stamp

RICHARD A. GENETT  
NOTARY PUBLIC, STATE OF NEW YORK  
Registration No. 02GE4805423  
Qualified in Westchester County  
My Commission Expires November 30, 2022



## TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590  
Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)  
Tel: (914) 763-5592 Fax: (914) 875-9148

### Tax Payment Affidavit Requirement

*This form must accompany all applications to the Planning Board.*

*Under regulations adopted by the Town of Lewisboro, the Planning Board may not accept any application unless an affidavit from the Town of Lewisboro Receiver of Taxes is on file in the Planning Board office. The affidavit must show that all amounts due to the Town of Lewisboro as real estate taxes and special assessments on the total area encompassed by the application, together with all penalties and interest thereon, have been paid.*

*Under New York State law, the Westchester County Clerk may not accept any subdivision map for filing unless the same type of affidavit from the Town of Lewisboro Receiver of Taxes is submitted by the applicant at the time of filing.*

This form must be completed by the applicant and must accompany all applications to the Planning Board. Upon receipt, the Planning Board Secretary will send the form to the Receiver of Taxes for signature and notarization. If preferred, the applicant may directly obtain the signature of the Receiver of Taxes and notarization prior to submission.

To Be Completed by Applicant (Please type or print)	
THE HELMES GROUP, LLC STEVEN C. HELMES, AIA Name of Applicant	THE BORO CAFE & YOGA STUDIO Project Name
<b>Property Description</b>	<b>Property Assessed to:</b>
Tax Block(s): 10800	GHI REAL ESTATE CORP.
Tax Lot(s): 008	Name 182 ALLISON ROAD
Tax Sheet(s): 0020	Address KATONAH N.Y. 10530
	City State Zip

The undersigned, being duly sworn deposes and says that a search of the tax records in the office of the Receiver of Taxes, Town of Lewisboro, reveals that all amounts due to the Town of Lewisboro as real estate taxes and special assessments, together with all penalties and interest thereon, affecting the premises described below, have been paid.

Signature - Receiver of Taxes: \_\_\_\_\_

Date

2/3/2020

Sworn to before me this

3rd day of February, 2022

Signature - Notary Public (affix stamp)

JANET L. DONOHUE  
NOTARY PUBLIC, STATE OF NEW YORK  
No. 01DO6259627  
Qualified in Westchester County  
Commission Expires April 16, 2026



# TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590 Tel: (914) 763-5592 Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

## Site Development Plan/Subdivision Plat Application - Check all that apply:

Waiver of Site Development Plan Procedures	<input checked="" type="checkbox"/>			
Site Development Plan Approval	Step I <input checked="" type="checkbox"/>	Step II <input type="checkbox"/>		
Special Use Permit Approval	Step I <input type="checkbox"/>	Step II <input type="checkbox"/>		
Subdivision Plat Approval	Step I <input type="checkbox"/>	Step II <input type="checkbox"/>	Step III <input type="checkbox"/>	

### Project Information

Project Name: THE BORO CAFE & YOGA STUDIO

Project Address: 873 ROUTE 35, CROSS RIVER, N.Y. 10518

Gross Parcel Area: 30,448.44 Zoning District: RB Sheet(s): 0020 Block (s): 10800 Lot(s): 008

Project Description: PROPOSED ALTERATIONS AND CHANGE OF USE TO EXISTING BUILDING. CONVERTING EXISTING BUSINESS OFFICES TO THE BORO CAFE AND YOGA STUDIO.

Is the site located within 500 feet of any Town boundary?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Is the site located within the New York City Watershed?	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Is the site located on a State or County Highway?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

Does the proposed action require any other permits/approvals from other agencies/departments?

Town Board <input type="checkbox"/>	ZBA <input type="checkbox"/>	Building Dept. <input checked="" type="checkbox"/>	Town Highway <input type="checkbox"/>
ACARC <input checked="" type="checkbox"/>	NYSDEC <input type="checkbox"/>	NYCDEP <input type="checkbox"/>	WCDH <input checked="" type="checkbox"/>
NYSDOT <input type="checkbox"/>	Town Wetland <input type="checkbox"/>	Town Stormwater <input type="checkbox"/>	

Other \_\_\_\_\_

### Owner's Information

Name: GHI REAL ESTATE CORP. Email: BILLS@ALAPS.COM

Address: 182 ALLISON ROAD, KATONAH, N.Y. 10536 Phone: 914-232-1700  
914-953-9548

### Applicant's Information (if different)

Name: SHKELZEN GECAT & JOHN SWERTFAGER Email: APEXCROSSRIVER2@GMAIL.COM

Address: 924 ROUTE 35, CROSS RIVER, NY 10518 Phone: 917-657-4933  
917-774-9324

### Authorized Agent's Information

Name: THE HELMES GROUP, LLP Email: SCH@THEHELMESGROUP.COM  
STEVEN C. HELMES, ALA

Address: 184 KATONAH AVENUE, KATONAH, NY 10536 Phone: 914-232-4633

THE APPLICANT understands that any application is considered complete only when all information and documents required have been submitted and received by the Planning Board. The applicant further understands that the applicant is responsible for the payment of all application and review fees incurred by the Planning Board.

THE UNDERSIGNED WARRANTS the truth of all statements contained herein and in all supporting documents according to the best of his/her knowledge and belief, and authorizes visitation and inspection of the subject property by the Town of Lewisboro and its agents.

APPLICANT'S SIGNATURE [Signature]

DATE 2-4-2022

OWNER'S SIGNATURE [Signature]

DATE 2/7/2022

# **THE BORO CAFÉ & YOGA STUDIO**

**Shkelzen Gecaj & John Swertfager**

**924 Route 35**

**Cross River, NY 10518**

**(917) 657-4933**

**(917) 774-9324**

**[apexcrossriver@gmail.com](mailto:apexcrossriver@gmail.com)**



January 21, 2022

Town of Lewisboro Building Department

**Attn: Ciorsdan Conran, Planning Board Administrator**

79 Bouton Road

South Salem, NY 10590

**Project: Proposed Alterations & Change of Use to Existing Building  
For The Boro Café & Yoga Studio  
873 Route 35, Cross River, NY 10518 – Town of Lewisboro  
Sheet 0020, Block 10800, Lot 008, RB Retail Business Zone District**

**Subject: 'Authorization Letter'**

Dear Ciorsdan:

We, Skaz Gecaj & John Swertfager, Applicant / Contract Vendee of the above-subject project, hereby authorize Steven C. Helmes, AIA, of The Helmes Group, Architects, to act as Owner's agent for filing all applications as required, for obtaining Planning Board Approval for "Change of Use" - Converting Business Offices into The Boro Café & Yoga Studio, which is a Permitted Use in this RB Retail Business Zone District and a Building Permit from the Town of Lewisboro Building Department.

Very truly yours,

Skaz Gecaj & John Swertfager  
Applicant / Contract Vendee

A handwritten signature in blue ink, appearing to be "Skaz Gecaj &amp; John Swertfager".



Fee: \$50.00 Date: 1/26/2022

**TOWN OF LEWISBORO  
ENVIRONMENTAL QUESTIONNAIRE**

The purpose of this Questionnaire is to determine whether a Town Wetland Permit, a Town Stormwater Permit and/or coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity is required. This form does not provide authorization to commence work.

Project Address: 873 Route 35, Cross River, NY 10518

Sheet: 0020 Block: 10800 Lot(s): 008

Project Description: Proposed Alterations & Change of Use to Existing Building

This questionnaire must be accompanied with a Site Plan or, at a minimum, a Plot Plan which clearly illustrates the location and dimensions of the proposed activity. Said plans must include a line which encircles the total area of proposed land disturbance and the approximate area of disturbance must be calculated (square feet). Failure to submit these items will delay review.

Owner's Name: GHI Real Estate Corp. Phone: 917-774-9324

Owner's Address: 873 Route 35, Cross River, NY Email: jswert21@gmail.com

Agent's Name (if applicable): The Helmes Group, LLP Phone: 914-232-4633

Agent's Address: 184 Katonah Avenue, Katonah, NY Email: sch@thehelmesgroup.com

I hereby grant permission to the Town's professional consultants to enter onto my property to conduct a site inspection.

Owner (Signature):  Date: 1/26/2022

REFELLS AUTHORIZATION LETTER ATTACHED

**FOR TOWN USE – PLEASE DO NOT WRITE BELOW THIS LINE**

1. The use of the property is? ☐ Residential ☐ Nonresidential
2. Is a Town Wetland Permit required? ☐ Yes ☐ No ☐ TBD  
If Yes, what type of Wetland Permit is required? ☐ Administrative ☐ Planning Board ☐ TBD
3. Is the project located within the NYCDEP Watershed? ☐ Yes ☐ No
4. Area of proposed disturbance: ☐ < 5,000 s.f. ☐ 5,000 s.f. - < 1 acre ☐ ≥ 1 acre ☐ TBD
5. Is a Town Stormwater Permit required? ☐ Yes ☐ No ☐ TBD  
If Yes, the approval authority will be? ☐ Town Engineer/SMO ☐ Planning Board ☐ TBD
6. Will the project require coverage under the NYSDEC General Permit for Stormwater Discharges from Construction Activity? ☐ Yes ☐ No ☐ Requires post-construction stormwater practice

Application Fee (if required): **Wetland Permit \$:** \_\_\_\_\_ **Stormwater Permit \$:** \_\_\_\_\_

Notes: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Wetland Inspector/Consultant



PROPOSED ALTERATIONS & CHANGE OF USE TO EXISTING BUILDING FOR:  
THE BORO CAFE & YOGA STUDIO

873 ROUTE 35

CROSS RIVER, TOWN OF LEWISBORO,, NY

TABLE R301.2(1)  
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

GROUND SNOW LOAD	WIND DESIGN				SEISMIC DESIGN CATEGORY	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP	ICE BARRIER UNDERLAYMENT REQUIRED	FLOOD HAZARDS	AIR FREEZING INDEX	MEAN ANNUAL TEMP
	SPEED (MPH)	TOPOGRAPHIC EFFECTS	SPECIAL WIND REGION	WIND-BORNE DEBRIS ZONE		WEATHERING	FROST LINE DEPTH	TERMINI					
30 PSF	115	NO	YES	NO	B	SEVERE	42"	MODERATE TO HEAVY	15 DAY	YES	4244 42.70	1500	48.5

BUILDING & ZONING DATA  
TOWN OF LEWISBORO, NEW YORK

Table of Dimensional Requirements  
SECTION 0020, BLOCK 10800, LOT 008  
ZONING DISTRICT RB (Retail Business District)

Minimum Lot Size	Required	Existing	Proposed
Area	1/2 Acre 21,780 SF	0.699 Acres 30,448.44 SF	NO CHANGE
Frontage	100 FT	195.49 FT	NO CHANGE
Minimum Yards			
Front (Route 35)	20 FT	70.91 FT	57.64 FT
Front (North Salem Road)	20 FT	129.16 FT	118.16 FT
Left Side (East)	15 FT	50.19 FT	65.75'
Rear	15 FT	17.60 FT	31.12 FT
Maximum Height			
Stories	2 1/2	2 1/2	NO CHANGE
Feet	35 FT	30 FT	
Maximum Building Coverage			
Lot Area (Percent)	20%	7.46 %	9.65 %
	4,356 SF	2,270 SF	2,937 SF
Maximum Site Coverage			
Lot Area (Percent)	60%	45.21 %	47.40 %
	13,068 SF	13,766 SF	14,433 SF
Maximum Floor Area Ratio			
Lot Area (Percent)	0.3	0.15	NO CHANGE
	6,534 SF	3,375 SF	

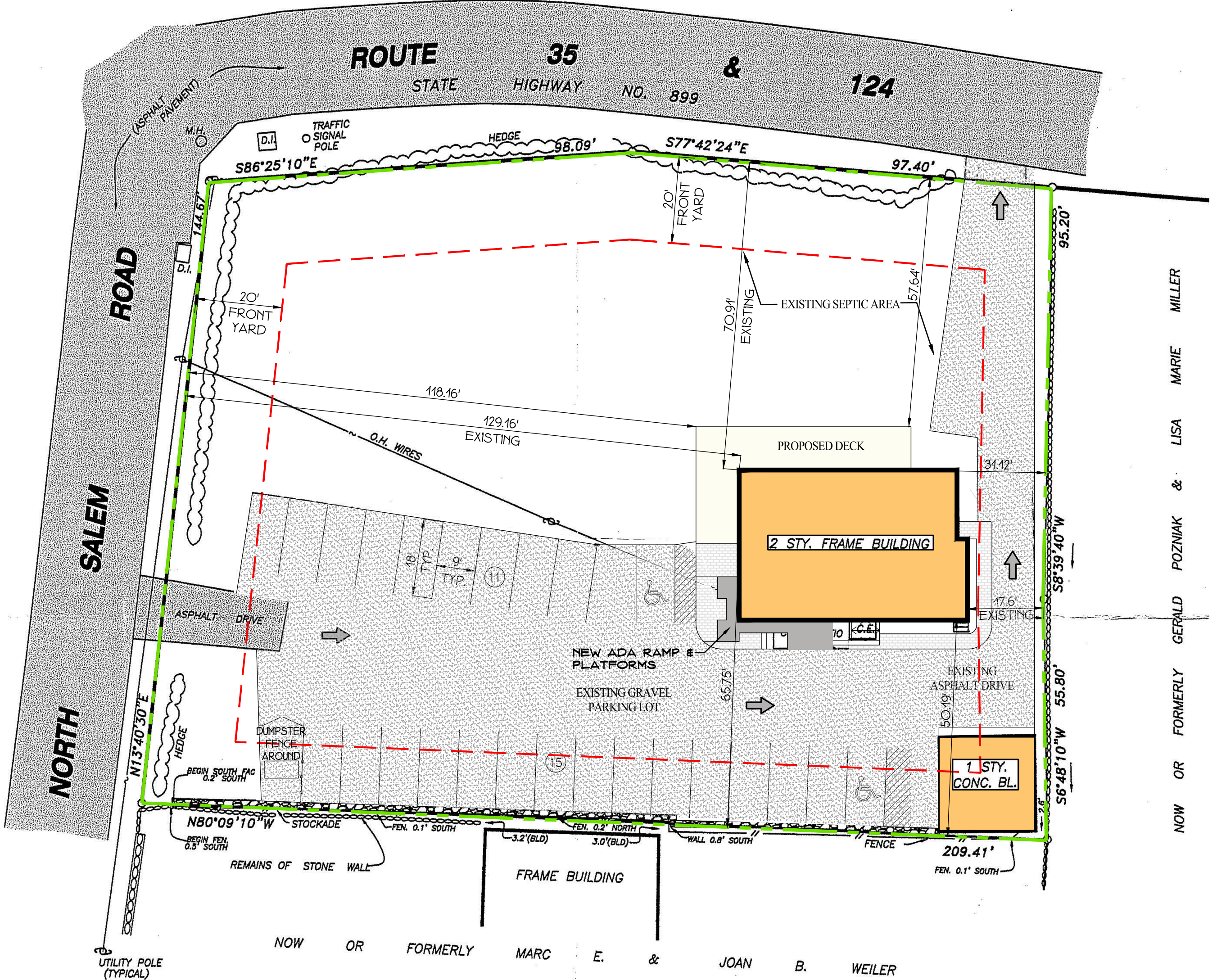


PARCEL MAPS

SCALE: NOT TO SCALE

EXISTING SQUARE FOOT/PARKING ANALYSIS			
USE	REQUIRED	EXISTING S.F.	REQUIRED PARKING SPACES
FIRST FLOOR LEVEL:	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(1,789 S.F.)	7.15 = SPACES
SECOND FLOOR LEVEL:	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(844 S.F.)	3.37 = SPACES
THIRD FLOOR LEVEL:	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(742 S.F.)	2.96 = SPACES
DETACHED GARAGE:	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(481 S.F.)	1.92 = SPACES
TOTAL PARKING REQUIRED: 15.40 = 16 SPACES			

PROPOSED SQUARE FOOT/PARKING ANALYSIS			
USE	REQUIRED	PROPOSED S.F.	REQUIRED PARKING SPACES
FIRST FLOOR LEVEL: (CAFE)	1 SPACE FOR EACH 2 SEATS OR 1 SPACE FOR EACH 100 SQUARE FEET OF GROSS FLOOR AREA, WHICHEVER IS GREATER	(978 NET S.F.)	34 SEATS INSIDE/OUTSIDE = 17 SPACES
SECOND FLOOR LEVEL: (YOGA STUDIO)	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(844 GROSS S.F.)	3.37 = SPACES
THIRD FLOOR LEVEL:	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(275 GROSS S.F.)	1.10 = SPACES
DETACHED GARAGE:	1 SPACE FOR EACH 250 S.F. OF GROSS FLOOR AREA	(481 S.F.)	1.92 = SPACES
TOTAL PARKING REQUIRED: EXISTING REQUIRED SPACES: 15.40 = 16 SPACES PROPOSED REQUIRED SPACES: 23.39 = 24 SPACES EXISTING PARKING PROVIDED: 26 SPACES			



PROPOSED SITE PLAN

SCALE: 1" = 20'-0"

SURVEY NOTE:

SURVEY INFORMATION TAKEN FROM A MAP  
PREPARED BY: BUNNEY ASSOCIATES ENGINEERS &  
SURVEYORS  
DATED: JANUARY 9, 2006  
BROUGHT TO DATE: DECEMBER 27, 2008

LOADING NOTES:

LOADING SCHEDULE		
	LIVE LOAD	DEAD LOAD
ROOF	45 PSF	10 PSF
ATTIC	20 PSF	10 PSF
FLOORS (1st & 2nd)	40 PSF	20 PSF
	(10#/WGT OF MAT'L)	(10#/PARTITION)
DECKS	50 PSF	10 PSF

SITE LEGEND:

- EXISTING OFFICE BUILDING
- EXISTING DETACHED ACCESSORY STRUCTURE
- PROPOSED DECK
- EXISTING GRAVEL PARKING LOT
- EXISTING ASPHALT DRIVEWAY

EXISTING WATER USAGE CALCULATION			
SPACE/USE	OCCUPANCY (B-BUSINESS)	REQUIRED	USAGE
FIRST FLOOR LEVEL:	1 PER 450 G.S.F.	1,789 S.F./450 = 11.92 = 12.00 OCCUPANTS	15 GAL./OCCUPANTS
SECOND FLOOR LEVEL:	1 PER 450 G.S.F.	844 S.F./450 = 5.62 = 6.00 OCCUPANTS	15 GAL./OCCUPANTS
THIRD FLOOR LEVEL:	1 PER 450 G.S.F.	742 S.F./450 = 4.94 = 5.00 OCCUPANTS	15 GAL./OCCUPANTS
TOTAL EXISTING WATER USAGE: 345 GAL. PER DAY			
PROPOSED WATER USAGE CALCULATION			
SPACE/USE	OCCUPANCY	REQUIRED	USAGE
FIRST FLOOR LEVEL: (CAFE)	A-3 ASSEMBLY	978 NET S.F./45 = 65.20 = 66 OCCUPANTS	20 GAL. PER OCCUPANT
SECOND FLOOR LEVEL: (YOGA STUDIO)	B BUSINESS	844 GROSS S.F./450 = 5.62 = 6 OCCUPANTS	15 GAL./OCCUPANTS
THIRD FLOOR LEVEL:	B BUSINESS	275 GROSS S.F./450 = 1.83 = 2 OCCUPANTS	15 GAL./OCCUPANTS
TOTAL PROPOSED WATER USAGE: 1440 GAL. PER DAY			

FLOOR AREA CALCULATIONS:

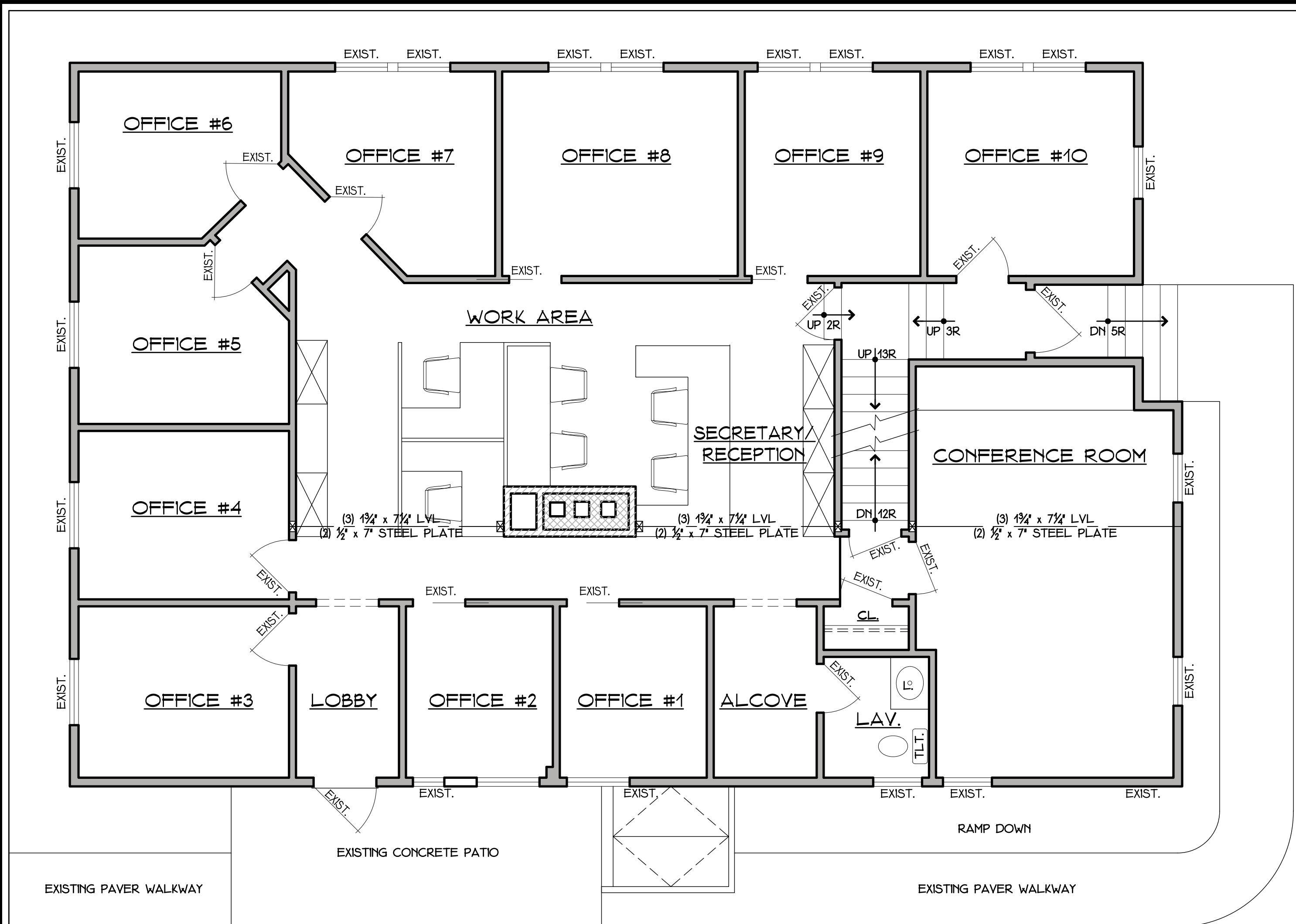
AREA	SQUARE FOOTAGE
EXISTING UNFINISHED BASEMENT LEVEL (NET)	868
EXISTING FIRST FLOOR LEVEL	1,789*
EXISTING SECOND FLOOR LEVEL	844*
EXISTING THIRD FLOOR LEVEL	742*
TOTAL FLOOR AREA OF EXISTING BUILDING	3,375
PROPOSED WOOD DECK	667
EXISTING DETACHED GARAGE STRUCTURE	481



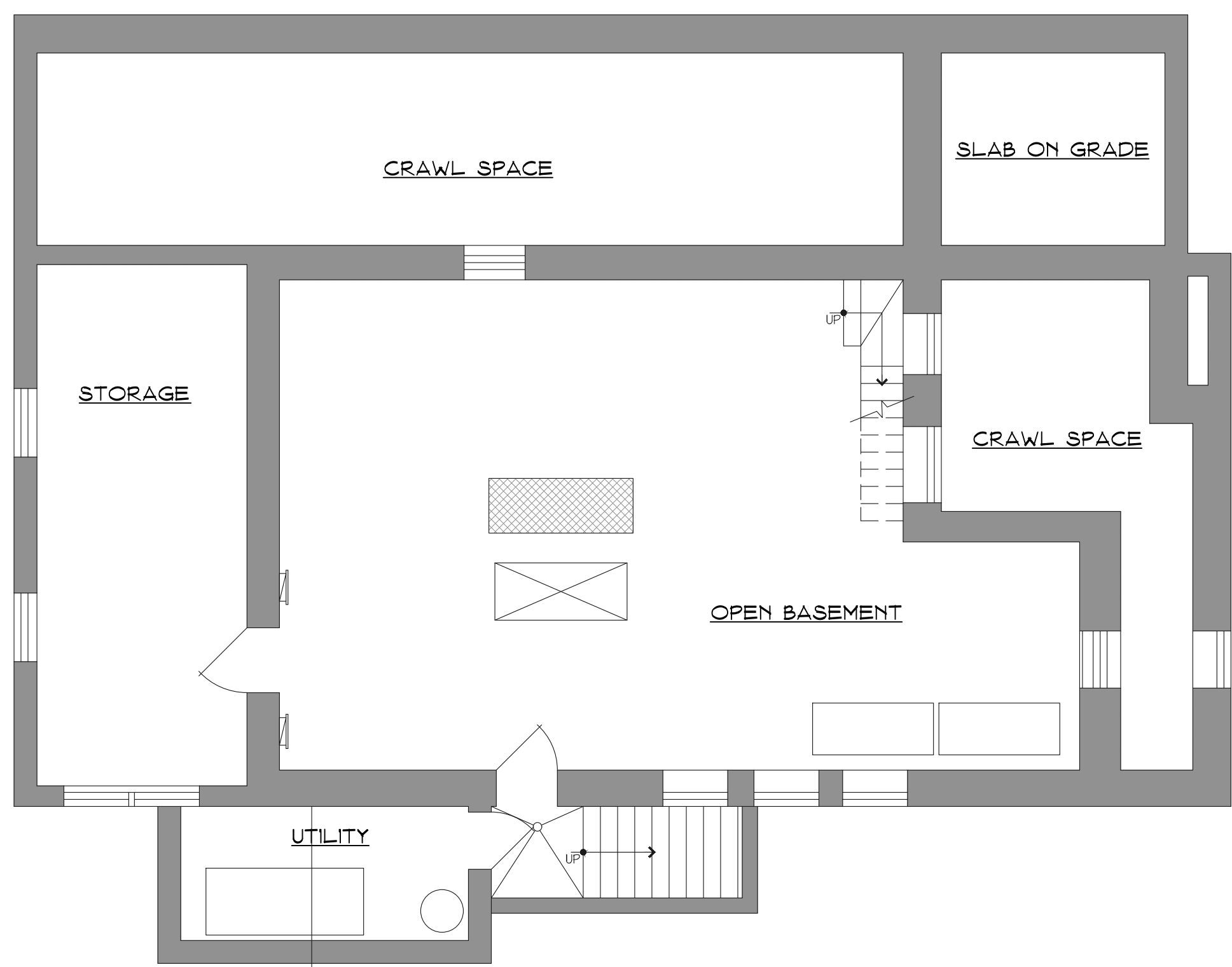
REFERENCE PHOTOGRAPHS

ISSUE DATES:		PROPOSED ALTERATIONS & CHANGE OF USE TO EXISTING BUILDING FOR: THE BORO CAFE & YOGA STUDIO	
		873 ROUTE 35	
		CROSS RIVER, NY	
		DRAWN BY: GNA	
		CHECKED BY: SCH	
		DRAWING NO:	
		1 of 3	

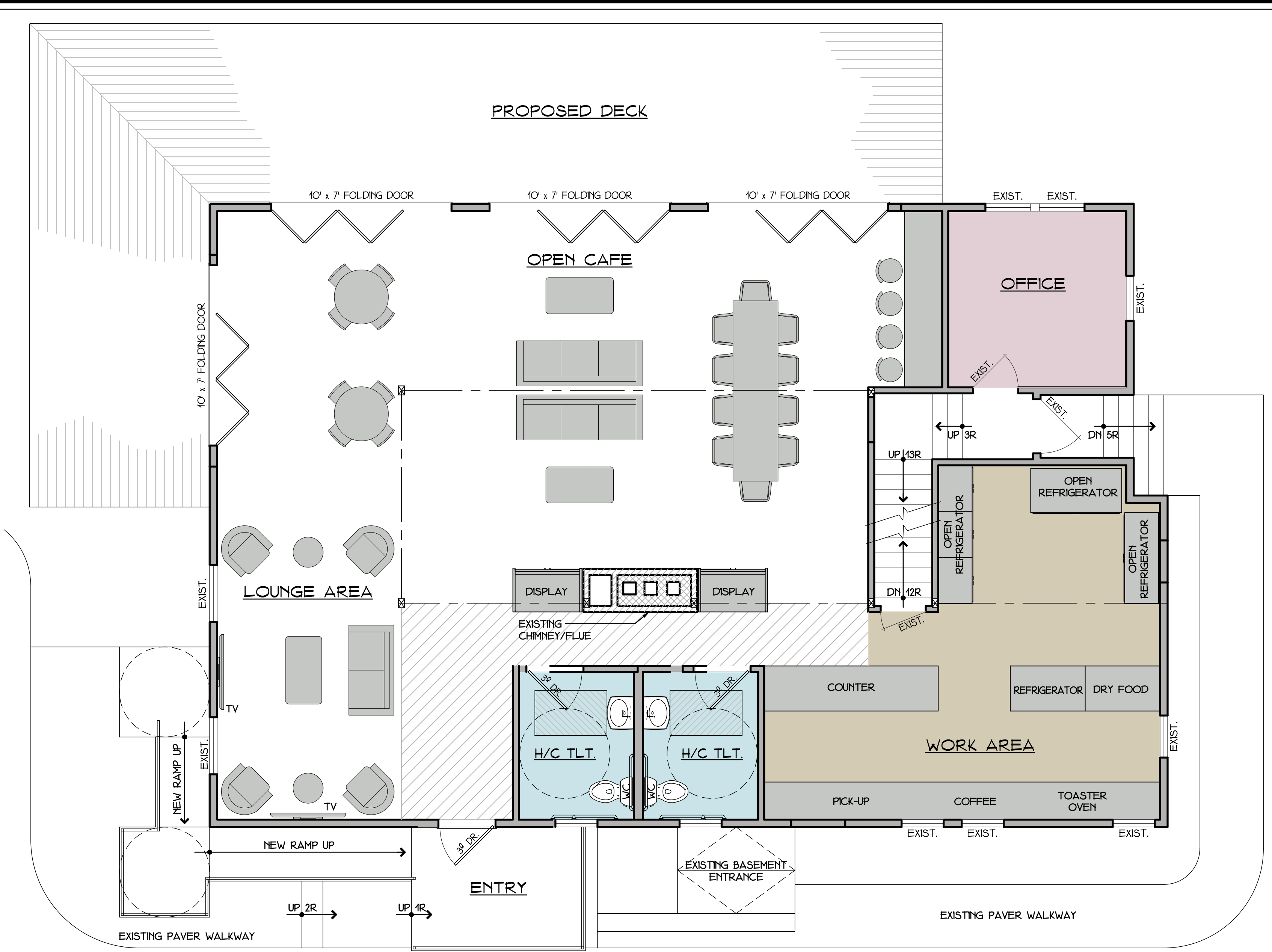




**EXISTING FIRST FLOOR PLAN**  
 SCALE: 1/4" = 1'-0"  
 1,789 GROSS S.F.



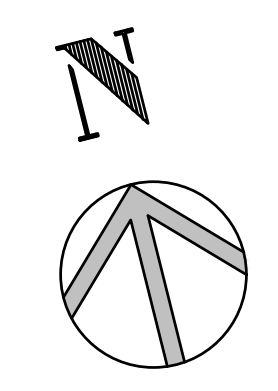
**EXISTING BASEMENT/FOUNDATION PLAN**  
 SCALE: 3/16" = 1'-0"



**PROPOSED FIRST FLOOR PLAN (ALTERATIONS)**  
 SCALE: 1/4" = 1'-0"  
 978 NET S.F.  
 OCCUPANCY: A-3 ASSEMBLY

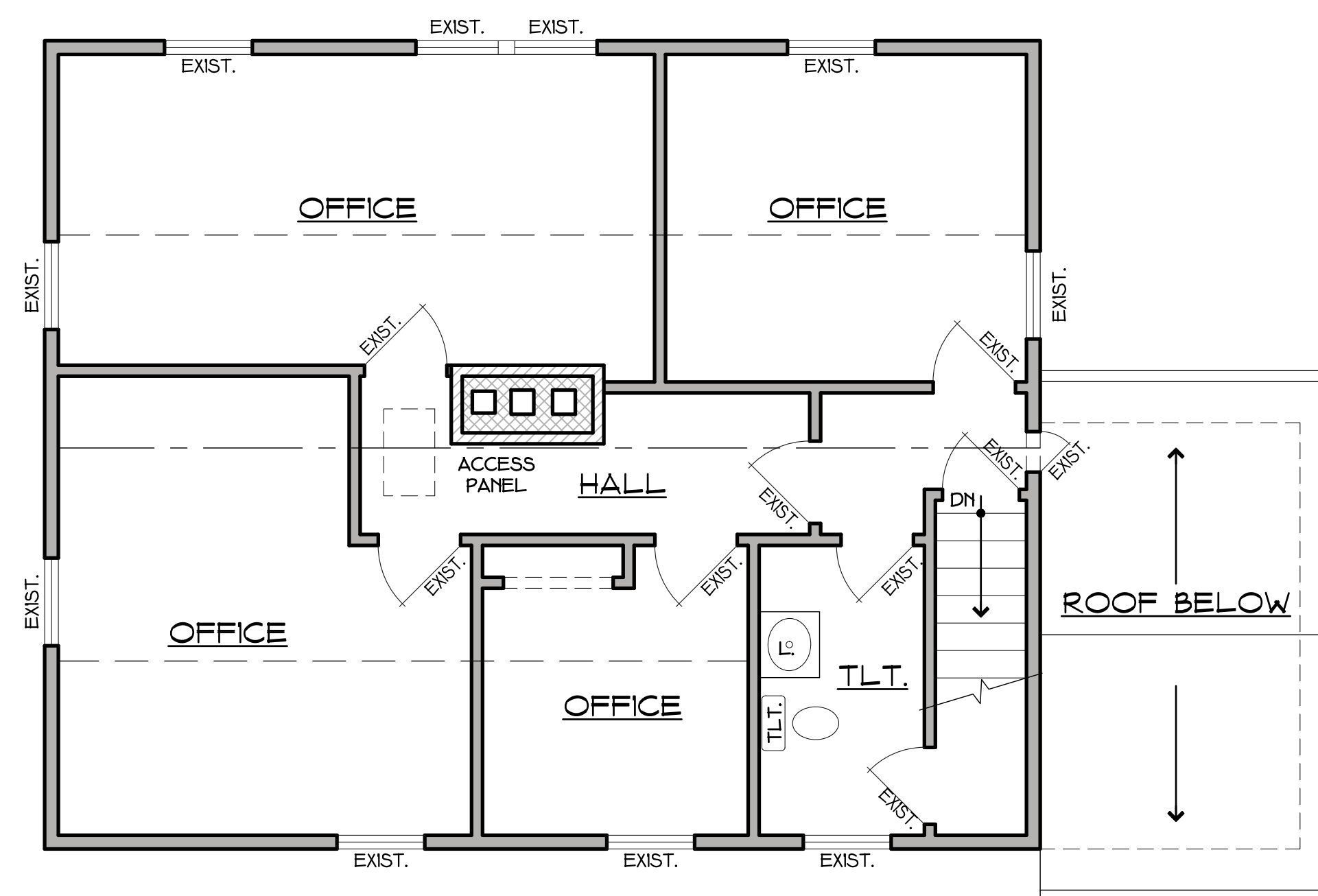


**REFERENCE PHOTOGRAPHS**



ISSUE DATES:          01/04/22 PLANNING BOARD FILING	<b>PROPOSED ALTERATIONS &amp; CHANGE OF USE TO EXISTING BUILDING FOR:</b> <b>THE BORO CAFE &amp; YOGA STUDIO</b> 873 ROUTE 35 CROSS RIVER, NY		
		<b>EXISTING/PROPOSED FIRST FLOOR PLANS &amp; PHOTOGRAPHS</b> SCALE: AS NOTED	
		<b>THE HELMES GROUP, LLP</b> ARCHITECTURE • ENGINEERING PROJECT MANAGEMENT 184 KATONAH AVENUE, KATONAH, NY 10536 TEL: (914) 232-4633 FAX: (914) 232-0768 EMAIL: thg@thelmesgroup.com	
	DRAWN BY: GNA CHECKED BY: SCH DRAWING NO:		2 of 3

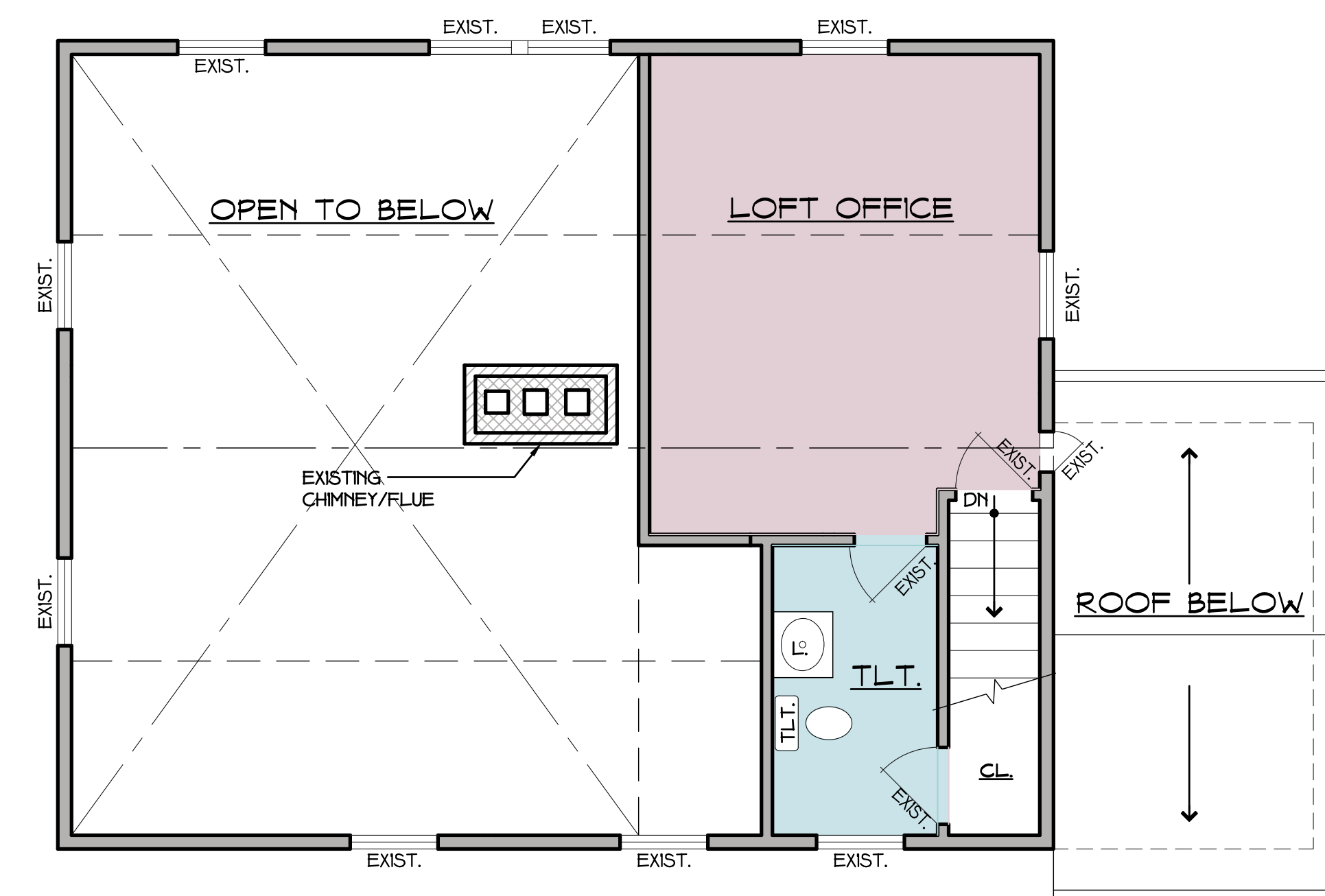




EXISTING THIRD FLOOR PLAN

SCALE: 1/4" = 1'-0"  
742 GROSS S.F.

742 GROSS S.F.

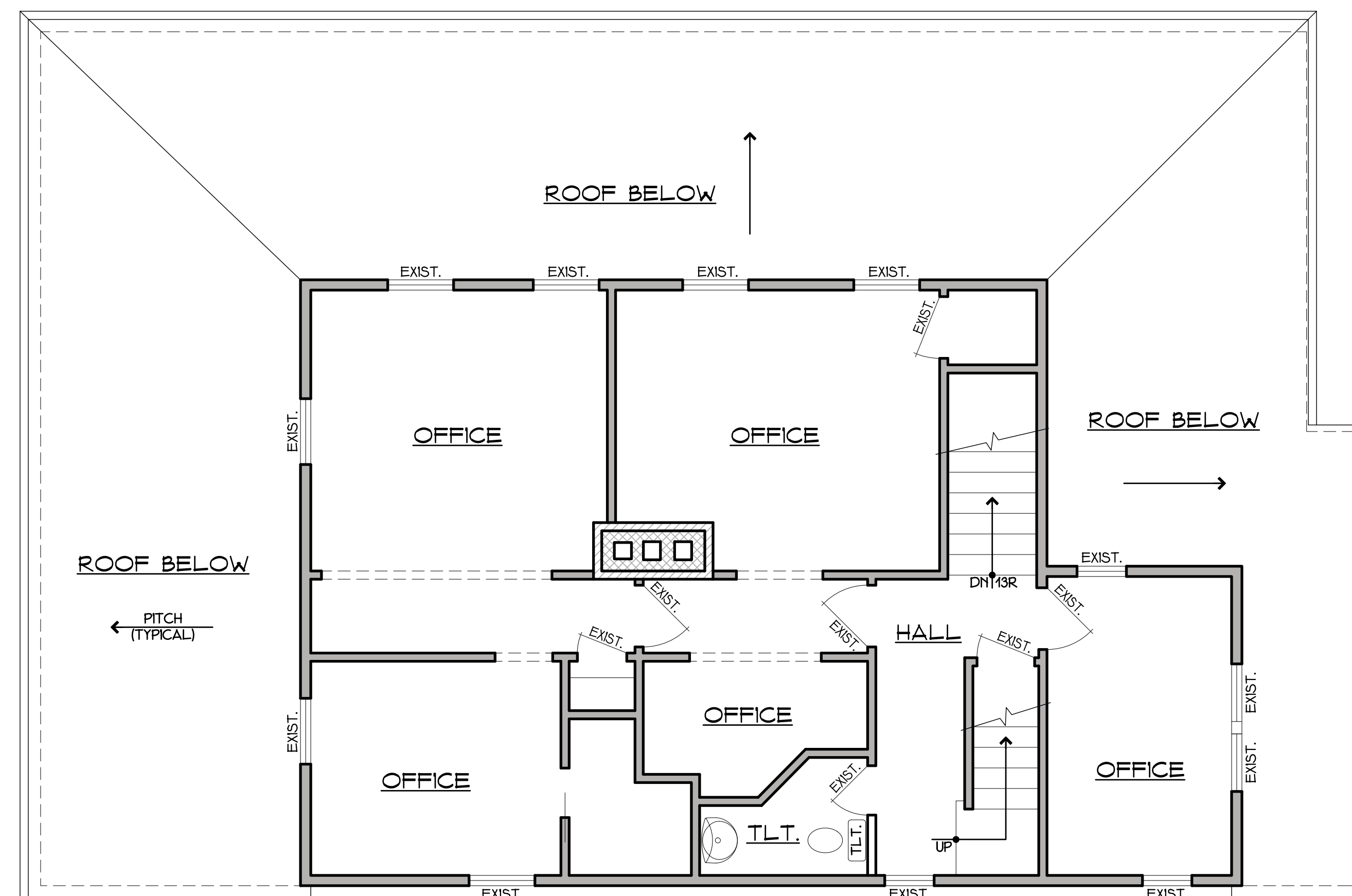


PROPOSED THIRD FLOOR PLAN

SCALE: 1/4" = 1'-0"  
275 GROSS S.F.  
OCCUPANCY: B BUSINESS

275 GROSS S.F.

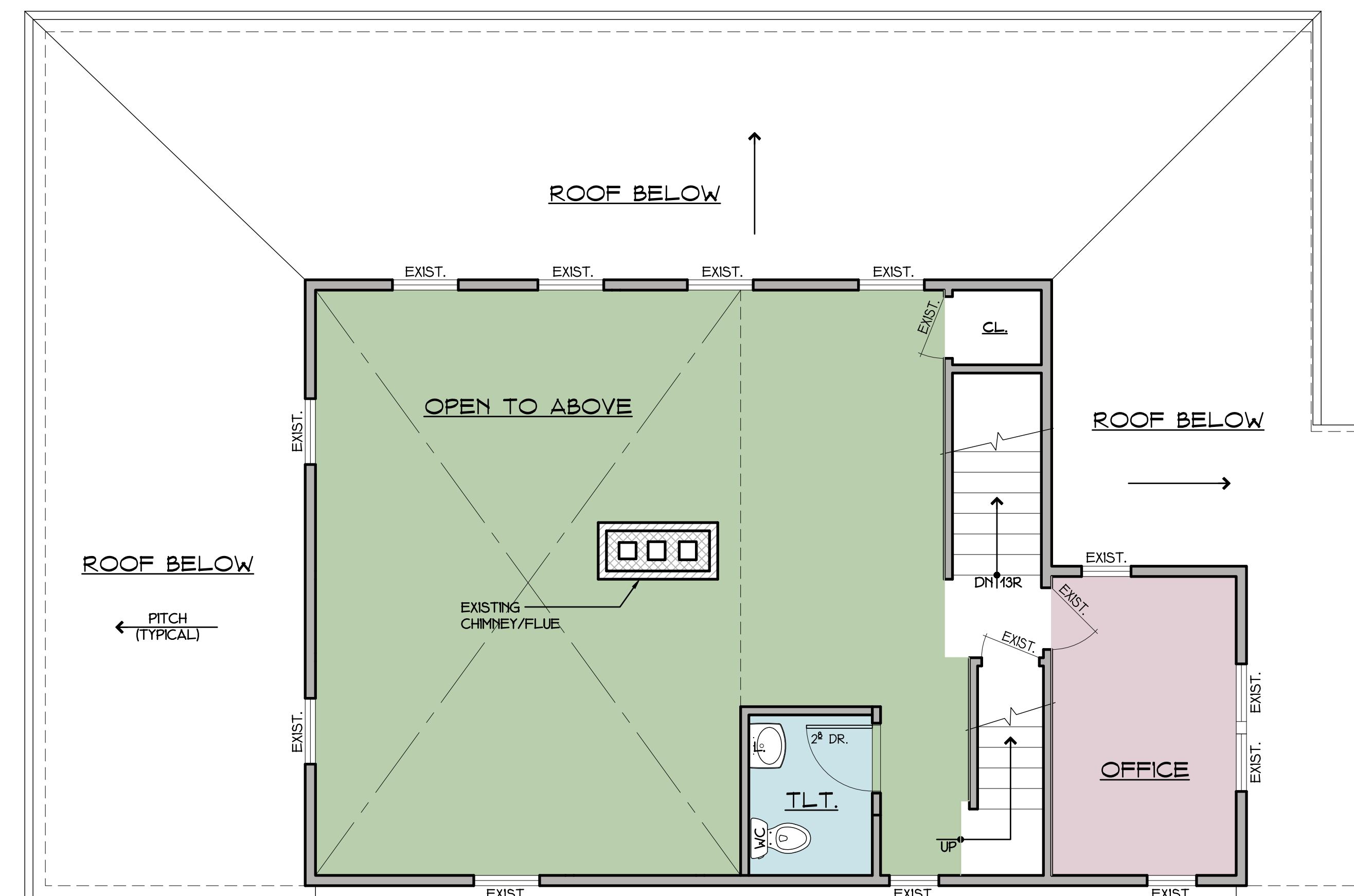
OCCUPANCY: B BUSINESS



EXISTING SECOND FLOOR PLAN

SCALE: 1/4" = 1'-0"  
GROSS 844 S.F.

GROSS 844 S.F.

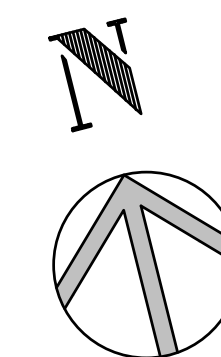




PROPOSED SECOND FLOOR PLAN

SCALE: 1/4" = 1'-0"  
GROSS 844 S.F.  
OCCUPANCY: B BUSINESS

GROSS 844 S.F.

OCCUPANCY: B BUSINESS





ISSUE DATES:	<u>PROPOSED ALTERATIONS &amp; CHANGE OF USE TO EXISTING BUILDING FOR:</u> THE BORO CAFE & YOGA STUDIO		
	873 ROUTE 35	CROSS RIVER, NY	
		<u>EXISTING/PROPOSED SECOND/THIRD FLOOR</u> <u>PLANS &amp; PHOTOGRAPHS</u> SCALE: AS NOTED	DRAWN BY: GNA CHECKED BY: SCH
		 <b>THE HELMES GROUP, LLP</b> ARCHITECTURE • ENGINEERING PROJECT MANAGEMENT 184 KATONAH AVENUE, KATONAH, NY 10536 TEL: (914) 232-4633 FAX: (914) 232-0768 EMAIL: <a href="mailto:th@thehelmesgroup.com">th@thehelmesgroup.com</a>	DRAWING NO:  <div>3 of 3</div>
02/04/22 PLANNING BOARD FILING			

**MEMORANDUM**

TO: Chairperson Janet Andersen and  
Members of Lewisboro Planning Board

CC: Ciorsdan Conran  
Judson Siebert, Esq.  
Joseph Angiello

FROM: Jan K. Johannessen, AICP   
Joseph M. Cermele, P.E., CFM   
Town Consulting Professionals

DATE: March 11, 2022

RE: Waccabuc Beach Club Improvements  
Waccabuc Country Club  
Perch Bay Road  
Sheet 25A, Block 10813, Lot 1  
Sheet 25, Block 11155, Lot 148

**PROJECT DESCRIPTION**

The subject property consists of ±9.1 acres of land and is located off of Perch Bay Road within the R-4A Zoning District. The property is owned by the Waccabuc County Club, has frontage on Lake Waccabuc, and is developed with various recreational buildings and amenities to support its private membership. The property obtains access from Perch Bay Road and contains parking areas, a public water well and septic system. The applicant is proposing to renovate the existing boathouse, construct a covered pavilion, replace the existing docks, demolish an existing building, install an outdoor seating area, construct a new snack bar and construct driveways, walkways, handicap access, a new septic system, and stormwater management facilities. The subject property consists of two (2) parcels that are proposed to be merged.

**SEQRA**

The proposed action has been preliminarily identified as an Unlisted Action pursuant to the State Environmental Quality Review Act (SEQRA). It is recommended that a coordinated review be conducted and that the Planning Board establish itself as the Lead Agency. Prior to taking action on this pending application, the Planning Board must issue a determination of significance.



**REQUIRED APPROVALS/REFERRALS**

1. Site Development Plan Approval, a Town Stormwater Permit, and a Wetland Activity Permit is required from the Planning Board; a public hearing is required to be held.
2. It appears that structures and improvements are proposed within the regulated rear yard zoning setback and area variances will be required from the Zoning Board of Appeals. The proposed action may also require approval from the Zoning Board relating to the expansion/alteration of a nonconforming use.
3. The proposed action must be referred to the Architecture and Community Appearance Review Council (ACARC).
4. A Floodplain Development Permit may be required from the Building Inspector.
5. The applicant is proposing new impervious surfaces within the 100-foot limiting distance of the lake and a variance from the New York City Department of Environmental Protection (NYCDEP) may be required.
6. The proposed expansion of use and new septic system will require approval from the Westchester County Department of Health (WCHD). It is noted that the existing well operates as a public water supply.
7. The subject property is located within the NYC East of Hudson Watershed and proposed land disturbance equals one (1) acre. Coverage under New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) will be required.
8. The subject property is located within the Waccabuc Historic District and the existing boathouse is listed on the State and National registers of historic places. Consultation with the State Historic Preservation Office (SHPO) is required.
9. The application must be referred to the Westchester County Planning Board in accordance with Section 239-m of the General Municipal Law. The Planning Board Administrator will coordinate this referral.

**COMMENTS**

1. This office defers review of the plan for zoning compliance to the Building Inspector. It is recommended that the application be referred to the Building Inspector for review.
2. It is recommended that the application be referred to the Fire Department; the applicant should work directly with the Building Inspector regarding coordinating with the Fire Department.
3. During the course of reviewing past applications at the beach club property, it was determined that the existing use is not identified as a permitted use within the underlying zone. In the past, the use was considered an existing nonconforming use and, therefore, its expansion or alteration may require approval from the Zoning Board of Appeals. The applicant should coordinate with the Building Inspector on this issue.
4. The applicant shall submit a business plan which shall provide a detailed description of the proposed use and its operation, operating hours, type and number of special events, number of participants/members per day, etc. The business plan shall include a title and date for reference purposes.
5. It is recommended that the applicant prepare the Full Environmental Assessment Form (EAF); the Short EAF has been submitted.
6. The limits of the 100-year floodplain should be illustrated and identified on the plans, as well as any known base flood elevations.
7. Slopes in excess of 15% should be shaded on the plan.
8. Provide a cut and fill calculation on the grading plan.
9. Provide a driveway profile and demonstrate compliance with the Town's driveway standards and State emergency access requirements.
10. Please clarify or decipher between gravel and asphalt surfaces; please clarify existing and proposed curb locations.
11. The width of the driveway shall be dimensioned on the plan and parking spaces shall be illustrated and dimensioned. Provide a parking calculation in accordance with Section 220-56 of the Zoning Code.
12. The landscaping plan must demonstrate compliance with Sections 220-15 and 220-55E of the Zoning Code and must identify the specie type, size and quantity of all proposed plant material.

13. The applicant shall develop a Wetland Mitigation Plan which provides, at a minimum, mitigation at a ratio of 1:1 (for every s.f. of wetland or wetland buffer disturbance proposed, an equal or greater amount of mitigation shall be provided). Reference is made to the Town's mitigation guidelines provided in Chapter 217, Appendix B.
14. The applicant shall submit a Wetland Report which shall contain the information required under Sections 217-5 and 6 of the Town's wetland ordinance.
15. In an effort to reduce the extent of improvements within the wetland buffer, consideration should be given to incorporating the proposed asphalt walkway with the proposed driveway. What is the purpose of the additional walkway? In addition to the driveway, we note that there is an existing wood walkway/steps in close proximity. Impacts to the buffer/lake could be further reduced by incorporating pervious surfaces or pavers within the proposed patio area and within the parking court at the end of the driveway.
16. Please clarify what is involved with the dock replacement and whether there will be any change or disturbance to the bottom of the lake.
17. A detailed lighting plan, demonstrating compliance with Sections 220-14 of the Zoning Code, shall be submitted for review. Illuminance levels shall be measured in footcandles and shall be depicted via a photometric plan identifying proposed footcandle measurements every 10 feet and extending over the property line by at least 20 feet. Unless otherwise approved, all light fixtures shall be full cut-off fixtures and shall direct the light downward toward the ground. Provide construction details and specifications for all proposed light fixtures, poles, pole foundations, and mounting brackets; provide manufacturer catalog cut sheets for all exterior lighting, including building mounted fixtures.
18. The limits of land disturbance are drawn very tight to proposed features and grading. As the area of disturbance is at or will likely exceed one (1) acre, please revise the limit line to be more generous, providing more flexibility in the field for the contractor. The plan shall note that disturbance limits shall be staked in the field prior to construction.
19. Land disturbance is presently calculated to be qualify to one (1) acre and a Full Stormwater Pollution Prevention Plan (SWPPP) is required to be prepared in accordance with Town and NYSDEC standards. The project will require coverage under the NYSDEC SPDES General Permit (GP-0-20-001) and the filing of a Notice of Intent (NOI) and MS4 Acceptance Form with the NYSDEC. Submit draft copies to this office for review.
20. The applicant is proposing new impervious surfaces within the 100-foot limiting distance of the lake; please clarify the extent of NYCDEP jurisdiction.

21. The applicant shall perform deep and percolation soil testing in the vicinity of the proposed mitigation system to be witnessed by the Town Engineer. The test locations and results shall be shown on the plan. Any modifications to the hydrologic analysis as a result of the soil testing shall be provided for review. Contact this office to schedule the testing.
22. Existing drainage features should be more prominently displayed and noted on the plans.
23. Please provide a detailed construction sequence on the Erosion and Sediment Control Plan and within the SWPPP.
24. Please provide rim and invert elevations for all stormwater components on the plans and coordinate with the hydrologic model.
25. Clarify the roof leader drains associated with the proposed snack bar.
26. Please provide a supporting figure indicating the areas of redeveloped and new development for each drainage area to support the Chapter 9 Redevelopment water quality calculations.
27. Provide design calculations and sizing for all proposed level spreaders. Update the construction detail as may be needed.
28. Provide stormwater capacity calculations for the storm collection system proposed to divert the upland drainage area of the parking lots and drives demonstrating adequate capacity to convey the 25-year storm. Regarding the proposed drainage diversion system, consideration should be given to relocating the outlet further from the lake or creating two (2) separate smaller diversions.
29. The plan shall illustrate the location of all existing and proposed utilities (electric, water, sewer, gas, etc.). The existing septic system should be illustrated and labeled on all sheets. It is recommended that the drawing viewport be adjusted so that the proposed septic system is illustrated on all sheets. The existing sewage pump station should be identified on the plans.
30. Top and bottom elevations of all proposed walls shall be identified on the plan. Any protection railing/fence shall be specified and detailed. All walls equal to or greater than four (4) feet in height shall be designed by a NYS Licensed Professional Engineer. Provide construction details and specifications on the plan.
31. The plan shall note that the construction of all walls equal to or greater than four (4) feet in height shall be certified by the Design Professional prior to issuance of a Certificate of Occupancy/Completion.

Chairperson Janet Andersen

March 11, 2022

Page 6 of 6

32. The parcel size is inconsistently referenced on the application, plans and SWPPP Report; please revise.
33. The applicant shall submit an existing condition survey (boundary and 2-foot contours), signed and sealed.
34. The applicant shall submit the current property deed.
35. The Planning Board's standard signature blocks shall appear on all sheets.
36. The applicant should contact this office to arrange for a site visit.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

**PLANS REVIEWED, PREPARED BY INSITE ENGINEERING, DATED FEBRUARY 8, 2022:**

- Overall Plan (1/7)
- Existing Conditions Plan (2/7)
- Layout & Landscape Plan (3/7)
- Grading & Utilities Plan (4/7)
- Erosion & Sediment Control Plan (5/7)
- Site Details (6/7 & 7/7)

**DOCUMENTS REVIEWED:**

- Letter, prepared by Insite Engineering, dated February 8, 2022
- Planning Board Application
- Wetland Permit Application
- Stormwater Permit Application
- Architectural Plan Set, prepared by Doyle Coffin Architecture
- Preliminary Stormwater Pollution Prevention Plan, dated February 8, 2022
- Short Environmental Assessment Form, dated February 8, 2022
- Wetlands Delineation & Report, dated May 10, 2021

JKJ/dc

TO: The Town of Lewisboro Planning Board

FROM: Lewisboro Conservation Advisory Council

SUBJECT: Waccabuc Country Club Snack Bar, 0 Perch Bay Road, Waccabuc, NY, 10597

DATE: March 9, 2022

---

The Conservation Advisory Council (CAC) has reviewed the application for beachfront improvements including renovation of the boathouse, construction of a pavilion, replacement of the snack bar, and installation of accessible parking and walkways.

The proposed construction is very close to the lake and the land has steep slopes. The construction includes the disturbance of land in the wetland buffer close to the lake, the addition of roofs, road and parking lots that are impervious surfaces. The construction plan shows the removal of a large number of trees.

The CAC would like to see:

- If all the construction is required at the water's edge and in the buffer
- If the driveways and parking could be made of material that are not impervious
- A mitigation plan that meets or exceeds the one-to-one requirement and compensates for any required tree removal.
- See a detailed description of the trees to be removed including the type and size. Specifically the CAC would like to see specimen trees identified as per the tree ordinance. The CAC would also like a review of the trees to be removed by the town's arborist consultant and whether this violates the tree ordinance. Beyond that, the CAC would like the applicant to make an effort to minimize the removal of healthy trees.
- The CAC feels that a site visit would be very helpful.



February 8, 2022

Town of Lewisboro Planning Board  
79 Bouton Road  
South Salen, NY 10590

RE: Beach Club Improvements Project  
Waccabuc Country Club  
Perch Bay Road  
Waccabuc, NY  
TM# Block 11155, Lot 148, Sheet 25 and Block 10813, Lot 01, Sheet 25A

Dear Chair Anderson and Members of the Board:

Please find four (4) copies (unless otherwise noted) of the following plans and documents enclosed here in support of an application for site plan development plan, wetland permit and stormwater permit approvals for the above referenced project:

- Site Development Plan Application.
- Wetland Permit Application.
- Stormwater Permit Application.
- Letter from Waccabuc Country Club authorizing John Assuma to act as agent for Club.
- Affidavit of Ownership.
- Tax Payment Affidavit signed by Receiver of Taxes, dated February 2, 2022.
- Seven (7) sheet Site Plan set, dated February 8, 2022.
- Two (2) sheet Architectural Drawing Set, prepared by Doyle Coffin Architecture LLC, dated February 8, 2022.
- Preliminary Stormwater Pollution Prevention Plan, dated February 8, 2022. (2 copies)
- Short Environmental Assessment Form, dated February 8, 2022.
- Wetland Delineation Report prepared by Ecological Analysis LLC, dated May 10, 2021.
- Check in the amount of \$615.00 for the Step I Site Development Plan Application Fee, Wetland Permit Fee and the Stormwater Permit Fee. (1 copy)
- Check for \$2,000.00 for the review escrow. (1 copy)

The Waccabuc Country Club seeks site development plan approval, wetland permit approval and stormwater permit approval for proposed improvements at its' existing beach club facility located on the

southerly shore of Lake Waccabuc, in the R-4A zoning district, and accessed off of Perch Bay Road in the Hamlet of Waccabuc.

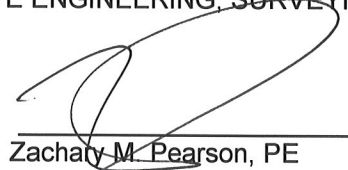
The project includes the renovation of the existing Boathouse, replacement of the adjacent existing storage building with a covered outdoor seating area (The Pavillion), and replacement of the existing snackbar. The project also includes handicap parking spaces located by the beachfront area, new ramps to provide handicap accessibility to the Boathouse and the Pavillion, relocation of the existing access driveway down to the lake, and stormwater management and OWTS improvements associated with the project. In addition, the applicant intends to merge the 2 subject parcels to facilitate the project.

Please place the project on the March 15, 2022 Planning Board agenda for a discussion of the project with the Board. Should you have any questions or comments regarding this information, please feel free to contact our office.

Very truly yours,

INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

By:

  
\_\_\_\_\_  
Zachary M. Pearson, PE  
Senior Project Engineer

ZMP/dlm

Enclosures (All via email only)

cc: Mr. Peter Hall, via email  
Mr. John Assuma, via email  
Mr. John M. Doyle AIA, Doyle Coffin Architecture LLC, via email



## TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590 Tel: (914) 763-5592 Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

### Site Development Plan/Subdivision Plat Application – Check all that apply:

Waiver of Site Development Plan Procedures ☐  
Site Development Plan Approval ☐  
Special Use Permit Approval ☐  
Subdivision Plat Approval ☐

☐

Step I ☒

Step I ☐

Step I ☐

Step II ☐

Step II ☐

Step II ☐

Step III ☐

### Project Information

Project Name: Waccabuc Beach Club Accessibility Improvements

Project Address: Perch Bay Road, Waccabuc, NY

Gross Parcel Area: 8.76 AC +/- Zoning District: R-4A Sheet(s): 25A Block (s): 10813 Lot(s): 01  
25 11155 148

Project Description: Proposed improvements for the Waccabuc Beach Club beachfront area:

Renovate existing "Boathouse" building; replace adjacent storage building with covered outdoor seating area "The Pavillion"; replace existing Snack Bar building; provide handicap parking area with access driveway; construct ramps to provide handicap accessibility to Boathouse and Pavillion; including associated stormwater management and OWTS improvements.

Is the site located within 500 feet of any Town boundary?

YES ☐

NO ☒

Is the site located within the New York City Watershed?

YES ☒

NO ☐

Is the site located on a State or County Highway?

YES ☐

NO ☒

Does the proposed action require any other permits/approvals from other agencies/departments?

Town Board ☐

ZBA ☒

Building Dept. ☒

Town Highway ☐

ACARC ☒

NYSDEC ☒

NYCDEP ☒

WCDH ☒

NYSDOT ☐

Town Wetland ☒

Town Stormwater ☒

Other \_\_\_\_\_

### Owner's Information

Name: Waccabuc Country Club Email: jdassuma@optonline.net

Address: 90 Mead Street, PO Box 400, Waccabuc NY 10597 Phone: 914-763-3144

### Applicant's Information (if different)

Name: same as owner Email: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

### Authorized Agent's Information

Name: Zachary Pearson, P.E. Senior Project Engineer Email: zpearson@insite-eng.com

Address: Insite Engineering, Surveying, and Landscape Architecture, P.C., 3 Garrett Place, Carmel, NY 10512 Phone: 845-225-9690

THE APPLICANT understands that any application is considered complete only when all information and documents required have been submitted and received by the Planning Board. The applicant further understands that the applicant is responsible for the payment of all application and review fees incurred by the Planning Board.

THE UNDERSIGNED WARRANTS the truth of all statements contained herein and in all supporting documents according to the best of his/her knowledge and belief, and authorizes visitation and inspection of the subject property by the Town of Lewisboro and its agents.

APPLICANT'S SIGNATURE 

DATE 02-07-2022

OWNER'S SIGNATURE 

DATE 02-07-2022

Application No.: \_\_\_\_\_

Fee: \_\_\_\_\_ Date: \_\_\_\_\_

**TOWN OF LEWISBORO  
WETLAND PERMIT APPLICATION**

79 Bouton Road, South Salem, NY 10590

Phone: (914) 763-5592

Fax: (914) 875-9148

Project Address: Perch Bay Road, Waccabuc, NY 10597

Sheet: 25A <sup>25A</sup> Block: 10813 <sub>11155</sub> Lot(s): 01 <sub>148</sub>

Project Description (Identify the improvements proposed within the wetland/wetland buffer and the approximate amount of wetland/wetland buffer disturbance): Proposed improvements for the Waccabuc Beach Club beachfront area:

Renovate existing "Boathouse" building; replace adjacent storage building with covered outdoor seating area "The Pavillion"; replace existing Snack Bar building; provide handicap parking area with access driveway; construct ramps to provide handicap accessibility to Boathouse and Pavillion; including associated stormwater management and OWTS improvements.

Owner's Name: Waccabuc Country Club Phone: 914-763-3144

Owner's Address: 90 Mead Street, PO Box 400, Waccabuc, NY 10597 Email: jdassuma@optonline.net

Applicant's Name (if different): same as owner Phone: \_\_\_\_\_

Applicant's Address: \_\_\_\_\_ Email: \_\_\_\_\_

Agent's Name (if applicable): Zachary Pearson, P.E., Sr. Project Engineer Phone: 845-225-9690

Agent's Address: Insite Engineering, Surveying & Landscape Architecture, P.C., 3 Garrett Place, Carmel, NY 10512 Email: zpearson@insite-eng.com

**TO BE COMPLETED BY OWNER/APPLICANT**

What type of Wetland Permit is required? (see §217-5C and §217-5D of the Town Code)

Administrative ☐ Planning Board ☒

Is the project located within the NYCDEP Watershed? ☒ Yes ☐ No

Total area of proposed disturbance: ☐ < 5,000 s.f. ☐ 5,000 s.f. - < 1 acre ☐ x ☐ ≥ 1 acre

Does the proposed action require any other permits/approvals from other agencies/departments? (Planning Board, Town Board, Zoning Board of Appeals, Building Department, Town Highway, ACARC, NYSDEC, NYCDEP, WCDOH, NYSDOT, etc): Identify all other permits/approvals required: \_\_\_\_\_

Wetland Inspector, ZBA, Building Dept., ACARC, NYSDEC, NYCDEP, and WCDOH

Note: Initially, all applications shall be submitted with a plan that illustrates the existing conditions and proposed improvements. Said plan must include a line which encircles the total area of proposed land disturbance and the approximate area of disturbance must be calculated (square feet). The Planning Board and/or Town Wetland Inspector may require additional materials, information, reports and plans, as determined necessary, to review and evaluate the proposed action. If the proposed action requires a Planning Board Wetland Permit, the application materials outlined under §217-7 of the Town Code must be submitted, unless waived by the Planning Board. The Planning Board may establish an initial escrow deposit to cover the cost of application/plan review and inspections conducted by the Town's consultants.

**For administrative wetland permits, see attached Administrative Wetland Permit Fee Schedule.**

Owner Signature: 

Date: 02-07-2022

Application No.: \_\_\_\_\_

Fee: \_\_\_\_\_ Date: \_\_\_\_\_

**TOWN OF LEWISBORO  
STORMWATER PERMIT APPLICATION**

79 Bouton Road, South Salem, NY 10590

Phone: (914) 763-5592

Fax: (914) 875-9148

Project Address: Perch Bay Road, Waccabuc, NY 10597

Sheet: 254 Block: 10813 Lot(s): 01  
25 11155 148

Project Description (describe overall project including all proposed land development activities):

Proposed improvements for the Waccabuc Beach Club beachfront area:

Renovate existing "Boathouse" building; replace adjacent storage building with covered outdoor seating area "The Pavillion"; replace existing Snack Bar building; provide handicap parking area with access driveway; construct ramps to provide handicap accessibility to Boathouse and Pavillion; including associated stormwater management and OWTS improvements.

Owner's Name: Waccabuc Country Club Phone: 914-763-3144

Owner's Address: 90 Mead Street, PO Box 400, Waccabuc, NY 10597 Email: jdassuma@optonline.net

Applicant's Name (if different): same as owner Phone: \_\_\_\_\_

Applicant's Address: \_\_\_\_\_ Email: \_\_\_\_\_

Agent's Name (if applicable): Zachary Pearson, P.E. Senior Project Engineer Phone: (845) 225-9690

Agent's Address: Insite Engineering, Surveying, and Landscape Architecture, P.C., 3 Garrett Place, Carmel, NY 10512 Email: zpearson@insite-eng.com

**TO BE COMPLETED BY OWNER/APPLICANT**

The approval authority is? (see §189-5 of the Town Code)

Town Engineer and Stormwater Management Officer ☒ Planning Board

Is the project located within the NYCDEP Watershed? ☒ Yes ☐ No

Total area of proposed disturbance: 5,000 s.f. - < 1 acre ☒ ≥1 acre

Will the project require coverage under the NYSDEC General Permit for Stormwater Discharges from Construction Activity? ☒ Yes ☐ No ☒ Requires post-construction stormwater practice

Does the proposed action require any other permits/approvals from other agencies/departments? (Wetland Inspector, Planning Board, Town Board, Zoning Board of Appeals, Building Department, Town Highway, ACARC, NYSDEC, NYCDEP, WCDOH, NYSDOT, etc): Identify all other permits/approvals required: Wetland Inspector, ZBA, Building Dept., ACARC, NYSDEC, NYCDEP, WCDOH

Note: The applicant, owner and/or agent is responsible for reviewing and complying with Chapter 189, "Stormwater Management and Erosion and Sediment Control," of the Town Code. This application must be submitted with all applicable plans, reports and documentation specified under §189-8, "SWPPP requirements," of the Town Code; all SWPPP's shall be prepared in conformance with Chapter 189 and shall be prepared by a qualified professional, as defined therein. The provision for obtaining a Town Stormwater Permit is in addition to the requirement of obtaining coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity, if applicable.

Owner Signature: \_\_\_\_\_

Date: 02-07-2022



September 27, 2018

Mr. Joseph Angiello  
Building Inspector  
Fire Inspector  
Town of Lewisboro, NY  
79 Bouton Road  
South Salem, NY 10590

Dear Mr. Angiello,

This letter serves to authorize our General Manager, John Assumma to act as the club's agent on all issues relating to any and all building projects taking place on club property.

If additional information is required, please contact me on my cell 914-424-8426 or email:  
[markcweigel@gmail.com](mailto:markcweigel@gmail.com).

In advance, I thank you for your support.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark Weigel', is written over the word 'Sincerely,'.

Mark Weigel  
Treasurer

## TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590

Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

Tel: (914) 763-5592

Fax: (914) 875-9148

### Affidavit of Ownership

State of: New York

County of: Westchester

John D. Assumma, being duly sworn, deposes and says that he/she  
resides at 90 Mead St Waccabuc  
in the County of Westchester, State of New York  
and that he/she is (check one) ☐ the owner, or ☒ the General manager  
of WACCABUC COUNTRY CLUB  
Name of corporation, partnership, or other legal entity

which is the owner, in fee of all that certain log, piece or parcel of land situated, lying and being in the  
Town of Lewisboro, New York, aforesaid and know and designated on the Tax Map in the Town of

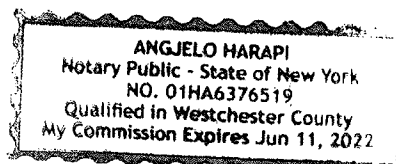
Lewisboro as: Block 11155 Lot 148 sheet 25  
Block 10813, Lot 01, on Sheet 25A.

John D. Assumma  
Owner's Signature

Sworn to before me this

5<sup>th</sup> day of February, 2022

[Signature]  
Notary Public - affix stamp



# TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590  
Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)  
Tel: (914) 763-5592 Fax: (914) 875-9148

## Tax Payment Affidavit Requirement

*This form must accompany all applications to the Planning Board.*

**Under regulations adopted by the Town of Lewisboro, the Planning Board may not accept any application unless an affidavit from the Town of Lewisboro Receiver of Taxes is on file in the Planning Board office. The affidavit must show that all amounts due to the Town of Lewisboro as real estate taxes and special assessments on the total area encompassed by the application, together with all penalties and interest thereon, have been paid.**

**Under New York State law, the Westchester County Clerk may not accept any subdivision map for filing unless the same type of affidavit from the Town of Lewisboro Receiver of Taxes is submitted by the applicant at the time of filing.**

This form must be completed by the applicant and must accompany all applications to the Planning Board. Upon receipt, the Planning Board Secretary will send the form to the Receiver of Taxes for signature and notarization. If preferred, the applicant may directly obtain the signature of the Receiver of Taxes and notarization prior to submission.

### To Be Completed by Applicant (Please type or print)

Waccabuc Country Club

Name of Applicant

Waccabuc Beach Club Building and Accessibility Improvements

Project Name

#### Property Description

Tax Block(s): 10813 / 11155

Tax Lot(s): 01 / 148

Tax Sheet(s): 254 / 25

#### Property Assessed to:

Waccabuc Country Club

Name 74 Mead Street PO Box 400

Address Waccabuc, NY 10597

City State Zip

The undersigned, being duly sworn deposes and says that a search of the tax records in the office of the Receiver of Taxes, Town of Lewisboro, reveals that all amounts due to the Town of Lewisboro as real estate taxes and special assessments, together with all penalties and interest thereon, affecting the premises described below, have been paid.

Signature - Receiver of Taxes:

Date

2.2.2022

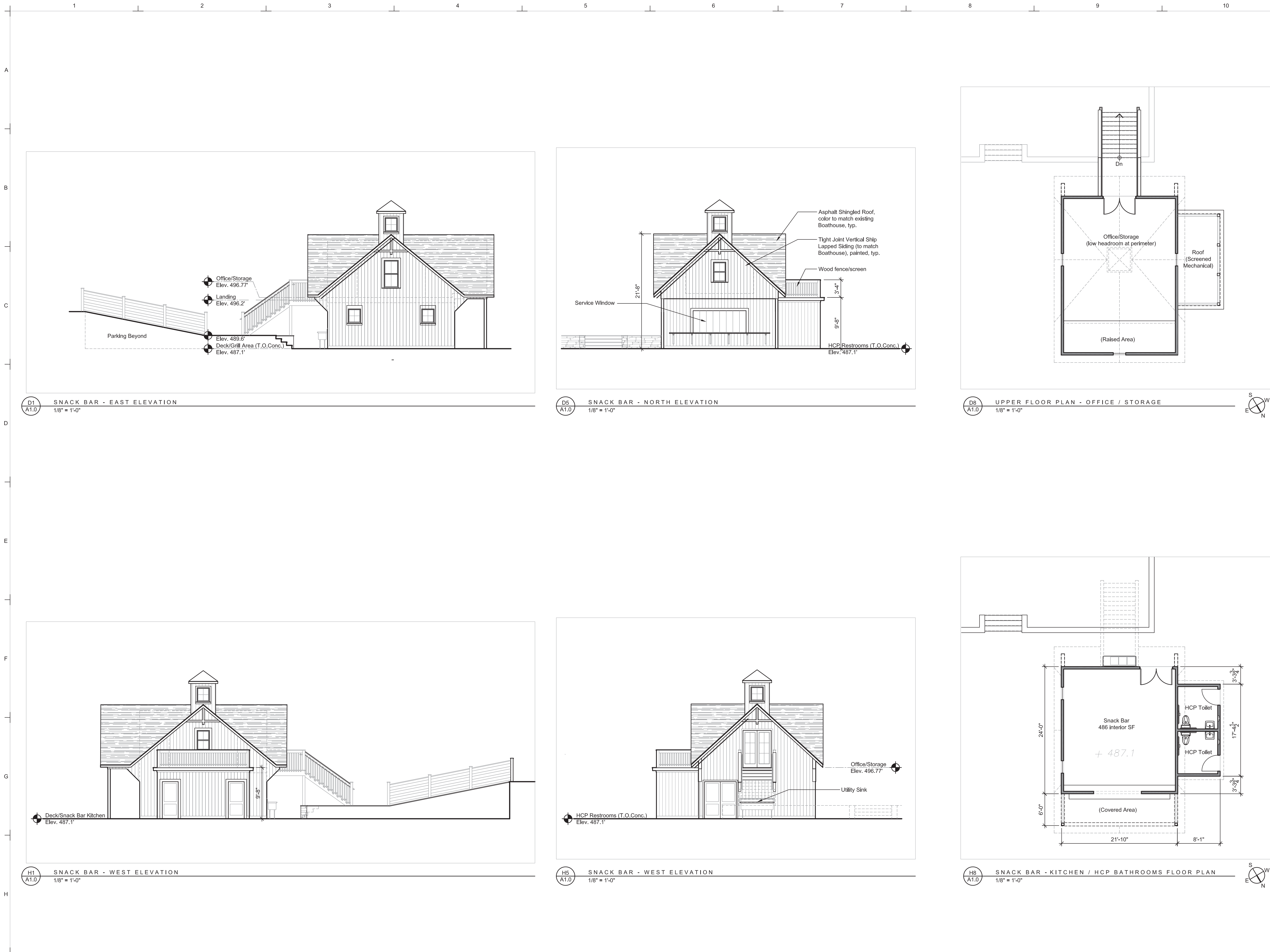
Sworn to before me this

2nd day of February, 2022

Signature - Notary Public (affix stamp)

JANET L. DONOHUE  
NOTARY PUBLIC, STATE OF NEW YORK  
No. 01DO6259627  
Qualified in Westchester County  
Commission Expires April 16, 2024







**DOYLE|COFFIN**  
ARCHITECTURE

Doyle Coffin Architecture, LLC  
158 Danbury Road  
Ridgefield, Connecticut 06877  
203|431|6001  
203|431|9764 fax  
info@doylecoffinarchitecture.com  
doylecoffinarchitecture.com

**PRELIMINARY NOT FOR CONSTRUCTION**  
THIS COMPUTER FILE / DRAWING IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION. DO NOT START CONSTRUCTION WITHOUT A SEALED SET OF CONSTRUCTION DOCUMENTS FROM THE ARCHITECT.

NOTES

ALTERATIONS & ADDITIONS TO  
WACCABUC COUNTRY CLUB  
WATERFRONT

SNACK BAR

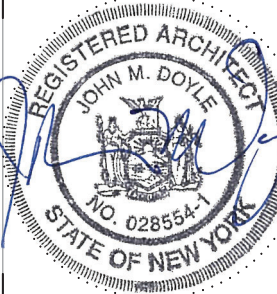
PERCH BAY ROAD  
WACCABUC, NEW YORK 10597

ISSUED	02/08/2022
--------	------------

PRINCIPAL	JMD	P.A.
JOB NUMBER	969	SCALE AS NOTED

**SCHEMATIC DESIGN**  
**SNACK BAR**  
**PLANS & ELEVATIONS**

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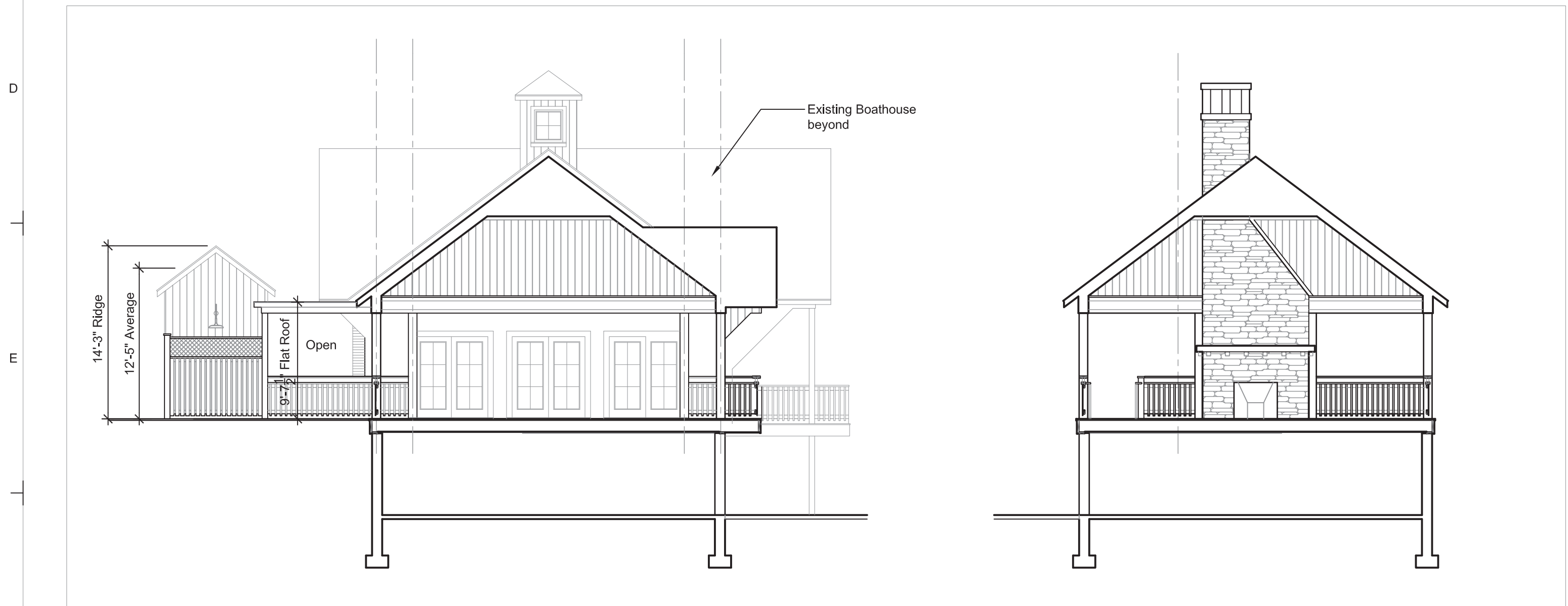
**A1.0**



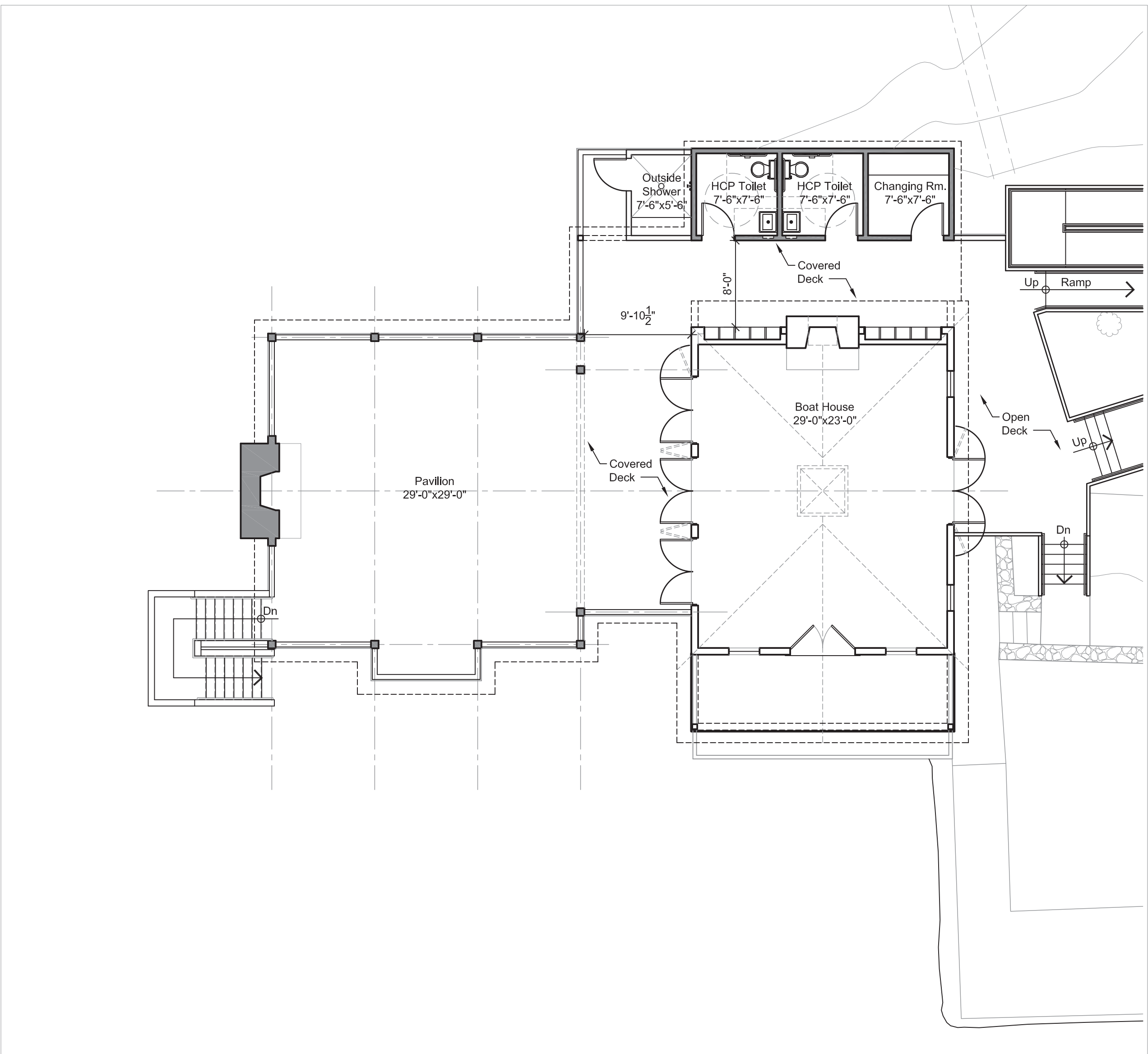
D5 BOATHOUSE - WEST ELEVATION  
A1.0 1/8" = 1'-0"



D5 PAVILION / BOATHOUSE - NORTH ELEVATION  
A1.0 1/8" = 1'-0"



D5 PAVILION - CROSS SECTIONS  
A1.0 1/8" = 1'-0"



H8 BOATHOUSE / PAVILION / HCP BATHROOMS / CHANGING ROOM - FLOOR PLAN  
A1.0 1/8" = 1'-0"

**DOYLE|COFFIN**  
ARCHITECTURE

Doyle Coffin Architecture, LLC  
158 Danbury Road  
Ridgefield, Connecticut 06877  
203|431|6001  
203|431|9764 fax  
info@doylecoffinarchitecture.com  
doylecoffinarchitecture.com

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NOTES

ALTERATIONS & ADDITIONS TO  
WACCABUC COUNTRY CLUB  
WATERFRONT

SNACK BAR

PERCH BAY ROAD  
WACCABUC, NEW YORK 10597

ISSUED 02/08/2022

PRINCIPAL JMD P.A.  
JOB NUMBER 969 SCALE AS NOTED

**SCHEMATIC DESIGN**  
**BOAT HOUSE, PAVILION**  
**RESTROOMS/CHANGING**  
**PLANS, ELEVATIONS &**  
**SECTION**

DOYLE COFFIN ARCHITECTURE, LLC 2021

REGISTERED ARCHITECT  
JOHN M. DOYLE  
NO. 028524  
STATE OF NEW YORK

SHEET

**A1.1**





## **PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN**

**For**

**Waccabuc Country Club – Beach Club Improvements  
Town of Lewisboro, New York**

**February 8, 2022**

**Applicant Information:**

Waccabuc Country Club  
90 Mead Street  
Waccabuc, New York 10597

**Note: This report in conjunction with the project plans make up the complete Preliminary Stormwater Pollution Prevention Plan.**

Prepared by:  
Insite Engineering, Surveying & Landscape Architecture, P.C.  
3 Garrett Place  
Carmel, New York 10512



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Appendix D	NYSDEC SPDES for Construction Activities Construction Site Log Book
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Appendix F	Hydrodynamic Separator Verification and Maintenance Checklist
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## FIGURES

Figure 1:	Location Map
Figure 2:	Pre-Development Drainage Map
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## 1.0 INTRODUCTION

### 1.1 Project Description

The subject project is located on two (2) parcels totaling  $8.76 \pm$  acres on Perch Bay Road in the Town of Lewisboro. The parcels and their surroundings are delineated on the attached Location Map (Figure 1). The parcels are designated as Tax Map Number 32.4-3-13 and 32.4-3-14 and are located in the R-4A zoning district. The subject parcels are currently developed as the Beach Club portion of Waccabuc Country Club with a concession stand, boat house, storage building with associated decking, parking areas and appurtenances. The project is located in the Amawalk Watershed.

The subject project consists of the redevelopment of existing impervious areas and new impervious surfaces. The existing concession stand and boat house are proposed to be modified. The project also proposes to construct a covered deck, access driveway, handicap accessible parking area and associated appurtenances. The proposed new and redeveloped impervious areas will be treated in a subsurface infiltration practice and a cistern.

### 1.2 Existing Site Conditions (Pre-Development)

The subject property consists of two adjoining parcels located on the north side of Perch Bay Road in the Town of Lewisboro. The subject parcels are currently developed as a the Beach Club portion of Waccabuc Country Club with a concession stand, boat house, storage building with associated decking, parking areas and appurtenances. The existing ground cover on the site is characterized as mostly wooded with lawn and impervious surfaces. The parcels front Lake Waccabuc to the north. The site generally drains from south to north towards Lake Waccabuc.

This analysis included in the project SWPPP utilized one Design Line (Design Line 1) to assess the stormwater runoff and any potential impacts from the proposed development to the existing downstream natural resources. Design Line 1 is located along a portion of the shoreline of Lake Waccabuc on the north side of the project site. The Pre-Development Drainage Map (Figure 2) shows the location of Design Line 1. The contributing area to Design Line 1 is identified as subcatchment Pre 1.

The hydrologic soils groups for the project consists of "B" and "C". The designations of the onsite soils located within the proposed limits of disturbance consist of Chatfield-Charlton Complex (CsD), and Paxton Fine Sandy Loam (PoC) as identified on the Soil Conservation Service Web Soil Survey. The soils boundaries are shown on Figure 2 and 3 of this report.

### 1.3 Proposed Site Conditions (Post Development)

As previously stated, the project includes the construction of a new impervious areas and redevelopment of existing impervious areas. The project proposed to modify the existing concession stand and boat house as well as construct a covered deck, access driveway, handicap accessible parking area and associated appurtenances. The proposed new and redeveloped impervious areas across the project site will be treated in a subsurface infiltration practice and a cistern. The cistern will be used to irrigate the proposed landscaping in the area of the proposed improvements.

The areas of redevelopment will be treated in accordance with Chapter 9, Redevelopment, of the New York State Stormwater Management Design Manual (Design Manual).

Treatment of stormwater runoff for all newly created impervious surfaces will meet the sizing requirements of Chapter 4 and 10 of the Design Manual. This will result in new SMP's designed to capture and treat runoff from the impervious surfaces. Stormwater treatment for the new impervious surfaces will be accomplished with several different practices including hydrodynamic separators for pretreatment, and subsurface infiltration system and a cistern. The infiltration practice and cistern have been sized to capture and treat the Runoff Reduction Volume and Water Quality Volume from the new and redeveloped areas. A flow splitter is proposed upstream of the infiltration practice, discharging full 1-year, 24-hour storm event to the practices while bypassing the larger storm events.

The developed / redeveloped subcatchments in the post-development conditions tributary to the Design Line that require treatment are shown as subcatchment 1.1S and 1.2S in Figure 3 of this report. The untreated / undeveloped portion of the contributing area to the Design Line is shown as subcatchment 1.0S.

## 2.0 STORMWATER MANAGEMENT

The proposed stormwater management system for the Beach Club Improvements project has been designed to meet the requirements of local, regional, and state stormwater ordinances and guidelines, including but not limited to those of the Town of Lewisboro and the NYSDEC. Specifically, the following codes / regulations have been used to design this SWPPP:

- *NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities, General Permit GP-0-20-001 (GP-0-20-001).*

Since the subject project proposes the disturbance of more than 1 acre, coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activities (GP-0-20-001) is required.

In order to meet the requirements set forth by GP-0-20-001, and the latest edition of the NYSDEC *New York State Stormwater Management Design Manual* (Design Manual), including the requirements listed in Chapter 9: *Redevelopment* (Chapter 9) and Chapter 10: *Enhanced Phosphorus Removal Standards* (Chapter 10) was referenced for the design of the proposed stormwater collection, conveyance and treatment system.

The Design Manual specifies five design criteria that are discussed in detail below. They are Runoff Reduction Volume ( $RR_v$ ), Water Quality Volume ( $WQ_v$ ), Stream Channel Protection Volume ( $CP_v$ ), Overbank Flood Control ( $Q_f$ ), and Extreme Storm Control ( $Q_p$ ). The first two requirements relate to treating water quality, while the later pertain to stormwater quantity (peak flow) attenuation.

To address stormwater quantity requirements of the NYSDEC, the "HydroCAD" Stormwater Modeling System," by HydroCAD Software Solutions LLC in Tamworth, New Hampshire, was used to model and assess the peak stormwater flows for the subject project. HydroCAD is a computer aided design program for modeling the hydrology and hydraulics of stormwater runoff. It is based primarily on hydrology techniques developed by the United States Department of Agriculture, Soil Conservation Service (USDA, SCS) TR-20 method combined with standard hydraulic calculations. For details on the input data for the subcatchments and design storms, refer to Appendices B through C and for the supporting data relative to the soils breakdown within the overall contributing area shown in the HydroCAD analysis, see Appendix B and C of this report:

The input requirements for the HydroCAD computer program are as follows:

Subcatchments (contributing watershed/sub-watersheds)

- Design storm rainfall in inches
- CN (runoff curve number) values which are based on soil type and land use/ground cover
- Tc (time of concentration) flow path information

Flow Splitters / Subsurface Infiltration System

- Surface area at appropriate elevations
- Flood elevation
- Outlet structure information

The following is a general description of the input data used to calculate the pre- and post-development stormwater runoff values. For detailed information for each subcatchment and pond, see Appendices B&C. The precipitation values for the 1-Year, 10-Year, 100-Year 24-hour design storm events and rainfall distribution curves utilized for this report were obtained from the information provided by Northeast Regional Climate Center(NRCC) and the Natural Resources Conservation Service(NRCS) which is available online at [www.precip.eas.cornell.edu](http://www.precip.eas.cornell.edu). The values provided for all design storms analyzed are listed below.

Design Storm	24-Hour Rainfall
1-Year	2.82"
10-Year	5.07"
100-Year	9.02"

The CN (runoff curve number) values utilized in this report were referenced from the USDA, SCS publication *Urban Hydrology for Small Watersheds*.

## 2.1 Chapter 10: Enhanced Phosphorus Removal Standards

As noted above, the New York City East of Hudson Watershed has been identified in the SPDES General Permit GP-0-20-001 as a watershed requiring compliance with the Enhanced Phosphorus Removal Standards when post-construction stormwater management practices are proposed. Chapter 10 establishes four goals to meet sizing performance standards:

- Goal 1: Reducing Runoff Volumes
- Goal 2: Effective Bypass Treatment
- Goal 3: Achieving Effluent Concentrations for Particulate Phosphorus
- Goal 4: Achieving Effluent Concentrations for Dissolved Phosphorus

In order to achieve the first goal, the site design shall, "assess the feasibility of hydrological source controls and reduce the total water quality volume by source control, implementation of green infrastructure, or standard SMP's with  $RR_v$  capacity, according to the process defined in Chapters 3 and 4 of the Design Manual. Each plan must include a rationale for acceptance and rejection of the various controls." A discussion on  $RR_v$  can be found in section 2.2 below. Based upon the results of onsite soil testing, the soils onsite in select areas are suitable for infiltration. Therefore, the use of infiltration practices (classified as Standard SMP's with  $RR_v$  capacity) has been maximized, specifically a subsurface infiltration system was selected to treat the stormwater runoff from the proposed impervious surfaces and satisfy  $RR_v$  minimum requirements. A cistern (green infrastructure) is also proposed to satisfy the  $RR_v$  minimum requirements. As such, Goal 1 has been achieved in this SWPPP.

Goal 2 cites that proposed stormwater management practices should achieve less than 15% effective treatment bypass of the long-term runoff volume. Chapter 10 further notes this goal is satisfied by capturing and treating the 1-year 24-hour design storm. The NYSDEC stormwater quality treatment practices proposed for this have been designed in accordance with Chapter 10 by utilizing the 1-yr, 24-hour design storm to generate the  $WQ_v / RR_v$ . As such, Goal 2 has been achieved in this SWPPP.

Achieving effluent concentrations for particulate phosphorus, Goal 3, is satisfied by achieving an 80% net removal of particulate phosphorus for a median influent concentration of 0.5mg/l. Chapter 10 states that through designing proposed SMP's in accordance with Section 10.4 this goal will be achieved. The proposed infiltration system has been designed in accordance with Section 10.4.3 of Chapter 10 thus satisfying the requirements of this goal.

Goal 4, achieving effluent concentration for dissolved phosphorus, is achieved by obtaining a 60% net removal of dissolved phosphorus given a median influent concentration of 0.15mg/l. As with Goal 3, Goal 4 is achieved by designing the proposed SMP's in accordance with Section 10.4 of Chapter 10. As noted above the proposed infiltration practice has been designed in accordance with section 10.4.3 of Chapter 10 thus satisfying the requirements of this goal.

## 2.2 NYSDEC Runoff Reduction Volume ( $RR_v$ )

The Runoff Reduction Volume ( $RR_v$ ) criterion is intended to replicate pre-development hydrology by maintaining preconstruction infiltration, peak flow runoff, discharge volume, as well as minimizing concentrated stormwater flow. As stated in Chapter 4 of the Design Manual,  $RR_v$  may be treated with

standard stormwater management practices (SMP's) sized in accordance with the Chapter 4/6 requirements, or with green infrastructure practices (GIP's) sized in accordance with the requirements set forth for each practice in Chapter 5. This requirement has been achieved on the subject project providing an infiltration practice, designed as a SMP in accordance with the latest design standards and a cistern designed as a GIP. Runoff reduction is achieved when runoff from a percentage of the impervious area on the site is captured, routed through a SMP or a GIP, infiltrated to the ground, reused, reduced by evapotranspiration, and eventually removed from the stormwater discharge from the site. Through this implementation, the design of the subsurface infiltration system as a SMP with the runoff reduction capacity and a cistern as a GIP equal to 100% of the WQ<sub>v</sub>, the RR<sub>v</sub> requirements will be achieved.

Section 4.3 of the Design Manual states for sites that do not achieve runoff reduction to pre-construction condition must, at a minimum reduce a percentage of the runoff from impervious areas to be constructed on the site a minimum RR<sub>v</sub>. The following equation can be used to determine the minimum runoff reduction volume:

$$\text{The minimum runoff reduction volume shall be } RRv_{\text{minimum}} = \frac{(P)(R_v)(A_i)}{12}$$

Where,

- S = Hydrologic Soil Group (HSG) Specific Reduction Factor
- A<sub>ic</sub> = Total Area of New Impervious Cover
- A<sub>i</sub> = Impervious cover targeted for Runoff Reduction
- = (S)(A<sub>ic</sub>)
- R<sub>v</sub> = 0.95

For detailed calculations of the runoff reduction for the proposed stormwater infiltration practice and cistern, see Appendix A. Listed in Table 2.2.1 below is a summary of the NYSDEC compliant practice, and its satisfaction of the NYSDEC RR<sub>v</sub> requirements:

**Table 2.2.1 Runoff Reduction Volume Summary**

Subcatchment	RR <sub>v</sub> Required = WQ <sub>v</sub> (c.f.) From Table 2.3.1	RR <sub>v</sub> Minimum (c.f.) Calculated in Appendix A	NYSDEC Practice Designation	Stormwater Management Practice ID	Storage Volume Provided below System Outlet (c.f.) (See Appendix C)	RR <sub>v</sub> Provided (c.f.)
1.1S	1,667	778	I-4	1.1P	1,786	1,667
1.2S	413	156	Cistern	1.2P	427	413

As shown in the table above the RR<sub>v</sub> *provided* is greater than the RR<sub>v</sub> *Minimum* and RR<sub>v</sub> *Required*, therefore the RR<sub>v</sub> requirement has been met for the subject project.

### 2.3 NYSDEC Water Quality Volume (WQ<sub>v</sub>)

For new impervious surfaces and as required by Chapter 10, the WQ<sub>v</sub> shall be the runoff volume from the 1-year, 24-hour storm event generated by the subcatchment. As permitted by Chapter 9 of the Design Manual, the portions of the existing impervious surfaces being redeveloped with impervious surfaces will only require 25% of the WQ<sub>v</sub> to be treated. Subcatchments 1.1S and 1.2S include redevelopment of existing impervious surfaces and the creation of new impervious surfaces within the same subcatchment. Appendix C has broken subcatchment 1.1S and 1.2S into two nodes so the redeveloped impervious surfaces contained within the subcatchment can be accounted for separately and the 25% reduction allowed by Chapter 9 applied. The calculation for the WQ<sub>v</sub> for the areas of redevelopment are shown in the table below.

**Table 2.3.1 - Water Quality Volume Calculation for Redevelopment**

Subcatchments	WQ <sub>v</sub> <sup>1</sup> New Impervious Surface (c.f.)	Full WQ <sub>v</sub> <sup>2</sup> Redeveloped Impervious Surface (c.f.)	25% WQ <sub>v</sub> <sup>3</sup> Redevelopment Calculation (c.f.)	WQ <sub>v</sub> Initial <sup>4</sup> (c.f.)
1.1S	1,525	566	142	1,667
1.2S	348	261	65	413

<sup>1</sup> Refer to Appendix C for the stormwater runoff volume from the 1-year, 24-hour storm event for the areas of new impervious surfaces within the subcatchment.

<sup>2</sup> Refer to Appendix C for the stormwater runoff volume from the 1-year, 24-hour storm event for the existing impervious areas proposed to be redeveloped within the subcatchment.

<sup>3</sup> In accordance with Chapter 9 of the Design Manual, only 25% of the WQ<sub>v</sub> from the existing impervious surfaces to be redeveloped requires treatment. The 25% reduction has been accounted for in the volumes provided.

<sup>4</sup> The volumes provided are the sum of the stormwater runoff volume from the new impervious surfaces and 25% of the runoff volume from the existing impervious surfaces to be redeveloped. These volumes are used in the sizing calculations for the SMP's.

The stormwater infiltration system and cistern have been sized in accordance with Chapter 5 of the Design Manual, as they have been sized to store the entire water quality volume (WQ<sub>v</sub>) from the proposed improvements. The subject project is located in the New York City Watershed, which is listed as a phosphorus-limited watershed per the NYSDEC regulations. Therefore the stormwater management practices have been designed in general accordance with the Enhanced Phosphorus Removal Supplement (Chapter 10) of the Design Manual. As outlined in Chapter 10, the treatment volume for the WQ<sub>v</sub> is the runoff volume produced during the 1-year 24-hour design storm as calculated in Table 2.3.1 above. The cistern shall be used to irrigate the proposed landscaping in the area of the proposed Beach Club improvements.

It should be noted that the infiltration practice and cistern have been sized to provide 100% storage of the water quality volume to meet the requirements set forth in the Design Manual. See Table 2.2.1 above for a summary of WQ<sub>v</sub> storage provided in the infiltration practice and cistern. By meeting the Water Quality Volume requirements through employment of the infiltration practice and cistern, the water quality objectives of the NYSDEC has been met.

#### 2.4 NYSDEC Stream Channel Protection Volume, CP<sub>v</sub>

The Stream Channel Protection (CP<sub>v</sub>) criterion is intended to protect stream channels from erosion and is accomplished by the 24-hour extended detention of the center-of-mass of the 1-year, 24-hour storm event or by fully infiltrating the stormwater runoff from the 1-year, 24-hour storm event. As permitted by Chapter 9, Section 9.2 of the Design Manual, for areas of redevelopment activities, the CP<sub>v</sub> criterion is not required if the peak flow for the project site in the post-development condition is less than the pre-development condition for the 1-year 24-hour storm event. As shown in Table 2.5.1 below, the project proposes a decrease in the peak flow from the pre to post-development condition for the 1-year, 24-hour storm event. Infiltration testing has yet to be performed in the area of the proposed infiltration practice. As such, the infiltration rate used in the HydroCAD model in Appendix C for the proposed infiltration system was conservatively modeled as an exfiltration rate of 5-inches per hour. A design infiltration rate was determined based on preliminary soil testing at the project site. Witnessed testing will be performed to confirm the design of the infiltration system. It should be noted, the infiltration system also meets the CP<sub>v</sub> criterion by fully infiltrating the stormwater runoff from the 1-year, 24-hour storm event.

#### 2.5 NYSDEC Overbank Flood Control, Q<sub>p</sub>, and Extreme Flood Control, Q<sub>f</sub>

The Overbank Flood Control (Q<sub>p</sub>) requirement is intended to prevent an increase in the frequency and magnitude of out-of-bank flooding events generated by urban development. Overbank control requires storage to attenuate the post-development 10-year, 24-hour peak discharge to pre-development rates. The Extreme Flood Control (Q<sub>f</sub>) requirement is intended to prevent the increased risk of flood damage from large storm events, maintain the boundaries of the pre-development 100-year flood plain,

and protect the physical integrity of stormwater management practice. Extreme flood control requires storage to attenuate the post-development 100-year, 24-hour peak discharge to pre-development rates. As shown in Table 2.5.1 attenuation for both the 10-year and 100-year 24-hour storms has been provided thus satisfying the  $Q_p$  and  $Q_r$  requirements.

**Table 2.5.1– Existing and Proposed Conditions Peak Flows**

24-HOUR DESIGN STORM PEAK FLOWS (c.f.s.)						
	1-YEAR		10-YEAR (Overbank Flood Control)		100-YEAR (Extreme Flood Control)	
	Pre	Post	Pre	Post	Pre	Post
Design Line 1	3.09	3.08	13.07	12.95	32.90	32.88

As shown in the above table the peak flows from the contributing areas to Design Line 1 in the post development condition has been mitigated to below the existing condition levels, thus meeting the general requirements of the NYSDEC.

### 3.0 STORMWATER CONVEYANCE SYSTEM

The project proposes to install a new stormwater collection and conveyance system to convey the stormwater runoff from the redeveloped areas to the proposed stormwater management practices. The proposed stormwater collection and conveyance system for the project consists of precast concrete drainage structures and HDPE drainage piping. The proposed stormwater conveyance system has been sized utilizing the Rational Method and is a standard method used by engineers to develop flow rates for sizing collection systems. The Rational Method calculates flows based on a one-hour design storm. The proposed collection system has been sized to convey, at a minimum, the 100-year design storm. Sizing calculations for the proposed stormwater conveyance piping will be provided in future reports.

A hydrodynamic separator is proposed as pretreatment for the infiltration practice. Appendix F of this report includes the sizing for the Hydroworks HydroStorm Hydrodynamic Separator. The Hydroworks Hydrostorm is a NJCAT verified proprietary practice for pretreatment. As shown on the project plans, a HydroStorm Hydrodynamic Separator by HydroWorks is proposed upstream of the proposed infiltration practice and down stream of the proposed flow splitter. In accordance with the Design Manual, the hydrodynamic separator has been sized to treat 100% of the WQv based on the peak flow rate from the upstream flow splitter for the Water Quality Volume storm event. The following table is a summary of the peak flow from the upstream flow splitter to the hydrodynamic separator for the Water Quality Volume storm event and the hydrodynamic separator sizing.

**Table 3.1 – Pretreatment Hydrodynamic Separator Summary**

Subcatchment	Flow Splitter	WQv Peak Flow (C.F.S.).	Hydrodynamic Separator Model	Hydrodynamic Separator Capacity (C.F.S.)
1.1S	FS 1	0.74	HydroStorm HS 4	0.88

### 4.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control should be accomplished by four basic principles: diversion of clean water, containment of sediment, treatment of dirty water, and stabilization of disturbed areas. Diversion of clean water should be accomplished with swales. This diverted water should be safely conveyed around the construction area as necessary and discharged downstream of the disturbed areas. Sediment should be contained with the use of silt fence at the toe of disturbed slopes. Disturbed areas should be permanently stabilized within 7 days of final grading to limit the required length of time that the temporary facilities must be utilized. The owner will be



responsible for the maintenance of the temporary erosion control facilities. Refer to the Project Drawings for further information implementation of the Erosion Control Plan and Construction Sequence.

#### 4.1 Temporary Erosion and Sediment Control Facilities

Temporary erosion and sediment control facilities should be installed and maintained as required to reduce the impacts to off-site properties. The owner will be required to provide maintenance for the temporary erosion and sediment control facilities. In general, the following temporary methods and materials should be used to control erosion and sedimentation from the project site:

- Stabilized Construction Entrance
- Silt Fence Barriers
- Storm Drain Inlet Protection
- Temporary Soil Stabilization

All temporary erosion control measures shall be maintained in accordance with the Erosion & Sediment Control Maintenance Schedule contained on the Project Drawings, and as discussed below.

A stabilized construction entrance should be installed at the site entrance as shown on the project plans. The design drawings will include details to guide the contractor in the construction of this entrance. The intent of the stabilized construction entrance is to prevent the "tracking" of soil from the site. Dust control should be accomplished with water sprinkling trucks if required. During dry periods, sprinkler trucks should wet all exposed earth surfaces as required to prevent the transport of air-borne particles to adjoining areas.

Siltation barriers constructed of geosynthetic filter cloth should be installed at the toe of all disturbed slopes. The intent of these barriers is to contain silt and sediment at the source and inhibit its transport by stormwater runoff. The siltation barriers will also help reduce the rate of runoff by creating filters through which the stormwater must pass. During construction, the siltation barriers shall be inspected weekly and after a rainfall event and shall be cleaned/replaced when needed.

Storm drain inlet protection in the form of filter fabric inlet protection will be installed around all proposed inlets. The filter fabric inlet protection will serve to filter stormwater runoff before it enters the collection system. Throughout construction the concrete drainage structures, associated piping and inlet protections shall be inspected weekly and after a rainfall event. These items shall be cleaned, repaired and/or replaced when needed.

When land is exposed during development, the exposure shall be kept to the shortest practical period, but in no case more than 7 days. Temporary grass seed and mulch shall be applied to any construction area idle for two weeks. The temporary seeding and mulching shall be performed in accordance with the seeding notes illustrated on the project drawings. Disturbance shall be minimized in the areas required to perform construction. Upon completion of final grading topsoil, permanent seeding and mulch shall be applied in accordance with the project drawings.

The stormwater runoff will be managed by the temporary erosion and sediment control facilities during construction. As discussed in the construction sequences provided the project plans the stabilized construction entrance shall be installed at the site entrance and silt fence shall be installed along the down hill perimeter of where soil disturbing activities will occur containing sediment laden stormwater runoff on-site.

#### 4.2 Permanent Erosion and Sediment Control Facilities

Permanent erosion and sediment control will be accomplished by diverting stormwater runoff from steep slopes, controlling/reducing stormwater runoff velocities and volumes, and vegetative and structural surface stabilization. All of the permanent facilities are relatively maintenance free and only require periodic inspections. The owner will provide maintenance for all the permanent erosion and sediment control facilities.

Rock outlet protection will be provided at the discharge end of all piped drainage systems, and will be sized in accordance with the Blue Book. The purpose of the rock outlet protection is to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach. The rock outlet protection shall be inspected for evidence of scour beneath the riprap and/or for any dislodged stones. Inspections of the rock outlet protection shall be performed during the inspections of the post-construction SMP's for the project.

Other than paved surfaces, disturbed surfaces will be stabilized with vegetation within 10 days of final grading. Permanent seed mix and mulch shall be applied to idle areas to minimize the amount of exposed soil. Permanent seed mixtures are proposed for the project and illustrated on project drawings. Application rates for the seed and mulch are provided on the project drawings. The vegetation will control stormwater runoff by preventing soil erosion, reducing runoff volume and velocities, and providing a filter medium. Permanent seeding should optimally be undertaken in the spring from March 21<sup>st</sup> through May 20<sup>th</sup> and in late summer from August 15<sup>th</sup> to October 15<sup>th</sup>.

## 5.0 IMPLEMENTATION AND MAINTENANCE

### 5.1 Construction Phase

Details associated with the implementation and maintenance of the proposed stormwater facilities and erosion control measures during construction are shown on the project drawings. Soil disturbance for the subject project shall not exceed five acres at any given time. The erosion control plan will include associated details and notes to aid the contractor in implementing the plan. Construction is anticipated to begin in the spring of 2022, and anticipated to be completed by the spring of 2023.

During construction, a Site Log Book, Appendix D, is required to be kept per NYSDEC SPDES General Permit GP-0-20-001. Erosion and sediment control inspections are required to be conducted as necessary under coverage of the permit (minimum twice a week) and an updated logbook and a copy of the SWPPP is required to be kept on site for the duration of the construction activities. The Construction Site Log Book is an appendix taken from the *New York Standards and Specifications for Erosion and Sediment Control* (Blue Book).

In addition to the proposed erosion and sediment control facilities, the following good housekeeping best management practices shall be implemented to mitigate potential pollution during the construction phase of the project. The general contractor overseeing the day-to-day site operation shall be responsible for the good housekeeping best management practices included in the following general categories:

- Material Handling and Waste Management
- Establishment of Building Material Staging Areas
- Establishment of Washout Areas
- Proper Equipment Fueling and Maintenance Practices
- Spill Prevention and Control Plan

All construction waste materials shall be collected and removed from the site regularly by the general contractor. The general contractor shall supply waste barrels for proper disposal of waste materials. All personnel working on the site shall be instructed of the proper procedures for construction waste disposal.

Although it is not anticipated any hazardous waste materials will be utilized during construction, any hazardous waste materials shall be disposed of in accordance with federal, state, and local regulations. No hazardous waste shall be disposed of on-site. Hazardous waste materials shall be stored in appropriate and clearly marked containers and segregated from the other non-waste materials. All hazardous waste shall be stored in a structurally sound and sealed shipping containers located in the staging areas. Material safety data sheets, material inventory, and emergency contact numbers will be maintained in the office trailer. All personnel working on the site shall be instructed of the proper procedures for hazardous waste disposal.

Temporary sanitary facilities (portable toilets) shall be provided on site during the entire length of construction. The sanitary facilities shall be located in the project staging area, or in an alternate area away from the construction activities on the site. The portable toilets shall be inspected weekly for evidence of leaking holding tanks.

All recyclables, including wood pallets, cardboard boxes, and all other recyclable construction scraps shall be disposed of in a designated recycling barrel provided by the contractor and removed from the site regularly. All personnel working on the site shall be instructed of the proper procedures for construction waste recycling.

All construction equipment and maintenance materials shall be stored in a construction staging area. Silt fence shall be installed down gradient of the construction staging area. Shipping containers shall be utilized to store hand tools, small parts, and other construction materials, not taken off site daily. Construction waste barrels, recycling barrels and if necessary hazardous waste containers shall be located within the limits of the construction staging area.

Throughout the construction of the project, several types of vehicles and equipment will be used on-site. Fueling of the equipment shall occur within the limits of the construction staging area. Fuel will be delivered to the site as needed, by the general contractor, or a party chosen by the general contractor. Only minor vehicle equipment maintenance shall occur on-site, all major maintenance shall be performed off-site. All equipment fluids generated from minor maintenance activities shall be disposed of into designated drums and stored in accordance with the hazardous waste storage as previously discussed.

The designated temporary concrete washout areas shall be constructed in accordance with the detail in the general locations as shown on the project plans. The temporary concrete washout areas shall be lined with plastic sheeting as specified on the detail free of holes or tears. Should the liner rip or tear at any time it shall be replaced immediately. All concrete mixer trucks and chutes shall be washed in the designated concrete wash areas. All personnel working on the site including concrete equipment operators shall be instructed of the locations and proper procedures for concrete washout. When the temporary concrete washout areas are no longer needed the hardened concrete and materials used to construct the washout area shall be broken up and removed from the site and disposed of in a landfill.

Vehicles and equipment shall be inspected on each day of use. Any leak discovered shall be repaired immediately. All leaking equipment unable to be repaired shall be removed from the site. Ample supplies of absorbent, spill-cleanup materials, and spill kits shall be located in the construction staging area. All spills shall be cleaned up immediately upon discovery. Spent absorbent materials and rags shall be hauled off-site immediately after the spill is cleaned for disposal at a local landfill. All personnel working on the site shall be instructed of the proper procedures for spill prevention and control. Any spill large enough to discharge to surface water will be immediately reported to the local fire / police departments, NYCDEP, and the National Response Center 1-800-424-8802.

Vegetation should be inspected every 30 days and after every major storm event until established, after which inspections should take place on a quarterly basis and after every large storm event. Damaged areas should be immediately re-seeded and re-mulched.

## 5.2 Soil Restoration

Soil Restoration is required to be applied across areas of the development site where soils have been disturbed and will be vegetated. The purpose is to recover the original properties and porosity of the soil compacted during construction activity. Soil Restoration is applied in the cleanup, restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate, deep-rooted groundcover to help maintain the restored soil structure. Soil restoration includes mechanical decompaction and compost amendment. The table below describes various soil disturbance activities related to land development, soil types and the requirements for soil restoration for each activity as identified in the Design Manual. Restoration is applied across areas of a development site where soils have been compacted and will be vegetated according to the criteria defined in the following table:

Soil Restoration Requirements <sup>1, 2,4</sup>			
(Onsite soils within the limit of disturbance belong to Hydrologic Soil Groups (HSG) B & C)			
Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A & B	HSG C&D	Protect area from any ongoing construction activities.
	Apply 6 inches of topsoil	Aerate <sup>3</sup> and apply 6 inches of topsoil	
Areas of cut or fill	HSG A &B	HSG C&D	
	Aerate <sup>1</sup> and apply 6 inches of topsoil	Apply full Soil Restoration <sup>2</sup>	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5-foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost Enhancement <sup>6</sup> )		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

1. Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
2. Per "Deep Ripping and De-compaction, DEC 2008".
3. Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
4. During periods of relatively low to moderate subsoil moisture, the disturbed soils are returned to rough grade and the following Soil Restoration steps applied:
  - 5.1. Apply 3 inches of compost over subsoil.
  - 5.2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor-mounted disc, or tiller, mixing, and circulating air and compost into subsoils.
  - 5.3. Rock-pick until uplifted stone/rock materials of four inches and larger size area cleaned off the site.
  - 5.4. Apply topsoil to a depth of 6 inches.
  - 5.5. Vegetate as required by seeding notes located on the project drawings.
  - 5.6. Tilling should not be performed within the drip line of any existing trees or over any utility installations that are within 24 inches of the surface.
6. Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a half inch screen and have a pH suitable to grow desired plants.

After soil restoration is completed an inspector should be able to push a 3/8" metal bar twelve inches into the soil with just body weight. Following decompaction/soil restoration activities, the following maintenance is anticipated during the first year:

- Initial inspections for the first six months (once after each storm greater than a half-inch).
- Reseeding to repair bare or eroding areas to assure grass stabilization.

- Water once every three days for first month, and then provide a half inch of water per week during first year. Irrigation plan may be adjusted according to the rain event.
- Fertilization may be needed in the fall after the first growing season to increase plant vigor.

In order to ensure the soil remains decompacted the following ongoing maintenance is recommended:

- Planting the appropriate ground cover with deep roots to maintain the soil structure.
- Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths (sometimes it may be necessary to de-thatch the turf every few years).

### 5.3 Long Term Maintenance Plan

The stormwater facilities for the subject project have been designed to minimize the required maintenance. This section discusses the minimum maintenance requirements to insure long-term performance of the stormwater facilities. Initially the stormwater facilities will require an increased maintenance and inspection schedule until all portions of the site are stable. Generally the stormwater facilities consist of either collection and conveyance components or treatment components.

The stormwater collection and conveyance system is composed of HDPE drainage pipe and precast concrete drainage structures. The owner will assume the maintenance responsibilities for the drainage system. Minimal maintenance is typically required for these facilities. All pipes should be checked for debris and blockages and cleaned as required. All drain inlet sumps shall be cleaned to removed deposited sediment. During the cleaning process, the pipes should be inspected for structural integrity and overall condition; repairs and/or replacement should be made as required.

There is a hydrodynamic separator located upstream of the proposed infiltration practice. Routine maintenance shall include inspection of the hydrodynamic separator for accumulated sediment / debris, and cleaning as necessary, see Appendix F.

Additionally, the infiltration practice shall be checked for deposited sediment as well. Visual inspection of system through the inspection ports shall take place yearly, and the system shall be cleaned / jetted as necessary to remove deposited sediment, see Appendix G.

**APPENDIX A**  
**RR<sub>v</sub> Calculation**

## RRv Calculation Worksheet - Infiltration System 1.1P

Project: Waccabuc Country Club - Beach Club Improvements

Project #: 20228.100

Date: 2/8/2022



1. *RRv Initial* = Water Quality Volume (WQv) 0.038 ac-ft = 1,667 c.f.  
(refer to Table 2.3.1 for Water Quality Volume)

2. *RRv Minimum* =  $[(P)(Rv)(S)(Aic)]/12$  where...  
 P = Rainfall (in.) = 2.82 in.  
 Rv =  $0.05 + 0.009(100\%)$  = 0.95  
 S = Hydrologic Soil Group Specific Reduction Factor = 0.40  
 [HSG A = 0.55] [HSG B = 0.40] [HSG C = 0.30] [HSG D = 0.20]  
 Aic = Total area of new impervious cover = 0.2 Acres  
*RRv Minimum* = 778 c.f.

3. *RRv Required* = *RRv Initial* - Green Infrastructure Practice (GIP) with Area Reduction

GIP with Area Reduction Applied in Project

5.3.1 Conservation of Natural Area N/A  
 5.3.2 Sheet Flow to Riparian Buffers or Filter Strips N/A  
 5.3.4 Tree Planting / Tree Box c.f.  
 5.3.5 Disconnection of Rooftop Runoff -  
 5.3.6 Stream Daylighting N/A

*RRv Required* (=WQv-RRv by area)(Refer to HydroCAD output in this Appendix) = 1,667 c.f.

4. *RRv Provided*

GIP with Volume Reduction Applied in Project	WQv Treated (c.f.)	% of WQv Applied to <i>RRv Provided</i>	<i>RRv Provided</i> (c.f.)
5.3.3 Vegetated Open Swales [HSG A / B = 20%] [HSG C / D = 10%] {Modified HSG C - D = 15% - 12%}		20%	0
		10%	0
5.3.7 Rain Garden [No underdrains / Good Soils = 100%] [With underdrains / Poor Soils = 40%]		40%	0
5.3.8 Green Roof [RRv provided equals volume provided in Green Roof]		100%	0
5.3.9 Stormwater Planters [Infiltration Planters = 100%] [Flow Through HSG C = 45%] [Flow Through HSG D = 30%]		45%	0
5.3.10 Rain Tank / Cisterns		100%	0
5.3.11 Porous Pavement		100%	0
Infiltration Practice (Standard SMP)		100%	0
Bioretention Practice (Standard SMP) [Without Underdrains HSG A/B = 80%] [With Underdrains HSG C/D = 40%]		40%	0
Dry Swale (Open Channel Practice) (Standard SMP) [HSG A/B = 40%] [HSG C/D = 20%]		20%	0
<i>RRv Provided</i> =			0

5. Summary

*RRv*  
 Initial = 1,667 c.f.  
*RRv Required* = 1,667 c.f.  
*RRv Minimum* = 778 c.f.  
*RRv Provided* = 0 c.f.  
 WQv Required for Downstream SMP = 1,667 c.f. (= *RRv Required* - *RRv Provided*)

Is *RRv Provided* greater than or equal to *RRv Minimum*? No

Refer to the "Analysis of Green Infrastructure Practices" contained in Appendix F for an explanation demonstrating the maximum *RRv Provided* has been achieved for the site.

## RRv Calculation Worksheet - Cistern 1.2P

Project: Waccabuc Country Club - Beach Club Improvements

Project #: 20228.100

Date: 2/8/2022



1. *RRv Initial* = Water Quality Volume (WQv) 0.009 ac-ft = 413 c.f.  
(refer to Table 2.3.1 for Water Quality Volume)

2. *RRv Minimum* = [(P) (Rv) (S) (Aic)] / 12 where...  
P = Rainfall (in.) = 2.82 in.  
Rv = 0.05 + 0.009 (100%) = 0.95  
S = Hydrologic Soil Group Specific Reduction Factor = 0.40  
[HSG A = 0.55] [HSG B = 0.40] [HSG C = 0.30] [HSG D = 0.20]  
Aic = Total area of new impervious cover = 0.04 Acres  
*RRv Minimum* = 156 c.f.

3. *RRv Required* = *RRv Initial* - Green Infrastructure Practice (GIP) with Area Reduction

GIP with Area Reduction Applied in Project

5.3.1 Conservation of Natural Area N/A  
5.3.2 Sheet Flow to Riparian Buffers or Filter Strips N/A  
5.3.4 Tree Planting / Tree Box c.f.  
5.3.5 Disconnection of Rooftop Runoff -  
5.3.6 Stream Daylighting N/A

*RRv Required* (=WQv-RRv by area)(Refer to HydroCAD output in this Appendix) = 413 c.f.

### 4. *RRv Provided*

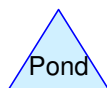
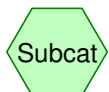
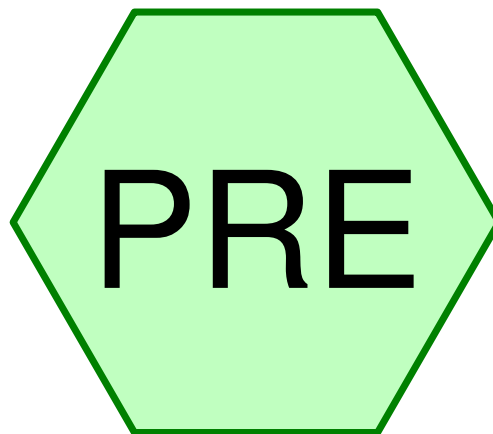
GIP with Volume Reduction Applied in Project	WQv Treated (c.f.)	% of WQv Applied to <i>RRv Provided</i>	<i>RRv Provided</i> (c.f.)
5.3.3 Vegetated Open Swales [HSG A / B = 20%] [HSG C / D = 10%] {Modified HSG C - D = 15% - 12%}		20%	0
		10%	0
5.3.7 Rain Garden [No underdrains / Good Soils = 100%] [With underdrains / Poor Soils = 40%]		40%	0
5.3.8 Green Roof [RRv provided equals volume provided in Green Roof]		100%	0
5.3.9 Stormwater Planters [Infiltration Planters = 100%] [Flow Through HSG C = 45%] [Flow Through HSG D = 30%]		45%	0
5.3.10 Rain Tank / Cisterns	413	100%	413
5.3.11 Porous Pavement		100%	0
Infiltration Practice (Standard SMP)		100%	0
Bioretention Practice (Standard SMP) [Without Underdrains HSG A/B = 80%] [With Underdrains HSG C/D = 40%]		40%	0
Dry Swale (Open Channel Practice) (Standard SMP) [HSG A/B = 40%] [HSG C/D = 20%]		20%	0
<i>RRv Provided</i> =			413

### 5. Summary

RRv Initial = 413 c.f.  
RRv Required = 413 c.f.  
RRv Minimum = 156 c.f.  
RRv Provided = 413 c.f.  
WQv Required for Downstream SMP = 0 c.f. (= RRv Required - RRv Provided)  
Is RRv Provided greater than or equal to RRv Minimum? Yes



**APPENDIX B**  
**Pre Development Computer Data**



**Routing Diagram for Pre-Development**

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**Pre-Development**

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Prepared by Insite Engineering, Surveying &amp; Landscape Architecture, P.C.

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Page 2

**Summary for Subcatchment PRE:**

Runoff = 3.09 cfs @ 12.42 hrs, Volume= 0.494 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Area (ac)	CN	Description
8.200	70	Woods, Good, HSG C
* 0.250	98	Paved parking
* 0.300	96	Gravel surface
2.300	55	Woods, Good, HSG B
11.050	68	Weighted Average
10.800		97.74% Pervious Area
0.250		2.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0500	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.40"
6.9	550	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.1	23	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	51	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.8	811	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
29.7	1,535	Total			

## Pre-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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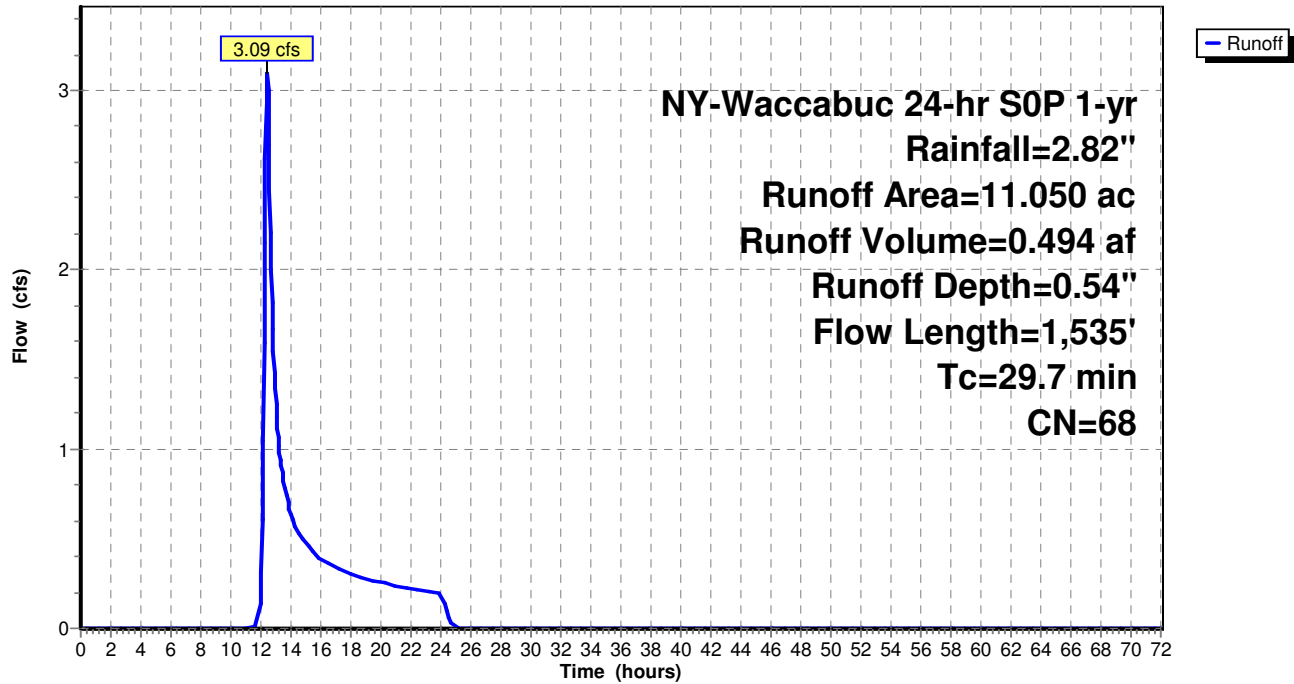
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Page 3

### Subcatchment PRE:

Hydrograph



**Pre-Development**

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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Page 4

**Summary for Subcatchment PRE:**

Runoff = 13.07 cfs @ 12.38 hrs, Volume= 1.777 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

Area (ac)	CN	Description
8.200	70	Woods, Good, HSG C
* 0.250	98	Paved parking
* 0.300	96	Gravel surface
2.300	55	Woods, Good, HSG B
11.050	68	Weighted Average
10.800		97.74% Pervious Area
0.250		2.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0500	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.40"
6.9	550	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.1	23	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	51	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.8	811	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
29.7	1,535	Total			

## Pre-Development

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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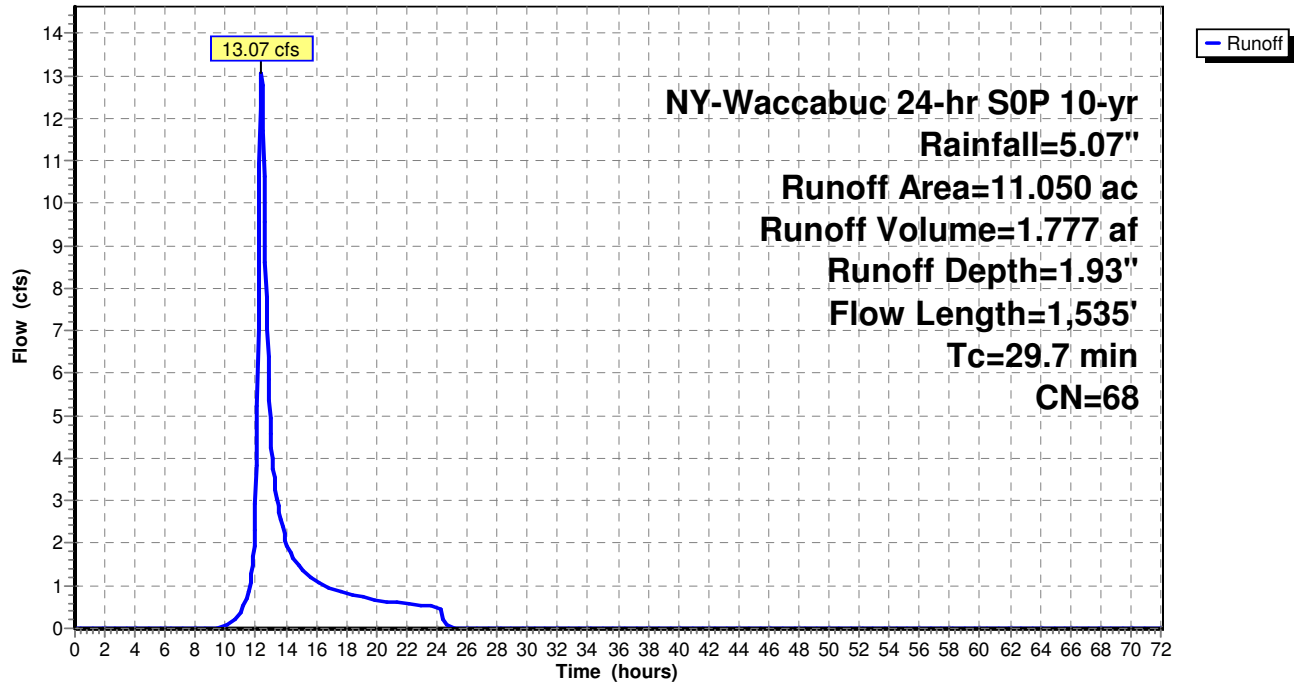
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### Subcatchment PRE:

#### Hydrograph



**Pre-Development**

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

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**Summary for Subcatchment PRE:**

Runoff = 32.90 cfs @ 12.37 hrs, Volume= 4.701 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

Area (ac)	CN	Description
8.200	70	Woods, Good, HSG C
* 0.250	98	Paved parking
* 0.300	96	Gravel surface
2.300	55	Woods, Good, HSG B
11.050	68	Weighted Average
10.800		97.74% Pervious Area
0.250		2.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0500	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.40"
6.9	550	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.1	23	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	51	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.8	811	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
29.7	1,535	Total			

## Pre-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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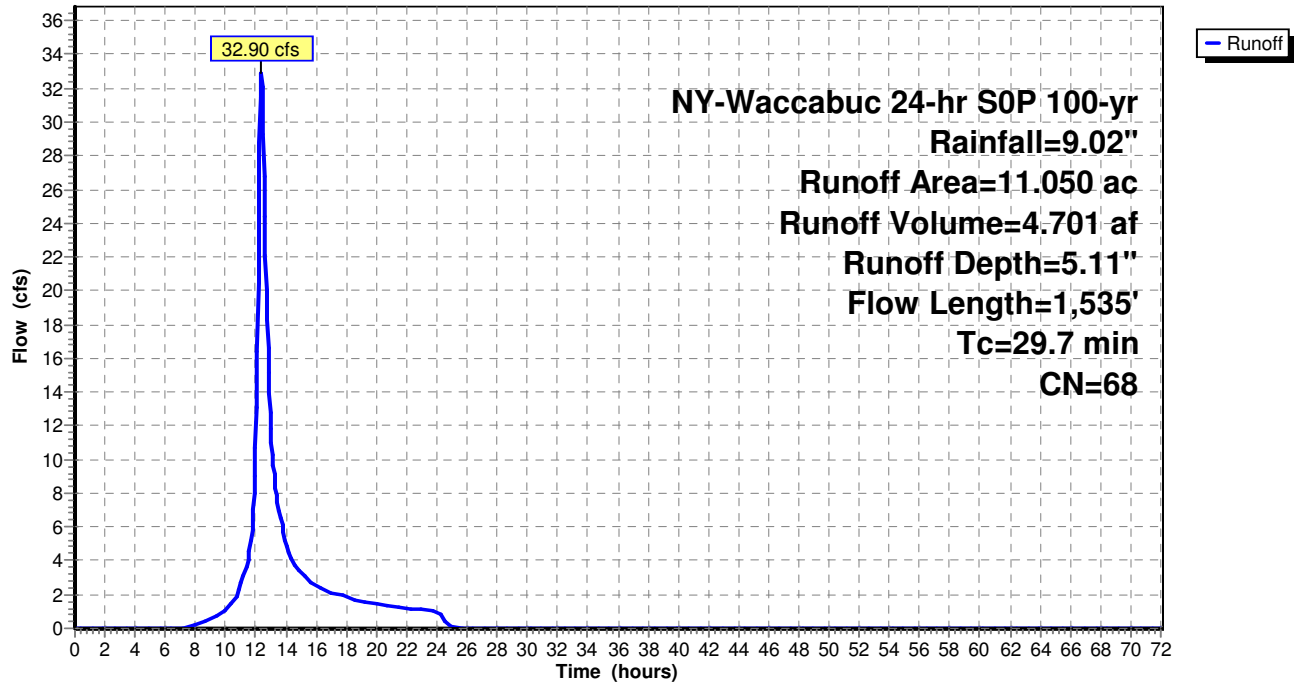
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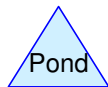
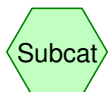
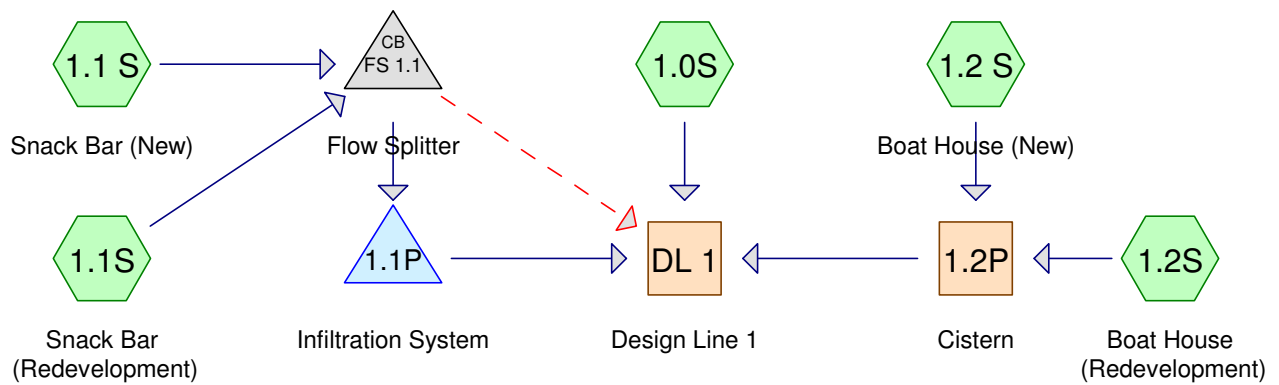
### Subcatchment PRE:

#### Hydrograph





**APPENDIX C**  
**Post Development Computer Data**



#### Routing Diagram for Post-Development

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**Post-Development**

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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Page 2

**Summary for Subcatchment 1.0S:**

Runoff = 3.06 cfs @ 12.40 hrs, Volume= 0.470 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Area (ac)	CN	Description
7.800	70	Woods, Good, HSG C
* 0.220	98	Paved parking
0.310	96	Gravel surface, HSG C
2.200	55	Woods, Good, HSG B
10.530	68	Weighted Average
10.310		97.91% Pervious Area
0.220		2.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0500	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.40"
6.9	550	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.1	23	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	51	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.4	565	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	280	0.0500	10.14	7.97	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.2	20	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
28.0	1,589	Total			

## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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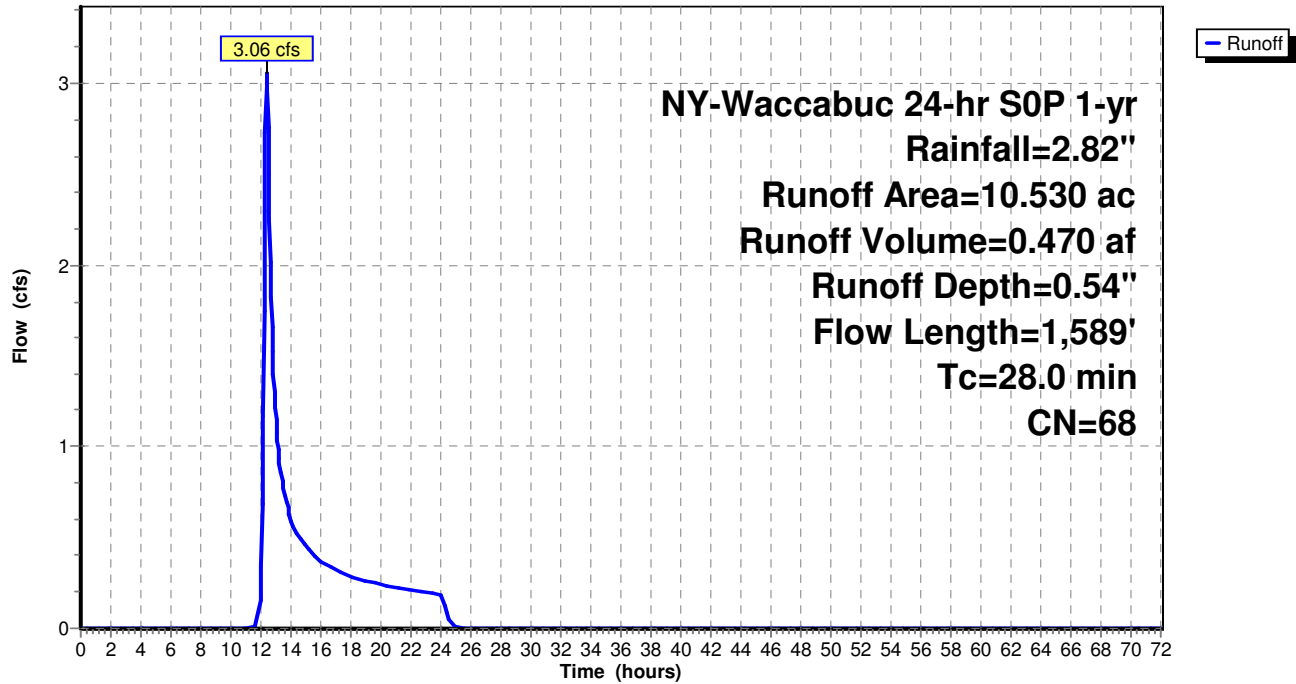
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### Subcatchment 1.0S:

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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### Summary for Subcatchment 1.1 S: Snack Bar (New)

Runoff = 0.55 cfs @ 12.04 hrs, Volume= 0.035 af, Depth= 1.06"

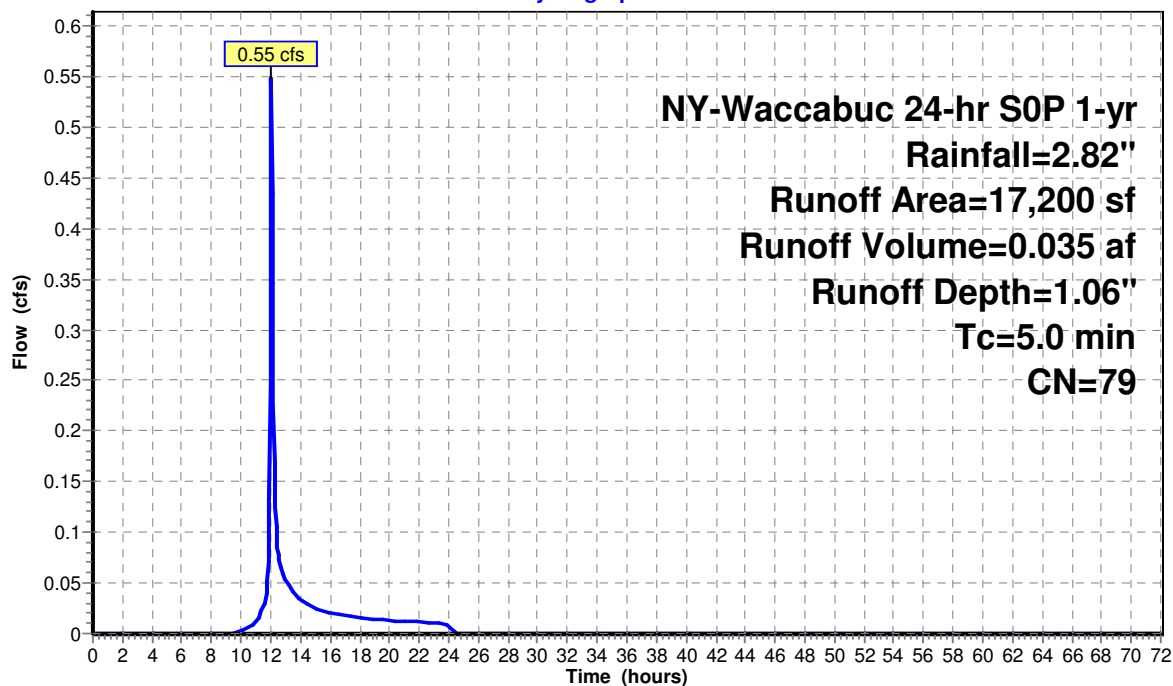
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Area (sf)	CN	Description
8,500	98	Paved parking, HSG B
8,700	61	>75% Grass cover, Good, HSG B
17,200	79	Weighted Average
8,700		50.58% Pervious Area
8,500		49.42% Impervious Area

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

### Subcatchment 1.1 S: Snack Bar (New)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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Page 5

### Summary for Subcatchment 1.1S: Snack Bar (Redevelopment)

Runoff = 0.19 cfs @ 12.03 hrs, Volume= 0.013 af, Depth= 2.59"

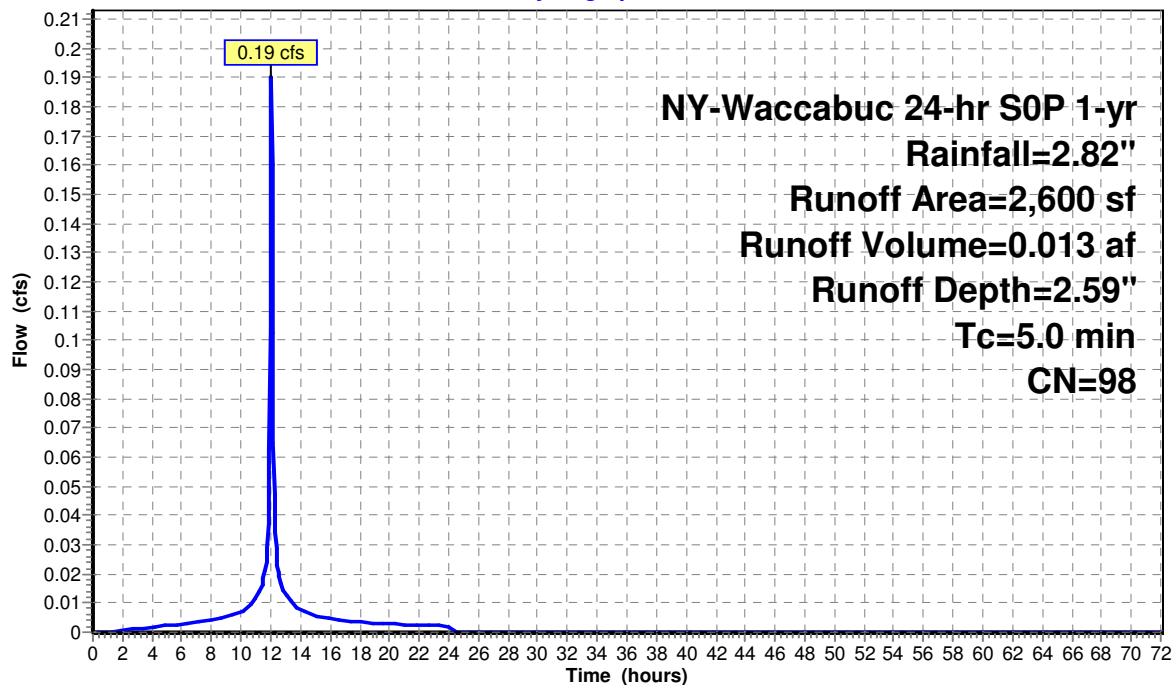
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Area (sf)	CN	Description
2,600	98	Paved parking, HSG B
2,600		100.00% Impervious Area

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

### Subcatchment 1.1S: Snack Bar (Redevelopment)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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### Summary for Subcatchment 1.2 S: Boat House (New)

Runoff = 0.12 cfs @ 12.03 hrs, Volume= 0.008 af, Depth= 2.59"

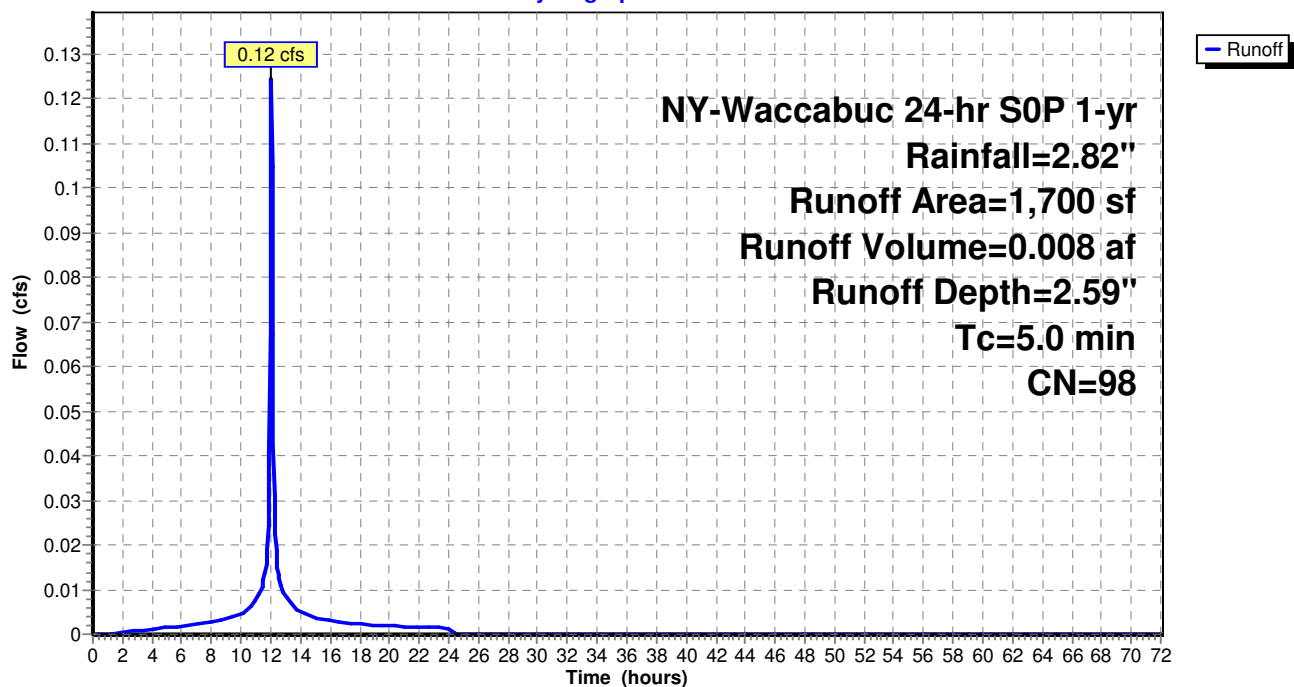
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Area (sf)	CN	Description
1,700	98	Paved parking, HSG B
1,700		100.00% Impervious Area

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

### Subcatchment 1.2 S: Boat House (New)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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### Summary for Subcatchment 1.2S: Boat House (Redevelopment)

Runoff = 0.09 cfs @ 12.03 hrs, Volume= 0.006 af, Depth= 2.59"

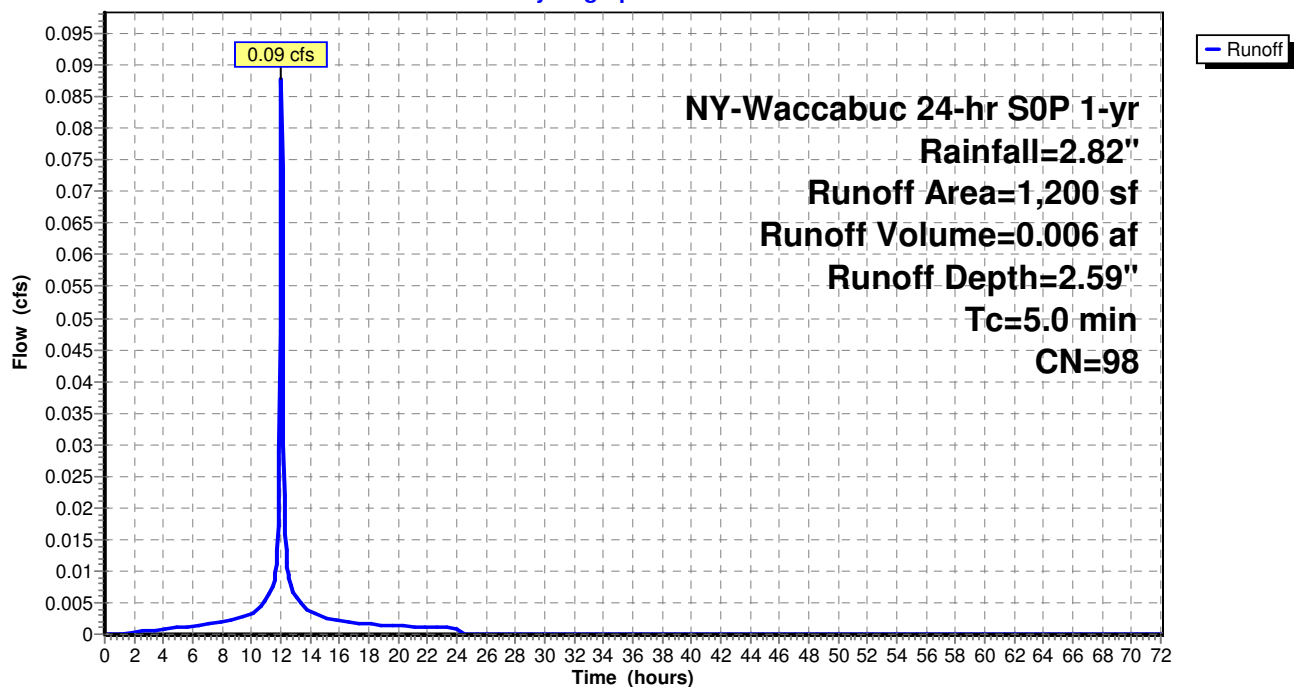
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

Area (sf)	CN	Description
1,200	98	Paved parking, HSG B
1,200		100.00% Impervious Area

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

### Subcatchment 1.2S: Boat House (Redevelopment)

Hydrograph





## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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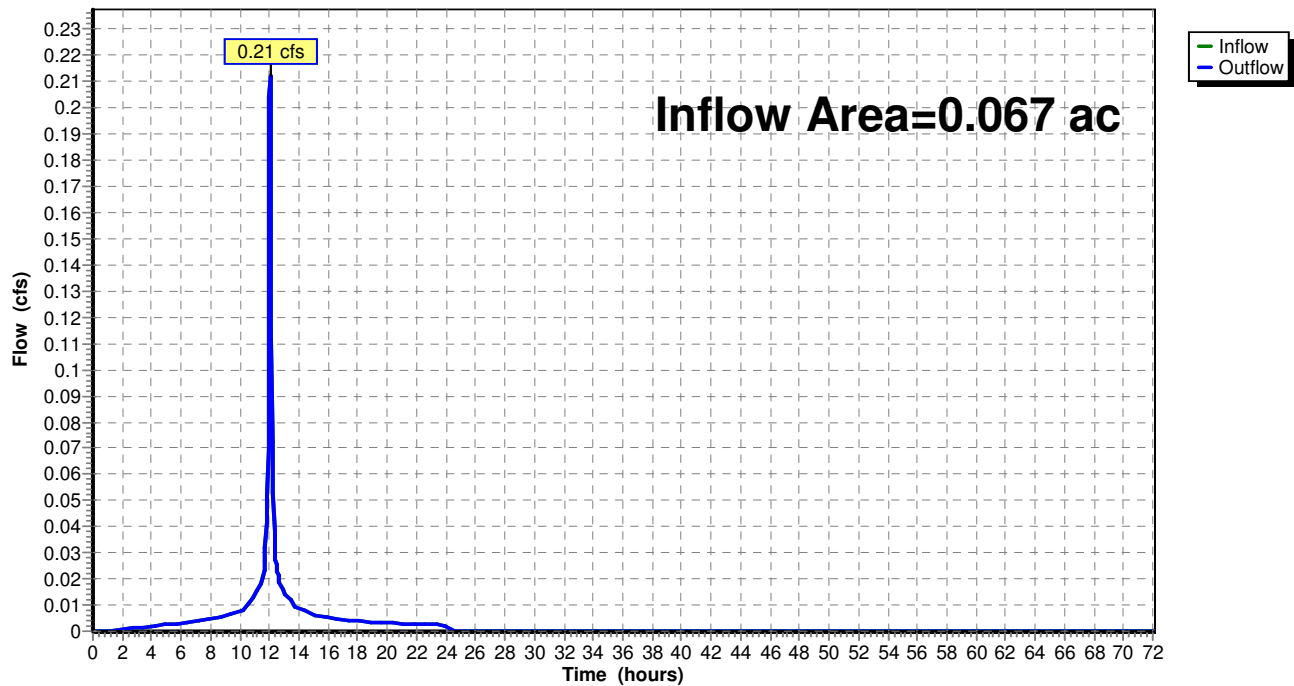
### Summary for Reach 1.2P: Cistern

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth = 2.59" for 1-yr event  
Inflow = 0.21 cfs @ 12.03 hrs, Volume= 0.014 af  
Outflow = 0.21 cfs @ 12.03 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Reach 1.2P: Cistern

#### Hydrograph



## Post-Development

NY-Waccabuc 24-hr SOP 1-yr Rainfall=2.82"

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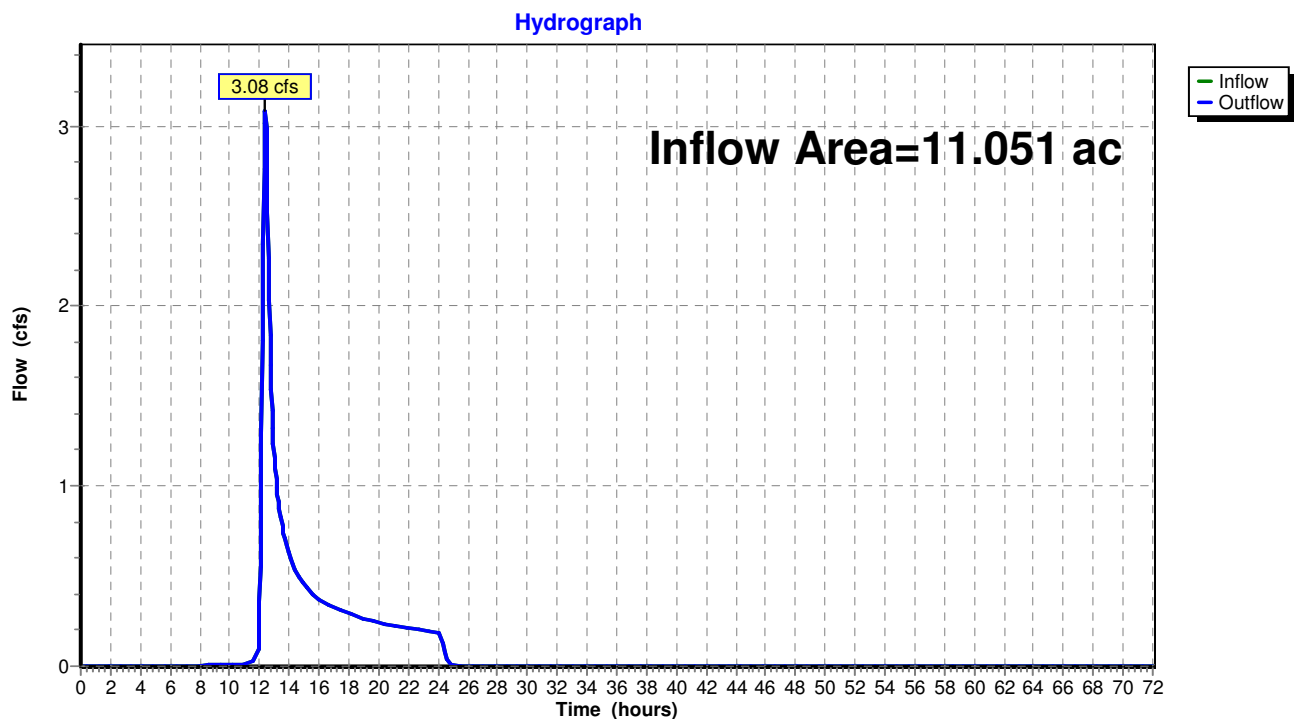
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### Summary for Reach DL 1: Design Line 1

Inflow Area = 11.051 ac, 4.90% Impervious, Inflow Depth = 0.53" for 1-yr event  
Inflow = 3.08 cfs @ 12.40 hrs, Volume= 0.485 af  
Outflow = 3.08 cfs @ 12.40 hrs, Volume= 0.485 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Reach DL 1: Design Line 1



## Post-Development

NY-Waccabuc 24-hr SOP 1-yr Rainfall=2.82"

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### Summary for Pond 1.1P: Infiltration System

Inflow Area = 0.455 ac, 56.06% Impervious, Inflow Depth = 1.26" for 1-yr event  
Inflow = 0.74 cfs @ 12.04 hrs, Volume= 0.048 af  
Outflow = 0.15 cfs @ 11.95 hrs, Volume= 0.048 af, Atten= 79%, Lag= 0.0 min  
Discarded = 0.15 cfs @ 11.95 hrs, Volume= 0.048 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Peak Elev= 472.14' @ 12.32 hrs Surf.Area= 0.030 ac Storage= 0.009 af

Plug-Flow detention time= 13.0 min calculated for 0.048 af (100% of inflow)  
Center-of-Mass det. time= 13.0 min ( 855.5 - 842.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	471.50'	0.028 af	<b>34.75'W x 38.04'L x 3.50'H Field A</b> 0.106 af Overall - 0.037 af Embedded = 0.069 af x 40.0% Voids
#2A	472.00'	0.037 af	<b>ADS StormTech SC-740</b> x 35 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 Row Length Adjustment= +0.44' x 6.45 sf x 7 rows
		0.065 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	471.50'	<b>5.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	473.50'	<b>6.0" Round Culvert</b> L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 473.50' / 473.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

**Discarded OutFlow** Max=0.15 cfs @ 11.95 hrs HW=471.56' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.15 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=471.50' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** ( Controls 0.00 cfs)

## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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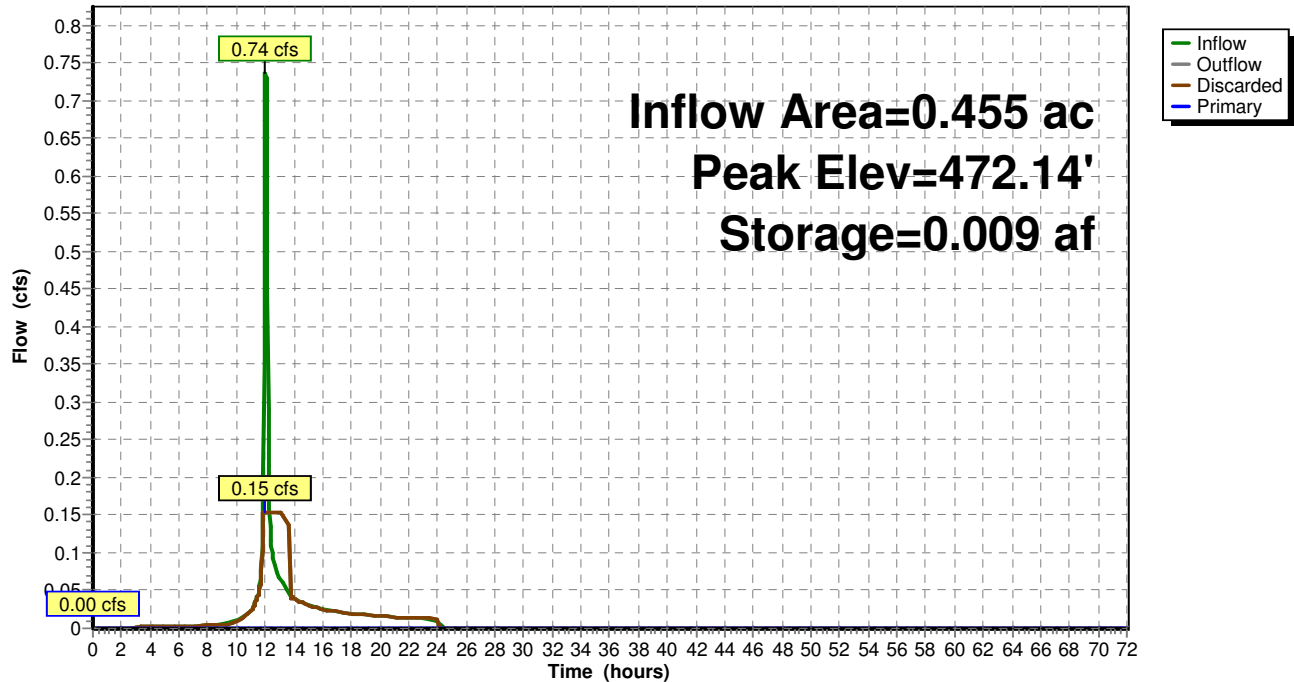
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### Pond 1.1P: Infiltration System

Hydrograph



**Post-Development***NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"*

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**Stage-Area-Storage for Pond 1.1P: Infiltration System**

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
471.50	<b>0.030</b>	0.000	474.10	0.030	0.053
471.55	0.030	0.001	474.15	0.030	0.054
471.60	0.030	0.001	474.20	0.030	0.055
471.65	0.030	0.002	474.25	0.030	0.056
471.70	0.030	0.002	474.30	0.030	0.056
471.75	0.030	0.003	474.35	0.030	0.057
471.80	0.030	0.004	474.40	0.030	0.058
471.85	0.030	0.004	474.45	0.030	0.058
471.90	0.030	0.005	474.50	0.030	0.059
471.95	0.030	0.005	474.55	0.030	0.059
472.00	0.030	0.006	474.60	0.030	0.060
472.05	0.030	0.007	474.65	0.030	0.061
472.10	0.030	0.009	474.70	0.030	0.061
472.15	0.030	0.010	474.75	0.030	0.062
472.20	0.030	0.011	474.80	0.030	0.062
472.25	0.030	0.012	474.85	0.030	0.063
472.30	0.030	0.014	474.90	0.030	0.064
472.35	0.030	0.015	474.95	0.030	0.064
472.40	0.030	0.016	475.00	0.030	<b>0.065</b>
472.45	0.030	0.017			
472.50	0.030	0.018			
472.55	0.030	0.020			
472.60	0.030	0.021			
472.65	0.030	0.022			
472.70	0.030	0.023			
472.75	0.030	0.024			
472.80	0.030	0.026			
472.85	0.030	0.027			
472.90	0.030	0.028			
472.95	0.030	0.029			
473.00	0.030	0.030			
473.05	0.030	0.032			
473.10	0.030	0.033			
473.15	0.030	0.034			
473.20	0.030	0.035			
473.25	0.030	0.036			
473.30	0.030	0.037			
473.35	0.030	0.038			
473.40	0.030	0.039			
473.45	0.030	0.040			
473.50	0.030	0.041			
473.55	0.030	0.043			
473.60	0.030	0.044			
473.65	0.030	0.045			
473.70	0.030	0.046			
473.75	0.030	0.047			
473.80	0.030	0.048			
473.85	0.030	0.049			
473.90	0.030	0.050			
473.95	0.030	0.050			
474.00	0.030	0.051			
474.05	0.030	0.052			

## Post-Development

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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### Summary for Pond FS 1.1: Flow Splitter

Inflow Area = 0.455 ac, 56.06% Impervious, Inflow Depth = 1.26" for 1-yr event  
Inflow = 0.74 cfs @ 12.04 hrs, Volume= 0.048 af  
Outflow = 0.74 cfs @ 12.04 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.74 cfs @ 12.04 hrs, Volume= 0.048 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 476.86' @ 12.04 hrs

Flood Elev= 480.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	476.00'	<b>6.0" Round Culvert</b> L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 476.00' / 473.50' S= 0.1250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	476.90'	<b>12.0" Round Culvert</b> L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 476.90' / 473.00' S= 0.0709 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.72 cfs @ 12.04 hrs HW=476.83' TW=471.82' (Dynamic Tailwater)

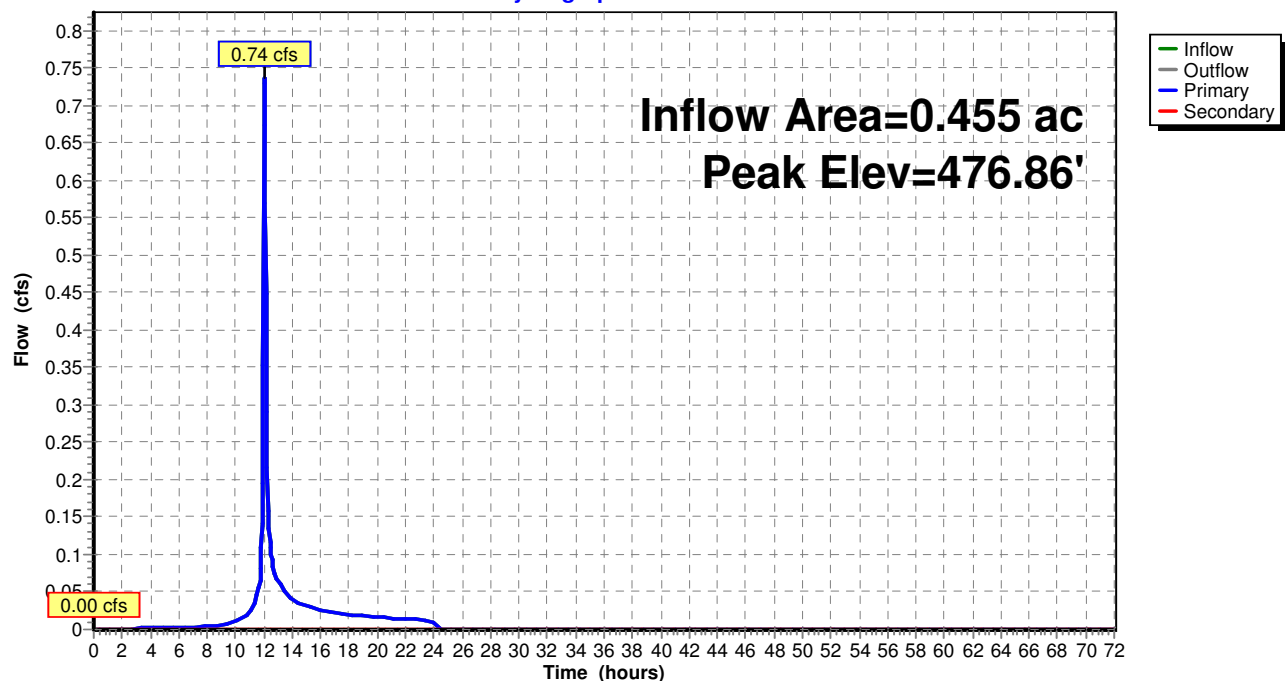
↑**1=Culvert** (Inlet Controls 0.72 cfs @ 3.65 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=476.00' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** ( Controls 0.00 cfs)

### Pond FS 1.1: Flow Splitter

#### Hydrograph



**Post-Development**

NY-Waccabuc 24-hr S0P 1-yr Rainfall=2.82"

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**Stage-Area-Storage for Pond FS 1.1: Flow Splitter**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
476.00	0	478.60	0
476.05	0	478.65	0
476.10	0	478.70	0
476.15	0	478.75	0
476.20	0	478.80	0
476.25	0	478.85	0
476.30	0	478.90	0
476.35	0	478.95	0
476.40	0	479.00	0
476.45	0	479.05	0
476.50	0	479.10	0
476.55	0	479.15	0
476.60	0	479.20	0
476.65	0	479.25	0
476.70	0	479.30	0
476.75	0	479.35	0
476.80	0	479.40	0
476.85	0	479.45	0
476.90	0	479.50	0
476.95	0	479.55	0
477.00	0	479.60	0
477.05	0	479.65	0
477.10	0	479.70	0
477.15	0	479.75	0
477.20	0	479.80	0
477.25	0	479.85	0
477.30	0	479.90	0
477.35	0	479.95	0
477.40	0	480.00	0
477.45	0	480.05	0
477.50	0	480.10	0
477.55	0	480.15	0
477.60	0	480.20	0
477.65	0		
477.70	0		
477.75	0		
477.80	0		
477.85	0		
477.90	0		
477.95	0		
478.00	0		
478.05	0		
478.10	0		
478.15	0		
478.20	0		
478.25	0		
478.30	0		
478.35	0		
478.40	0		
478.45	0		
478.50	0		
478.55	0		

**Post-Development**

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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**Summary for Subcatchment 1.0S:**

Runoff = 12.88 cfs @ 12.36 hrs, Volume= 1.693 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

Area (ac)	CN	Description
7.800	70	Woods, Good, HSG C
* 0.220	98	Paved parking
0.310	96	Gravel surface, HSG C
2.200	55	Woods, Good, HSG B
10.530	68	Weighted Average
10.310		97.91% Pervious Area
0.220		2.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0500	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.40"
6.9	550	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.1	23	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	51	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.4	565	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	280	0.0500	10.14	7.97	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.2	20	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
28.0	1,589	Total			



## Post-Development

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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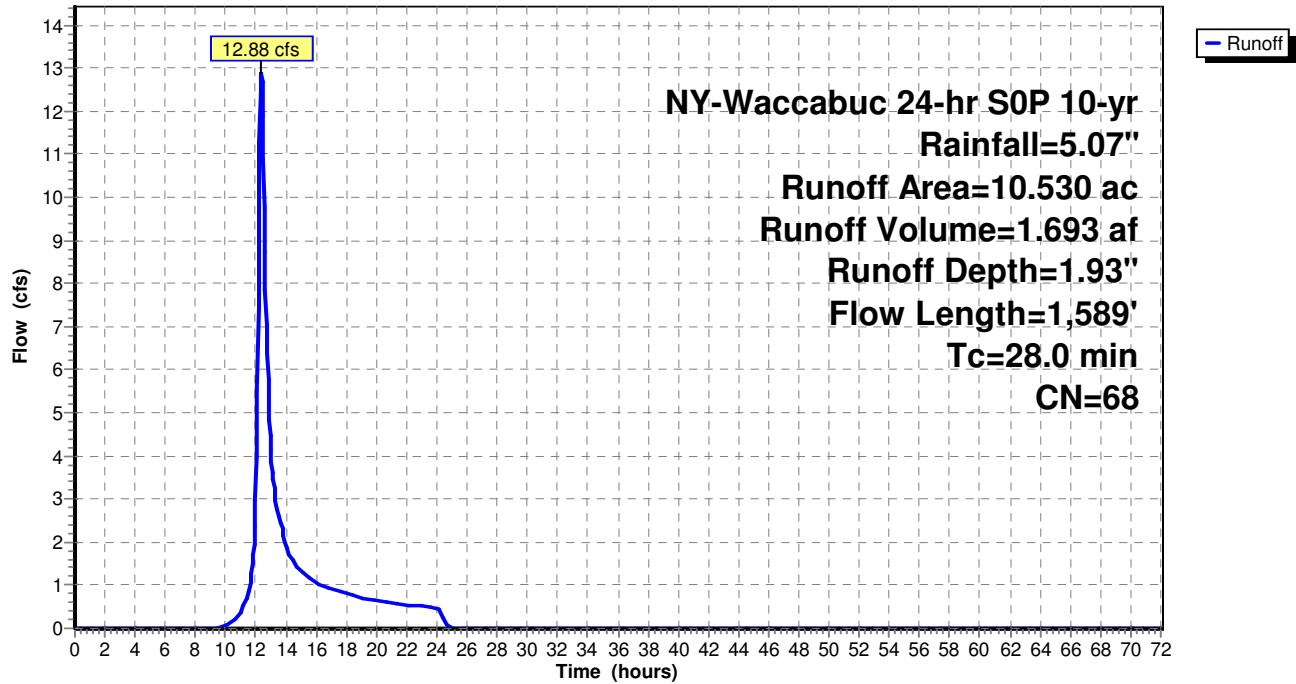
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### Subcatchment 1.0S:

#### Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

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### Summary for Subcatchment 1.1 S: Snack Bar (New)

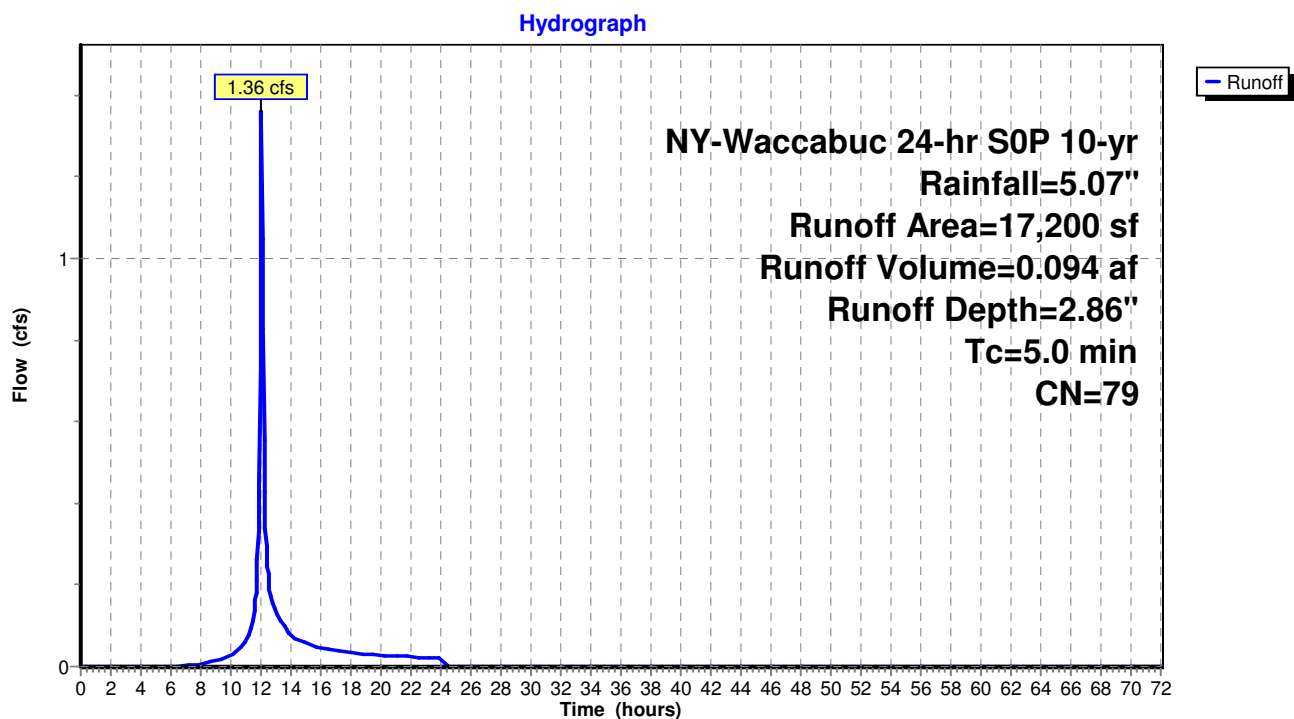
Runoff = 1.36 cfs @ 12.03 hrs, Volume= 0.094 af, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

Area (sf)	CN	Description
8,500	98	Paved parking, HSG B
8,700	61	>75% Grass cover, Good, HSG B
17,200	79	Weighted Average
8,700		50.58% Pervious Area
8,500		49.42% Impervious Area

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

### Subcatchment 1.1 S: Snack Bar (New)



## Post-Development

NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

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### Summary for Subcatchment 1.1S: Snack Bar (Redevelopment)

Runoff = 0.31 cfs @ 12.03 hrs, Volume= 0.024 af, Depth= 4.83"

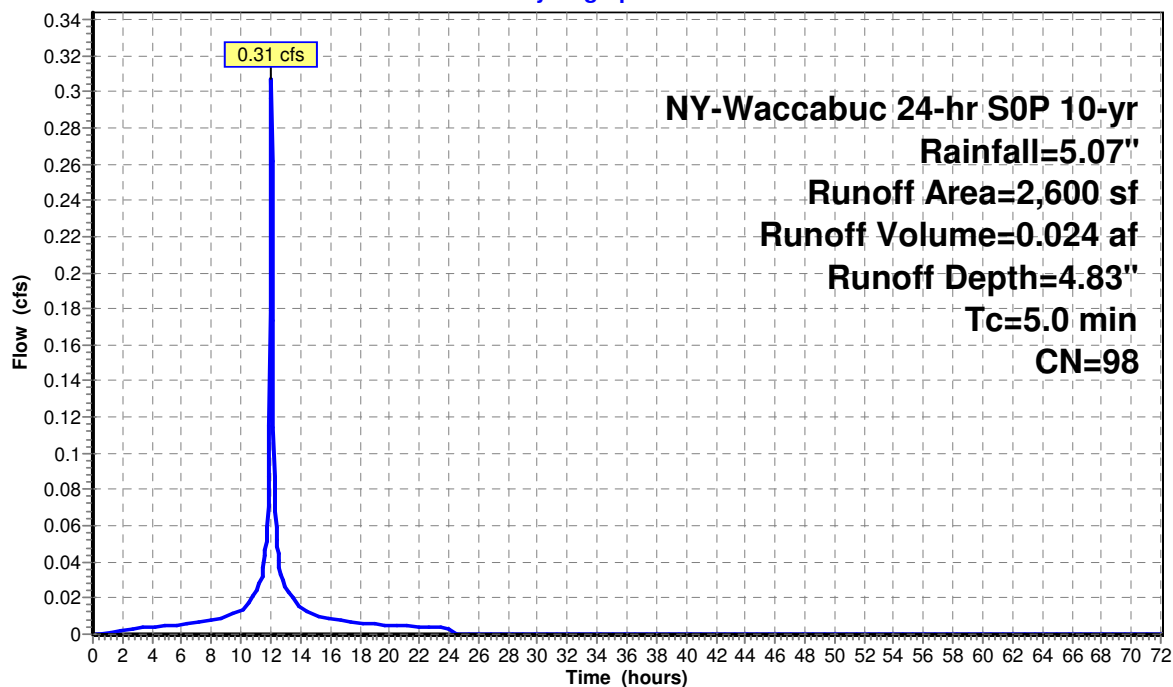
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

Area (sf)	CN	Description
2,600	98	Paved parking, HSG B
2,600		100.00% Impervious Area

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

### Subcatchment 1.1S: Snack Bar (Redevelopment)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

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### Summary for Subcatchment 1.2 S: Boat House (New)

Runoff = 0.20 cfs @ 12.03 hrs, Volume= 0.016 af, Depth= 4.83"

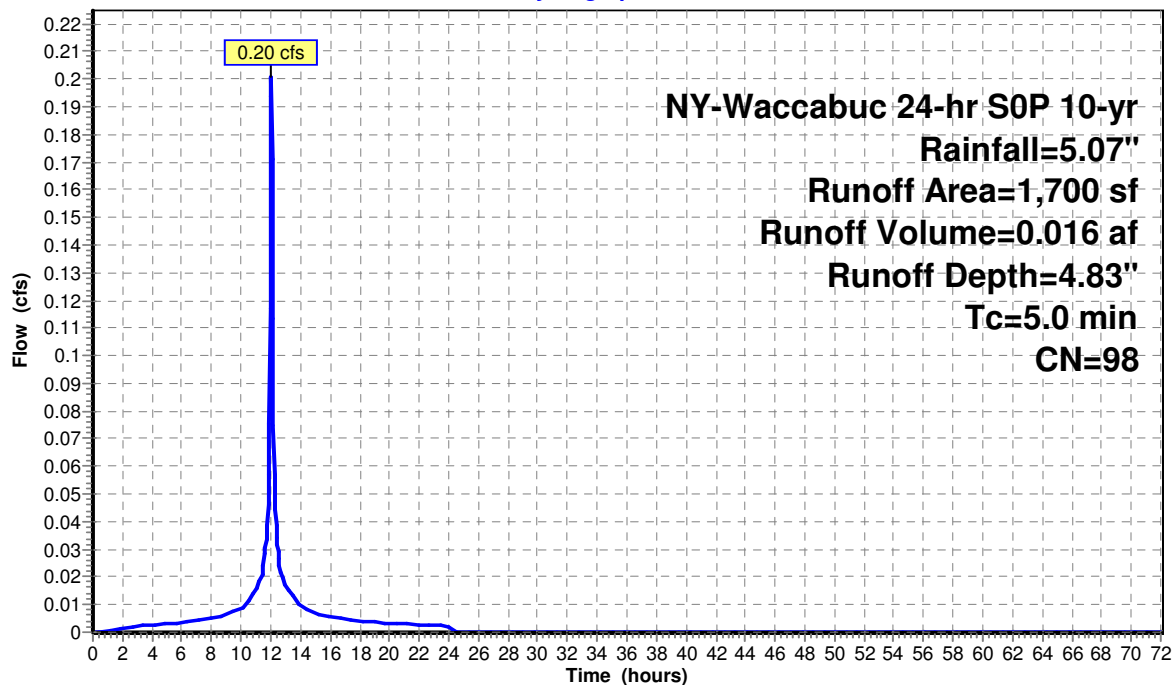
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

Area (sf)	CN	Description
1,700	98	Paved parking, HSG B
1,700		100.00% Impervious Area

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

### Subcatchment 1.2 S: Boat House (New)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

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### Summary for Subcatchment 1.2S: Boat House (Redevelopment)

Runoff = 0.14 cfs @ 12.03 hrs, Volume= 0.011 af, Depth= 4.83"

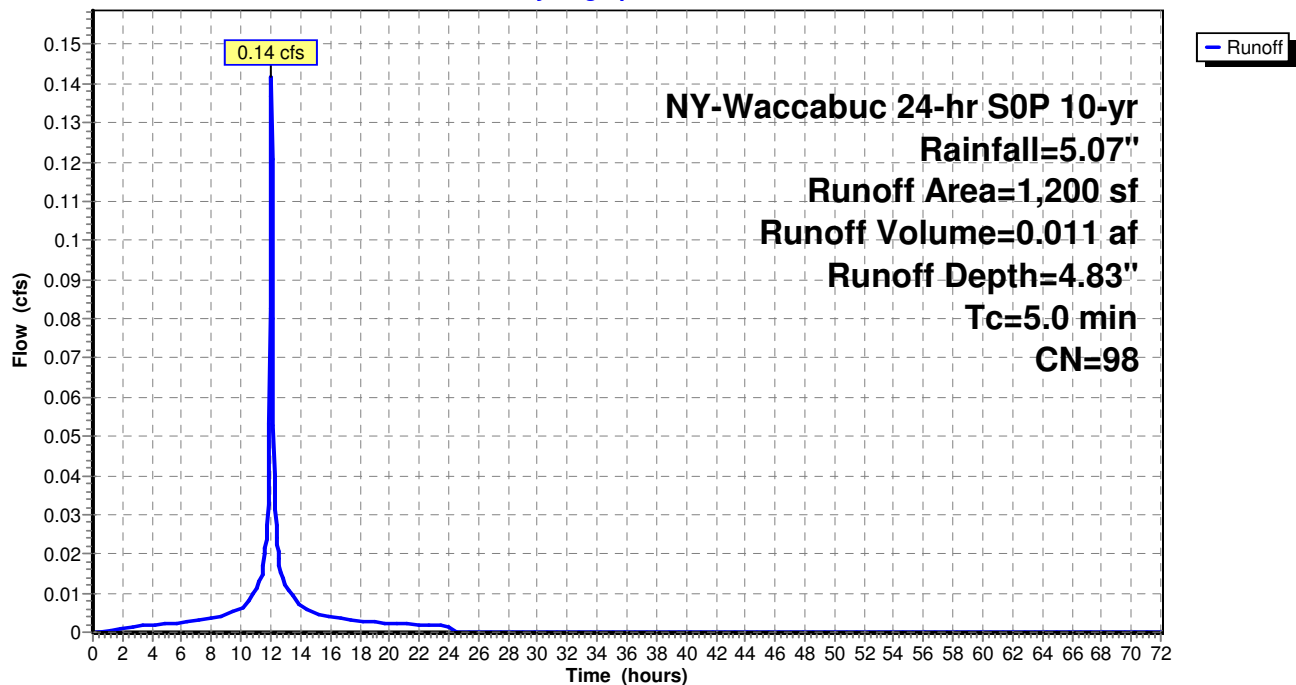
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

Area (sf)	CN	Description
1,200	98	Paved parking, HSG B
1,200		100.00% Impervious Area

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

### Subcatchment 1.2S: Boat House (Redevelopment)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"

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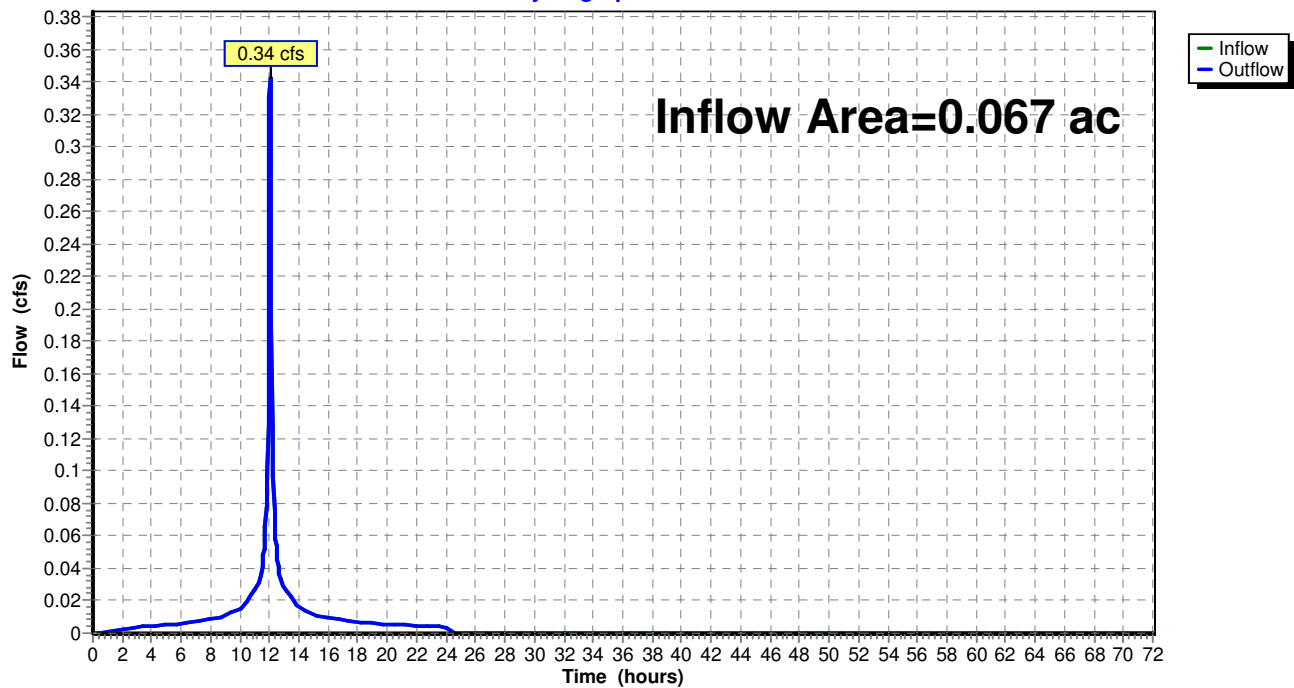
### Summary for Reach 1.2P: Cistern

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth = 4.83" for 10-yr event  
Inflow = 0.34 cfs @ 12.03 hrs, Volume= 0.027 af  
Outflow = 0.34 cfs @ 12.03 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Reach 1.2P: Cistern

#### Hydrograph



## Post-Development

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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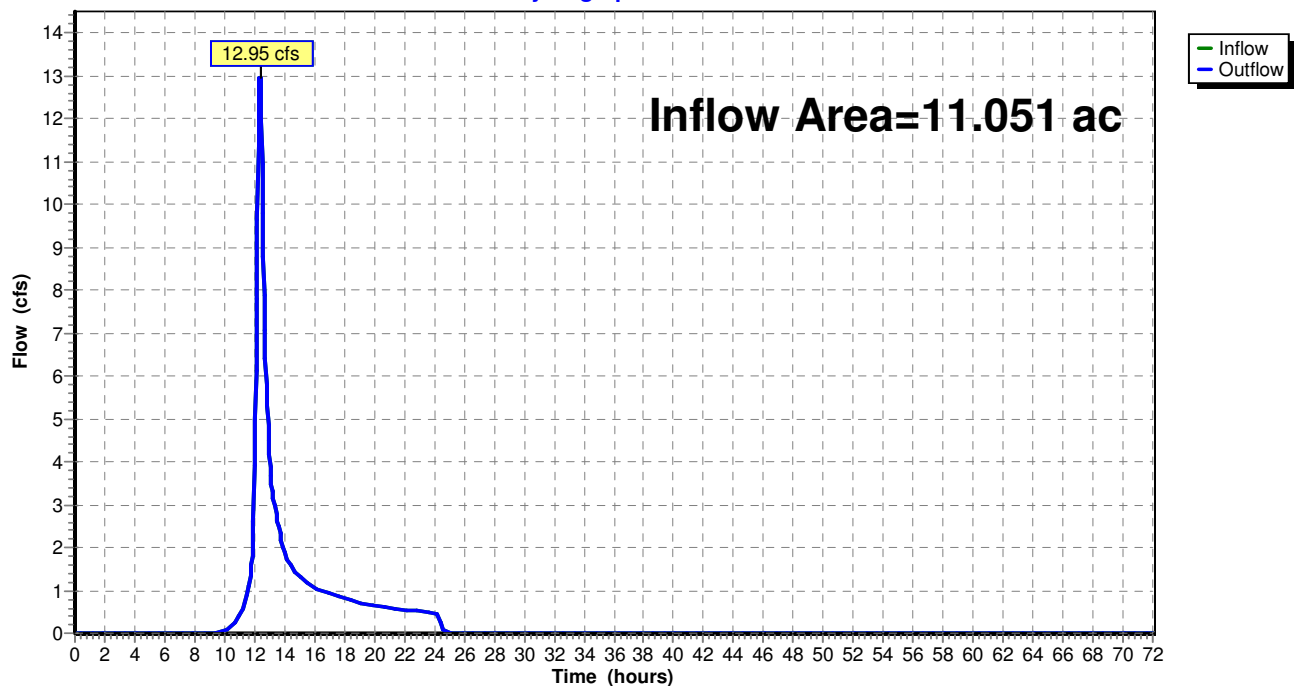
### Summary for Reach DL 1: Design Line 1

Inflow Area = 11.051 ac, 4.90% Impervious, Inflow Depth = 1.88" for 10-yr event  
Inflow = 12.95 cfs @ 12.36 hrs, Volume= 1.728 af  
Outflow = 12.95 cfs @ 12.36 hrs, Volume= 1.728 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Reach DL 1: Design Line 1

Hydrograph



## Post-Development

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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### Summary for Pond 1.1P: Infiltration System

Inflow Area = 0.455 ac, 56.06% Impervious, Inflow Depth = 2.92" for 10-yr event  
Inflow = 0.98 cfs @ 12.03 hrs, Volume= 0.111 af  
Outflow = 0.15 cfs @ 11.65 hrs, Volume= 0.111 af, Atten= 84%, Lag= 0.0 min  
Discarded = 0.15 cfs @ 11.65 hrs, Volume= 0.111 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Peak Elev= 472.96' @ 13.09 hrs Surf.Area= 0.030 ac Storage= 0.030 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
Center-of-Mass det. time= 58.1 min ( 883.2 - 825.0 )

Volume	Invert	Avail.Storage	Storage Description
#1A	471.50'	0.028 af	<b>34.75'W x 38.04'L x 3.50'H Field A</b> 0.106 af Overall - 0.037 af Embedded = 0.069 af x 40.0% Voids
#2A	472.00'	0.037 af	<b>ADS StormTech SC-740</b> x 35 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 Row Length Adjustment= +0.44' x 6.45 sf x 7 rows
		0.065 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	471.50'	<b>5.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	473.50'	<b>6.0" Round Culvert</b> L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 473.50' / 473.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

**Discarded OutFlow** Max=0.15 cfs @ 11.65 hrs HW=471.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=471.50' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** ( Controls 0.00 cfs)



## Post-Development

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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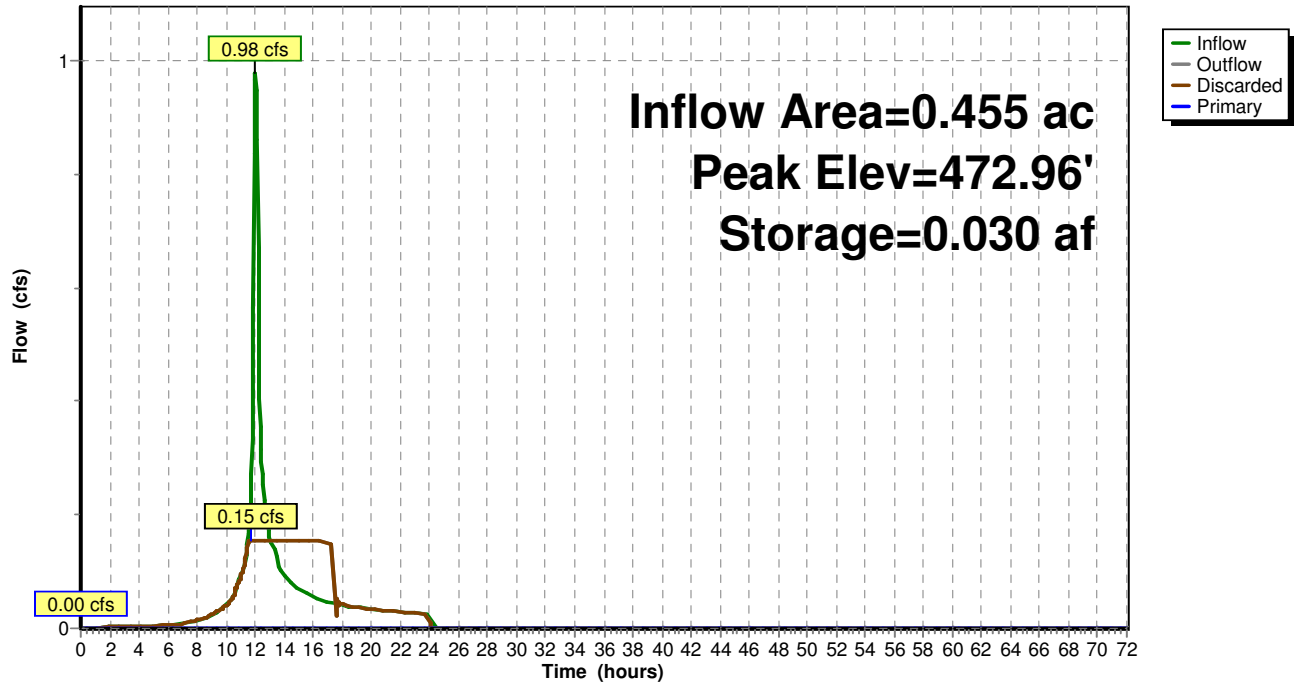
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### Pond 1.1P: Infiltration System

Hydrograph



**Post-Development***NY-Waccabuc 24-hr S0P 10-yr Rainfall=5.07"*

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**Stage-Area-Storage for Pond 1.1P: Infiltration System**

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
471.50	<b>0.030</b>	0.000	474.10	0.030	0.053
471.55	0.030	0.001	474.15	0.030	0.054
471.60	0.030	0.001	474.20	0.030	0.055
471.65	0.030	0.002	474.25	0.030	0.056
471.70	0.030	0.002	474.30	0.030	0.056
471.75	0.030	0.003	474.35	0.030	0.057
471.80	0.030	0.004	474.40	0.030	0.058
471.85	0.030	0.004	474.45	0.030	0.058
471.90	0.030	0.005	474.50	0.030	0.059
471.95	0.030	0.005	474.55	0.030	0.059
472.00	0.030	0.006	474.60	0.030	0.060
472.05	0.030	0.007	474.65	0.030	0.061
472.10	0.030	0.009	474.70	0.030	0.061
472.15	0.030	0.010	474.75	0.030	0.062
472.20	0.030	0.011	474.80	0.030	0.062
472.25	0.030	0.012	474.85	0.030	0.063
472.30	0.030	0.014	474.90	0.030	0.064
472.35	0.030	0.015	474.95	0.030	0.064
472.40	0.030	0.016	475.00	0.030	<b>0.065</b>
472.45	0.030	0.017			
472.50	0.030	0.018			
472.55	0.030	0.020			
472.60	0.030	0.021			
472.65	0.030	0.022			
472.70	0.030	0.023			
472.75	0.030	0.024			
472.80	0.030	0.026			
472.85	0.030	0.027			
472.90	0.030	0.028			
472.95	0.030	0.029			
473.00	0.030	0.030			
473.05	0.030	0.032			
473.10	0.030	0.033			
473.15	0.030	0.034			
473.20	0.030	0.035			
473.25	0.030	0.036			
473.30	0.030	0.037			
473.35	0.030	0.038			
473.40	0.030	0.039			
473.45	0.030	0.040			
473.50	0.030	0.041			
473.55	0.030	0.043			
473.60	0.030	0.044			
473.65	0.030	0.045			
473.70	0.030	0.046			
473.75	0.030	0.047			
473.80	0.030	0.048			
473.85	0.030	0.049			
473.90	0.030	0.050			
473.95	0.030	0.050			
474.00	0.030	0.051			
474.05	0.030	0.052			

## Post-Development

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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### Summary for Pond FS 1.1: Flow Splitter

Inflow Area = 0.455 ac, 56.06% Impervious, Inflow Depth = 3.12" for 10-yr event  
Inflow = 1.67 cfs @ 12.03 hrs, Volume= 0.118 af  
Outflow = 1.67 cfs @ 12.03 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.98 cfs @ 12.03 hrs, Volume= 0.111 af  
Secondary = 0.69 cfs @ 12.03 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 477.32' @ 12.03 hrs

Flood Elev= 480.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	476.00'	<b>6.0" Round Culvert</b> L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 476.00' / 473.50' S= 0.1250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	476.90'	<b>12.0" Round Culvert</b> L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 476.90' / 473.00' S= 0.0709 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.97 cfs @ 12.03 hrs HW=477.31' TW=472.22' (Dynamic Tailwater)

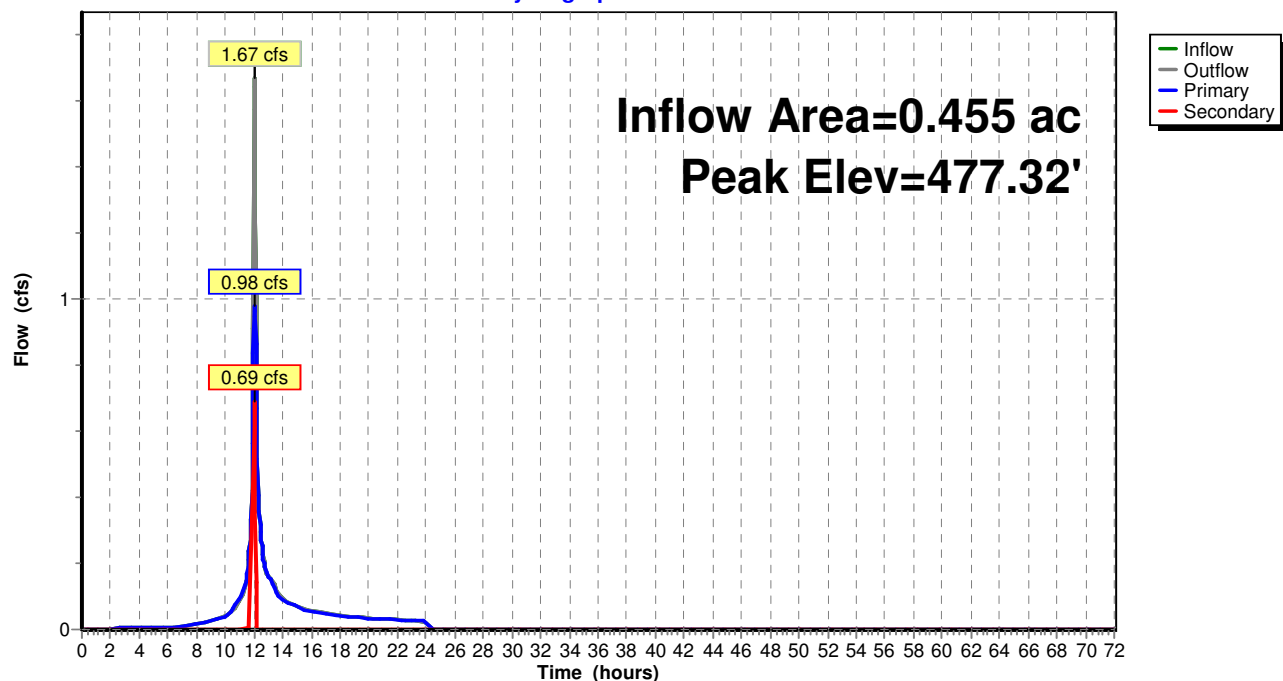
↑**1=Culvert** (Inlet Controls 0.97 cfs @ 4.95 fps)

**Secondary OutFlow** Max=0.65 cfs @ 12.03 hrs HW=477.31' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Inlet Controls 0.65 cfs @ 2.17 fps)

### Pond FS 1.1: Flow Splitter

Hydrograph



**Post-Development**

NY-Waccabuc 24-hr SOP 10-yr Rainfall=5.07"

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**Stage-Area-Storage for Pond FS 1.1: Flow Splitter**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
476.00	0	478.60	0
476.05	0	478.65	0
476.10	0	478.70	0
476.15	0	478.75	0
476.20	0	478.80	0
476.25	0	478.85	0
476.30	0	478.90	0
476.35	0	478.95	0
476.40	0	479.00	0
476.45	0	479.05	0
476.50	0	479.10	0
476.55	0	479.15	0
476.60	0	479.20	0
476.65	0	479.25	0
476.70	0	479.30	0
476.75	0	479.35	0
476.80	0	479.40	0
476.85	0	479.45	0
476.90	0	479.50	0
476.95	0	479.55	0
477.00	0	479.60	0
477.05	0	479.65	0
477.10	0	479.70	0
477.15	0	479.75	0
477.20	0	479.80	0
477.25	0	479.85	0
477.30	0	479.90	0
477.35	0	479.95	0
477.40	0	480.00	0
477.45	0	480.05	0
477.50	0	480.10	0
477.55	0	480.15	0
477.60	0	480.20	0
477.65	0		
477.70	0		
477.75	0		
477.80	0		
477.85	0		
477.90	0		
477.95	0		
478.00	0		
478.05	0		
478.10	0		
478.15	0		
478.20	0		
478.25	0		
478.30	0		
478.35	0		
478.40	0		
478.45	0		
478.50	0		
478.55	0		

**Post-Development**

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

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**Summary for Subcatchment 1.0S:**

Runoff = 32.28 cfs @ 12.35 hrs, Volume= 4.480 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

Area (ac)	CN	Description
7.800	70	Woods, Good, HSG C
* 0.220	98	Paved parking
0.310	96	Gravel surface, HSG C
2.200	55	Woods, Good, HSG B
10.530	68	Weighted Average
10.310		97.91% Pervious Area
0.220		2.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0500	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.40"
6.9	550	0.0700	1.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.1	23	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	51	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.4	565	0.1200	1.73		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	280	0.0500	10.14	7.97	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.2	20	0.1000	1.58		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
28.0	1,589	Total			

## Post-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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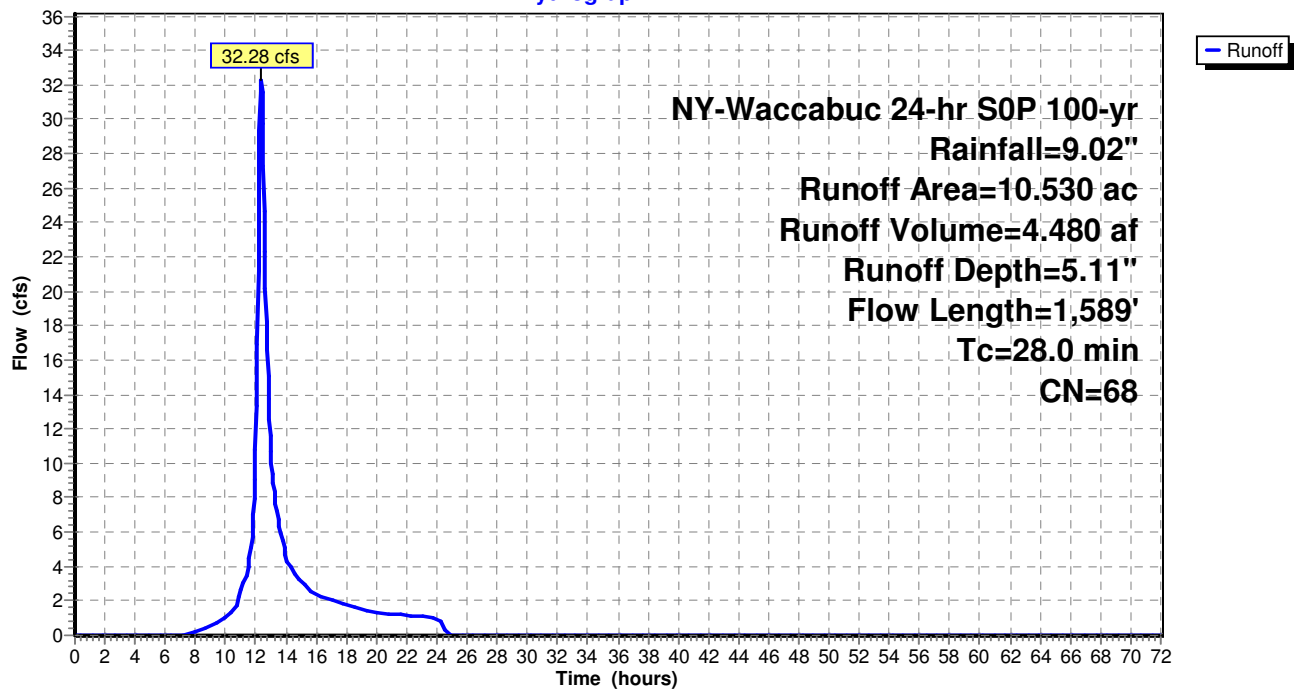
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### Subcatchment 1.0S:

#### Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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### Summary for Subcatchment 1.1 S: Snack Bar (New)

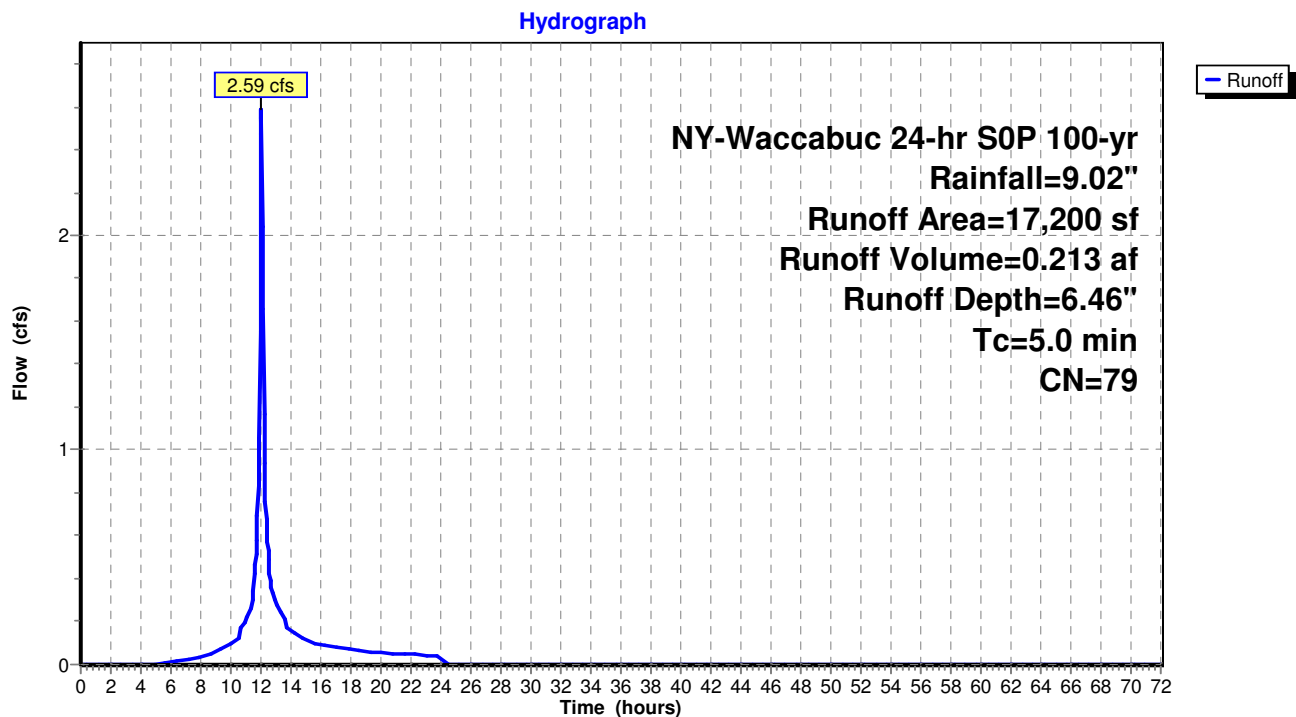
Runoff = 2.59 cfs @ 12.03 hrs, Volume= 0.213 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

Area (sf)	CN	Description
8,500	98	Paved parking, HSG B
8,700	61	>75% Grass cover, Good, HSG B
17,200	79	Weighted Average
8,700		50.58% Pervious Area
8,500		49.42% Impervious Area

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

### Subcatchment 1.1 S: Snack Bar (New)



## Post-Development

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

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### Summary for Subcatchment 1.1S: Snack Bar (Redevelopment)

Runoff = 0.47 cfs @ 12.03 hrs, Volume= 0.044 af, Depth= 8.78"

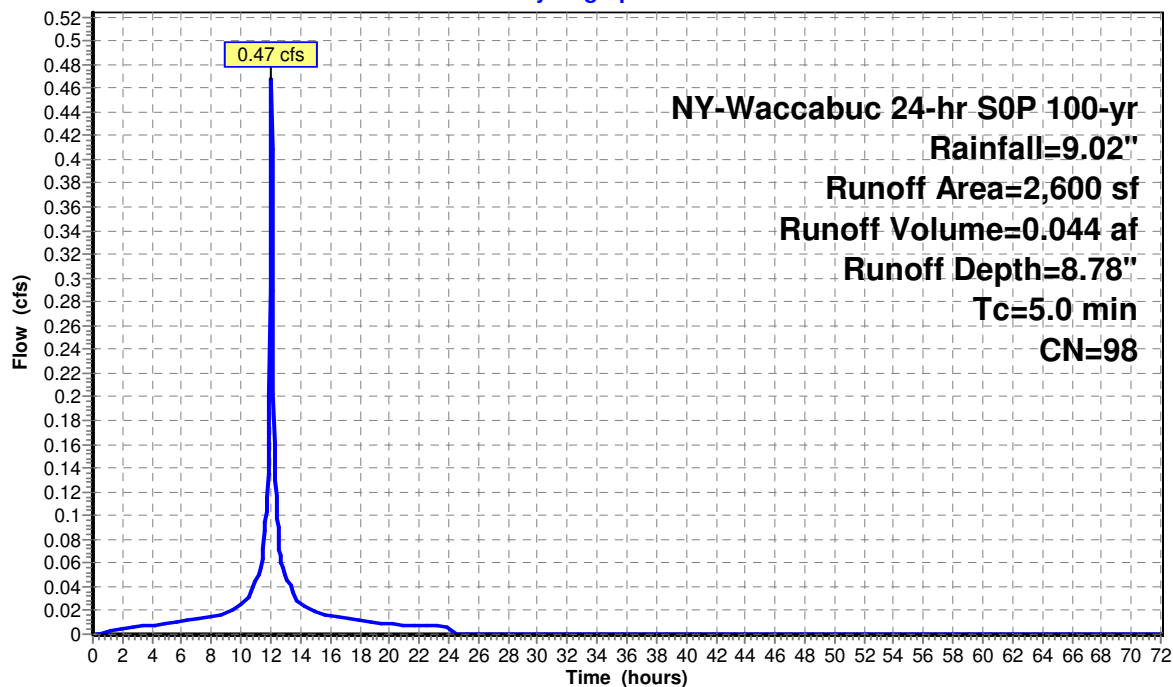
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

Area (sf)	CN	Description
2,600	98	Paved parking, HSG B
2,600		100.00% Impervious Area

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

### Subcatchment 1.1S: Snack Bar (Redevelopment)

Hydrograph





## Post-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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### Summary for Subcatchment 1.2 S: Boat House (New)

Runoff = 0.31 cfs @ 12.03 hrs, Volume= 0.029 af, Depth= 8.78"

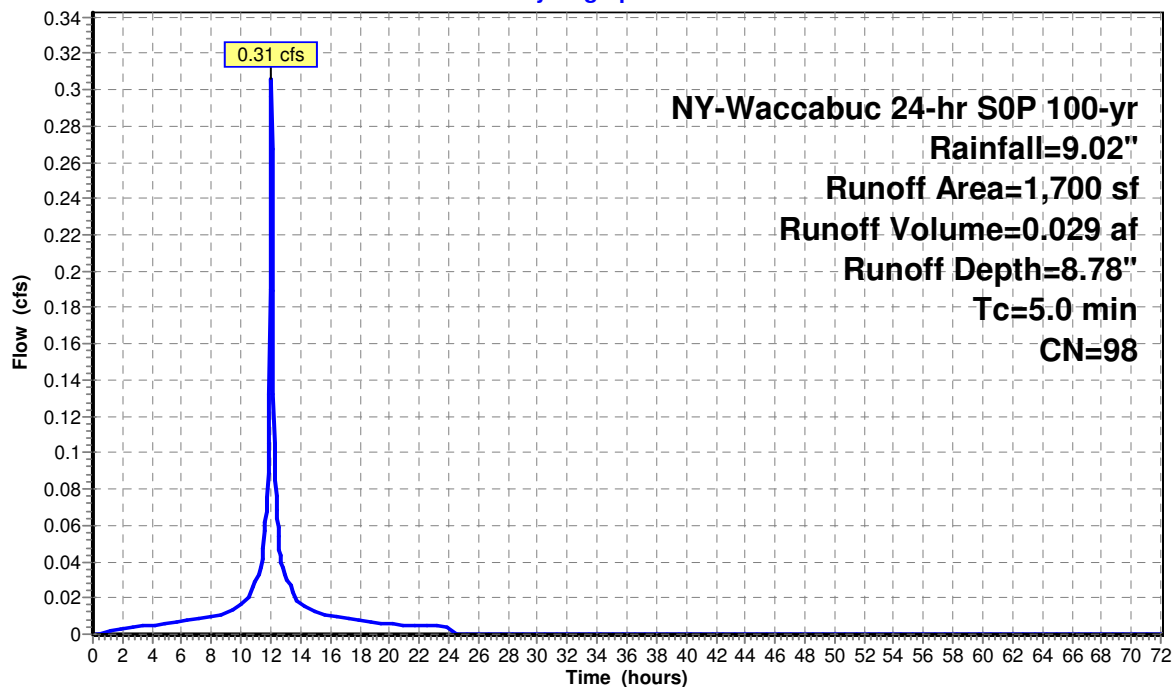
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

Area (sf)	CN	Description
1,700	98	Paved parking, HSG B
1,700		100.00% Impervious Area

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

### Subcatchment 1.2 S: Boat House (New)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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### Summary for Subcatchment 1.2S: Boat House (Redevelopment)

Runoff = 0.22 cfs @ 12.03 hrs, Volume= 0.020 af, Depth= 8.78"

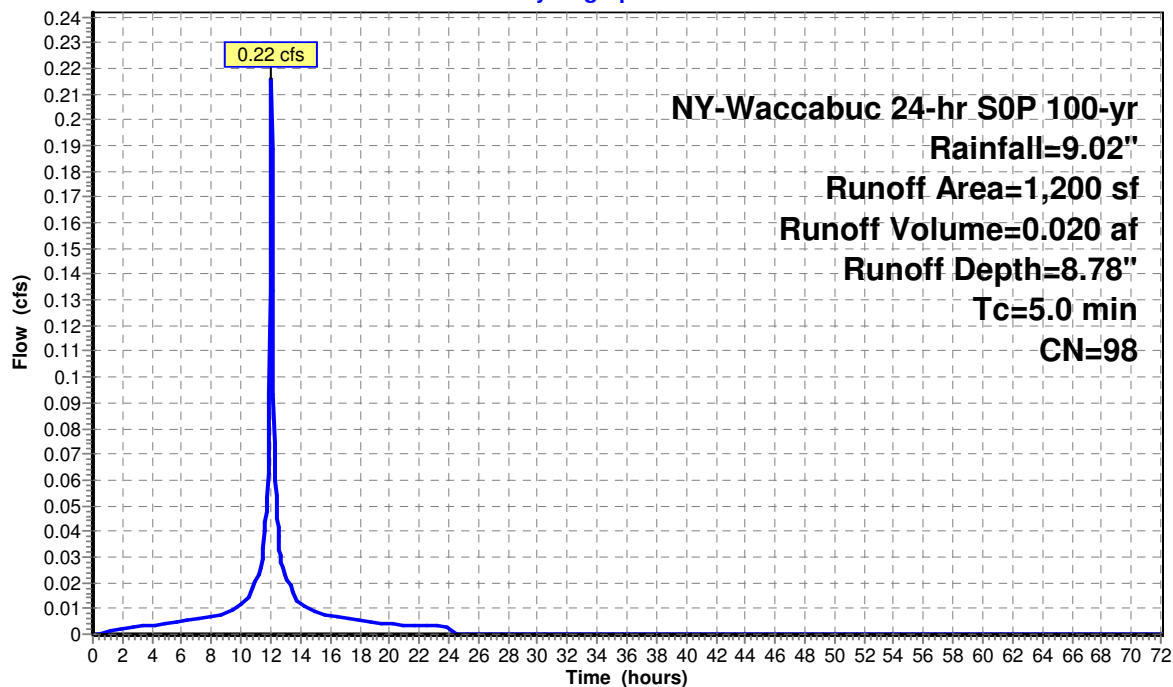
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

Area (sf)	CN	Description
1,200	98	Paved parking, HSG B
1,200		100.00% Impervious Area

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

### Subcatchment 1.2S: Boat House (Redevelopment)

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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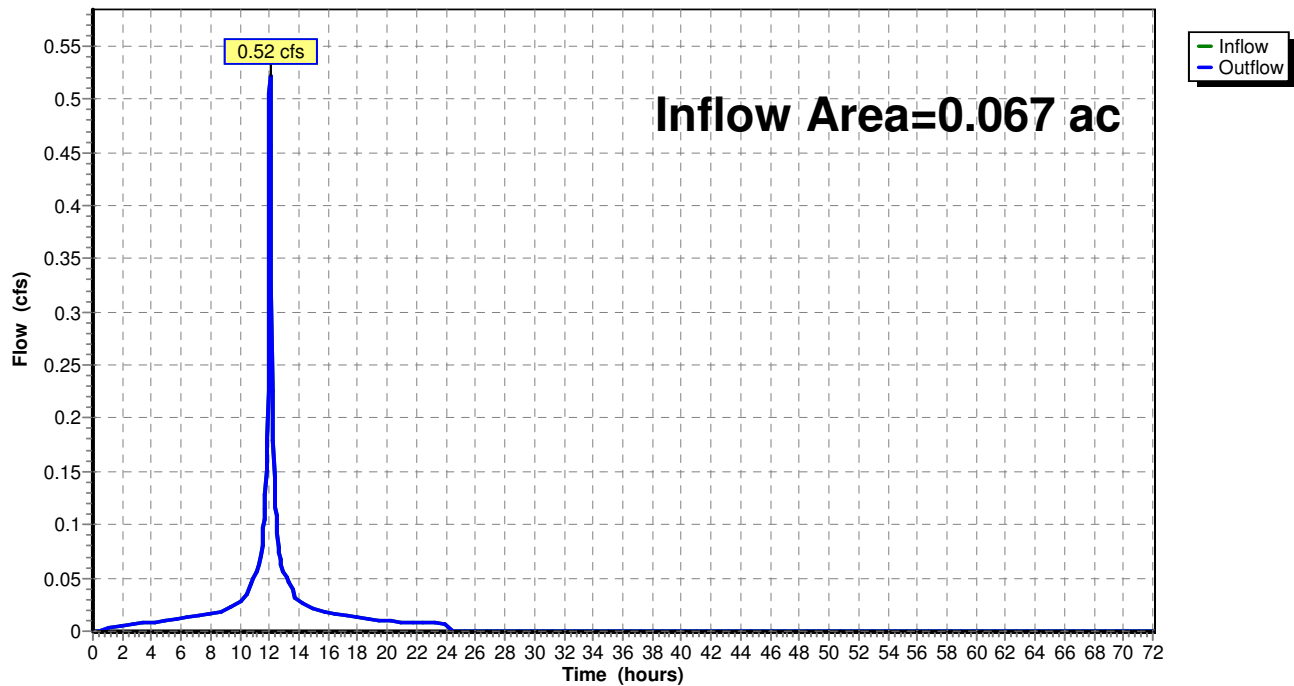
### Summary for Reach 1.2P: Cistern

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth = 8.78" for 100-yr event  
Inflow = 0.52 cfs @ 12.03 hrs, Volume= 0.049 af  
Outflow = 0.52 cfs @ 12.03 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Reach 1.2P: Cistern

#### Hydrograph



## Post-Development

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

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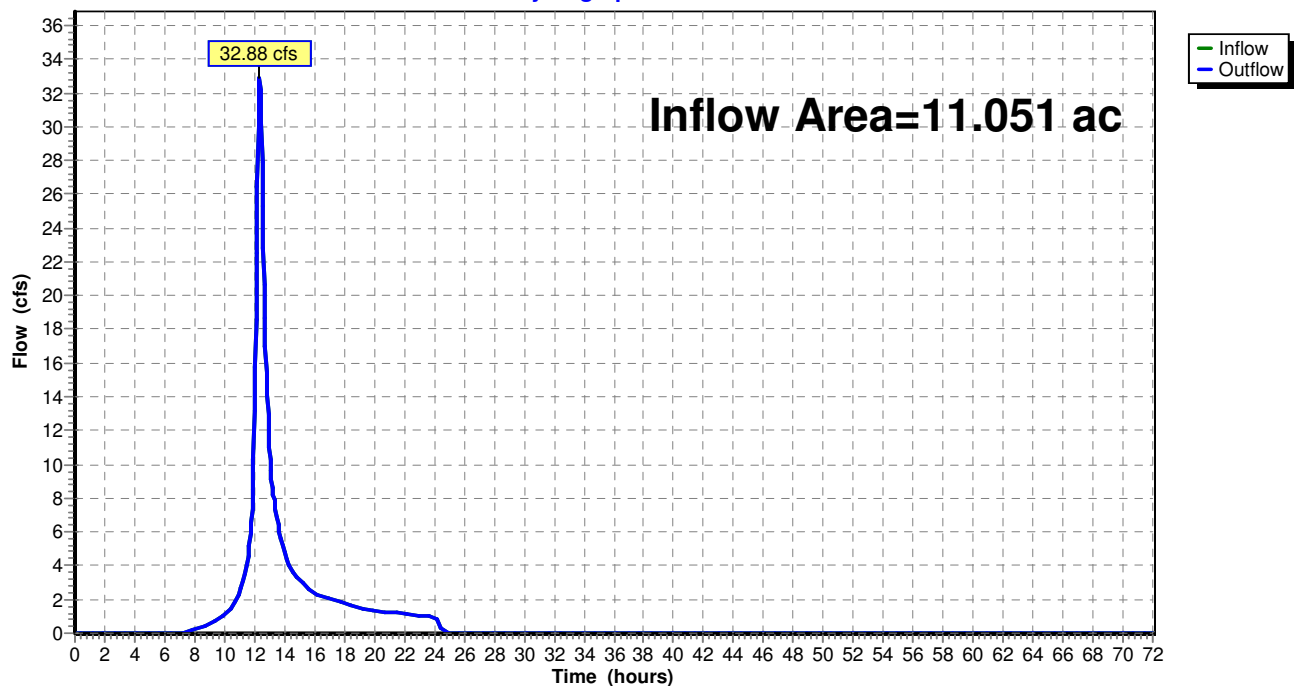
### Summary for Reach DL 1: Design Line 1

Inflow Area = 11.051 ac, 4.90% Impervious, Inflow Depth = 5.00" for 100-yr event  
Inflow = 32.88 cfs @ 12.35 hrs, Volume= 4.602 af  
Outflow = 32.88 cfs @ 12.35 hrs, Volume= 4.602 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Reach DL 1: Design Line 1

Hydrograph



## Post-Development

NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"

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### Summary for Pond 1.1P: Infiltration System

Inflow Area = 0.455 ac, 56.06% Impervious, Inflow Depth = 5.89" for 100-yr event  
Inflow = 1.13 cfs @ 12.03 hrs, Volume= 0.223 af  
Outflow = 0.65 cfs @ 12.47 hrs, Volume= 0.223 af, Atten= 42%, Lag= 26.7 min  
Discarded = 0.15 cfs @ 10.70 hrs, Volume= 0.182 af  
Primary = 0.50 cfs @ 12.47 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Peak Elev= 474.03' @ 12.47 hrs Surf.Area= 0.030 ac Storage= 0.052 af

Plug-Flow detention time= 87.3 min calculated for 0.223 af (100% of inflow)  
Center-of-Mass det. time= 87.2 min ( 894.2 - 807.0 )

Volume	Invert	Avail.Storage	Storage Description
#1A	471.50'	0.028 af	<b>34.75'W x 38.04'L x 3.50'H Field A</b> 0.106 af Overall - 0.037 af Embedded = 0.069 af x 40.0% Voids
#2A	472.00'	0.037 af	<b>ADS StormTech SC-740</b> x 35 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 Row Length Adjustment= +0.44' x 6.45 sf x 7 rows
		0.065 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	471.50'	<b>5.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#2	Primary	473.50'	<b>6.0" Round Culvert</b> L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 473.50' / 473.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

**Discarded OutFlow** Max=0.15 cfs @ 10.70 hrs HW=471.55' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.15 cfs)

**Primary OutFlow** Max=0.50 cfs @ 12.47 hrs HW=474.02' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 0.50 cfs @ 2.52 fps)

## Post-Development

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

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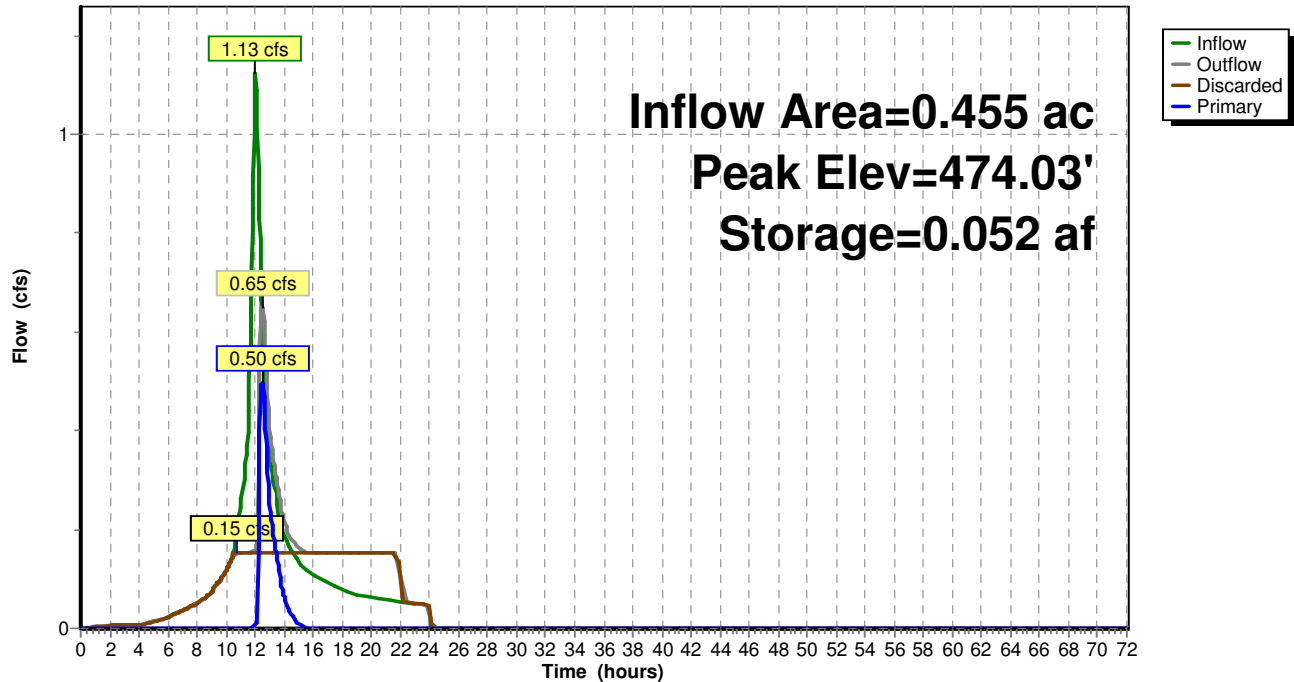
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### Pond 1.1P: Infiltration System

Hydrograph



**Post-Development**

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

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**Stage-Area-Storage for Pond 1.1P: Infiltration System**

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
471.50	<b>0.030</b>	0.000	474.10	0.030	0.053
471.55	0.030	0.001	474.15	0.030	0.054
471.60	0.030	0.001	474.20	0.030	0.055
471.65	0.030	0.002	474.25	0.030	0.056
471.70	0.030	0.002	474.30	0.030	0.056
471.75	0.030	0.003	474.35	0.030	0.057
471.80	0.030	0.004	474.40	0.030	0.058
471.85	0.030	0.004	474.45	0.030	0.058
471.90	0.030	0.005	474.50	0.030	0.059
471.95	0.030	0.005	474.55	0.030	0.059
472.00	0.030	0.006	474.60	0.030	0.060
472.05	0.030	0.007	474.65	0.030	0.061
472.10	0.030	0.009	474.70	0.030	0.061
472.15	0.030	0.010	474.75	0.030	0.062
472.20	0.030	0.011	474.80	0.030	0.062
472.25	0.030	0.012	474.85	0.030	0.063
472.30	0.030	0.014	474.90	0.030	0.064
472.35	0.030	0.015	474.95	0.030	0.064
472.40	0.030	0.016	475.00	0.030	<b>0.065</b>
472.45	0.030	0.017			
472.50	0.030	0.018			
472.55	0.030	0.020			
472.60	0.030	0.021			
472.65	0.030	0.022			
472.70	0.030	0.023			
472.75	0.030	0.024			
472.80	0.030	0.026			
472.85	0.030	0.027			
472.90	0.030	0.028			
472.95	0.030	0.029			
473.00	0.030	0.030			
473.05	0.030	0.032			
473.10	0.030	0.033			
473.15	0.030	0.034			
473.20	0.030	0.035			
473.25	0.030	0.036			
473.30	0.030	0.037			
473.35	0.030	0.038			
473.40	0.030	0.039			
473.45	0.030	0.040			
473.50	0.030	0.041			
473.55	0.030	0.043			
473.60	0.030	0.044			
473.65	0.030	0.045			
473.70	0.030	0.046			
473.75	0.030	0.047			
473.80	0.030	0.048			
473.85	0.030	0.049			
473.90	0.030	0.050			
473.95	0.030	0.050			
474.00	0.030	0.051			
474.05	0.030	0.052			

## Post-Development

NY-Waccabuc 24-hr SOP 100-yr Rainfall=9.02"

Prepared by Insite Engineering, Surveying & Landscape Architecture, P.C.

Printed 2/4/2022

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### Summary for Pond FS 1.1: Flow Splitter

Inflow Area = 0.455 ac, 56.06% Impervious, Inflow Depth = 6.77" for 100-yr event  
Inflow = 3.05 cfs @ 12.03 hrs, Volume= 0.256 af  
Outflow = 3.05 cfs @ 12.03 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min  
Primary = 1.13 cfs @ 12.03 hrs, Volume= 0.223 af  
Secondary = 1.93 cfs @ 12.03 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 477.67' @ 12.03 hrs

Flood Elev= 480.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	476.00'	<b>6.0" Round Culvert</b> L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 476.00' / 473.50' S= 0.1250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	476.90'	<b>12.0" Round Culvert</b> L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 476.90' / 473.00' S= 0.0709 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.12 cfs @ 12.03 hrs HW=477.65' TW=473.18' (Dynamic Tailwater)

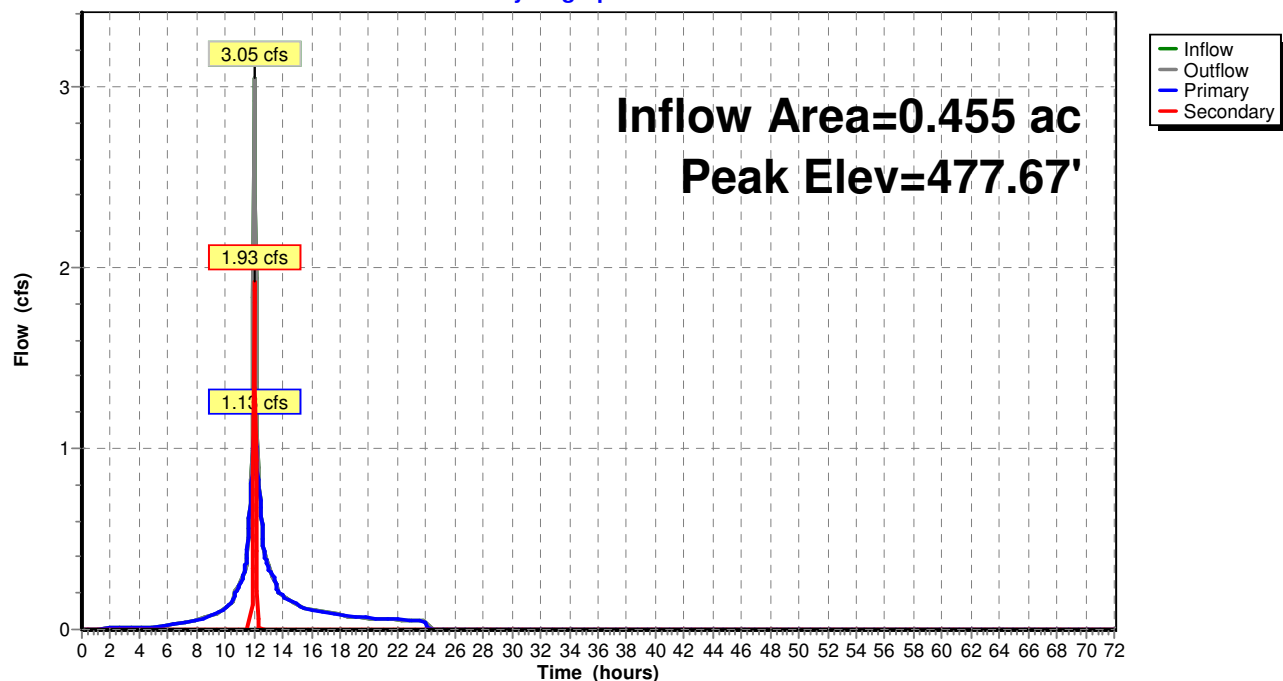
↑**1=Culvert** (Inlet Controls 1.12 cfs @ 5.69 fps)

**Secondary OutFlow** Max=1.85 cfs @ 12.03 hrs HW=477.65' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Inlet Controls 1.85 cfs @ 2.94 fps)

### Pond FS 1.1: Flow Splitter

Hydrograph





**Post-Development***NY-Waccabuc 24-hr S0P 100-yr Rainfall=9.02"*

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**Stage-Area-Storage for Pond FS 1.1: Flow Splitter**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
476.00	0	478.60	0
476.05	0	478.65	0
476.10	0	478.70	0
476.15	0	478.75	0
476.20	0	478.80	0
476.25	0	478.85	0
476.30	0	478.90	0
476.35	0	478.95	0
476.40	0	479.00	0
476.45	0	479.05	0
476.50	0	479.10	0
476.55	0	479.15	0
476.60	0	479.20	0
476.65	0	479.25	0
476.70	0	479.30	0
476.75	0	479.35	0
476.80	0	479.40	0
476.85	0	479.45	0
476.90	0	479.50	0
476.95	0	479.55	0
477.00	0	479.60	0
477.05	0	479.65	0
477.10	0	479.70	0
477.15	0	479.75	0
477.20	0	479.80	0
477.25	0	479.85	0
477.30	0	479.90	0
477.35	0	479.95	0
477.40	0	480.00	0
477.45	0	480.05	0
477.50	0	480.10	0
477.55	0	480.15	0
477.60	0	480.20	0
477.65	0		
477.70	0		
477.75	0		
477.80	0		
477.85	0		
477.90	0		
477.95	0		
478.00	0		
478.05	0		
478.10	0		
478.15	0		
478.20	0		
478.25	0		
478.30	0		
478.35	0		
478.40	0		
478.45	0		
478.50	0		
478.55	0		

**APPENDIX D**  
**NYSDEC SPDES for Construction Activities Construction Site Log Book**

**APPENDIX F**  
**CONSTRUCTION SITE INSPECTION**  
**AND MAINTENANCE LOG BOOK**

**STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION  
ACTIVITIES**

**SAMPLE CONSTRUCTION SITE LOG BOOK**

Table of Contents

---

- I. Pre-Construction Meeting Documents
  - a. Preamble to Site Assessment and Inspections
  - b. Pre-Construction Site Assessment Checklist
  
- II. Construction Duration Inspections
  - a. Directions
  - b. Modification to the SWPPP

## I. PRE-CONSTRUCTION MEETING DOCUMENTS

**Project Name** \_\_\_\_\_  
**Permit No.** \_\_\_\_\_ **Date of Authorization** \_\_\_\_\_  
**Name of Operator** \_\_\_\_\_  
**Prime Contractor** \_\_\_\_\_

### a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector<sup>1</sup> conduct an assessment of the site prior to the commencement of construction<sup>2</sup> and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization<sup>3</sup> using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

## **b. Pre-construction Site Assessment Checklist**

**(NOTE: Provide comments below as necessary)**

### **1. Notice of Intent, SWPPP, and Contractors Certification:**

**Yes No NA**

- ☐ ☐ ☐ Has a Notice of Intent been filed with the NYS Department of Conservation?
- ☐ ☐ ☐ Is the SWPPP on-site? Where? \_\_\_\_\_
- ☐ ☐ ☐ Is the Plan current? What is the latest revision date? \_\_\_\_\_
- ☐ ☐ ☐ Is a copy of the NOI (with brief description) onsite? Where? \_\_\_\_\_
- ☐ ☐ ☐ Have all contractors involved with stormwater related activities signed a contractor's certification?

### **2. Resource Protection**

**Yes No NA**

- ☐ ☐ ☐ Are construction limits clearly flagged or fenced?
- ☐ ☐ ☐ Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
- ☐ ☐ ☐ Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

### **3. Surface Water Protection**

**Yes No NA**

- ☐ ☐ ☐ Clean stormwater runoff has been diverted from areas to be disturbed.
- ☐ ☐ ☐ Bodies of water located either on site or in the vicinity of the site have been identified and protected.
- ☐ ☐ ☐ Appropriate practices to protect on-site or downstream surface water are installed.
- ☐ ☐ ☐ Are clearing and grading operations divided into areas <5 acres?

### **4. Stabilized Construction Access**

**Yes No NA**

- ☐ ☐ ☐ A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
- ☐ ☐ ☐ Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
- ☐ ☐ ☐ Sediment tracked onto public streets is removed or cleaned on a regular basis.

### **5. Sediment Controls**

**Yes No NA**

- ☐ ☐ ☐ Silt fence material and installation comply with the standard drawing and specifications.
- ☐ ☐ ☐ Silt fences are installed at appropriate spacing intervals
- ☐ ☐ ☐ Sediment/detention basin was installed as first land disturbing activity.
- ☐ ☐ ☐ Sediment traps and barriers are installed.

### **6. Pollution Prevention for Waste and Hazardous Materials**

**Yes No NA**

- ☐ ☐ ☐ The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
- ☐ ☐ ☐ The plan is contained in the SWPPP on page \_\_\_\_\_
- ☐ ☐ ☐ Appropriate materials to control spills are onsite. Where? \_\_\_\_\_

## II. CONSTRUCTION DURATION INSPECTIONS

### a. Directions:

**Inspection Forms will be filled out during the entire construction phase of the project.**

Required Elements:

- 1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
- 2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;
- 3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;
- 4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);
- 5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and
- 6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

**SITE PLAN/SKETCH**

\_\_\_\_\_  
**Inspector (print name)**

\_\_\_\_\_  
**Date of Inspection**

\_\_\_\_\_  
**Qualified Inspector (print name)**

\_\_\_\_\_  
**Qualified Inspector Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.



**Maintaining Water Quality****Yes No NA**

- ☐ ☐ ☐ Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
- ☐ ☐ ☐ Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
- ☐ ☐ ☐ All disturbance is within the limits of the approved plans.
- ☐ ☐ ☐ Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

**Housekeeping**

## 1. General Site Conditions

**Yes No NA**

- ☐ ☐ ☐ Is construction site litter, debris and spoils appropriately managed?
- ☐ ☐ ☐ Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
- ☐ ☐ ☐ Is construction impacting the adjacent property?
- ☐ ☐ ☐ Is dust adequately controlled?

## 2. Temporary Stream Crossing

**Yes No NA**

- ☐ ☐ ☐ Maximum diameter pipes necessary to span creek without dredging are installed.
- ☐ ☐ ☐ Installed non-woven geotextile fabric beneath approaches.
- ☐ ☐ ☐ Is fill composed of aggregate (no earth or soil)?
- ☐ ☐ ☐ Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

## 3. Stabilized Construction Access

**Yes No NA**

- ☐ ☐ ☐ Stone is clean enough to effectively remove mud from vehicles.
- ☐ ☐ ☐ Installed per standards and specifications?
- ☐ ☐ ☐ Does all traffic use the stabilized entrance to enter and leave site?
- ☐ ☐ ☐ Is adequate drainage provided to prevent ponding at entrance?

**Runoff Control Practices**

## 1. Excavation Dewatering

**Yes No NA**

- ☐ ☐ ☐ Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
- ☐ ☐ ☐ Clean water from upstream pool is being pumped to the downstream pool.
- ☐ ☐ ☐ Sediment laden water from work area is being discharged to a silt-trapping device.
- ☐ ☐ ☐ Constructed upstream berm with one-foot minimum freeboard.

**Runoff Control Practices (continued)**

## 2. Flow Spreader

**Yes No NA**

- ☐ ☐ ☐ Installed per plan.
- ☐ ☐ ☐ Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
- ☐ ☐ ☐ Flow sheets out of level spreader without erosion on downstream edge.

## 3. Interceptor Dikes and Swales

**Yes No NA**

- ☐ ☐ ☐ Installed per plan with minimum side slopes 2H:1V or flatter.
- ☐ ☐ ☐ Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
- ☐ ☐ ☐ Sediment-laden runoff directed to sediment trapping structure

## 4. Stone Check Dam

**Yes No NA**

- ☐ ☐ ☐ Is channel stable? (flow is not eroding soil underneath or around the structure).
- ☐ ☐ ☐ Check is in good condition (rocks in place and no permanent pools behind the structure).
- ☐ ☐ ☐ Has accumulated sediment been removed?.

## 5. Rock Outlet Protection

**Yes No NA**

- ☐ ☐ ☐ Installed per plan.
- ☐ ☐ ☐ Installed concurrently with pipe installation.

**Soil Stabilization**

## 1. Topsoil and Spoil Stockpiles

**Yes No NA**

- ☐ ☐ ☐ Stockpiles are stabilized with vegetation and/or mulch.
- ☐ ☐ ☐ Sediment control is installed at the toe of the slope.

## 2. Revegetation

**Yes No NA**

- ☐ ☐ ☐ Temporary seedings and mulch have been applied to idle areas.
- ☐ ☐ ☐ 4 inches minimum of topsoil has been applied under permanent seedings

**Sediment Control Practices**

## 1. Silt Fence and Linear Barriers

**Yes No NA**

- ☐ ☐ ☐ Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
- ☐ ☐ ☐ Joints constructed by wrapping the two ends together for continuous support.
- ☐ ☐ ☐ Fabric buried 6 inches minimum.
- ☐ ☐ ☐ Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is \_\_\_\_% of design capacity.

**Sediment Control Practices (continued)**

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

**Yes No NA**

- ☐ ☐ ☐ Installed concrete blocks lengthwise so open ends face outward, not upward.  
☐ ☐ ☐ Placed wire screen between No. 3 crushed stone and concrete blocks.  
☐ ☐ ☐ Drainage area is 1 acre or less.  
☐ ☐ ☐ Excavated area is 900 cubic feet.  
☐ ☐ ☐ Excavated side slopes should be 2:1.  
☐ ☐ ☐ 2" x 4" frame is constructed and structurally sound.  
☐ ☐ ☐ Posts 3-foot maximum spacing between posts.  
☐ ☐ ☐ Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.  
☐ ☐ ☐ Posts are stable, fabric is tight and without rips or frayed areas.  
☐ ☐ ☐ Manufactured insert fabric is free of tears and punctures.  
☐ ☐ ☐ Filter Sock is not torn or flattened and fill material is contained within the mesh sock.

Sediment accumulation \_\_\_\_% of design capacity.

3. Temporary Sediment Trap

**Yes No NA**

- ☐ ☐ ☐ Outlet structure is constructed per the approved plan or drawing.  
☐ ☐ ☐ Geotextile fabric has been placed beneath rock fill.  
☐ ☐ ☐ Sediment trap slopes and disturbed areas are stabilized.

Sediment accumulation is \_\_\_\_% of design capacity.

4. Temporary Sediment Basin

**Yes No NA**

- ☐ ☐ ☐ Basin and outlet structure constructed per the approved plan.  
☐ ☐ ☐ Basin side slopes are stabilized with seed/mulch.  
☐ ☐ ☐ Drainage structure flushed and basin surface restored upon removal of sediment basin facility.  
☐ ☐ ☐ Sediment basin dewatering pool is dewatering at appropriate rate.

Sediment accumulation is \_\_\_\_% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

## CONSTRUCTION DURATION INSPECTIONS

**b. Modifications to the SWPPP (To be completed as described below)**

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
  - a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
  - b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

**Modification & Reason:**This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings present.

**APPENDIX E**  
**Project and Owner Information**

Site Data:

Waccabuc Country Club – Beach Club  
90 Mead Street  
Waccabuc, New York 10597  
Area: 8.76 acres ±

Owner/Applicant Information:

Waccabuc Country Club  
90 Mead Street  
Waccabuc, New York 10597

Parties Responsible for Implementation of the Short and Long Term Maintenance Plan:

Waccabuc Country Club  
90 Mead Street  
Waccabuc, New York 10597

and or the current owner(s) of the subject property.

Qualified Professional Responsible for Inspection of the Stormwater Pollution Prevention Plan:

Insite Engineering, Surveying & Landscape Architecture, P.C.  
3 Garrett Place  
Carmel, New York 10512  
845-225-9690

## **APPENDIX F**

### **Hydrodynamic Separator Verification and Maintenance Checklist**



## State of New Jersey

PHILIP D. MURPHY  
*Governor*

DEPARTMENT OF ENVIRONMENTAL PROTECTION

CATHERINE R. McCABE  
*Acting Commissioner*

SHEILA Y. OLIVER  
*Lt. Governor*

Mail Code – 401-02B  
Division of Water Quality  
Bureau of Nonpoint Pollution Control  
P.O. Box 420 – 401 E. State St.  
Trenton, NJ 08625-0420  
Phone: (609) 633-7021 / Fax: (609) 777-0432  
[http://www.state.nj.us/dep/dwq/bnpc\\_home.htm](http://www.state.nj.us/dep/dwq/bnpc_home.htm)

**March 27, 2018**

Graham Bryant, M.Sc., P.E.  
President  
Hydroworks, LLC  
136 Central Avenue  
Clark, NJ 07066

Re: MTD Lab Certification  
HydroStorm Hydrodynamic Separator by Hydroworks, LLC  
Online Installation

### **TSS Removal Rate 50%**

Dear Mr. Bryant:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7 (c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Hydroworks, LLC has requested an MTD Laboratory Certification for the Hydroworks HydroStorm Hydrodynamic Separator.

The project falls under the “Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology” dated January 25, 2013. The applicable protocol is the “New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device” dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated February 2018) for this device is published online at <http://www.njcat.org/verification-process/technology-verification-database.html>.

**The NJDEP certifies the use of the HydroStorm by Hydroworks, LLC at a TSS removal rate of 50% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:**



1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5.
2. The HydroStorm shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 6 below.
3. This HydroStorm cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.
4. Additional design criteria for MTDs can be found in Chapter 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at [www.njstormwater.org](http://www.njstormwater.org).
5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the Hydrostorm. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at <http://www.hydroworks.com/hydrostormo&m.pdf> for any changes to the maintenance requirements.
6. Sizing Requirement:

The example below demonstrates the sizing procedure for the Hydrostorm:

Example:        A 0.25-acre impervious site is to be treated to 50% TSS removal using a HydroStorm. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was based on the following:

time of concentration = 10 minutes

i = 3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)

c = 0.99 (runoff coefficient for impervious)

$Q = ciA = 0.99 \times 3.2 \times 0.25 = 0.79 \text{ cfs}$

Given the site runoff is 0.79 cfs and based on Table 1 below, the HydroStorm Model HS4 with a MTFR of 0.88 cfs could be used for this site to remove 50% of the TSS from the impervious area without exceeding the MTFR.

The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix under Table A-1.

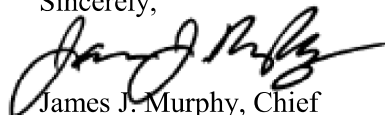
**Table 1 HydroStorm Sizing Information**

<b>HydroStorm Model</b>	<b>NJDEP 50% TSS Maximum Treatment Flow Rate (cfs)</b>	<b>Treatment Area (ft<sup>2</sup>)</b>	<b>Hydraulic Loading Rate (gpm/ft<sup>2</sup>)</b>	<b>50% Maximum Sediment Storage (ft<sup>3</sup>)</b>
HS3	0.50	7.1	31.4	3.6
HS4	0.88	12.6	31.4	6.3
HS5	1.37	19.6	31.4	9.8
HS6	1.98	28.3	31.4	14.2
HS7	2.69	38.5	31.4	19.3
HS8	3.52	50.3	31.4	25.2
HS9	4.45	63.6	31.4	31.8
HS10	5.49	78.5	31.4	39.3
HS11	6.65	95.0	31.4	47.5
HS12	7.91	113.0	31.4	56.5

A detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Brian Salvo or Nick Grotts of my office at (609) 633-7021.

Sincerely,



James J. Murphy, Chief  
Bureau of Nonpoint Pollution Control

Attachment: Maintenance Plan

cc: Chron File  
Richard Magee, NJCAT  
Vince Mazzei, NJDEP - DLUR  
Ravi Patraju, NJDEP - BES  
Gabriel Mahon, NJDEP - BNPC  
Brian Salvo, NJDEP – BNPC  
Nick Grotts, NJDEP – BNPC



Hydroworks® HydroStorm

## Operations & Maintenance Manual

Version 1.0

Please call Hydroworks at 888-290-7900 or email us at [support@hydroworks.com](mailto:support@hydroworks.com) if you have any questions regarding the Inspection Checklist. Please fax a copy of the completed checklist to Hydroworks at 888-783-7271 for our records.

## **Introduction**

The HydroStorm is a state of the art hydrodynamic separator. Hydrodynamic separators remove solids, debris and lighter than water (oil, trash, floating debris) pollutants from stormwater. Hydrodynamic separators and other water quality measures are mandated by regulatory agencies (Town/City, State, Federal Government) to protect storm water quality from pollution generated by urban development (traffic, people) as part of new development permitting requirements.

As storm water treatment structures fill up with pollutants they become less and less effective in removing new pollution. Therefore, it is important that storm water treatment structures be maintained on a regular basis to ensure that they are operating at optimum performance. The HydroStorm is no different in this regard and this manual has been assembled to provide the owner/operator with the necessary information to inspect and coordinate maintenance of their HydroStorm.

## **Hydroworks® HydroStorm Operation**

The Hydroworks HydroStorm (HS) separator is a unique hydrodynamic by-pass separator. It incorporates a protected submerged pretreatment zone to collect larger solids, a treatment tank to remove finer solids, and a dual set of weirs to create a high flow bypass. High flows are conveyed directly to the outlet and do not enter the treatment area, however, the submerged pretreatment area still allows removal of coarse solids during high flows.

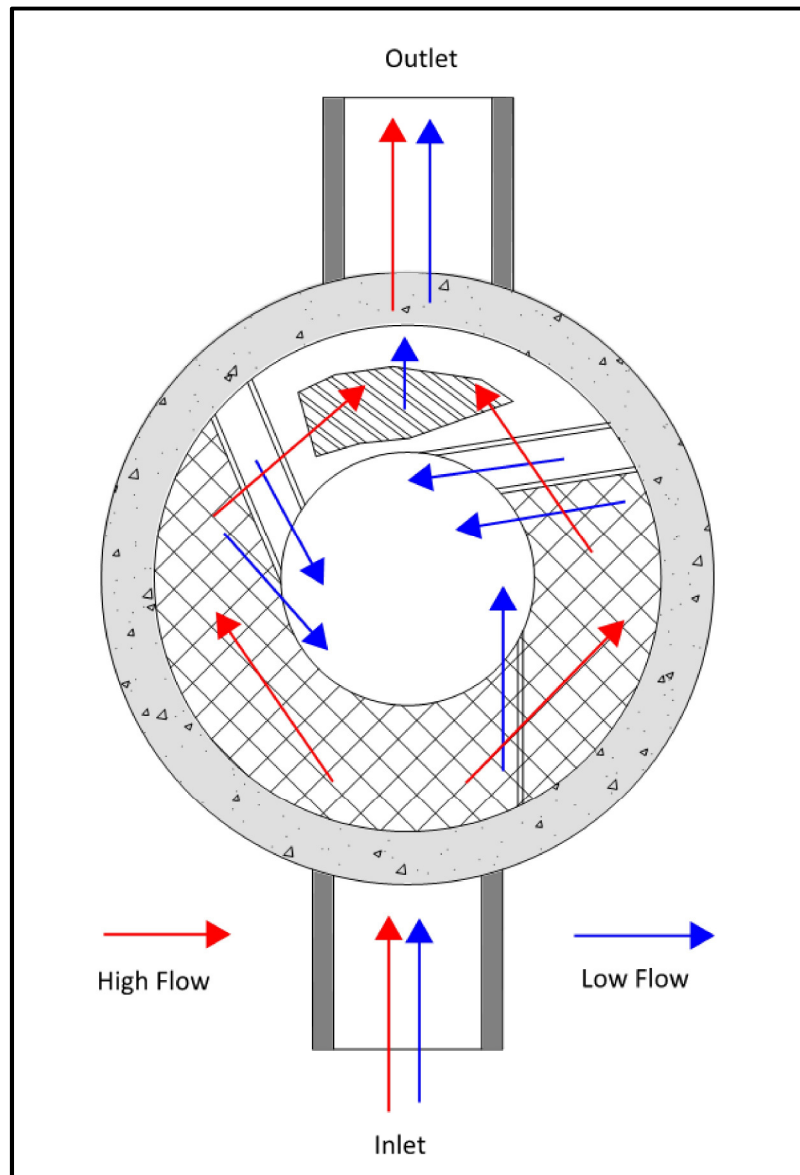
Under normal or low flows, water enters an inlet area with a horizontal grate. The area underneath the grate is submerged with openings to the main treatment area of the separator. Coarse solids fall through the grate and are either trapped in the pretreatment area or conveyed into the main treatment area depending on the flow rate. Fines are transported into the main treatment area. Openings and weirs in the pretreatment area allow entry of water and solids into the main treatment area and cause water to rotate in the main treatment area creating a vortex motion. Water in the main treatment area is forced to rise along the walls of the separator to discharge from the treatment area to the downstream pipe.

The vortex motion forces solids and floatables to the middle of the inner chamber. Floatables are trapped since the inlet to the treatment area is submerged. The design maximizes the retention of settled solids since solids are forced to the center of the inner chamber by the vortex motion of water while water must flow up the walls of the separator to discharge into the downstream pipe.

A set of high flow weirs near the outlet pipe create a high flow bypass over both the pretreatment area and main treatment chamber. The rate of flow into the treatment area is regulated by the number and size of openings into the treatment chamber and the height of by-pass weirs. High flows flow over the weirs directly to the outlet pipe preventing the scour and resuspension of any fines collected in the treatment chamber.

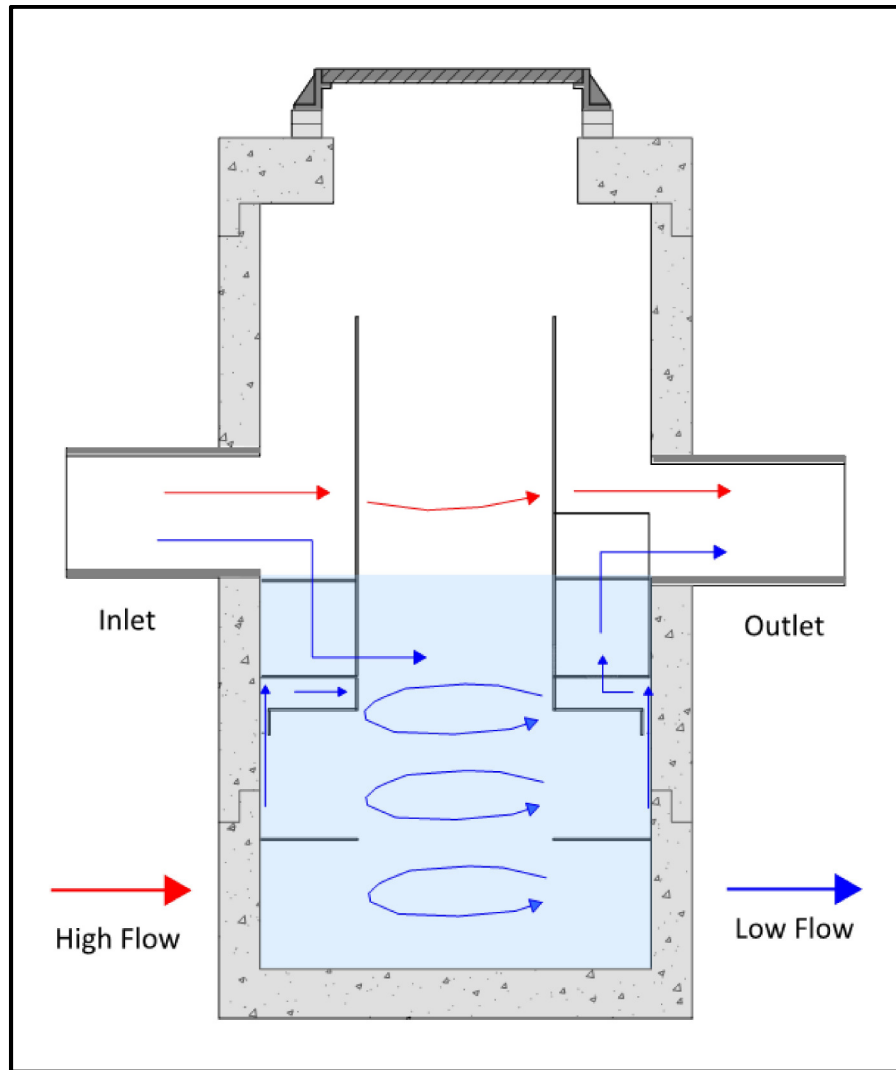


A central access tube is located in the structure to provide access for cleaning. The arrangement of the inlet area and bypass weirs near the outlet pipe facilitate the use of multiple inlet pipes.



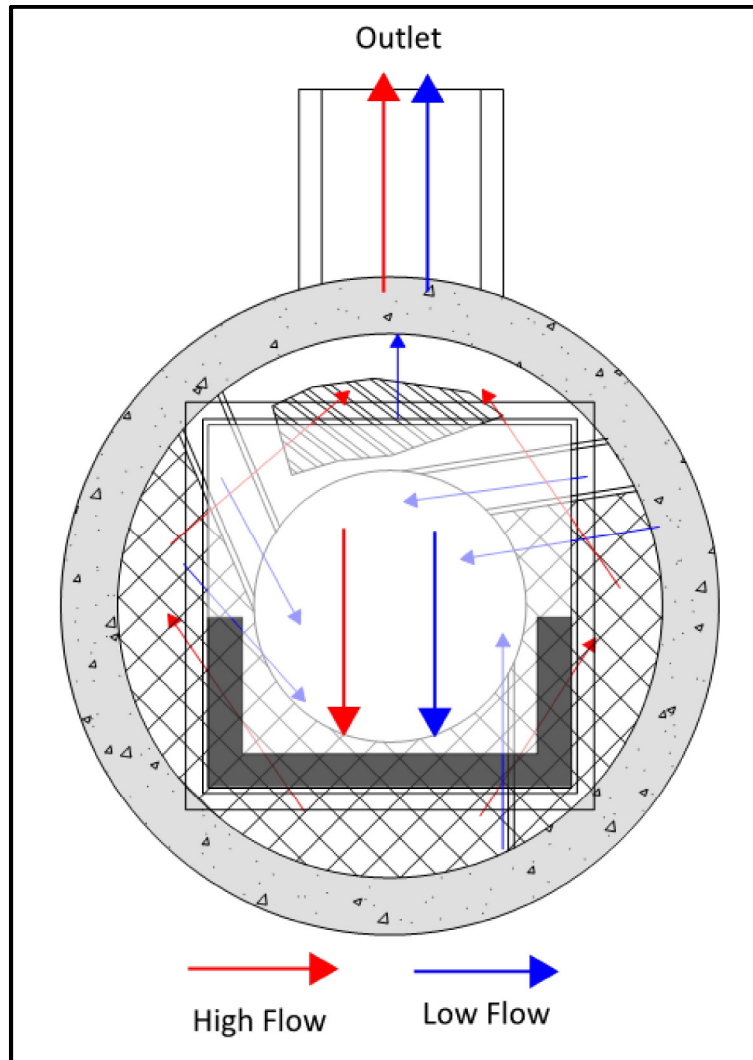
**Figure 1. Hydroworks HydroStorm Operation – Plan View**

Figure 2 is a profile view of the HydroStorm separator showing the flow patterns for low and high flows.



**Figure 2. Hydroworks HydroStorm Operation – Profile View**

The HS 4i is an inlet version of the HS 4 separator. There is a catch-basin grate on top of the HS 4i. A funnel sits underneath the grate on the frame and directs the water to the inlet side of the separator to ensure all low flows are properly treated. The whole funnel is removed for inspection and cleaning.



**Figure 3. Hydroworks HS 4i Funnel**

### **Inspection**

### **Procedure**

### **Floatables**

A visual inspection can be conducted for floatables by removing the covers and looking down into the center access tube of the separator. Separators with an inlet grate (HS 4i or custom separator) will have a plastic funnel located under the grate that must be removed from the frame prior to inspection or maintenance. If you are missing a funnel please contact Hydroworks at the numbers provided at the end of this document.





## TSS/Sediment

Inspection for TSS build-up can be conducted using a Sludge Judge®, Core Pro®, AccuSludge® or equivalent sampling device that allows the measurement of the depth of TSS/sediment in the unit. These devices typically have a ball valve at the bottom of the tube that allows water and TSS to flow into the tube when lowering the tube into the unit. Once the unit touches the bottom of the device, it is quickly pulled upward such that the water and TSS in the tube forces the ball valve closed allowing the user to see a full core of water/TSS in the unit. The unit should be inspected for TSS through each of the access covers. Several readings (2 or 3) should be made at each access cover to ensure that an accurate TSS depth measurement is recorded.

## **Frequency**

### Construction Period

The HydroStorm separator should be inspected every four weeks and after every large storm (over 0.5" (12.5 mm) of rain) during the construction period.

### Post-Construction Period

The Hydroworks HydroStorm separator should be inspected during the first year of operation for normal stabilized sites (grassed or paved areas). If the unit is subject to oil spills or runoff from unstabilized (storage piles, exposed soils) areas the HydroStorm separator should be inspected more frequently (4 times per year). The initial annual inspection will indicate the required future frequency of inspection and maintenance if the unit was maintained after the construction period.

## **Reporting**

Reports should be prepared as part of each inspection and include the following information:

1. Date of inspection
2. GPS coordinates of Hydroworks unit
3. Time since last rainfall
4. Date of last inspection
5. Installation deficiencies (missing parts, incorrect installation of parts)
6. Structural deficiencies (concrete cracks, broken parts)
7. Operational deficiencies (leaks, blockages)
8. Presence of oil sheen or depth of oil layer
9. Estimate of depth/volume of floatables (trash, leaves) captured
10. Sediment depth measured
11. Recommendations for any repairs and/or maintenance for the unit
12. Estimation of time before maintenance is required if not required at time of inspection



A sample inspection checklist is provided at the end of this manual.

## **Maintenance**

### **Procedure**

The Hydroworks HydroStorm unit is typically maintained using a vacuum truck. There are numerous companies that can maintain the HydroStorm separator. Maintenance with a vacuum truck involves removing all of the water and sediment together. The water is then separated from the sediment on the truck or at the disposal facility.

A central access opening (24" or greater) is provided to the gain access to the lower treatment tank of the unit. This is the primary location to maintain by vacuum truck. The pretreatment area can also be vacuumed and/or flushed into the lower treatment tank of the separator for cleaning via the central access once the water level is lowered below the pretreatment floor.

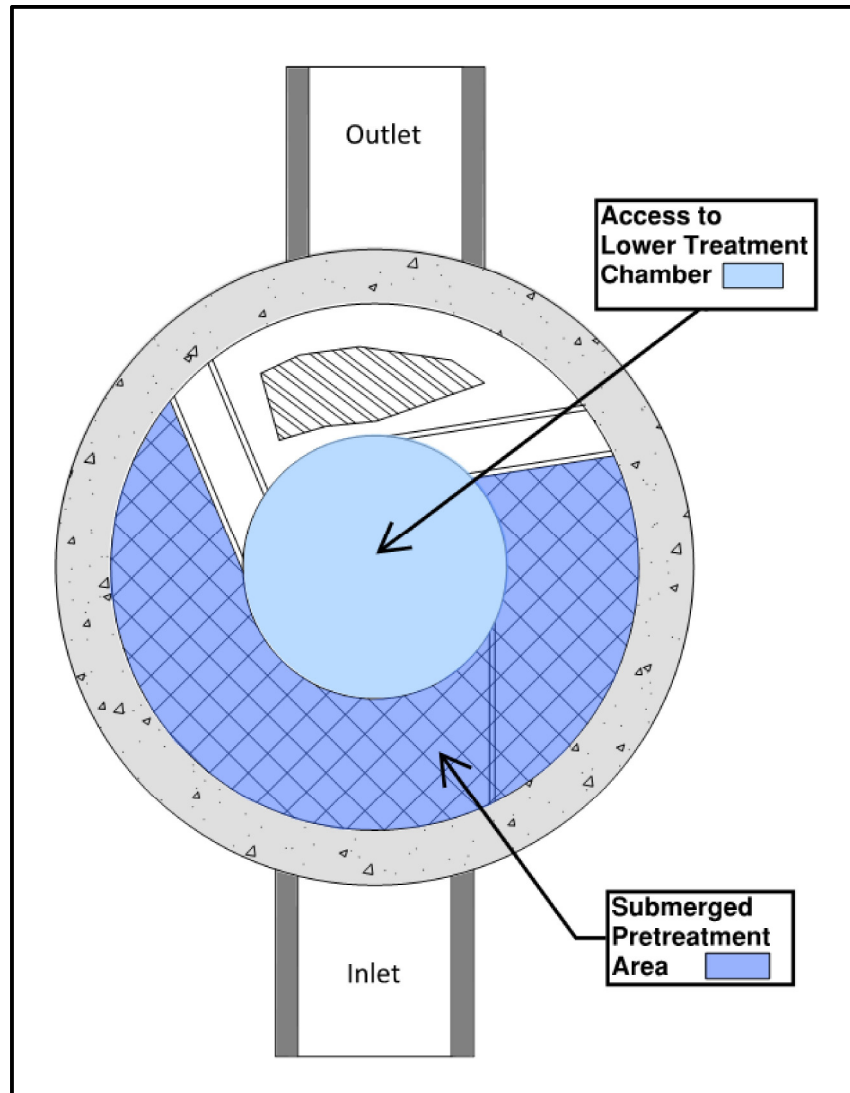
In instances where a vacuum truck is not available other maintenance methods (i.e. clamshell bucket) can be used, but they will be less effective. If a clamshell bucket is used the water must be decanted prior to cleaning since the sediment is under water and typically fine in nature. Disposal of the water will depend on local requirements. Disposal options for the decanted water may include:

1. Discharge into a nearby sanitary sewer manhole
2. Discharge into a nearby LID practice (grassed swale, bioretention)
3. Discharge through a filter bag into a downstream storm drain connection

The local municipality should be consulted for the allowable disposal options for both water and sediments prior to any maintenance operation. Once the water is decanted the sediment can be removed with the clamshell bucket.

Disposal of the contents of the separator depend on local requirements. Maintenance of a Hydroworks HydroStorm unit will typically take 1 to 2 hours based on a vacuum truck and longer for other cleaning methods (i.e. clamshell bucket).





**Figure 3. Maintenance Access**

## **Frequency**

### Construction Period

A HydroStorm separator can fill with construction sediment quickly during the construction period. The HydroStorm must be maintained during the construction period when the depth of TSS/sediment reaches 24" (600 mm). It must also be maintained during the construction period if there is an appreciable depth of oil in the unit (more than a sheen) or if floatables other than oil cover over 50% of the area of the separator

The HydroStorm separator should be maintained at the end of the construction period, prior to operation for the post-construction period.

### Post-Construction Period

The HydroStorm was independently tested by Alden Research Laboratory in 2017. A HydroStorm HS 4 was tested for scour with a 50% sediment depth of 0.5 ft. Therefore, maintenance for sediment accumulation is required if the depth of sediment is 1 ft or greater in separators with standard water (sump) depths (Table 1).

There will be designs with increased sediment storage based on specifications or site-specific criteria. A measurement of the total water depth in the separator through the central access tube should be taken and compared to water depth given in Table 1. The standard water depth from Table 1 should be subtracted from the measured water depth and the resulting extra depth should be added to the 1 ft to determine the site-specific sediment maintenance depth for that separator.

For example, if the measured water depth in the HS-7 is 7 feet, then the sediment maintenance depth for that HS-7 is 2 ft ( $= 1 + 7 - 6$ ) and the separator does not need to be cleaned for sediment accumulation until the measure sediment depth is 2 ft.

The HydroStorm separator must also be maintained if there is an appreciable depth of oil in the unit (more than a sheen) or if floatables other than oil cover over 50% of the water surface of the separator.

**Table 1 Standard Dimensions for Hydroworks HydroStorm Models**

Model	Diameter (ft)	Total Water Depth (ft)	Sediment Maintenance Depth for Table 1 Total Water Depth(ft)
HS-3	3	3	1
HS-4	4	4	1
HS-5	5	4	1
HS-6	6	4	1
HS-7	7	6	1
HS-8	8	7	1
HS-9	9	7.5	1
HS-10	10	8	1
HS-11	11	9	1
HS-12	12	9.5	1



# HYDROSTORM INSPECTION SHEET

Date \_\_\_\_\_  
Date of Last Inspection \_\_\_\_\_

Site \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_  
Owner \_\_\_\_\_

GPS Coordinates \_\_\_\_\_

Date of last rainfall \_\_\_\_\_

## Site Characteristics

	Yes	No
Soil erosion evident	<input type="checkbox"/>	<input type="checkbox"/>
Exposed material storage on site	<input type="checkbox"/>	<input type="checkbox"/>
Large exposure to leaf litter (lots of trees)	<input type="checkbox"/>	<input type="checkbox"/>
High traffic (vehicle) area	<input type="checkbox"/>	<input type="checkbox"/>

## HydroStorm

	Yes	No
Obstructions in the inlet or outlet	<input type="checkbox"/> *	<input type="checkbox"/>
Missing internal components	<input type="checkbox"/> **	<input type="checkbox"/>
Improperly installed inlet or outlet pipes	<input type="checkbox"/> ***	<input type="checkbox"/>
Internal component damage (cracked, broken, loose pieces)	<input type="checkbox"/> **	<input type="checkbox"/>
Floating debris in the separator (oil, leaves, trash)	<input type="checkbox"/>	<input type="checkbox"/>
Large debris visible in the separator	<input type="checkbox"/> *	<input type="checkbox"/>
Concrete cracks/deficiencies	<input type="checkbox"/> ***	<input type="checkbox"/>
Exposed rebar	<input type="checkbox"/> **	<input type="checkbox"/>
Water seepage (water level not at outlet pipe invert)	<input type="checkbox"/> ***	<input type="checkbox"/>
Water level depth below outlet pipe invert _____"		

## Routine Measurements

Floating debris depth	< 0.5" (13mm)	<input type="checkbox"/>	>0.5" 13mm)	<input type="checkbox"/> *
Floating debris coverage	< 50% of surface area	<input type="checkbox"/>	> 50% surface area	<input type="checkbox"/> *
Sludge depth	< 12" (300mm)	<input type="checkbox"/>	> 12" (300mm)	<input type="checkbox"/> *

\* Maintenance required  
\*\* Repairs required  
\*\*\* Further investigation is required



**Other Comments:** \_\_\_\_\_

[illegible]



## Hydroworks® HydroStorm

### One Year Limited Warranty

Hydroworks, LLC warrants, to the purchaser and subsequent owner(s) during the warranty period subject to the terms and conditions hereof, the Hydroworks HydroStorm to be free from defects in material and workmanship under normal use and service, when properly installed, used, inspected and maintained in accordance with Hydroworks written instructions, for the period of the warranty. The standard warranty period is 1 year.

The warranty period begins once the separator has been manufactured and is available for delivery. Any components determined to be defective, either by failure or by inspection, in material and workmanship will be repaired, replaced or remanufactured at Hydroworks' option provided, however, that by doing so Hydroworks, LLC will not be obligated to replace an entire insert or concrete section, or the complete unit. This warranty does not cover shipping charges, damages, labor, any costs incurred to obtain access to the unit, any costs to repair/replace any surface treatment/cover after repair/replacement, or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to any material that has been disassembled or modified without prior approval of Hydroworks, LLC, that has been subjected to misuse, misapplication, neglect, alteration, accident or act of God, or that has not been installed, inspected, operated or maintained in accordance with Hydroworks, LLC instructions and is in lieu of all other warranties expressed or implied. Hydroworks, LLC does not authorize any representative or other person to expand or otherwise modify this limited warranty.

The owner shall provide Hydroworks, LLC with written notice of any alleged defect in material or workmanship including a detailed description of the alleged defect upon discovery of the defect. Hydroworks, LLC should be contacted at 136 Central Ave., Clark, NJ 07066 or any other address as supplied by Hydroworks, LLC. (888-290-7900).

This limited warranty is exclusive. There are no other warranties, express or implied, or merchantability or fitness for a particular purpose and none shall be created whether under the uniform commercial code, custom or usage in the industry or the course of dealings between the parties. Hydroworks, LLC will replace any goods that are defective under this warranty as the sole and exclusive remedy for breach of this warranty.

Subject to the foregoing, all conditions, warranties, terms, undertakings or liabilities (including liability as to negligence), expressed or implied, and howsoever arising, as to the condition, suitability, fitness, safety, or title to the Hydroworks HydroStorm are hereby negated and excluded and Hydroworks, LLC gives and makes no such representation, warranty or undertaking except as expressly set forth herein. Under no circumstances shall Hydroworks, LLC be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the HydroStorm, or the cost of other goods or services related to the purchase and installation of the HydroStorm. For this Limited Warranty to apply, the HydroStorm must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Hydroworks' written installation instructions.

Hydroworks, LLC expressly disclaims liability for special, consequential or incidental damages (even if it has been advised of the possibility of the same) or breach of expressed or implied warranty. Hydroworks, LLC shall not be liable for penalties or liquidated damages, including loss of production and profits; labor and materials; overhead costs; or other loss or expense incurred by the purchaser or any third party. Specifically excluded from limited warranty coverage are damages to the HydroStorm arising from ordinary wear and tear; alteration, accident, misuse, abuse or neglect; improper maintenance, failure of the product due to improper installation of the concrete sections or improper sizing; or any other event not caused by Hydroworks, LLC. This limited warranty represents Hydroworks' sole liability to the purchaser for claims related to the HydroStorm, whether the claim is based upon contract, tort, or other legal basis.



## **APPENDIX G**

### **NYSDEC Infiltration Practice Construction and Maintenance Checklist**

## Infiltration Trench Construction Inspection Checklist

Project:

Location:

Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
<b>1. Pre-Construction</b>		
Pre-construction meeting		
Runoff diverted		
Soil permeability tested		
Groundwater / bedrock sufficient at depth		
<b>2. Excavation</b>		
Size and location		
Side slopes stable		
Excavation does not compact subsoils		
<b>3. Filter Fabric Placement</b>		
Fabric specifications		
Placed on bottom, sides, and top		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
<b>4. Aggregate Material</b>		
Size as specified		
Clean / washed material		
Placed properly		
<b>5. Observation Well</b>		
Pipe size		
Removable cap / footplate		
Initial depth = _____ feet		
<b>6. Final Inspection</b>		
Pretreatment facility in place		
Contributing watershed stabilized prior to flow diversion		
Outlet		

**Comments:**This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.

**Actions to be Taken:**

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## Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:  
Location:  
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
<b>1. Debris Cleanout (Monthly)</b>		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
<b>2. Sediment Traps or Forebays (Annual)</b>		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
<b>3. Dewatering (Monthly)</b>		
Trench dewaterers between storms		
<b>4. Sediment Cleanout of Trench (Annual)</b>		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
<b>5. Inlets (Annual)</b>		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
<b>6. Outlet/Overflow Spillway (Annual)</b>		
Good condition, no need for repair		
No evidence of erosion		
<b>7. Aggregate Repairs (Annual)</b>		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

**Comments:**


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**Actions to be Taken:**


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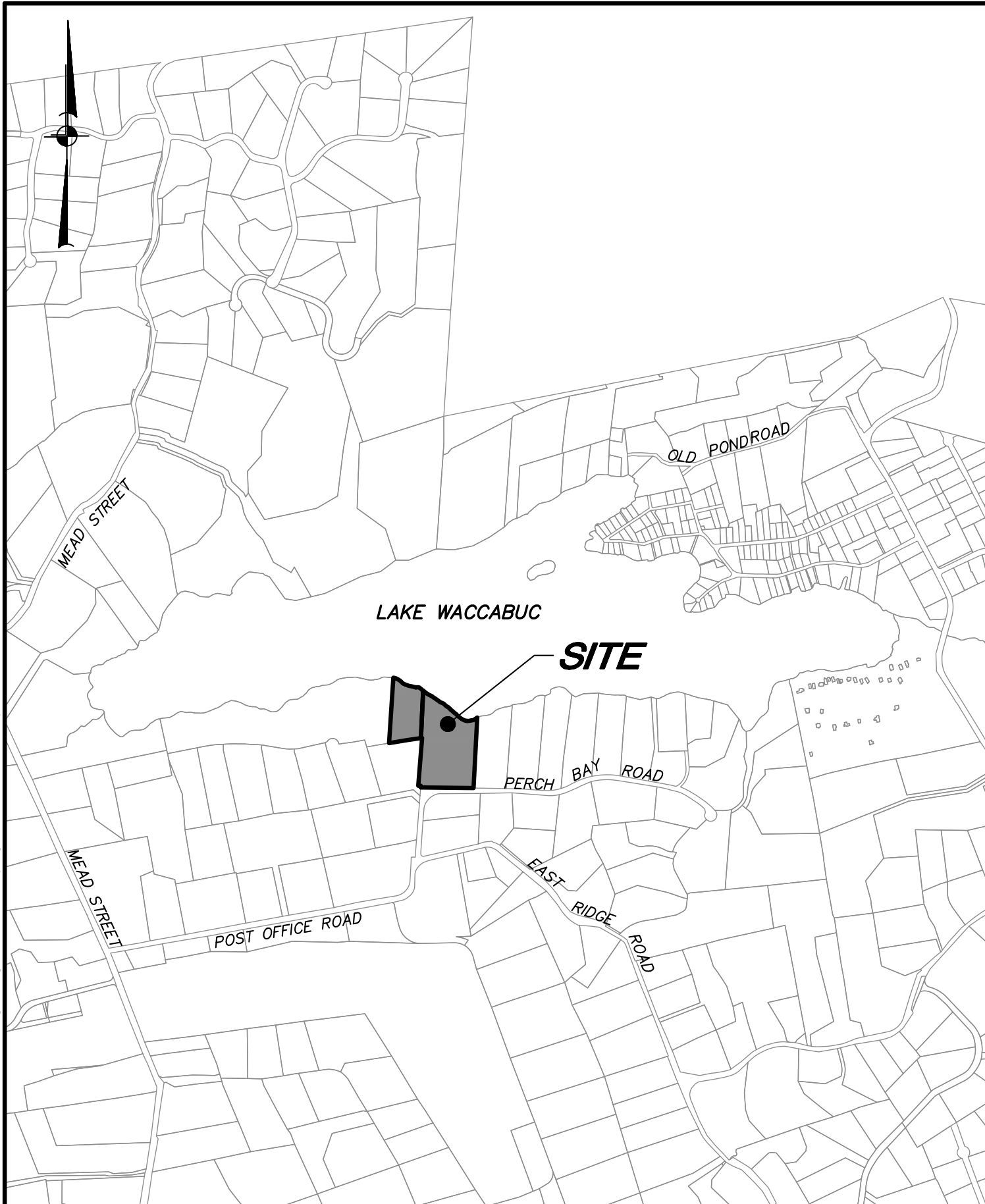
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## **FIGURES**



Z:\E\20228100 Waccabuc CC-Beach Club\Stormwater\Figures\Figure - 1 Location Map.dwg, 2/4/2022 12:45:01 PM, ependleton, 1:1



PROJECT: WACCABUC COUNTRY CLUB  
BEACH HOUSE IMPROVEMENTS

144 SARLES STREET, TOWN OF BEDFORD, WESTCHESTER CO., NY

DRAWING:

LOCATION MAP

PREPARED BY:



3 Garrett Place • Carmel, New York 10512  
Phone (845) 225-9690 • Fax (845) 225-9717  
[www.insite-eng.com](http://www.insite-eng.com)

DATE: 2-8-22

SCALE: 1" = 1000'

PROJECT NO.: 20228.100

FIGURE:

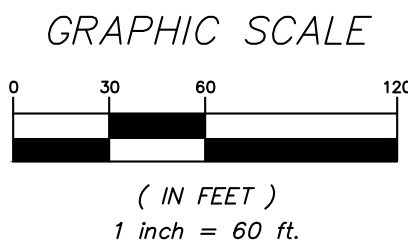
1



**LEGEND**

	SUBCATCHMENT
	TIME OF CONCENTRATION SHEET FLOW
	TIME OF CONCENTRATION SHALLOW CONCENTRATED FLOW
	DESIGN LINE
	SUBCATCHMENT CONTRIBUTING AREA

SOILS LEGEND		
SOILS	DESCRIPTION	HYDROLOGICAL GROUP
CsD PnC PoC	Chatfield-Charlton complex, hilly, very rocky	B
	Paxton fine sandy loam, 8% to 15% slopes	C
	Paxton fine sandy loam, 8% to 15% slopes, very stony	C
NRCS Soil Boundary Line		



NO.	DATE	REVISION	BY
<b>INSITE</b> ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.			
PROJECT: <b>WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS</b>			
DRAWING: <b>PRE-DEVELOPMENT DRAINAGE MAP</b>			
PROJECT NUMBER	20228.100	PROJECT MANAGER	Z.M.P.
DATE	2-8-22	DRAWN BY	J.L.T.
SCALE	1" = 60'	CHECKED BY	E.J.P.

3 Garrett Place  
Carmel, NY 10512  
(845) 225-9690  
(845) 225-9717 fax  
www.insite-eng.com

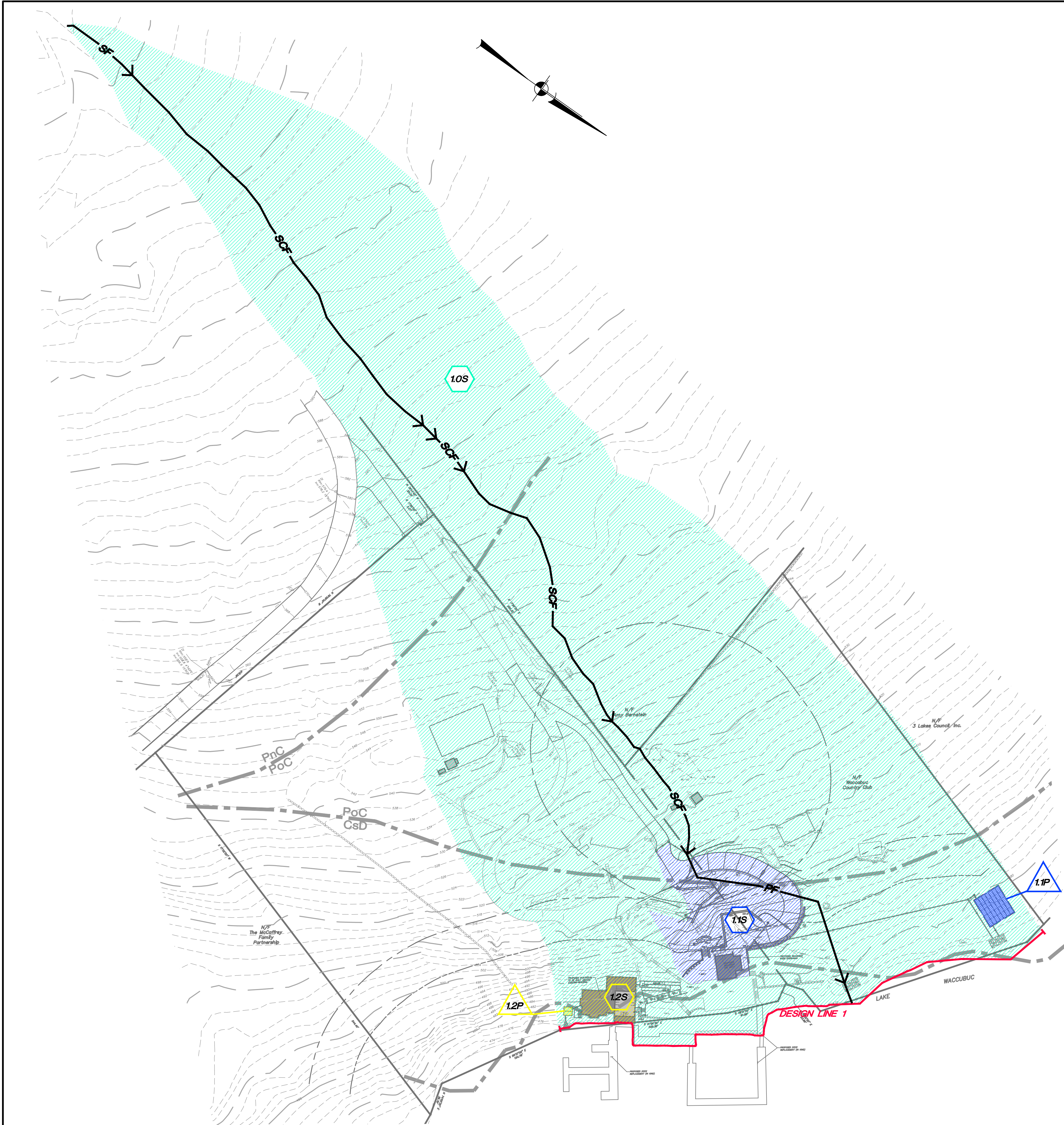
90 MEAD ST., WACCABUC, TOWN OF LEWISBORO, WESTCHESTER CTY, NY

DRAWING NO. **FIG-2**

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.

Z:\16\20228100 Waccabuc CC Beach Club Stormwater\Figures\Figure 2-Pre.dwg, 2/4/2022 12:47:03 PM, agardner, 1:1

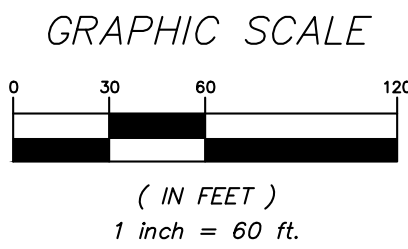




**LEGEND**

	SUBCATCHMENT
	STORMWATER MANAGEMENT PRACTICE
	TIME OF CONCENTRATION SHEET FLOW
	TIME OF CONCENTRATION SHALLOW CONCENTRATED FLOW
	TIME OF CONCENTRATION PIPE FLOW
	DESIGN LINE
	SUBCATCHMENT CONTRIBUTING AREA
	STORMWATER MANAGEMENT / GREEN INFRASTRUCTURE PRACTICE AREA

SOILS LEGEND		
SOILS	DESCRIPTION	HYDROLOGICAL GROUP
CsD	Chatfield-Charlton complex, hilly, very rocky	B
PnC	Paxton fine sandy loam, 8% to 15% slopes	C
PoC	Paxton fine sandy loam, 8% to 15% slopes, very stony	C
NRCS Soil Boundary Line		



NO.	DATE	REVISION	BY
<b>INSITE</b> ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place Carmel, NY 10512 (845) 225-9690 (845) 225-9717 fax www.insite-eng.com			
PROJECT: <b>WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS</b> 90 MEAD ST., WACCABUC, TOWN OF LEWISBORO, WESTCHESTER CTY, NY			
DRAWING: <b>POST-DEVELOPMENT DRAINAGE MAP</b>			
PROJECT NUMBER	20228.100	PROJECT MANAGER	Z.M.P.
DATE	2-8-22	DRAWN BY	J.L.T.
SCALE	1" = 60'	CHECKED BY	E.J.P.
DRAWING NO.			<b>FIG-3</b>

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.

Z:\16\20228100 Waccabuc CC Beach Club Stormwater\Figures\Figures 3 Post Map 2-8-2022 11:02 PM, updated, 11



# Short Environmental Assessment Form

## Part 1 - Project Information

### Instructions for Completing

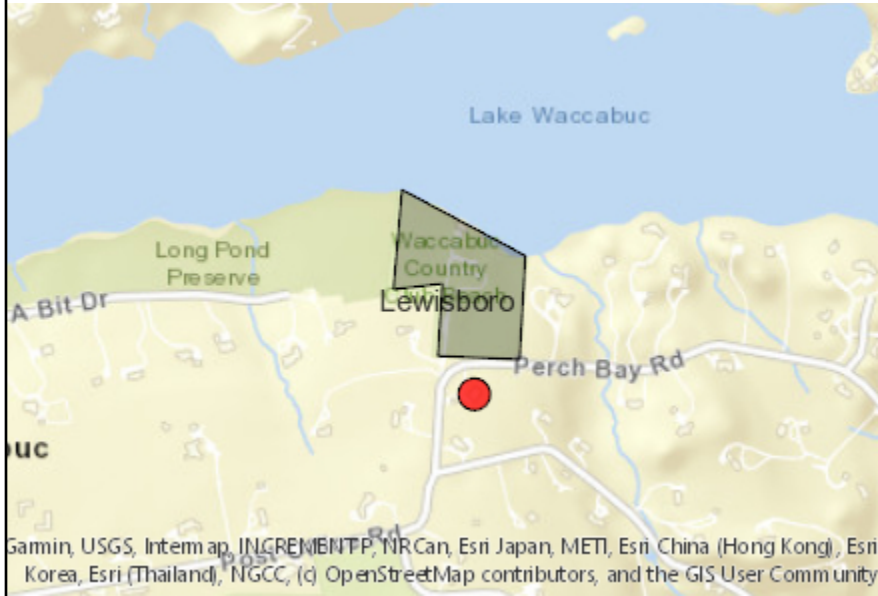
**Part 1 – Project Information.** The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

<b>Part 1 – Project and Sponsor Information</b>			
Name of Action or Project: Waccabuc Beach Club Building and Site Improvements			
Project Location (describe, and attach a location map): Perch Bay Road, Waccabuc, NY Tax Map Sheet 25 Block 11155 Lot 148 and Sheet 25A Block 10813 Lot 04			
Brief Description of Proposed Action: The project includes the renovation of the existing Boathouse, replacement of the adjacent existing storage building with a covered outdoor seating area (The Pavillion), and replacement of the existing snackbar. The project also includes handicap parking spaces located by the beachfront area, new ramps to provide handicap accessibility to the Boathouse and the Pavillion, relocation of the existing access driveway down to the lake, and stormwater management and OWTS improvements associated with the project. The 2 subject parcels will be merged to facilitate the project.			
Name of Applicant or Sponsor: Waccabuc Country Club		Telephone: 914-763-3144 E-Mail: jdassuma@optonline.net	
Address: 90 Mead Street, P.O. Box 400			
City/PO: Waccabuc		State: NY	Zip Code: 10597
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/>
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: <small>T/Lewisboro Site Plan Approval, Wetland Permit, Stormwater Permit, Bldg Permit, ACARC approval; ZBA approval; WCDOH OWTS Approval; NYCDEP SPPP &amp; OWTS Approval, variance for impervious w/in impervious restricted area; NYSDEC GP 0-20-001 coverage</small>		NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>
3. a. Total acreage of the site of the proposed action? b. Total acreage to be physically disturbed? c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor?		9.1 +/- acres 1.0 +/- acres 9.1 +/- acres	
4. Check all land uses that occur on, are adjoining or near the proposed action:			
5. <input type="checkbox"/> Urban <input type="checkbox"/> Rural (non-agriculture) <input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Residential (suburban) <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input checked="" type="checkbox"/> Aquatic <input type="checkbox"/> Other(Specify): <input type="checkbox"/> Parkland			

5. Is the proposed action,	NO	YES	N/A
a. A permitted use under the zoning regulations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Consistent with the adopted comprehensive plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO	YES	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?	NO	YES	
If Yes, identify: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO	YES	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b. Are public transportation services available at or near the site of the proposed action?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Does the proposed action meet or exceed the state energy code requirements?	NO	YES	
If the proposed action will exceed requirements, describe design features and technologies: _____ _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
10. Will the proposed action connect to an existing public/private water supply?	NO	YES	
If No, describe method for providing potable water: _____ Existing well. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
11. Will the proposed action connect to existing wastewater utilities?	NO	YES	
If No, describe method for providing wastewater treatment: _____ Existing OWTS area, plus additional improvements to OWTS area _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	NO	YES	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Waccabuc Historic District. Boathouse is Historically Designated.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?			
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	NO	YES	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____ _____ _____			

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: <input checked="" type="checkbox"/> Shoreline <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Agricultural/grasslands <input checked="" type="checkbox"/> Early mid-successional <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Urban <input checked="" type="checkbox"/> Suburban		
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Is the project site located in the 100-year flood plan?	NO	YES
	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	NO	YES
a. Will storm water discharges flow to adjacent properties?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If Yes, briefly describe: _____ Stormwater management practices.		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment: _____ Stormwater management practices.	NO	YES
	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE</b> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;">           Applicant/sponsor/name: <u>Insite Engineering, Surveying &amp; Landscape Architecture PC</u>  <u>Zachary M. Pearson, PE, Senior Associate</u> </div> <div style="width: 35%;">           Date: <u>February 8, 2022</u> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 55%;">           Signature:  </div> <div style="width: 40%;">           Title: <u>Senior Project Engineer</u> </div> </div>		



**Disclaimer:** The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	Yes
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	Yes
Part 1 / Question 20 [Remediation Site]	No



633 Rt. 211 East, Suite 4, Box 4  
Middletown, NY 10941  
Office: (845) 495-0123 • Fax: (866) 688-0836

May 10, 2021

Zachary M. Pearson, PE, Senior Associate  
Senior Project Engineer  
*INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.*  
3 Garrett Place  
Carmel, New York 10512

RE: Wetlands Delineation & Report  
Waccabuc Beach Club  
Town of Lewisboro, Westchester County, NY

Dear Mr. Pearson:

On April 21, 2021, a wetland delineation was concluded as requested on the above-referenced property. The area was walked and a field investigation was completed to determine whether there were any areas that would be within the jurisdiction of either the United States Army Corps of Engineers (USACE), the New York State Department of Environmental Conservation (NYSDEC), and/or the Town of Lewisboro for federally state or local regulated wetlands.

Before conducting the field investigation, related aerial, soils, and wetland online mapping resources were reviewed for the parcel. These identified any tentative wetland features on the property that would indicate any areas of the parcel where we should verify whether or not the field conditions match the related mapped features.

As shown on the attached NYSDEC wetland resource map and USFWS National Wetland inventory map, no potential wetland areas were identified by either USFWS or NYSDEC. The maps showed no regulated wetlands in the area of the project.

The field investigation was conducted in accordance to the 2012 Northcentral and Northeast Regional Supplement to the USACE 1987 manual and the Town of Lewisboro Wetland Code. The upland and wetland areas on the property were determined by observing plant vegetation, soil types, and hydrological conditions in accordance with the USACE field investigation guidelines. Areas meeting the conditions set forth by the agencies were then flagged on their edge with pink "Wetland Delineation" flaggings that were numbered sequentially to aid any subsequent surveying of the regulated wetlands line. During the course of our field investigation, five wetland areas and two drainage stream were identified. A representative USACE Wetland Delineation Form was filled out for wetland A as a representative wetland for the project site.

#### **Wetland/Upland Vegetation**

The dominant ground story vegetation in the wetland areas consisted of soft rush and sedge species. The overstory tree canopy was dominated by red maple. All of these are mostly consistent with plants that are recognized as wetland plant species and their abundances in the various wetlands pass the USACE 50/20 rule, thereby defining each of the areas as having wetland vegetation. The plant species dominating areas outside of the wetlands were primarily garlic mustard, poplar, red oak and sugar maple.



Wetland A Photo:



### **Wetland/Upland Soils**

Both the Putnam and Westchester County Soil Survey and the United States Department of Agriculture (USDA) online web soil survey were reviewed to verify if there were any potential hydric (wetland) soils on the property. A copy of the USDA soil report for the property is included for your use. No potential wetland soils was identified in these soil surveys. The area we delineated has PoC—Paxton fine sandy loam, 8 to 15 percent slopes, soils. Which are well drained soils, However, included in this soil group are small area of Ridgebury soils along drainage way. This is what was observed in the wetland area. The characteristics of the soil cores taken in the wetland areas during the field investigation were consistent with wetland soils identifiers.

Upland soils on the property are mostly Paxton fine sandy loam and Woodbridge loam. These are well-drained soils and they do not maintain proper hydrology to be wetland soils as they dry out during the growing season.

### **Wetlands Hydrology**

An aerial mapping of the water resources (e.g. ponds, streams and wetlands) identified by the USFWS's National Wetlands Inventory within the near vicinity of the property was referenced online prior to our fieldwork. A copy of this USFWS map is included with this letter. Hydrology to the wetlands on the site is provided by small watercourse or groundwater from adjacent higher terrains. The area flagged was saturated in the upper 12 inches, with obvious drainage patterns in the wetland area.



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Office: (845) 495-0123 • Fax: (866) 688-0836

### **Conclusions**

The wetland on site is regulated by the Town of Lewisboro.

Ecological Analysis is grateful for this opportunity to be of service on this project and looks forward to the opportunity to work with you in the future. Feel free to call if you have any questions or if we can be of further assistance.

Sincerely

*James A. Bates*

James Bates, CPESC, CPSWQ  
Managing Member  
Ecological Analysis, LLC

### Attachments:

USFWS National Wetlands Inventory Map  
NYSDEC Environmental Resource Map  
USDA Soil Survey

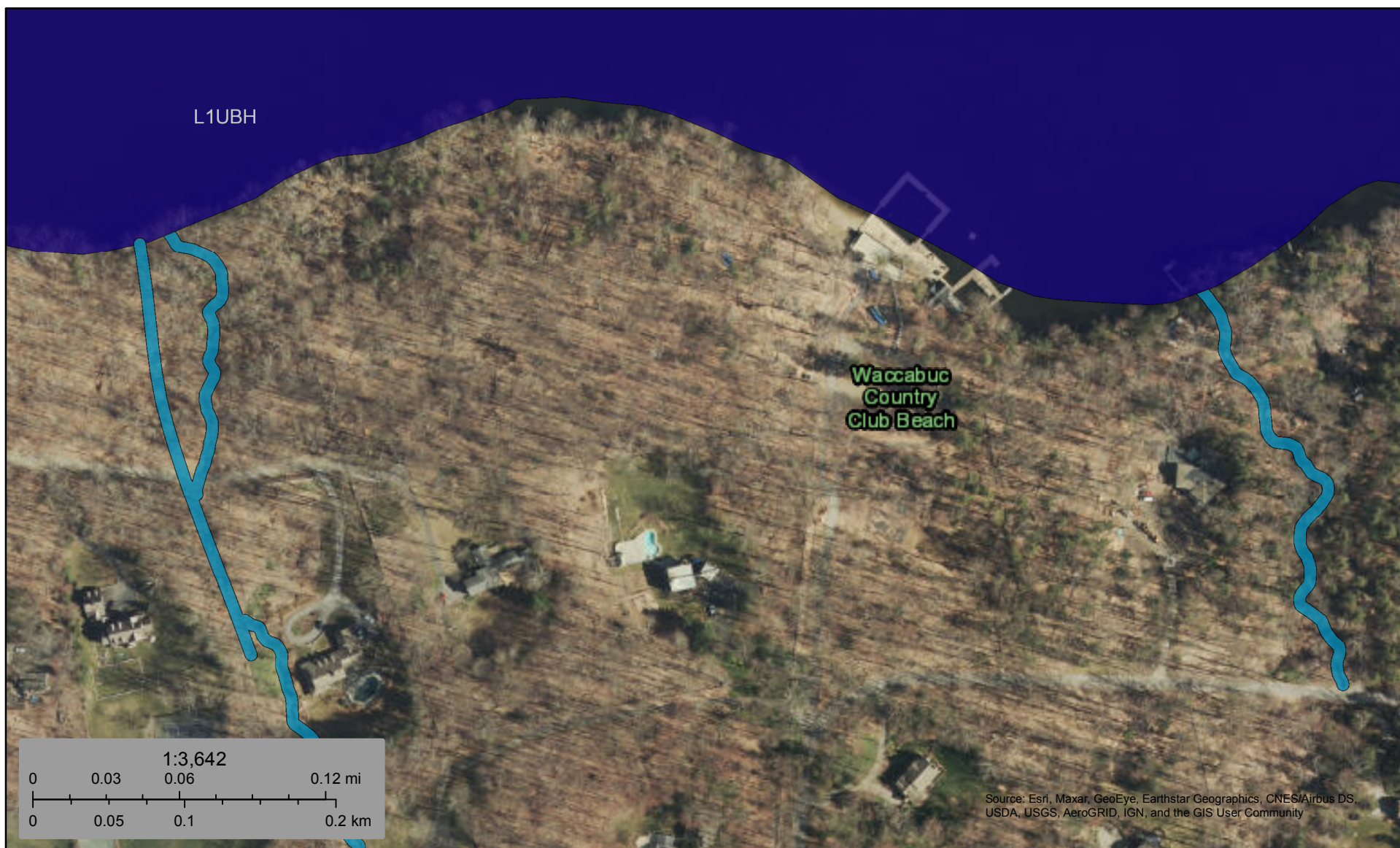




U.S. Fish and Wildlife Service




# National Wetlands Inventory

## Waccabuc Beach Club



May 10, 2021

### Wetlands

	Estuarine and Marine Deepwater		Freshwater Emergent Wetland		Lake
	Estuarine and Marine Wetland		Freshwater Forested/Shrub Wetland		Other
			Freshwater Pond		Riverine

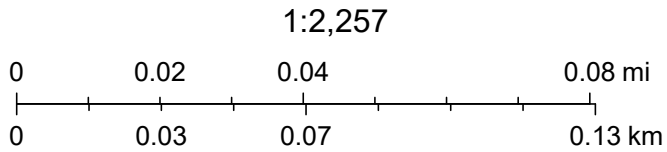
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



# Waccabuc Beach Club



May 10, 2021



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, NYS ITS GIS Program Office, Westchester County GIS , Esri, HERE, Garmin, (c) OpenStreetMap contributors





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 **Westchester County, New York**

**Waccaubac Beach Club**



May 10, 2021

# Preface

---

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

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

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

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

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

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

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

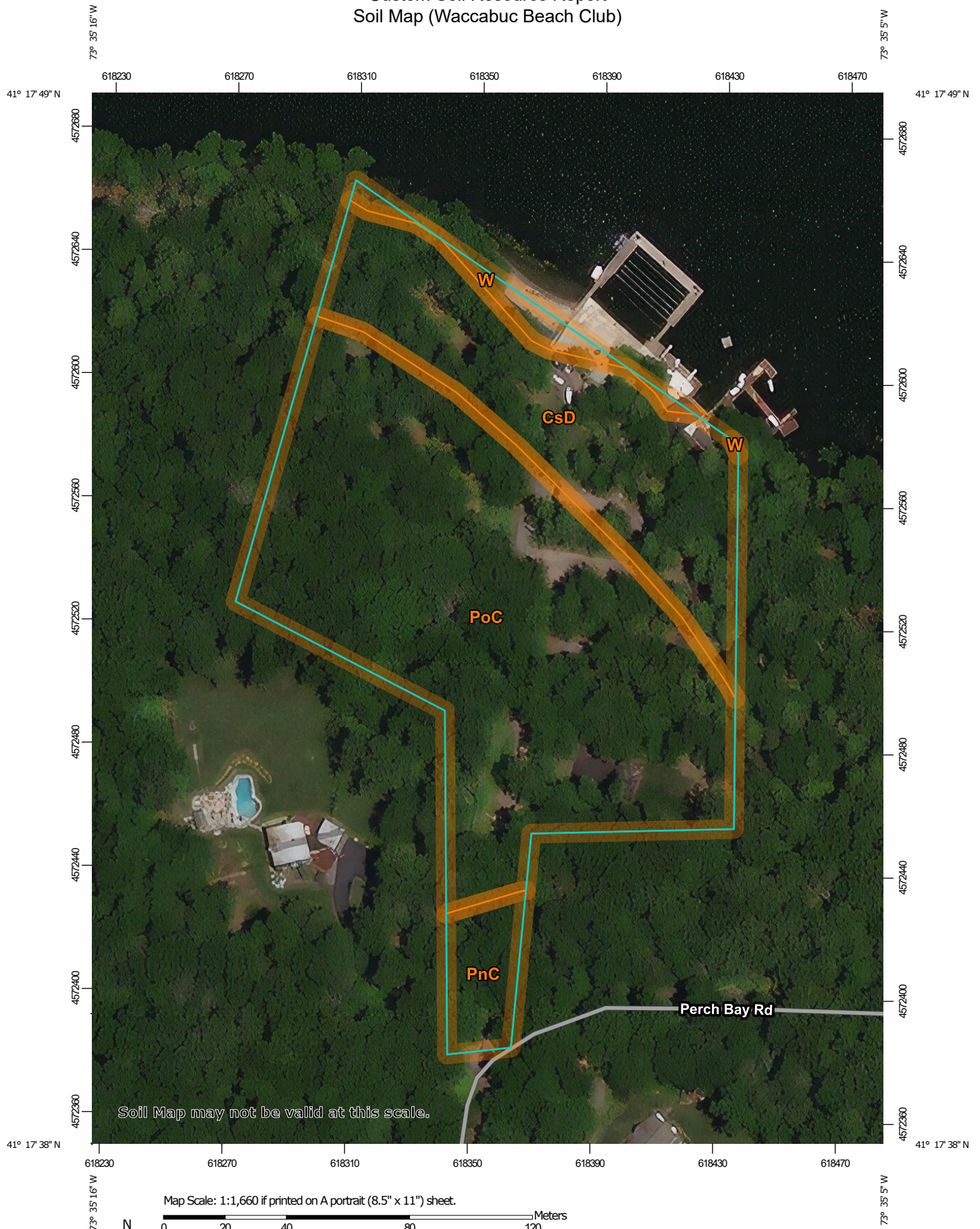
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

---

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

# Custom Soil Resource Report Soil Map (Waccabuc Beach Club)



Soil Map may not be valid at this scale.

Map Scale: 1:1,660 if printed on A portrait (8.5" x 11") sheet.

0 20 40 80 120 Meters

0 50 100 200 300 Feet


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



# Custom Soil Resource Report


## 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: Westchester County, New York  
Survey Area Data: Version 16, Jun 11, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

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 (Waccabuc Beach Club)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	1.7	27.7%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	0.3	4.6%
PoC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	4.0	65.4%
W	Water	0.1	2.3%
<b>Totals for Area of Interest</b>		<b>6.1</b>	<b>100.0%</b>

## Map Unit Descriptions (Waccabuc Beach Club)

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.

## Custom Soil Resource Report

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

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

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

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

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

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

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

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

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

## Westchester County, New York

### CsD—Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky

#### Map Unit Setting

*National map unit symbol:* 2w69k  
*Elevation:* 0 to 1,290 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Chatfield, very stony, and similar soils:* 45 percent  
*Charlton, very stony, and similar soils:* 35 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Chatfield, Very Stony

##### Setting

*Landform:* Ridges, hills  
*Landform position (two-dimensional):* Backslope, shoulder, summit  
*Landform position (three-dimensional):* Crest, side slope, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

##### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material  
*A - 1 to 2 inches:* fine sandy loam  
*Bw - 2 to 30 inches:* gravelly fine sandy loam  
*2R - 30 to 40 inches:* bedrock

##### Properties and qualities

*Slope:* 15 to 35 percent  
*Surface area covered with cobbles, stones or boulders:* 1.6 percent  
*Depth to restrictive feature:* 20 to 41 inches to lithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 to 0.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water capacity:* Low (about 4.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* B  
*Ecological site:* F144AY034CT - Well Drained Till Uplands  
*Hydric soil rating:* No

## Description of Charlton, Very Stony

### Setting

*Landform:* Hills, ridges

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex

*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

### Typical profile

*Oe - 0 to 2 inches:* moderately decomposed plant material

*A - 2 to 4 inches:* fine sandy loam

*Bw - 4 to 27 inches:* gravelly fine sandy loam

*C - 27 to 65 inches:* gravelly fine sandy loam

### Properties and qualities

*Slope:* 15 to 35 percent

*Surface area covered with cobbles, stones or boulders:* 1.6 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):* Moderately low to high (0.14 to 14.17 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water capacity:* Moderate (about 8.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* B

*Ecological site:* F144AY034CT - Well Drained Till Uplands

*Hydric soil rating:* No

## Minor Components

### Leicester, very stony

*Percent of map unit:* 6 percent

*Landform:* Hills, ground moraines, depressions, drainageways

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

### Hollis, very stony

*Percent of map unit:* 5 percent

*Landform:* Hills, ridges

*Landform position (two-dimensional):* Backslope, shoulder, summit

*Landform position (three-dimensional):* Crest, side slope, nose slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex, linear

*Hydric soil rating:* No

**Rock outcrop**

*Percent of map unit:* 5 percent

*Landform:* Ridges, hills

*Hydric soil rating:* No

**Sutton, very stony**

*Percent of map unit:* 4 percent

*Landform:* Hills, ground moraines

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

**PnC—Paxton fine sandy loam, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2w66y

*Elevation:* 0 to 1,320 feet

*Mean annual precipitation:* 36 to 71 inches

*Mean annual air temperature:* 39 to 55 degrees F

*Frost-free period:* 140 to 240 days

*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Paxton and similar soils:* 85 percent

*Minor components:* 15 percent

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

**Description of Paxton**

**Setting**

*Landform:* Ground moraines, drumlins, hills

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex

*Parent material:* Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

**Typical profile**

*Ap - 0 to 8 inches:* fine sandy loam

*Bw1 - 8 to 15 inches:* fine sandy loam

*Bw2 - 15 to 26 inches:* fine sandy loam

*Cd - 26 to 65 inches:* gravelly fine sandy loam

**Properties and qualities**

*Slope:* 8 to 15 percent



## Custom Soil Resource Report

*Depth to restrictive feature:* 20 to 39 inches to densic material

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.14 in/hr)

*Depth to water table:* About 18 to 37 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water capacity:* Low (about 4.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* F144AY007CT - Well Drained Dense Till Uplands

*Hydric soil rating:* No

### Minor Components

#### Charlton

*Percent of map unit:* 7 percent

*Landform:* Hills

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Woodbridge

*Percent of map unit:* 6 percent

*Landform:* Ground moraines, drumlins, hills

*Landform position (two-dimensional):* Backslope, footslope, summit

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Ridgebury

*Percent of map unit:* 2 percent

*Landform:* Drumlins, hills, ground moraines, depressions, drainageways

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, head slope

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave, linear

*Hydric soil rating:* Yes

## PoC—Paxton fine sandy loam, 8 to 15 percent slopes, very stony

### Map Unit Setting

*National map unit symbol:* 2w677

## Custom Soil Resource Report

*Elevation:* 0 to 1,330 feet

*Mean annual precipitation:* 36 to 71 inches

*Mean annual air temperature:* 39 to 55 degrees F

*Frost-free period:* 140 to 240 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Paxton, very stony, and similar soils:* 85 percent

*Minor components:* 15 percent

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

### Description of Paxton, Very Stony

#### Setting

*Landform:* Hills, ground moraines, drumlins

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear, convex

*Across-slope shape:* Convex, linear

*Parent material:* Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

#### Typical profile

*Oe - 0 to 2 inches:* moderately decomposed plant material

*A - 2 to 10 inches:* fine sandy loam

*Bw1 - 10 to 17 inches:* fine sandy loam

*Bw2 - 17 to 28 inches:* fine sandy loam

*Cd - 28 to 67 inches:* gravelly fine sandy loam

#### Properties and qualities

*Slope:* 8 to 15 percent

*Surface area covered with cobbles, stones or boulders:* 1.6 percent

*Depth to restrictive feature:* 20 to 43 inches to densic material

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.14 in/hr)

*Depth to water table:* About 18 to 37 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water capacity:* Low (about 4.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* C

*Ecological site:* F144AY007CT - Well Drained Dense Till Uplands

*Hydric soil rating:* No

### Minor Components

#### Woodbridge, very stony

*Percent of map unit:* 8 percent

*Landform:* Ground moraines, drumlins, hills

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope

## Custom Soil Resource Report

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

### **Charlton, very stony**

*Percent of map unit:* 5 percent

*Landform:* Hills

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Ridgebury, very stony**

*Percent of map unit:* 2 percent

*Landform:* Drainageways, hills, ground moraines, depressions, drumlins

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, head slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## **W—Water**

### **Map Unit Setting**

*National map unit symbol:* bd7z

*Mean annual precipitation:* 46 to 50 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 115 to 215 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Water:* 100 percent

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

# **Soil Information for All Uses**

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## **Suitabilities and Limitations for Use**

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

## **Land Classifications**

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

## **Hydric Rating by Map Unit (Waccabuc Beach Club)**

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

## Custom Soil Resource Report

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

### References:

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

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

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

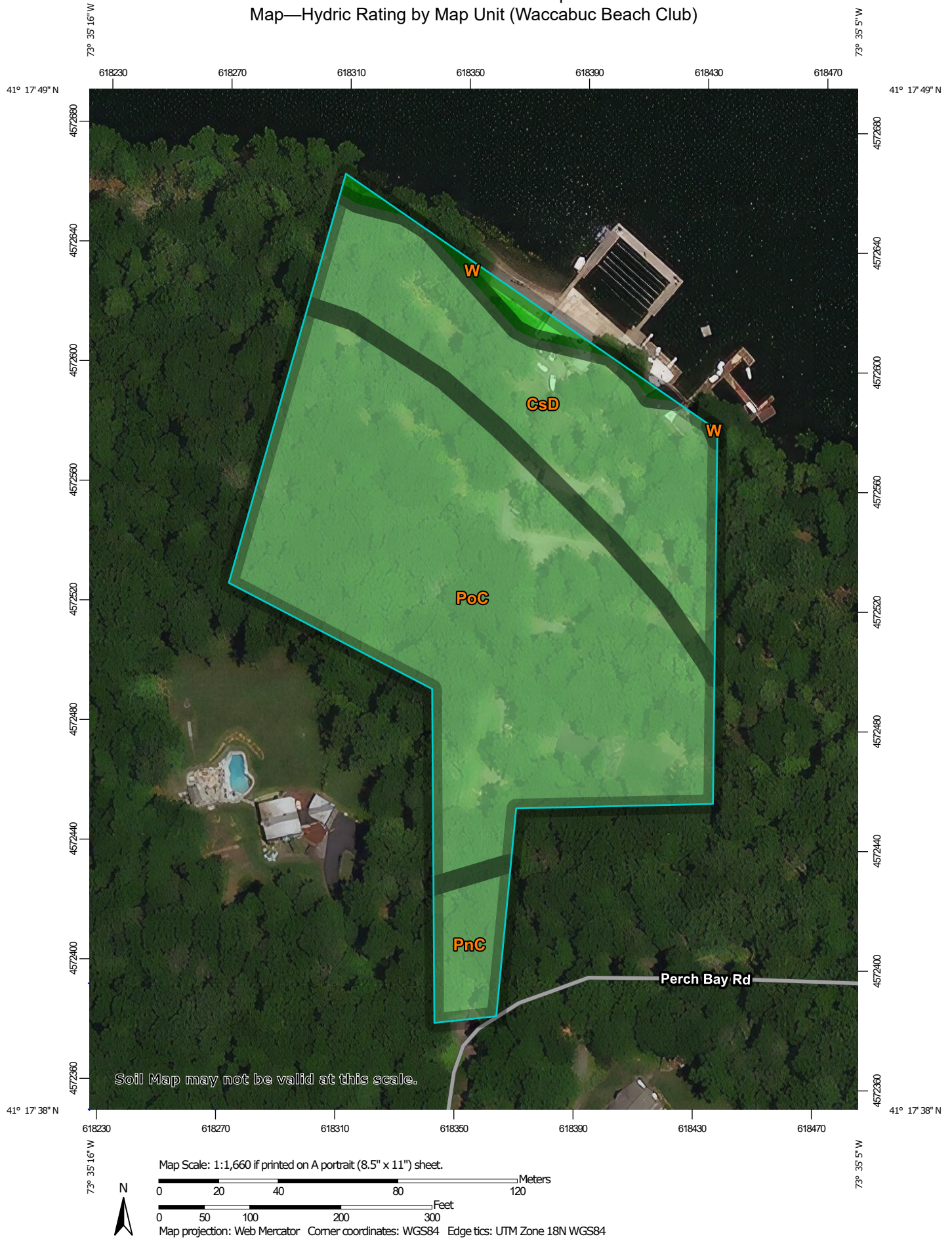
Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

# Custom Soil Resource Report


## Map—Hydric Rating by Map Unit (Waccabuc Beach Club)











## MAP LEGEND

### Area of Interest (AOI)







 Area of Interest (AOI)

### Soils







#### Soil Rating Polygons

 Hydric (100%)  
 Hydric (66 to 99%)  
 Hydric (33 to 65%)  
 Hydric (1 to 32%)  
 Not Hydric (0%)  
 Not rated or not available


#### Soil Rating Lines

 Hydric (100%)  
 Hydric (66 to 99%)  
 Hydric (33 to 65%)  
 Hydric (1 to 32%)  
 Not Hydric (0%)  
 Not rated or not available






#### Soil Rating Points

 Hydric (100%)  
 Hydric (66 to 99%)  
 Hydric (33 to 65%)  
 Hydric (1 to 32%)  
 Not Hydric (0%)  
 Not rated or not available


### 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: Westchester County, New York  
 Survey Area Data: Version 16, Jun 11, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

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.



**Table—Hydric Rating by Map Unit (Waccabuc Beach Club)**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	6	1.7	27.7%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	2	0.3	4.6%
PoC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	2	4.0	65.4%
W	Water	0	0.1	2.3%
<b>Totals for Area of Interest</b>			<b>6.1</b>	<b>100.0%</b>

**Rating Options—Hydric Rating by Map Unit (Waccabuc Beach Club)***Aggregation Method: Percent Present**Component Percent Cutoff: None Specified**Tie-break Rule: Lower*

# References

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- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
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- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
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- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
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- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

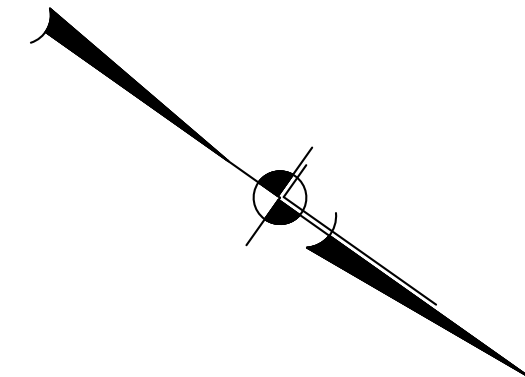
## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

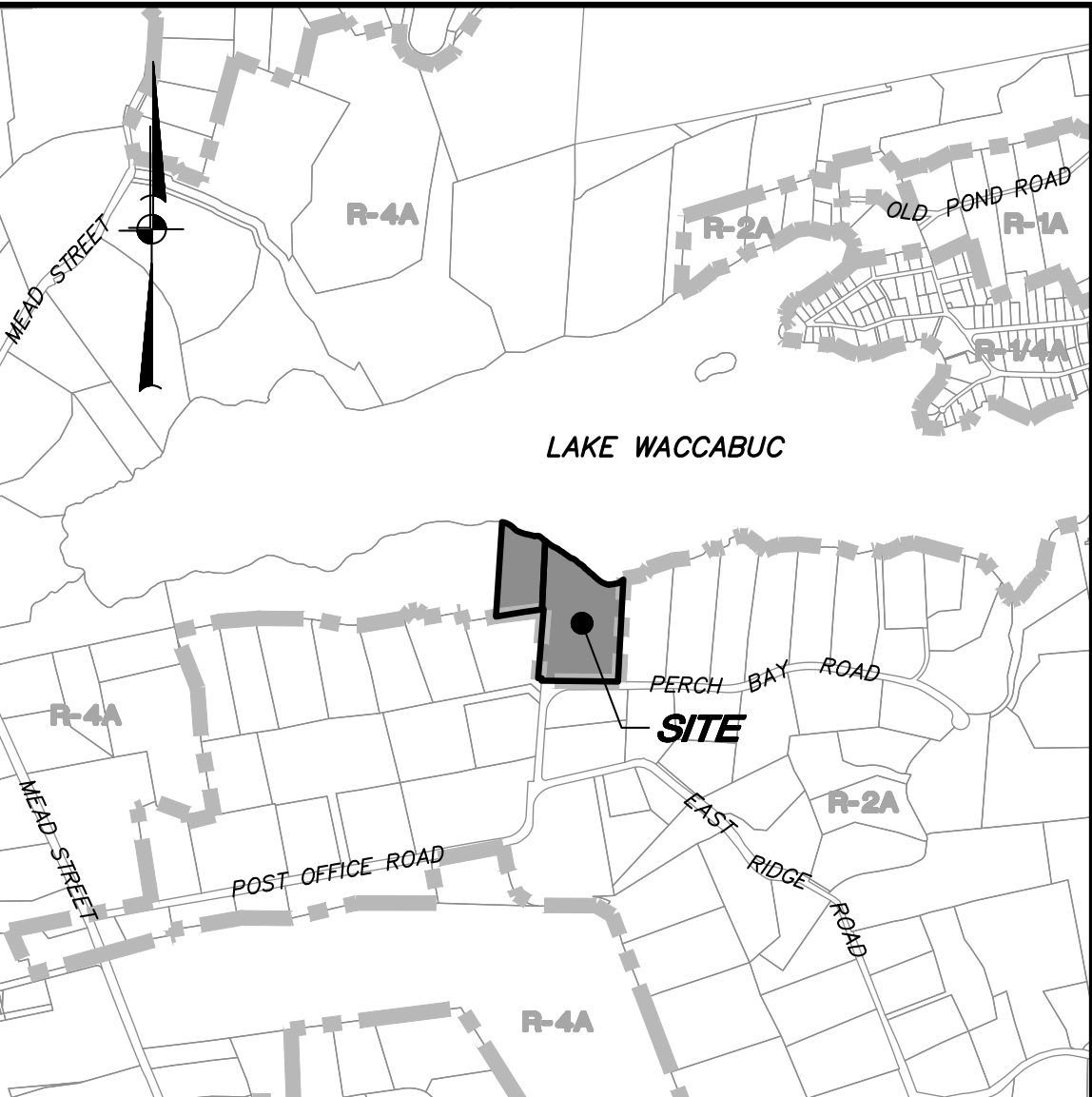
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)





R4-A ZONE REQUIREMENTS			
	REQUIRED/ PERMITTEE	COMBINED LOTS	
		EXISTING	PROPOSED
Minimum Lot Size:	4 AC	9.1 AC	9.1 AC
Minimum Front Yard:			
From street center line	75'	600'	573'
From front lot line	50'	576'	550'
Minimum Side Yard:	50'	29'	218'
Minimum Rear Yard:	50'	0' **	No change
Maximum Building Height:	2.5 stories/ 35'	2.5 stories/ 35'	2.5 stories/ 35'
Maximum Building Coverage:	6%	0.5%	1.1%

\* Bathhouse - Pre-existing concrete deck is 0.3' over property line per survey.  
\*\* Bathhouse - Pre-existing porch overhang is 1.4' over property line per architectural drawings.



LOCATION MAP

SCALE: 1" = 1,000'±

**OWNER/APPLICANT:**

WACCABUC COUNTRY CLUB  
90 MEAD STREET  
WACCABUC, NY 10597

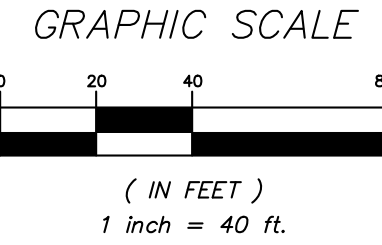
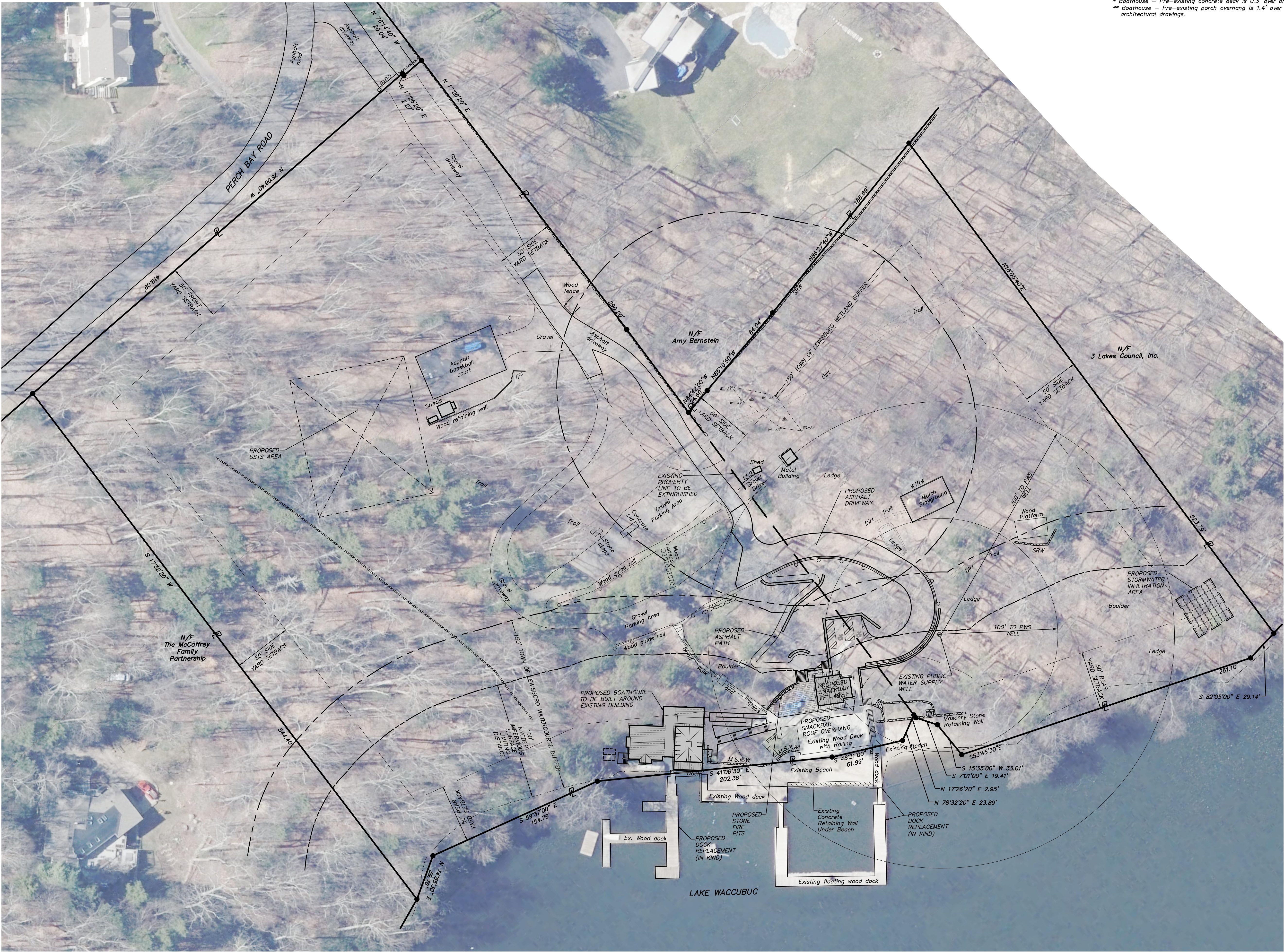
**SITE DATA:**

Zone: R-4A (4 Acre Residential)  
Total Acreage 9.1 AC±  
Tax Map No.:  
1. Sheet 25A-Block 10813-Lot 01  
2. Sheet 25-Block 148-Lot 25

**GENERAL NOTES:**

- Property lines, existing conditions and topography as shown hereon based off of survey mapping prepared by Bunney Associates Land Surveyors completed 2007 and 4-4-2012, and by Insite Engineering, Surveying & Landscape Architecture P.C., completed 7-28-2018 and 6-7-2021.
- Topography shown hereon (outside property lines) taken from both the Westchester County 2' contour, 1" = 100 scale GIS dataset dated April 2004 (elevations reference the North American Vertical Datum of 1988, NAVD 88).
- Wetlands shown hereon delineated by James Bates of Ecological Analysis on April 21, 2021, and survey located by Insite Engineering, Surveying & Landscape Architecture, P.C. on June 7, 2021.
- Based on a watercourse walk conducted with Miryam Zachariah of NYCDEP on April 26, 2021, there are no NYCDEP watercourses on the project site.
- It is the applicants intent to merge the 2 parcels into one lot as part of this project.

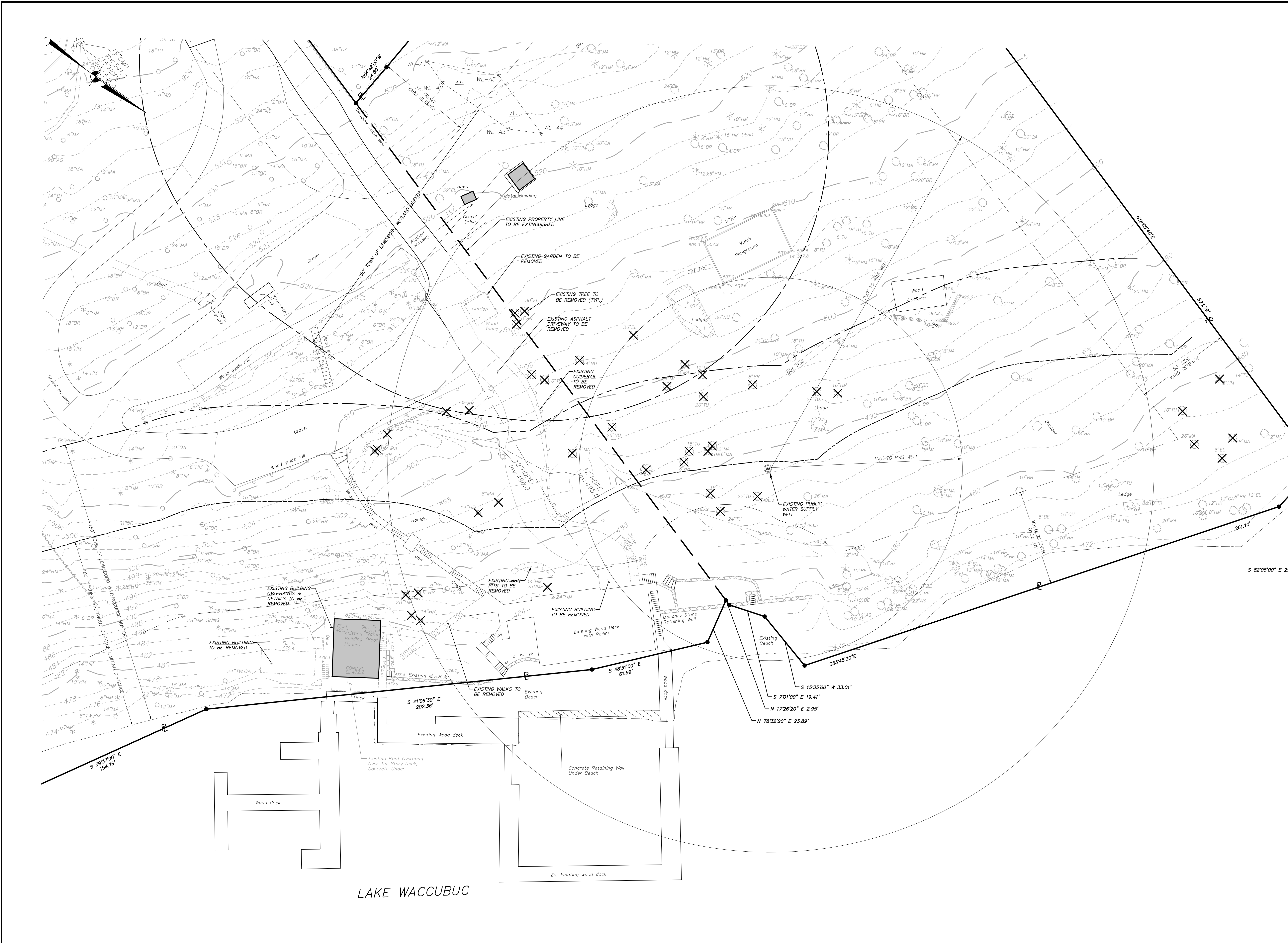
LEGEND	
	EXISTING PROPERTY LINE
	EXISTING BUILDING
	EXISTING BUILDING TO BE REMOVED
	EXISTING STONE WALL
	EXISTING MASONRY STONE WALL
	EXISTING WOODEN RETAINING WALL
	EXISTING DIRT TRAIL
	EXISTING GUIDE RAIL
	EXISTING CURB
	EXISTING WATERCOURSE
	EXISTING EDGE OF WATER
	EXISTING WETLAND
	EXISTING WETLAND FLAG
	EXISTING ROCK LEDGE
	PROPOSED 150' WATERCOURSE BUFFER
	PROPOSED 100' IMPERVIOUS LIMITING DISTANCE



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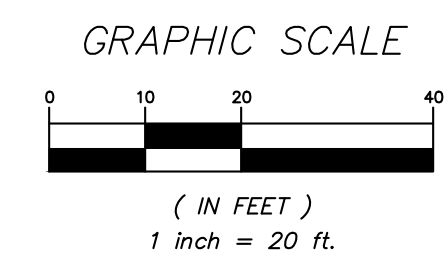
NO.	DATE	REVISION	BY
PROJECT: WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS			
80 MEAD ST., WACCABUC, TOWN OF LEWISBORO, WESTCHESTER CTY, NY			
DRAWING: OVERALL PLAN			
PROJECT NUMBER	20228.100	PROJECT MANAGER	Z.M.P.
DATE	2-8-22	DRAWN BY	E.R.A.
SCALE	1" = 40'	CHECKED BY	D.L.M.
DRAWING NO.	SHEET 1/7		





**LEGEND**

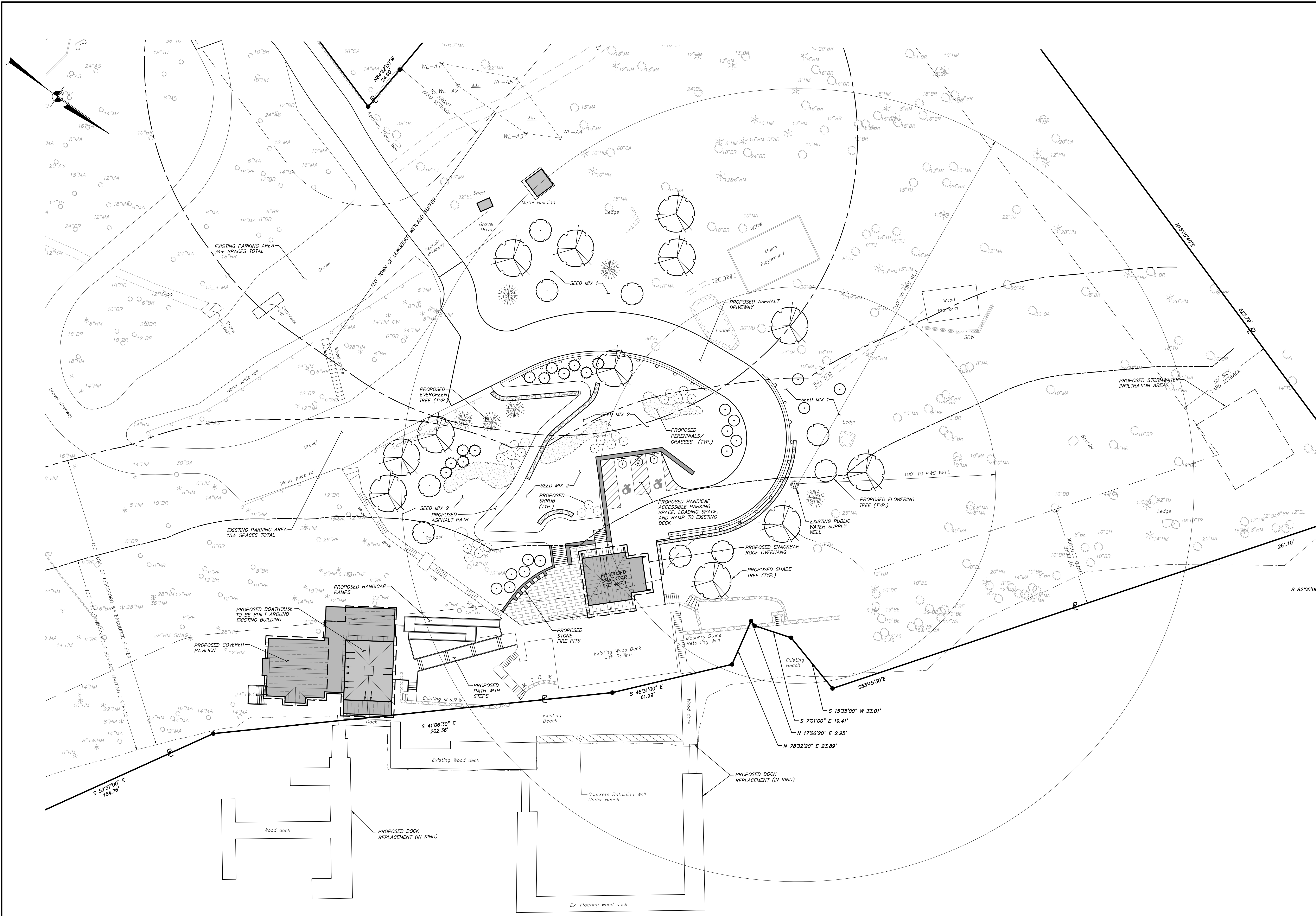
- EXISTING PROPERTY LINE
- EXISTING BUILDING
- EXISTING BUILDING TO BE REMOVED
- EXISTING STONE WALL
- EXISTING MASONRY STONE WALL
- EXISTING WOODEN RETAINING WALL
- EXISTING DIRT TRAIL
- EXISTING GUIDE RAIL
- EXISTING CURB
- EXISTING UNDERGROUND DRAINAGE PIPE
- EXISTING DRAIN INLET
- EXISTING WELL
- EXISTING SSSTS
- EXISTING WATERCOURSE
- EXISTING EDGE OF WATER
- EXISTING WETLAND
- EXISTING WETLAND FLAG
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING SPOT GRADE
- EXISTING INDIVIDUAL TREE
- EXISTING DECIDUOUS TREE
- EXISTING EVERGREEN TREE
- EXISTING TREE TO BE REMOVED
- EXISTING ROCK LEDGE
- EXISTING POST MOUNTED LIGHT



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NO.	DATE	REVISION	BY
<b>INSITE</b> ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place Carmel, NY 10512 (845) 225-9690 (845) 225-9717 fax www.insite-eng.com			
PROJECT: <b>WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS</b> 80 MEAD ST., WACCABUC, TOWN OF LEWISBORO, WESTCHESTER CTY, NY			
DRAWING: <b>EXISTING CONDITIONS PLAN</b>			
PROJECT NUMBER 20228.100	PROJECT MANAGER Z.M.P.	DRAWING NO. EX-1	SHEET 2
DATE 2-8-22	DRAWN BY E.R.A.	CHECKED BY D.L.M.	7
SCALE 1" = 20'			





LEGEND

EXISTING PROPERTY LINE

EXISTING BUILDING

EXISTING STONE WALL

EXISTING MASONRY STONE WALL

EXISTING WOODEN RETAINING WALL

EXISTING DIRT TRAIL

EXISTING CURB

EXISTING WATERCOURSE

EXISTING EDGE OF WATER

EXISTING WETLAND

EXISTING WETLAND FLAG

EXISTING DECIDUOUS TREE

EXISTING EVERGREEN TREE

EXISTING ROCK LEDGE

EXISTING POST MOUNTED LIGHT

EXISTING INDIVIDUAL TREE

EXISTING WELL

PROPOSED 150' WATERCOURSE BUFFER

PROPOSED 100' IMPERVIOUS LIMITING DISTANCE

PROPOSED LANDSCAPING

LAKE WACCUBUC

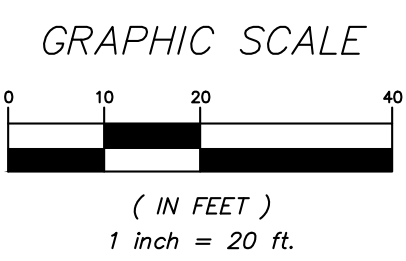
SEEDING NOTES:

- All proposed seeded areas to receive 4" min. depth of topsoil. Soil amendments and fertilizer application rates shall be determined based on specific testing of topsoil material. Topsoil shall be placed using a method that will not cause compaction.
- Upon final grading and placement of topsoil and any required soil amendments, areas to receive permanent vegetation cover in combination with suitable mulch as follows:
  - select seed mixture per drawings and seeding notes.
  - low starter fertilizer to be applied only as needed based on results of soil testing and relative recommendations.
  - no fertilizer is to be used in low areas, within wetland buffers, or with native seed mixes within areas to be naturalized. Nutrient requirements shall be met by incorporation of acceptable organic matter based on results of soil testing.
  - mulch: salt hay or small grain straw applied at a rate of 90 lbs./1000 s.f. or 2 tons/acre, to be applied and anchored according to New York State Standards and Specifications for Erosion and Sediment Control, August 2005.
  - if the season prevents the establishment of a permanent vegetation cover, the disturbed areas will be mulched with straw or equivalent.
- Seeding should begin immediately upon completion of finish grading and seed bed preparation while soil is still friable and before weeds can emerge. If seeding area is crusted or compacted, it should be loosened by disking or tilling. If weeds are present, they should be mowed short and removed or killed under before seed is applied.
- Seed mixtures shall be planted between March 21 and May 20, or between August 15, and October 15 or as directed by project representative. The seed mixes as specified on these drawings are as follows:
  - A. Seed Mix #1 for disturbed woodland areas shall be (ERNMX-132-1) Right of Way Native Woods Mix with annual ryegrass at a rate of 30 lbs./acre.
  - B. Seed Mix #2 for the area between the parking lot and deck shall be (ERNMX-181) Native Steep Slopes Mix with annual ryegrass at a rate of 60 lbs./acre.
  - C. Temporary Seed Mix for temporary seeding shall be annual or perennial ryegrass in spring, summer or early fall, at a rate of 30 lbs./acre or winter rye (cereal rye) in late fall or early winter at a rate of 100 lbs./acre.

PLANTING NOTES:

- All proposed planting beds to receive a 12" min. depth of topsoil. Soil amendments and fertilizer application rates shall be determined based on specific testing of topsoil material.
- Any new soils added will be amended as required by results of soil testing and placed using a method that will not cause compaction.
- All plant material to be nursery grown.
- Plants shall conform with ANSI 260.1 American Standard for Nursery Stock in all ways including dimensions.
- Plant material shall be taken from healthy nursery stock.
- All plants shall be grown under climate conditions similar to those in the locality of the project.
- Plants shall be planted in all locations designed on the plan or as staked in the field by the Landscape Architect.
- The location and layout of landscape plants shown on the site plan shall take precedence in any discrepancies between the quantities of plants shown on the plans and the quantity of plants in the Plant List.
- Provide a 3" layer of shredded bark mulch (or as specified) over entire watering saucer at all tree pits or over entire planting bed. Do not place mulch within 3" of tree or shrub trunks.
- All landscape plantings shall be maintained in a healthy condition at all times. Any dead or diseased plants shall immediately be replaced "in kind" by the contractor (during warranty period) or project owner.

PLANT LIST			
SYMBOL	BOTANICAL/COMMON NAME	SIZE	ROOT/NOTES
	SHADE TREES		
	Acer rubrum / Red Maple	10' HT.	B&B
	Betula lenta / Black Birch	10' HT.	B&B
	Fagus grandifolia / American Beech	10' HT.	B&B
	Liriodendron tulipifera / Tulip Tree	10' HT.	B&B
	Nyssa sylvatica / Black Gum	10' HT.	B&B
	Flowering TREES		
	Cercis canadensis / Redbud	8' HT.	B&B
	Cornus florida / Cherokee / Flowering Dogwood	8' HT.	B&B
	Magnolia virginiana / Sweetbay Magnolia	6' HT.	B&B/(Multi-stem)
	Evergreen TREES		
	Ilex opaca / American Holly	6' HT.	B&B
	Pinus strobus / White Pine	6' HT.	B&B
	Tsuga 'Traveler' / Traveler Hemlock	6' HT.	B&B
	SHRUBS		
	Aesculus parviflora / Bottlebrush Buckeye	3' HT.	#3 CONT./6' O.C.
	Hamamelis virginiana / Witchhazel	3' HT.	#3 CONT./6' O.C.
	Hydrangea quercifolia / Oakleaf Hydrangea	3' HT.	#3 CONT./6' O.C.
	Itea virginica / Virginia Sweetpire	2' HT.	#3 CONT./6' O.C.
	Kalmia latifolia / Mountain Laurel	3' HT.	#3 CONT./6' O.C.
	Rhododendron atlanticum / Deciduous Azalea	3' HT.	#3 CONT./6' O.C.
	PERENNIALS/GROUND COVERS		
	Rosa 'Blushing' / Blushing Knockout Rose	2' HT.	#3 CONT./6' O.C.
	PERENNIALS/GROUND COVERS		
	Asplenium platyneuron / Lady Fern	#1 CONT./18" O.C.	
	Deschampsia cespitosa / Tufted Hair Grass	#1 CONT./18" O.C.	
	Echinacea purpurea / Coneflower	#1 CONT./18" O.C.	
	Mertensia virginica / Virginia Bluebells	#1 CONT./18" O.C.	
	PERENNIALS/GROUND COVERS		
	Polystichum acrostichoides / Christmas Fern	#1 CONT./18" O.C.	
	PERENNIALS/GROUND COVERS		
	Sporobolus heterolepis / Prairie Dropseed	#1 CONT./18" O.C.	



NO. DATE REVISION BY

ENGINEERING, SURVEYING &  
LANDSCAPE ARCHITECTURE, P.C.

3 Garrett Place  
Carmel, NY 12012  
(845) 225-9690  
(845) 225-9717 fax  
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PROJECT:  
WACCUBUC COUNTRY CLUB  
BEACH CLUB IMPROVEMENTS

90 MEAD ST., WACCUBUC, TOWN OF LEWISBORO, WESTCHESTER CITY, NY

DRAWING:  
LAYOUT & LANDSCAPE PLAN

PROJECT NUMBER 20228.100  
DATE 2-8-22  
SCALE 1" = 20'

PROJECT MANAGER Z.M.P.  
DRAWN BY E.R.A.  
CHECKED BY D.L.M.

DRAWING NO. SP-1  
SHEET 3  
7

Z:\2022\20220505 Waccubuc CC Beach Club\03 254.dwg 26/02/2022 16:27 AM Author: L

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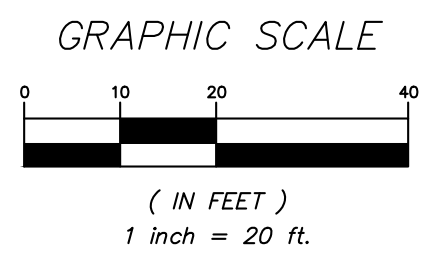




**LEGEND**

- EXISTING PROPERTY LINE
- EXISTING BUILDING
- EXISTING STONE WALL
- EXISTING MASONRY STONE WALL
- EXISTING WOODEN RETAINING WALL
- EXISTING UNDERGROUND DRAINAGE PIPE
- EXISTING DRAIN INLET
- EXISTING WELL
- EXISTING SSTS
- EXISTING WATERCOURSE
- EXISTING EDGE OF WATER
- EXISTING WETLAND
- EXISTING WETLAND FLAG
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING SPOT GRADE
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED SPOT ELEVATION
- PROPOSED TOP OF CURB & BOTTOM OF CURB ELEVATIONS
- PROPOSED TOP OF WALL & BOTTOM OF WALL ELEVATIONS
- PROPOSED DRAINAGE PIPE
- PROPOSED ROOF DRAIN
- PROPOSED DRAINAGE STRUCTURE
- PROPOSED DRAINAGE MANHOLE
- PROPOSED END SECTION WITH RIPRAP

LAKE WACCUBUC



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NO.	DATE	REVISION	BY
<b>INSITE</b> ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place Carmel, NY 10512 (845) 225-9690 (845) 225-9717 fax www.insite-eng.com			
PROJECT: <b>WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS</b> 80 MEAD ST., WACCABUC, TOWN OF LEWISBORO, WESTCHESTER CTY, NY			
DRAWING: <b>GRADING &amp; UTILITIES PLAN</b>			
PROJECT NUMBER 20228.100	PROJECT MANAGER Z.M.P.	DRAWING NO. SP-2	SHEET 4
DATE 2-8-22	DRAWN BY E.R.A.	CHECKED BY D.L.M.	7
SCALE 1" = 20'			





**LEGEND**

EXISTING PROPERTY LINE  
EXISTING BUILDING  
EXISTING STONE WALL  
EXISTING MASONRY STONE WALL  
EXISTING WOODEN RETAINING WALL  
EXISTING UNDERGROUND DRAINAGE PIPE  
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EXISTING SPOT GRADE  
PROPOSED 10' CONTOUR  
PROPOSED 2' CONTOUR  
PROPOSED SPOT ELEVATION  
PROPOSED TOP OF CURB & BOTTOM OF CURB ELEVATIONS  
PROPOSED TOP OF WALL & BOTTOM OF WALL ELEVATIONS  
PROPOSED SILT FENCE  
PROPOSED CONSTRUCTION FENCE  
PROPOSED TURBIDITY CURTAIN  
PROPOSED LIMITS OF DISTURBANCE  
PROPOSED TOPSOIL STOCKPILE  
PROPOSED STABILIZED CONSTRUCTION ENTRANCE

698.6 X  
x TC 101.0  
x BC 100.5  
x TW 105.0  
x BW 100.0

100.5  
100.0

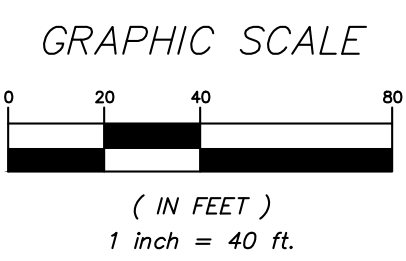
- EROSION & SEDIMENT CONTROL NOTES:**
- The owner's field representative (O.F.R.) will be responsible for the implementation and maintenance of erosion and sediment control measures on this site prior to and during construction.
  - All construction activities involving the removal or disposition of soil are to be provided with appropriate protective measures to minimize erosion and contain sediment disposition within. Minimum soil erosion and sediment control measures shall be implemented as shown on the plans and shall be installed in accordance with "New York Standards and Specifications For Erosion and Sediment Control," latest edition.
  - Wherever feasible, natural vegetation should be retained and protected. Disturbance shall be minimized in the areas required to perform construction. No more than 5 acres of unprotected soil shall be exposed at any one time.
  - When land is exposed during development, the exposure shall be kept to the shortest practical period of time. In the areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. Disturbance shall be minimized to the areas required to perform construction.
  - Silt fence shall be installed as shown on the plans prior to beginning any clearing, grubbing or earthwork.
  - All topsoil to be stripped from the area being developed shall be stockpiled and immediately seeded for temporary stabilization. Ryegrass (annual or perennial) at a rate of 30 lbs. per acre shall be used for temporary seeding in spring, summer or early fall. "Aristook" Winter Rye (cereal rye) shall be used for temporary seeding in late fall and winter.
  - Any disturbed areas not subject to further disturbance or construction traffic, permanent or temporary, shall have soil stabilization measures initiated for permanent vegetation cover in combination with a suitable mulch within 1 business day of final grading. All seeded areas to receive a minimum 4" topsoil (from stockpile area) and be seeded and mulched as follows:
    - Seed mixture to be planted between March 21 and May 20, or between August 15 and October 15 or as directed by project representative at a rate of 100 pounds per acre in the following proportions:
      - Kentucky Bluegrass 20%
      - Creeping Red Fescue 40%
      - Perennial Ryegrass 20%
      - Annual Ryegrass 20%
    - Mulch: Salt hay or small grain straw applied at a rate of 90 lbs./1000 S.F. or 2 tons/acre, to be applied and anchored according to "New York Standards and Specification For Erosion and Sediment Control," latest edition.
  - Grass seed mix may be applied by either mechanical or hydroseeding methods. Seeding shall be performed in accordance with the current edition of the "NYSDOT Standard Specification, Construction and Materials, Section 610-3.02, Method No. 1". Hydroseeding shall be performed using materials and methods as approved by the site engineer.
  - Cut or fill slopes steeper than 3:1 shall be stabilized immediately after grading with Curlex I Single Net Erosion Control Blanket, or approved equal.
  - Paved roadways shall be kept clean at all times.
  - The site shall at all times be graded and maintained such that all stormwater runoff is directed to soil erosion and sediment control facilities.
  - All storm drainage outlets shall be stabilized, as required, before the discharge points become operational.
  - Stormwater from disturbed areas must be passed through erosion control barriers before discharge beyond disturbed areas or discharged into other drainage systems.
  - Erosion and sediment control measures shall be inspected and maintained on a daily basis by the O.F.R. to insure that channels, temporary and permanent ditches and pipes are clear of debris, that embankments and berms have not been breached and that all straw bales and silt fences are intact. Any failure of erosion and sediment control measures shall be immediately repaired by the contractor and inspected for approval by the O.F.R. and/or site engineer.
  - Dust shall be controlled by sprinkling or other approved methods as necessary, or as directed by the O.F.R.
  - Cut and fills shall not endanger adjoining property, nor divert water into the property of others.
  - All fills shall be placed and compacted in 6" lifts to provide stability of material and to prevent settlement.
  - The O.F.R. shall inspect downstream conditions for evidence of sedimentation on a weekly basis and after rainstorms.
  - As warranted by field conditions, special additional erosion and sediment control measures, as specified by the site engineer and/or the Town Engineer shall be installed by the contractor.
  - Erosion and sediment control measures shall remain in place until all disturbed areas are suitably stabilized.

**EROSION AND SEDIMENT CONTROL MAINTENANCE SCHEDULE**

MONITORING REQUIREMENTS				MAINTENANCE REQUIREMENTS	
PRACTICE	DAILY	WEEKLY	AFTER RAINFALL	DURING CONSTRUCTION	AFTER CONSTRUCTION
SILT FENCE BARRIER	—	Inspect	Inspect	Clean/Replace	Remove
STABILIZED CONSTRUCTION ENTRANCE	Inspect	—	Inspect	Clean/Replace Stone and Fabric	Remove
DUST CONTROL	Inspect	—	Inspect	Mulching/Spraying Water	N/A
*VEGETATIVE ESTABLISHMENT	—	Inspect	Inspect	Water/Reseed/Remove	Reseed to 80% Coverage
INLET PROTECTION	—	Inspect	Inspect	Clean/Repair/Replace	Remove
SOIL STOCKPILES	—	Inspect	Inspect	Mulching/Silt Fence Repair	Remove
CONCRETE DRAINAGE STRUCTURES	—	Inspect	Inspect	Clean Sumps/Remove Debris/Repair/Replace	Clean Sumps/Remove Debris/Repair/Replace
DRAINAGE PIPES	—	Inspect	Inspect	Clean/Repair	Clean/Repair
ROAD & PAVEMENT	—	Inspect	Inspect	Clean	Clean
*STORMWATER MANAGEMENT PRACTICE	—	Inspect	Inspect	Clean/Mulch/Repair/Reseed	See Permanent Stormwater Facilities Maintenance Schedule

\* Permanent vegetation is considered stabilized when 80% of the plant density is established. Erosion control measures shall remain in place until all disturbed areas are permanently stabilized. Note: The party responsible for implementation of the maintenance schedule during and after construction is:  
WACCABUC COUNTRY CLUB  
90 MEAD STREET  
WACCABUC, NY 10597  
and/or the current owner(s) of the subject property.

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NO. DATE REVISION BY

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www.insite-eng.com

PROJECT:  
**WACCABUC COUNTRY CLUB  
BEACH CLUB IMPROVEMENTS**  
90 MEAD ST., WACCABUC, TOWN OF LEWISBORO, WESTCHESTER CTY, NY

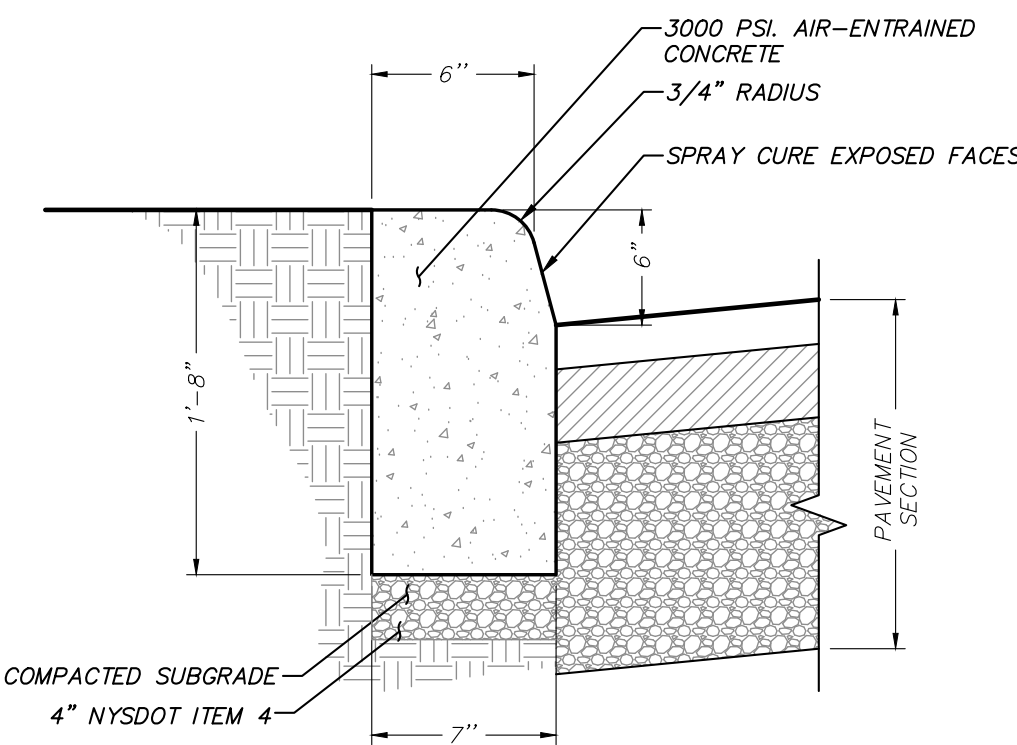
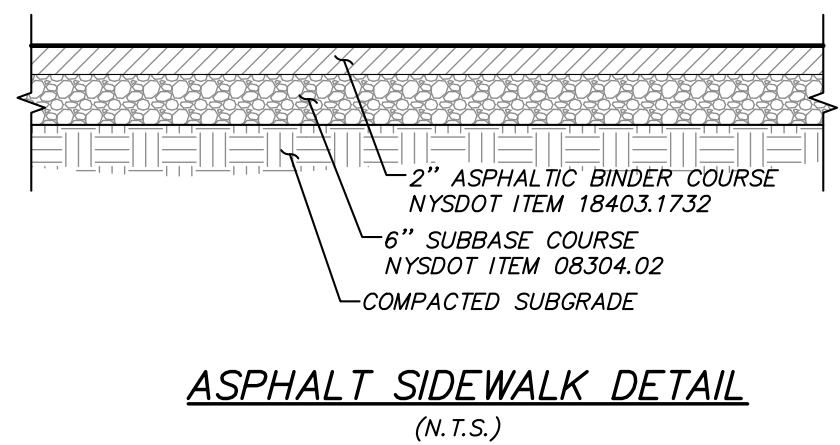
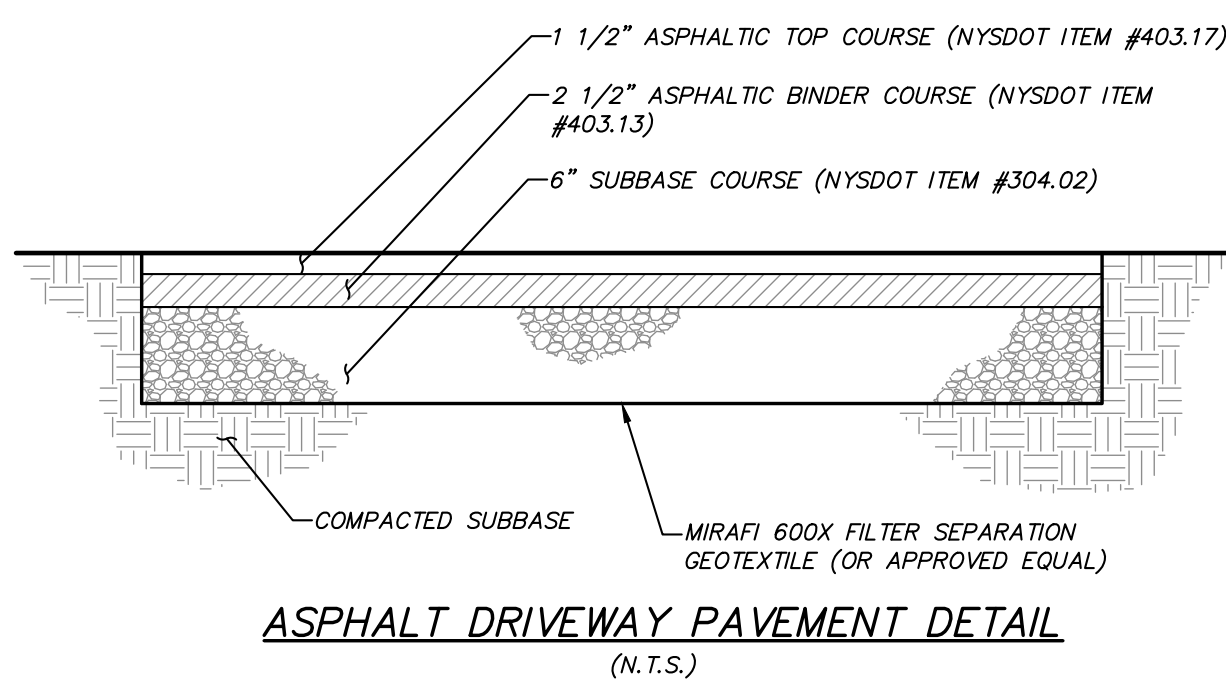
DRAWING:  
**EROSION & SEDIMENT CONTROL  
PLAN**

PROJECT NUMBER 20228.100 PROJECT MANAGER Z.M.P.  
DATE 2-8-22 DRAWN BY E.R.A.  
SCALE 1" = 40' CHECKED BY D.L.M.

DRAWING NO. SHEET  
**SP-3** 5  
7

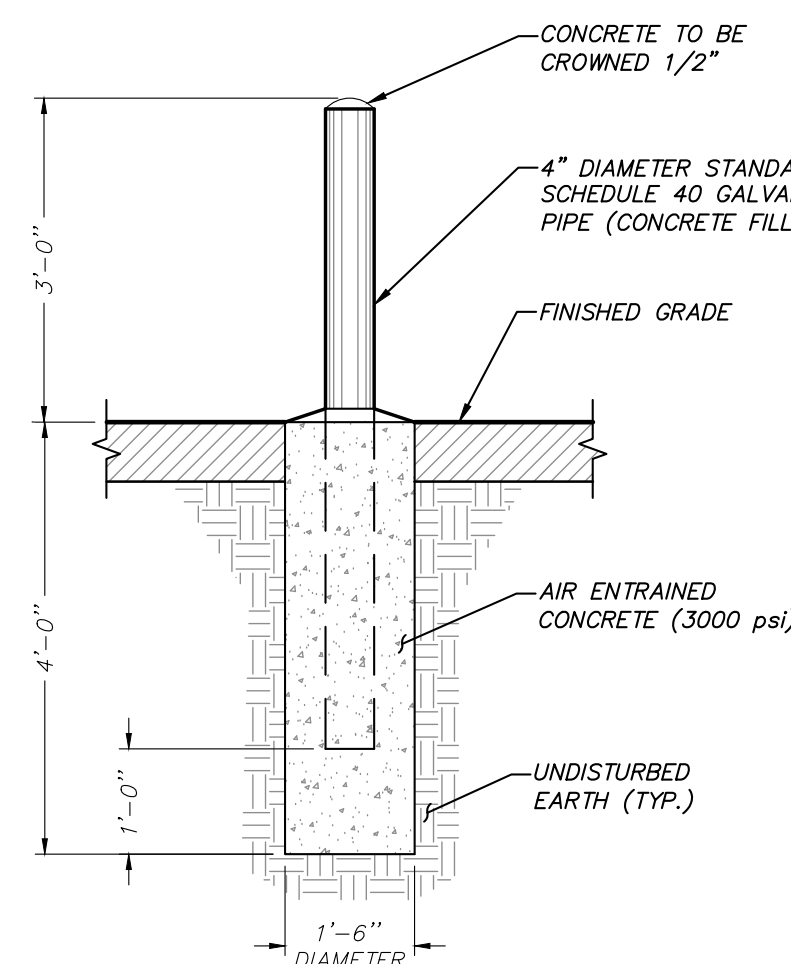
STATE OF NEW YORK  
REGISTERED PROFESSIONAL ENGINEER  
16664





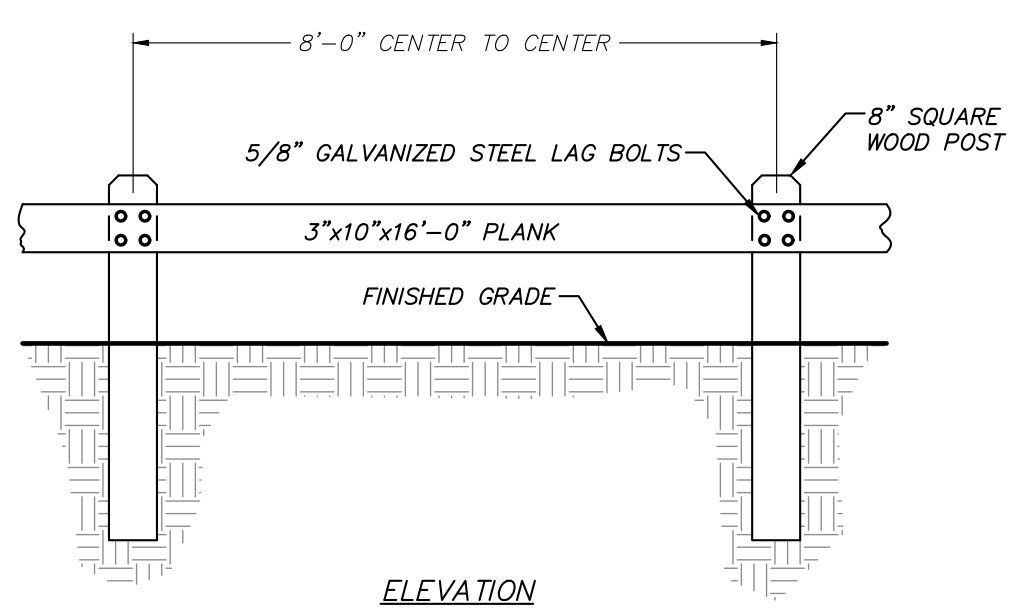
NOTE: ISOLATION JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB 20'-0" APART AND SHALL BE FILLED WITH CELLULAR COMPRESSION MATERIALS RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB.

CONCRETE CURB DETAIL (N.T.S.)



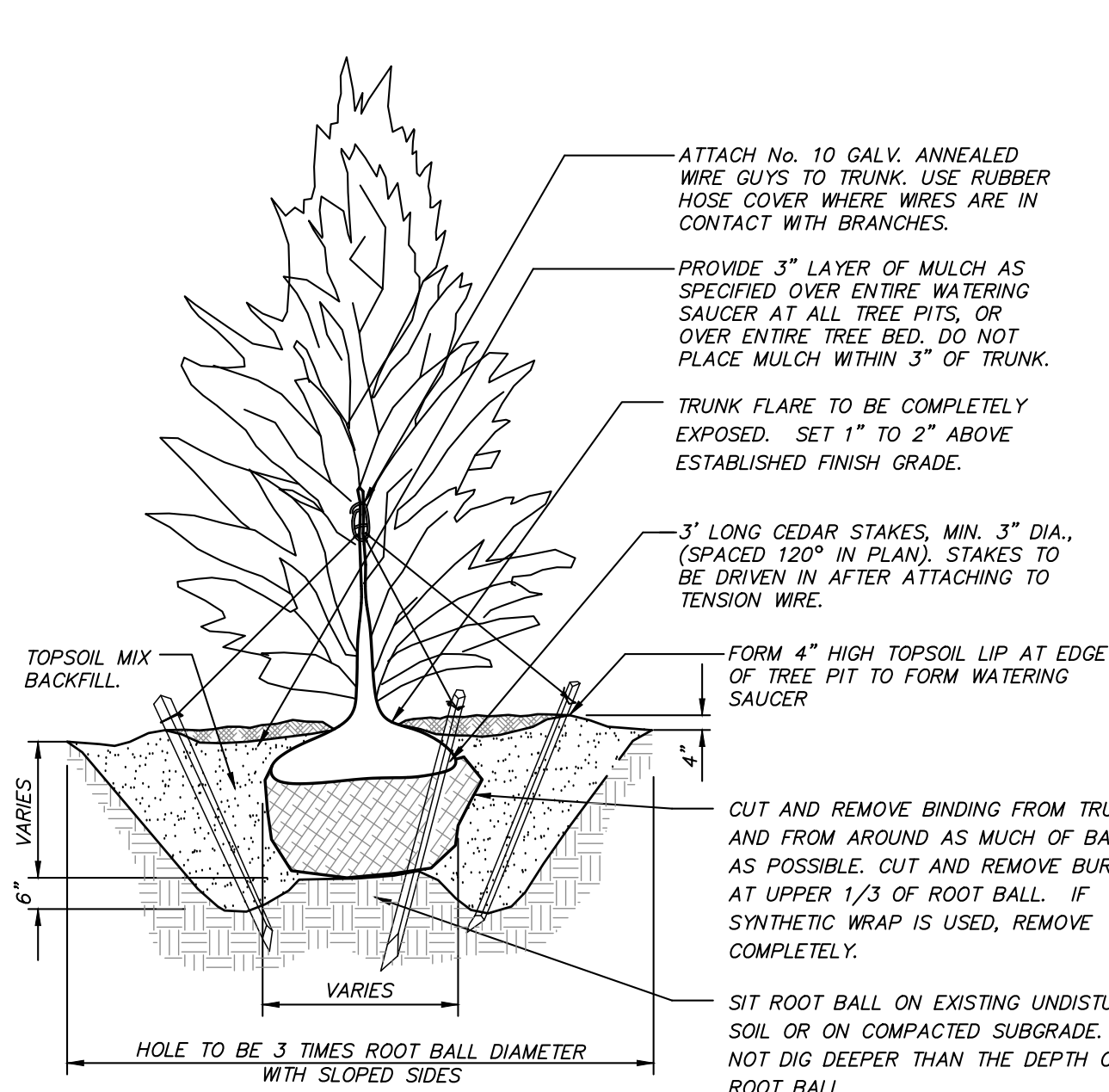
NOTE: WHEN PROTECTION POSTS ARE TO BE USED FOR PROTECTION OF HANDICAP PARKING SIGNS OR OTHER TRAFFIC SIGNS, SIGN SUPPORTING POST SHALL BE EMBEDDED A MINIMUM OF THREE (3) FEET INTO THE CONCRETE.

STEEL BOLLARD DETAIL (N.T.S.)



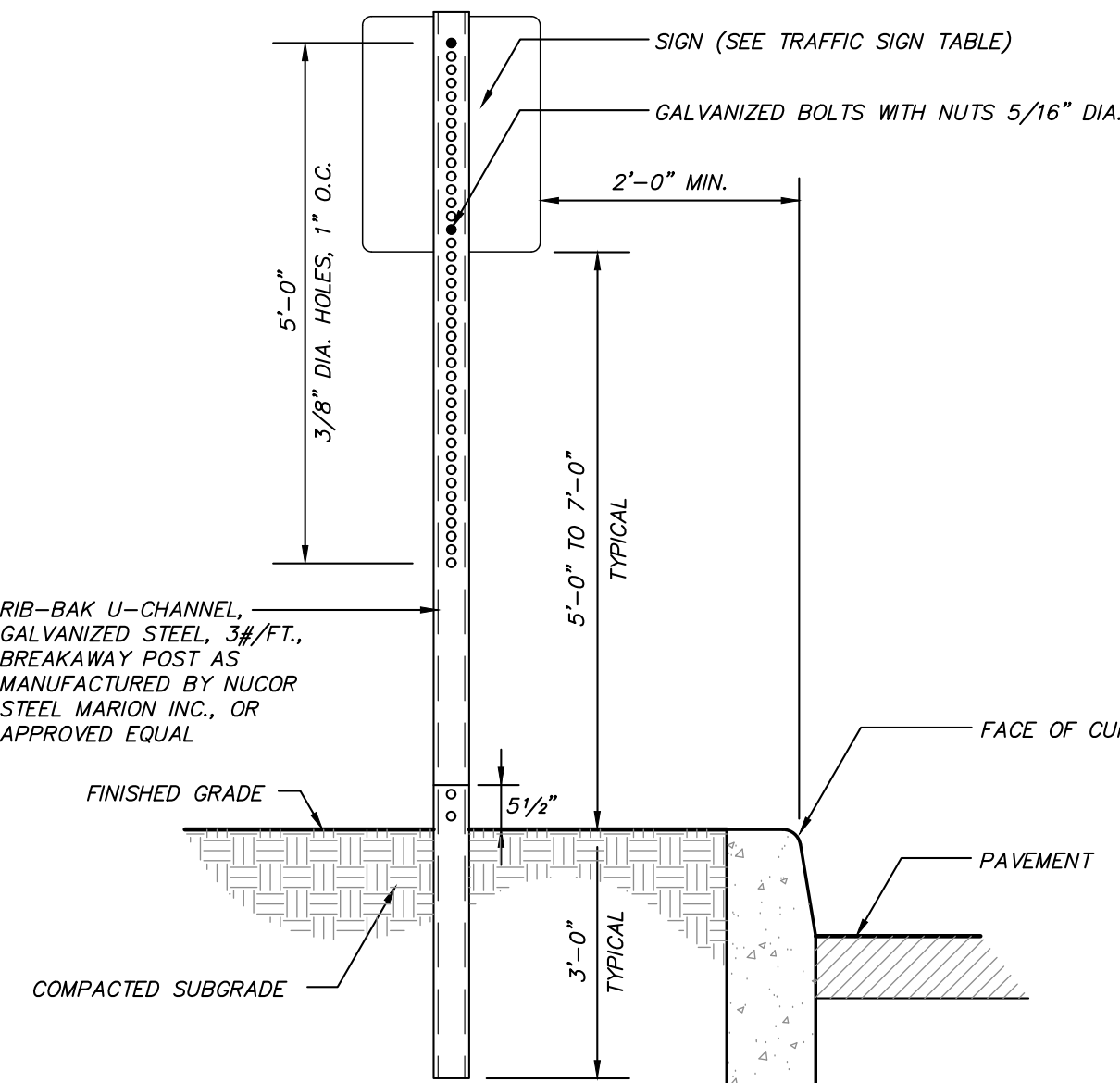
NOTES:  
1. ALL WOOD TO BE SEASONED NO.1 DOUGLAS FIR, SOUTHERN YELLOW PINE OR OTHER APPROVED STRUCTURAL LUMBER.  
2. ALL WOOD TO BE TREATED WITH AN APPROVED WOOD PRESERVATIVE SUITABLE FOR INSTALLATION IN AND ADJACENT TO GROUND SURFACES.

WOOD GUIDERAIL DETAIL (N.T.S.)



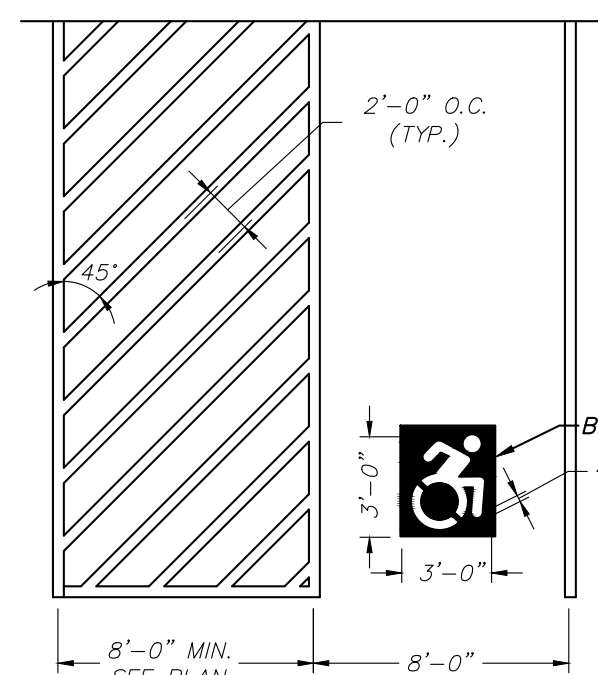
NOTE: PROVIDE STAKING AND GUYING FOR TREES PLANTED ON SLOPES GREATER THAN 3:1 V, IN EXPOSED, WINDY AREAS AND AS SPECIFIED BY LANDSCAPE ARCHITECT. GUY WIRES AND STAKES SHALL BE REMOVED WITHIN TWELVE MONTHS OF PLANTING.

EVERGREEN TREE PLANTING DETAIL (N.T.S.)



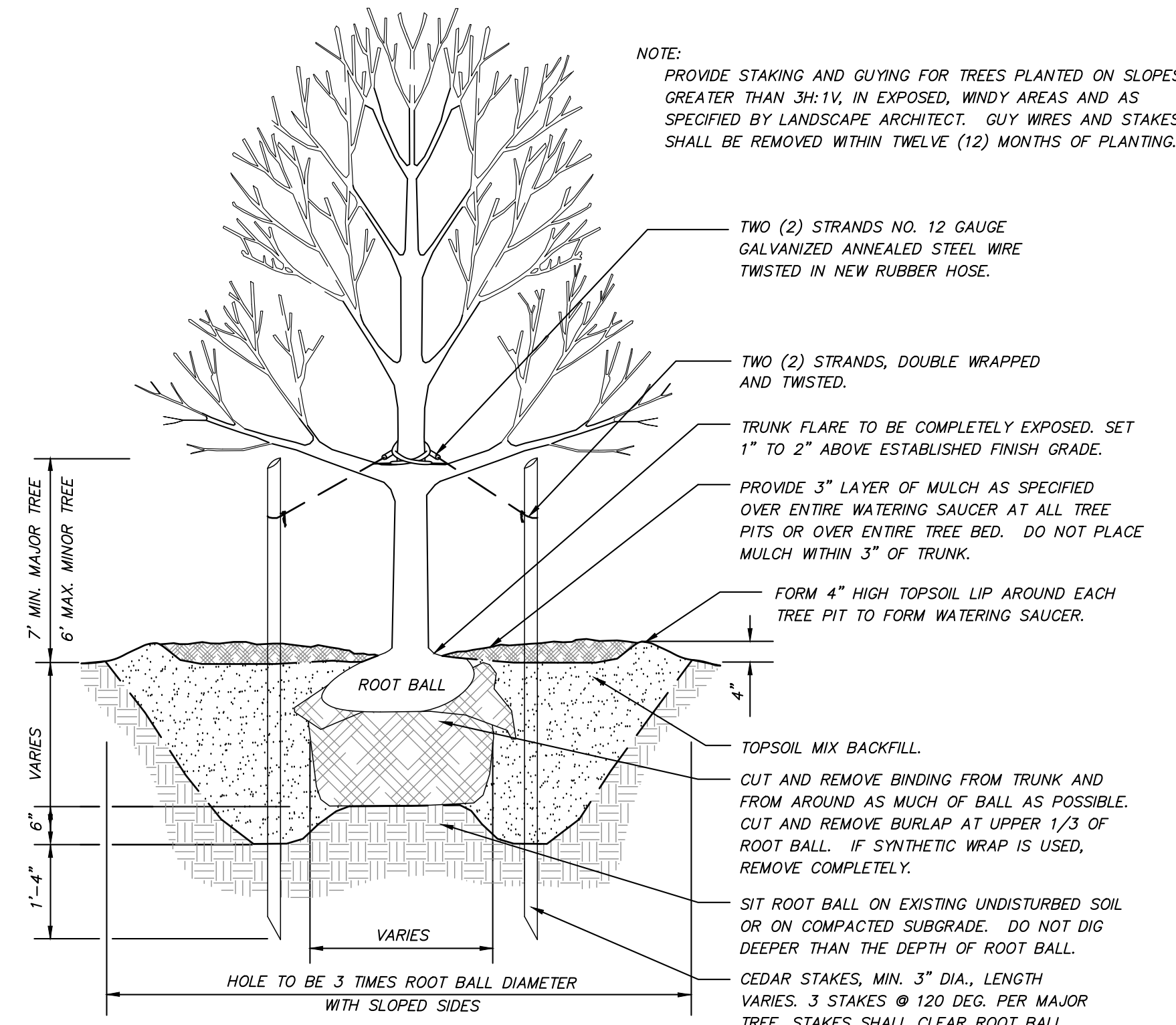
NOTE: FOR HANDICAP PARKING SIGNAGE, SIGNS SHALL BE INSTALLED AT A CLEAR HEIGHT OF BETWEEN 5'-0" AND 7'-0" ABOVE GRADE OF PARKING SPACE AND SUCH THAT SIGNS SHALL NOT BE OBSCURED BY A VEHICLE PARKED IN THE SPACE.

TRAFFIC SIGN DETAIL (N.T.S.)



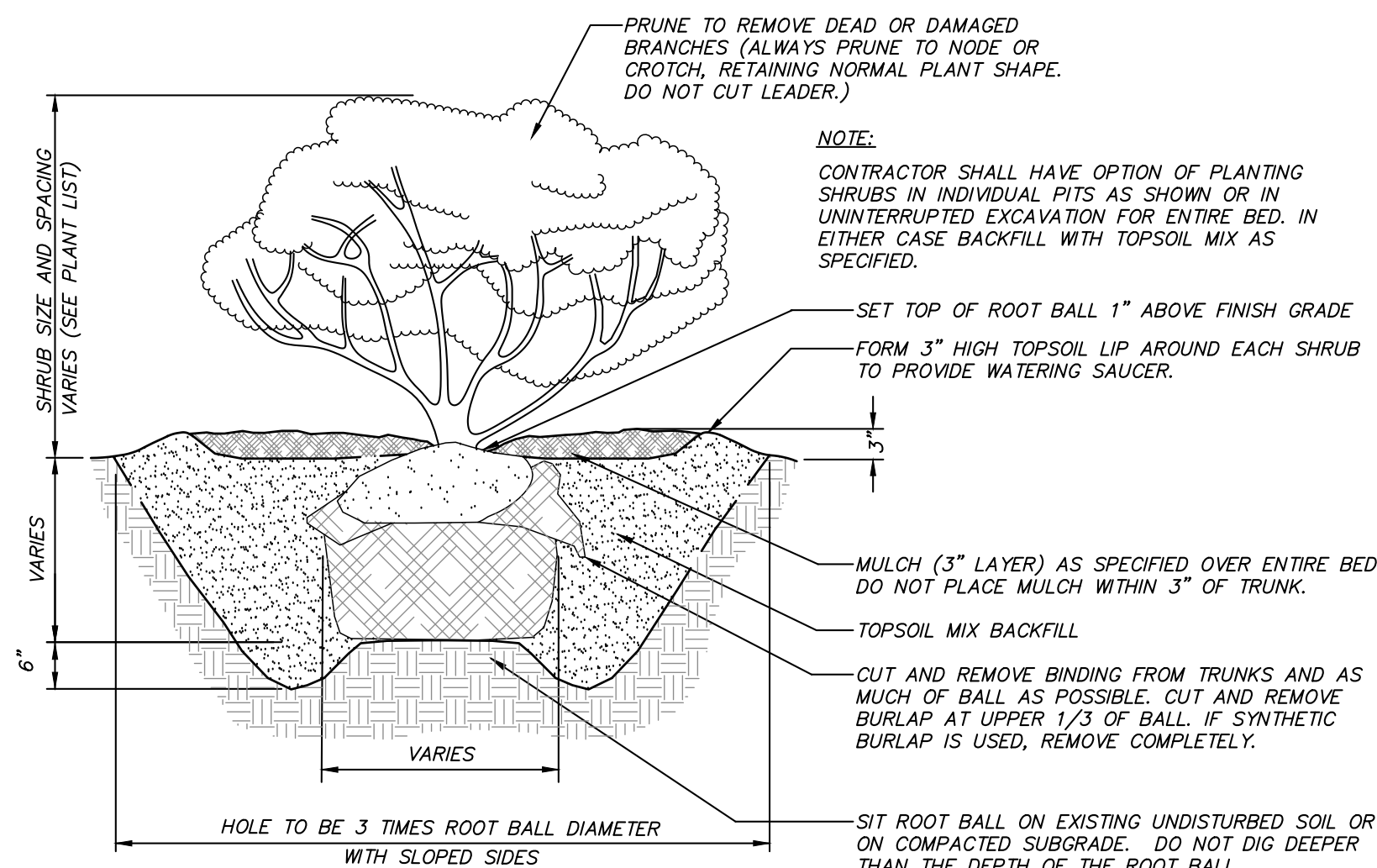
NOTE: ALL HANDICAP STRIPING SHALL BE 4" WIDE BLUE PAINT.

PAINTED NYS ACCESSIBLE PARKING DETAIL (N.T.S.)



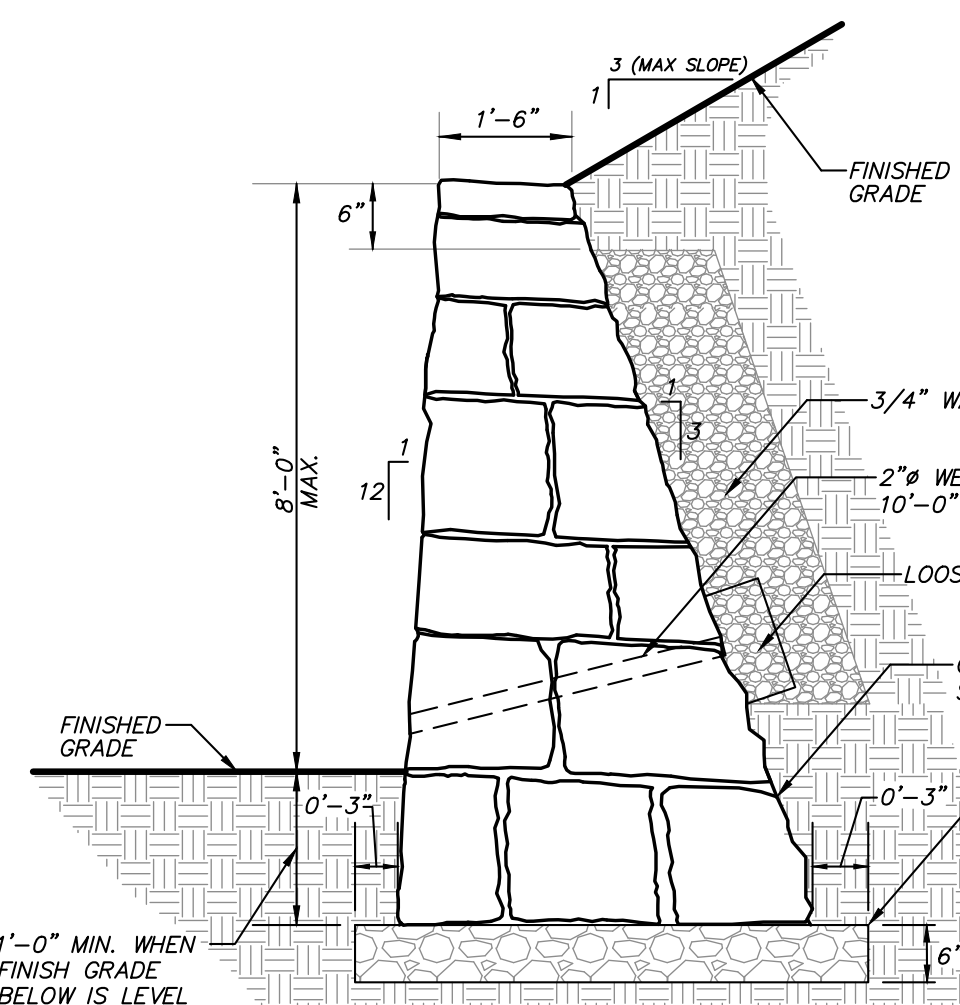
NOTE: PROVIDE STAKING AND GUYING FOR TREES PLANTED ON SLOPES GREATER THAN 3:1 V, IN EXPOSED, WINDY AREAS AND AS SPECIFIED BY LANDSCAPE ARCHITECT. GUY WIRES AND STAKES SHALL BE REMOVED WITHIN TWELVE (12) MONTHS OF PLANTING.

TREE PLANTING DETAIL (N.T.S.)

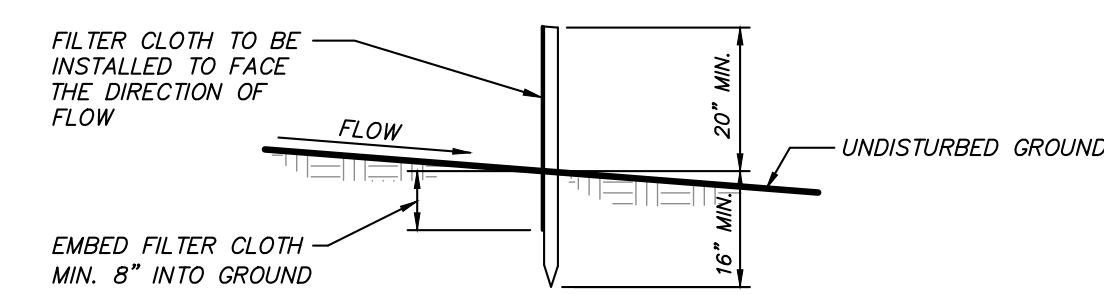
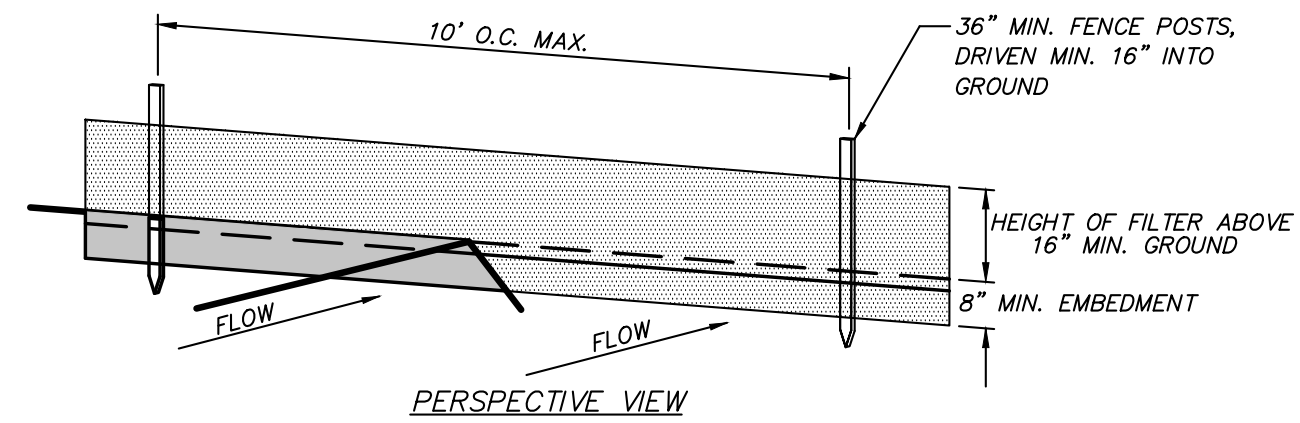


NOTE: CONTRACTOR SHALL HAVE OPTION OF PLANTING SHRUBS IN INDIVIDUAL PITS AS SHOWN OR IN UNINTERRUPTED EXCAVATION FOR ENTIRE BED. IN EITHER CASE BACKFILL WITH TOPSOIL MIX AS SPECIFIED.

SHRUB PLANTING DETAIL (N.T.S.)

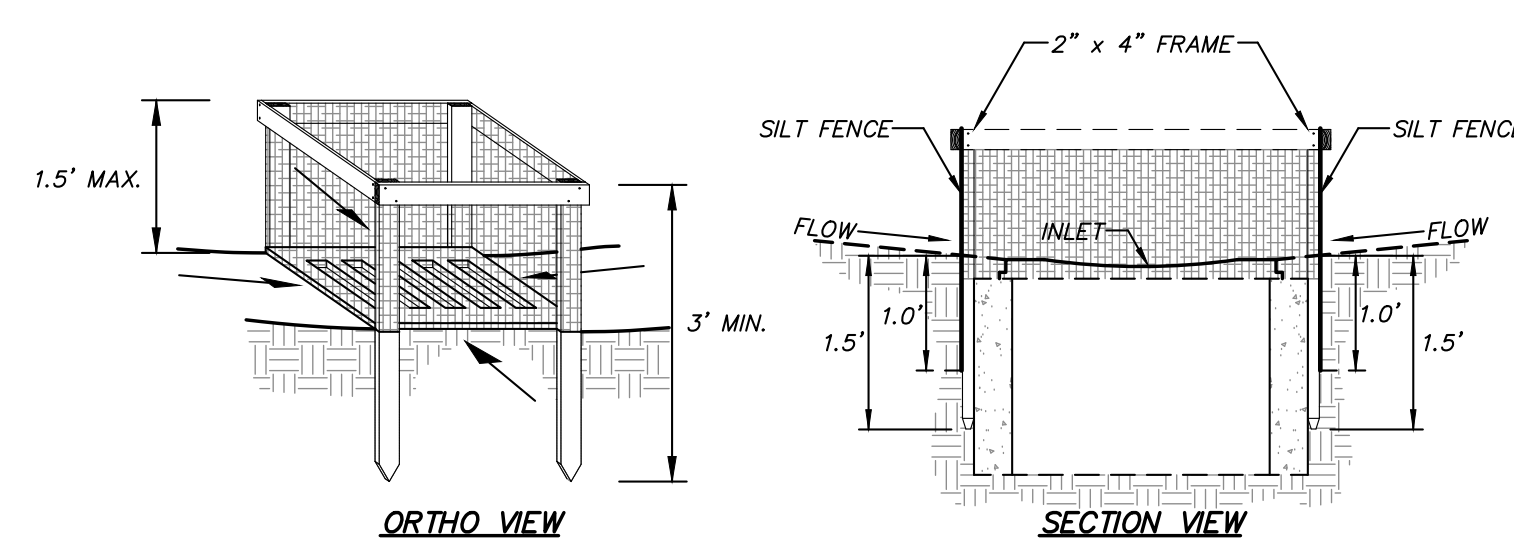


STONE RETAINING WALL DETAIL (N.T.S.)



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE  
1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS AT TOP AND MID SECTION.  
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.  
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

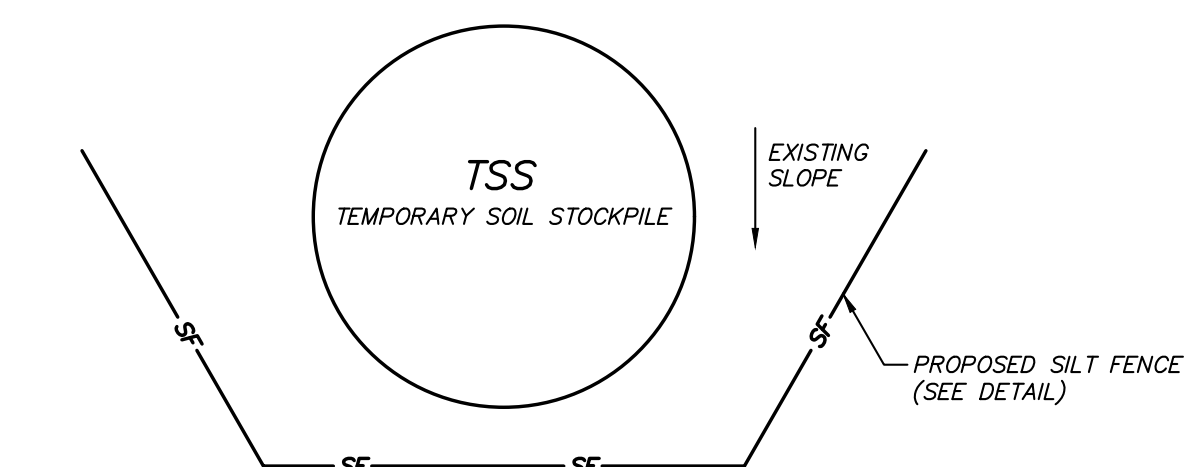
SILT FENCE DETAIL (N.T.S.)



INSTALLATION NOTES  
1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAYBE USED FOR SHORT TERM APPLICATIONS.  
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.  
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.  
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.  
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.  
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

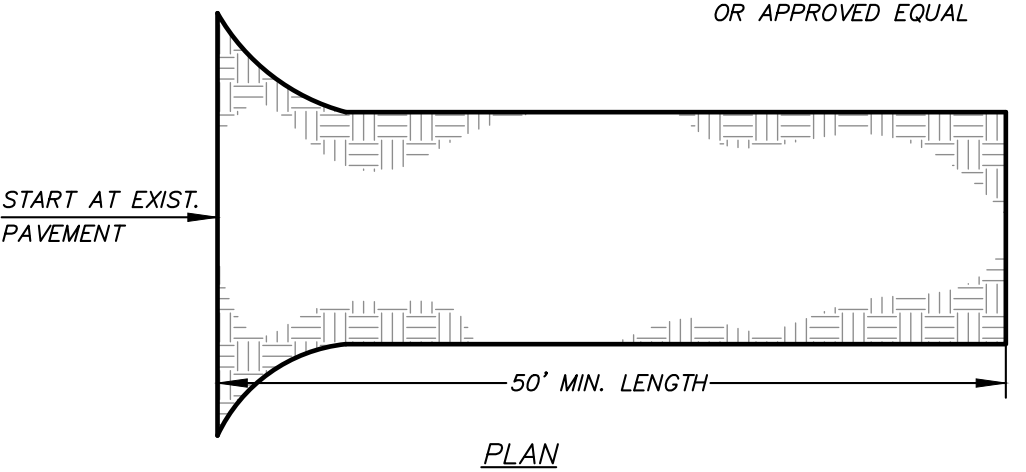
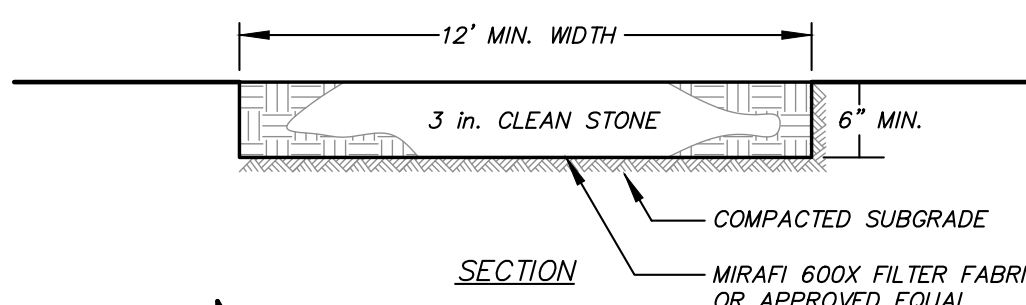
MAXIMUM DRAINAGE AREA 1 ACRE

FILTER FABRIC INLET PROTECTION DETAIL (N.T.S.)



NOTES:  
1. AREA CHOSEN FOR STOCKPILE LOCATION SHALL BE DRY AND STABLE.  
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2:1.  
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE IMMEDIATELY SEEDING WITH K31 PERENNIAL TALL FESCUE.  
4. ALL STOCKPILES SHALL BE PROTECTED WITH SILT FENCING INSTALLED ON THE DOWNGRADIENT SIDE.

TEMPORARY SOIL STOCKPILE DETAIL (N.T.S.)



INSTALLATION NOTES

1. STONE SIZE - USE 3" STONE  
2. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.)  
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.  
4. WIDTH - 12 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCUR.  
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. FILTER CLOTH WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.  
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.  
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAY THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT OF WAY MUST BE REMOVED IMMEDIATELY.  
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.  
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

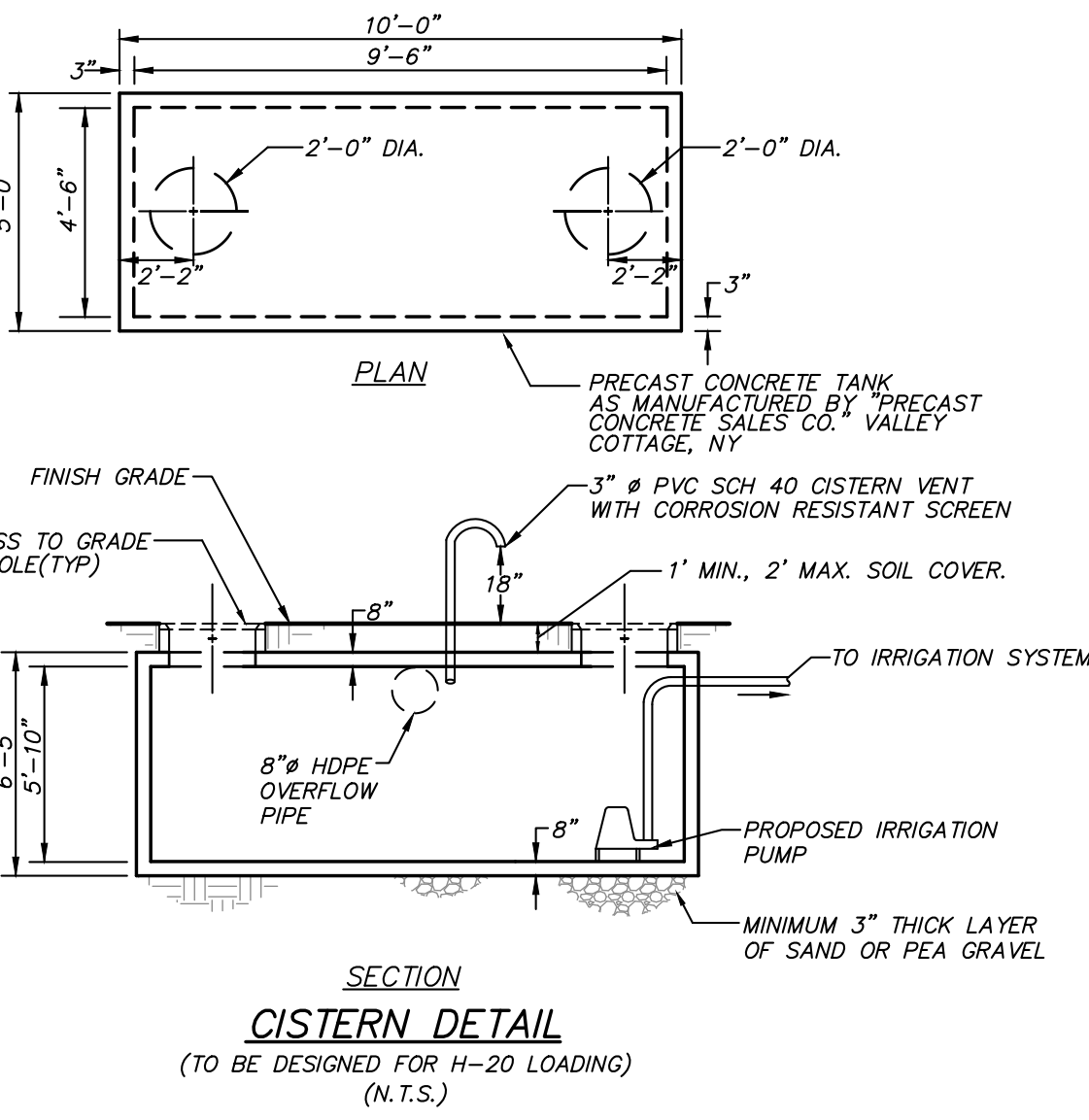
STABILIZED CONSTRUCTION ENTRANCE DETAIL (N.T.S.)

NOTES:  
1. CONTRACTOR SHALL RETAIN QUALIFIED MATERIAL TESTING COMPANY TO VERIFY CONFORMANCE OF SOIL CONDITIONS, MATERIAL SPECIFICATIONS, SOIL COMPACTION, AND OTHER REQUIREMENTS OF THE WALL DESIGN.  
2a. DESIGN PARAMETERS:  
FRICTION ANGLE - 33°  
COHESION - 0  
UNIT WEIGHT - 110 pcf  
RETAINED SOIL - 33°  
FOUNDATION SOIL - BEARING STRESS - 3,000 PSI  
GROUND WATER - BELOW BASE OF FOOTING

2b. TESTING FREQUENCY:  
FOUNDATION BEARING - 3 LOCATIONS ALONG WALL  
RETAINED SOIL - 3 RANDOM SAMPLES PER MATERIAL SOURCE  
3. BENCH CUT ALL EXCAVATED SLOPES.  
4. DO NOT OVER EXCAVATE UNLESS DIRECTED BY DESIGN ENGINEER TO REMOVE UNSUITABLE SOIL.  
5. DESIGN ENGINEER SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS, BY USING THE TEST RESULTS SUPPLIED BY CONTRACTOR'S TESTING COMPANY.  
6. LEVELING PAD SHALL CONSIST OF 3/4" CRUSHED GRAVEL, 6" THICK MIN.  
7. MINIMUM EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE 1'-0" OR AS SHOWN.  
8. DRAINAGE AGGREGATE SHALL BE INSTALLED DIRECTLY BEHIND THE WALL WITHIN 6" OF THE TOP OF THE WALL. DRAINAGE AGGREGATE SHALL NOT EXTEND BELOW FINAL GRADE IN FRONT OF WALL.  
9. CONTRACTOR SHALL DIRECT SURFACE RUNOFF TO AVOID DAMAGING WALL WHILE UNDER CONSTRUCTION.  
10. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT, OR TURF SHALL BE INSTALLED IMMEDIATELY AFTER WALL IS COMPLETED.

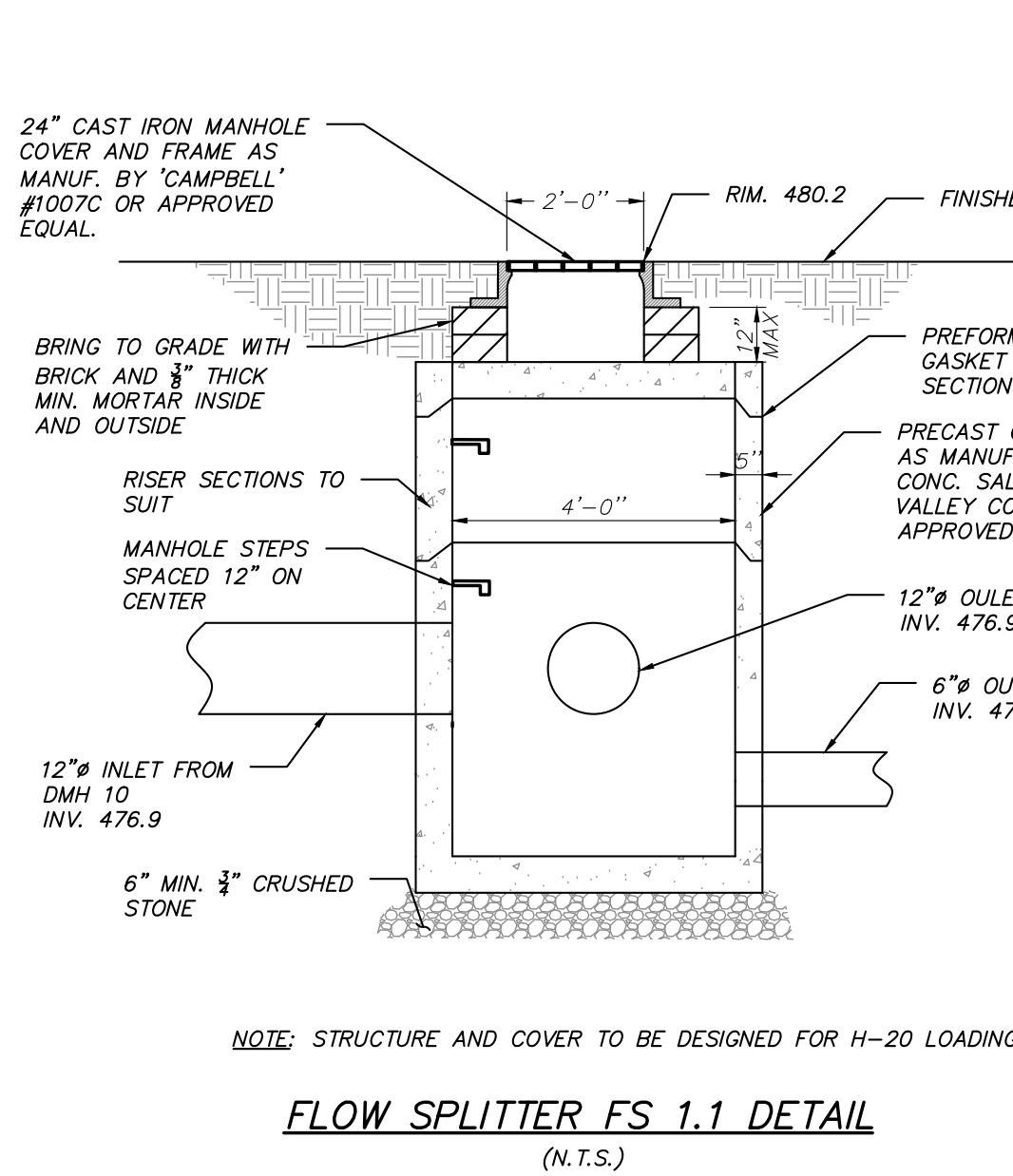
NO.	DATE	REVISION	BY
<div> <b>INSITE</b> ENGINEERING, SURVEYING &amp; LANDSCAPE ARCHITECTURE, P.C. </div>			
PROJECT:		3 Garrett Place Carmel, NY 10512 (845) 225-9690 (845) 225-9717 fax www.insite-eng.com	
PROJECT:		WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS	
DRAWING:		SITE DETAILS	
PROJECT NUMBER	20228.100	PROJECT MANAGER	Z.M.P.
DATE	2-8-22	DRAWN BY	E.R.A.
SCALE	AS SHOWN	CHECKED BY	D.L.M.
DRAWING NO.	D-1		
SHEET	6		





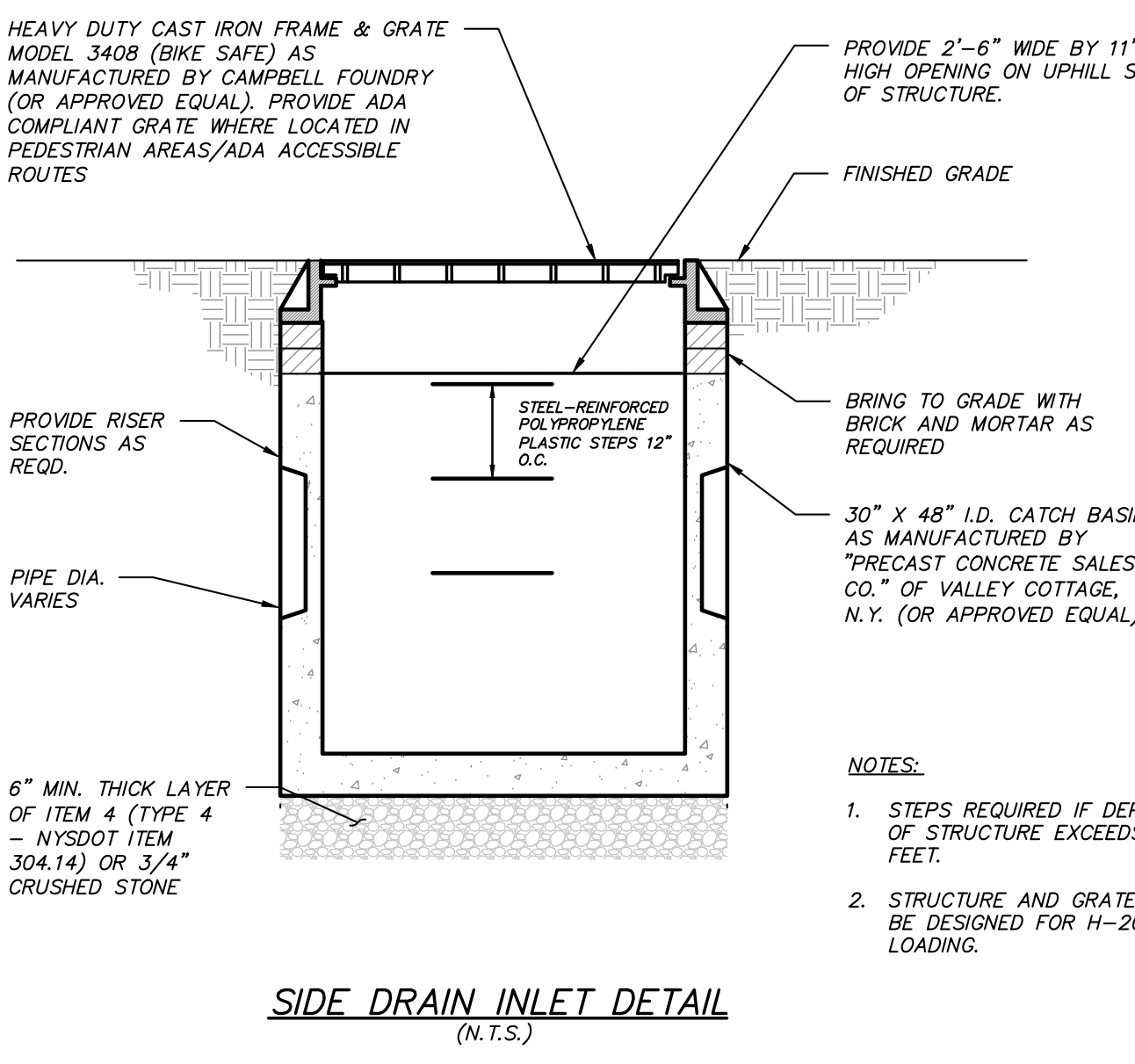
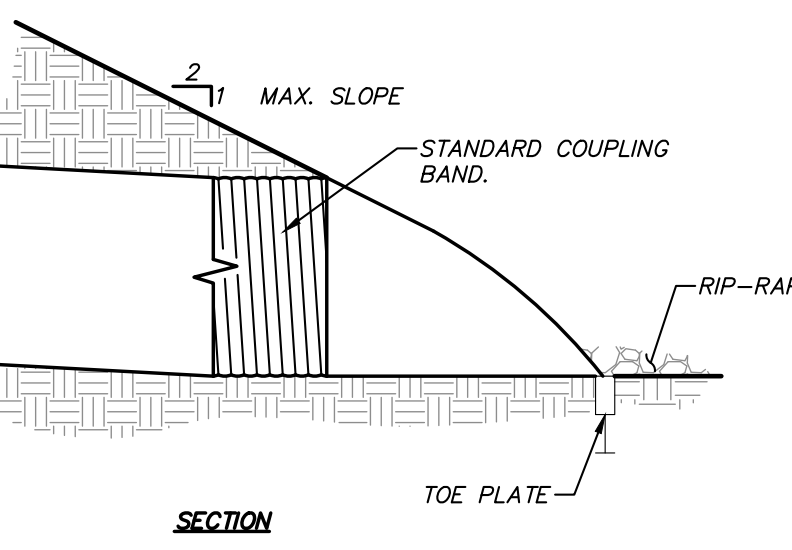
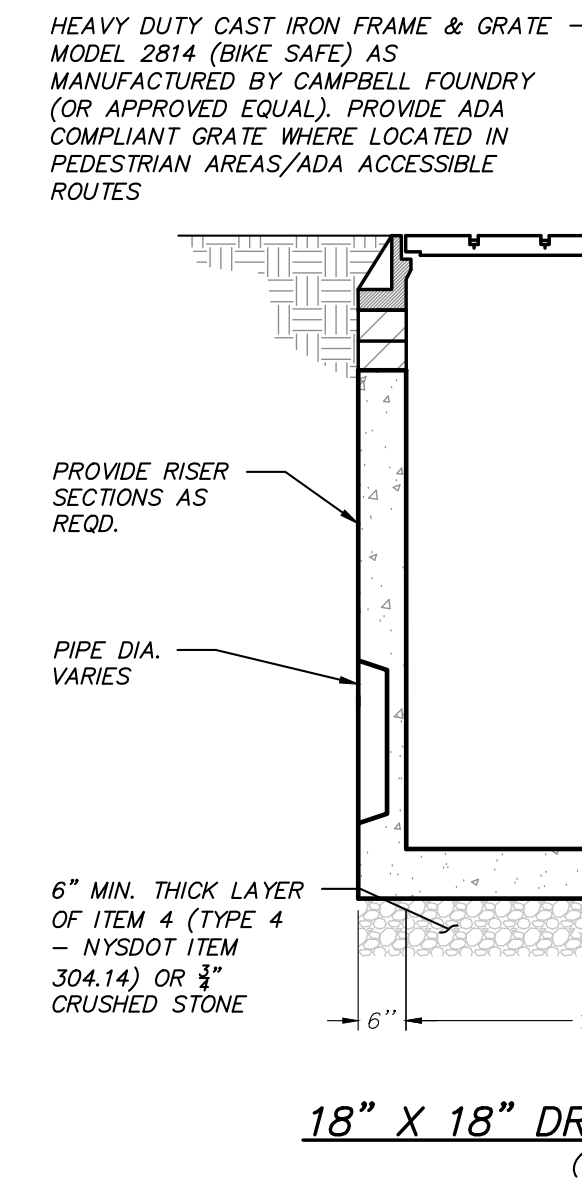
#### IRRIGATION SYSTEM NOTES:

- A cistern system is proposed to capture roof runoff from the proposed boat house. The cistern will be used regularly to ensure storage capacity is provided for future storm events and to prevent the stored runoff from becoming stagnant.
- The cistern shall be installed with a pump and distribution piping capable of servicing the onsite landscaped areas. Irrigation system to be designed by others.
- The cistern system shall consist of two (2) concrete tanks connected together for a total storage volume of 3,200 gallons.
- Irrigation distribution and piping shall be installed prior to the installation of finished asphalt and concrete surfaces.
- Water levels in the cisterns must be lowered at the beginning of winter to prevent possible ice damage and provide the needed storage in the cistern for capturing runoff from spring snow melt.
- Contractor to connect both tanks with 6" PVC SDR 35 equalization pipes. Equalization pipes shall be laid level at the bottom of the tanks.
- A 3" PVC SCH 40 vent shall be provided for each tank. The vents shall be collected with a manifold to an open vent in the adjacent lawn area.



#### DRAINAGE MANHOLE DETAIL

(N.T.S.)

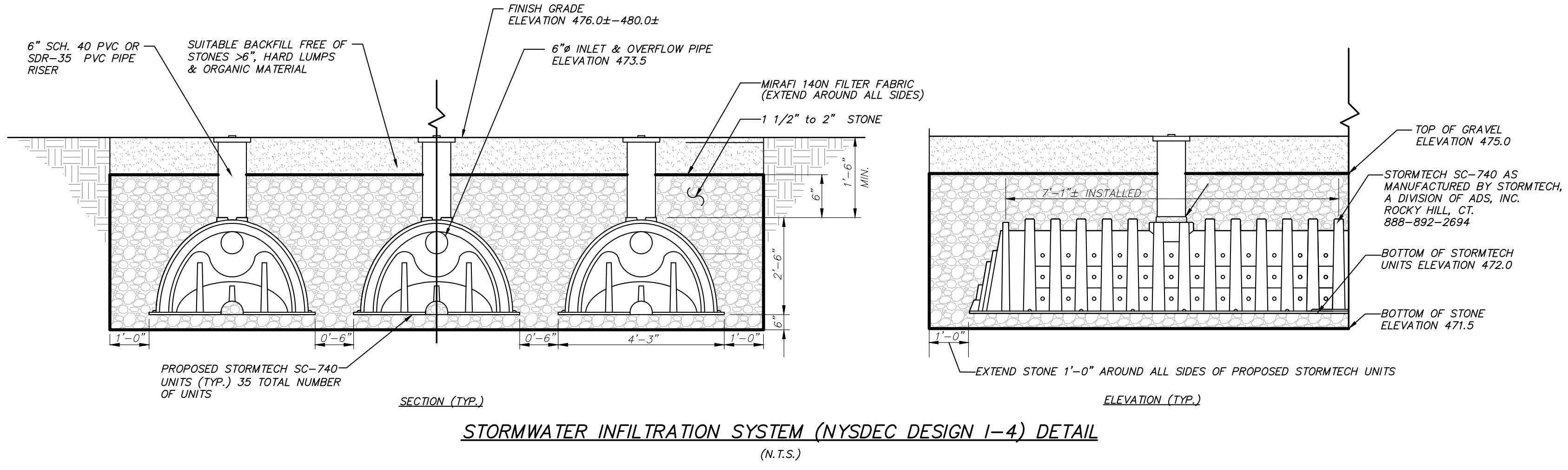


#### REQUIRED SWPPP CONTENTS PER GP-0-20-001:

- Pursuant to the NYSDOT "SPDES General Permit for Stormwater Discharges from Construction Activity" (GP-0-20-001), all Stormwater Pollution Prevention Plan's (SWPPP) shall include erosion and sediment control practices designed in conformance with the most current version of the technical standard, "New York Standards and Specifications for Erosion and Sediment Control". Where erosion and sediment control practices are not designed in conformance with this technical standard, the owner or operator must demonstrate equivalence to the technical standard. The following list of required SWPPP components is provided in accordance with Part III.B.1a-1 of General Permit GP-0-20-001:
  - Site map / construction drawing: These plans serve to satisfy this SWPPP requirement.
  - Description of the soils present at the site: Onsite soils located within the proposed limits of disturbance consist of Chertified-Charlton Complex (Csd), and Paxton Fine Sandy Loam (Poc), as identified on the Soil Conservation Service Web Soil Survey. These soil types belong to the Hydrologic Soil Groups "A" and "B".
  - Construction phasing plan / sequence of operations: The Construction Sequence and phasing found on these plans provide the required phasing. A Construction Sequence and Erosion and Sediment Control Maintenance Schedule has been provided. The Sedimentation and Erosion Control Notes contained hereon outline a general sequence of construction and the proposed project. In general all erosion and sediment control facilities shall be installed prior to commencement with land disturbing activities, and areas of disturbance shall be limited to the shortest period of time as practicable.
  - Description of erosion and sediment control practices: This plan, and details / notes shown hereon serve to satisfy this SWPPP requirement.
  - Temporary and permanent soil stabilization plan: The Sedimentation and Erosion Control Notes and Details provided herein identify temporary and permanent stabilization measures to be employed with respect to specific elements of the project, and at the various stages of development.
  - Site map / construction drawing: This plan serves to satisfy this SWPPP requirement.
  - The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices: The details, Erosion and Sediment Control Notes, and Erosion and Sediment Control Maintenance Schedule serve to satisfy this SWPPP requirement.
  - An inspection schedule: Inspections are to be performed twice weekly and by a qualified professional as required by the General Permit GP-0-15-002. In addition the NYSDOT Trench Contractor shall perform additional inspections as cited in the Sedimentation and Erosion Control Notes.
  - A description of pollution prevention measures that will be used to control litter, construction chemicals and construction debris: In general, all construction litter / debris shall be collected and removed from the site. The general contractor shall supply either waste barrels or dumpster for proper waste disposal. Any construction chemicals utilized during construction shall either be removed from site daily by the contractor or stored in a structurally sound and weatherproof building. No hazardous waste shall be disposed of onsite, and shall ultimately be disposed of in accordance with all federal, state and local regulations. Material Safety Data Sheets (MSDS), material inventory, and emergency contact numbers shall be maintained by the general contractor for all construction chemicals utilized onsite. Finally, temporary sanitary facilities (portable toilets) shall be provided onsite during the entire length of construction, and inspected weekly for evidence of leaking holding tanks.
  - A description and location of any stormwater discharges associated with industrial activity other than construction at the site: There are no known industrial stormwater discharges present or proposed at the site.
  - Identification of any elements of the design that are not in conformance with the technical standard, "New York Standards and Specifications for Erosion and Sediment Control": All proposed elements of this SWPPP have been designed in accordance with the "New York Standards and Specifications for Erosion and Sediment Control".
- Pursuant to the NYSDOT "SPDES General Permit for Stormwater Discharges from Construction Activity" (GP-0-20-001), all construction projects needing post-construction stormwater management practices shall prepare a SWPPP that also includes practices designed in conformance with the most current version of the technical standard, New York State Stormwater Management Design Manual ("Design Manual"). Where post-construction stormwater management practices are not designed in conformance with this technical standard, the owner or operator must demonstrate equivalence to the technical standard. The following list of SWPPP components is provided in accordance with Part III.B.2-1 and III.B.3:
  - Identification of all post-construction stormwater management practices to be constructed as part of the project: This plan, and details/notes shown hereon serve to satisfy this SWPPP requirement.
  - A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice: This plan, and details/notes shown hereon serve to satisfy this SWPPP requirement.
  - A Stormwater Modeling and Analysis Report including pre-development conditions, post-development conditions, the results of the stormwater modeling, a summary table demonstrating that each practice has been designed in conformance with the sizing criteria, identification of any deviations for any deviations from the Design Manual, and identification of any design criteria that are not required. The required analysis is provided in the report titled Stormwater Pollution Prevention Plan for Waccabuc Country Club - Beach Club Improvements.
  - Site testing results and locations: This SWPPP requirement is provided in the report titled Stormwater Pollution Prevention Plan for Waccabuc Country Club - Beach Club Improvements.
  - Infiltration testing results: This SWPPP requirement is provided in the report titled Stormwater Pollution Prevention Plan for Waccabuc Country Club - Beach Club Improvements.
- Enhanced Phosphorus Removal Standards - Beginning on September 30, 2008, all construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the most current version of the technical standard, New York Stormwater Management Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f above. The permanent stormwater practices for this project have been sized according to chapter 10 of the Design Manual Enhanced Phosphorus Removal Standards. Please see 2.a - 2.f above.

#### HYDROWORKS HYDROSTORM HYDRODYNAMIC SEPARATOR DETAIL

(N.T.S.)



#### DRAINAGE LINE TRENCH DETAIL

(N.T.S.)

NO.	DATE	REVISION	BY
1	2-8-22	PROJECT MANAGER	Z.M.P.
2	2-8-22	DRAWN	E.R.A.
3	2-8-22	CHECKED	D.L.M.

**PROJECT:** WACCABUC COUNTRY CLUB BEACH CLUB IMPROVEMENTS

**DRAWING:** SITE DETAILS

**PROJECT NUMBER:** 20228.100

**DATE:** 2-8-22

**SCALE:** AS SHOWN

**PROJECT MANAGER:** Z.M.P.

**DRAWN:** E.R.A.

**CHECKED:** D.L.M.

**DRAWING NO.:** D-2



**SHEET:** 7



## MEMORANDUM

TO: Chairperson Janet Andersen and  
Members of Lewisboro Planning Board

CC: Ciorsdan Conran  
Judson Siebert, Esq.  
Joseph Angiello

FROM: Jan K. Johannessen, AICP   
Joseph M. Cermele, P.E., CFM   
Town Consulting Professionals

DATE: March 11, 2022

RE: Waccabuc Beach Club/Teresa E. Harder Lot Line Change  
Perch Bay Road  
Sheet 22A, Block 10802, Lots 59, 83 (Harder Property)  
Sheet 25, Block 11155, Lot 36 (Waccabuc County Club)

### PROJECT DESCRIPTION

The application is for a lot line change between the Waccabuc County Club and property owned by the Harders. The proposed action will result in  $\pm 4.8$  acres of land being transferred from the Harders (Lot 59) to the Waccabuc Country Club (Lot 36). There are no known improvements on the property owned by the Waccabuc County Club, nor are there any improvements on the land to be transferred. The parcel owned by Harder is developed with a single-family residence, pool and other ancillary improvements that will remain.

### SEQRA

The proposed action has been preliminarily identified as an Unlisted Action pursuant to the State Environmental Quality Review Act (SEQRA). Prior to taking action on this pending application, a Determination of Significance must be issued.

### REQUIRED APPROVALS

1. Preliminary and Final Subdivision Plat Approval is required from the Planning Board; unless waived by the Planning Board, a public hearing is required to be held on the Preliminary Subdivision Plat.

CIVIL ENGINEERING | LANDSCAPE ARCHITECTURE | SITE & ENVIRONMENTAL PLANNING

2. The proposed subdivision requires Realty Subdivision Approval from the Westchester County Department of Health (WCDH).

**COMMENTS**

1. The applicant shall supply a narrative or project description identifying the reason/need for the lot line change.
2. It is recommended that the application be referred to the Building Inspector for zoning review.
3. In accordance with Section 195-13 of the Town's Subdivision Regulations, the Planning Board may adjust the normal 3-step subdivision application process and waive the public hearing for a line change that does not result in the formation of any new lots or result in a zoning nonconformity; the subject application appears to qualify for this waiver.
4. The applicant shall submit the current property deeds for Lot A and Lot B.
5. The existing septic system and any expansion area shall be illustrated on the Plat.
6. Please delineate Tax Lot 83 on the Subdivision Plat or identify why it is not being illustrated.
7. The Town Engineer's signature block shall be added to the Plat.
8. The plan shall include a bulk zoning table comparing the requirements of the underlying Zoning District to the existing and proposed condition; required variances and existing nonconformities, if any, shall be noted.
9. The plan shall be revised to illustrate and dimension all required minimum zoning setbacks lines (front, rear, side yard setbacks).

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

**PLAN REVIEWED, PREPARED BY INSITE ENGINEERING, DATED FEBRUARY 8, 2022:**

- Lot Line Change Map

**DOCUMENTS REVIEWED:**

- Letter, prepared by Bibbo Associates, dated February 8, 2022
- Planning Board Application
- Short Environmental Assessment Form, dated February 8, 2022

JKJ/dc



# BIBBO ASSOCIATES, L.L.P.

*Consulting Engineers*

Timothy S. Allen, P.E.  
Nicholas Gaboury, P.E.  
Matthew J. Gironda, P.E.

February 8, 2022

Town of Lewisboro Planning Board  
79 Bouton Road  
South Salem, New York 10590-1430

Attn: Ms. Janet Andersen, Chair

Re: Proposed Land Transfer  
Waccabuc Country Club & Teresa Harder

Dear Chair Andersen & Members of the Board:

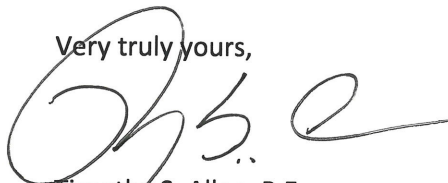
On behalf of the Waccabuc Country Club (WCC), please find enclosed 4 prints/copies of the following in support of a 4.8 acre land transfer between the Club and their neighbor, Teresa Harder:

- Subdivision Application, Steps I, II, III
- Subdivision Application Fee, \$1180 by checks # 35694 (\$205) & # 35703 (\$975)
- Escrow Fee, \$2,000 by check #35695
- Letter of Authorization
- Short Environmental Assessment Form, Part I
- Affidavit of Ownership (Club)
- Affidavit of Ownership (Harder) (*under separate cover*)
- Tax Payment Affidavit (Club)
- Tax Payment Affidavit (Harder)
- Lot Line Change Map, by Insite Engineering, Surveying & L.A.
- Flash drive, containing the above documents & plans

Waccabuc Country Club (WCC) is proposing a land transfer with its neighbor, Teresa Harder. WCC will obtain 4.8 acres from Harder. No improvements are proposed at this time.

We respectfully request this matter be placed on your next available meeting agenda for consideration.

Very truly yours,



Timothy S. Allen, P.E.

TSA/mme  
Enclosures

cc: J. Assumma (via email)  
File

*Site Design ♦ Environmental*

Mill Pond Offices • 293 Route 100 • Suite 203 • Somers, New York 10589

Phone: 914.277.5805 • Fax: 914.277.8210

Website: [www.bibboassociates.com](http://www.bibboassociates.com) • E-mail: [bibbo@bibboassociates.com](mailto:bibbo@bibboassociates.com)

# TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590 Tel: (914) 763-5592 Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

## Site Development Plan/Subdivision Plat Application - Check all that apply:

Waiver of Site Development Plan Procedures  
Site Development Plan Approval  
Special Use Permit Approval  
Subdivision Plat Approval

☐

Step I ☐

Step I ☐

Step I ☒

Step II ☐

Step II ☐

Step II ☒

Step III ☒

### Project Information

Project Name: Waccabuc Country Club & Teresa Harder Lot Line Change

Project Address: 90 Mead Street, Waccabuc

Gross Parcel Area: 91+/- Zoning District: R-4 Sheet(s): 22 Block (s): 10802 Lot(s): 36,59,83

Project Description: Proposed land transfer between Waccabuc Country Club (WCC) and Harder.

WCC to receive 4.8 acres, from Harder. No improvements and proposed at this time.

Is the site located within 500 feet of any Town boundary?

YES ☐

NO ☒

Is the site located within the New York City Watershed?

YES ☒

NO ☐

Is the site located on a State or County Highway?

YES ☐

NO ☒

Does the proposed action require any other permits/approvals from other agencies/departments?

Town Board ☐

ZBA ☐

Building Dept. ☐

Town Highway ☐

ACARC ☐

NYSDEC ☐

NYCDEP ☐

WCDH ☒

NYSDOT ☐

Town Wetland ☐

Town Stormwater ☐

Other \_\_\_\_\_

### Owner's Information

Name: c/o Waccabuc Country Club, John Assumma

Email: jdassumma@optonline.net

Address: 90 Mead Street, P.O. Box 400, Waccabuc, NY 10590

Phone: 914-763-3144

### Applicant's Information (if different)

Name: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

### Authorized Agent's Information

Name: Timothy S. Allen, P.E., Bibbo Associates, LLP

Email: tallen@bibboassociates.com

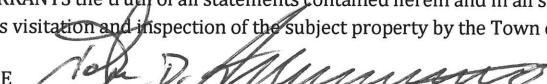
Address: 293 Route 100, Suite 203, Somers, NY 10598

Phone: 914-277-5805

THE APPLICANT understands that any application is considered complete only when all information and documents required have been submitted and received by the Planning Board. The applicant further understands that the applicant is responsible for the payment of all application and review fees incurred by the Planning Board.

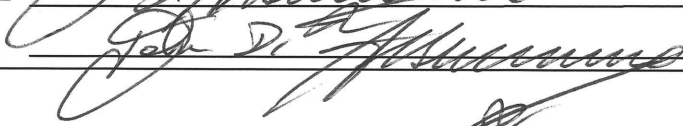
THE UNDERSIGNED WARRANTS the truth of all statements contained herein and in all supporting documents according to the best of his/her knowledge and belief, and authorizes visitation and inspection of the subject property by the Town of Lewisboro and its agents.

APPLICANT'S SIGNATURE



DATE 02-08-2022

OWNER'S SIGNATURE



DATE 02-08-2022



February 7, 2022

Mr. Joseph Angiello  
Building Inspector  
Fire Inspector  
Town of Lewisboro, NY  
79 Bouton Road  
South Salem, NY 10590

Dear Mr. Angiello,

This letter serves to authorize our General Manager, John Assumma to act as the club's agent on all issues relating to any and all building projects taking place on club property.

If additional information is required, please contact me on my cell phone: 917-653-5207 or email: [peterjhall@gmail.com](mailto:peterjhall@gmail.com).

In advance, I thank you for your support.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Peter Hall', is written over the printed name.

Peter Hall  
Secretary

# TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590

Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

Tel: (914) 763-5592

Fax: (914) 875-9148

## Affidavit of Ownership

State of: NEW YORK

County of: WESTCHESTER

John D. Assumma, being duly sworn, deposes and says that he/she  
resides at 90 Mead Street / 8 Carriage House Road, Waccabuc  
in the County of WESTCHESTER, State of New York  
and that he/she is (check one) ☐ the owner, or ☒ the GENERAL MANAGER  
of WACCABUC COUNTRY CLUB  
Name of corporation, partnership, or other legal entity  
Title

which is the owner, in fee of all that certain log, piece or parcel of land situated, lying and being in the  
Town of Lewisboro, New York, aforesaid and know and designated on the Tax Map in the Town of  
Lewisboro as:

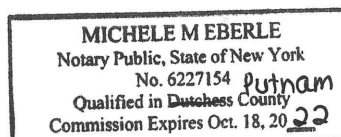
Block 10802, Lot 36, on Sheet 22.

John D. Assumma  
Owner's Signature

Sworn to before me this

8th day of February, 2022

Michele M. Eberle



Notary Public - affix stamp



## TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590  
Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)  
Tel: (914) 763-5592 Fax: (914) 875-9148

### Tax Payment Affidavit Requirement

*This form must accompany all applications to the Planning Board.*

*Under regulations adopted by the Town of Lewisboro, the Planning Board may not accept any application unless an affidavit from the Town of Lewisboro Receiver of Taxes is on file in the Planning Board office. The affidavit must show that all amounts due to the Town of Lewisboro as real estate taxes and special assessments on the total area encompassed by the application, together with all penalties and interest thereon, have been paid.*

*Under New York State law, the Westchester County Clerk may not accept any subdivision map for filing unless the same type of affidavit from the Town of Lewisboro Receiver of Taxes is submitted by the applicant at the time of filing.*

This form must be completed by the applicant and must accompany all applications to the Planning Board. Upon receipt, the Planning Board Secretary will send the form to the Receiver of Taxes for signature and notarization. If preferred, the applicant may directly obtain the signature of the Receiver of Taxes and notarization prior to submission.

#### To Be Completed by Applicant (Please type or print)

Teresa Harder

Name of Applicant

Waccabuc Country Club-Harder Lot Line Change

Project Name

#### Property Description

(1) 10802  
(2) 10802  
Tax Block(s):  
59. 83  
Tax Lot(s):  
22 22  
Tax Sheet(s):

#### Property Assessed to:

Donald & Teresa Harder, Trustee Revocable living Trust

Name 128 Mead Street

Address Waccabuc, NY 10597

City

State

Zip

The undersigned, being duly sworn deposes and says that a search of the tax records in the office of the Receiver of Taxes, Town of Lewisboro, reveals that all amounts due to the Town of Lewisboro as real estate taxes and special assessments, together with all penalties and interest thereon, affecting the premises described below, have been paid.

Signature - Receiver of Taxes:

Date

Sworn to before me this

9<sup>th</sup> day of February, 2022

Signature - Notary Public (affix stamp)

JANET L. DONOHUE  
NOTARY PUBLIC, STATE OF NEW YORK  
No. 01D06259627  
Qualified in Westchester County  
Commission Expires April 16, 2026



## TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590  
Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)  
Tel: (914) 763-5592 Fax: (914) 875-9148

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#### To Be Completed by Applicant (Please type or print)

Waccabuc Country Club

Name of Applicant

Waccabuc Country Club-Harder Lot Line Change

Project Name

#### Property Description

Tax Block(s): 10802

Tax Lot(s): 36

Tax Sheet(s): 22

#### Property Assessed to:

Waccabuc Country Club

Name

P.O. Box 400

Address Waccabuc, NY 10597

City

State

Zip

The undersigned, being duly sworn deposes and says that a search of the tax records in the office of the Receiver of Taxes, Town of Lewisboro, reveals that all amounts due to the Town of Lewisboro as real estate taxes and special assessments, together with all penalties and interest thereon, affecting the premises described below, have been paid.

Signature - Receiver of Taxes: \_\_\_\_\_

Date

2/9/2022

Sworn to before me this

9<sup>th</sup> day of

February

2022

Signature - Notary Public (affix stamp)

JANET L. DONOHUE  
NOTARY PUBLIC, STATE OF NEW YORK  
No. 01DO6259627  
Qualified in Westchester County  
Commission Expires April 16, 2029

# TOWN OF LEWISBORO PLANNING BOARD

79 Bouton Road, South Salem, NY 10590

Email: [planning@lewisborogov.com](mailto:planning@lewisborogov.com)

Tel: (914) 763-5592

Fax: (914) 875-9148

## Affidavit of Ownership

State of: NEW YORK

County of: WESTCHESTER

TEREAS E. HARDER

\_\_\_\_\_, being duly sworn, deposes and says that he/she

resides at 128 MEAD STREET

in the County of WESTCHESTER, State of NEW YORK

and that he/she is (check one) ☐ the owner, or ☒ the TRUSTEE

of DONALD HARDER and TERESA HARDER REVOCABLE TRUST <sup>Title</sup>

*Name of corporation, partnership, or other legal entity*

which is the owner, in fee of all that certain log, piece or parcel of land situated, lying and being in the

Town of Lewisboro, New York, aforesaid and know and designated on the Tax Map in the Town of

Lewisboro as:

Block 10802, Lot 59 & 83, on Sheet 22

Teresa E Harder, Trustee  
Owner's Signature

Sworn to before me this

11<sup>th</sup> day of February, 2022

Lisa B. Stelwagon  
Notary Public - affix stamp

LISA B. STELWAGON  
Notary Public, State of New York  
No. 02ST6325553  
Qualified in Westchester County  
Commission Expires June 1, 2023

# Short Environmental Assessment Form

## Part 1 - Project Information

### Instructions for Completing

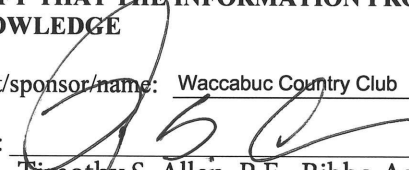
**Part 1 – Project Information.** The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

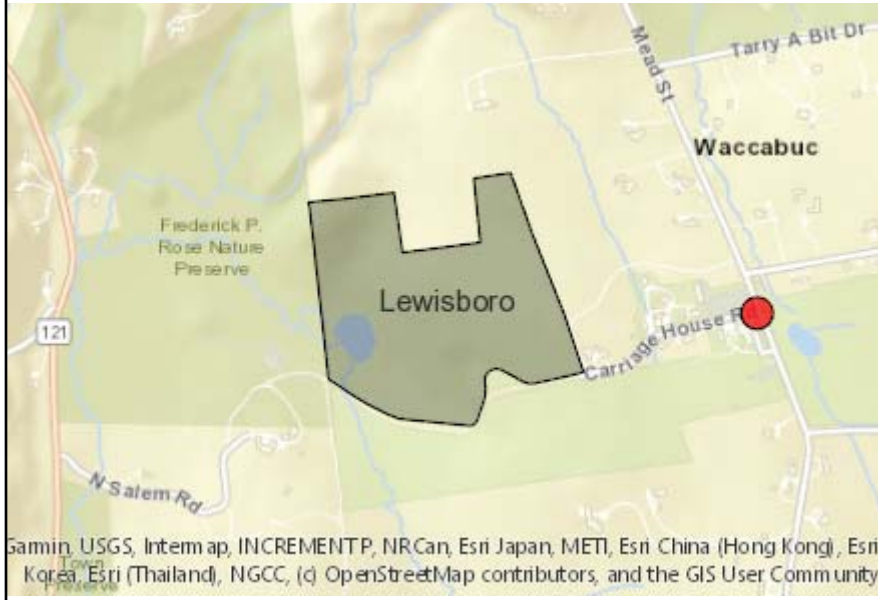
<b>Part 1 – Project and Sponsor Information</b>			
Name of Action or Project: Waccabuc Country Club & Teresa Harder Lot Line Change			
Project Location (describe, and attach a location map): Mead Street, Waccabuc, NY (see location map on plan)			
Brief Description of Proposed Action: Waccabuc Country Club (WCC) is proposing a land transfer with its neighbor, Teresa Harder. WCC will obtain 4.8 acres from Harder. No improvements are proposed at this time.			
Name of Applicant or Sponsor: Waccabuc Country Club, Attn: John Assumma		Telephone: (914) 763-3144 E-Mail: jdassumma@optonline.net	
Address: 90 Mead Street, P.O. Box 400			
City/PO: Waccabuc		State: NY	Zip Code: 10597
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.		NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/>
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: Westchester County Dept. of Health, Subdivision approval		NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>
3. a. Total acreage of the site of the proposed action? _____ acres b. Total acreage to be physically disturbed? _____ 0 acres c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ acres			
4. Check all land uses that occur on, are adjoining or near the proposed action: 5. <input type="checkbox"/> Urban <input type="checkbox"/> Rural (non-agriculture) <input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Residential (suburban) <input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Aquatic <input checked="" type="checkbox"/> Other(Specify): Country Club <input type="checkbox"/> Parkland			

5. Is the proposed action,	NO	YES	N/A
a. A permitted use under the zoning regulations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Consistent with the adopted comprehensive plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO	YES	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?	NO	YES	
If Yes, identify: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO	YES	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b. Are public transportation services available at or near the site of the proposed action?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
9. Does the proposed action meet or exceed the state energy code requirements?	NO	YES	
If the proposed action will exceed requirements, describe design features and technologies:			
N/A	<input type="checkbox"/>	<input type="checkbox"/>	
10. Will the proposed action connect to an existing public/private water supply?	NO	YES	
If No, describe method for providing potable water: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
11. Will the proposed action connect to existing wastewater utilities?	NO	YES	
If No, describe method for providing wastewater treatment: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	NO	YES	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	NO	YES	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____			
_____			
_____			



14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: <input type="checkbox"/> Shoreline <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Agricultural/grasslands <input type="checkbox"/> Early mid-successional <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Urban <input checked="" type="checkbox"/> Suburban		
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Is the project site located in the 100-year flood plan?	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Will storm water discharges flow to adjacent properties?	<input type="checkbox"/>	<input type="checkbox"/>
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe:	<input type="checkbox"/>	<input type="checkbox"/>
_____		
_____		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment:	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
_____		
_____		
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe:	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
_____		
_____		
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe:	NO	YES
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
_____		
_____		
<b>I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE</b>		
Applicant/sponsor/name: <u>Waccabuc Country Club</u> Date: <u>February 8, 2022</u>		
Signature:  Title: <u>Senior Partner</u>		
<u>Timothy S. Allen, P.E., Bibbo Associates, LLP - Engineer for Applicant</u>		





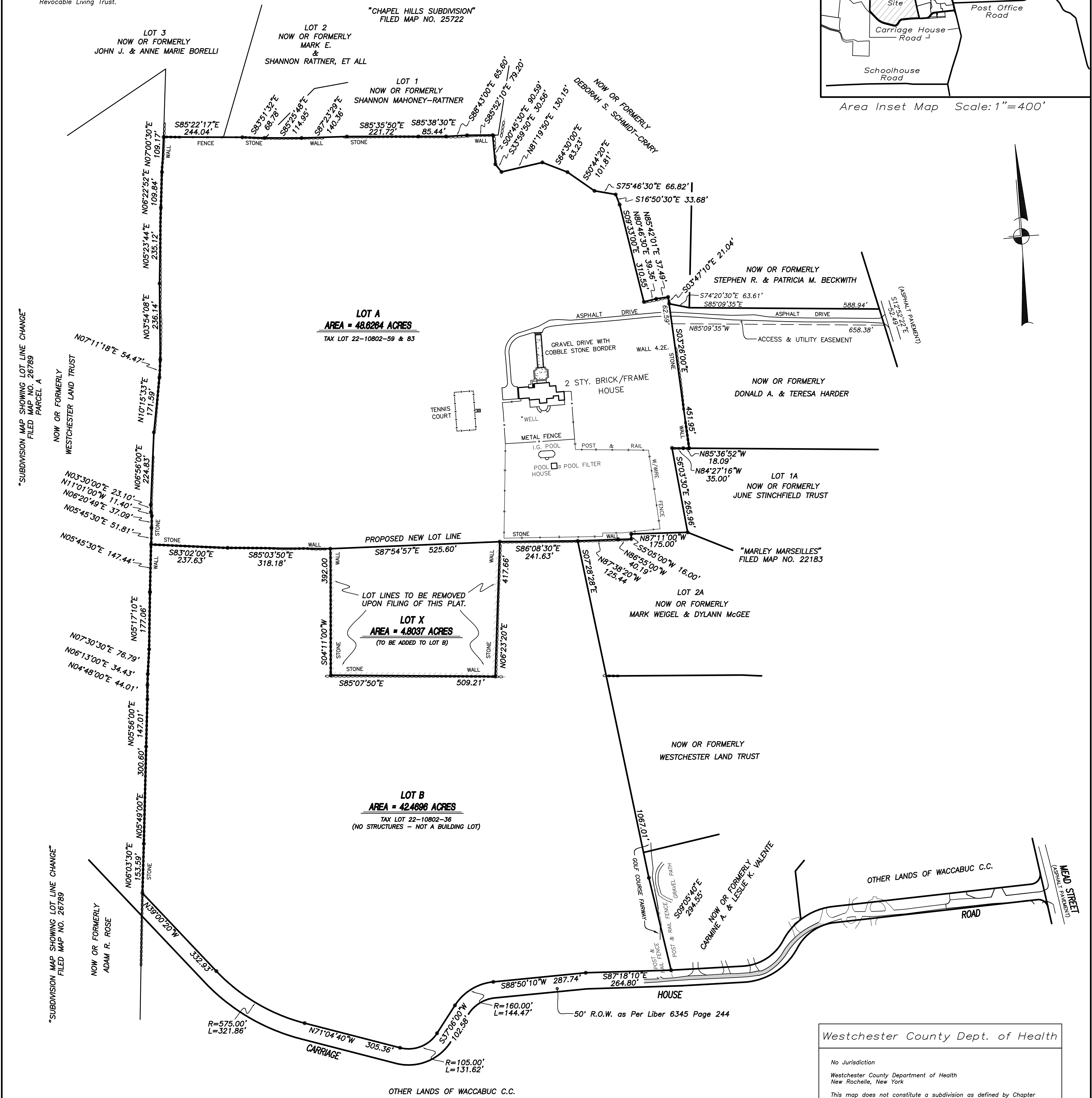
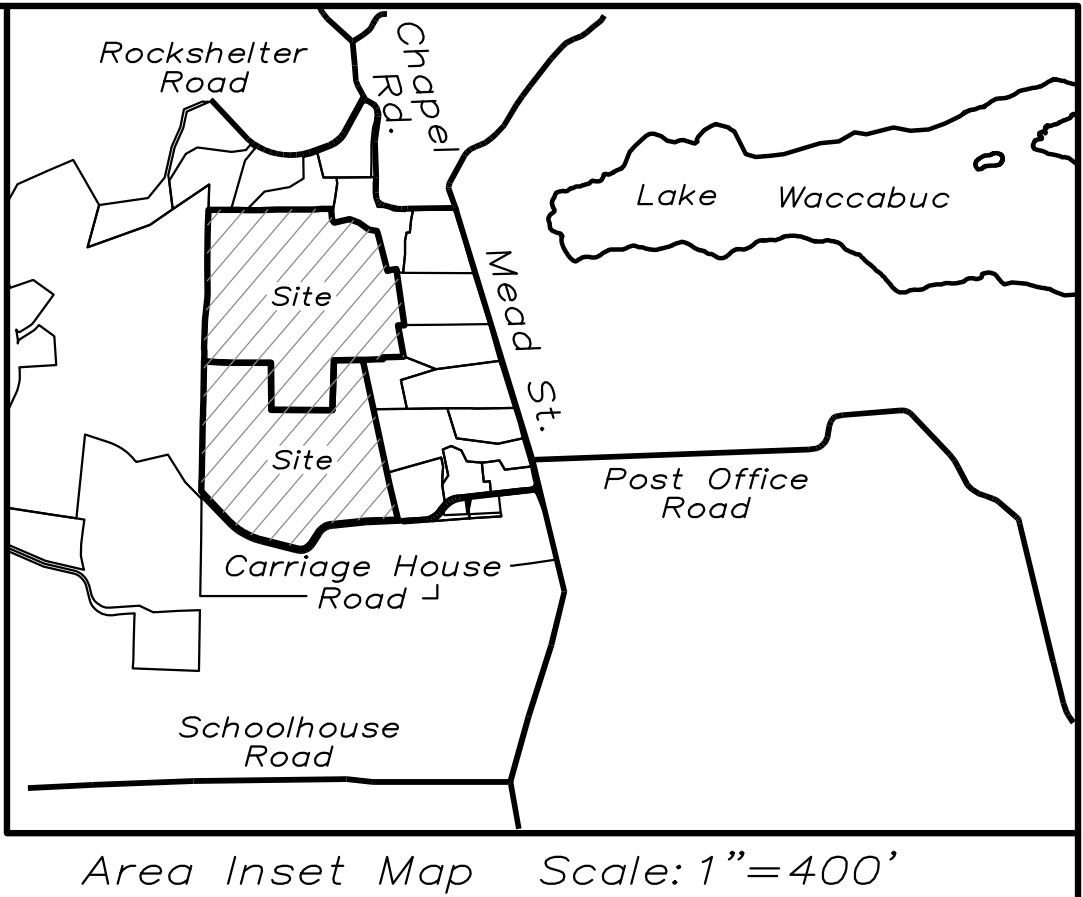
**Disclaimer:** The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	Yes
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	No
Part 1 / Question 20 [Remediation Site]	No

DEED REFERENCE:  
Lot A  
Tax ID 22-10802-59 & 83  
Control No. 590383141  
Recorded: June 21, 2019  
Grantor: Donald A. Harder & Teresa E. Harder  
Grantee: Donald A. Harder & Teresa E. Harder  
as Co-Trustees of the Donald A. Harder Revocable Living Trust, and Donald A. Harder & Teresa E. Harder as Co-Trustees of the Teresa E. Harder Revocable Living Trust.

DEED REFERENCE:  
Lot B  
Tax ID 22-10802-36  
Liber 6345 Page 244 (Parcel II)  
Recorded: October 7, 1963  
Grantor: Studwell Foundation, Incorporated  
Grantee: Waccabuc Country Club Company



Unauthorized alteration or addition to this survey is a violation of Section 7209, subdivision 2 of the New York State Education Law.

The alteration of survey maps by anyone other than the original preparer is misleading, confusing and not in the general welfare and benefit of the public. Licensed Land Surveyors shall not alter survey maps, survey plans, or survey plats prepared by others.

Approved By Resolution of The  
Lewisboro Planning Board

Janet E. Andersen, Chair  
Clorsdan Conran, Administrator

Owners Certification

The undersigned is the owner's of the property shown hereon, is familiar with this drawing and its contents, and hereby approves same for filing.

Teresa E. Harder  
128 Mead Street,  
Waccabuc, N.Y. 10597

Waccabuc Country Club Company  
90 Mead Street,  
Waccabuc, N.Y. 10597

Land Surveyor's Certification

Prepared By:  
**INSITE**  
ENGINEERING, SURVEYING &  
LANDSCAPE ARCHITECTURE, P.C.  
3 Garrett Place • Carmel, New York 10512  
Phone (845) 225-9690 • Fax (845) 225-9717  
www.insite-eng.com  
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TABLE OF LOT AREAS:

LOT A	LOT B
EXISTING 48.8264 AC.	EXISTING 42.4696 AC.
LOT X -4.8037 AC.	LOT X +4.8037 AC.
TOTAL 43.8227 AC.	TOTAL 47.2733 AC.



I hereby certify that the survey shown hereon was completed on XXXX, 2022; that this map was completed February 8, 2022; and that this survey has been prepared in accordance with the existing Code of Practice for Land Surveys as adopted by the New York State Association of Professional Land Surveyors, Inc.

Jeffrey DeRosa  
New York State License No. 50749

Westchester County Dept. of Health

No Jurisdiction

Westchester County Department of Health  
New Rochelle, New York

This map does not constitute a subdivision as defined by Chapter 873, Article X of the Westchester County Sanitary Code. Permission is hereby granted for the filing of this map in the Office of the Westchester County Clerk, Division of Land Records. The appearance of the signature of the Commissioner of Health on this plat is not an endorsement and does not in any way indicate conformance with the Department's Rules and Regulations pertaining to water supply and sewage disposal.

Each purchaser of property shown hereon shall be furnished a true copy of this plat showing this endorsement. Any erasures, changes, additions or alterations of any kind, except the addition of signatures of other approving authority and the date thereof made on this plan after this approval, shall invalidate this approval.

Approved by the Assistant Commissioner of Health  
on Behalf of the Department of Health

Date:

Property shown hereon is subject to the "Rules and Regulations for the Protection from Contamination of the New York City Water Supply and its Sources".

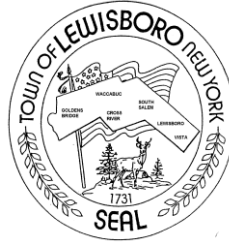
**Lot Line Change Map**  
Prepared for  
**Waccabuc C.C.**  
and  
**Teresa E. Harder**  
Situate in the  
**Town of Lewisboro**  
**Westchester County, New York**  
Scale 1" = 150' Date: February 8, 2022

County Sheet No. 270  
County Block No. 10802

0 150 300  
T650-5 P5-9 16125.200  
Waccabuc CC Harder Lot Line Change.dwg



**TOWN OF LEWISBORO**  
**Westchester County, New York**



**Building Department**  
**79 Bouton Road**  
**South Salem, New York 10590**

**Tel: (914) 763-3060**  
**Fax: (914) 875-9148**  
**Email: jangiello@lewisborogov.com**

February 8, 2022

Ms. Janet Andersen, Chair  
Town of Lewisboro Planning Board

Re: Cal#4-21PB, Cal#42-21WP, Cal#08-21SW  
Kaplan Storage, 397 Smith Ridge Rd., sheet 050A, block 9848, lot 02

Dear Ms. Andersen and Members of the Board,

I have reviewed the plans from Alan L. Pilch, P.E. latest revision dated 12/9/21 as well as the latest memo from Jan K. Johannessen, AICP and Joseph M. Cermele, P.E. dated 1/6/2022. I agree with the comments from our Town Consulting Professionals and will not repeat them here. I have the following additional comments to my memo dated 8/10/21:

1. A fire apparatus road (minimum width 20') must extend to within 150' of all portions of the facility (includes rear of proposed buildings) per Section 503 of the 2020 Fire Code of NYS. The *fire code official* (building inspector) may approve less than a 20' width for security gates, but I did not specify the 13' width at the entry keypad mentioned in the letter from ALP Engineering dated 12/19/21. I visited the site with the Vista fire chief and we determined that a 15' width at the keypad would be sufficient for fire dept. operations. There is sufficient space to move keypad to the north, which would also provide a straighter path to the entry gate.
2. The proposed storage buildings will increase the lot coverage to 23.52% whereas 20% is the maximum permitted per Article IV Section 220-24E of the Zoning Code.

Please do not hesitate to contact me with any questions.



Sincerely,

Joe Angiello  
Building Inspector

## **MEMORANDUM**

TO: Chairperson Janet Andersen and  
Members of Lewisboro Planning Board

CC: Ciorsdan Conran  
Judson Siebert, Esq.  
Joseph Angiello

FROM: Jan K. Johannessen, AICP   
Joseph M. Cermele, P.E., CFM   
Town Consulting Professionals

DATE: March 11, 2022

RE: Site Development Plan Approval, Wetland Activity Permit, and Stormwater Permit  
397 Smith Ridge Road, LLC  
397 Smith Ridge Road  
Sheet 50A, Block 9848, Lot 2

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### **PROJECT DESCRIPTION**

The subject property consists of  $\pm 0.93$  acres of land and is located at 397 Smith Ridge Road within the GB Zoning District. The subject property is developed with two (2) self-storage buildings. The applicant is proposing the construction of two (2) new self-storage buildings, resulting in  $\pm 2,846$  s.f. of new storage space. The applicant is also proposing to expand the existing stormwater management facility to accommodate additional flows and has proposed wetland mitigation in the form of plantings.

### **SEQRA**

The proposed action has been preliminarily identified as a Type II Action and is therefore categorically exempt from the State Environmental Quality Review Act (SEQRA).

### **REQUIRED APPROVALS/REFERRALS**

1. Amended Site Development Plan Approval, a Town Stormwater Permit, and a Wetland Activity Permit are required from the Planning Board; a public hearing is required to be held.
2. A building coverage variance is required from the Zoning Board of Appeals.

Chairperson Janet Andersen

March 11, 2022

Page 2 of 3

3. Referral to the Architecture and Community Appearance Review Council is required.
4. An Article 24 Freshwater Wetland Permit may be required from the New York State Department of Environmental Conservation (NYSDEC).
5. Referral to the Westchester County Planning Board has been made in accordance with Section 239-m of the General Municipal Law.

#### **COMMENTS**

1. The plan has been revised at the request of the Fire Department to maintain a minimum driveway width of 15 feet at the rear access. Please adjust the proposed curb to provide a smooth transition to the existing curb at the existing entry gate. Please also demonstrate that the required 15 feet is being maintained at and through the existing gated access.
2. The applicant shall submit an easement agreement in connection with the off-site wetland mitigation; the easement shall be depicted on the plans by metes and bounds.
3. A maintenance protocol for the proposed wetland mitigation shall be provided. The applicant will be required to monitor and report on the mitigation area for a period of three (3) years following installation. While maintenance of the mitigation area will be the responsibility of the owner for the life of the facility, the owner will be directly responsible for the replacement of any non-viable plant material during the 3-year monitoring period. Please identify how the plants will be irrigated, particularly for the first growing season, with no on-site water available.
4. The wetland mitigation plan should clarify the location of the proposed deer fence.
5. As previously identified, the applicant must coordinate with the New York State Department of Environmental Conservation (NYSDEC) to determine if the NYSDEC wetland boundary needs to be reverified.
6. The water quality calculations for each drainage area do not correspond to the drainage areas and values reported in the hydrologic model. For ease of review, please provide a figure illustrating the sub-watershed areas within proposed drainage area PDA-2. This treatment area shall include all of the proposed impervious areas (buildings and driveway extension) and clearly indicate the quantity of impervious surface being pre-treated. We note that the original approval collected and treated all stormwater runoff from all of the buildings. The current drainage figures appear to only collect and treat the front halves of the perimeter buildings. Please revise to collect all impervious surfaces as originally approved. Update the model as needed.



Chairperson Janet Andersen

March 11, 2022

Page 3 of 3

7. The required water quality volumes used for the minimum required pre-treatment volume calculations do not correspond and shall be verified. Please revise as needed.
8. The plan shall illustrate all roof leader connections to the drainage system.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

**PLAN REVIEWED, PREPARED BY ALP ENGINEERING, DATED FEBRUARY 18, 2022:**

- Site Layout Plan (C-101)
- Site Grading and Utilities Plan (C-102)
- Erosion and Sediment Control Plan (C-103)
- Mitigation Planting Plan (C-104)
- Construction Details (C-111, C-112, C-113, C-114)

**DOCUMENTS REVIEWED:**

- Letter, prepared by ALP Engineering, dated February 18, 2022
- Stormwater Pollution Prevention Plan/Stormwater Management Report, dated February 18, 2022

JKJ/dc

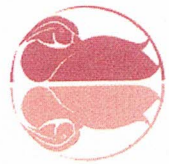
TO: The Town of Lewisboro Planning Board  
FROM: Lewisboro Conservation Advisory Council  
SUBJECT: 397 Smith Ridge Road, South Salem, NY 10590  
DATE: March 9, 2022

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The Conservation Advisory Council (CAC) has reviewed the application for an addition to an existing self-storage facility. The addition is within the 150-foot buffer and adds a significant amount of impervious surface. The applicant has provided a mitigation plan that requires offsite mitigation.

Although the Lewisboro wetland law does allow for the use of offsite mitigation, it is required that the applicant have control of the offsite location. This control is required so that the applicant can maintain the mitigation as required. The CAC would like to see a document that confirms that the applicant has this control.

In addition, the CAC is concerned that almost this entire site will be impervious with close proximity to the wetland. The CAC would like to know the amount of impervious surface area that currently exists and the total amount if this additional storage area is built. Further, the CAC would like to understand if there is any limit to how much of a property bordering a wetland can be impervious.



**ALP Engineering**  
& Landscape Architecture, PLLC

February 18, 2022

Hon. Janet Andersen, Chairwoman and Members of the Planning Board  
Town of Lewisboro  
79 Bouton Road  
South Salem, NY 10590

**Re: 397 Smith Ridge Road  
Sheet 50A, Block 9848, Lot 2  
Application for Amended Site Development Plan Approval, Wetlands and  
Stormwater Management Permits**

Dear Chairwoman Andersen and Members of the Planning Board:

We are pleased to submit four (4) copies of the following drawings in support of this application by 397 Smith Ridge Rd, LLC, the owner of the property located at 397 Smith Ridge Road for Amended Site Development Plan Approval, Wetlands and Stormwater Management Permits. As a result of comments received from the Planning Board and the Town consultants, the plans have been modified.

<u>Dwg No.:</u>	<u>Drawing Title:</u>	<u>Date:</u>
Dwg. C-101	Site Layout Plan	02/18/2022
Dwg. C-102	Site Grading and Utilities Plan	02/18/2022
Dwg. C-103	Erosion and Sediment Control Plan	02/18/2022
Dwg. C-104	Mitigation Planting Plan	02/18/2022
Dwg. C-111	Construction Details	02/18/2022
Dwg. C-112	Construction Details	02/18/2022
Dwg. C-113	Construction Details	02/18/2022

In addition, we are submitting two copies of the report entitled "Stormwater Pollution Prevention Plan/ Stormwater Management Report for Self-Storage Facility, dated 02/18/2022.

The principal changes to the plans are as follows:

P.O. Box 843 Ridgefield, CT 06877  
EAEC Office: 162 Falls Road Bethany, CT 06524  
Direct: (475) 215-5343 Mobile: (203) 710-0587  
EAEC Tel: (203) 393-0690 x114  
Email: alan@eaec-inc.com



- Additional planted mitigation areas for impacts within the Town's wetland buffer are depicted in the plans, both on-site and in the off-site easement area. See Sheet C-104 for the updated mitigation planting plan.
- The stormwater management facility has been expanded with the addition of 4 more chambers in order to provide attenuation of the 1-year through 100-year storm events, as well as providing treatment of the runoff in excess of the water quality volume.
- Pre-treatment of the runoff from the two new catch basins is provided (see Sheet C-102).

Each of the comments below received from the Planning Board and/or the Town consultants is repeated below in italics with the response to the comments under that.

*1. This office defers review of the plan for zoning compliance to the Building Inspector. It is recommended that the revised plans be forwarded to the Building Inspector to determine if the comments contained within his August 10, 2021 memorandum have been satisfactorily addressed.*

Response: Plans have been forwarded to the Building Inspector for comment.

*2. It is recommended that the application be referred to the Fire Department for review; the applicant should coordinate this referral with the Building Inspector (please do not send plans directly to the Fire Department).*

Response: Plans were forwarded to the Building Inspector for comment to the Fire Department. In response, Chief Jeffrey Peck of the Vista Fire Department noted that "The Vista Volunteer Fire Department is suggesting that the entrance into the Kaplan Self Storage be widened from the proposed 13 feet to 15 feet so emergency response apparatus can adequately enter the facility. To this end, the plans currently and previously submitted to the Town incorporated the widening of the entrance gate to a width of 15 feet.

*3. As part of the original approval for the self-storage facility, the applicant was required to submit annual maintenance reports relating to the originally installed wetland mitigation plantings; reports were never submitted. The applicant has since inspected the mitigation area and has submitted a report entitled "Report on Wetland Mitigation Area", prepared by Alan Pilch, P.E., RLA, dated December 13, 2021. The report identifies that the entire wetland mitigation area has been consumed by invasives, a condition that could have been prevented if the applicant had been diligent with required inspections. The applicant is proposing to remove the invasives and replant the former mitigation area; however, the plan does not satisfy the minimum required 1:1 mitigation ratio and there is a 2,560 s.f. deficit.*





*The applicant should evaluate options for achieving the minimum requirement. We note that the previously proposed off-site mitigation area has been eliminated with this latest plan submission.*

Response: The revised mitigation plan (see Sheet C-104) shows using the lower portion of the property plus the easement area off-site for mitigation.

*4. As previously identified, the applicant must coordinate with the New York State Department of Environmental Conservation (NYSDEC) to determine if the NYSDEC wetland boundary needs to be reverified and to discuss if any permitting is required for work proposed within the NYSDEC 100-foot Wetland Adjacent Area (proposed mitigation).*

Response: The applicant contacted Sarah Pawliczak-Vacek, Biologist, Bureau of Ecosystem Health at Region 3 of the NYSDEC regarding the wetland boundary verification and permitting for planting within the wetland buffer. Ms. Pawliczak-Vacek noted that the NYSDEC has a General Permit for the Management of Invasive Species which allows for the removal of invasive species using hand harvesting techniques and does not authorize the use of pesticides. Finally, according Ms. Pawliczak-Vacek, the installation of a deer fence (to protect the new plantings) and 3-foot-wide mulch path would require a Freshwater Wetland permit.

*5. As previously requested, provide a Lighting Plan to demonstrate proposed illuminance levels and provided details of lighting fixtures for the new buildings.*

Response: As shown on Sheet C-114, the lighting on the new buildings will be the McGraw Edison Impact Elite LED lighting. The selected lighting fixture has a sharp cut-off lens which will be adjusted to illuminate to a maximum distance of about 20 feet from the fixture. In this way, there will be no light spillover off the property and certainly no impact from the lighting onto the public street or into the 100-foot wetland adjacent area.

*6. The stormwater mitigation design for the original approval included an infiltration system consisting of 55 infiltration units located along the rear of the drive. Pre-treatment of stormwater runoff was provided via temporary storage of influent flows. The plan proposes to relocate a portion of the previously installed system to accommodate the proposed building foundations. The system will be expanded as needed to mitigate peak runoff rates from the added impervious area. The hydrologic design demonstrates that peak discharge rates through the 25-year storm will be attenuated. We note that the original design and approval required attenuation of peak discharge rates through the 100-year design storm.*





*The analysis should be updated to demonstrate that the same level of mitigation will be maintained as previously approved.*

Response: The stormwater management plan has been revised to include an additional 4 Cultec 330XLHD chambers in the facility for a total of 16 chambers to be installed. With this modification, the project does provide attenuation of the peak rate of runoff through the 100-year storm event.

*7. The stormwater design indicates that water quality treatment is being provided for the added impervious area. We note, however, that the plan proposes to install a new catch basin, Proposed Catch Basin CB-1, which will collect runoff from the proposed storage building roof and expanded driveway. These flows will not be pre-treated prior to discharging to the infiltration system. Please modify the system layout as needed to provide pre-treatment of all collected stormwater runoff. The SWPPP should include updated water quality treatment calculations to demonstrate that the existing pretreatment system is adequate.*

Response: Pre-treatment of the runoff from proposed catch basin CB-1 will be done similarly using a settling chamber which has been sized to capture and treat the pre-treatment volume. In this case, a 550 gallon precast concrete (pump) chamber is proposed to be used. The water quality volume of the drainage area to catch basins CB-A and CB-B is calculated to be 267 s.f. With a minimum of 25% of the WQv to be pre-treated, the volume to be pre-treated would be 67 cubic feet (501 gallons). The proposed sedimentation tank has a volume below the invert of 70 cubic feet (see Attachment 2 in the SWPPP report) and will therefore treat the WQv.

*8. Please provide invert elevations for all inlet and outlet piping connections at Existing Catch Basin, CB-1. It is unclear whether pretreatment of stormwater runoff is being provided prior to discharge to the proposed 12 infiltration units. Please provide a detail for the required modifications to the existing catch basin.*

Response: Existing catch basin CB-1 sits on top of a 36-foot long 48" diameter pipe installed for pre-treatment of the runoff. The invert elevation of the pipe is installed at elevation 111.84 feet. The 12" pipe to convey runoff to the 16 chambers would be set an elevation 114.75'. Thus, pre-treatment of the runoff would be provided.

*9. We note that the two (2) identified snow storage areas require access through a gate; this is not ideal. The applicant should consider elimination of the gated access.*



Response: The applicant's preference is to use a gated access to the lands to the east of the property. We note that the truck traffic for accessing the waste disposal also used codes to enter the property, so will the person driving the truck open a gate for snow disposal.

*10. Provide construction details for all proposed improvements, including but not limited to, the concrete retaining wall, refuse enclosure and stormwater components.*

Response: The concrete retaining wall is part of the building (it forms the easterly wall of the two new buildings) and will be submitted to the Building Department as part of the architectural plan submission. Details of the other walls are shown on Sheet C-113. Details for the refuse enclosure and the components of the new stormwater management and storm drainage facilities may be found on Sheet C-112.

*11. The chain link fence detail on Sheet C-112 references plans that are not included within the plan set. The detail should state that the proposed chain link fence is to match what is existing elsewhere on the property. Note that the previously approved chain link fence was to be black vinyl coated galvanized steel.*

Response: A note on the detail indicates that the galvanized steel mesh shall be coated with black vinyl.

We look forward to your review of the amended site development plans for the construction of the additions to the existing self-storage facility. If you have any questions regarding this submission, please feel free to call me on my direct line at (475) 215-5343, or my cell at (203) 710-0587.

Sincerely,

ALP ENGINEERING & LANDSCAPE ARCHITECTURE, PLLC

Alan L. Pilch, P.E., R.L.A.  
Principal

cc: Jan Johannessen, AICP  
Steven Kaplan  
Beth Evans



## VISTA FIRE DEPARTMENT

377 SMITH RIDGE ROAD  
South Salem, NY 10590

Jeffrey M. Peck  
Chief of Department

Tel. # (914)-533-2727  
Fax (914)-533-2853

February 8, 2022

To Whom It May Concern -

The Vista Volunteer Fire Department is suggesting that the entrance into the Kaplan Self Storage be widened from the proposed 13 feet to 15 feet so emergency response apparatus can adequately enter the facility.

If you need additional information or have further questions, please reach out.

Regards,

Chief Jeffrey M. Peck

**STORMWATER POLLUTION PREVENTION PLAN/  
STORMWATER MANAGEMENT REPORT  
FOR SELF-STORAGE FACILITY  
SMITH RIDGE ROAD (NEW YORK ROUTE 123)  
TOWN OF LEWISBORO, NEW YORK  
Date: February 18, 2022 (revised)**

Report Contents:

- 1) Existing Site Conditions
- 2) Stormwater Management Design Criteria
- 3) Stormwater Analysis
- 4) Stormwater Facilities
- 5) Peak Rate Attenuation Analysis

Appendix A Water Quality Volume (WQv) Calculations

Appendix B Hydrographs and Routings

---

1) Existing Site Conditions

The subject property is 0.933 acres in size and is located on the east side of Smith Ridge Road (New York State Route 123) in the Vista hamlet area. The property is essentially a rectangle, about 200 feet on a side. The property is essentially a rectangle, about 200 feet on a side. The property presently contains two self-storage buildings, an L-shaped building in the northern and western portion of the property, and a building in the central portion of the property. Paved parking and circulation drives provide vehicular access to the self-storage buildings.

According to the Soils Survey of Putnam and Westchester Counties, the soils over the entire property consist of Urban Land-Charlton complex soils. Charlton soils are in hydrologic group B; Urban Land soils are not classified. For purposes of modeling the runoff, land cover types are classified in hydrologic group B.

2) Stormwater Management Design Criteria

This update to the stormwater management plan for the property has been designed to meet the requirements of the New York State *Stormwater Management Design Manual* to the maximum extent practicable. The property is located in the watershed of the Silvermine Brook, and therefore the site lies *outside* of the New York City watershed. The revised stormwater management facilities are therefore designed to: (1) capture and treat the Water Quality Volume (WQv), the 1.5" storm event, and (2) provide peak rate attenuation for the 1 through 100 year storm events in accordance with the Town requirements.

3) Stormwater Analysis

The majority of the runoff from the project site is conveyed directly to the east into New York State Freshwater Wetland D-45 which lies about 50 feet to the east of the property. Runoff from a small portion of the property is conveyed to the northwest toward the property to the north and to Smith Ridge Road. The overall majority of the runoff is conveyed to a single design line in the eastern portion of the site.

In the existing condition, three drainage areas were delineated, as follows:

Existing Condition Drainage Area 1 (XDA-1) is 21,405 s.f. in size and is to consist of the lands which in the future will convey runoff to the stormwater management facility. This drainage area includes all of the new on-site impervious surfaces. Runoff from this drainage area is conveyed to Design Line 1.

Existing Condition Drainage Area 2 (XDA-2) is 18,379 s.f. in size and consists of the remainder of the property which will convey runoff to Design Line 1.

Existing Condition Drainage Area 3 (XDA-3) is 3,868 s.f. and consists of the lands which will continue to convey runoff to the northwest corner of the site, eventually discharging to Smith Ridge Road.

In the future condition, three drainage areas were delineated, as follows:

Future Condition Drainage Area 1 (FDA-1) is 23,114 s.f. in size and is to consist of the lands which in the future will convey runoff to the stormwater management facilities. This drainage area includes the existing developed site and the new on-site impervious surfaces. A curve number of 90 was calculated for this drainage area. Runoff from this drainage area is conveyed to Design Line 1.

Future Condition Drainage Area 2 (FDA-2) is 16,670 s.f. in size and consists of the lands in the eastern portion of the property which contributes runoff to Design Line 1.

Future Condition Drainage Area 3 (FDA-3) is 3,868 s.f. and consists of the lands which will continue to convey runoff to the northwest corner of the site, eventually discharging to Smith Ridge Road.

#### 4) Stormwater Facilities

Runoff from the parking area facing roofs of the two new buildings will be conveyed by sheet flow across the new pavement surface and into existing catch basins and existing and future subsurface storm pipes to the stormwater management facilities. The runoff from the interior of the site will be conveyed by sheet flow to the two existing on-site catch basins. One of the catch basins directly discharges to an existing 36-foot long, 4-foot diameter subsurface pipe which serves as a pre-treatment facility for runoff being conveyed to the subsurface chambers.

The existing stormwater management facility consist of a subsurface recharger/detention system. It presently contains 55 Cultec Model 330XL chambers arranged as 5 rows of 11 chambers placed end-to-end. The proposed construction of the new Building 3 will require that the row of 11 chambers nearest to the building be eliminated. To attenuate the flows from the property to Design Line 1 from the additional impervious surfaces, 16 Cultec chambers will be installed as



four rows of four chambers end-to-end) to the north of Building 3. Runoff flows to the 16 new chambers will conveyed from the existing pre-treatment facility.

#### 5) Peak Rate Attenuation Analysis

The peak rate of runoff from the property to the design line has been calculated. The analysis of peak rates of runoff was performed in accordance with the methodology of the United States Department of Agriculture Soil Conservation Service (now Natural Resources Conservation Service) publication *Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55)*, 1986. To calculate the peak rate of runoff conveyed to the design line from the property, the following information was obtained or determined:

The precipitation depths have been adjusted to the data from the Northeast Regional Climate Center. The analysis shows that for all modeled storm events the peak rate of runoff conveyed to the design line (and to the wetland to the east of the subject site) is less than the existing peak rate of runoff.

**Table 1**, Peak Rates of Runoff summarizes the peak rates of flow conveyed by the site in the existing and future conditions to the design line and State highway for the modeled storms.

**Table 1. Peak Rates of Runoff to Design Line 1 and to Smith Ridge Road**  
(all flows in cubic feet per second)

<b><i>Drainage Area/ Storm Interval</i></b>	<b><i>1 year</i></b>	<b><i>2 year</i></b>	<b><i>10 year</i></b>	<b><i>25 year</i></b>	<b><i>100 year</i></b>
<b><i>Existing Condition</i></b>					
<i>Flows to Design Line 1/Wetland</i>	0.03	0.08	0.46	1.41	5.64
<b><i>Future Condition</i></b>					
<i>Flows to Design Line 1/Wetland</i>	0.02	0.07	0.41	1.28	5.56

<b><i>Drainage Area/ Storm Interval</i></b>	<b><i>1 year</i></b>	<b><i>2 year</i></b>	<b><i>10 year</i></b>	<b><i>25 year</i></b>	<b><i>100 year</i></b>
<b><i>Existing Condition</i></b>					
<i>Flows to Smith Ridge Road</i>	0.12	0.17	0.32	0.45	0.70
<b><i>Future Condition</i></b>					
<i>Flows to Smith Ridge Road</i>	0.12	0.17	0.32	0.45	0.70

The calculations also show that there will be no flow from the chambers (i.e., the primary outflow is 0.00 cfs) during the 1-year storm event. Thus, the flows that are being conveyed to the chambers will be fully infiltrated to the soils, even using the most conservative exfiltration rate of 1" per hour. The water quality volume of 1.5" of precipitation will therefore also be fully treated.

## ***FIGURES***

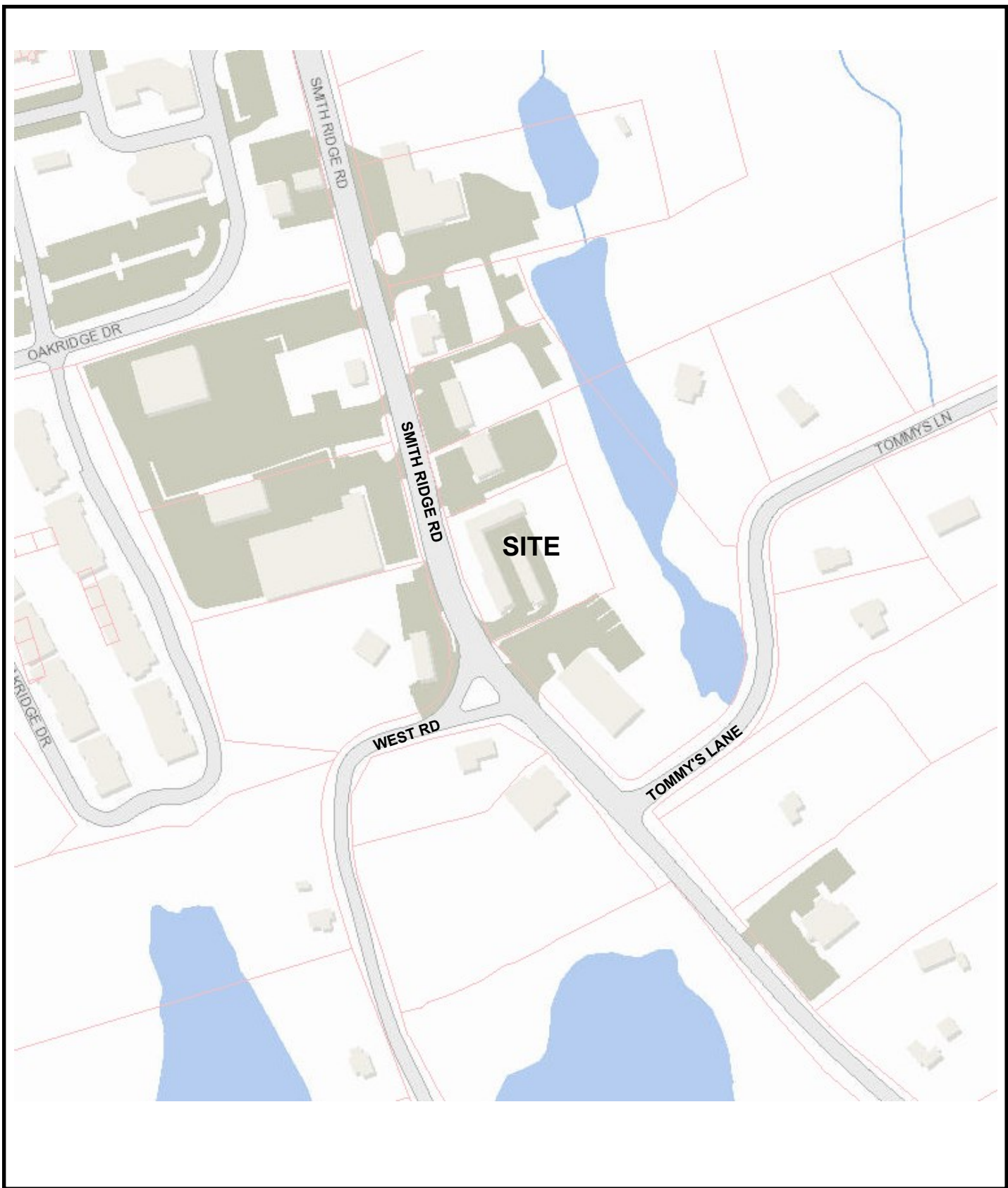


Figure 1  
**SITE LOCATION MAP**  
Scale: Not to Scale





#### LEGEND

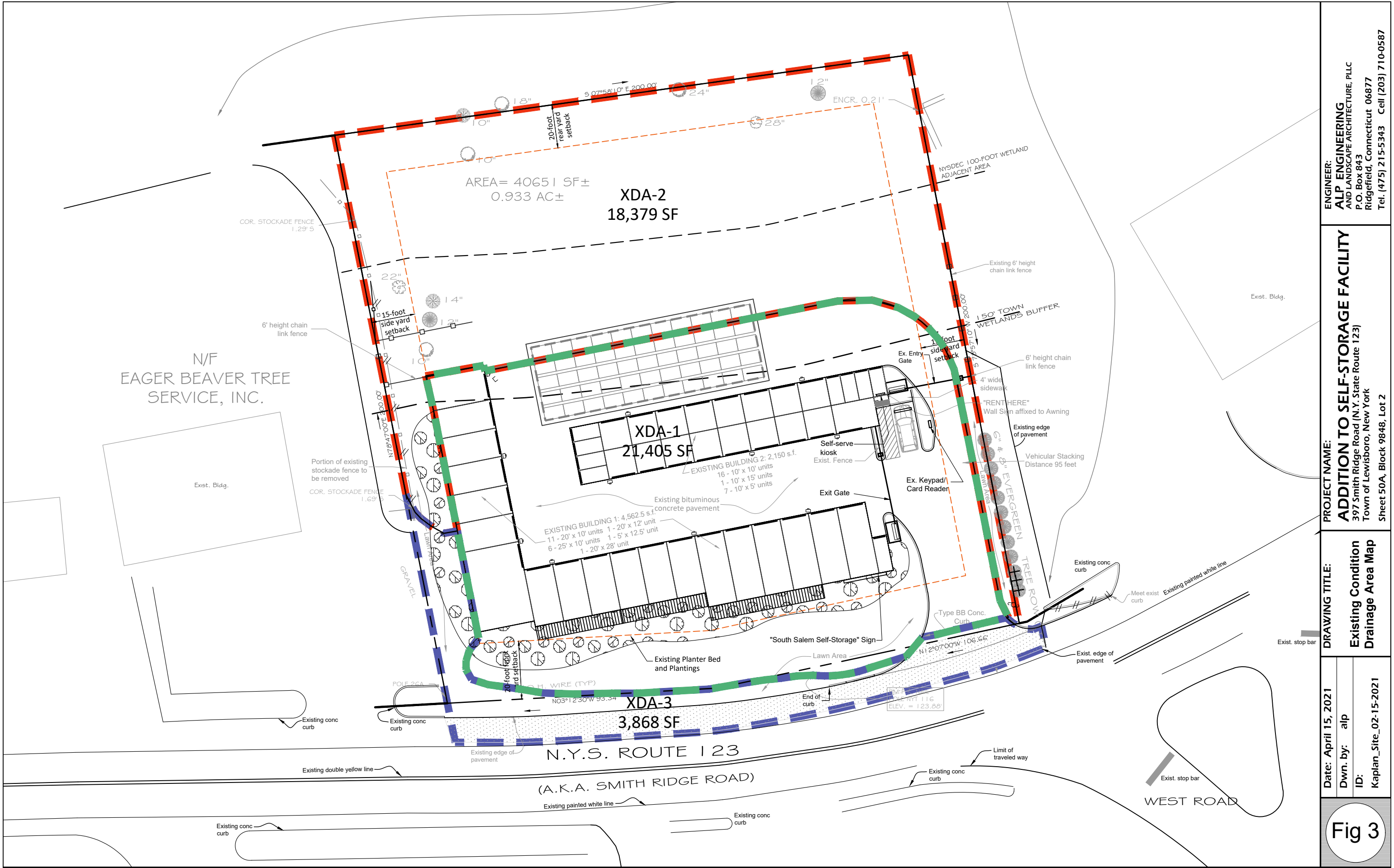
UhB—Urban land-Charlton complex, 3 to 8 percent slopes

Figure 2

#### SOILS MAP

Scale: Not to Scale





ENGINEER:  
**ALP ENGINEERING**  
AND LANDSCAPE ARCHITECTURE, PLLC  
P.O. Box 843  
Ridgefield, Connecticut 06877  
Tel. (475) 215-5343 Cell (203) 710-0587

PROJECT NAME:  
**ADDITION TO SELF-STORAGE FACILITY**  
397 Smith Ridge Road (N.Y. State Route 123)  
Town of Lewisboro, New York  
Sheet 50A, Block 9848, Lot 2

DRAWING TITLE:  
**Existing Condition  
Drainage Area Map**

Date: April 15, 2021	Dwn. by: alp
ID: Kaplan_Site_02-15-2021	

**Fig 3**



ENGINEER:  
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PROJECT NAME:  
**ADDITION TO SELF-STORAGE FACILITY**  
397 Smith Ridge Road (N.Y. State Route 123)  
Town of Lewisboro, New York  
Sheet 50A, Block 9848, Lot 2

DRAWING TITLE:  
**Future Condition  
Drainage Area Map**

Date: February 18, 2022  
Dwn. by: alp  
ID: Kaplan\_Site\_02-04-2022

**Fig 4**

## ***SUPPORTING DOCUMENTATION***

**Attachment 1**  
**Water Quality Volume (WQv) Calculation, Self-Storage Facility**

According to the New York State Stormwater Management Manual,  
Water Quality Volume (WQv) is defined by the equation:

$$\text{Water Quality Volume, WQv} = (P \times R_v \times A) / 12$$

where,

WQv = water quality volume in acre-feet

P = Precipitation Depth, 90% Rule = 1.50 inches in this part of New York State

$R_v = 0.05 + 0.009 \times (I)$ , where I is percent impervious cover

A = site area in acres

**Drainage Area to Stormwater Management Facility**

Impervious area =	18,405 sq feet
Lawn/Landscape Area =	4,709
<hr/>	
TOTAL =	23,114 sq feet
or	0.531 acres

Calculate  $R_v$  value:

		<u>Remarks</u>
Area, A = 0.531	acres	as calculated above
Impervious area, I = 0.423	acres	as calculated above
Percent Impervious = 80	%	impervious area/total area
$R_v = 0.77$		$0.05 + 0.009 \times \% \text{ impervious area}$

Therefore,

Water Quality Volume, WQv = 0.0508	acre-feet	as per calculation
Water Quality Volume, WQv = 2,215	cubic feet	acre-feet x 43560

**TREATMENT SUMMARY:**

According to the HydroCAD stormwater routing, during the 1 year storm event, there is no outflow from the stormwater management facility and the storage volume in the in the chambers alone (not including the stone) is 3,219 cubic feet.

This is well in excess of the water quality volume of 2,215 cubic feet.

**CONCLUSION:**

The proposed stormwater management facility will capture and treat a volume of runoff in excess of the water quality volume.

**Attachment 1**  
**Water Quality Volume (WQv) Calculation, Self-Storage Facility**

**PRE-TREATMENT FACILITY SIZING:**

According to the Stormwater Management Design Manual, pre-treatment facilities are required for infiltration. The minimum pre-treatment volume that is required is 25% of the Water Quality Volume.

Water Quality Volume, WQv =	1,948 cubic feet	<i>calculated above less area to CB-A &amp; CB-B</i>
Min. Volume for Pre-Treatment Facility =	554 cubic feet	<i>WQv x 25%</i>

Provide Pre-treatment in a sedimentation basin consisting of a horizontally-laid storm pipe with end caps to capture the runoff flows.

Pipe Length =	40 feet
Pipe Diameter =	48 inches
Pipe Volume =	503 cubic feet

The proposed storm pipe sedimentation basin volume is in excess of the requirement.



## Attachment 2

### Water Quality Volume (WQv) Calculation from New Catch Basins

According to the New York State Stormwater Management Manual,  
Water Quality Volume (WQv) is defined by the equation:

$$\text{Water Quality Volume, WQv} = (P \times R_v \times A) / 12$$

where,

WQv = water quality volume in acre-feet

P = Precipitation Depth, 90% Rule = 1.50 inches in this part of New York State

$R_v = 0.05 + 0.009 \times (I)$ , where I is percent impervious cover

A = site area in acres

#### Additional Drainage Area to Stormwater Managment Facility

#### Remarks

Impervious area =	2,249 sq feet	area to new CB-A and CB-B
Lawn/Landscape Area =	0	
<hr/>		
TOTAL =	2,249 sq feet	
or	0.052 acres	

Calculate  $R_v$  value:

Area, A = 0.052	acres	as calculated above
Impervious area, I = 0.052	acres	as calculated above
Percent Impervious = 100	%	impervious area/total area
$R_v = 0.95$		$0.05 + 0.009 \times \% \text{ impervious area}$

Therefore,

Water Quality Volume, WQv = 0.0061	acre-feet	as per calculation
Water Quality Volume, WQv = 267	cubic feet	acre-feet x 43560

**Attachment 2**  
**Water Quality Volume (WQv) Calculation from New Catch Basins**

**PRE-TREATMENT FACILITY SIZING:**

According to the Stormwater Management Design Manual, pre-treatment facilities are required for infiltration. The minimum pre-treatment volume that is required is 25% of the Water Quality Volume.

Water Quality Volume, WQv =	267 cubic feet	<i>calculated above</i>
Min. Volume for Pre-Treatment Facility =	67 cubic feet	<i>WQv x 25%</i>

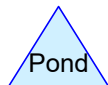
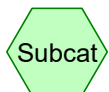
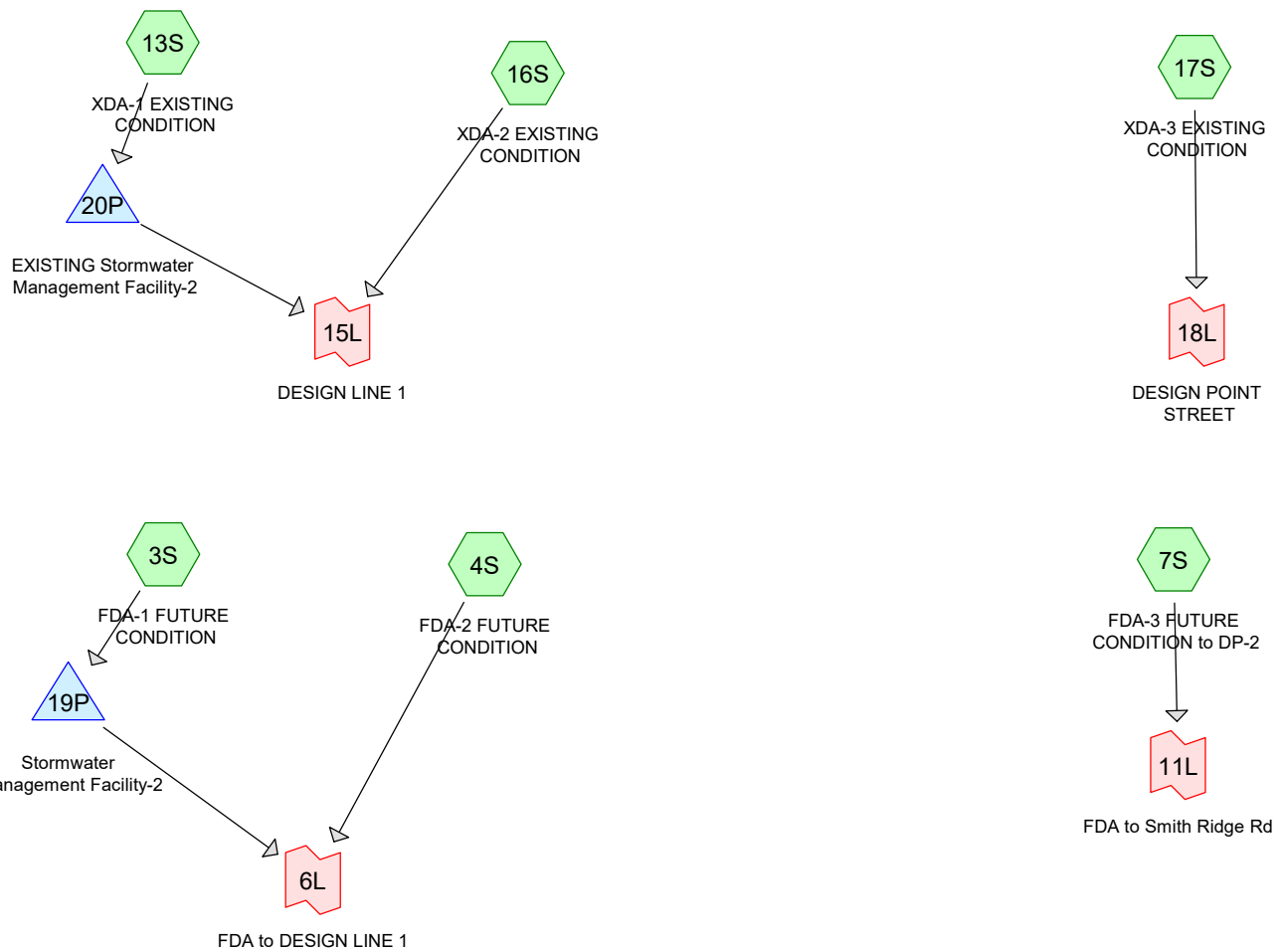
Provide Pre-treatment in a sedimentation basin consisting of a tank with a capacity of 500 gallons capture the runoff flows.

Interior Length =	90 inches
Interior Width =	42 inches
Height to Invert =	32 inches
Volume =	70 cubic feet

The proposed storm pipe sedimentation basin volume is in excess of the requirement.

***Appendix A***

***Stormwater Management Report  
Hydrographs and Routings***



# **Routing Diagram for Self-Storage SW Plan\_02-18-2022**

Prepared by ALP Engineering & Land. Arch. PLLC

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## Self-Storage SW Plan\_02-18-2022

Prepared by ALP Engineering & Land. Arch. PLLC

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 year	Type III 24-hr		Default	24.00	1	2.85	2
2	2 year	Type III 24-hr		Default	24.00	1	3.44	2
3	10 year	Type III 24-hr		Default	24.00	1	5.12	2
4	25 year	Type III 24-hr		Default	24.00	1	6.43	2
5	100 year	Type III 24-hr		Default	24.00	1	9.08	2



## Self-Storage SW Plan\_02-18-2022

Prepared by ALP Engineering & Land. Arch. PLLC

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.301	61	>75% Grass cover, Good, HSG B (3S, 7S, 13S, 17S)
0.422	56	Brush, Fair, HSG B (16S)
0.178	48	Brush, Good, HSG B (4S)
0.423	98	Impervious surfaces, HSG B (3S)
0.092	98	Pavement (7S, 17S)
0.383	98	Roofs, HSG B (13S)
0.053	98	Unconnected roofs, HSG B (4S)
0.151	58	Woods/grass comb., Good, HSG B (4S)
<b>2.004</b>	<b>76</b>	<b>TOTAL AREA</b>

**Self-Storage SW Plan\_02-18-2022**

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**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.301	0.000	0.000	0.000	0.301	>75% Grass cover, Good	3S, 7S, 13S, 17S
0.000	0.422	0.000	0.000	0.000	0.422	Brush, Fair	16S
0.000	0.178	0.000	0.000	0.000	0.178	Brush, Good	4S
0.000	0.423	0.000	0.000	0.000	0.423	Impervious surfaces	3S
0.000	0.000	0.000	0.000	0.092	0.092	Pavement	7S, 17S
0.000	0.383	0.000	0.000	0.000	0.383	Roofs	13S
0.000	0.053	0.000	0.000	0.000	0.053	Unconnected roofs	4S
0.000	0.151	0.000	0.000	0.000	0.151	Woods/grass comb., Good	4S
<b>0.000</b>	<b>1.912</b>	<b>0.000</b>	<b>0.000</b>	<b>0.092</b>	<b>2.004</b>	<b>TOTAL AREA</b>	

**Self-Storage SW Plan\_02-18-2022***Type III 24-hr 1 year Rainfall=2.85"*

Prepared by ALP Engineering &amp; Land. Arch. PLLC

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 3S: FDA-1 FUTURE</b>	Runoff Area=23,114 sf 79.63% Impervious Runoff Depth=1.85" Tc=6.0 min CN=90 Runoff=1.14 cfs 0.082 af
<b>Subcatchment 4S: FDA-2 FUTURE</b>	Runoff Area=16,670 sf 13.85% Impervious Runoff Depth=0.18" Tc=6.0 min UI Adjusted CN=56 Runoff=0.02 cfs 0.006 af
<b>Subcatchment 7S: FDA-3 FUTURE</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=1.14" Tc=5.0 min CN=80 Runoff=0.12 cfs 0.008 af
<b>Subcatchment 13S: XDA-1 EXISTING</b>	Runoff Area=21,405 sf 78.04% Impervious Runoff Depth=1.85" Tc=6.0 min CN=90 Runoff=1.06 cfs 0.076 af
<b>Subcatchment 16S: XDA-2 EXISTING</b>	Runoff Area=18,379 sf 0.00% Impervious Runoff Depth=0.18" Tc=6.0 min CN=56 Runoff=0.03 cfs 0.006 af
<b>Subcatchment 17S: XDA-3 EXISTING</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=1.14" Tc=5.0 min CN=80 Runoff=0.12 cfs 0.008 af
<b>Pond 19P: Stormwater Management</b>	Peak Elev=114.10' Storage=1,803 cf Inflow=1.14 cfs 0.082 af Discarded=0.05 cfs 0.082 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.082 af
<b>Pond 20P: EXISTING Stormwater</b>	Peak Elev=114.15' Storage=1,700 cf Inflow=1.06 cfs 0.076 af Discarded=0.05 cfs 0.076 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.076 af
<b>Link 6L: FDA to DESIGN LINE 1</b>	Inflow=0.02 cfs 0.006 af Primary=0.02 cfs 0.006 af
<b>Link 11L: FDA to Smith Ridge Rd</b>	Inflow=0.12 cfs 0.008 af Primary=0.12 cfs 0.008 af
<b>Link 15L: DESIGN LINE 1</b>	Inflow=0.03 cfs 0.006 af Primary=0.03 cfs 0.006 af
<b>Link 18L: DESIGN POINT STREET</b>	Inflow=0.12 cfs 0.008 af Primary=0.12 cfs 0.008 af

**Total Runoff Area = 2.004 ac Runoff Volume = 0.186 af Average Runoff Depth = 1.11"**  
**52.53% Pervious = 1.053 ac 47.47% Impervious = 0.951 ac**

**Summary for Subcatchment 3S: FDA-1 FUTURE CONDITION**

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 1.85"

Routed to Pond 19P : Stormwater Management Facility-2

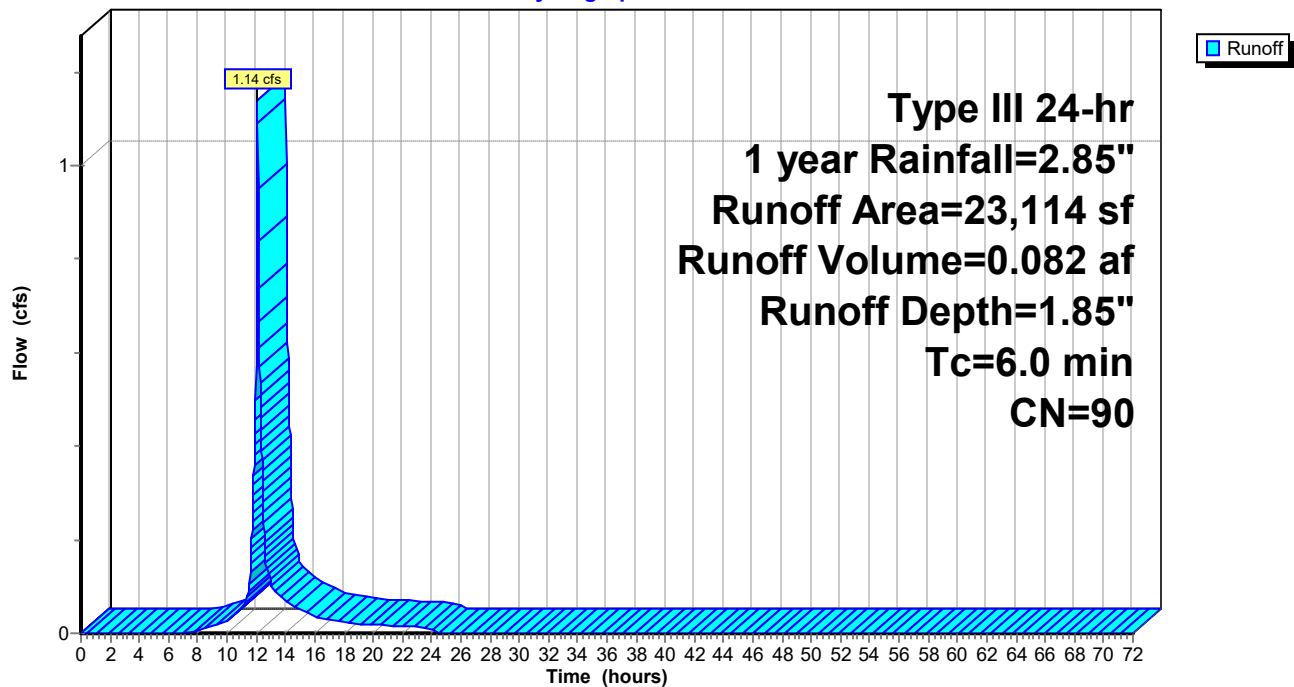
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 1 year Rainfall=2.85"

	Area (sf)	CN	Description
*	18,405	98	Impervious surfaces, HSG B
	4,709	61	>75% Grass cover, Good, HSG B
	23,114	90	Weighted Average
	4,709		20.37% Pervious Area
	18,405		79.63% Impervious Area

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

**Subcatchment 3S: FDA-1 FUTURE CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 1 year Rainfall=2.85"

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**Summary for Subcatchment 4S: FDA-2 FUTURE CONDITION**

Runoff = 0.02 cfs @ 12.38 hrs, Volume= 0.006 af, Depth= 0.18"  
 Routed to Link 6L : FDA to DESIGN LINE 1

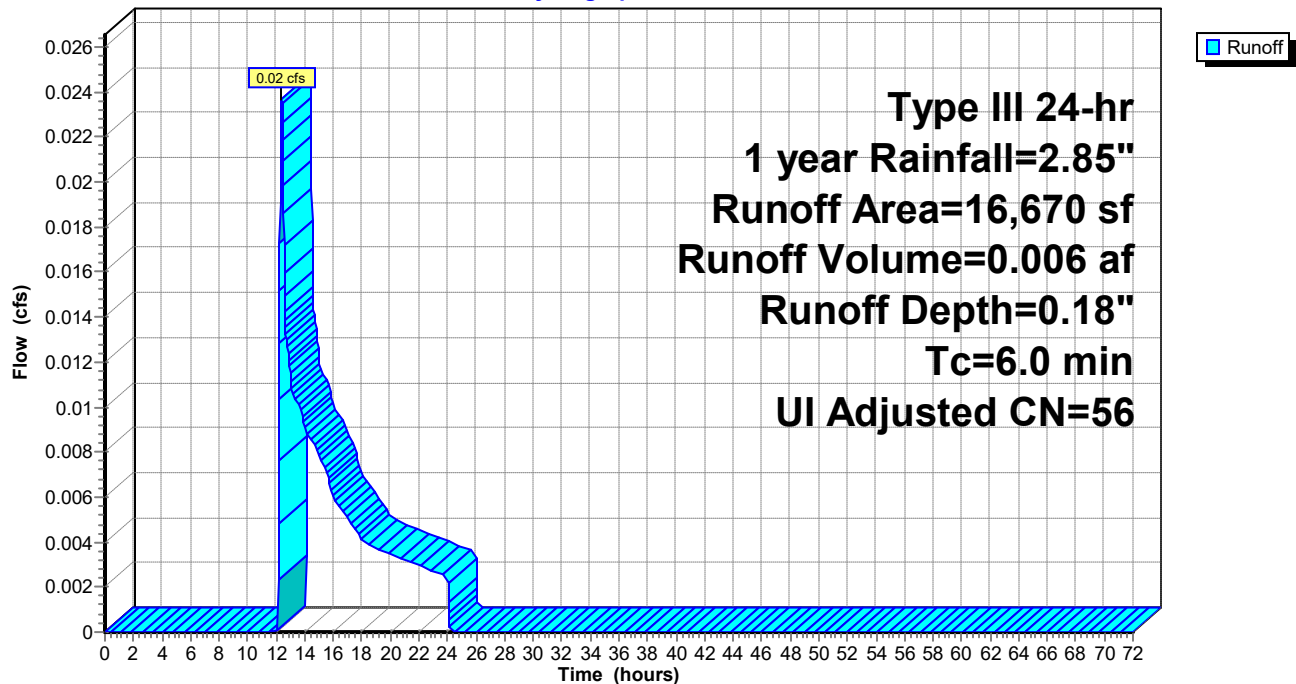
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 1 year Rainfall=2.85"

Area (sf)	CN	Adj	Description
6,597	58		Woods/grass comb., Good, HSG B
7,764	48		Brush, Good, HSG B
2,309	98		Unconnected roofs, HSG B
16,670	59	56	Weighted Average, UI Adjusted
14,361			86.15% Pervious Area
2,309			13.85% Impervious Area
2,309			100.00% Unconnected

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

**Subcatchment 4S: FDA-2 FUTURE CONDITION**

Hydrograph





**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 1 year Rainfall=2.85"

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**Summary for Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af, Depth= 1.14"

Routed to Link 11L : FDA to Smith Ridge Rd

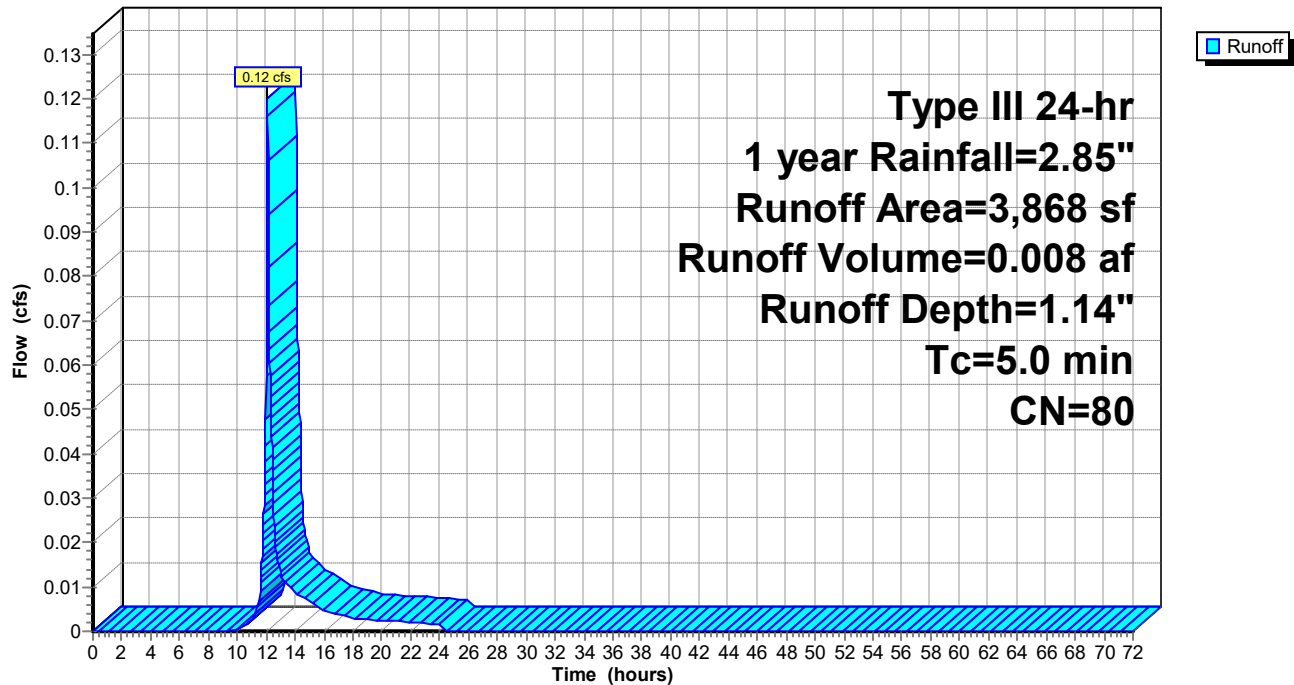
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 1 year Rainfall=2.85"

	Area (sf)	CN	Description
	1,855	61	>75% Grass cover, Good, HSG B
*	2,013	98	Pavement
	3,868	80	Weighted Average
	1,855		47.96% Pervious Area
	2,013		52.04% Impervious Area

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

**Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Hydrograph



**Summary for Subcatchment 13S: XDA-1 EXISTING CONDITION**

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 1.85"

Routed to Pond 20P : EXISTING Stormwater Management Facility-2

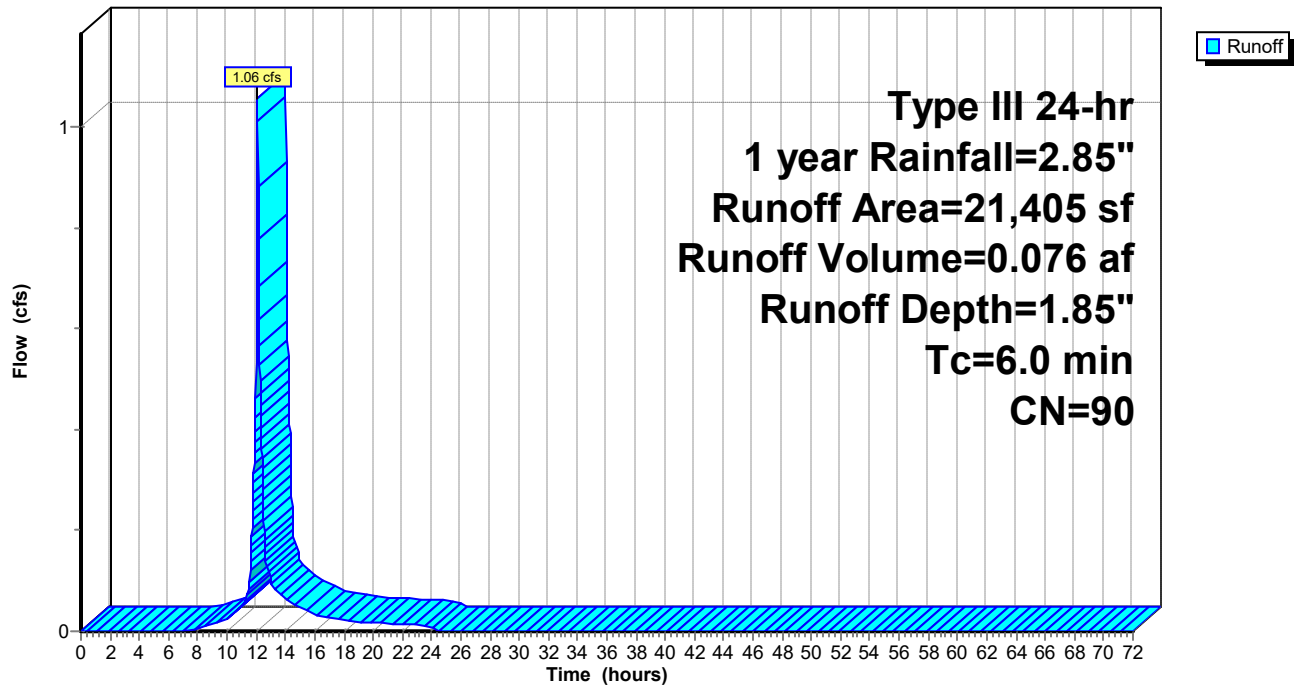
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 1 year Rainfall=2.85"

Area (sf)	CN	Description
16,705	98	Roofs, HSG B
4,700	61	>75% Grass cover, Good, HSG B
21,405	90	Weighted Average
4,700		21.96% Pervious Area
16,705		78.04% Impervious Area

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

**Subcatchment 13S: XDA-1 EXISTING CONDITION**

Hydrograph



**Summary for Subcatchment 16S: XDA-2 EXISTING CONDITION**

Runoff = 0.03 cfs @ 12.38 hrs, Volume= 0.006 af, Depth= 0.18"  
 Routed to Link 15L : DESIGN LINE 1

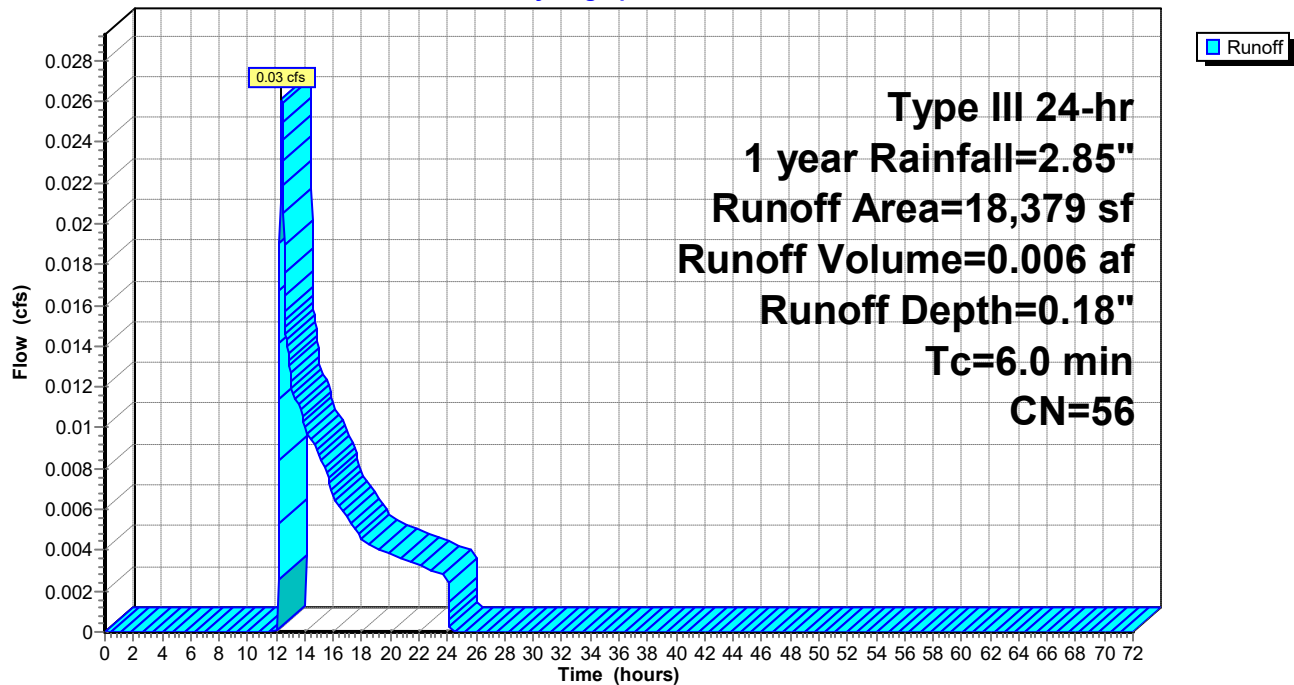
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 1 year Rainfall=2.85"

Area (sf)	CN	Description
18,379	56	Brush, Fair, HSG B
18,379		100.00% Pervious Area

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

**Subcatchment 16S: XDA-2 EXISTING CONDITION**

Hydrograph



**Summary for Subcatchment 17S: XDA-3 EXISTING CONDITION**

Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af, Depth= 1.14"  
 Routed to Link 18L : DESIGN POINT STREET

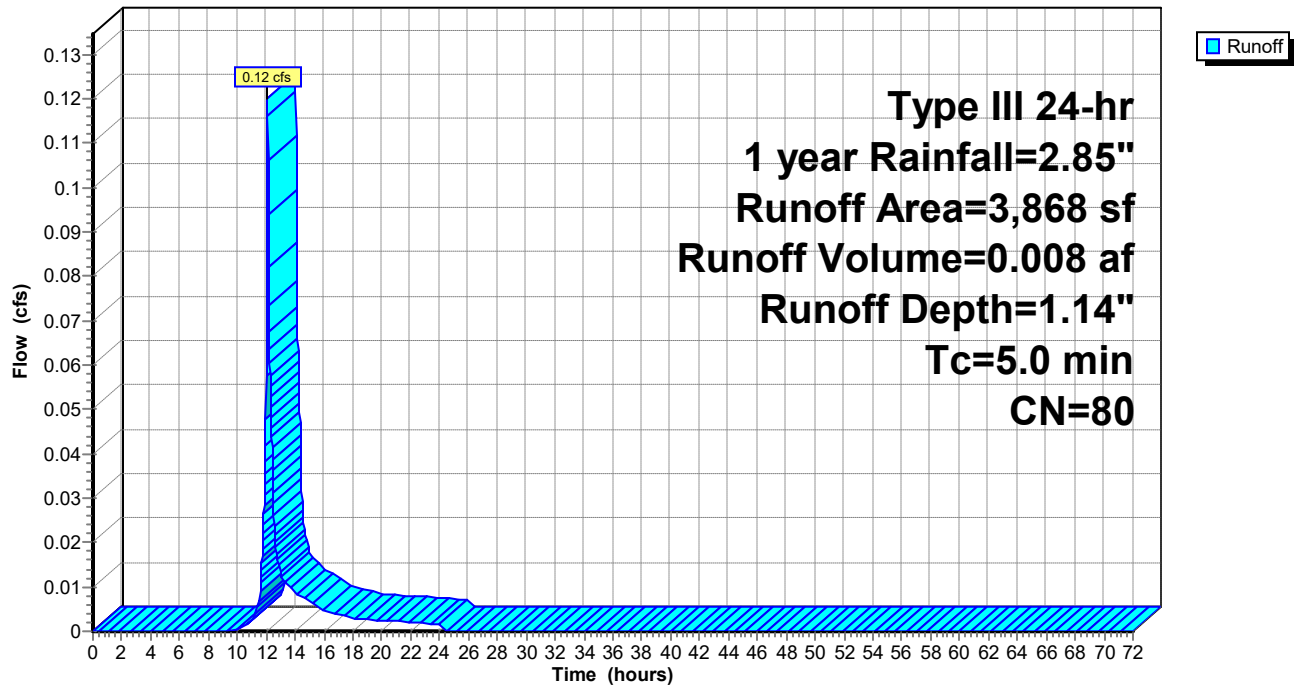
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 1 year Rainfall=2.85"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 17S: XDA-3 EXISTING CONDITION**

Hydrograph



**Summary for Pond 19P: Stormwater Management Facility-2**

Inflow Area = 0.531 ac, 79.63% Impervious, Inflow Depth = 1.85" for 1 year event  
 Inflow = 1.14 cfs @ 12.09 hrs, Volume= 0.082 af  
 Outflow = 0.05 cfs @ 11.14 hrs, Volume= 0.082 af, Atten= 95%, Lag= 0.0 min  
 Discarded = 0.05 cfs @ 11.14 hrs, Volume= 0.082 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 6L : FDA to DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 114.10' @ 14.88 hrs Surf.Area= 2,333 sf Storage= 1,803 cf

Plug-Flow detention time= 321.6 min calculated for 0.082 af (100% of inflow)  
 Center-of-Mass det. time= 321.6 min ( 1,133.1 - 811.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,440 cf	<b>20.83'W x 80.50'L x 3.54'H Field A Existing</b> 5,940 cf Overall - 2,340 cf Embedded = 3,600 cf x 40.0% Voids
#2A	113.41'	2,340 cf	<b>Cultec R-330XLHD x 44 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
#3B	112.91'	578 cf	<b>20.83'W x 31.50'L x 3.54'H Field B Proposed</b> 2,324 cf Overall - 879 cf Embedded = 1,445 cf x 40.0% Voids
#4B	113.41'	879 cf	<b>Cultec R-330XLHD x 16 Inside #3</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		5,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard  
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 11.14 hrs HW=112.95' (Free Discharge)  
 ↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=112.91' (Free Discharge)  
 ↑ **1=Culvert** (Passes 0.00 cfs of 0.62 cfs potential flow)  
 ↑ **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)



**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

44 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 2,339.6 cf Chamber Storage

5,939.7 cf Field - 2,339.6 cf Chambers = 3,600.1 cf Stone x 40.0% Voids = 1,440.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,779.6 cf = 0.087 af

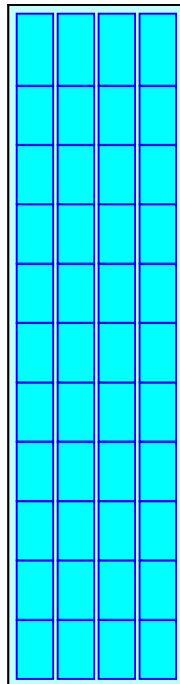
Overall Storage Efficiency = 63.6%

Overall System Size = 80.50' x 20.83' x 3.54'

44 Chambers

220.0 cy Field

133.3 cy Stone



**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field B Proposed**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

4 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 29.50' Row Length +12.0" End Stone x 2 = 31.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

16 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 879.2 cf Chamber Storage

2,324.2 cf Field - 879.2 cf Chambers = 1,445.0 cf Stone x 40.0% Voids = 578.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,457.2 cf = 0.033 af

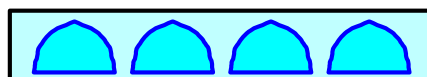
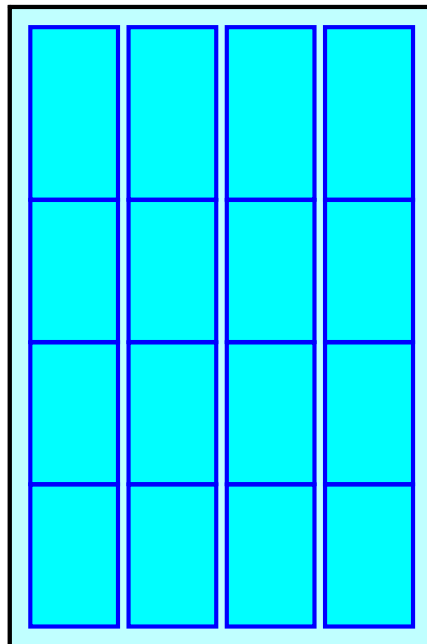
Overall Storage Efficiency = 62.7%

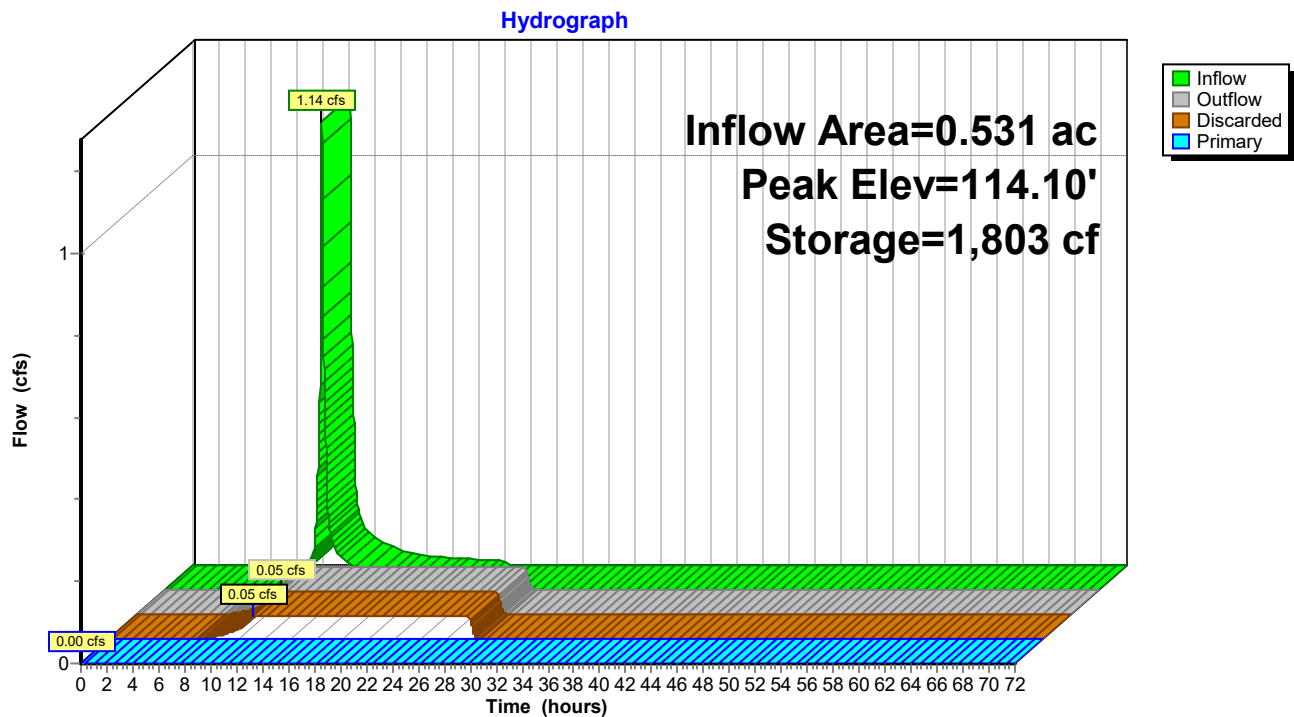
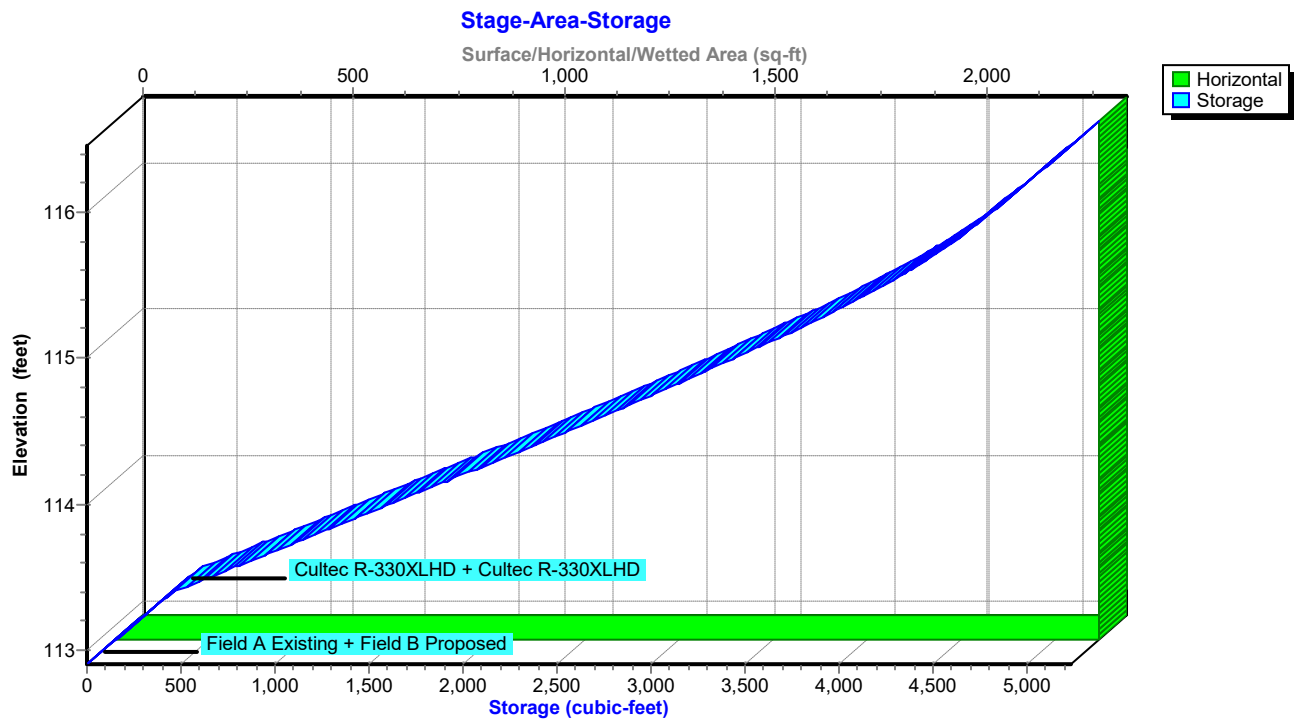
Overall System Size = 31.50' x 20.83' x 3.54'

16 Chambers

86.1 cy Field

53.5 cy Stone



**Pond 19P: Stormwater Management Facility-2****Pond 19P: Stormwater Management Facility-2**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 1 year Rainfall=2.85"

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**Summary for Pond 20P: EXISTING Stormwater Management Facility-2**

Inflow Area = 0.491 ac, 78.04% Impervious, Inflow Depth = 1.85" for 1 year event  
 Inflow = 1.06 cfs @ 12.09 hrs, Volume= 0.076 af  
 Outflow = 0.05 cfs @ 11.08 hrs, Volume= 0.076 af, Atten= 95%, Lag= 0.0 min  
 Discarded = 0.05 cfs @ 11.08 hrs, Volume= 0.076 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 15L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 114.15' @ 15.04 hrs Surf.Area= 2,066 sf Storage= 1,700 cf

Plug-Flow detention time= 343.2 min calculated for 0.076 af (100% of inflow)  
 Center-of-Mass det. time= 343.2 min ( 1,154.7 - 811.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,757 cf	<b>25.67'W x 80.50'L x 3.54'H Field A Existing</b> 7,318 cf Overall - 2,925 cf Embedded = 4,393 cf x 40.0% Voids
#2A	113.41'	2,925 cf	<b>Cultec R-330XLHD</b> x 55 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		4,682 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 11.08 hrs HW=112.95' (Free Discharge)↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=112.91' (Free Discharge)↑ **1=Culvert** (Passes 0.00 cfs of 0.62 cfs potential flow)↑ **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond 20P: EXISTING Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 5 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

5 Rows x 52.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.67' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

55 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 5 Rows = 2,924.5 cf Chamber Storage

7,317.7 cf Field - 2,924.5 cf Chambers = 4,393.2 cf Stone x 40.0% Voids = 1,757.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,681.8 cf = 0.107 af

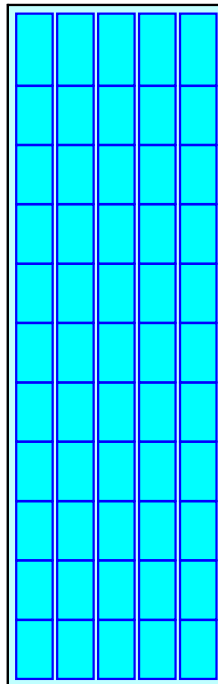
Overall Storage Efficiency = 64.0%

Overall System Size = 80.50' x 25.67' x 3.54'

55 Chambers

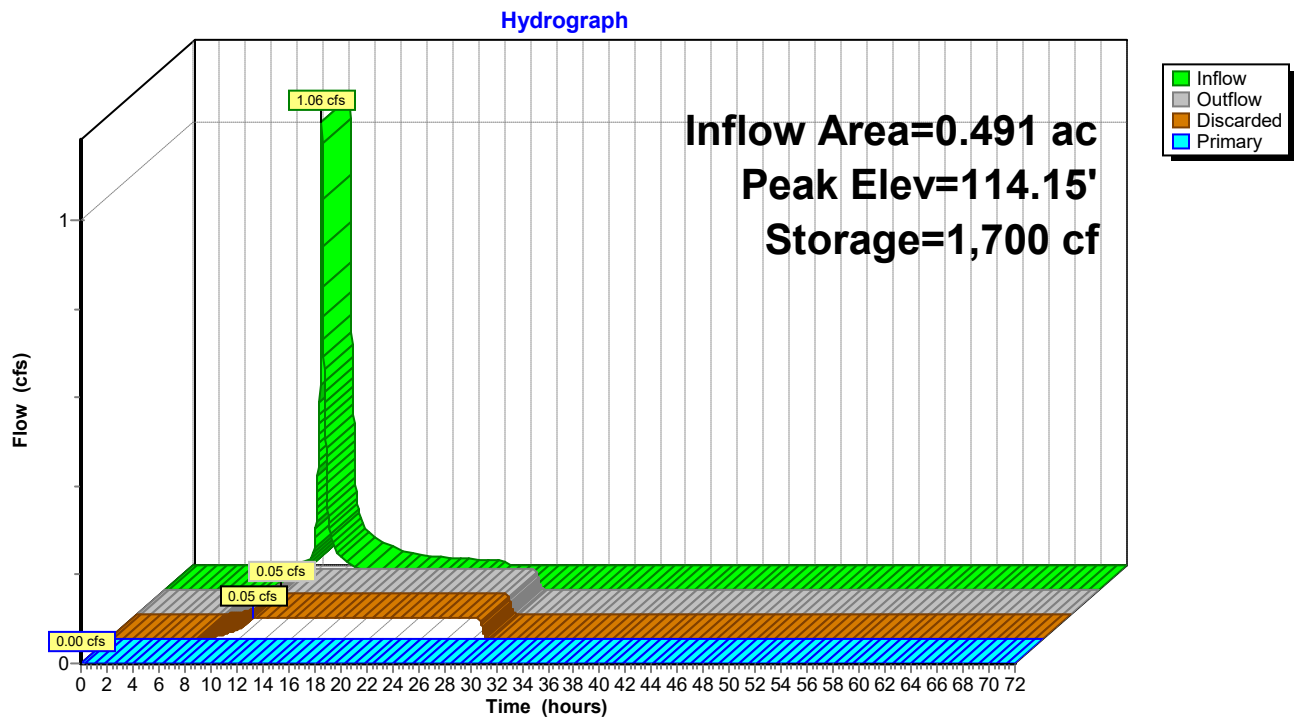
271.0 cy Field

162.7 cy Stone

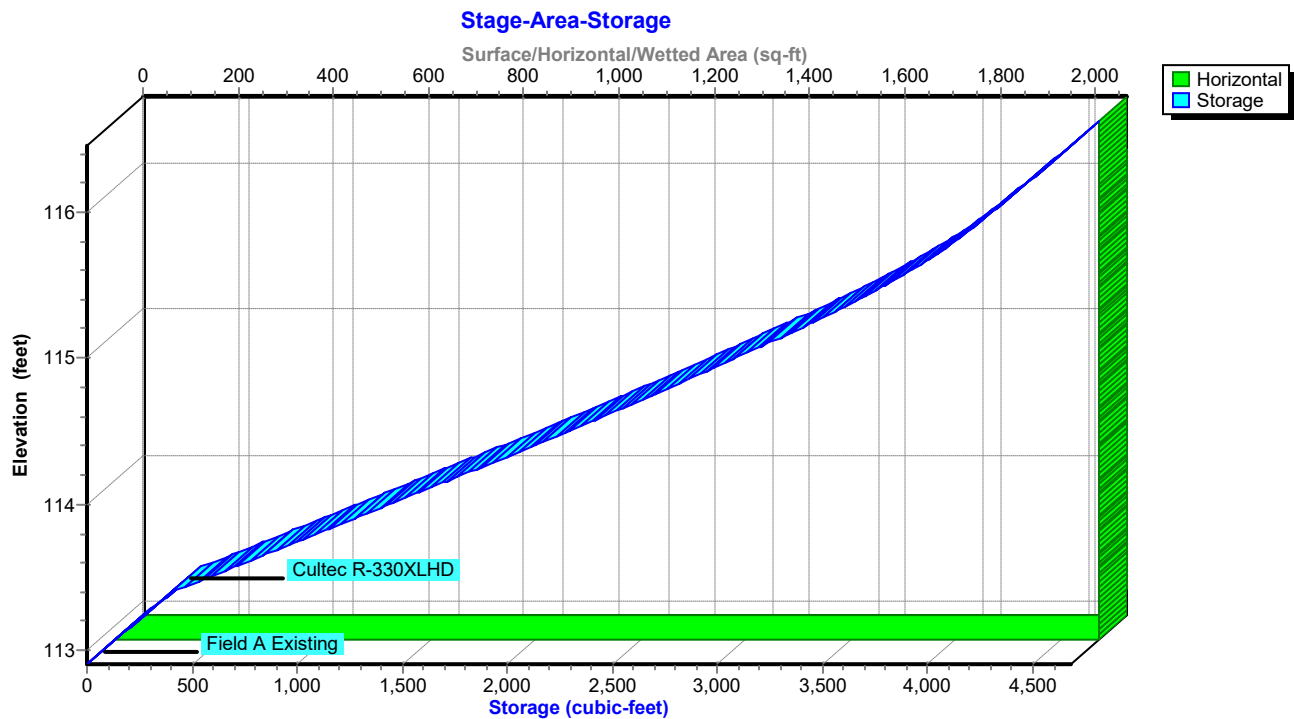




## Pond 20P: EXISTING Stormwater Management Facility-2



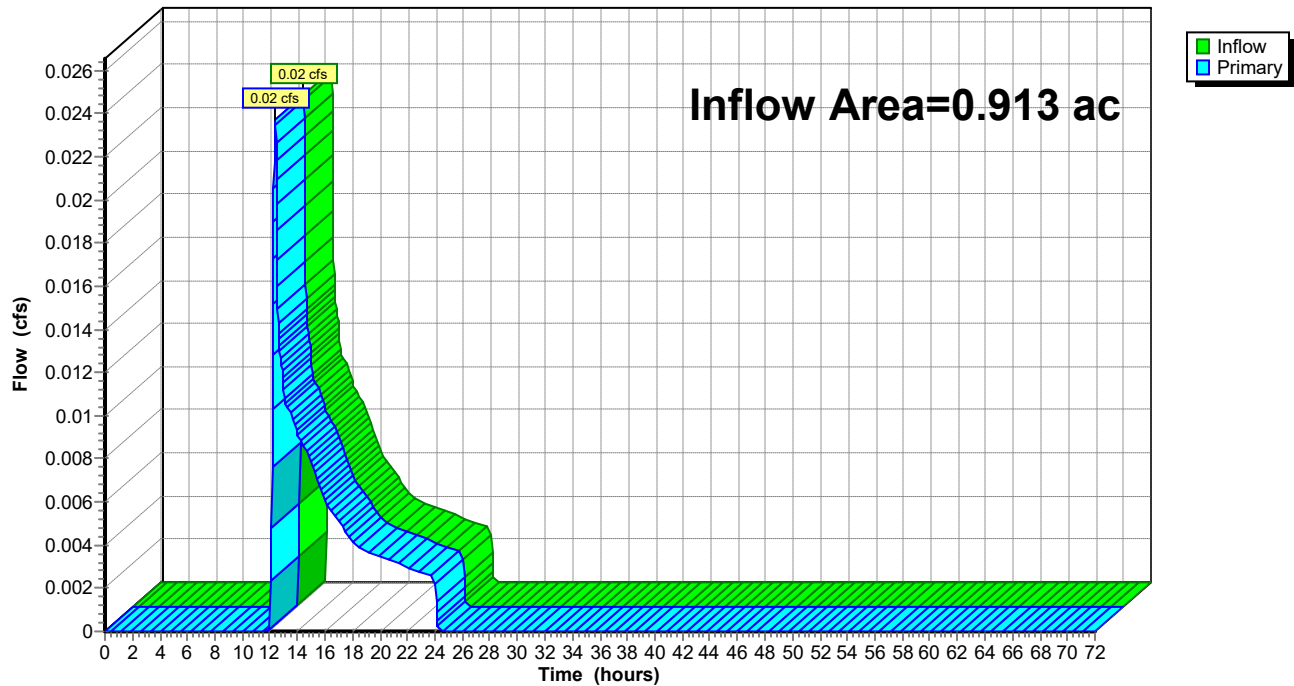
## Pond 20P: EXISTING Stormwater Management Facility-2



**Summary for Link 6L: FDA to DESIGN LINE 1**

Inflow Area = 0.913 ac, 52.07% Impervious, Inflow Depth = 0.07" for 1 year event  
Inflow = 0.02 cfs @ 12.38 hrs, Volume= 0.006 af  
Primary = 0.02 cfs @ 12.38 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

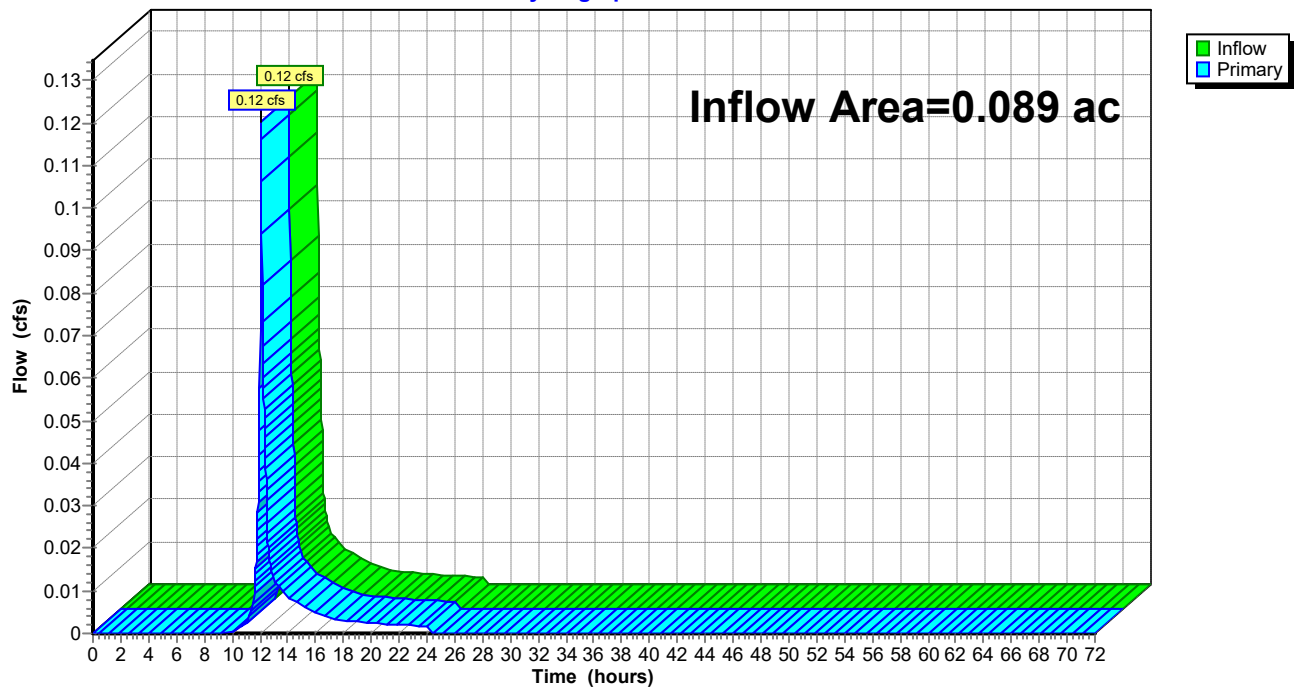
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 6L: FDA to DESIGN LINE 1****Hydrograph**

**Summary for Link 11L: FDA to Smith Ridge Rd**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 1.14" for 1 year event  
Inflow = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af  
Primary = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 11L: FDA to Smith Ridge Rd****Hydrograph**

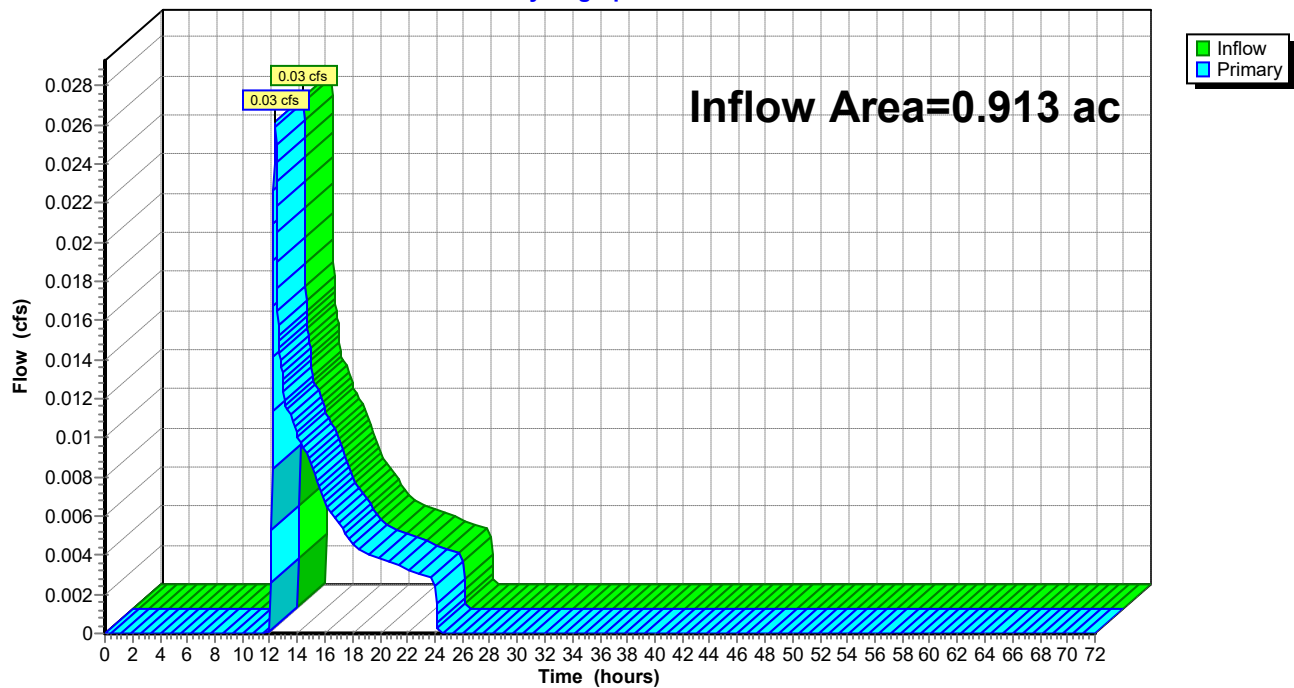
**Summary for Link 15L: DESIGN LINE 1**

Inflow Area = 0.913 ac, 41.99% Impervious, Inflow Depth = 0.08" for 1 year event  
Inflow = 0.03 cfs @ 12.38 hrs, Volume= 0.006 af  
Primary = 0.03 cfs @ 12.38 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 15L: DESIGN LINE 1**

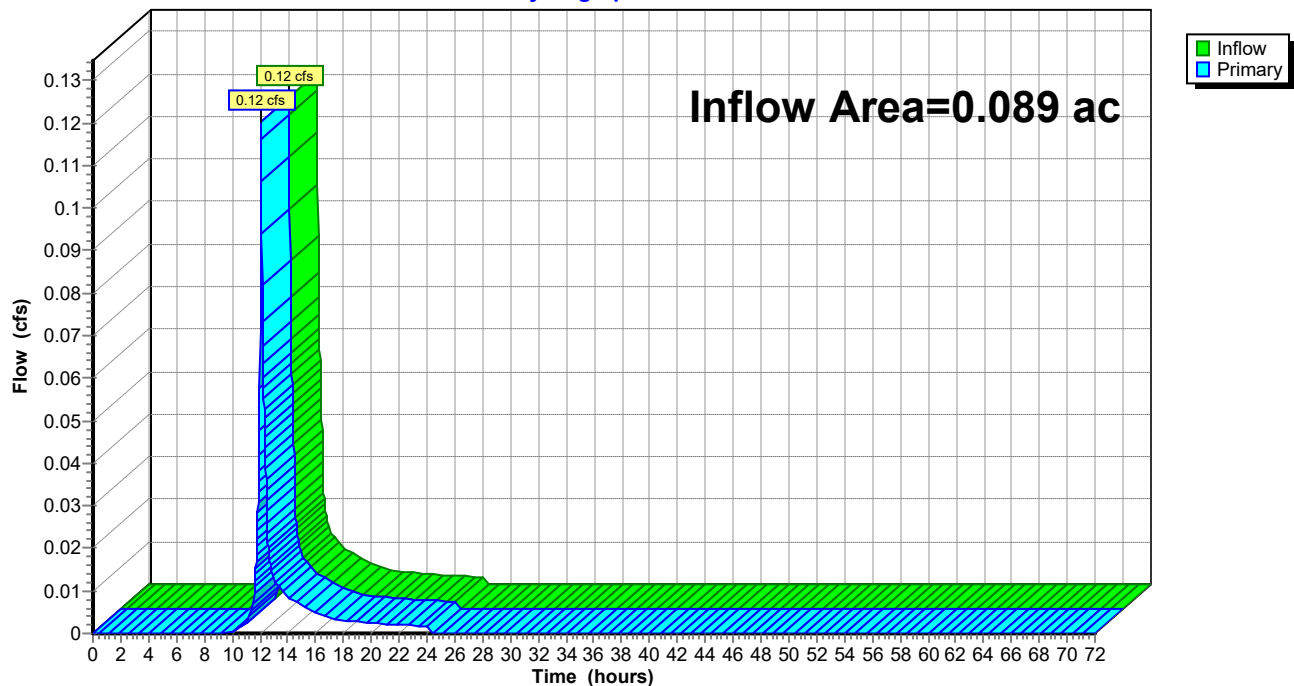
Hydrograph



**Summary for Link 18L: DESIGN POINT STREET**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 1.14" for 1 year event  
Inflow = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af  
Primary = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 18L: DESIGN POINT STREET****Hydrograph**



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 2 year Rainfall=3.44"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 3S: FDA-1 FUTURE</b>	Runoff Area=23,114 sf 79.63% Impervious Runoff Depth=2.39" Tc=6.0 min CN=90 Runoff=1.46 cfs 0.106 af
<b>Subcatchment 4S: FDA-2 FUTURE</b>	Runoff Area=16,670 sf 13.85% Impervious Runoff Depth=0.36" Tc=6.0 min UI Adjusted CN=56 Runoff=0.07 cfs 0.011 af
<b>Subcatchment 7S: FDA-3 FUTURE</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=1.59" Tc=5.0 min CN=80 Runoff=0.17 cfs 0.012 af
<b>Subcatchment 13S: XDA-1 EXISTING</b>	Runoff Area=21,405 sf 78.04% Impervious Runoff Depth=2.39" Tc=6.0 min CN=90 Runoff=1.36 cfs 0.098 af
<b>Subcatchment 16S: XDA-2 EXISTING</b>	Runoff Area=18,379 sf 0.00% Impervious Runoff Depth=0.36" Tc=6.0 min CN=56 Runoff=0.08 cfs 0.013 af
<b>Subcatchment 17S: XDA-3 EXISTING</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=1.59" Tc=5.0 min CN=80 Runoff=0.17 cfs 0.012 af
<b>Pond 19P: Stormwater Management</b>	Peak Elev=114.50' Storage=2,558 cf Inflow=1.46 cfs 0.106 af Discarded=0.05 cfs 0.106 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.106 af
<b>Pond 20P: EXISTING Stormwater</b>	Peak Elev=114.57' Storage=2,409 cf Inflow=1.36 cfs 0.098 af Discarded=0.05 cfs 0.098 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.098 af
<b>Link 6L: FDA to DESIGN LINE 1</b>	Inflow=0.07 cfs 0.011 af Primary=0.07 cfs 0.011 af
<b>Link 11L: FDA to Smith Ridge Rd</b>	Inflow=0.17 cfs 0.012 af Primary=0.17 cfs 0.012 af
<b>Link 15L: DESIGN LINE 1</b>	Inflow=0.08 cfs 0.013 af Primary=0.08 cfs 0.013 af
<b>Link 18L: DESIGN POINT STREET</b>	Inflow=0.17 cfs 0.012 af Primary=0.17 cfs 0.012 af
<b>Total Runoff Area = 2.004 ac Runoff Volume = 0.251 af Average Runoff Depth = 1.50"</b>	
<b>52.53% Pervious = 1.053 ac 47.47% Impervious = 0.951 ac</b>	

**Summary for Subcatchment 3S: FDA-1 FUTURE CONDITION**

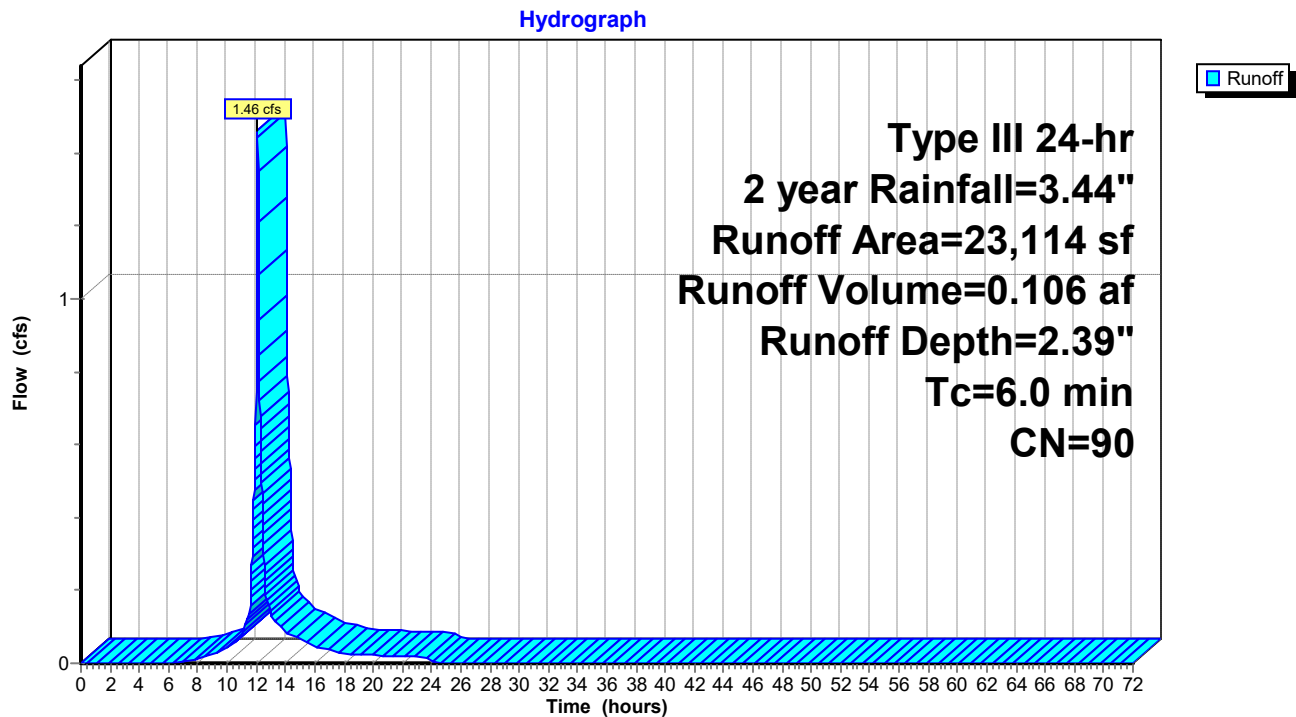
Runoff = 1.46 cfs @ 12.09 hrs, Volume= 0.106 af, Depth= 2.39"

Routed to Pond 19P : Stormwater Management Facility-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2 year Rainfall=3.44"

	Area (sf)	CN	Description
*	18,405	98	Impervious surfaces, HSG B
	4,709	61	>75% Grass cover, Good, HSG B
	23,114	90	Weighted Average
	4,709		20.37% Pervious Area
	18,405		79.63% Impervious Area

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

**Subcatchment 3S: FDA-1 FUTURE CONDITION**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 2 year Rainfall=3.44"

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**Summary for Subcatchment 4S: FDA-2 FUTURE CONDITION**

Runoff = 0.07 cfs @ 12.15 hrs, Volume= 0.011 af, Depth= 0.36"  
 Routed to Link 6L : FDA to DESIGN LINE 1

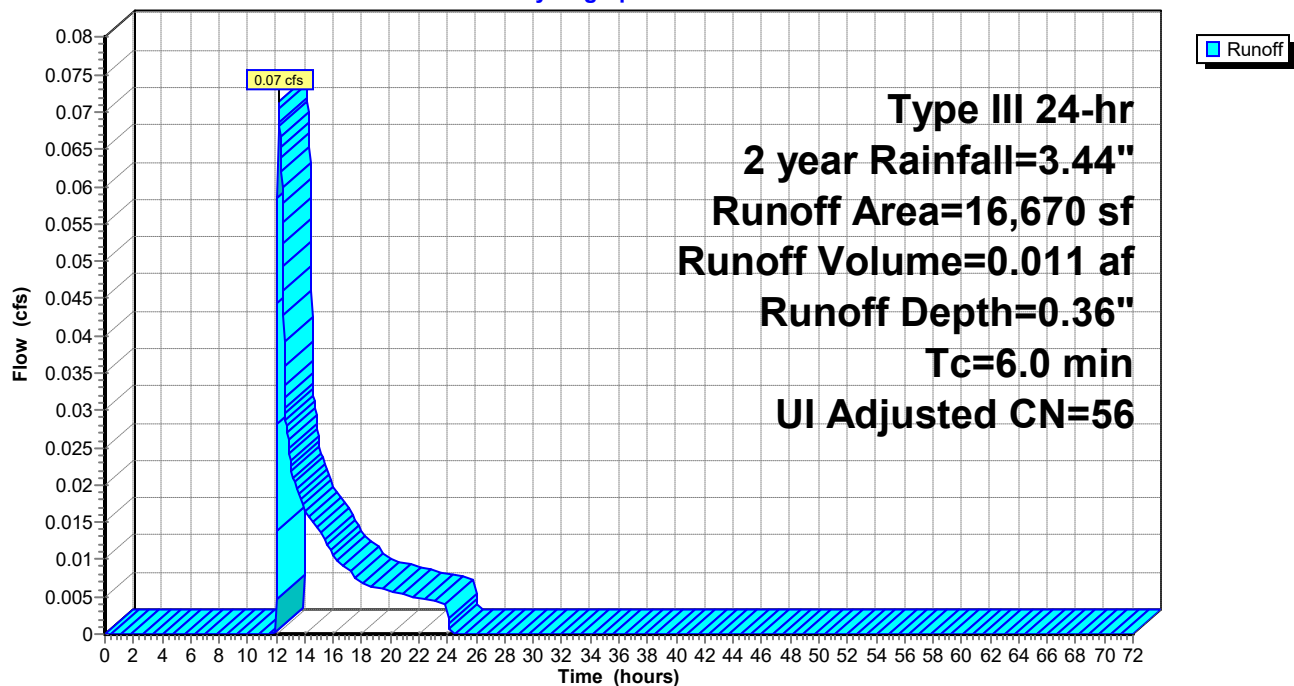
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 year Rainfall=3.44"

Area (sf)	CN	Adj	Description
6,597	58		Woods/grass comb., Good, HSG B
7,764	48		Brush, Good, HSG B
2,309	98		Unconnected roofs, HSG B
16,670	59	56	Weighted Average, UI Adjusted
14,361			86.15% Pervious Area
2,309			13.85% Impervious Area
2,309			100.00% Unconnected

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

**Subcatchment 4S: FDA-2 FUTURE CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 2 year Rainfall=3.44"

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**Summary for Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 1.59"

Routed to Link 11L : FDA to Smith Ridge Rd

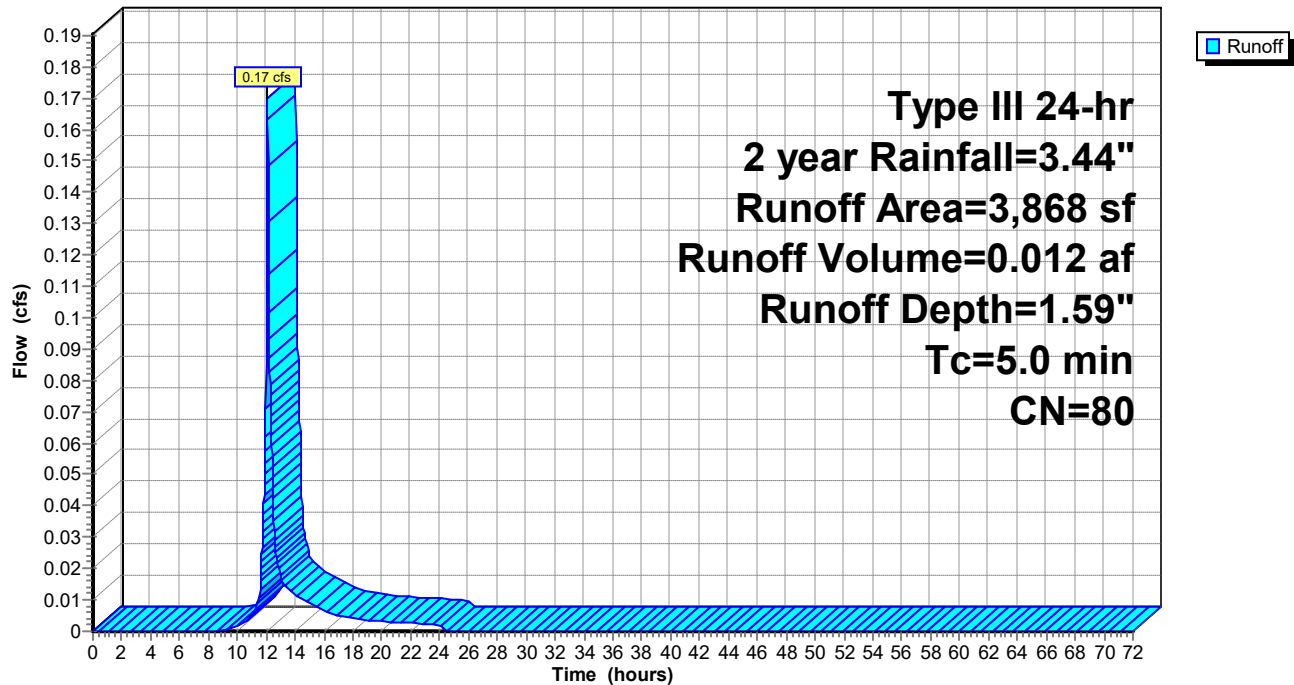
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2 year Rainfall=3.44"

	Area (sf)	CN	Description
	1,855	61	>75% Grass cover, Good, HSG B
*	2,013	98	Pavement
	3,868	80	Weighted Average
	1,855		47.96% Pervious Area
	2,013		52.04% Impervious Area

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

**Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Hydrograph



**Summary for Subcatchment 13S: XDA-1 EXISTING CONDITION**

Runoff = 1.36 cfs @ 12.09 hrs, Volume= 0.098 af, Depth= 2.39"

Routed to Pond 20P : EXISTING Stormwater Management Facility-2

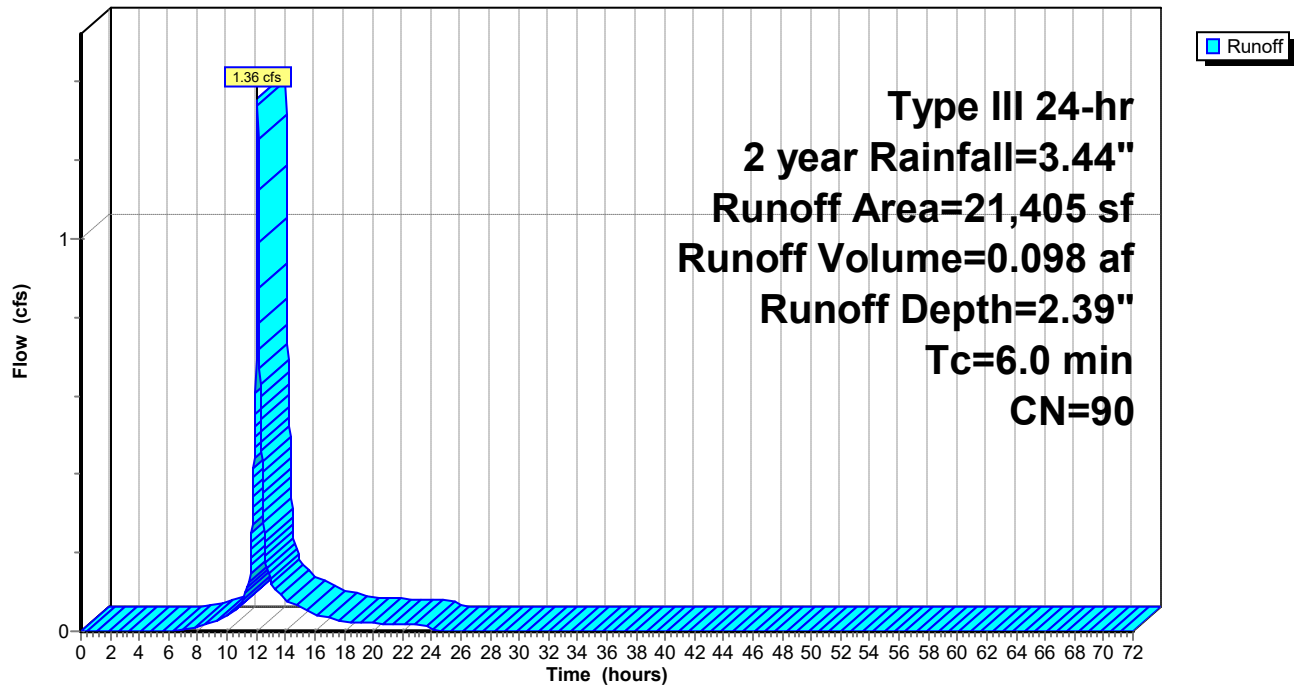
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 2 year Rainfall=3.44"

Area (sf)	CN	Description
16,705	98	Roofs, HSG B
4,700	61	>75% Grass cover, Good, HSG B
21,405	90	Weighted Average
4,700		21.96% Pervious Area
16,705		78.04% Impervious Area

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

**Subcatchment 13S: XDA-1 EXISTING CONDITION**

Hydrograph





**Summary for Subcatchment 16S: XDA-2 EXISTING CONDITION**

Runoff = 0.08 cfs @ 12.15 hrs, Volume= 0.013 af, Depth= 0.36"  
 Routed to Link 15L : DESIGN LINE 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 year Rainfall=3.44"

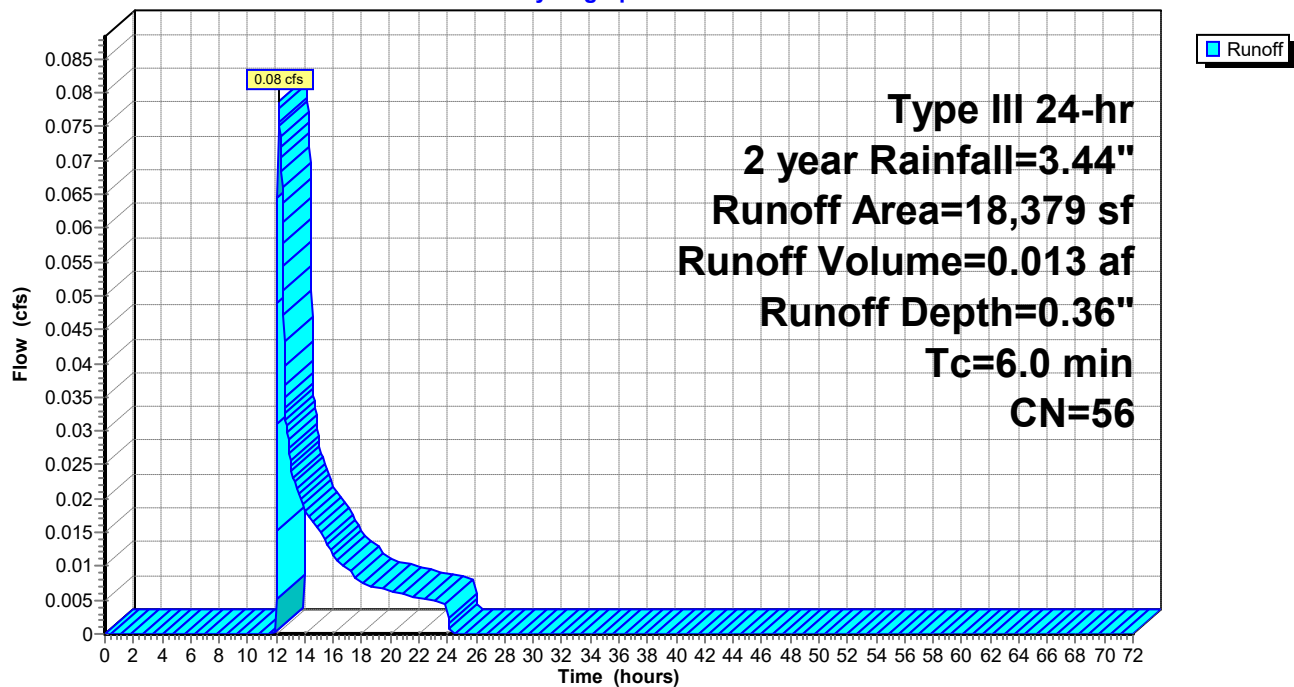
Area (sf)	CN	Description
18,379	56	Brush, Fair, HSG B
18,379		100.00% Pervious Area

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

**Subcatchment 16S: XDA-2 EXISTING CONDITION**

Hydrograph



**Summary for Subcatchment 17S: XDA-3 EXISTING CONDITION**

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 1.59"  
 Routed to Link 18L : DESIGN POINT STREET

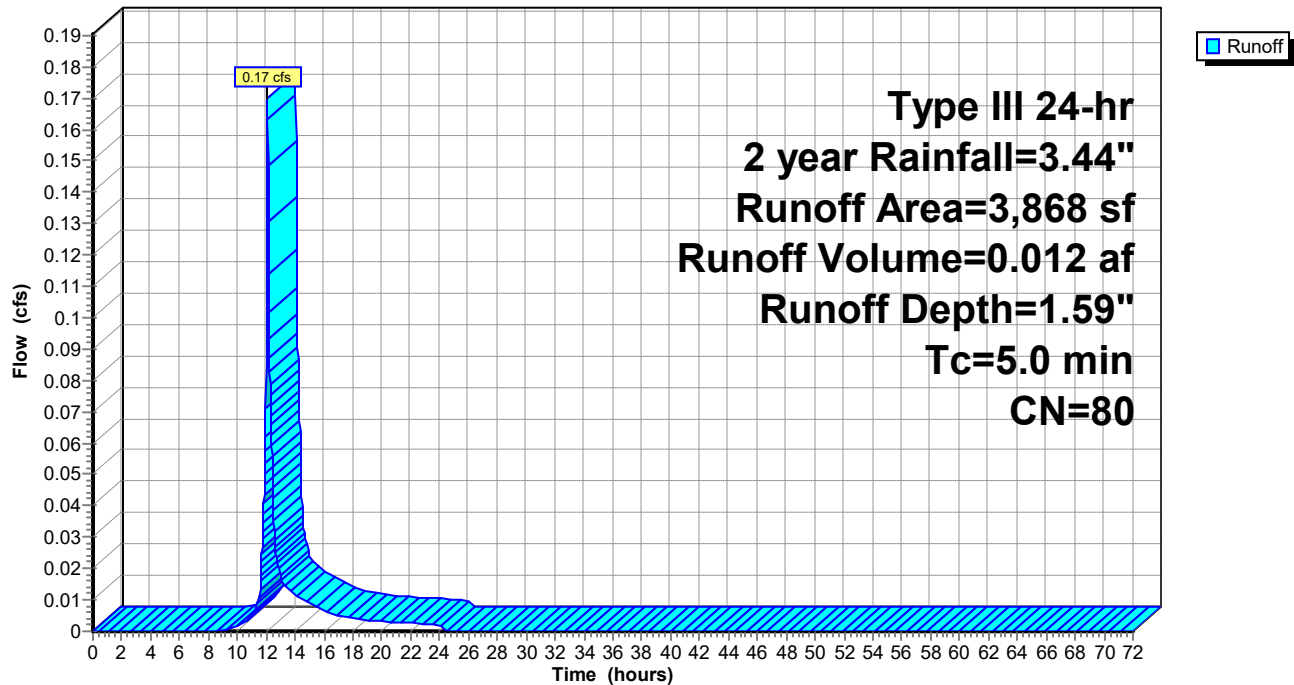
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 year Rainfall=3.44"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 17S: XDA-3 EXISTING CONDITION**

Hydrograph



**Summary for Pond 19P: Stormwater Management Facility-2**

Inflow Area = 0.531 ac, 79.63% Impervious, Inflow Depth = 2.39" for 2 year event  
 Inflow = 1.46 cfs @ 12.09 hrs, Volume= 0.106 af  
 Outflow = 0.05 cfs @ 10.58 hrs, Volume= 0.106 af, Atten= 96%, Lag= 0.0 min  
 Discarded = 0.05 cfs @ 10.58 hrs, Volume= 0.106 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 6L : FDA to DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 114.50' @ 15.57 hrs Surf.Area= 2,333 sf Storage= 2,558 cf

Plug-Flow detention time= 451.3 min calculated for 0.106 af (100% of inflow)  
 Center-of-Mass det. time= 451.4 min ( 1,255.5 - 804.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,440 cf	<b>20.83'W x 80.50'L x 3.54'H Field A Existing</b> 5,940 cf Overall - 2,340 cf Embedded = 3,600 cf x 40.0% Voids
#2A	113.41'	2,340 cf	<b>Cultec R-330XLHD x 44 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
#3B	112.91'	578 cf	<b>20.83'W x 31.50'L x 3.54'H Field B Proposed</b> 2,324 cf Overall - 879 cf Embedded = 1,445 cf x 40.0% Voids
#4B	113.41'	879 cf	<b>Cultec R-330XLHD x 16 Inside #3</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		5,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard  
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 10.58 hrs HW=112.95' (Free Discharge)  
 ↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=112.91' (Free Discharge)  
 ↑ **1=Culvert** (Passes 0.00 cfs of 0.62 cfs potential flow)  
 ↑ **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

44 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 2,339.6 cf Chamber Storage

5,939.7 cf Field - 2,339.6 cf Chambers = 3,600.1 cf Stone x 40.0% Voids = 1,440.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,779.6 cf = 0.087 af

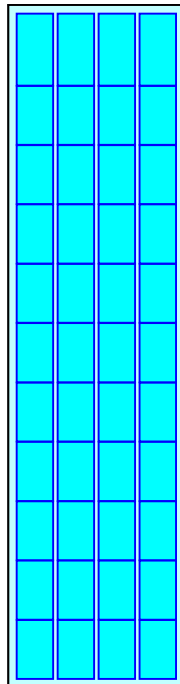
Overall Storage Efficiency = 63.6%

Overall System Size = 80.50' x 20.83' x 3.54'

44 Chambers

220.0 cy Field

133.3 cy Stone



**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field B Proposed**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

4 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 29.50' Row Length +12.0" End Stone x 2 = 31.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

16 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 879.2 cf Chamber Storage

2,324.2 cf Field - 879.2 cf Chambers = 1,445.0 cf Stone x 40.0% Voids = 578.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,457.2 cf = 0.033 af

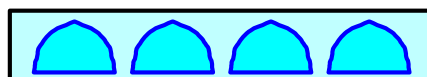
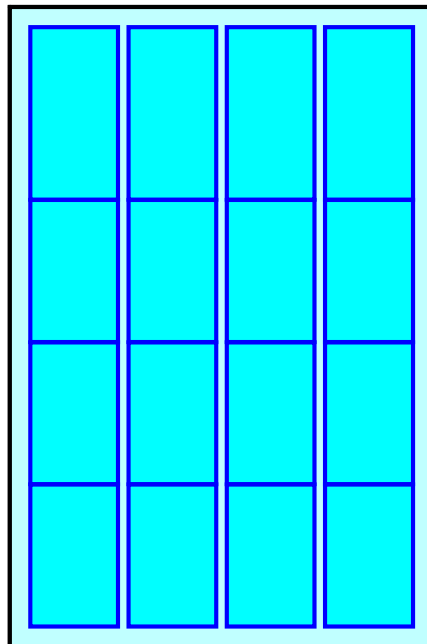
Overall Storage Efficiency = 62.7%

Overall System Size = 31.50' x 20.83' x 3.54'

16 Chambers

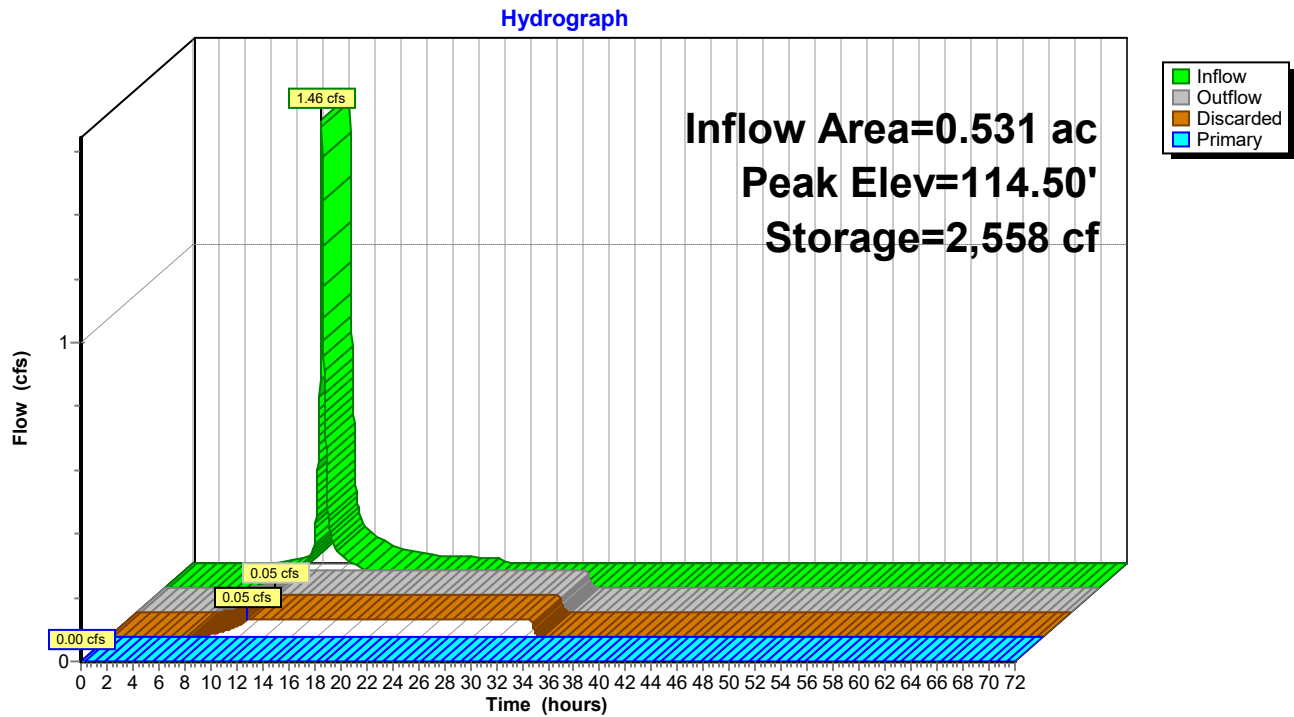
86.1 cy Field

53.5 cy Stone

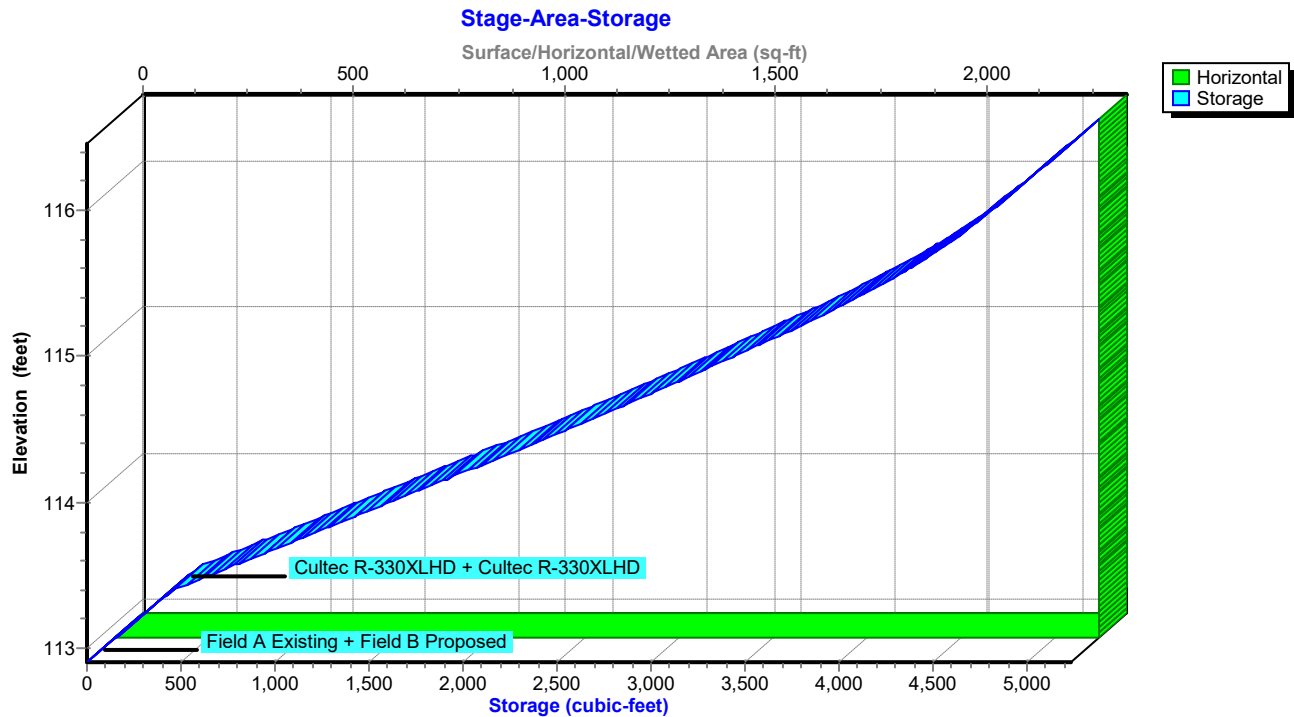




## Pond 19P: Stormwater Management Facility-2



## Pond 19P: Stormwater Management Facility-2



**Summary for Pond 20P: EXISTING Stormwater Management Facility-2**

Inflow Area = 0.491 ac, 78.04% Impervious, Inflow Depth = 2.39" for 2 year event  
 Inflow = 1.36 cfs @ 12.09 hrs, Volume= 0.098 af  
 Outflow = 0.05 cfs @ 10.52 hrs, Volume= 0.098 af, Atten= 96%, Lag= 0.0 min  
 Discarded = 0.05 cfs @ 10.52 hrs, Volume= 0.098 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 15L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 114.57' @ 15.70 hrs Surf.Area= 2,066 sf Storage= 2,409 cf

Plug-Flow detention time= 480.0 min calculated for 0.098 af (100% of inflow)  
 Center-of-Mass det. time= 480.1 min ( 1,284.2 - 804.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,757 cf	<b>25.67'W x 80.50'L x 3.54'H Field A Existing</b> 7,318 cf Overall - 2,925 cf Embedded = 4,393 cf x 40.0% Voids
#2A	113.41'	2,925 cf	<b>Cultec R-330XLHD</b> x 55 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		4,682 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 10.52 hrs HW=112.95' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=112.91' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 0.62 cfs potential flow)

↑ **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond 20P: EXISTING Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 5 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

5 Rows x 52.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.67' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

55 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 5 Rows = 2,924.5 cf Chamber Storage

7,317.7 cf Field - 2,924.5 cf Chambers = 4,393.2 cf Stone x 40.0% Voids = 1,757.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,681.8 cf = 0.107 af

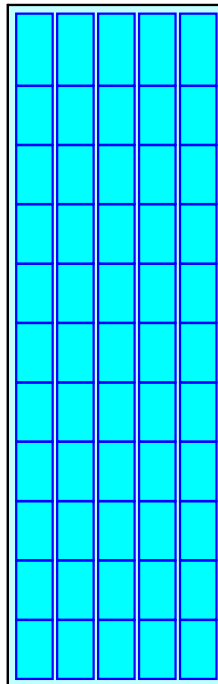
Overall Storage Efficiency = 64.0%

Overall System Size = 80.50' x 25.67' x 3.54'

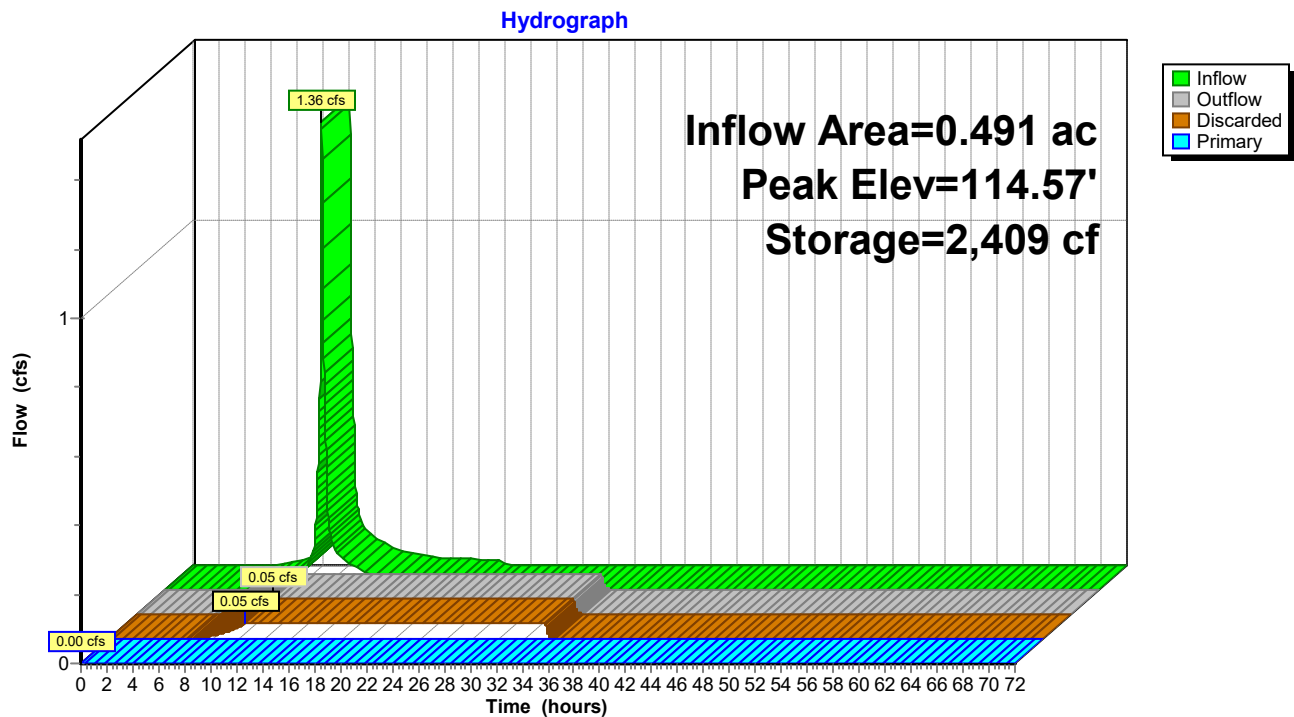
55 Chambers

271.0 cy Field

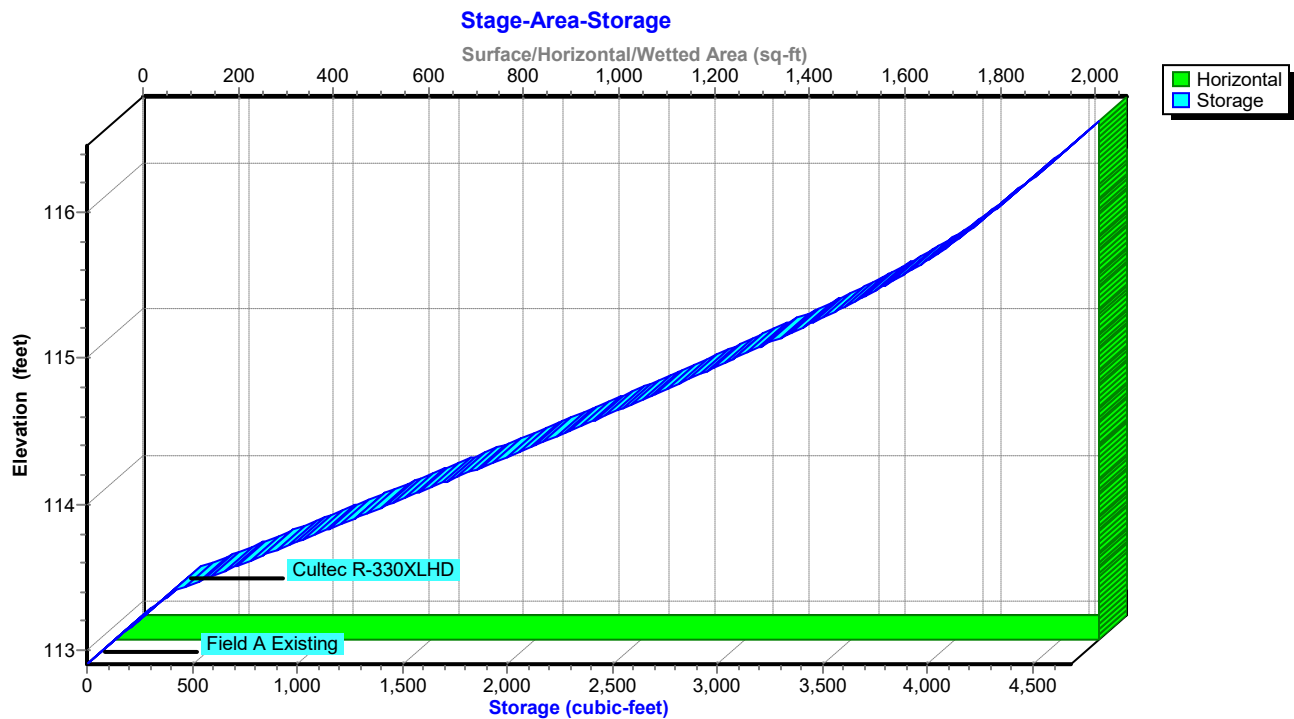
162.7 cy Stone



## Pond 20P: EXISTING Stormwater Management Facility-2



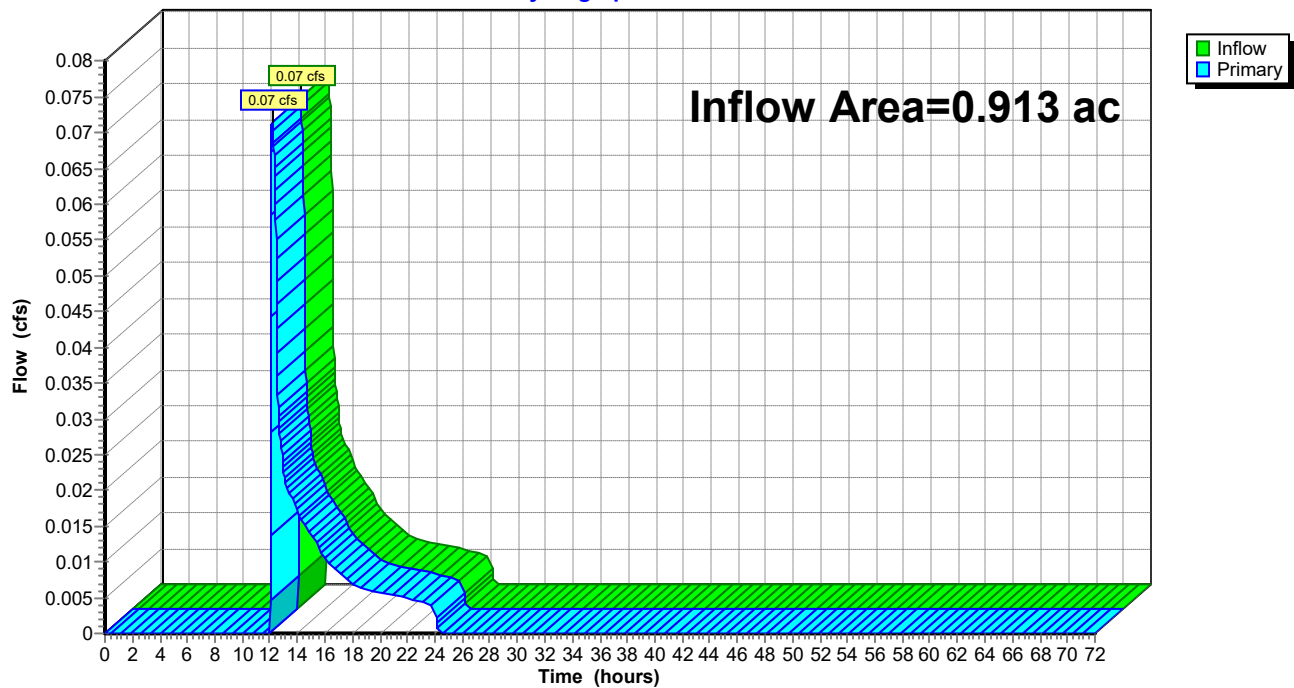
## Pond 20P: EXISTING Stormwater Management Facility-2



**Summary for Link 6L: FDA to DESIGN LINE 1**

Inflow Area = 0.913 ac, 52.07% Impervious, Inflow Depth = 0.15" for 2 year event  
Inflow = 0.07 cfs @ 12.15 hrs, Volume= 0.011 af  
Primary = 0.07 cfs @ 12.15 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

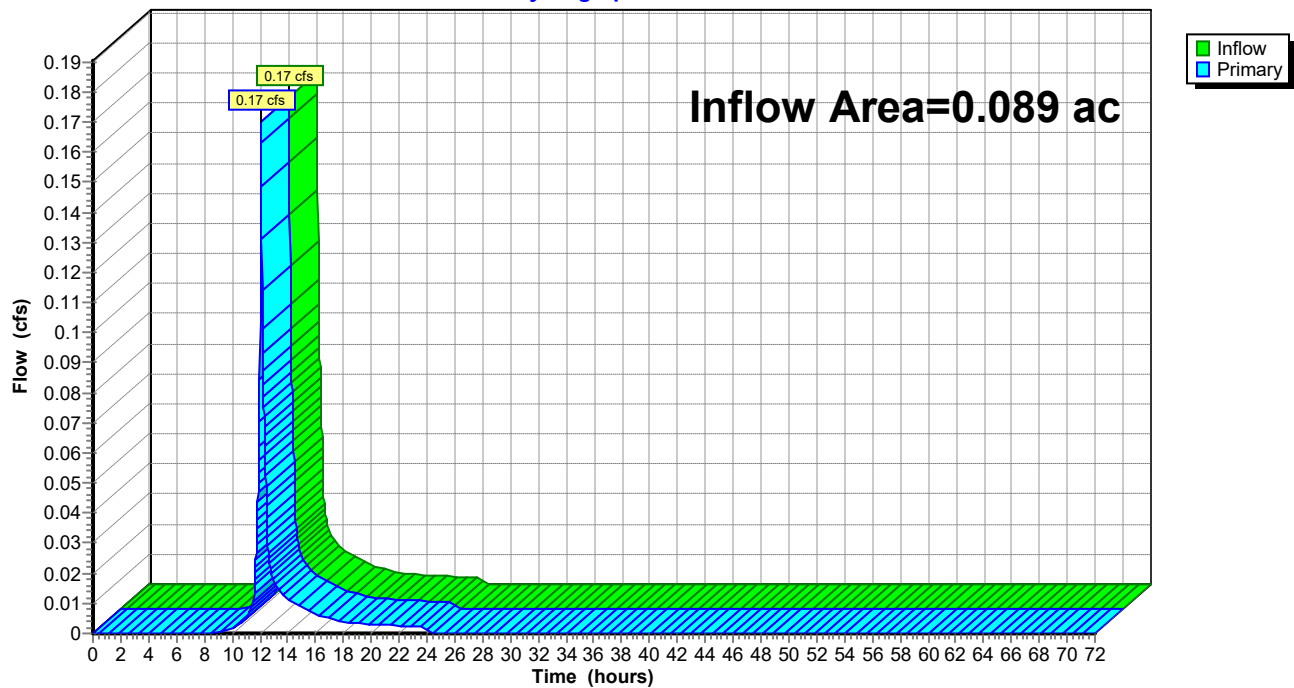
**Link 6L: FDA to DESIGN LINE 1****Hydrograph**



**Summary for Link 11L: FDA to Smith Ridge Rd**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 1.59" for 2 year event  
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af  
Primary = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

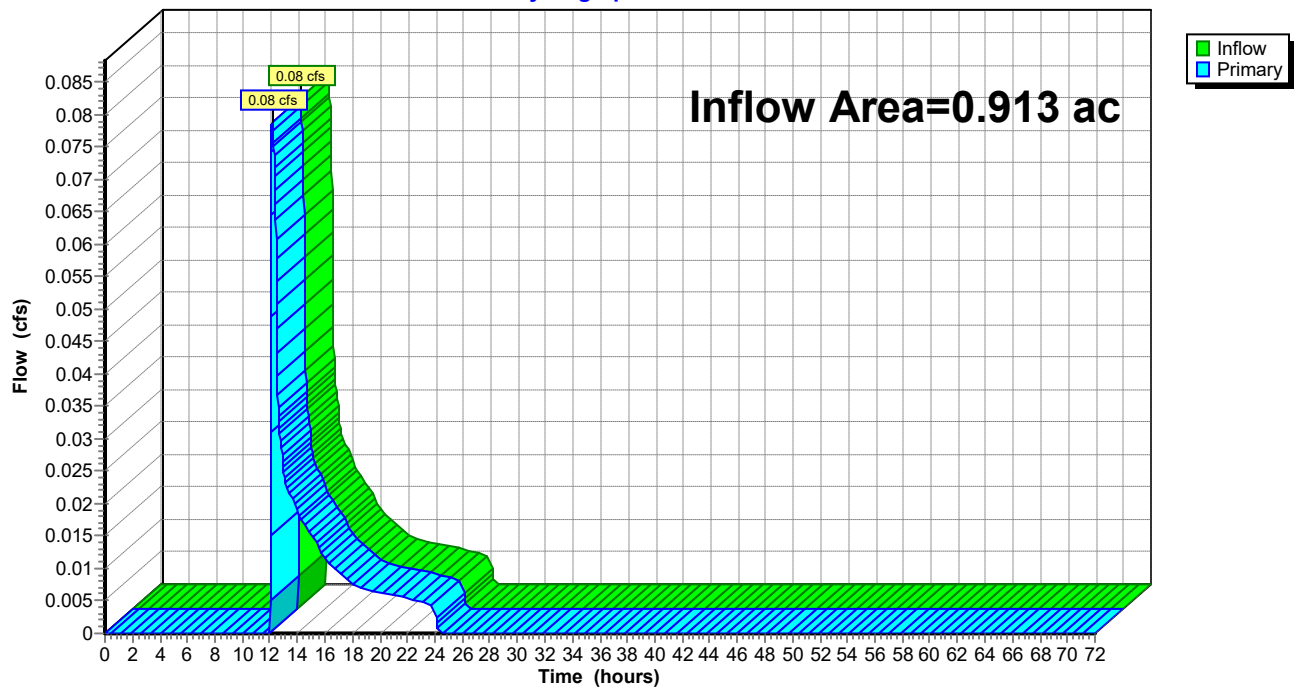
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 11L: FDA to Smith Ridge Rd****Hydrograph**

**Summary for Link 15L: DESIGN LINE 1**

Inflow Area = 0.913 ac, 41.99% Impervious, Inflow Depth = 0.17" for 2 year event  
Inflow = 0.08 cfs @ 12.15 hrs, Volume= 0.013 af  
Primary = 0.08 cfs @ 12.15 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

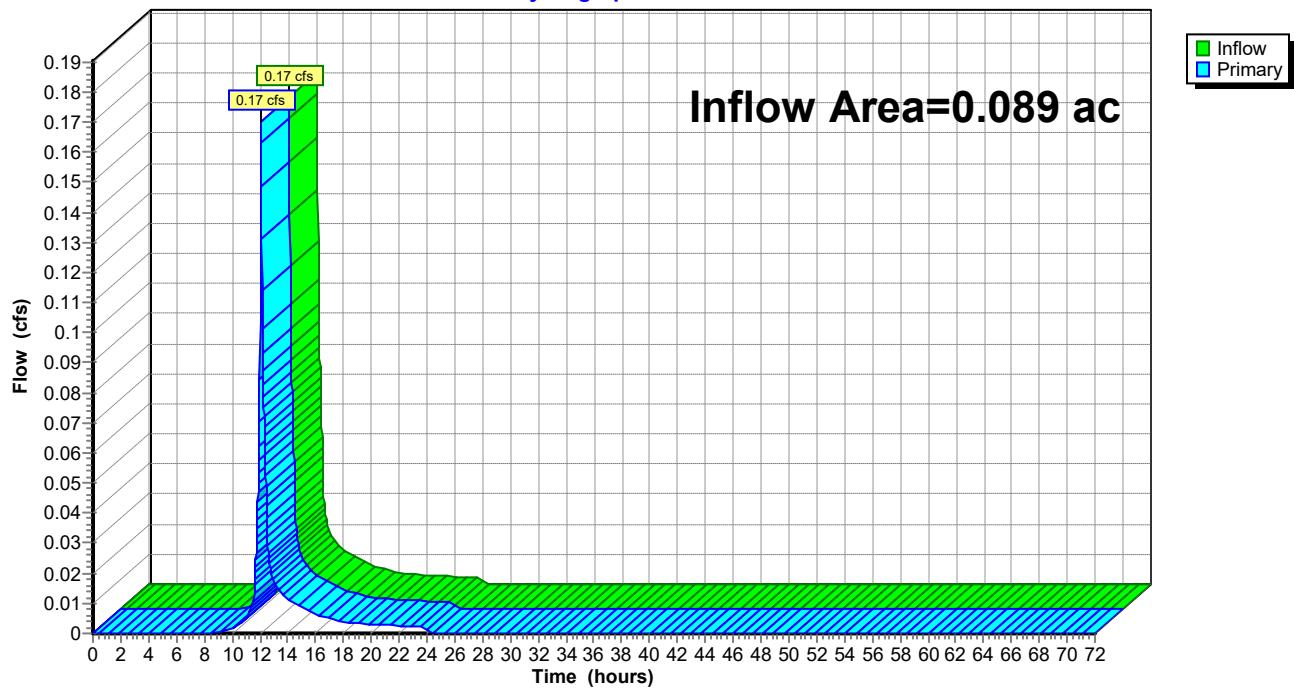
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 15L: DESIGN LINE 1****Hydrograph**

**Summary for Link 18L: DESIGN POINT STREET**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 1.59" for 2 year event  
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af  
Primary = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 18L: DESIGN POINT STREET****Hydrograph**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 3S: FDA-1 FUTURE</b>	Runoff Area=23,114 sf 79.63% Impervious Runoff Depth=3.99" Tc=6.0 min CN=90 Runoff=2.39 cfs 0.177 af
<b>Subcatchment 4S: FDA-2 FUTURE</b>	Runoff Area=16,670 sf 13.85% Impervious Runoff Depth=1.10" Tc=6.0 min UI Adjusted CN=56 Runoff=0.41 cfs 0.035 af
<b>Subcatchment 7S: FDA-3 FUTURE</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=3.00" Tc=5.0 min CN=80 Runoff=0.32 cfs 0.022 af
<b>Subcatchment 13S: XDA-1 EXISTING</b>	Runoff Area=21,405 sf 78.04% Impervious Runoff Depth=3.99" Tc=6.0 min CN=90 Runoff=2.21 cfs 0.163 af
<b>Subcatchment 16S: XDA-2 EXISTING</b>	Runoff Area=18,379 sf 0.00% Impervious Runoff Depth=1.10" Tc=6.0 min CN=56 Runoff=0.46 cfs 0.039 af
<b>Subcatchment 17S: XDA-3 EXISTING</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=3.00" Tc=5.0 min CN=80 Runoff=0.32 cfs 0.022 af
<b>Pond 19P: Stormwater Management</b>	Peak Elev=115.64' Storage=4,438 cf Inflow=2.39 cfs 0.177 af Discarded=0.05 cfs 0.163 af Primary=0.10 cfs 0.014 af Outflow=0.15 cfs 0.177 af
<b>Pond 20P: EXISTING Stormwater</b>	Peak Elev=115.65' Storage=3,980 cf Inflow=2.21 cfs 0.163 af Discarded=0.05 cfs 0.146 af Primary=0.11 cfs 0.017 af Outflow=0.16 cfs 0.163 af
<b>Link 6L: FDA to DESIGN LINE 1</b>	Inflow=0.41 cfs 0.049 af Primary=0.41 cfs 0.049 af
<b>Link 11L: FDA to Smith Ridge Rd</b>	Inflow=0.32 cfs 0.022 af Primary=0.32 cfs 0.022 af
<b>Link 15L: DESIGN LINE 1</b>	Inflow=0.46 cfs 0.056 af Primary=0.46 cfs 0.056 af
<b>Link 18L: DESIGN POINT STREET</b>	Inflow=0.32 cfs 0.022 af Primary=0.32 cfs 0.022 af

**Total Runoff Area = 2.004 ac Runoff Volume = 0.458 af Average Runoff Depth = 2.74"**  
**52.53% Pervious = 1.053 ac 47.47% Impervious = 0.951 ac**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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**Summary for Subcatchment 3S: FDA-1 FUTURE CONDITION**

Runoff = 2.39 cfs @ 12.09 hrs, Volume= 0.177 af, Depth= 3.99"

Routed to Pond 19P : Stormwater Management Facility-2

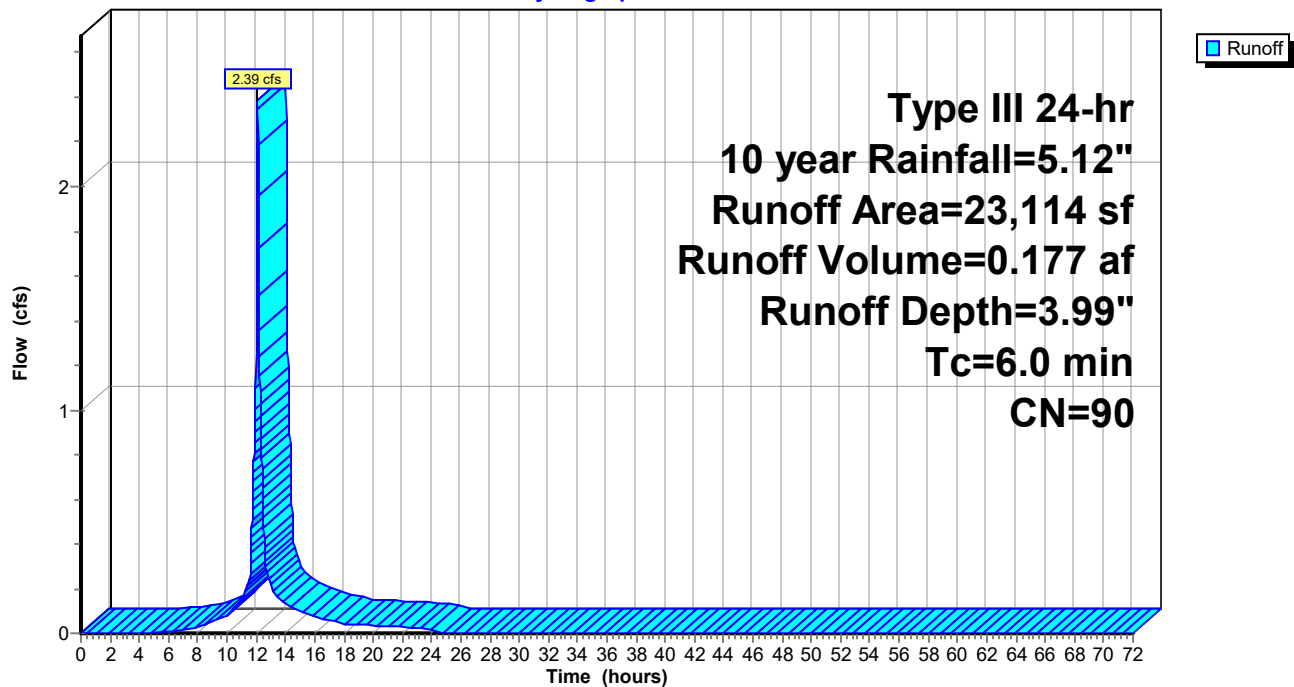
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10 year Rainfall=5.12"

	Area (sf)	CN	Description
*	18,405	98	Impervious surfaces, HSG B
	4,709	61	>75% Grass cover, Good, HSG B
	23,114	90	Weighted Average
	4,709		20.37% Pervious Area
	18,405		79.63% Impervious Area

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

**Subcatchment 3S: FDA-1 FUTURE CONDITION**

Hydrograph





**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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**Summary for Subcatchment 4S: FDA-2 FUTURE CONDITION**

Runoff = 0.41 cfs @ 12.10 hrs, Volume= 0.035 af, Depth= 1.10"  
 Routed to Link 6L : FDA to DESIGN LINE 1

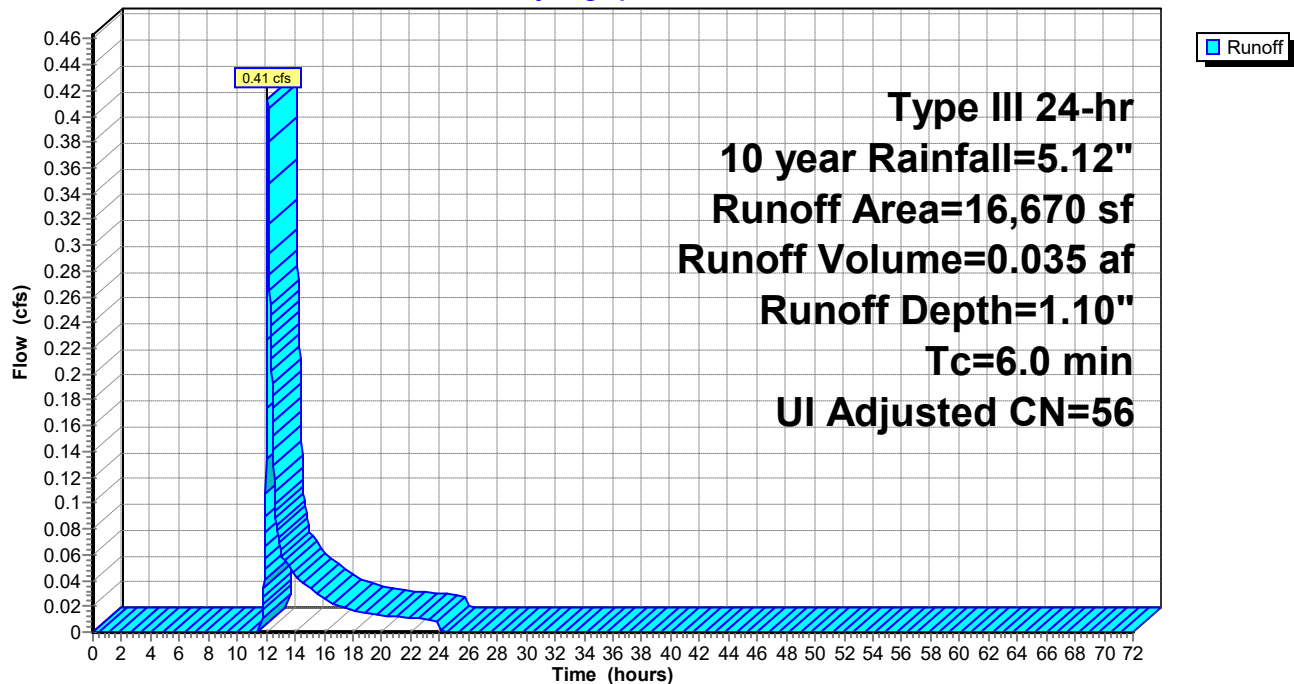
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 year Rainfall=5.12"

Area (sf)	CN	Adj	Description
6,597	58		Woods/grass comb., Good, HSG B
7,764	48		Brush, Good, HSG B
2,309	98		Unconnected roofs, HSG B
16,670	59	56	Weighted Average, UI Adjusted
14,361			86.15% Pervious Area
2,309			13.85% Impervious Area
2,309			100.00% Unconnected

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

**Subcatchment 4S: FDA-2 FUTURE CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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**Summary for Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 3.00"

Routed to Link 11L : FDA to Smith Ridge Rd

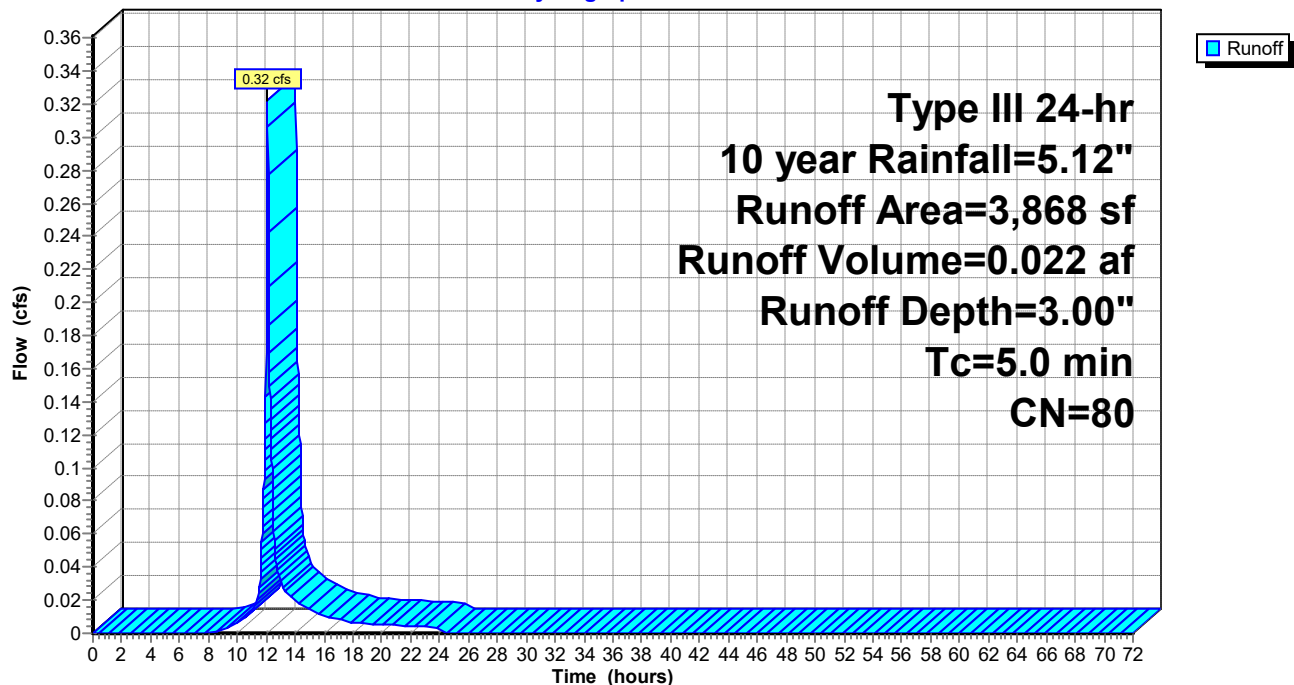
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10 year Rainfall=5.12"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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**Summary for Subcatchment 13S: XDA-1 EXISTING CONDITION**

Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.163 af, Depth= 3.99"

Routed to Pond 20P : EXISTING Stormwater Management Facility-2

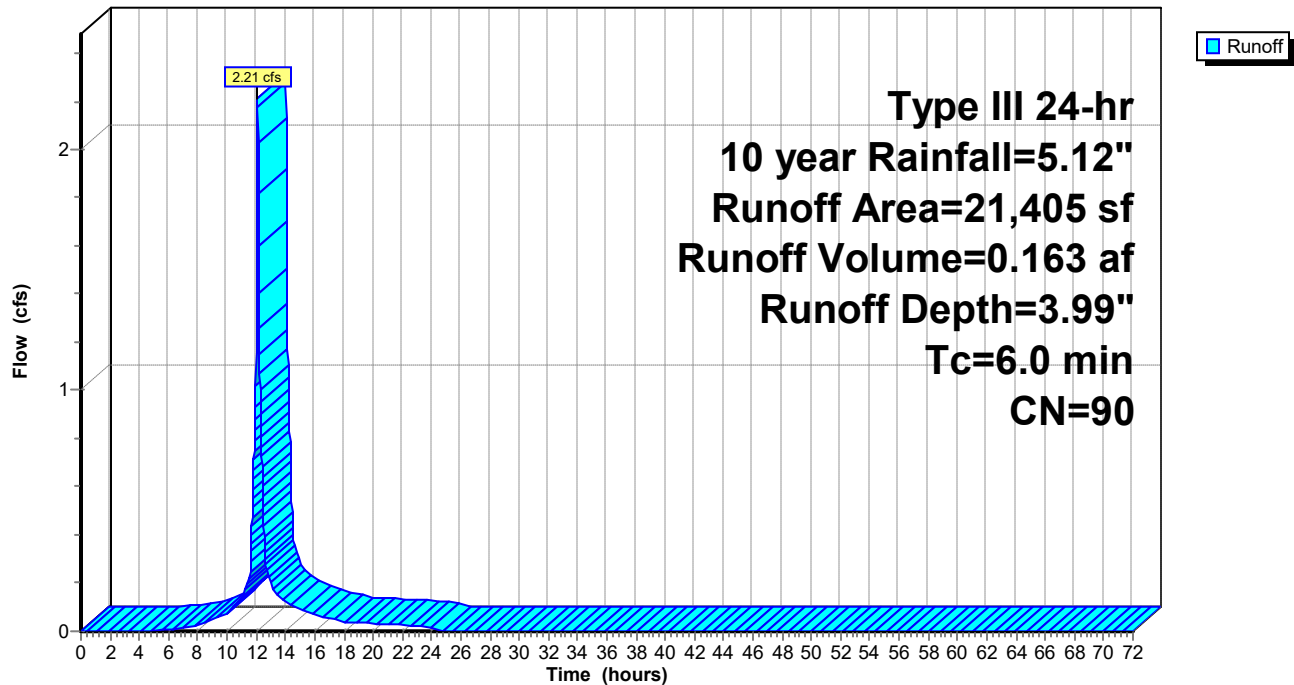
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10 year Rainfall=5.12"

Area (sf)	CN	Description
16,705	98	Roofs, HSG B
4,700	61	>75% Grass cover, Good, HSG B
21,405	90	Weighted Average
4,700		21.96% Pervious Area
16,705		78.04% Impervious Area

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

**Subcatchment 13S: XDA-1 EXISTING CONDITION**

Hydrograph



**Summary for Subcatchment 16S: XDA-2 EXISTING CONDITION**

Runoff = 0.46 cfs @ 12.10 hrs, Volume= 0.039 af, Depth= 1.10"  
 Routed to Link 15L : DESIGN LINE 1

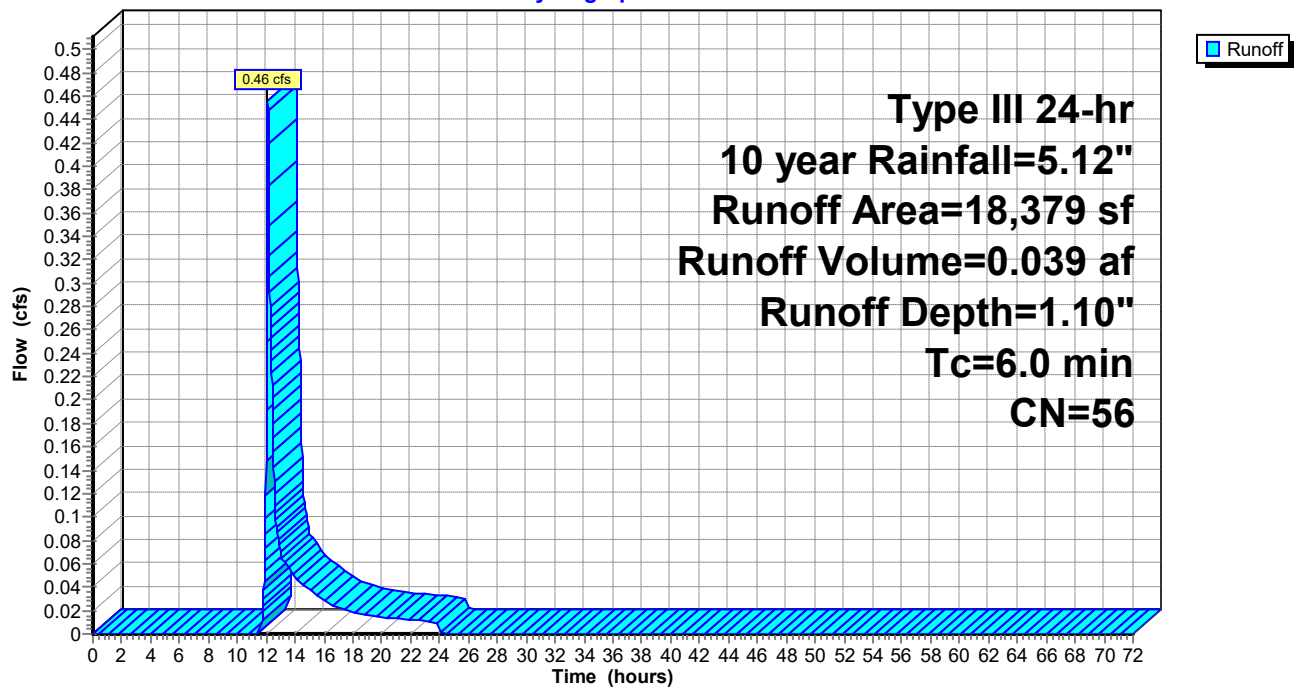
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 year Rainfall=5.12"

Area (sf)	CN	Description
18,379	56	Brush, Fair, HSG B
18,379		100.00% Pervious Area

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

**Subcatchment 16S: XDA-2 EXISTING CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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**Summary for Subcatchment 17S: XDA-3 EXISTING CONDITION**

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 3.00"  
Routed to Link 18L : DESIGN POINT STREET

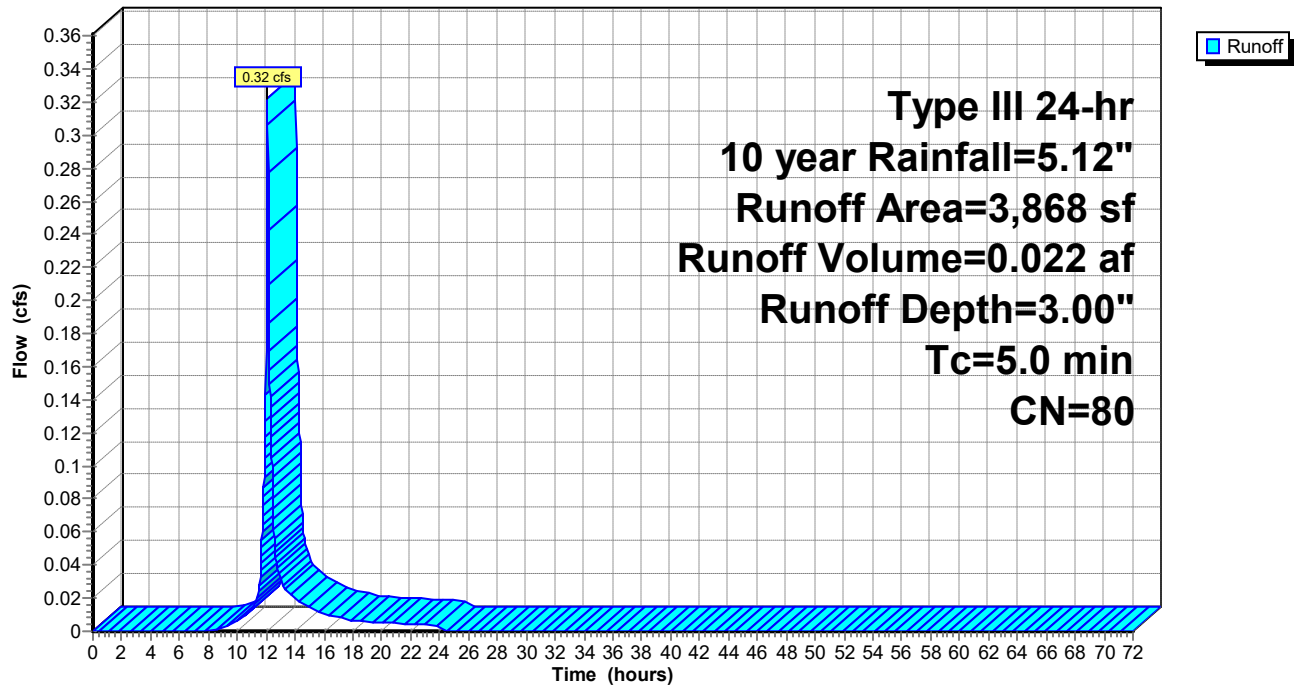
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 10 year Rainfall=5.12"

	Area (sf)	CN	Description
	1,855	61	>75% Grass cover, Good, HSG B
*	2,013	98	Pavement
	3,868	80	Weighted Average
	1,855		47.96% Pervious Area
	2,013		52.04% Impervious Area

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

**Subcatchment 17S: XDA-3 EXISTING CONDITION**

Hydrograph





**Summary for Pond 19P: Stormwater Management Facility-2**

Inflow Area = 0.531 ac, 79.63% Impervious, Inflow Depth = 3.99" for 10 year event  
 Inflow = 2.39 cfs @ 12.09 hrs, Volume= 0.177 af  
 Outflow = 0.15 cfs @ 13.74 hrs, Volume= 0.177 af, Atten= 94%, Lag= 99.6 min  
 Discarded = 0.05 cfs @ 9.22 hrs, Volume= 0.163 af  
 Primary = 0.10 cfs @ 13.74 hrs, Volume= 0.014 af  
 Routed to Link 6L : FDA to DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 115.64' @ 13.74 hrs Surf.Area= 2,333 sf Storage= 4,438 cf

Plug-Flow detention time= 705.4 min calculated for 0.176 af (100% of inflow)  
 Center-of-Mass det. time= 705.5 min ( 1,495.5 - 789.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,440 cf	<b>20.83'W x 80.50'L x 3.54'H Field A Existing</b> 5,940 cf Overall - 2,340 cf Embedded = 3,600 cf x 40.0% Voids
#2A	113.41'	2,340 cf	<b>Cultec R-330XLHD x 44 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
#3B	112.91'	578 cf	<b>20.83'W x 31.50'L x 3.54'H Field B Proposed</b> 2,324 cf Overall - 879 cf Embedded = 1,445 cf x 40.0% Voids
#4B	113.41'	879 cf	<b>Cultec R-330XLHD x 16 Inside #3</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		5,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard  
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 9.22 hrs HW=112.95' (Free Discharge)  
 ↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.09 cfs @ 13.74 hrs HW=115.64' (Free Discharge)  
 ↑ **1=Culvert** (Passes 0.09 cfs of 4.89 cfs potential flow)  
 ↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.69 fps)

**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

44 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 2,339.6 cf Chamber Storage

5,939.7 cf Field - 2,339.6 cf Chambers = 3,600.1 cf Stone x 40.0% Voids = 1,440.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,779.6 cf = 0.087 af

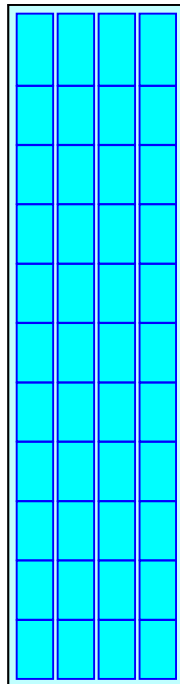
Overall Storage Efficiency = 63.6%

Overall System Size = 80.50' x 20.83' x 3.54'

44 Chambers

220.0 cy Field

133.3 cy Stone



**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field B Proposed**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

4 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 29.50' Row Length +12.0" End Stone x 2 = 31.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

16 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 879.2 cf Chamber Storage

2,324.2 cf Field - 879.2 cf Chambers = 1,445.0 cf Stone x 40.0% Voids = 578.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,457.2 cf = 0.033 af

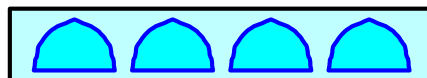
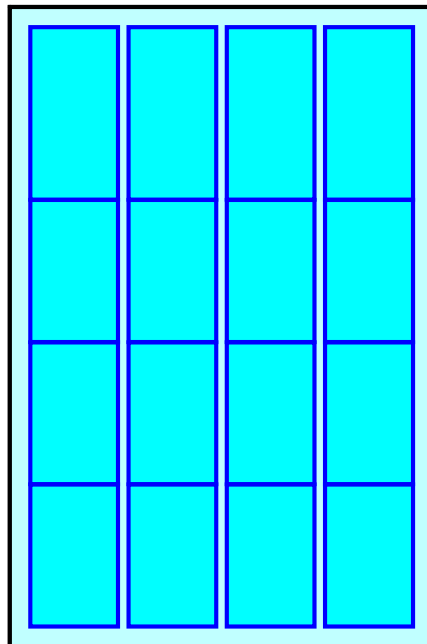
Overall Storage Efficiency = 62.7%

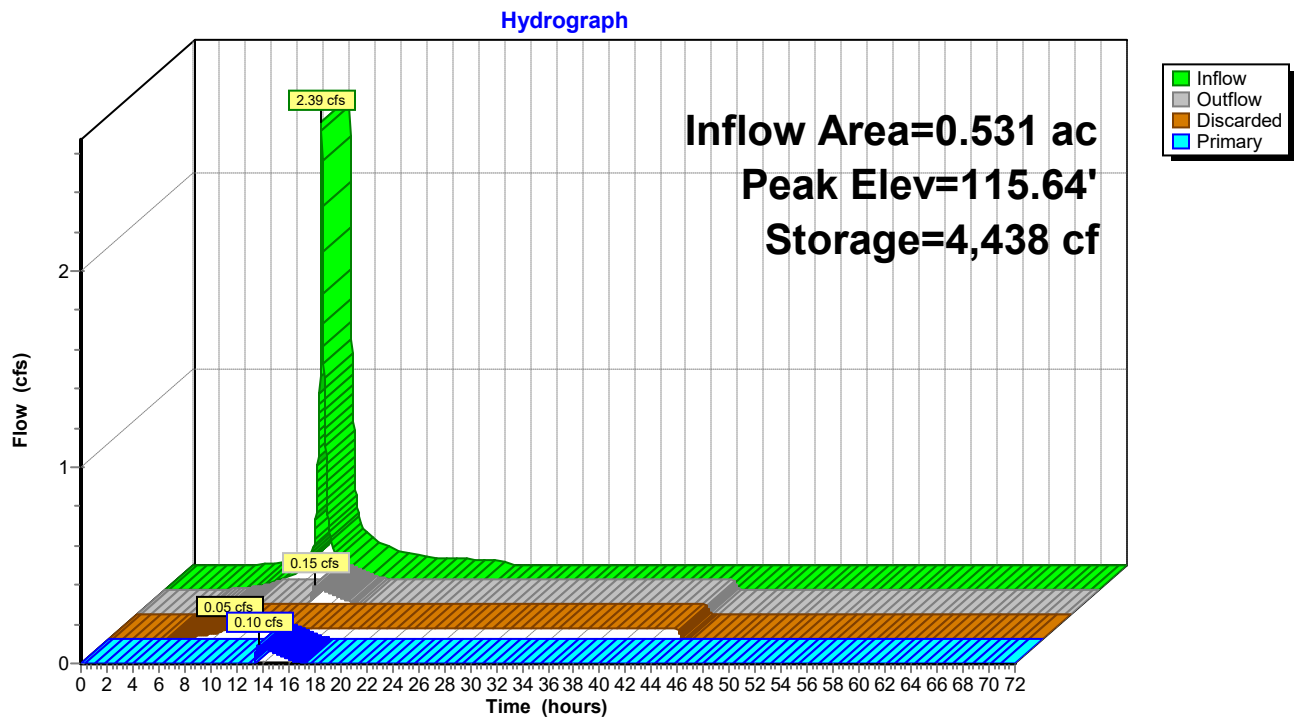
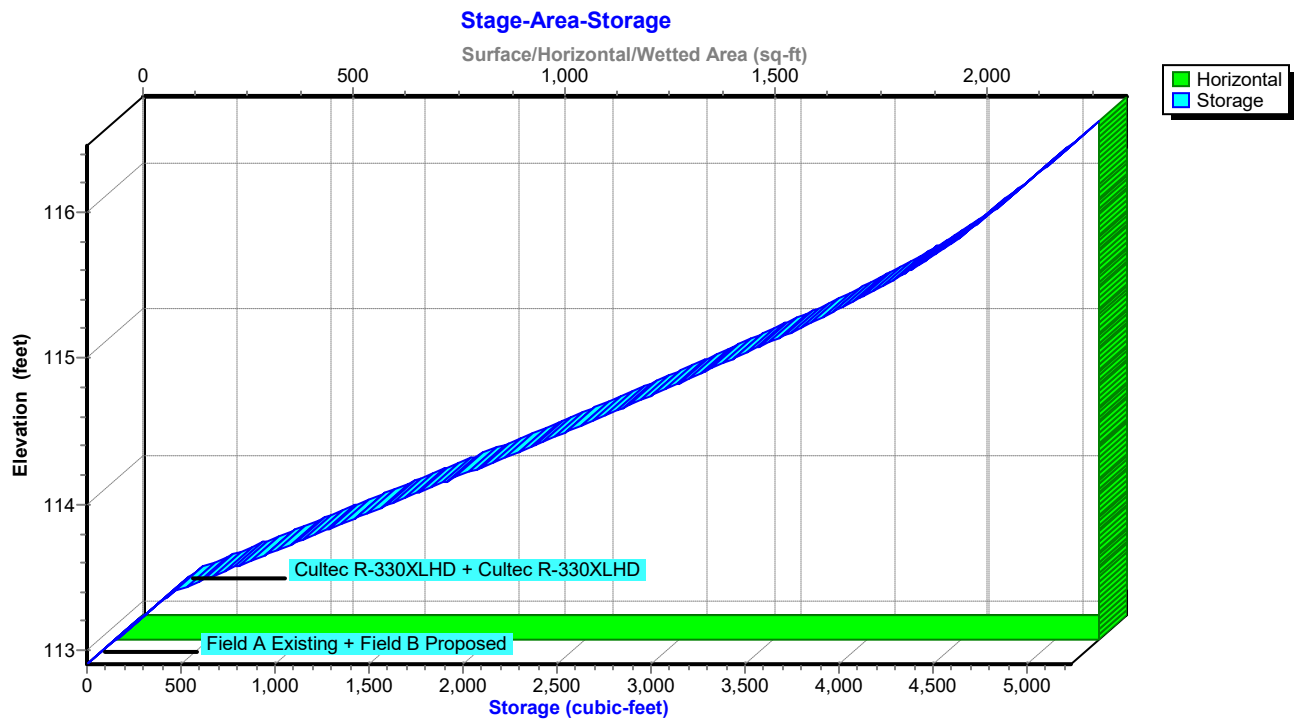
Overall System Size = 31.50' x 20.83' x 3.54'

16 Chambers

86.1 cy Field

53.5 cy Stone



**Pond 19P: Stormwater Management Facility-2****Pond 19P: Stormwater Management Facility-2**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 10 year Rainfall=5.12"

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**Summary for Pond 20P: EXISTING Stormwater Management Facility-2**

Inflow Area = 0.491 ac, 78.04% Impervious, Inflow Depth = 3.99" for 10 year event  
 Inflow = 2.21 cfs @ 12.09 hrs, Volume= 0.163 af  
 Outflow = 0.16 cfs @ 13.34 hrs, Volume= 0.163 af, Atten= 93%, Lag= 75.3 min  
 Discarded = 0.05 cfs @ 9.14 hrs, Volume= 0.146 af  
 Primary = 0.11 cfs @ 13.34 hrs, Volume= 0.017 af  
 Routed to Link 15L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 115.65' @ 13.34 hrs Surf.Area= 2,066 sf Storage= 3,980 cf

Plug-Flow detention time= 694.9 min calculated for 0.163 af (100% of inflow)  
 Center-of-Mass det. time= 695.1 min ( 1,485.0 - 789.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,757 cf	<b>25.67'W x 80.50'L x 3.54'H Field A Existing</b> 7,318 cf Overall - 2,925 cf Embedded = 4,393 cf x 40.0% Voids
#2A	113.41'	2,925 cf	<b>Cultec R-330XLHD</b> x 55 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		4,682 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 9.14 hrs HW=112.95' (Free Discharge)↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=0.11 cfs @ 13.34 hrs HW=115.65' (Free Discharge)↑ **1=Culvert** (Passes 0.11 cfs of 4.90 cfs potential flow)↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.74 fps)



**Pond 20P: EXISTING Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 5 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

5 Rows x 52.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.67' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

55 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 5 Rows = 2,924.5 cf Chamber Storage

7,317.7 cf Field - 2,924.5 cf Chambers = 4,393.2 cf Stone x 40.0% Voids = 1,757.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,681.8 cf = 0.107 af

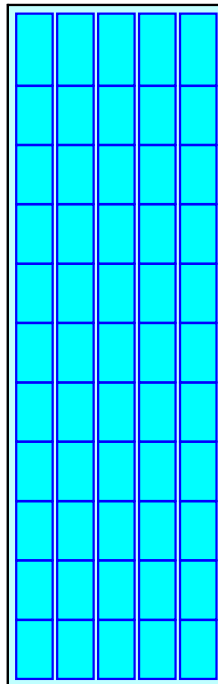
Overall Storage Efficiency = 64.0%

Overall System Size = 80.50' x 25.67' x 3.54'

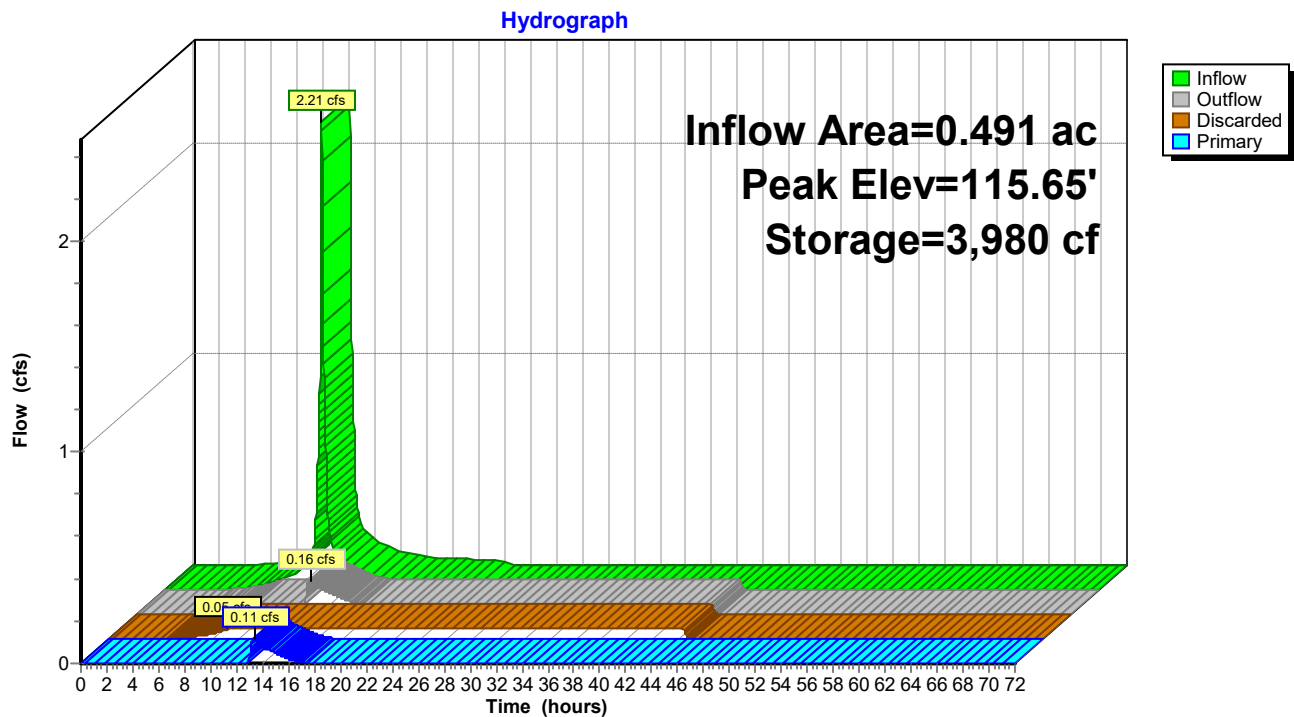
55 Chambers

271.0 cy Field

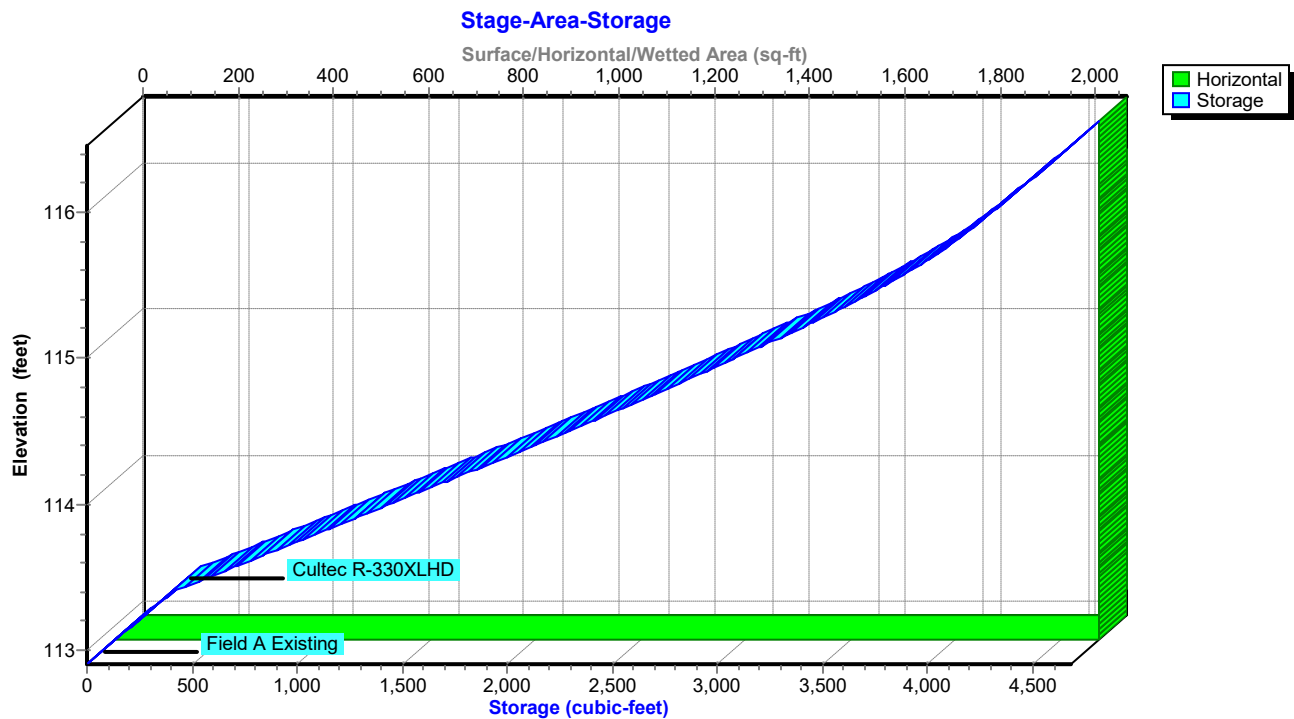
162.7 cy Stone



## Pond 20P: EXISTING Stormwater Management Facility-2



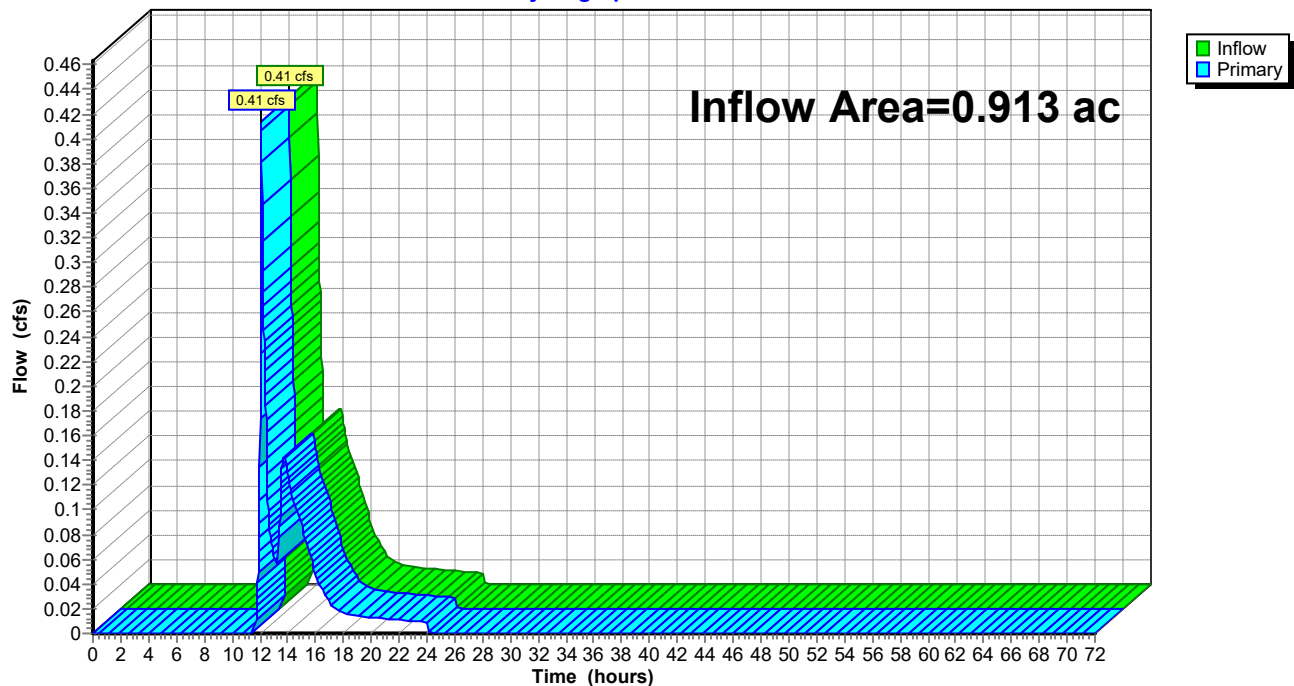
## Pond 20P: EXISTING Stormwater Management Facility-2



**Summary for Link 6L: FDA to DESIGN LINE 1**

Inflow Area = 0.913 ac, 52.07% Impervious, Inflow Depth = 0.64" for 10 year event  
Inflow = 0.41 cfs @ 12.10 hrs, Volume= 0.049 af  
Primary = 0.41 cfs @ 12.10 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

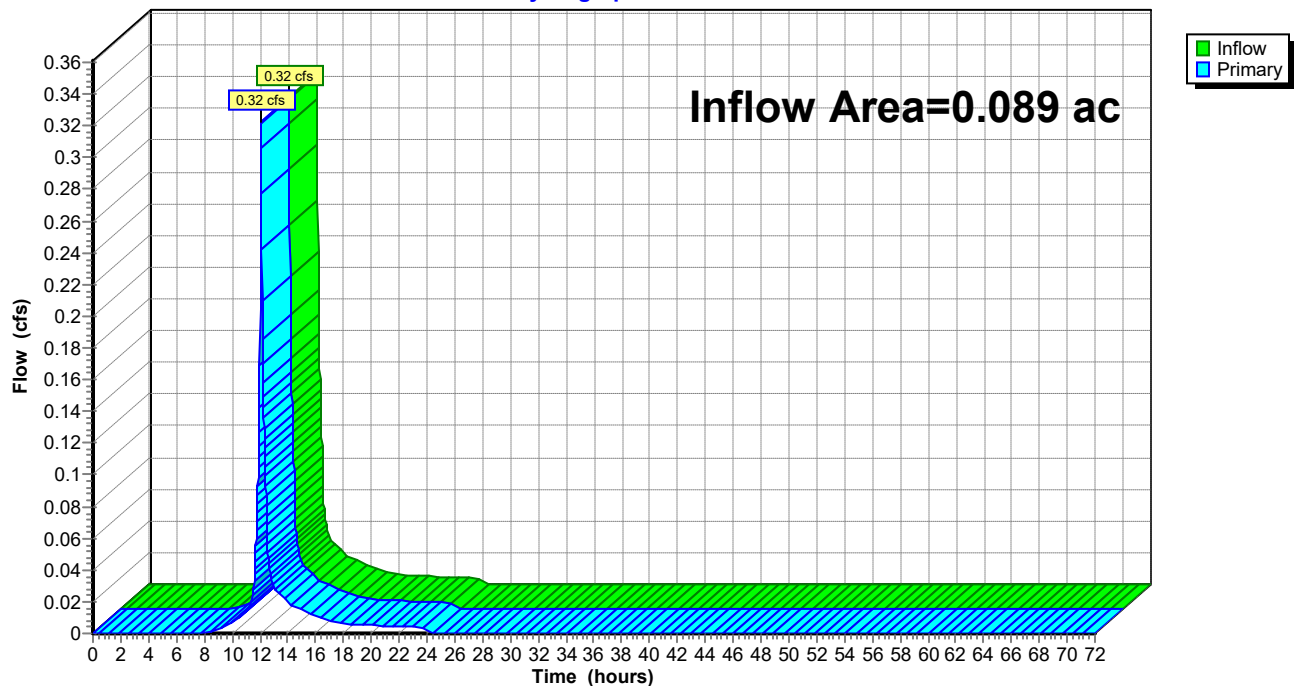
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 6L: FDA to DESIGN LINE 1****Hydrograph**

**Summary for Link 11L: FDA to Smith Ridge Rd**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 3.00" for 10 year event  
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af  
Primary = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

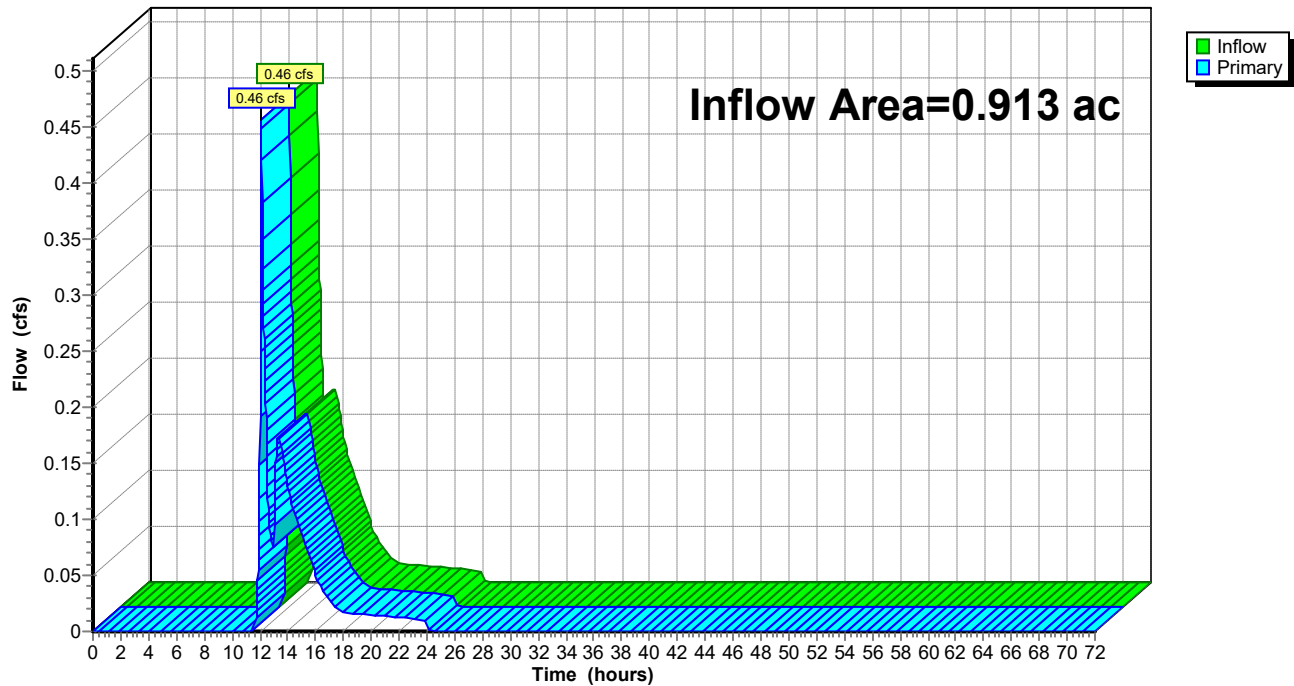
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 11L: FDA to Smith Ridge Rd****Hydrograph**

**Summary for Link 15L: DESIGN LINE 1**

Inflow Area = 0.913 ac, 41.99% Impervious, Inflow Depth = 0.74" for 10 year event  
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.056 af  
Primary = 0.46 cfs @ 12.10 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 15L: DESIGN LINE 1****Hydrograph**



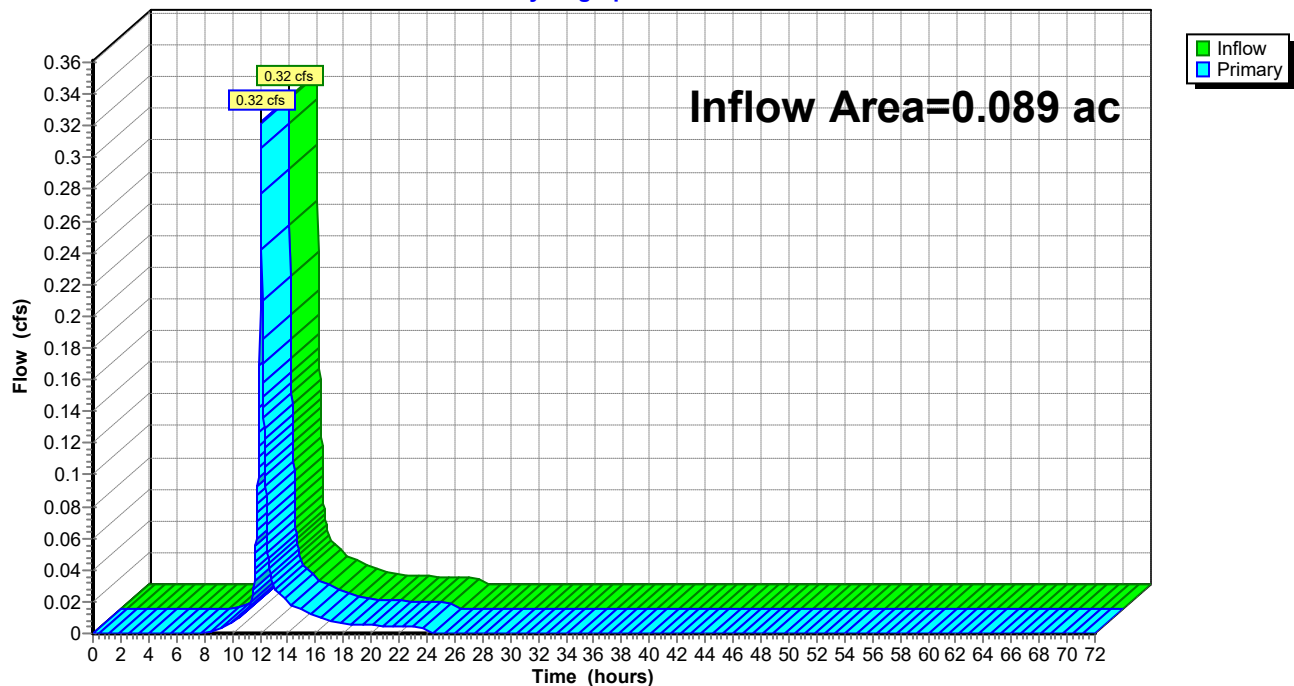
**Summary for Link 18L: DESIGN POINT STREET**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 3.00" for 10 year event  
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af  
Primary = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 18L: DESIGN POINT STREET**

Hydrograph



**Self-Storage SW Plan\_02-18-2022***Type III 24-hr 25 year Rainfall=6.43"*

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 3S: FDA-1 FUTURE</b>	Runoff Area=23,114 sf 79.63% Impervious Runoff Depth=5.27" Tc=6.0 min CN=90 Runoff=3.10 cfs 0.233 af
<b>Subcatchment 4S: FDA-2 FUTURE</b>	Runoff Area=16,670 sf 13.85% Impervious Runoff Depth=1.86" Tc=6.0 min UI Adjusted CN=56 Runoff=0.77 cfs 0.059 af
<b>Subcatchment 7S: FDA-3 FUTURE</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=4.17" Tc=5.0 min CN=80 Runoff=0.45 cfs 0.031 af
<b>Subcatchment 13S: XDA-1 EXISTING</b>	Runoff Area=21,405 sf 78.04% Impervious Runoff Depth=5.27" Tc=6.0 min CN=90 Runoff=2.87 cfs 0.216 af
<b>Subcatchment 16S: XDA-2 EXISTING</b>	Runoff Area=18,379 sf 0.00% Impervious Runoff Depth=1.86" Tc=6.0 min CN=56 Runoff=0.85 cfs 0.065 af
<b>Subcatchment 17S: XDA-3 EXISTING</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=4.17" Tc=5.0 min CN=80 Runoff=0.45 cfs 0.031 af
<b>Pond 19P: Stormwater Management</b>	Peak Elev=115.81' Storage=4,633 cf Inflow=3.10 cfs 0.233 af Discarded=0.05 cfs 0.172 af Primary=0.94 cfs 0.061 af Outflow=1.00 cfs 0.233 af
<b>Pond 20P: EXISTING Stormwater</b>	Peak Elev=115.82' Storage=4,155 cf Inflow=2.87 cfs 0.216 af Discarded=0.05 cfs 0.154 af Primary=1.00 cfs 0.062 af Outflow=1.05 cfs 0.216 af
<b>Link 6L: FDA to DESIGN LINE 1</b>	Inflow=1.28 cfs 0.120 af Primary=1.28 cfs 0.120 af
<b>Link 11L: FDA to Smith Ridge Rd</b>	Inflow=0.45 cfs 0.031 af Primary=0.45 cfs 0.031 af
<b>Link 15L: DESIGN LINE 1</b>	Inflow=1.41 cfs 0.127 af Primary=1.41 cfs 0.127 af
<b>Link 18L: DESIGN POINT STREET</b>	Inflow=0.45 cfs 0.031 af Primary=0.45 cfs 0.031 af

**Total Runoff Area = 2.004 ac Runoff Volume = 0.635 af Average Runoff Depth = 3.80"**  
**52.53% Pervious = 1.053 ac 47.47% Impervious = 0.951 ac**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Subcatchment 3S: FDA-1 FUTURE CONDITION**

Runoff = 3.10 cfs @ 12.08 hrs, Volume= 0.233 af, Depth= 5.27"

Routed to Pond 19P : Stormwater Management Facility-2

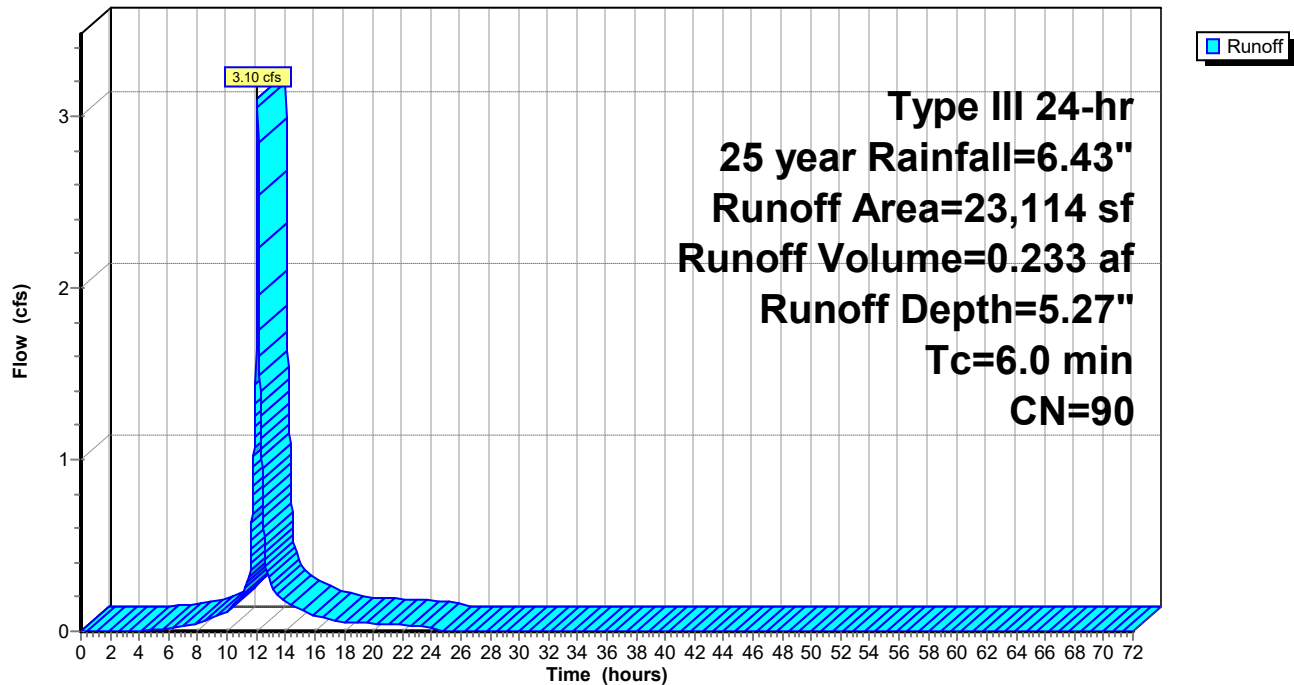
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25 year Rainfall=6.43"

	Area (sf)	CN	Description
*	18,405	98	Impervious surfaces, HSG B
	4,709	61	>75% Grass cover, Good, HSG B
	23,114	90	Weighted Average
	4,709		20.37% Pervious Area
	18,405		79.63% Impervious Area

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

**Subcatchment 3S: FDA-1 FUTURE CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Subcatchment 4S: FDA-2 FUTURE CONDITION**

Runoff = 0.77 cfs @ 12.10 hrs, Volume= 0.059 af, Depth= 1.86"  
 Routed to Link 6L : FDA to DESIGN LINE 1

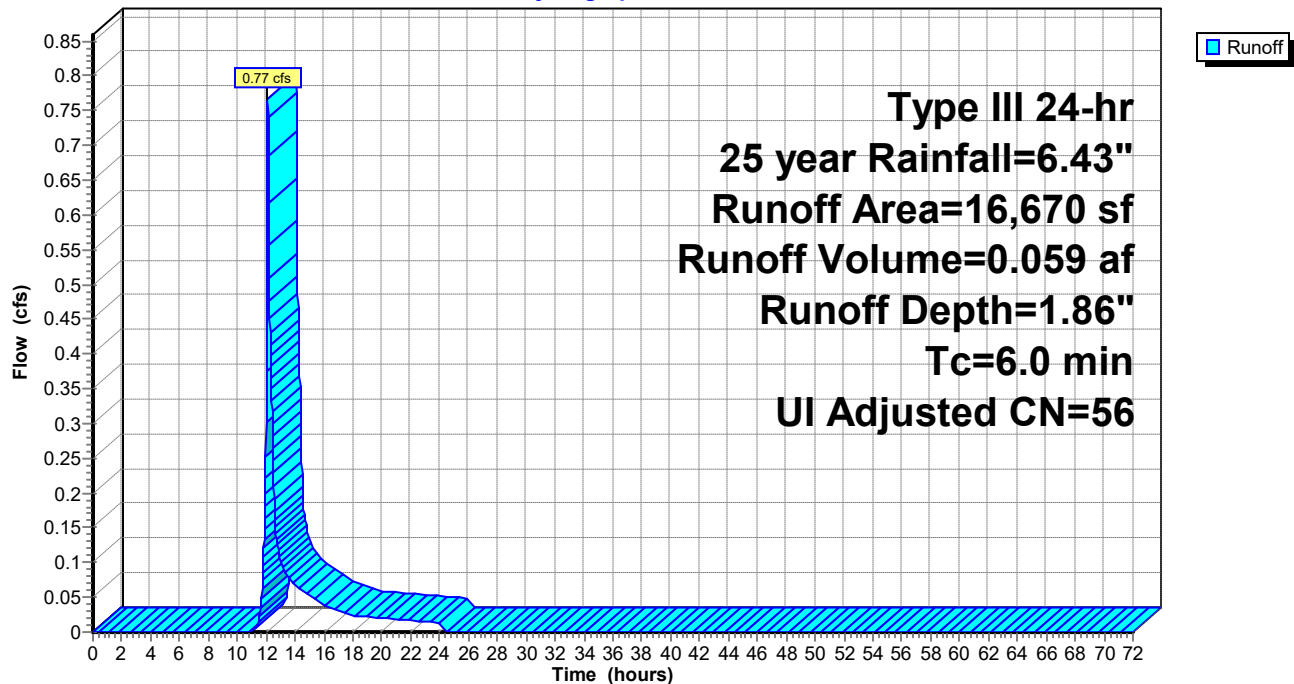
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 25 year Rainfall=6.43"

Area (sf)	CN	Adj	Description
6,597	58		Woods/grass comb., Good, HSG B
7,764	48		Brush, Good, HSG B
2,309	98		Unconnected roofs, HSG B
16,670	59	56	Weighted Average, UI Adjusted
14,361			86.15% Pervious Area
2,309			13.85% Impervious Area
2,309			100.00% Unconnected

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

**Subcatchment 4S: FDA-2 FUTURE CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 4.17"

Routed to Link 11L : FDA to Smith Ridge Rd

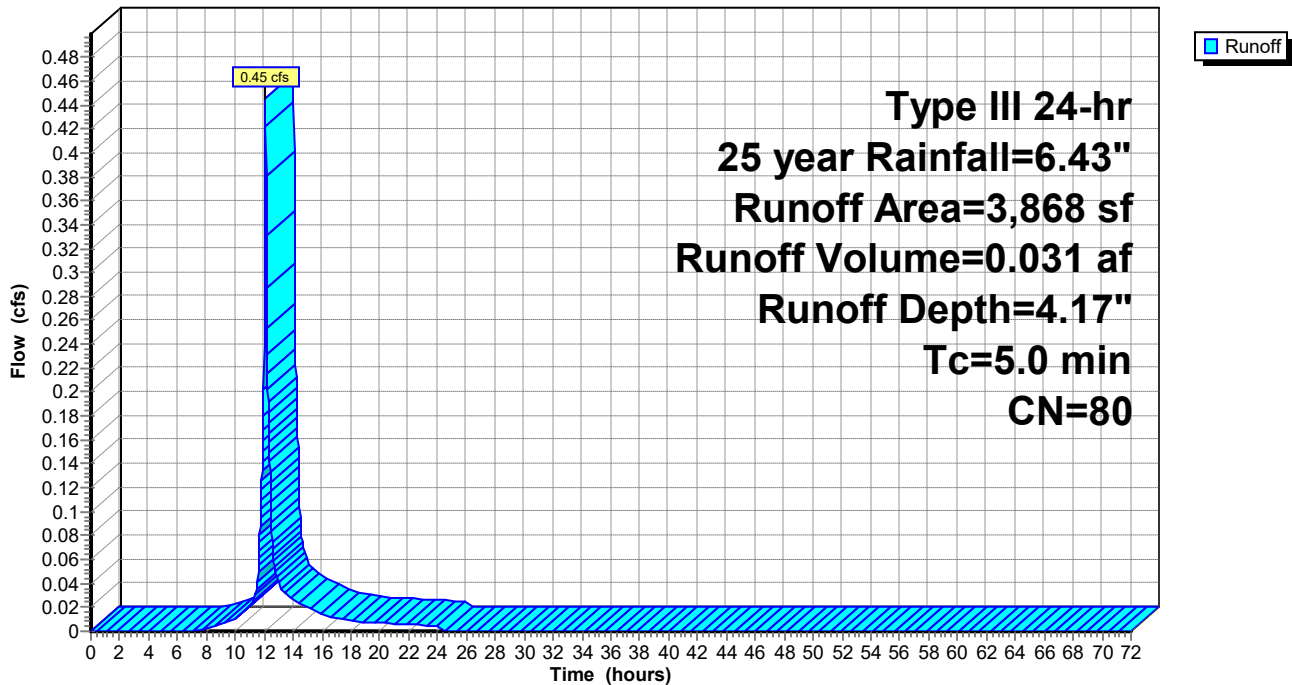
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25 year Rainfall=6.43"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Hydrograph





**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Subcatchment 13S: XDA-1 EXISTING CONDITION**

Runoff = 2.87 cfs @ 12.08 hrs, Volume= 0.216 af, Depth= 5.27"

Routed to Pond 20P : EXISTING Stormwater Management Facility-2

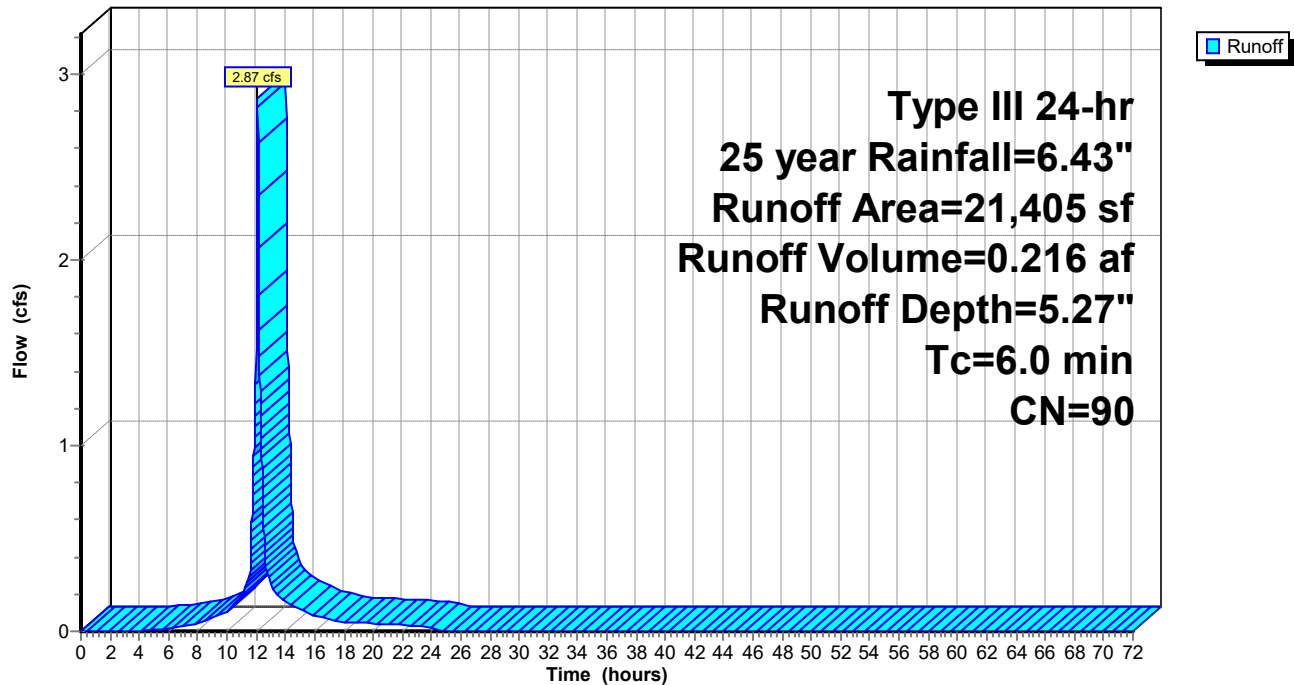
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 25 year Rainfall=6.43"

Area (sf)	CN	Description
16,705	98	Roofs, HSG B
4,700	61	>75% Grass cover, Good, HSG B
21,405	90	Weighted Average
4,700		21.96% Pervious Area
16,705		78.04% Impervious Area

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

**Subcatchment 13S: XDA-1 EXISTING CONDITION**

Hydrograph



**Summary for Subcatchment 16S: XDA-2 EXISTING CONDITION**

Runoff = 0.85 cfs @ 12.10 hrs, Volume= 0.065 af, Depth= 1.86"  
 Routed to Link 15L : DESIGN LINE 1

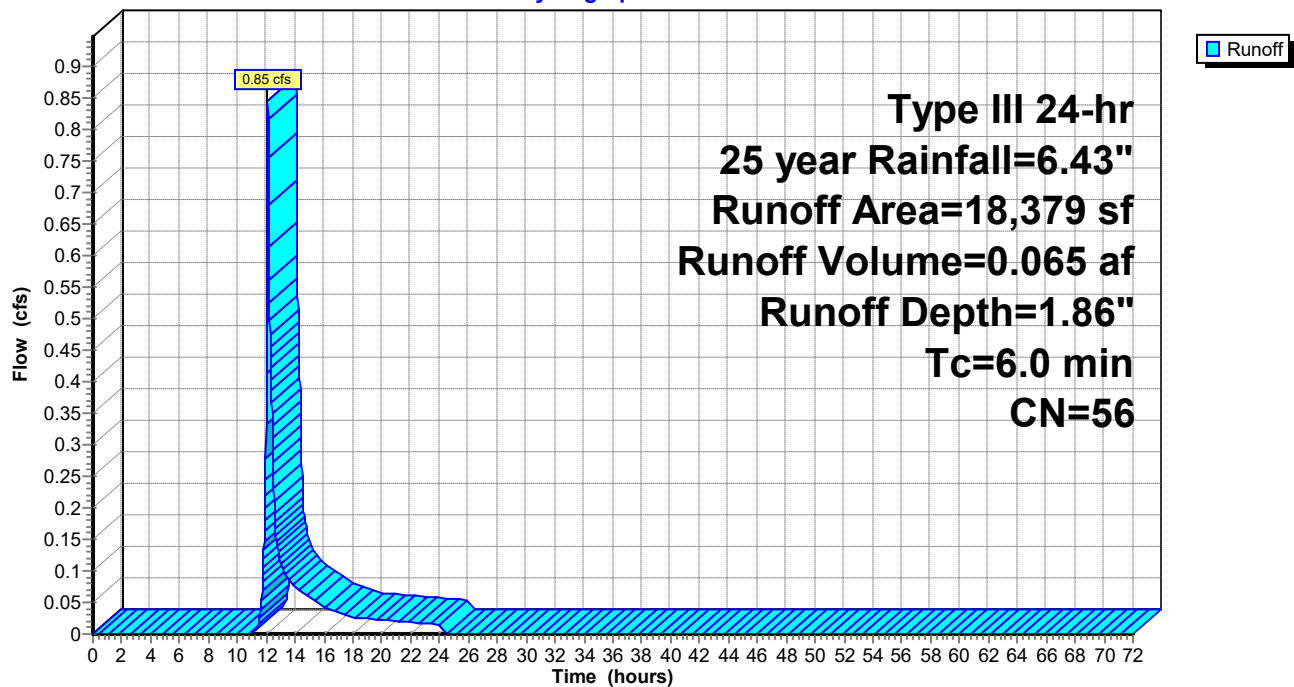
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 25 year Rainfall=6.43"

Area (sf)	CN	Description
18,379	56	Brush, Fair, HSG B
18,379		100.00% Pervious Area

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

**Subcatchment 16S: XDA-2 EXISTING CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Subcatchment 17S: XDA-3 EXISTING CONDITION**

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 4.17"  
 Routed to Link 18L : DESIGN POINT STREET

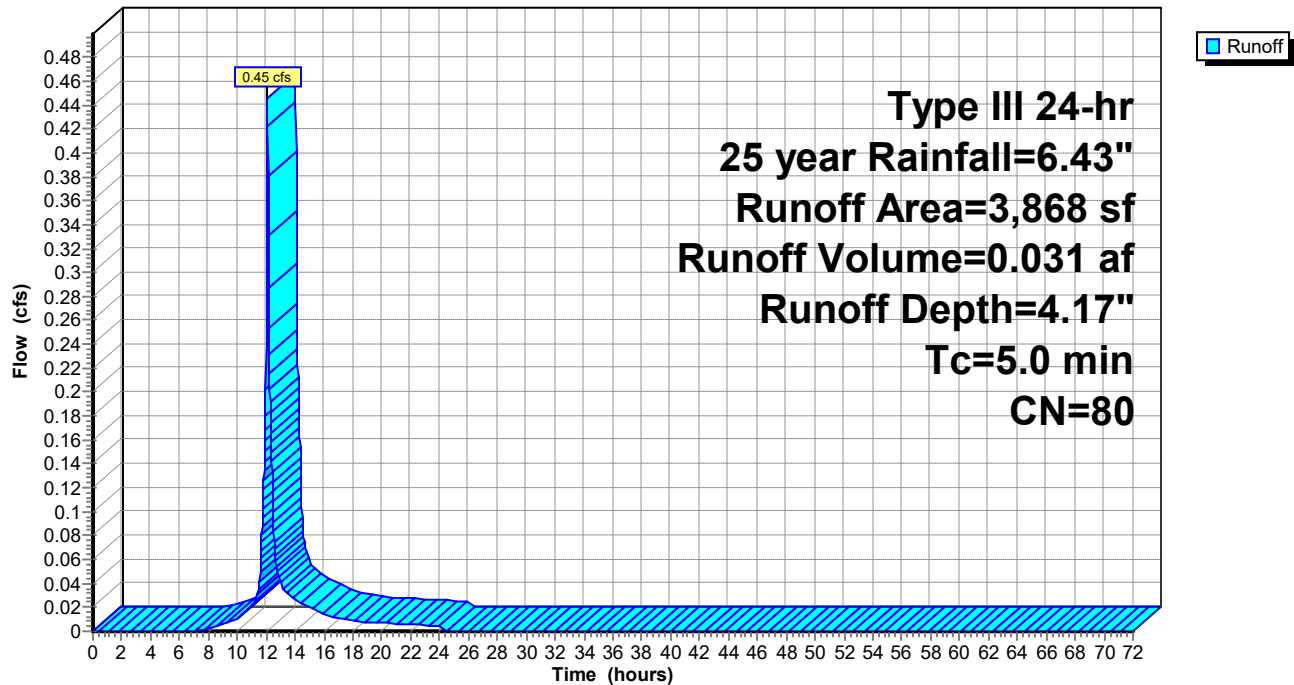
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 25 year Rainfall=6.43"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 17S: XDA-3 EXISTING CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Pond 19P: Stormwater Management Facility-2**

Inflow Area = 0.531 ac, 79.63% Impervious, Inflow Depth = 5.27" for 25 year event  
 Inflow = 3.10 cfs @ 12.08 hrs, Volume= 0.233 af  
 Outflow = 1.00 cfs @ 12.38 hrs, Volume= 0.233 af, Atten= 68%, Lag= 18.0 min  
 Discarded = 0.05 cfs @ 8.48 hrs, Volume= 0.172 af  
 Primary = 0.94 cfs @ 12.38 hrs, Volume= 0.061 af  
 Routed to Link 6L : FDA to DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 115.81' @ 12.38 hrs Surf.Area= 2,333 sf Storage= 4,633 cf

Plug-Flow detention time= 573.8 min calculated for 0.233 af (100% of inflow)  
 Center-of-Mass det. time= 574.0 min ( 1,356.5 - 782.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,440 cf	<b>20.83'W x 80.50'L x 3.54'H Field A Existing</b> 5,940 cf Overall - 2,340 cf Embedded = 3,600 cf x 40.0% Voids
#2A	113.41'	2,340 cf	<b>Cultec R-330XLHD x 44 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
#3B	112.91'	578 cf	<b>20.83'W x 31.50'L x 3.54'H Field B Proposed</b> 2,324 cf Overall - 879 cf Embedded = 1,445 cf x 40.0% Voids
#4B	113.41'	879 cf	<b>Cultec R-330XLHD x 16 Inside #3</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		5,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard  
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 8.48 hrs HW=112.95' (Free Discharge)  
 ↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.94 cfs @ 12.38 hrs HW=115.81' (Free Discharge)  
 ↑ **1=Culvert** (Passes 0.94 cfs of 5.04 cfs potential flow)  
 ↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 0.94 cfs @ 1.50 fps)

**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

44 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 2,339.6 cf Chamber Storage

5,939.7 cf Field - 2,339.6 cf Chambers = 3,600.1 cf Stone x 40.0% Voids = 1,440.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,779.6 cf = 0.087 af

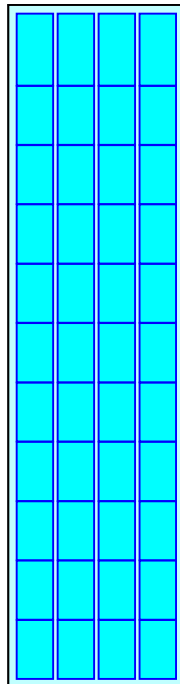
Overall Storage Efficiency = 63.6%

Overall System Size = 80.50' x 20.83' x 3.54'

44 Chambers

220.0 cy Field

133.3 cy Stone





**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field B Proposed**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

4 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 29.50' Row Length +12.0" End Stone x 2 = 31.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

16 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 879.2 cf Chamber Storage

2,324.2 cf Field - 879.2 cf Chambers = 1,445.0 cf Stone x 40.0% Voids = 578.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,457.2 cf = 0.033 af

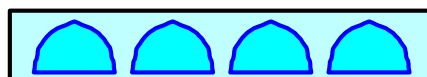
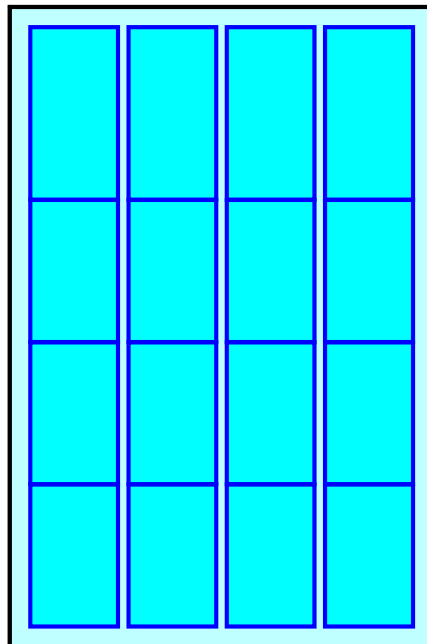
Overall Storage Efficiency = 62.7%

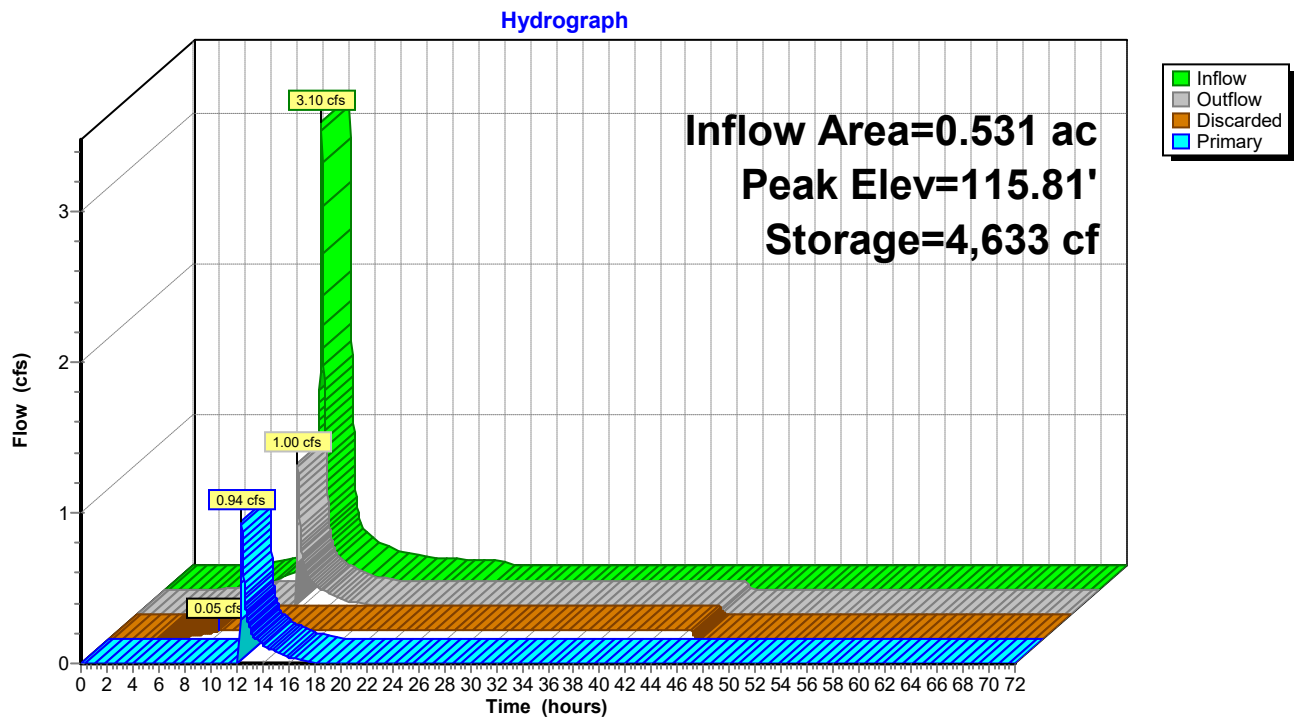
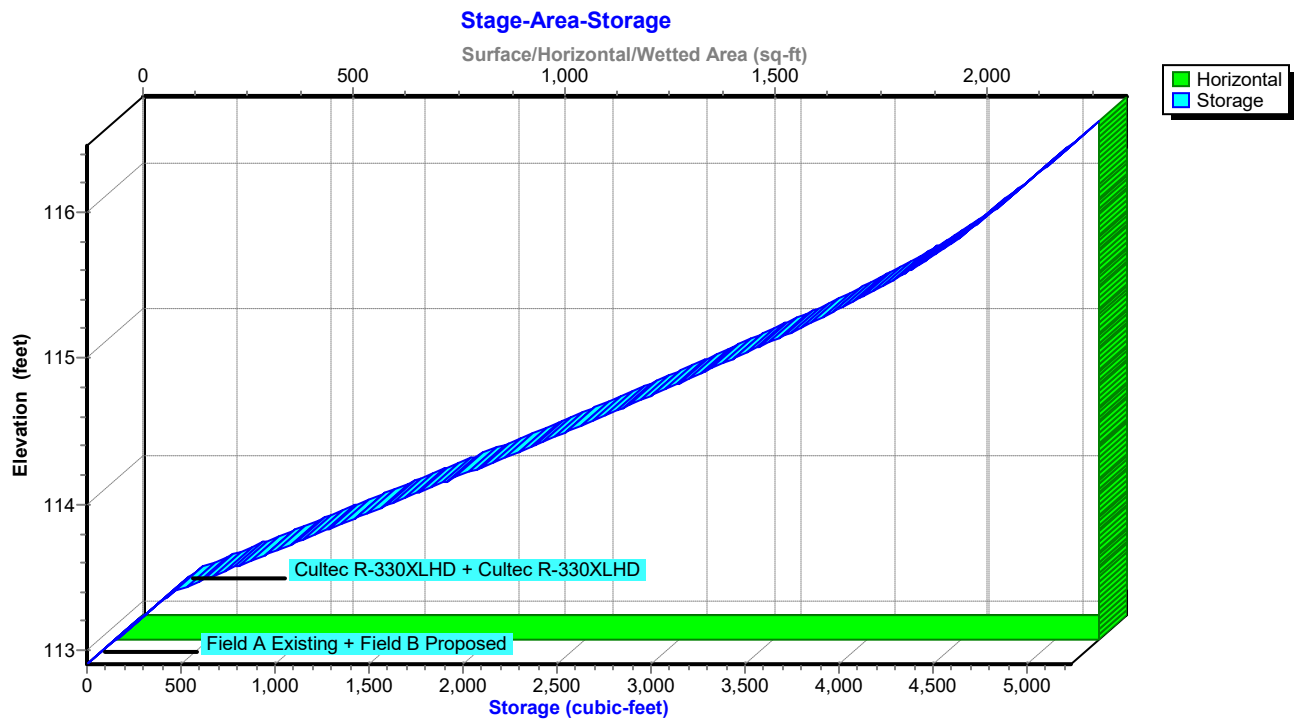
Overall System Size = 31.50' x 20.83' x 3.54'

16 Chambers

86.1 cy Field

53.5 cy Stone



**Pond 19P: Stormwater Management Facility-2****Pond 19P: Stormwater Management Facility-2**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 25 year Rainfall=6.43"

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**Summary for Pond 20P: EXISTING Stormwater Management Facility-2**

Inflow Area = 0.491 ac, 78.04% Impervious, Inflow Depth = 5.27" for 25 year event  
 Inflow = 2.87 cfs @ 12.08 hrs, Volume= 0.216 af  
 Outflow = 1.05 cfs @ 12.34 hrs, Volume= 0.216 af, Atten= 64%, Lag= 15.3 min  
 Discarded = 0.05 cfs @ 8.40 hrs, Volume= 0.154 af  
 Primary = 1.00 cfs @ 12.34 hrs, Volume= 0.062 af  
 Routed to Link 15L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 115.82' @ 12.34 hrs Surf.Area= 2,066 sf Storage= 4,155 cf

Plug-Flow detention time= 564.0 min calculated for 0.216 af (100% of inflow)  
 Center-of-Mass det. time= 564.2 min ( 1,346.7 - 782.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,757 cf	<b>25.67'W x 80.50'L x 3.54'H Field A Existing</b> 7,318 cf Overall - 2,925 cf Embedded = 4,393 cf x 40.0% Voids
#2A	113.41'	2,925 cf	<b>Cultec R-330XLHD</b> x 55 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		4,682 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 8.40 hrs HW=112.95' (Free Discharge)↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)**Primary OutFlow** Max=1.00 cfs @ 12.34 hrs HW=115.82' (Free Discharge)↑ **1=Culvert** (Passes 1.00 cfs of 5.05 cfs potential flow)↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 1.00 cfs @ 1.54 fps)

## Self-Storage SW Plan\_02-18-2022

Type III 24-hr 25 year Rainfall=6.43"

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### Pond 20P: EXISTING Stormwater Management Facility-2 - Chamber Wizard Field A Existing

#### Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 5 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

5 Rows x 52.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.67' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

55 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 5 Rows = 2,924.5 cf Chamber Storage

7,317.7 cf Field - 2,924.5 cf Chambers = 4,393.2 cf Stone x 40.0% Voids = 1,757.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,681.8 cf = 0.107 af

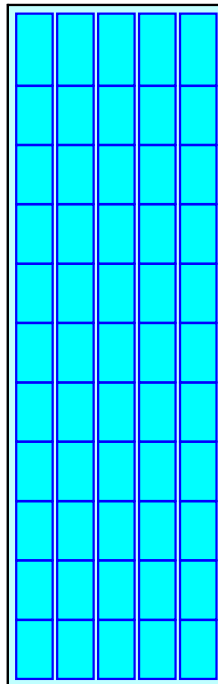
Overall Storage Efficiency = 64.0%

Overall System Size = 80.50' x 25.67' x 3.54'

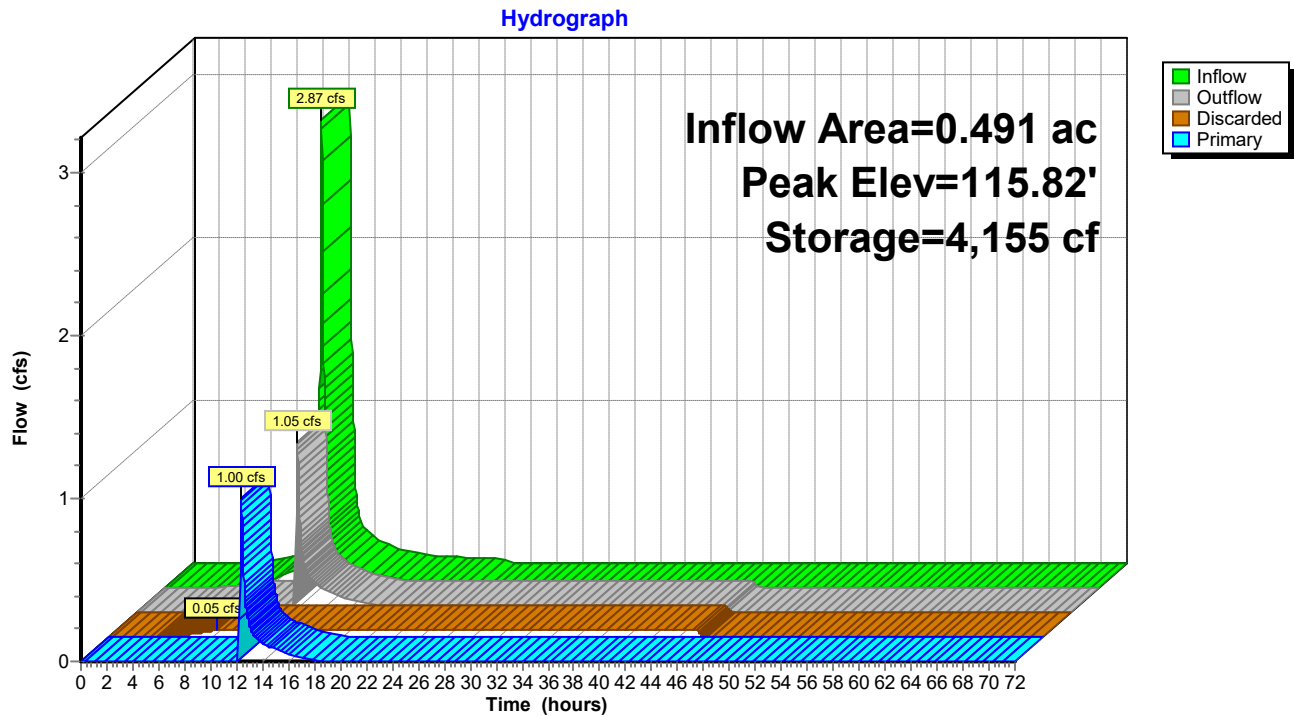
55 Chambers

271.0 cy Field

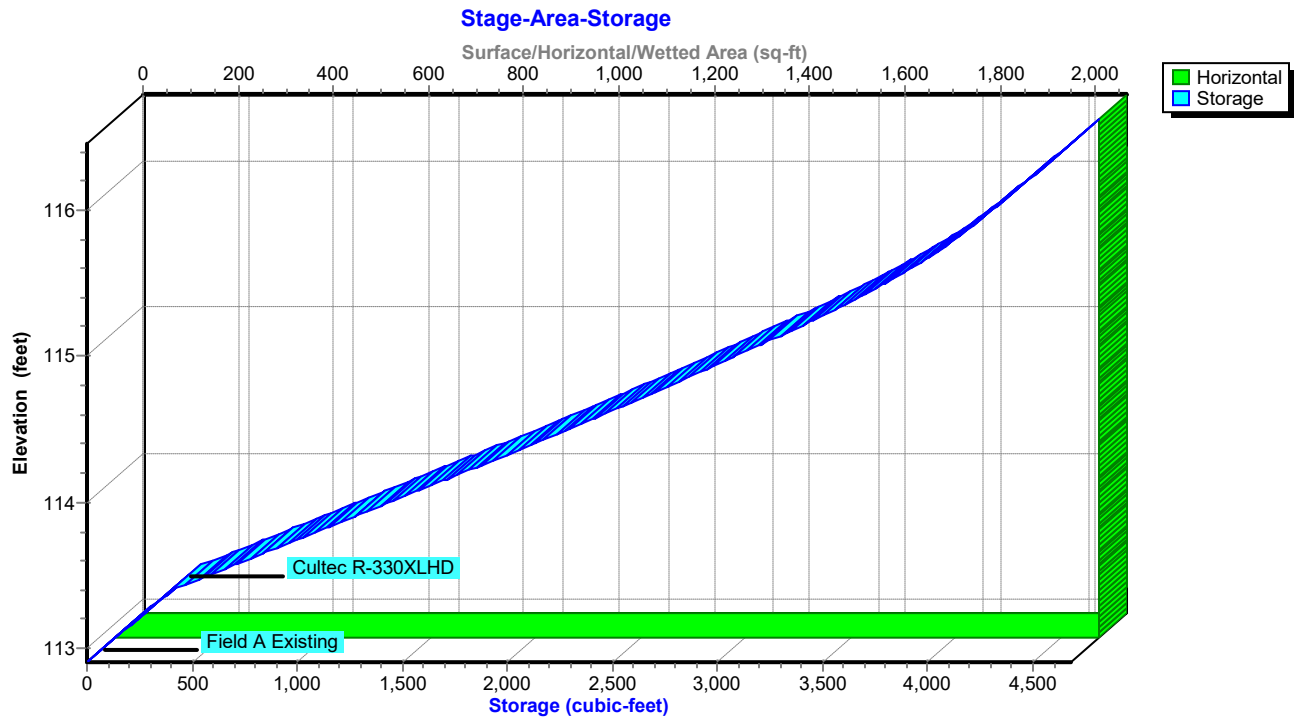
162.7 cy Stone



**Pond 20P: EXISTING Stormwater Management Facility-2**



**Pond 20P: EXISTING Stormwater Management Facility-2**

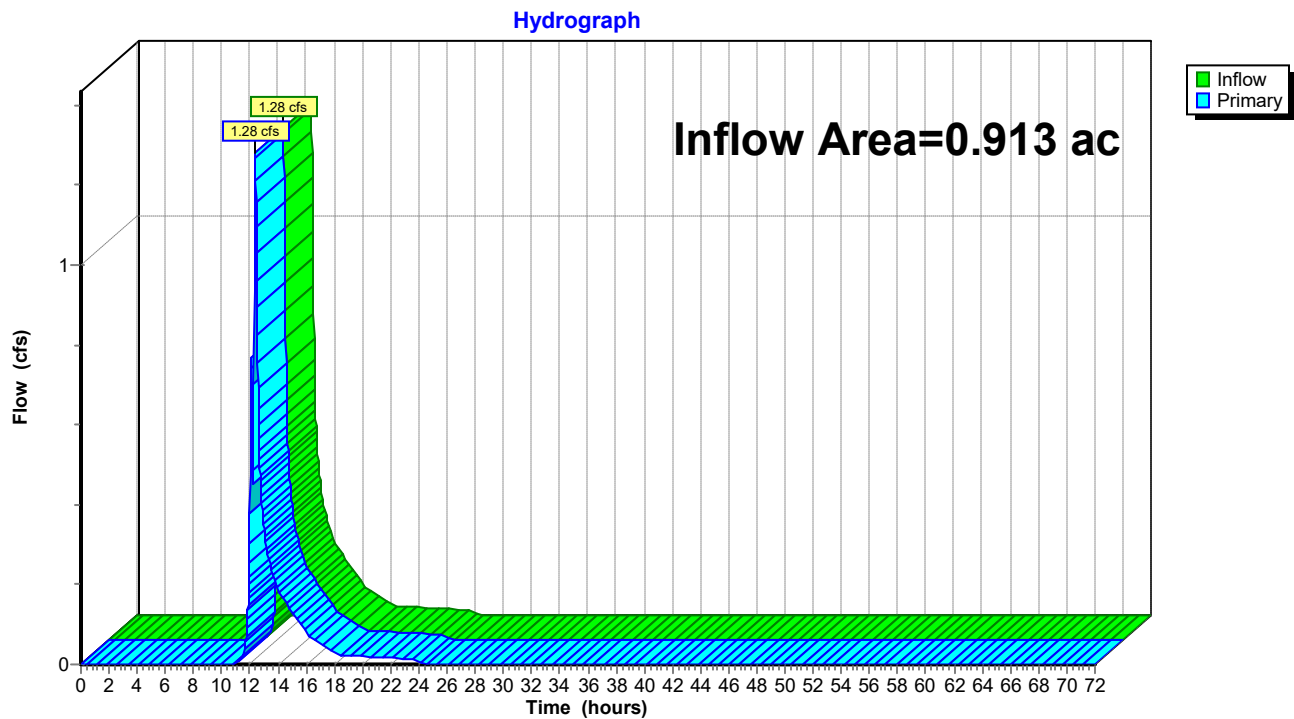




**Summary for Link 6L: FDA to DESIGN LINE 1**

Inflow Area = 0.913 ac, 52.07% Impervious, Inflow Depth = 1.58" for 25 year event  
Inflow = 1.28 cfs @ 12.37 hrs, Volume= 0.120 af  
Primary = 1.28 cfs @ 12.37 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min

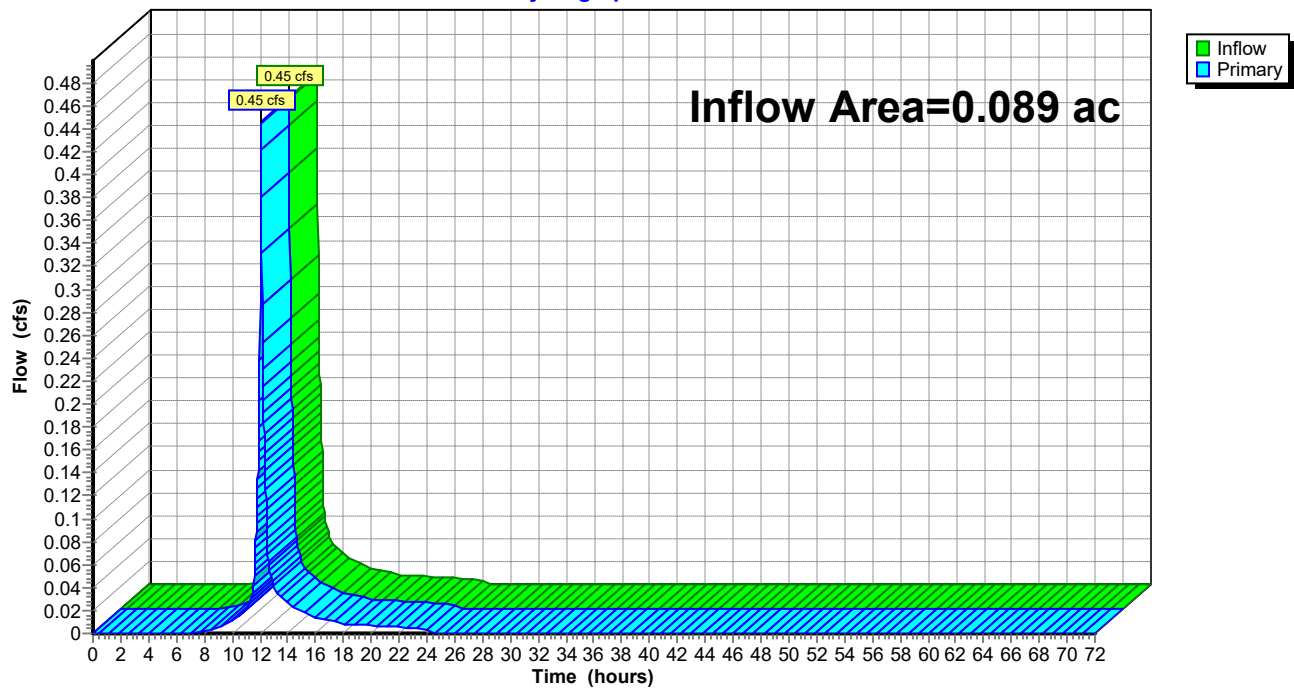
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 6L: FDA to DESIGN LINE 1**

**Summary for Link 11L: FDA to Smith Ridge Rd**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 4.17" for 25 year event  
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.031 af  
Primary = 0.45 cfs @ 12.07 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

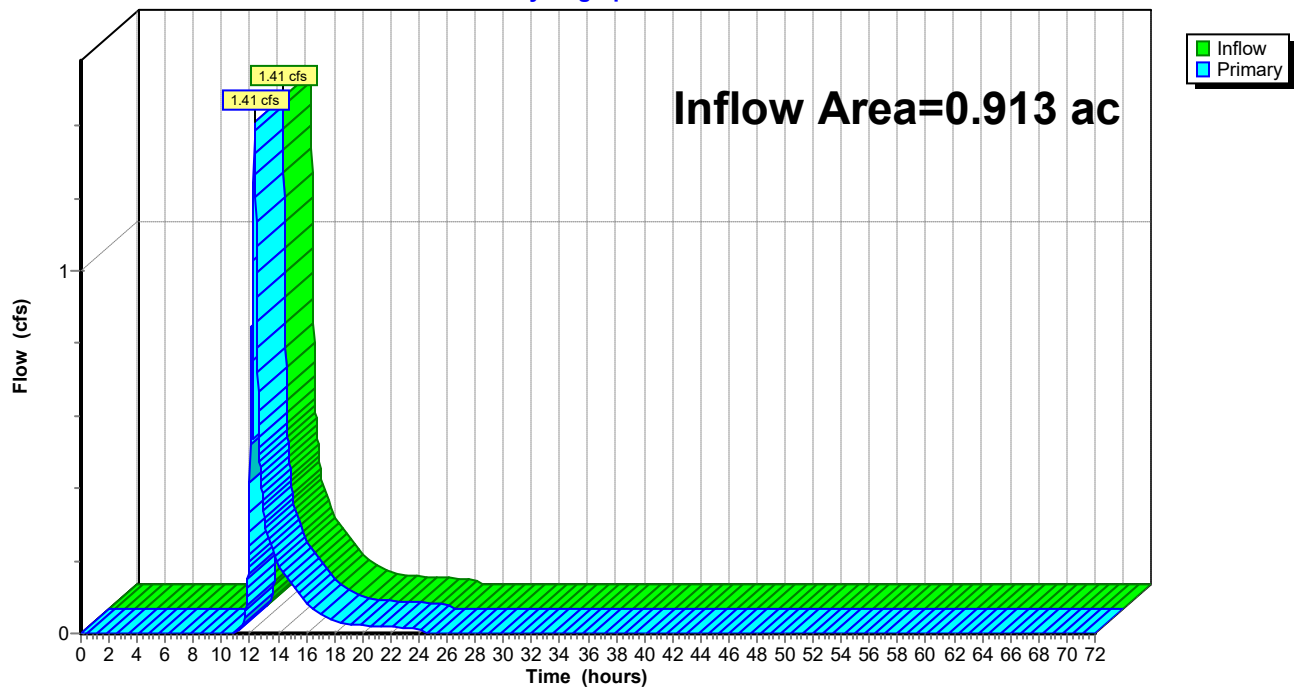
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 11L: FDA to Smith Ridge Rd****Hydrograph**

**Summary for Link 15L: DESIGN LINE 1**

Inflow Area = 0.913 ac, 41.99% Impervious, Inflow Depth = 1.67" for 25 year event  
Inflow = 1.41 cfs @ 12.33 hrs, Volume= 0.127 af  
Primary = 1.41 cfs @ 12.33 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

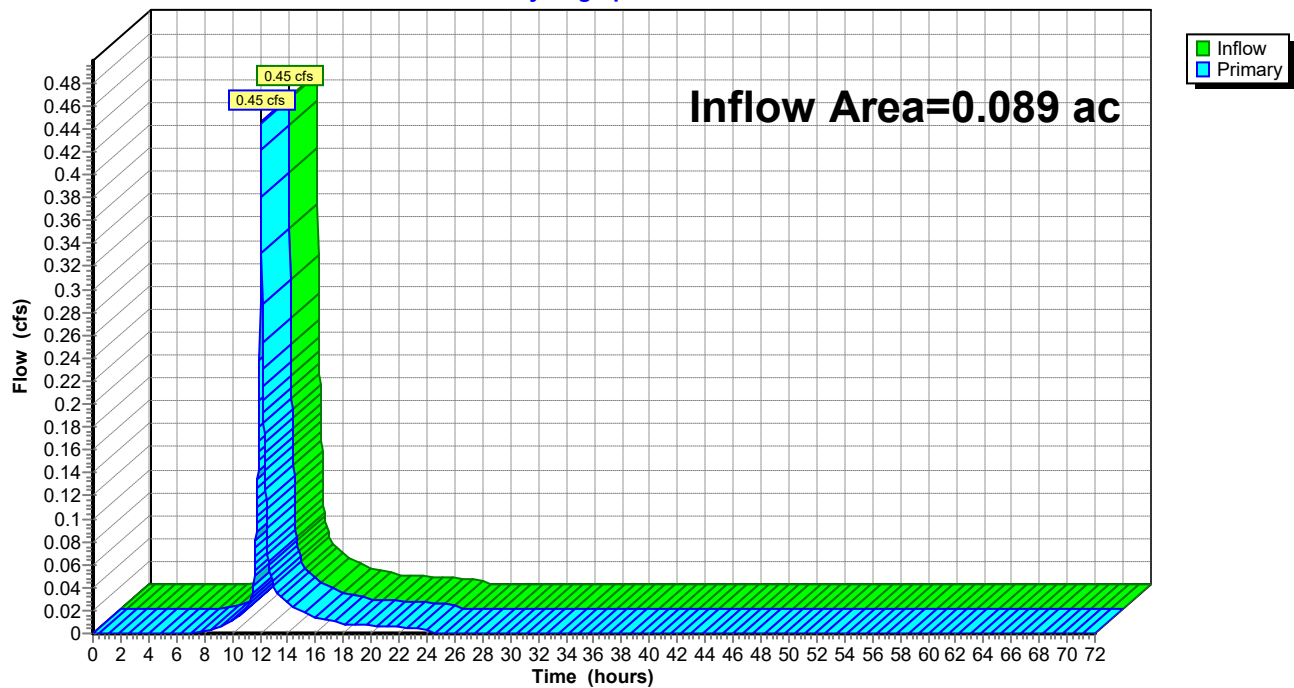
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 15L: DESIGN LINE 1****Hydrograph**

**Summary for Link 18L: DESIGN POINT STREET**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 4.17" for 25 year event  
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.031 af  
Primary = 0.45 cfs @ 12.07 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 18L: DESIGN POINT STREET****Hydrograph**

**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 100 year Rainfall=9.08"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment 3S: FDA-1 FUTURE</b>	Runoff Area=23,114 sf 79.63% Impervious Runoff Depth=7.87" Tc=6.0 min CN=90 Runoff=4.53 cfs 0.348 af
<b>Subcatchment 4S: FDA-2 FUTURE</b>	Runoff Area=16,670 sf 13.85% Impervious Runoff Depth=3.67" Tc=6.0 min UI Adjusted CN=56 Runoff=1.61 cfs 0.117 af
<b>Subcatchment 7S: FDA-3 FUTURE</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=6.64" Tc=5.0 min CN=80 Runoff=0.70 cfs 0.049 af
<b>Subcatchment 13S: XDA-1 EXISTING</b>	Runoff Area=21,405 sf 78.04% Impervious Runoff Depth=7.87" Tc=6.0 min CN=90 Runoff=4.20 cfs 0.322 af
<b>Subcatchment 16S: XDA-2 EXISTING</b>	Runoff Area=18,379 sf 0.00% Impervious Runoff Depth=3.67" Tc=6.0 min CN=56 Runoff=1.78 cfs 0.129 af
<b>Subcatchment 17S: XDA-3 EXISTING</b>	Runoff Area=3,868 sf 52.04% Impervious Runoff Depth=6.64" Tc=5.0 min CN=80 Runoff=0.70 cfs 0.049 af
<b>Pond 19P: Stormwater Management</b>	Peak Elev=116.17' Storage=4,972 cf Inflow=4.53 cfs 0.348 af Discarded=0.05 cfs 0.184 af Primary=4.04 cfs 0.164 af Outflow=4.10 cfs 0.348 af
<b>Pond 20P: EXISTING Stormwater</b>	Peak Elev=116.15' Storage=4,435 cf Inflow=4.20 cfs 0.322 af Discarded=0.05 cfs 0.164 af Primary=3.89 cfs 0.158 af Outflow=3.94 cfs 0.322 af
<b>Link 6L: FDA to DESIGN LINE 1</b>	Inflow=5.56 cfs 0.281 af Primary=5.56 cfs 0.281 af
<b>Link 11L: FDA to Smith Ridge Rd</b>	Inflow=0.70 cfs 0.049 af Primary=0.70 cfs 0.049 af
<b>Link 15L: DESIGN LINE 1</b>	Inflow=5.64 cfs 0.287 af Primary=5.64 cfs 0.287 af
<b>Link 18L: DESIGN POINT STREET</b>	Inflow=0.70 cfs 0.049 af Primary=0.70 cfs 0.049 af

**Total Runoff Area = 2.004 ac Runoff Volume = 1.015 af Average Runoff Depth = 6.08"**  
**52.53% Pervious = 1.053 ac 47.47% Impervious = 0.951 ac**



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 100 year Rainfall=9.08"

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**Summary for Subcatchment 3S: FDA-1 FUTURE CONDITION**

Runoff = 4.53 cfs @ 12.08 hrs, Volume= 0.348 af, Depth= 7.87"

Routed to Pond 19P : Stormwater Management Facility-2

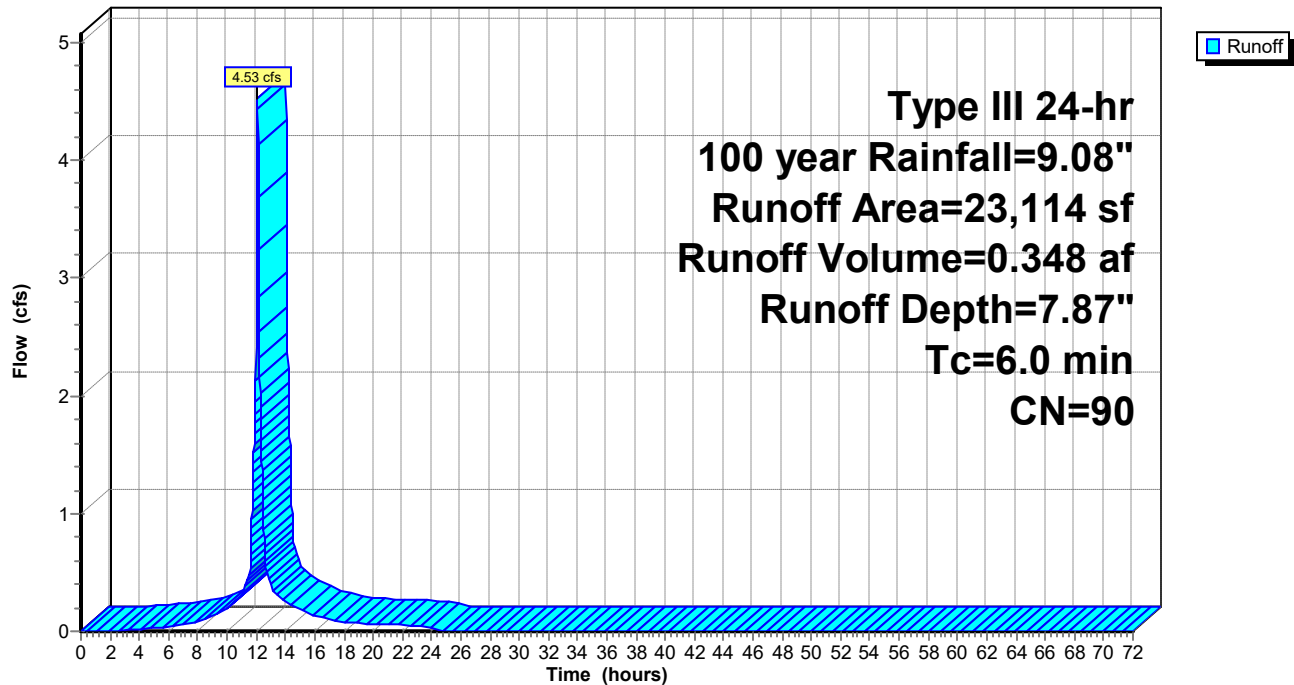
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 100 year Rainfall=9.08"

	Area (sf)	CN	Description
*	18,405	98	Impervious surfaces, HSG B
	4,709	61	>75% Grass cover, Good, HSG B
	23,114	90	Weighted Average
	4,709		20.37% Pervious Area
	18,405		79.63% Impervious Area

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

**Subcatchment 3S: FDA-1 FUTURE CONDITION**

Hydrograph



**Self-Storage SW Plan\_02-18-2022**

Type III 24-hr 100 year Rainfall=9.08"

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**Summary for Subcatchment 4S: FDA-2 FUTURE CONDITION**

Runoff = 1.61 cfs @ 12.09 hrs, Volume= 0.117 af, Depth= 3.67"  
 Routed to Link 6L : FDA to DESIGN LINE 1

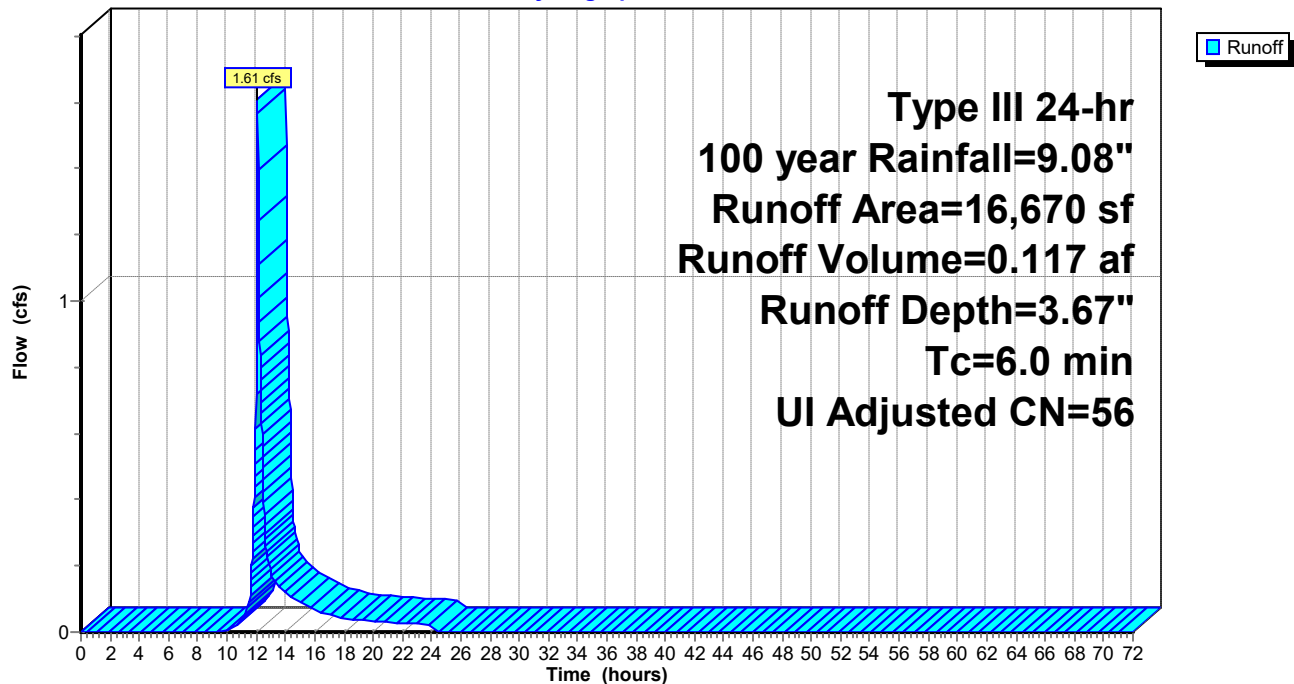
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 year Rainfall=9.08"

Area (sf)	CN	Adj	Description
6,597	58		Woods/grass comb., Good, HSG B
7,764	48		Brush, Good, HSG B
2,309	98		Unconnected roofs, HSG B
16,670	59	56	Weighted Average, UI Adjusted
14,361			86.15% Pervious Area
2,309			13.85% Impervious Area
2,309			100.00% Unconnected

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

**Subcatchment 4S: FDA-2 FUTURE CONDITION**

Hydrograph



**Summary for Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af, Depth= 6.64"

Routed to Link 11L : FDA to Smith Ridge Rd

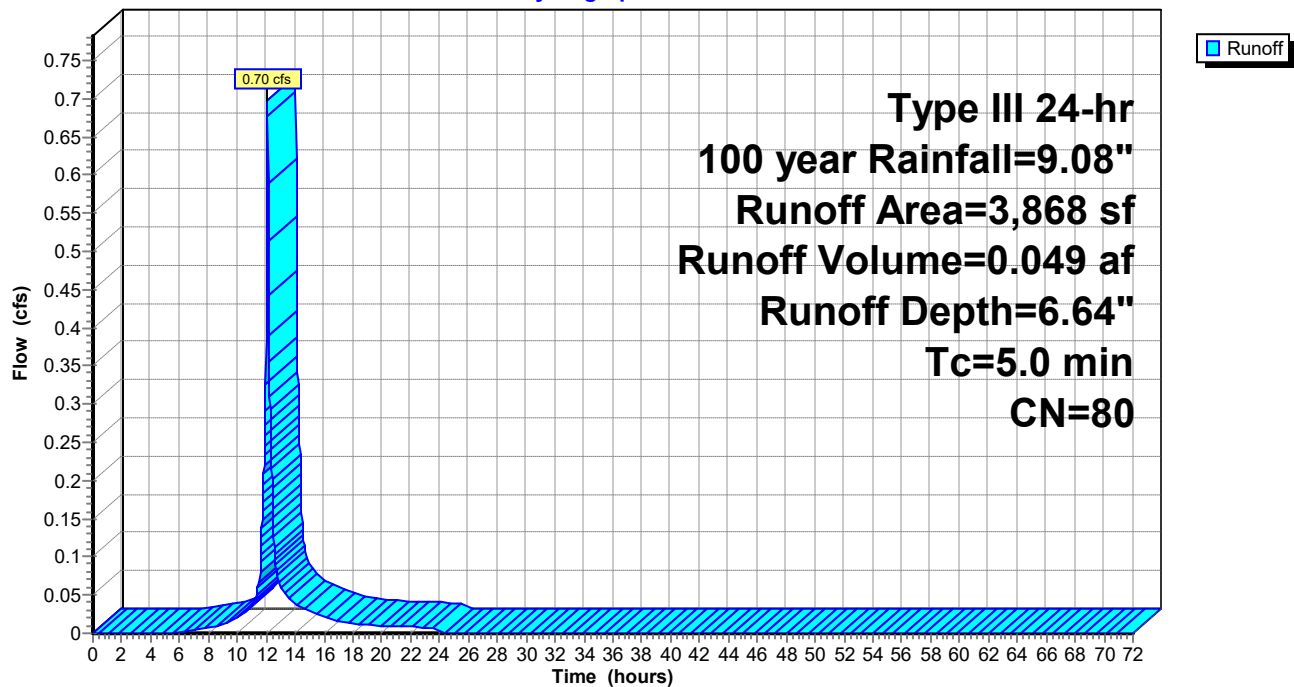
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 100 year Rainfall=9.08"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 7S: FDA-3 FUTURE CONDITION to DP-2**

Hydrograph



**Summary for Subcatchment 13S: XDA-1 EXISTING CONDITION**

Runoff = 4.20 cfs @ 12.08 hrs, Volume= 0.322 af, Depth= 7.87"

Routed to Pond 20P : EXISTING Stormwater Management Facility-2

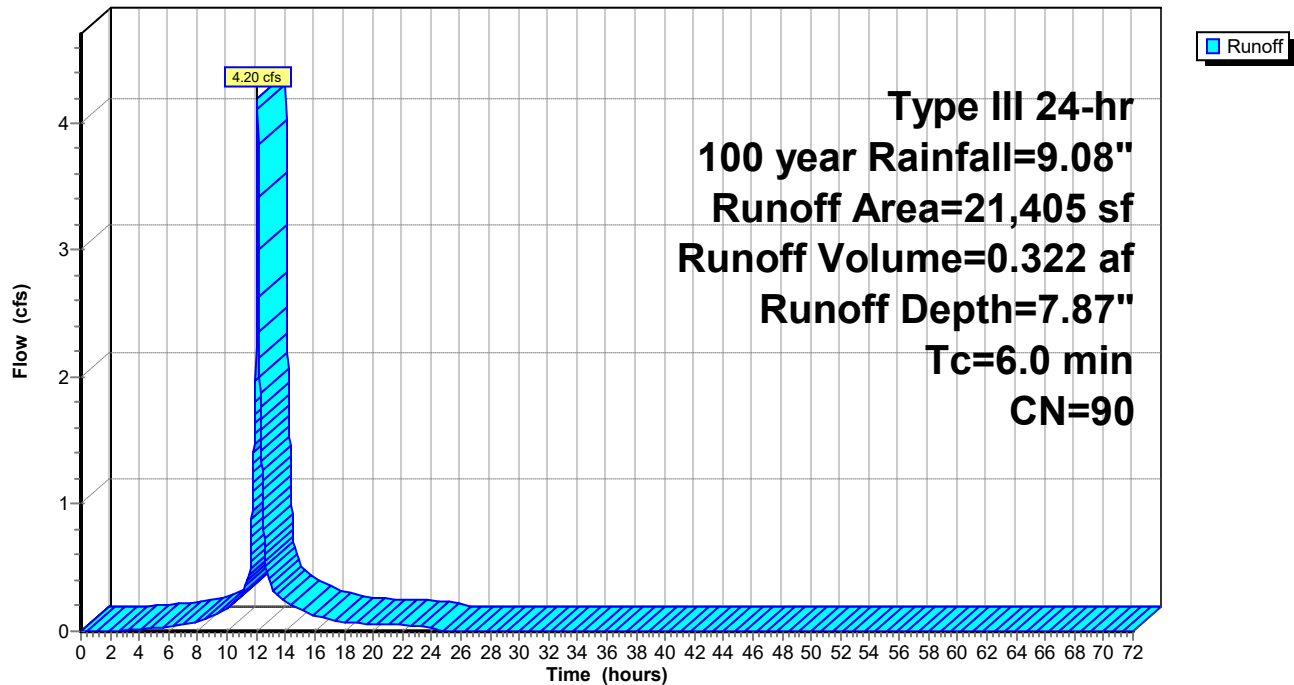
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
Type III 24-hr 100 year Rainfall=9.08"

Area (sf)	CN	Description
16,705	98	Roofs, HSG B
4,700	61	>75% Grass cover, Good, HSG B
21,405	90	Weighted Average
4,700		21.96% Pervious Area
16,705		78.04% Impervious Area

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

**Subcatchment 13S: XDA-1 EXISTING CONDITION**

Hydrograph



**Summary for Subcatchment 16S: XDA-2 EXISTING CONDITION**

Runoff = 1.78 cfs @ 12.09 hrs, Volume= 0.129 af, Depth= 3.67"  
 Routed to Link 15L : DESIGN LINE 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 year Rainfall=9.08"

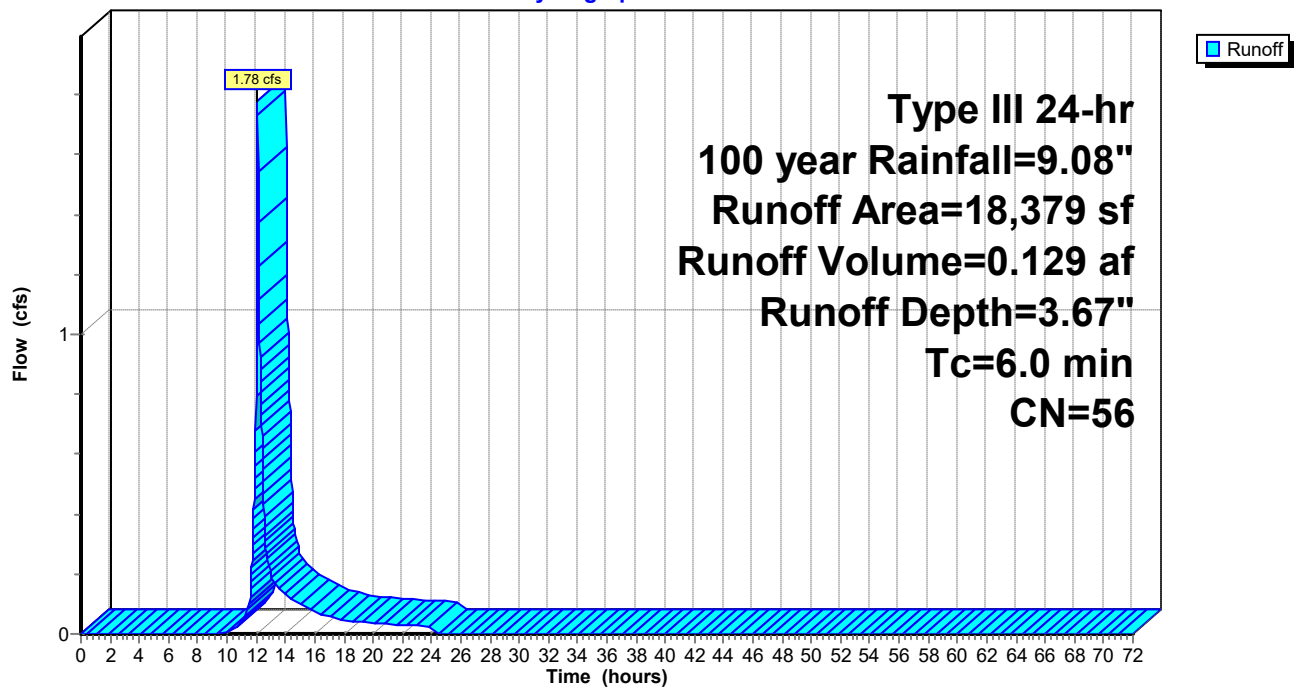
Area (sf)	CN	Description
18,379	56	Brush, Fair, HSG B
18,379		100.00% Pervious Area

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

**Subcatchment 16S: XDA-2 EXISTING CONDITION**

Hydrograph





**Summary for Subcatchment 17S: XDA-3 EXISTING CONDITION**

Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af, Depth= 6.64"  
 Routed to Link 18L : DESIGN POINT STREET

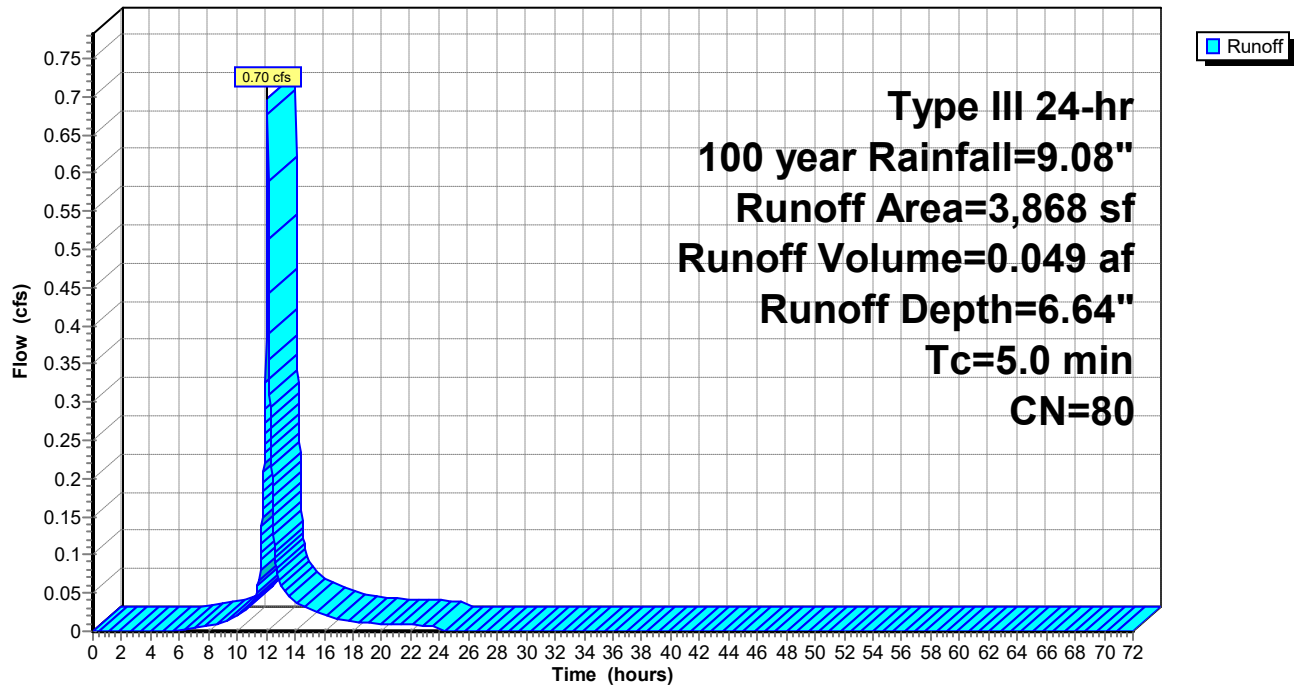
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 year Rainfall=9.08"

Area (sf)	CN	Description
1,855	61	>75% Grass cover, Good, HSG B
* 2,013	98	Pavement
3,868	80	Weighted Average
1,855		47.96% Pervious Area
2,013		52.04% Impervious Area

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

**Subcatchment 17S: XDA-3 EXISTING CONDITION**

Hydrograph



**Summary for Pond 19P: Stormwater Management Facility-2**

Inflow Area = 0.531 ac, 79.63% Impervious, Inflow Depth = 7.87" for 100 year event  
 Inflow = 4.53 cfs @ 12.08 hrs, Volume= 0.348 af  
 Outflow = 4.10 cfs @ 12.12 hrs, Volume= 0.348 af, Atten= 10%, Lag= 2.4 min  
 Discarded = 0.05 cfs @ 7.06 hrs, Volume= 0.184 af  
 Primary = 4.04 cfs @ 12.12 hrs, Volume= 0.164 af  
 Routed to Link 6L : FDA to DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 116.17' @ 12.12 hrs Surf.Area= 2,333 sf Storage= 4,972 cf

Plug-Flow detention time= 417.0 min calculated for 0.348 af (100% of inflow)  
 Center-of-Mass det. time= 417.2 min ( 1,189.5 - 772.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,440 cf	<b>20.83'W x 80.50'L x 3.54'H Field A Existing</b> 5,940 cf Overall - 2,340 cf Embedded = 3,600 cf x 40.0% Voids
#2A	113.41'	2,340 cf	<b>Cultec R-330XLHD x 44 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
#3B	112.91'	578 cf	<b>20.83'W x 31.50'L x 3.54'H Field B Proposed</b> 2,324 cf Overall - 879 cf Embedded = 1,445 cf x 40.0% Voids
#4B	113.41'	879 cf	<b>Cultec R-330XLHD x 16 Inside #3</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		5,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard  
 Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 7.06 hrs HW=112.95' (Free Discharge)  
 ↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=4.01 cfs @ 12.12 hrs HW=116.16' (Free Discharge)  
 ↑ **1=Culvert** (Passes 4.01 cfs of 5.34 cfs potential flow)  
 ↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 4.01 cfs @ 2.46 fps)

**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

44 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 2,339.6 cf Chamber Storage

5,939.7 cf Field - 2,339.6 cf Chambers = 3,600.1 cf Stone x 40.0% Voids = 1,440.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,779.6 cf = 0.087 af

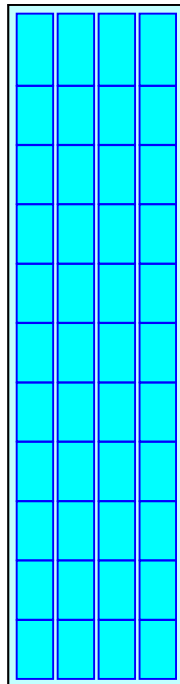
Overall Storage Efficiency = 63.6%

Overall System Size = 80.50' x 20.83' x 3.54'

44 Chambers

220.0 cy Field

133.3 cy Stone



**Pond 19P: Stormwater Management Facility-2 - Chamber Wizard Field B Proposed**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

4 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 29.50' Row Length +12.0" End Stone x 2 = 31.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

16 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 879.2 cf Chamber Storage

2,324.2 cf Field - 879.2 cf Chambers = 1,445.0 cf Stone x 40.0% Voids = 578.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,457.2 cf = 0.033 af

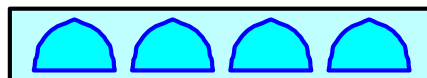
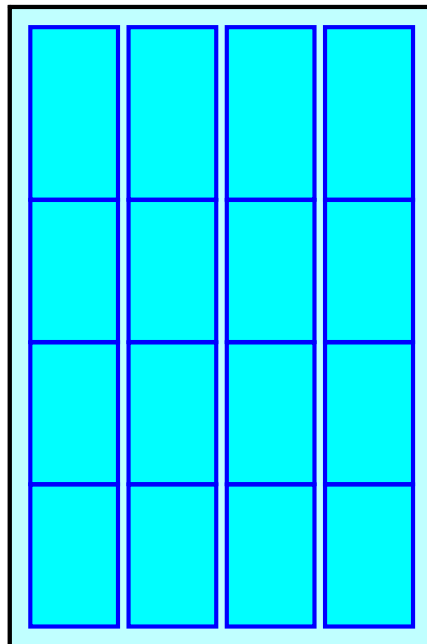
Overall Storage Efficiency = 62.7%

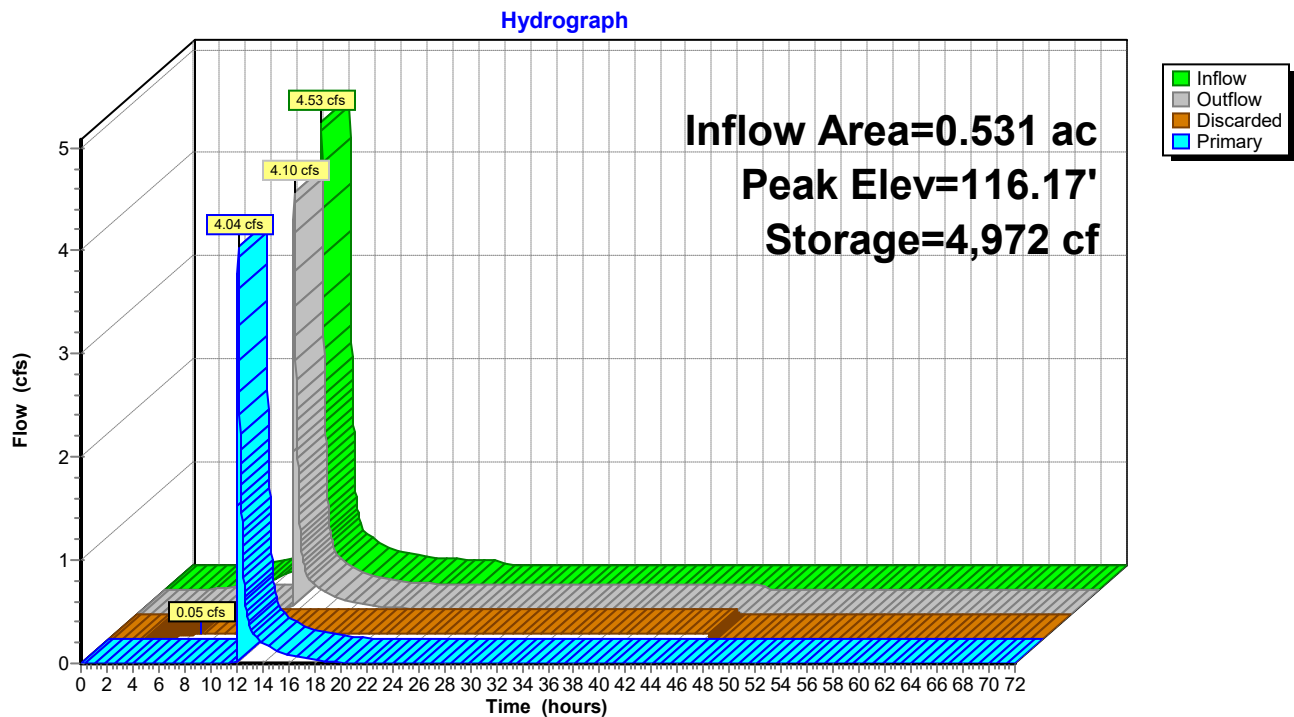
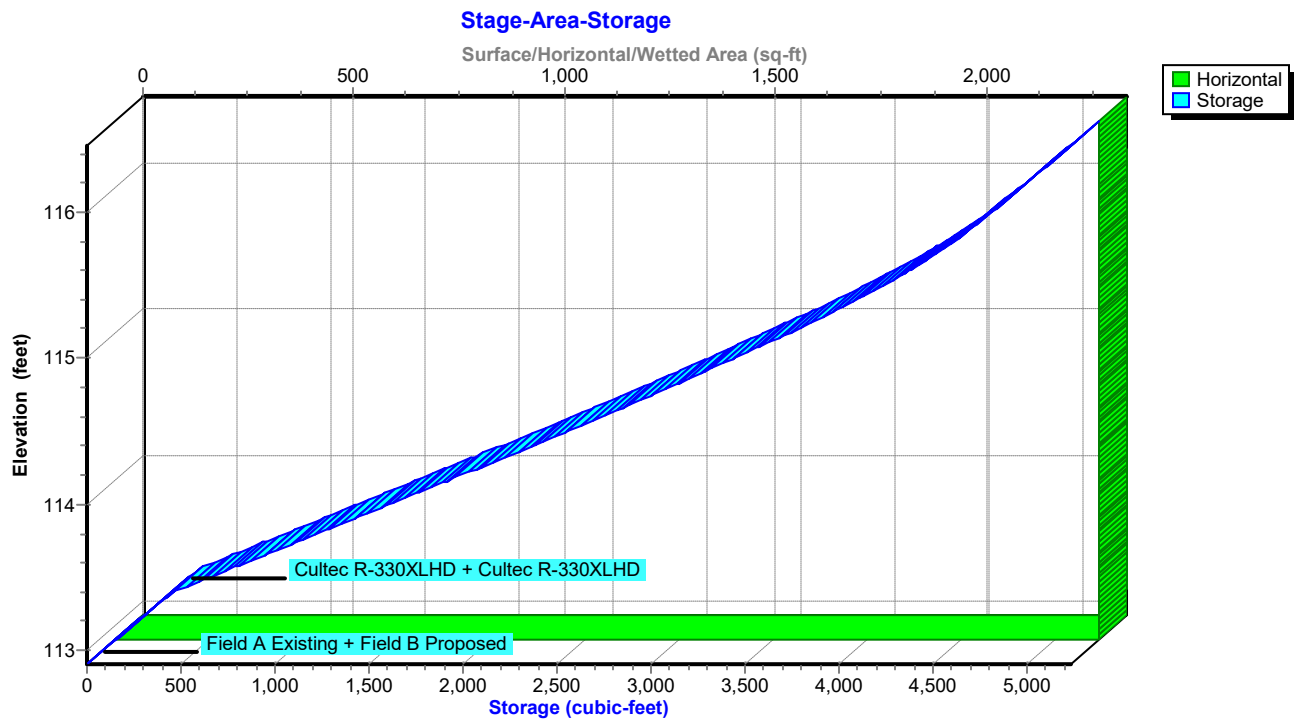
Overall System Size = 31.50' x 20.83' x 3.54'

16 Chambers

86.1 cy Field

53.5 cy Stone



**Pond 19P: Stormwater Management Facility-2****Pond 19P: Stormwater Management Facility-2**



**Summary for Pond 20P: EXISTING Stormwater Management Facility-2**

Inflow Area = 0.491 ac, 78.04% Impervious, Inflow Depth = 7.87" for 100 year event  
 Inflow = 4.20 cfs @ 12.08 hrs, Volume= 0.322 af  
 Outflow = 3.94 cfs @ 12.12 hrs, Volume= 0.322 af, Atten= 6%, Lag= 1.9 min  
 Discarded = 0.05 cfs @ 6.96 hrs, Volume= 0.164 af  
 Primary = 3.89 cfs @ 12.12 hrs, Volume= 0.158 af  
 Routed to Link 15L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs  
 Peak Elev= 116.15' @ 12.12 hrs Surf.Area= 2,066 sf Storage= 4,435 cf

Plug-Flow detention time= 407.6 min calculated for 0.322 af (100% of inflow)  
 Center-of-Mass det. time= 407.9 min ( 1,180.2 - 772.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	112.91'	1,757 cf	<b>25.67'W x 80.50'L x 3.54'H Field A Existing</b> 7,318 cf Overall - 2,925 cf Embedded = 4,393 cf x 40.0% Voids
#2A	113.41'	2,925 cf	<b>Cultec R-330XLHD</b> x 55 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		4,682 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	112.46'	<b>12.0" Round Culvert</b> L= 108.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 112.46' / 108.00' S= 0.0413 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	115.60'	<b>3.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	112.91'	<b>1.000 in/hr Exfiltration over Horizontal area</b>

**Discarded OutFlow** Max=0.05 cfs @ 6.96 hrs HW=112.95' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=3.87 cfs @ 12.12 hrs HW=116.15' (Free Discharge)

↑ **1=Culvert** (Passes 3.87 cfs of 5.33 cfs potential flow)

↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 3.87 cfs @ 2.43 fps)

**Pond 20P: EXISTING Stormwater Management Facility-2 - Chamber Wizard Field A Existing**

**Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 5 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

11 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 78.50' Row Length +12.0" End Stone x 2 = 80.50' Base Length

5 Rows x 52.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.67' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

55 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 5 Rows = 2,924.5 cf Chamber Storage

7,317.7 cf Field - 2,924.5 cf Chambers = 4,393.2 cf Stone x 40.0% Voids = 1,757.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,681.8 cf = 0.107 af

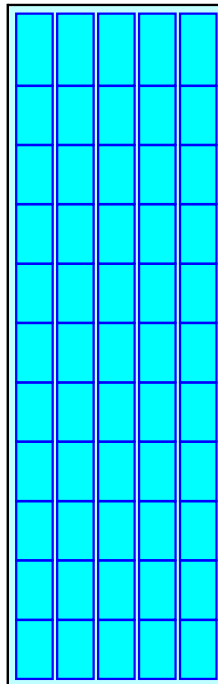
Overall Storage Efficiency = 64.0%

Overall System Size = 80.50' x 25.67' x 3.54'

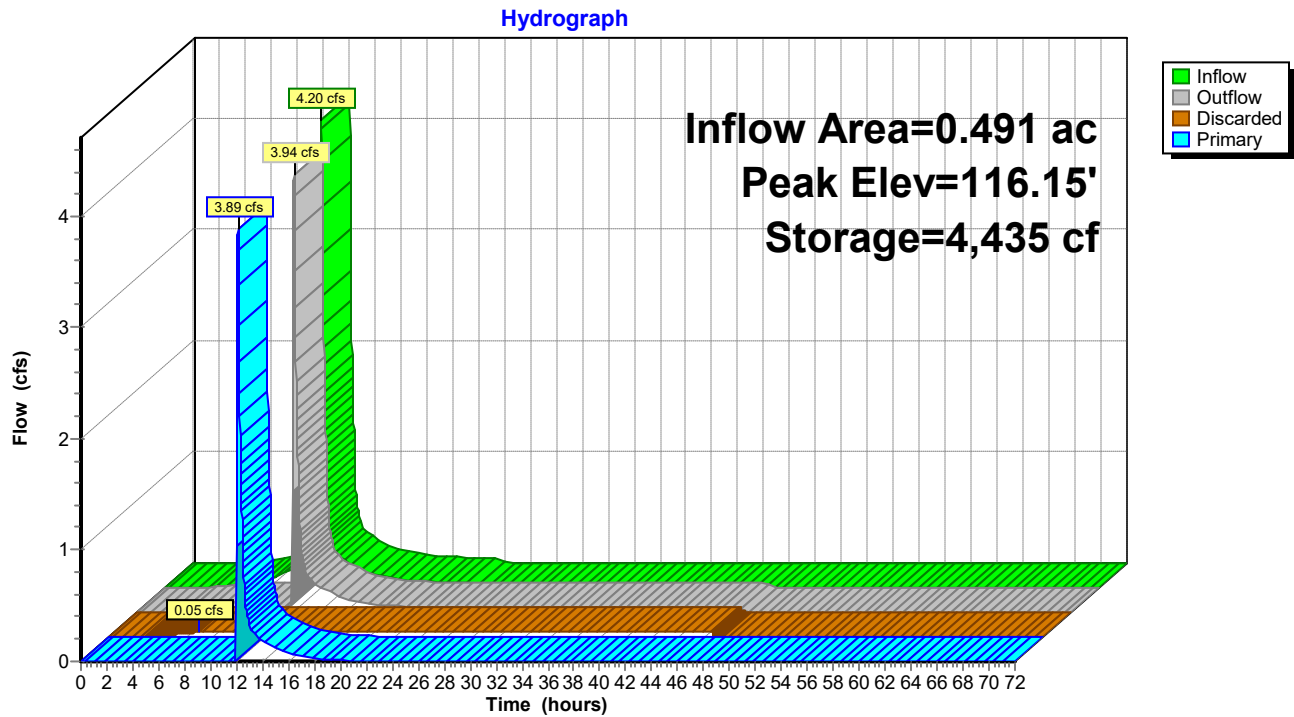
55 Chambers

271.0 cy Field

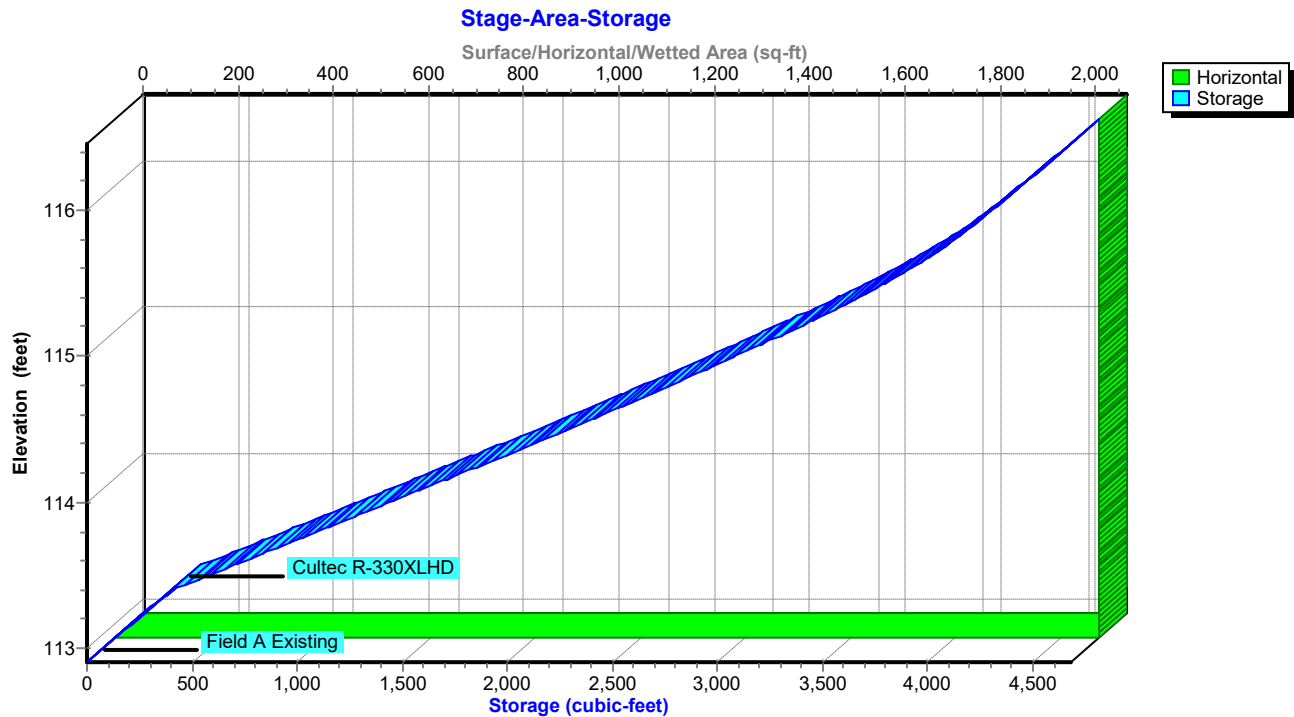
162.7 cy Stone



**Pond 20P: EXISTING Stormwater Management Facility-2**



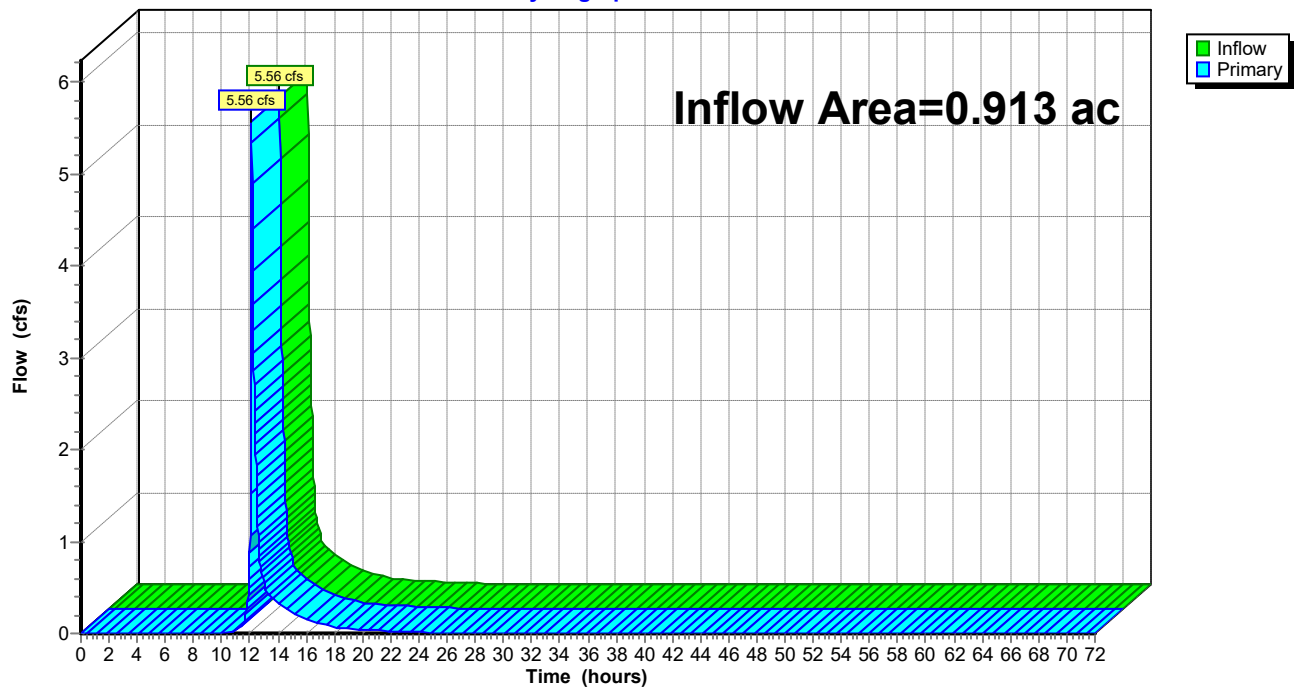
**Pond 20P: EXISTING Stormwater Management Facility-2**



**Summary for Link 6L: FDA to DESIGN LINE 1**

Inflow Area = 0.913 ac, 52.07% Impervious, Inflow Depth = 3.70" for 100 year event  
Inflow = 5.56 cfs @ 12.12 hrs, Volume= 0.281 af  
Primary = 5.56 cfs @ 12.12 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min

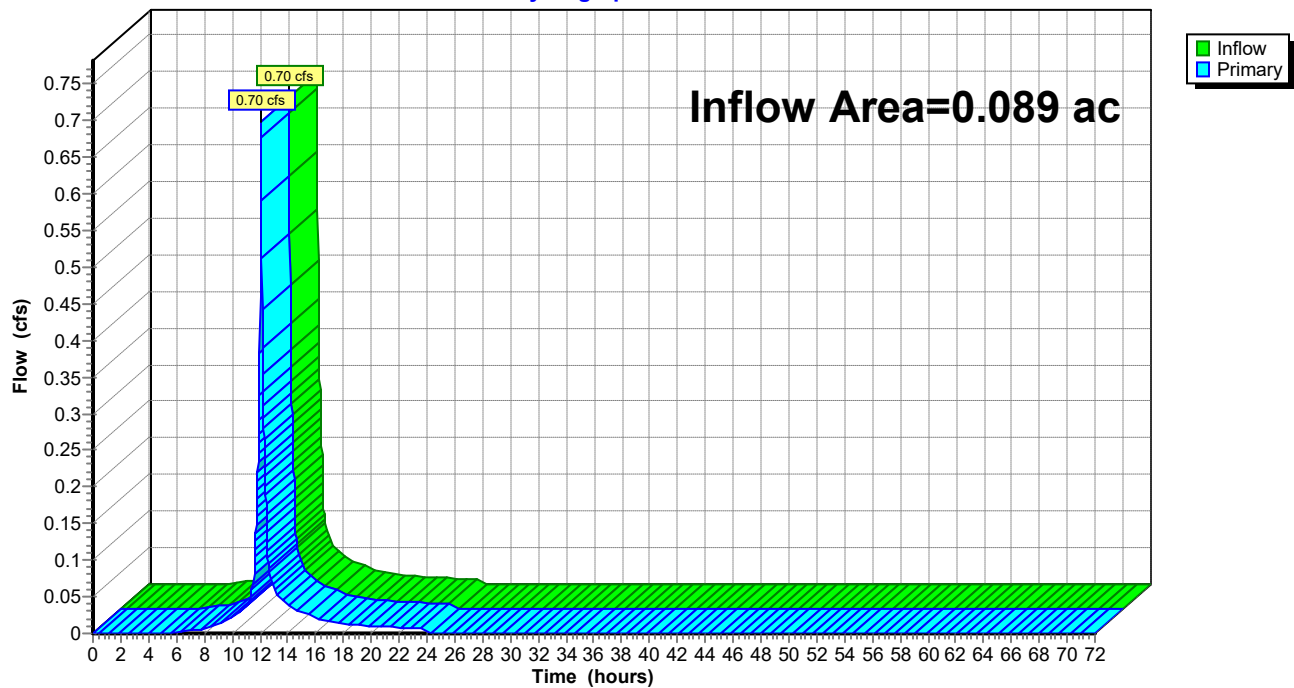
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 6L: FDA to DESIGN LINE 1****Hydrograph**

**Summary for Link 11L: FDA to Smith Ridge Rd**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 6.64" for 100 year event  
Inflow = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af  
Primary = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 11L: FDA to Smith Ridge Rd****Hydrograph**



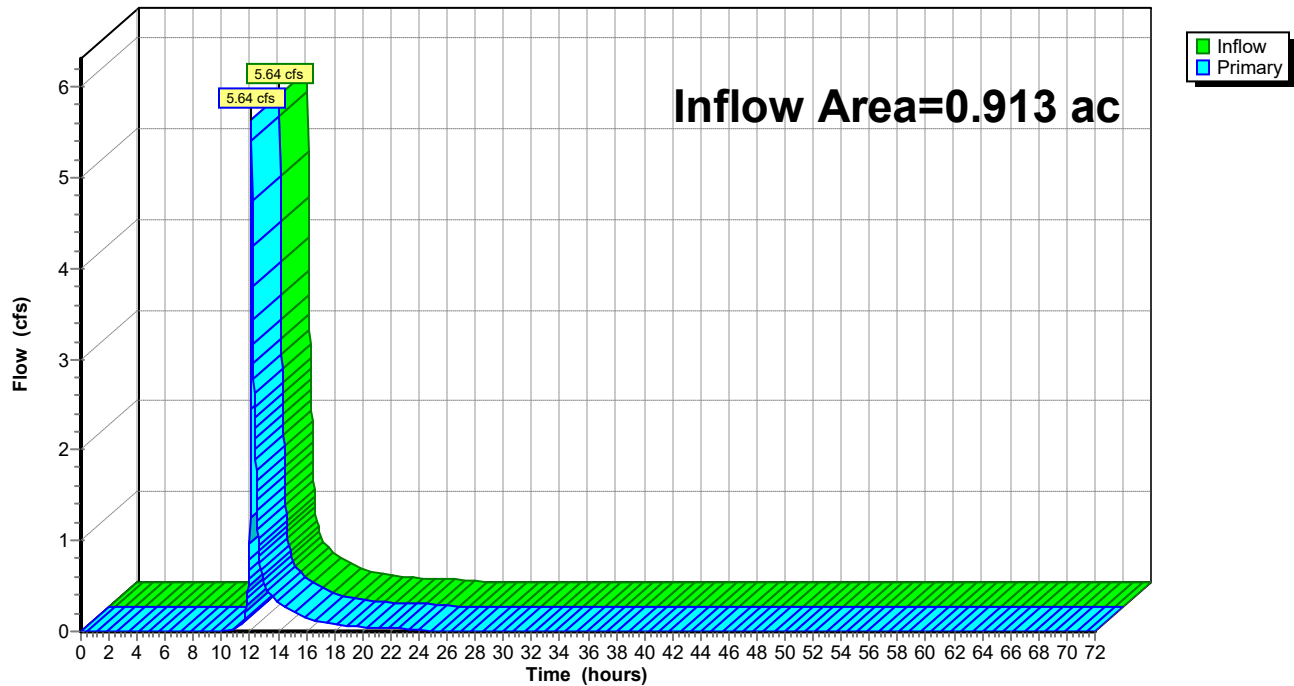
**Summary for Link 15L: DESIGN LINE 1**

Inflow Area = 0.913 ac, 41.99% Impervious, Inflow Depth = 3.77" for 100 year event  
Inflow = 5.64 cfs @ 12.11 hrs, Volume= 0.287 af  
Primary = 5.64 cfs @ 12.11 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 15L: DESIGN LINE 1**

Hydrograph



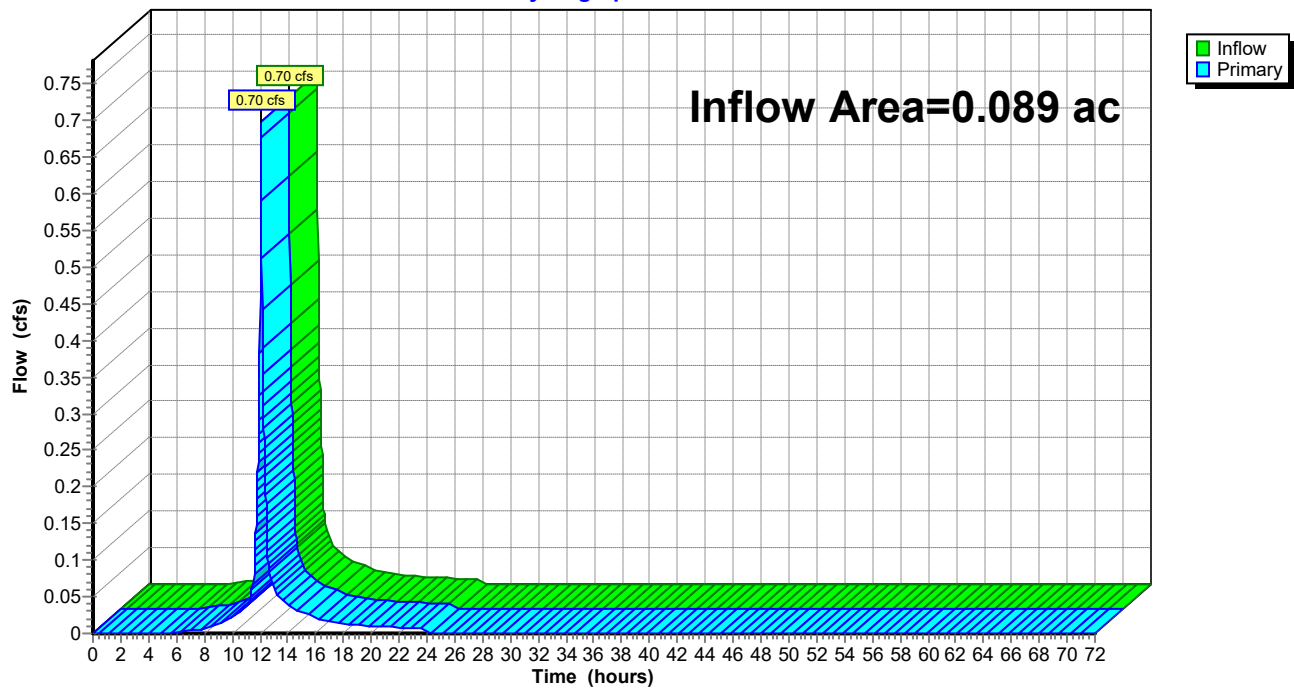
**Summary for Link 18L: DESIGN POINT STREET**

Inflow Area = 0.089 ac, 52.04% Impervious, Inflow Depth = 6.64" for 100 year event  
Inflow = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af  
Primary = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

**Link 18L: DESIGN POINT STREET**

Hydrograph





	REQUIRED	PROPOSED/ PROVIDED	CHANGE FROM EXISTING
Minimum Lot Area	1/2 ACRE	40,648 S.F. (0.933AC.)	No Change
Minimum Frontage	100 FEET	200 FEET	No Change
Maximum Bldg Coverage	20%	22.91%	Increase <sup>1</sup>
Maximum Site Coverage	60%	50.9%	Increase <sup>2</sup>
Maximum Floor Area Ratio	0.40	0.229	Increase <sup>3</sup>
Setbacks			
Front			
from front lot line	20'	21.5'	No Change
from street center line	45'	51'	No Change
Side	15'	15'/29.3'	No Change
Rear	15'	57.8'	Decrease <sup>4</sup>
Maximum Building Height			
Stories	2-1/2 STORIES	1 STORY	No Change
Feet	30'	12'	No Change

AREA = 40651 SF±  
0.933 AC±

65'±

COR. STOCKADE FENCE  
1.29'±

PROPOSED BUILDING 4:  
Area = 1100 sq. feet  
3 - 20' x 10' units  
1 - 10' x 5' unit  
1 - 6' x 5' units

PROPOSED 6'±

ADJACENT BUILDING

Proposed Bituminous Concrete Sidewalk

Proposed Conc.

FFE

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209(2) OF THE NEW YORK STATE EDUCATION LAW.

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ENGINEER & LANDSCAPE ARCHITECT:  
**ALP ENGINEERING**  
 & LANDSCAPE ARCHITECTURE, PLLC

## Site Layout Plan

ID: Kaplan Site 02-04-2022

# C-101

Chair	DATE
Administrator	DATE

Reviewed for compliance with the Planning Board Resolution dated

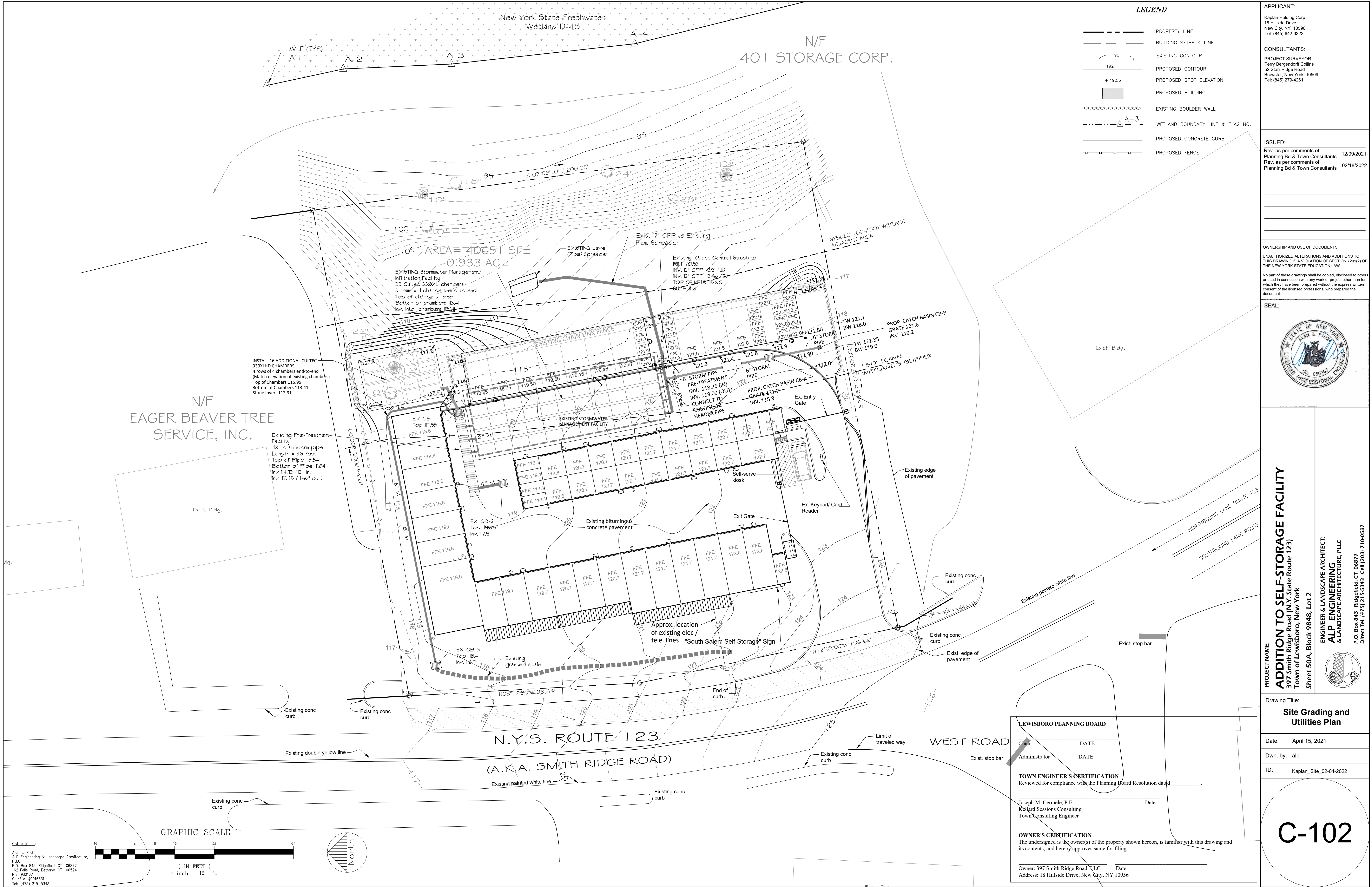
~~Joseph M. Cermele, P.E.  
Kellard Sessions Consulting  
Town Consulting Engineer~~

**OWNER'S CERTIFICATION**  
The undersigned is the owner(s) of the property shown hereon, is familiar with this drawing and its contents, and hereby approves same for filing.

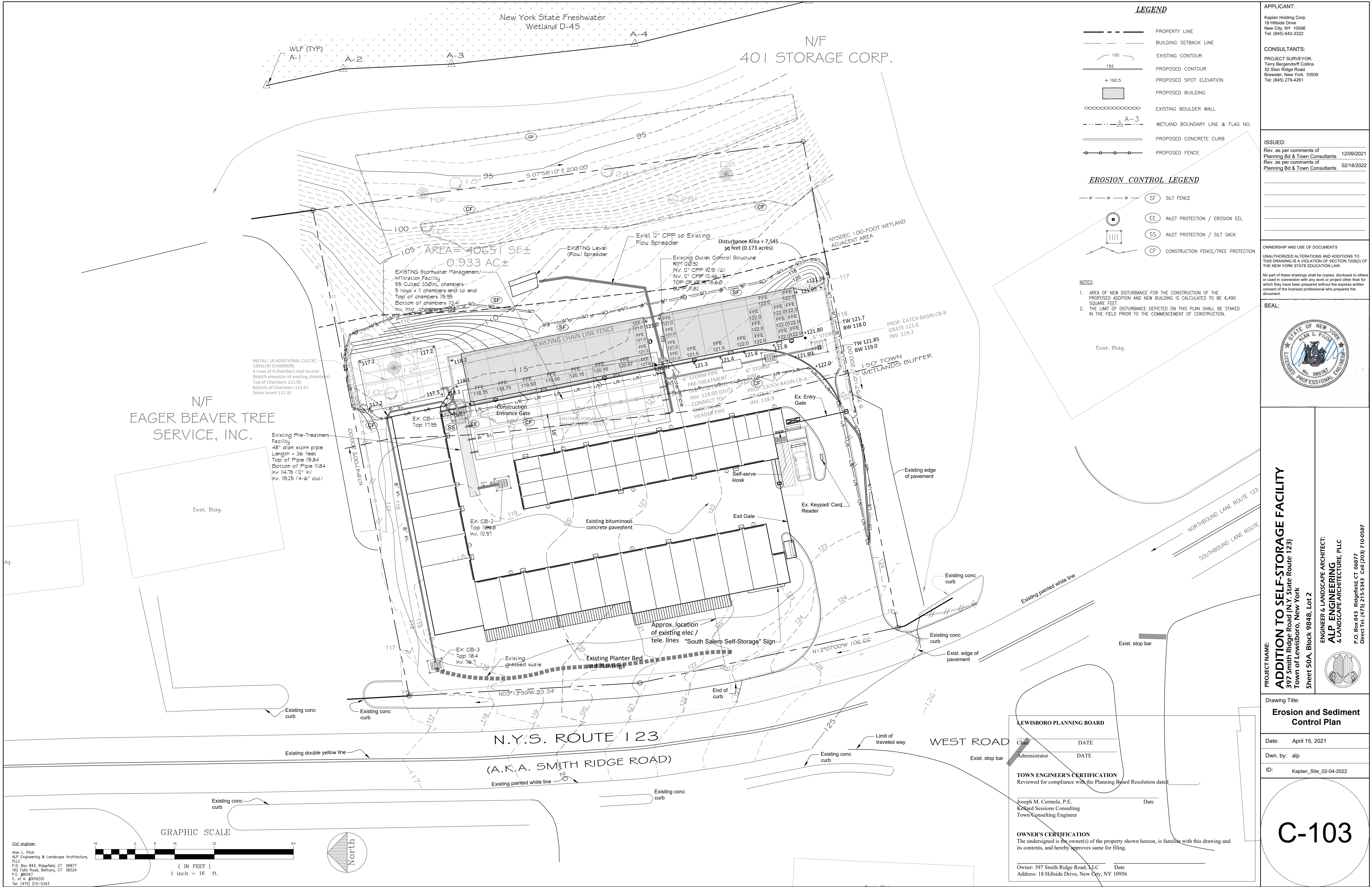
Owner: 397 Smith Ridge Road, LLC      Date  
Address: 18 Hillside Drive, New City, NY 10956

Civil engineer:  
Alan L. Pilch  
ALP Engineering & Landscape Architecture,  
PLLC  
P.O. Box 843, Ridgefield, CT 06877  
162 Falls Road, Bethany, CT 06524  
P.E. #80167  
C. of A. #0016331  
Tel: (475) 215-5343

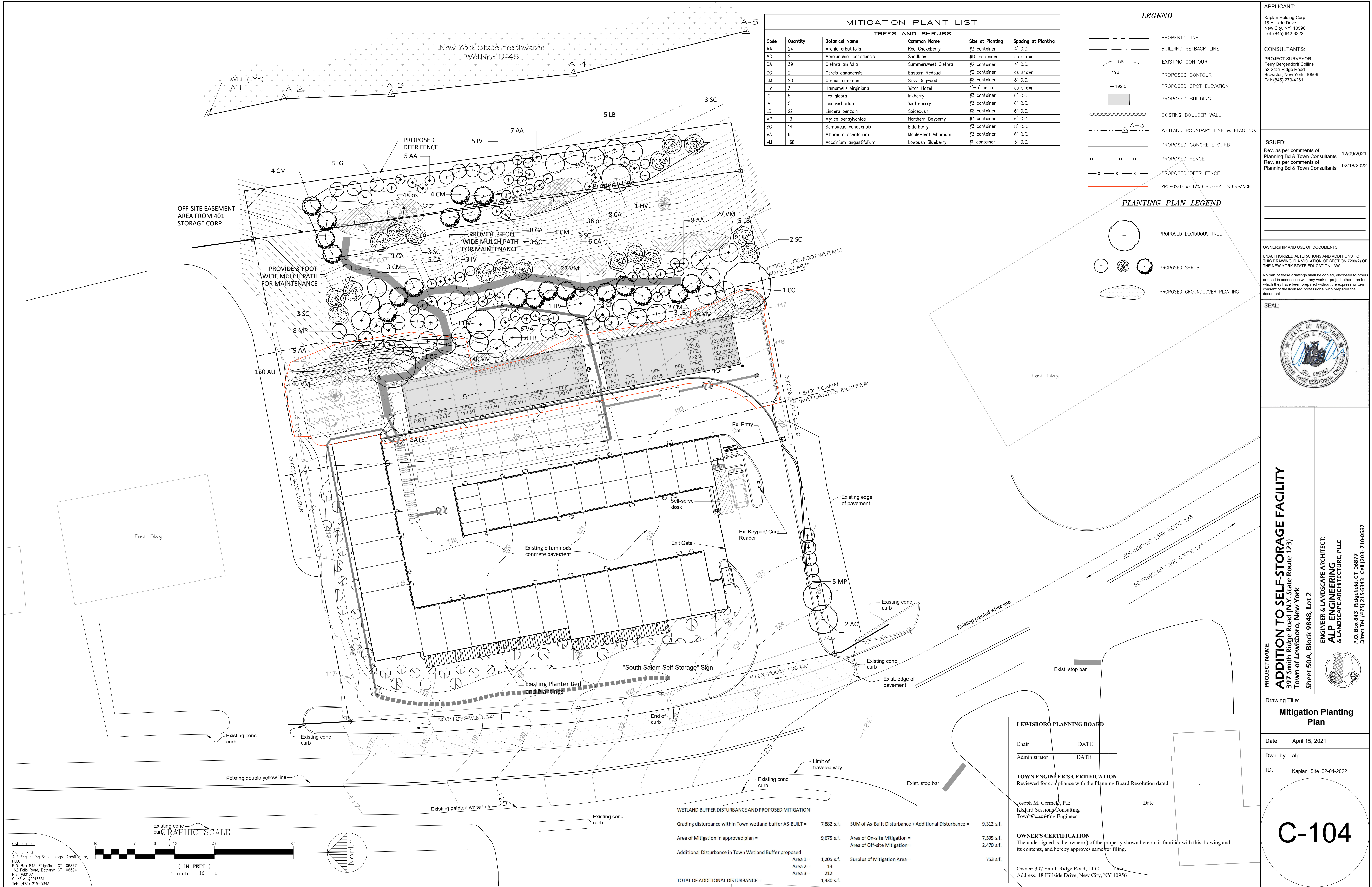








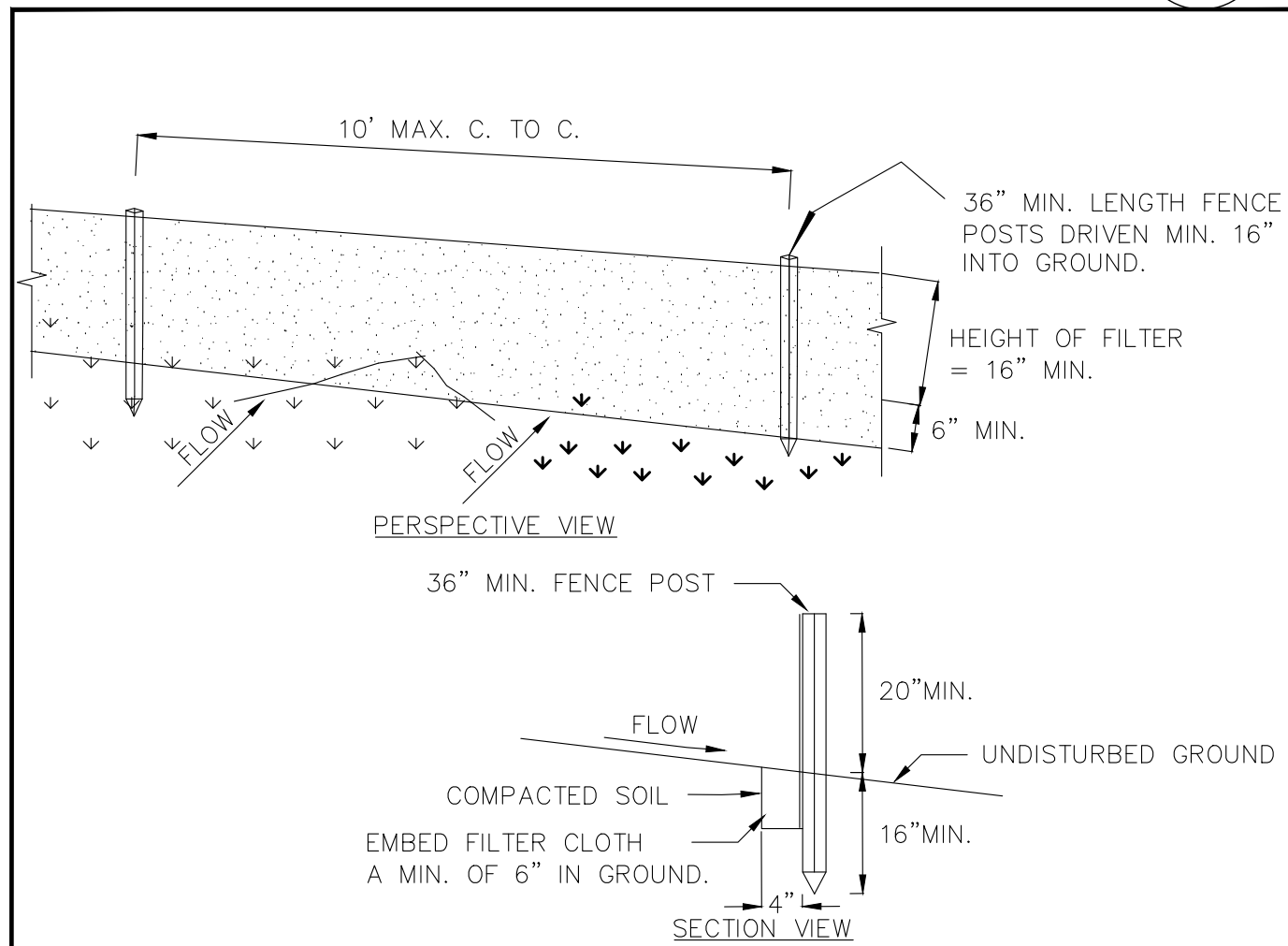






## Silt Fence

1



### CONSTRUCTION SPECIFICATIONS

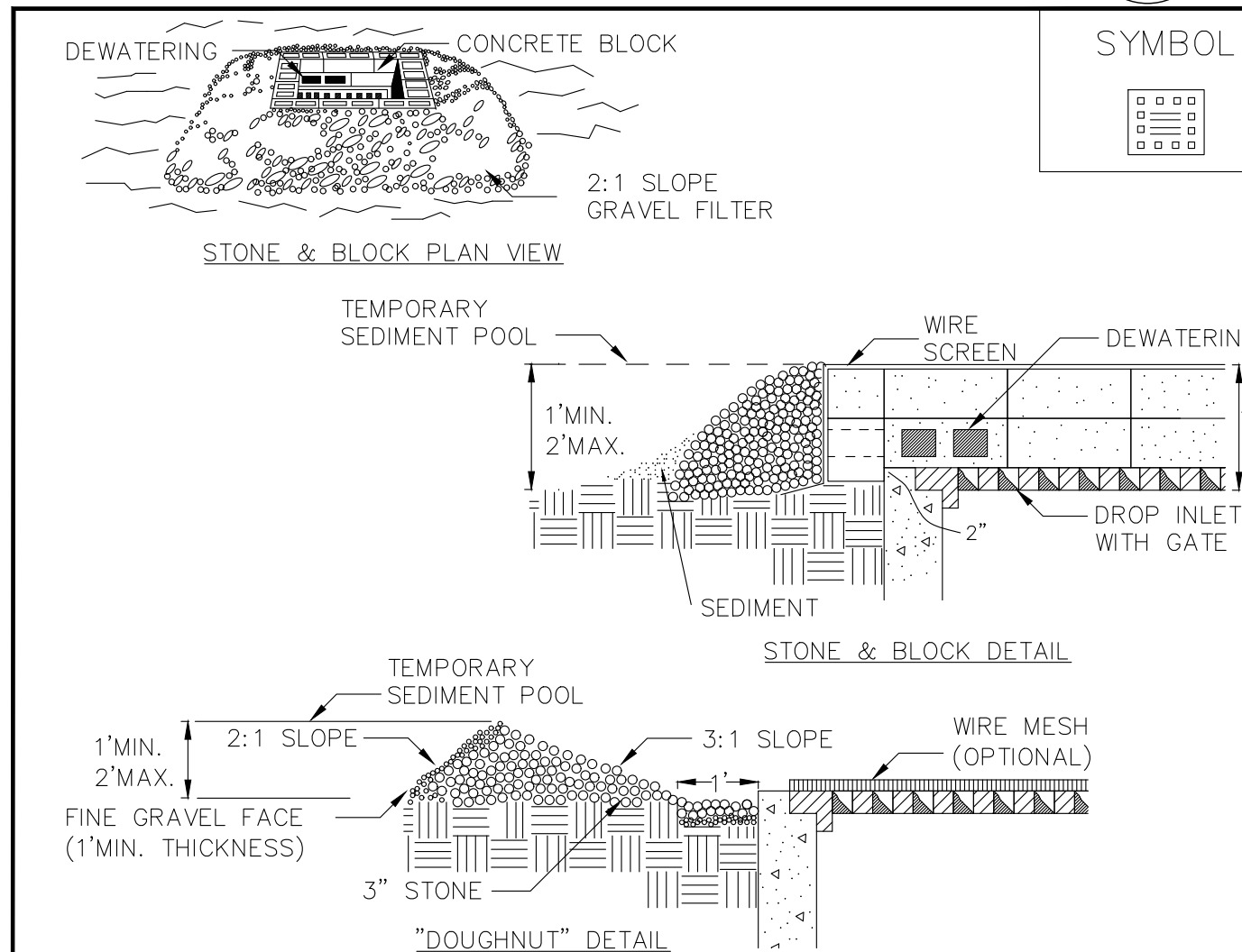
- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
- FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
- PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,  
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,  
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,  
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

SILT FENCE

## Stone and Block Inlet Protection

4



### CONSTRUCTION SPECIFICATIONS

- LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
- HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
- USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
- FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

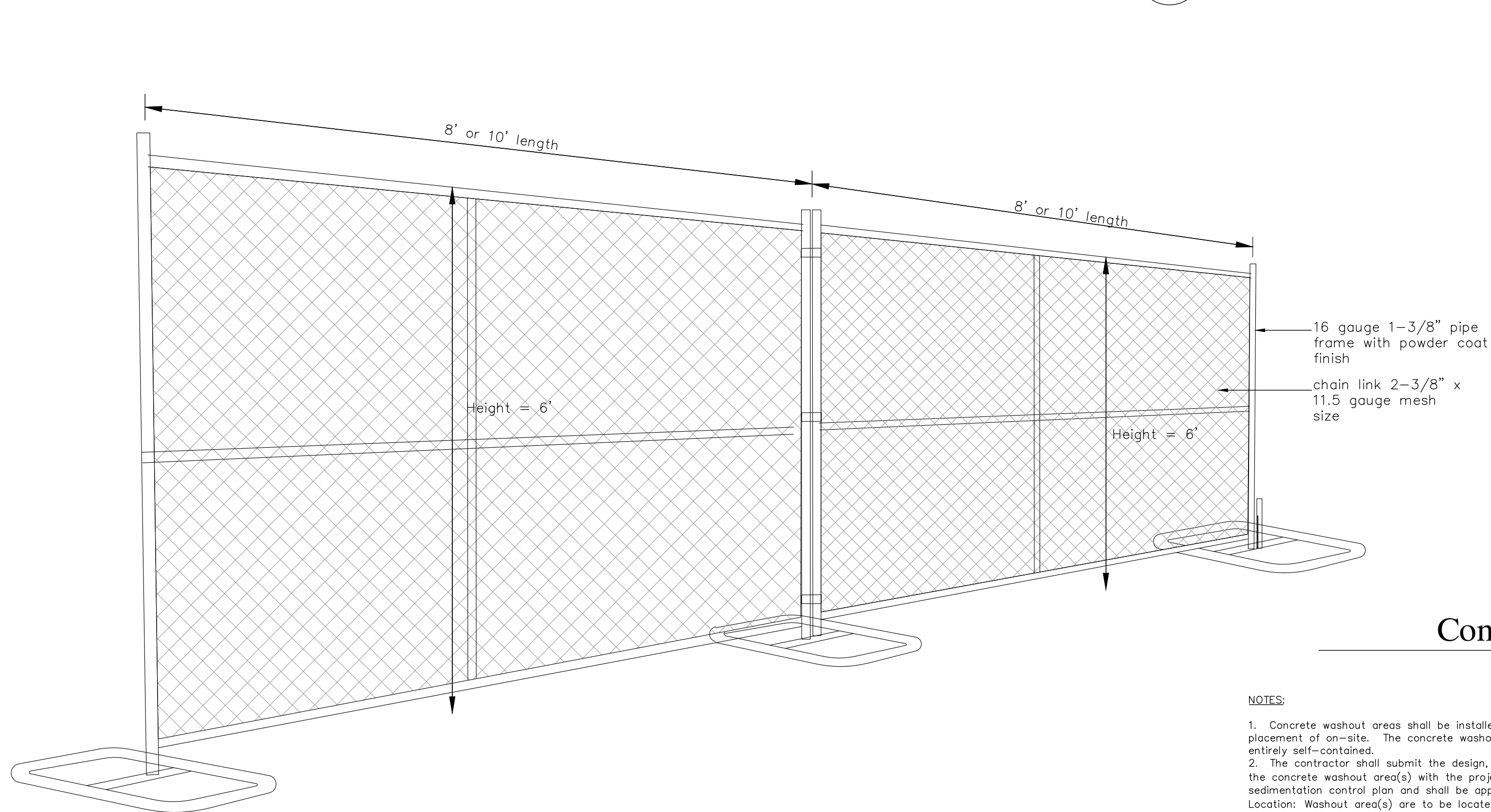
MAXIMUM DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,  
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,  
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,  
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE & BLOCK  
DROP INLET  
PROTECTION

## Chain Link Construction Fence / Barrier

2

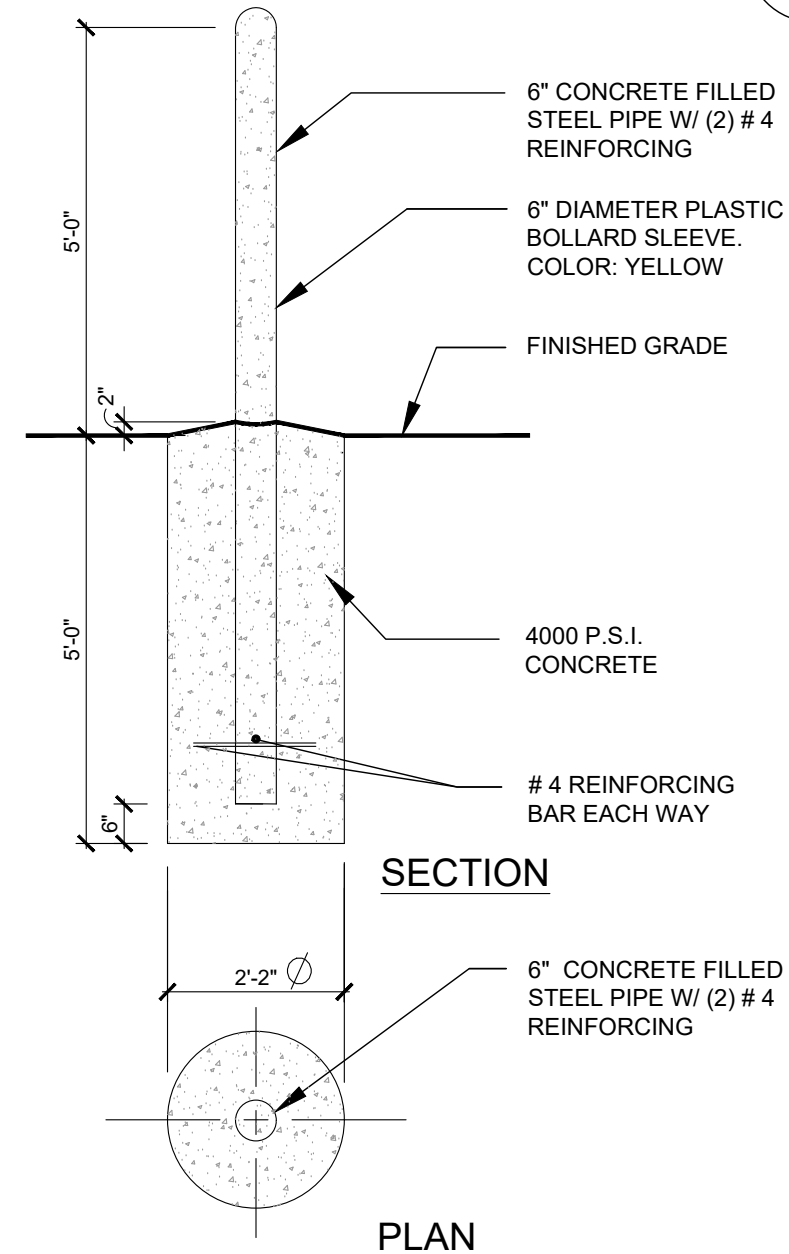


### NOTES:

- Concrete washout areas shall be installed prior to concrete placement of on-site. The concrete washout area shall be entirely self-contained.
- The contractor shall submit the design, location and sizing of the concrete washout area(s) with the project's erosion and sedimentation control plan and shall be approved by the engineer. Location: Washout area(s) are to be located at least 50 feet from any stream, wetland, storm drains, or other sensitive resource. The flood contingency plan must address the concrete washout. If the washout is to be located within the floodplain. Size: the washout must have sufficient volume to contain all liquid and concrete waste generated by washout operations including, but not limited to, operations associated with grout and mortar.
- Surface discharge is unacceptable. Therefore, hay bales or other control measures, as approved by the engineer, should be used around the perimeter of the concrete washout area for containment.
- Signs should be placed at the construction entrance, at the concrete area(s) and elsewhere as necessary to clearly indicate the location of the concrete washout to operators of concrete trucks and pump rigs. Washout area(s) should be flagged with safety fencing or other approved method.
- Washout area(s) are to be inspected at least once a week for structural integrity, adequate holding capacity and check for leaks, tears or overflow. (As required by the construction site environmental inspection report, washout areas should be checked after heavy rains.)
- Hardened concrete waste should be removed and disposed of when the waste has accumulated to half the concrete washout's height. The waste can be stored at an upland location, as approved by the engineer. All concrete waste shall be disposed of in a manner consistent with all applicable laws, regulations and guidelines.
- Payment for this item is to be included under the general cost of the work for the project, including site restoration.

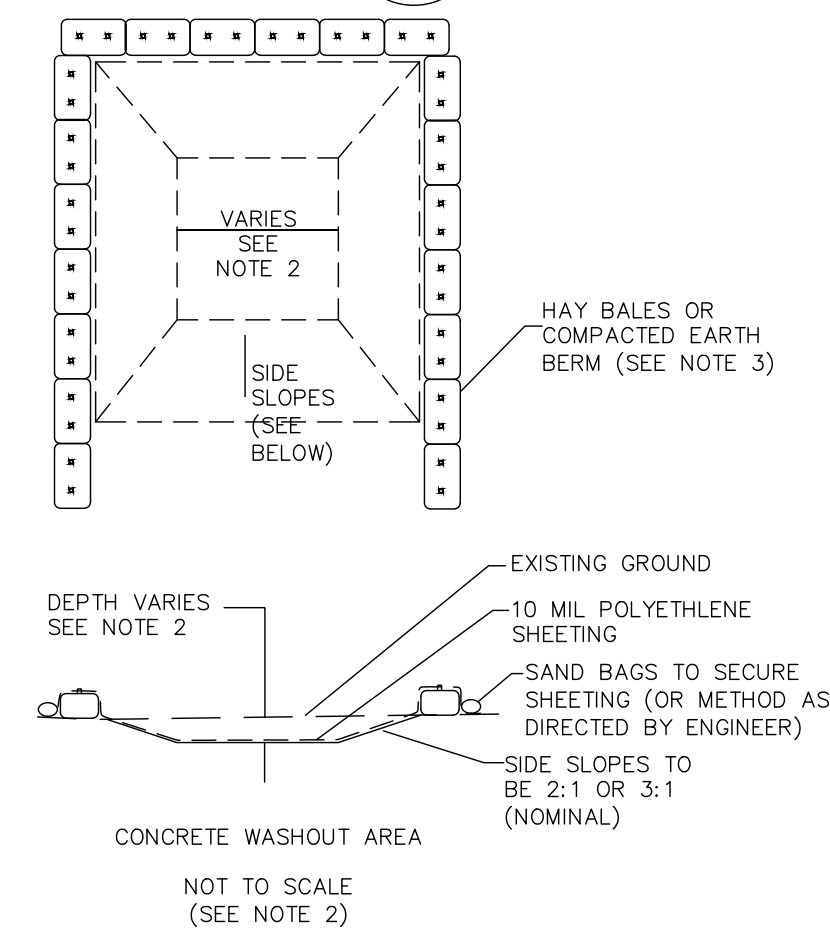
## Concrete Bollard

3



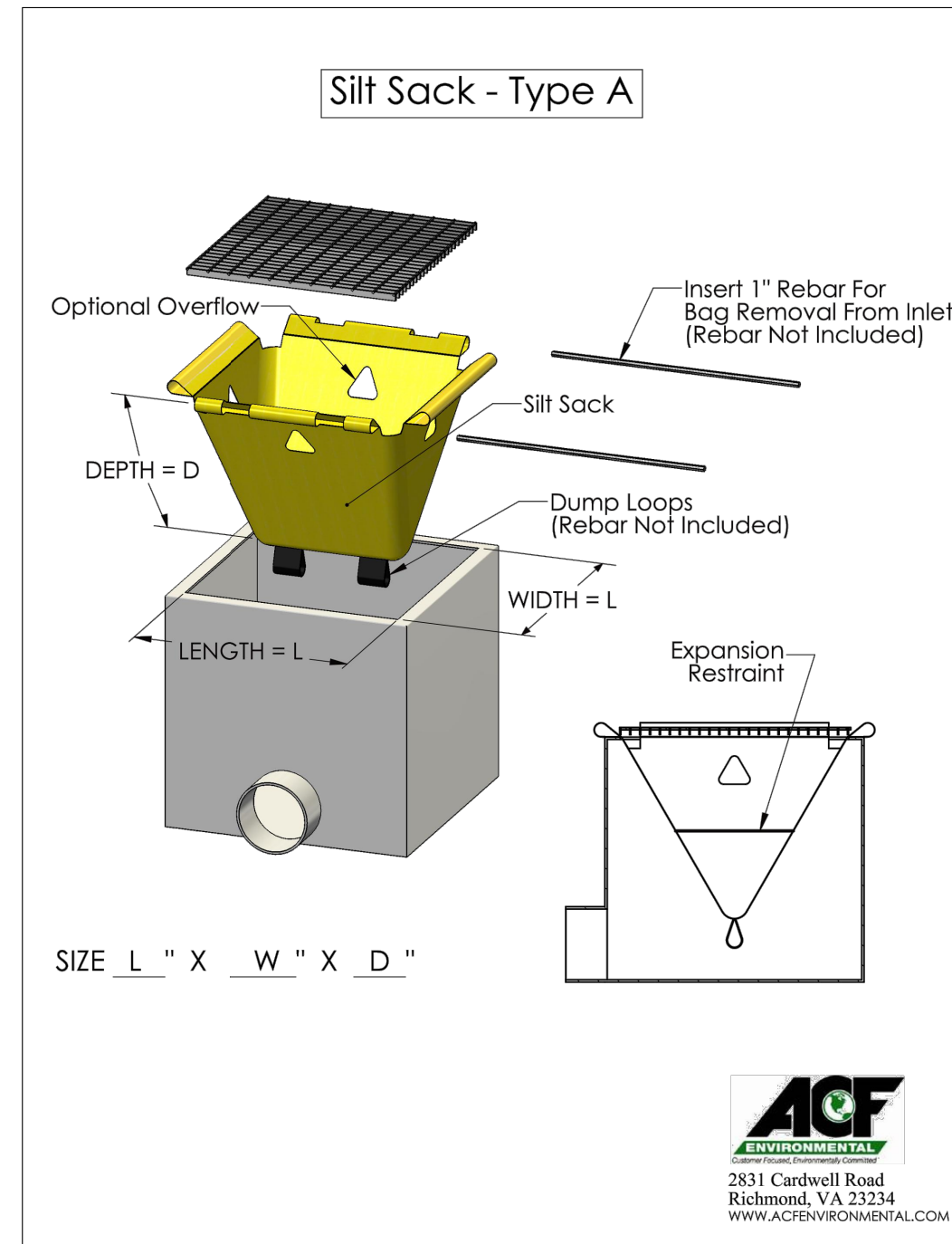
## Concrete Washout

7



## Silt Sack Inlet Protection

8



Civil Engineer:  
Alap L. Plick  
ALP Engineering & Landscape Architecture, PLLC  
P.O. Box 843, Ridgefield, CT 06877  
162 Falls Road, Bethany, CT 06524  
P.E. #80167  
C. of A. #0016331  
Tel: (475) 215-5343

### APPLICANT:

Kaplan Holding Corp.  
18 Hillside Drive  
New City, NY 10596  
Tel: (845) 842-3322

### CONSULTANTS:

PROJECT SURVEYOR:  
Terry Bergendorff Collins  
52 Starr Ridge Road  
Brewster, New York 10509  
Tel: (845) 279-4261

### ISSUED:

Rev. as per comments of  
Planning Bd & Town Consultants 12/09/2021  
Rev. as per comments of  
Planning Bd & Town Consultants 02/18/2022

### OWNERSHIP AND USE OF DOCUMENTS

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document.

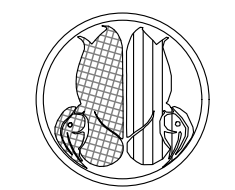
### SEAL:



PROJECT NAME:  
**ADDITION TO SELF-STORAGE FACILITY**  
397 Smith Ridge Road (N.Y. State Route 123)  
Town of Lewisboro, New York  
Sheet 50-A, Block 9848, Lot 2

ENGINEER & LANDSCAPE ARCHITECT:  
**ALP ENGINEERING**  
& LANDSCAPE ARCHITECTURE, PLLC

P.O. Box 843 Ridgefield, CT 06877  
Direct Tel: (475) 215-5343 Cell (203) 710-0587



### Drawing Title:

**Construction  
Details**

Date: April 15, 2021

Dwn. by: alp

ID: Kaplan\_Site\_02-04-2022

**C-111**

### LEWISBORO PLANNING BOARD

Chair DATE  
Administrator DATE

### TOWN ENGINEER'S CERTIFICATION

Reviewed for compliance with the Planning Board Resolution dated \_\_\_\_\_.

Joseph M. Cernello, P.E.  
Kellard Sessions Consulting  
Town Consulting Engineer

Date

### OWNER'S CERTIFICATION

The undersigned is the owner(s) of the property shown hereon, is familiar with this drawing and its contents, and hereby approves same for filing.

Owner: 397 Smith Ridge Road, LLC Date  
Address: 18 Hillside Drive, New City, NY 10596



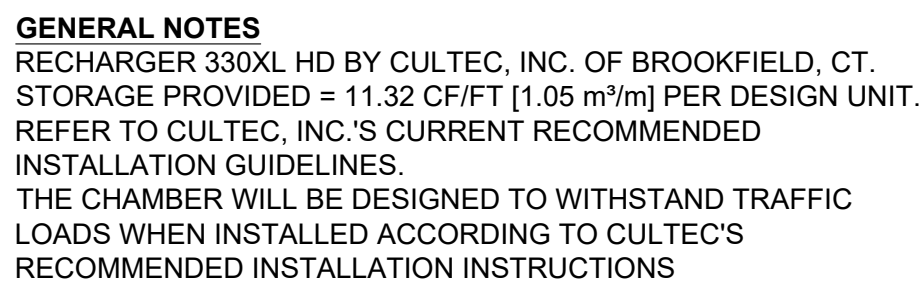
6



Installation Instructions for the Erosion Eel™

1. Erosion Eels can be placed at the top, on the face, or at the toe of slopes to intercept runoff, reduce flow velocity, releasing the runoff as sheet flow, and provide reduction/removal of suspended solids from the runoff.
2. Erosion Eels shall be installed along the ground contour, at the toe of slopes, at an angle to the contour to direct flow as a diversion berm, around inlet structures, in a ditch as a check dam to help reduce suspended solids loading and erosion of sediment, or as a general filter for any disturbed soil area.
3. No trenching is required for installation of Erosion Eels.
4. Prepare the bed for Eel installation by removing any large debris including rocks, soil clods, and woody vegetation (>1 inch in size). Erosion Eels can also be placed over paved surfaces including concrete and asphalt with no surface preparation required.
5. Rake bed area with a hand rake or by drag harrow.
6. All surfaces shall be uniformly and well-compacted for maximum seating and stability of the Eels in place.
7. Do not place Eel directly over rills and gullies until area has been hand excavated and raked to provide a level bedding surface in order for the Eels to seat uniformly with no bridging effects that would allow flow to bypass under the bag.
8. For locations where Eels will be placed in concentrated flows (such as check dams, inlet protection) and for perimeter controls at primary discharge locations, bed the Eels in a jute mesh (or FlacoMatTM) cradle.
9. If more than one erosion Eel is placed in a row, install the Eels by firmly pulling the sewn end against tied end of the Eels together to form a butt joint. No wraps are required around the joints locations.
10. Eels shall be installed where the handles will be positioned at the very top of the bag.

5



ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.

ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS

2



1. TYPE II TRENCH, MATERIAL FOR SELECT BEDDING AND SELECT BACKFILL SHALL BE:  
A. EITHER SAND OR CRUSHED STONE IF NO WATER IS ENCOUNTERED IN TRENCH.  
B. CRUSHED STONE IF WATER IS ENCOUNTERED IN TRENCH.
2. TYPE II TRENCH SHALL BE USED IN ALL OF THE FOLLOWING CIRCUMSTANCES:  
A. FOR ALL FIVE PIPE AND CONDUIT MATERIALS.  
B. WHEN ROCK OR HARDPAN IS ENCOUNTERED IN BOTTOM OF TRENCH.  
C. WHEN UNSUITABLE MATERIAL IS ENCOUNTERED IN BOTTOM OF TRENCH, IN SUCH CASE DEPTH OF UNDERDIGGING SHALL BE AS DIRECTED BY THE ENGINEER WITH A MINIMUM:  
3. FOR ALL TRENCH EXCAVATION IN FILL AREAS, ALL EMBANKMENTS SHALL BE CONSTRUCTED TO BE AT LEAST 2 FEET ABOVE TOP OF TRENCH (AT THE BELL) OF THE PIPE PRIOR TO BEGINNING ANY TRENCH EXCAVATION.
4. SELECT BEDDING - SHALL CONSIST OF A BED OF PROPERLY COMPACTED GRANULAR BEDDING MATERIAL (SAND OR CRUSHED STONE AS SPECIFIED) HAVING A COMPACTED THICKNESS OF AT LEAST SIX (6) INCHES BELOW THE BOTTOM OF THE TRENCH. THE BEDDING SHALL BE COMPACTED TO A MINIMUM OF AT LEAST 30% OF ITS DIAMETER OR RISE. THE LAYER OF BEDDING MATERIAL SHALL BE SHAPED TO FIT THE PIPE OR CONDUIT FOR AT LEAST 15% OF THE OUTSIDE DIAMETER OR RISE OF THE PIPE OR CONDUIT AND TO CONFORM TO THE SHAPE OF THE REMAINDER OF THE TRENCH. THE BEDDING SHALL BE CLEAN, WELL-GRADED SAND CONSISTING OF HARD, DURABLE PARTICLES FREE FROM LUMPS OF CLAY, OR OTHER DELTERIOUS SUBSTANCES. CRUSHED STONE SHALL BE WELL-GRADED CRUSHED STONE CONFORMING TO ASTM DESIGNATION C-33, SIZE NO. 67.
5. STANDARD BACKFILL - SHALL CONSIST OF ON-SITE MATERIAL (EARTH) APPROVED BY THE OWNER'S FIELD REPRESENTATIVE AND/OR SOILS ENGINEER. SHOULD THERE BE A DEFICIENCY OF PROPER ON-SITE MATERIAL FOR BACKFILLING, THE CONTRACTOR SHALL FURNISH, PLACE AND COMPACT ADDITIONAL PROPER BACKFILL MATERIAL.
6. SELECT BACKFILL - SHALL CONSIST OF GRANULAR MATERIAL (SAND OR CRUSHED STONE AS SPECIFIED) APPROVED BY THE OWNER'S FIELD REPRESENTATIVE AND/OR SOILS ENGINEER. SAND SHALL CONSIST OF CLEAN, WELL GRADED, HARD, DURABLE PARTICLES, FREE OF LUMPS OF CLAY, LOAM AND ALL OTHER DELTERIOUS SUBSTANCES. CRUSHED STONE SHALL CONSIST OF WELL GRADED CRUSHED STONE CONFORMING TO ASTM DESIGNATION C-33, SIZE NO. 67.
7. BACKFILL FOR PIPE AND CONDUIT SHALL BE PLACED EVENLY AND CAREFULLY AROUND AND OVER THE PIPE OR PIPE IN SIX (6) INCH MAXIMUM LAYERS. EACH LAYER SHALL BE THOROUGHLY AND CAREFULLY COMPACTED UNTIL TWELVE (12) INCHES OF COVER EXISTS OVER THE PIPE OR CONDUIT. THE REMAINDER OF THE BACKFILL SHALL BE COMPACTED TO A MINIMUM OF TWELVE (12) INCH LAYERS. EACH LAYER SHALL BE COMPACTED BY APPROVED MEANS, SUCH AS TAMING MACHINE.

3



1. ALL POSTS, RAILS, FABRIC AND ACCESSORIES SHALL BE BLACK VINYL-COATED GALVANIZED AND SHALL MATCH THE EXISTING CHAIN LINK FENCE INSTALLED ON THE PROPERTY.
2. POST AND RAILS SHALL BE STANDARD FULL WEIGHT GALVANIZED SCHEDULE 40 PIPE MANUFACTURED AND GALVANIZED IN ACCORDANCE WITH ASTM A153. ALL MATERIALS SHALL BE NEW AND FIRST CLASS AND SHALL NOT INCLUDE RECONDITIONED OR REROLLED PIPE.
3. FITTINGS SHALL BE MALLEABLE IRON FITTINGS CONFORMING TO THE REQUIREMENTS OF ASTM A47 GALVANIZED IN ACCORDANCE WITH ASTM A153.
4. FABRIC SHALL BE 9 GAUGE GALVANIZED 2" MESH. TOP RAILING SHALL HAVE KNUCKLED FINISH.
5. TENSION WIRE SHALL BE 7 GAUGE MEETING THE REQUIREMENTS OF ASTM A641 AS MODIFIED HEREIN. THE TENSILE STRENGTH SHALL BE AT LEAST 80,000 PSI WITH A GALVANIZED COATING OF NOT LESS THAN 0.7 PER SQUARE FOOT.
6. FABRIC TIES SHALL BE MINIMUM 9 GAUGE GALVANIZED STEEL OR ALUMINUM. MINIMUM SPACING SHALL BE AS FOLLOWS:
  - A. 14" O.C. AT LINE POSTS
  - B. 24" O.C. AT TOP RAIL
  - C. 12" O.C. AT TENSION WIRE
7. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT SHOP AND ERECTION DRAWINGS INDICATING MATERIALS SIZES AND DIMENSIONS OF FENCING TO THE OWNER'S FIELD REPRESENTATIVE PRIOR TO ORDERING MATERIALS FOR HIS REVIEW AND APPROVAL.
8. PRIOR TO INSTALLATION OF THE FENCE, THE CONTRACTOR SHALL CHECK THE FENCE LAYOUT WITH THE OWNER'S FIELD REPRESENTATIVE WHO MUST APPROVE THE LAYOUT BEFORE ANY OF THE WORK IS TO BE

4



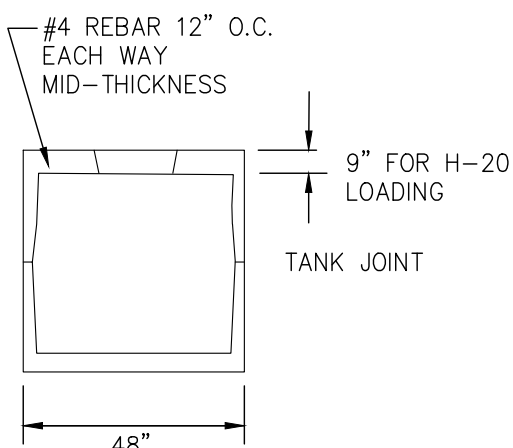
- NOTES:

1. MINIMUM CROSS SLOPE SHALL BE 1/8" PER FOOT, UNLESS OTHERWISE INDICATED ON DRAWINGS.
2. PROVIDE 1/4" PREMOLDED EXPANSION JOINTS AT 20' INTERVALS UNLESS OTHERWISE DIRECTED.
3. REINFORCING SHALL NOT EXTEND THROUGH CONSTRUCTION JOINTS.

7



1. STEEL REINFORCEMENT ASTM A496-A615 GRADE 60-60 ksi
2. JOINTS SEALED WITH ASPHALT CEMENT OF EQUAL.
3. CONCRETE 4000 PSI @ 28 DAYS, 5%-9% AIR ENTRAINMENT.
4. EQUIPPED WITH POLYLOK SEALS.
5. TANK SHALL MEET H-20 LOADING.
6. PRODUCT OF MID-HUDSON CONCRETE.



## 6



APPLICANT:

Kaplan Holding Corp.  
18 Hillside Drive  
New City, NY 10596  
Tel: (845) 642-3322

CONSULTANTS:

PROJECT SURVEYOR: \_\_\_\_\_

52 Starr Ridge Road  
Brewster, New York 10509  
Tel: (845) 279-4261

**ISSUED:**

Rev. as per comments of Planning Bd & Town Consultants	12/09/2021
Rev. as per comments of Planning Bd & Town Consultants	02/18/2022

OWNERSHIP AND USE OF DOCUMENTS

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SEAL:



PROJECT NAME: **ADDITION TO SELF-STORAGE FACILITY**

Drawing Title:

## Construction Details

Date: April 15, 2021

Dwn. by: alp

ID: Kaplan Site 02-04-2022

Town Consulting Engineer

**OWNER'S CERTIFICATION**  
The undersigned is the owner(s) of the property shown hereon, is familiar with this drawing and its contents, and hereby approves same for filing.

Owner: 397 Smith Ridge Road, LLC      Date \_\_\_\_\_  
Address: 18 Hillside Drive, New City, NY 10956

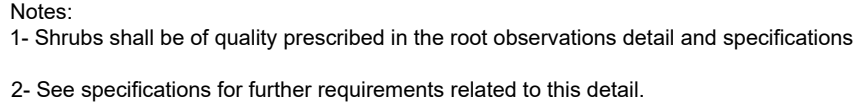
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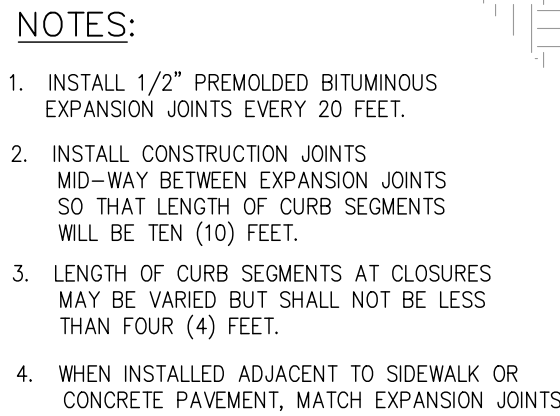
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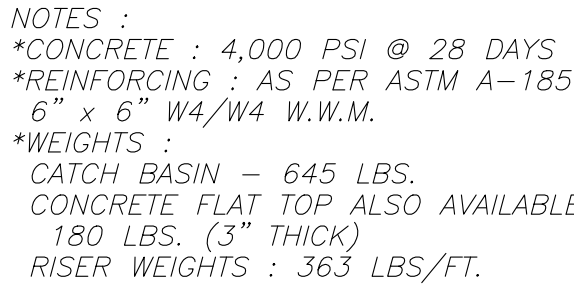
## 4



1



## 2



## 23



Kaplan Holding Corp  
18 Hillside Drive  
New City, NY 10596  
Tel: (845) 642-3322

**PROJECT SURVEYOR:**  
Terry Bergendorff Collins  
52 Starr Ridge Road  
Brewster, New York 10511  
Tel: (845) 279-4261

Rev. as per comments of  
Planning Bd & Town Consultants 02/18/2022

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**ADDITION TO SELF-STORAGE FACILITY**  
397 Smith Ridge Road (N.Y. State Route 123)

**PROJECT NAME:**



ENGINEER & LANDSCAPE ARCHITECT:  
**ALP ENGINEERING**  
 & LANDSCAPE ARCHITECTURE, PLLC

P.O. Box 843 Ridgefield, CT 06877  
Direct Tel. (475) 215-5343 Cell (203) 710-0587

## Construction Details

Date: December 9, 2021

Dwn. by: alp

ID: Kaplan\_Site\_02-04-2022

7

\_\_\_\_\_

6-15

\_\_\_\_\_

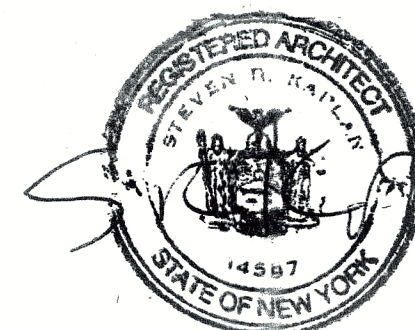
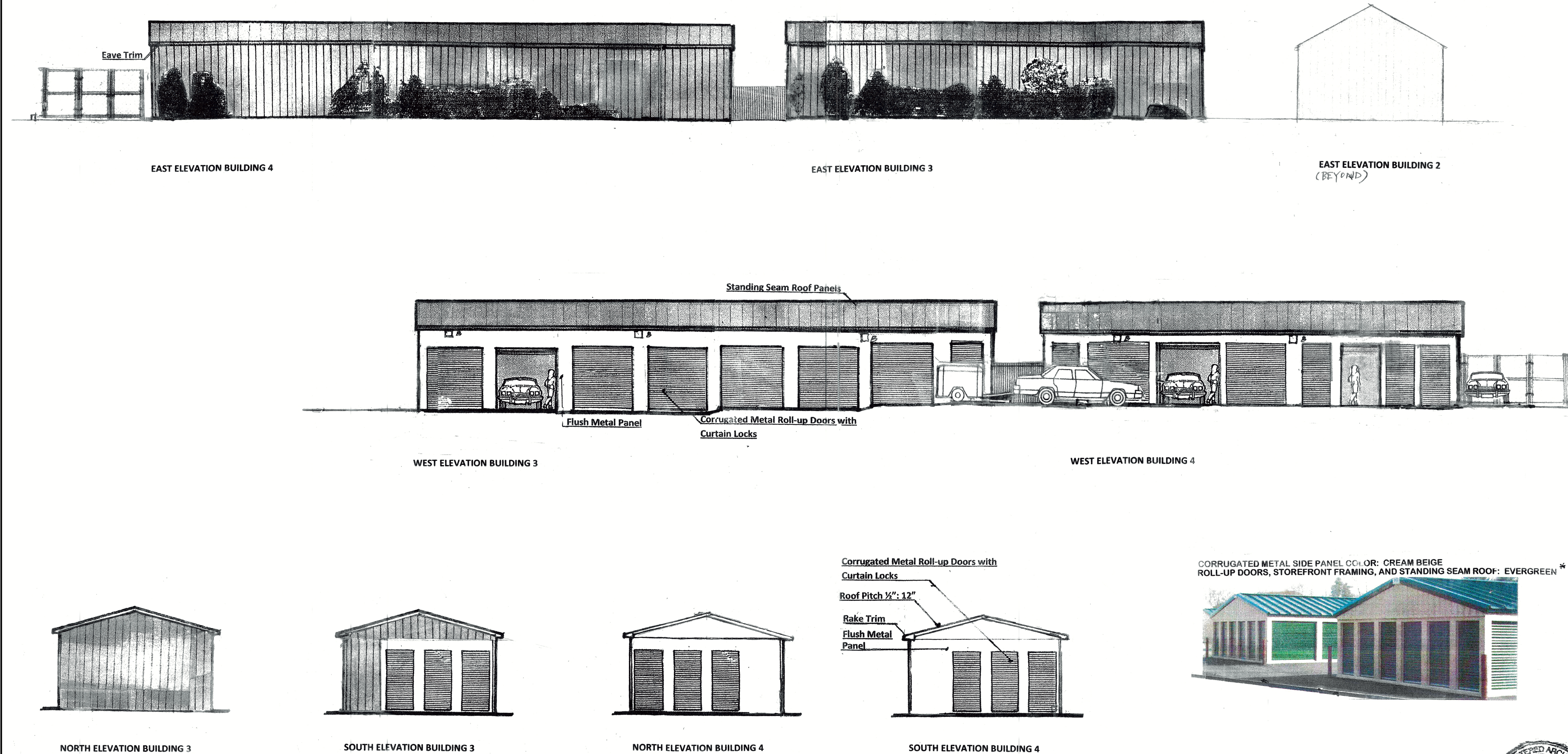
\_\_\_\_\_

A graph of a parabola opening upwards, tangent to the x-axis at the origin. The vertex of the parabola is at (0, 0).



Owner: 397 Smith Ridge Road, LLC      Date \_\_\_\_\_  
Address: 18 Hillside Drive, New City, NY 10956





\*All new materials to match existing facility materials in type and color.

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ARCHITECT:  
**Steven R. Kaplan Architect  
& Associates PLLC**  
18 Hillside Drive  
New City, New York 10956  
Tele: 845-634-1134 Cell: 845-642-3322  
Email: skaplanarchitects@gmail.com

PROJECT:  
PROPOSED ADDITION TO:  
**SOUTH SALEM SELF-STORAGE**  
397 Smith Ridge Road  
South Salem, New York 10950

DATE: 1/14/2022 SCALE: 1/8"=1'-0"

SUBMISSION/REVISIONS

**ELEVATIONS**

DRAWING TITLE

**A-1**



## Ciorsdan Conran

---

**From:** tatiana rozo <tatiana\_rozo@hotmail.com>  
**Sent:** Saturday, January 22, 2022 8:55 AM  
**To:** planning@lewisborogov.com  
**Subject:** Storage Facility vista

Just read about the proposal to expand the storage facility at vista. The new buildings would encroach upon an existing wetland buffer. Many of home owners in town have encountered resistance by the planning board in town due to wetlands. I had to fight to build my addition and I am not allowed to pave my driveway as they are in the buffer zone. Not "creative" solutions were provided by the board as they are considering for this facility. Why businessses have more rights then owners? Why we are allowing to expand a cold building instead of bringing other family friendly business in town? I am located in Glen drive and I am opposed to the expansion of the storage facility so I am asking the board not to have any preferential treatment or exceptions for this project considering many residents are bound and limited by wetlands restrictions. We struggled with an addition and then we have been living with an unpaved impossible to plow driveway. Please do the right thing!!

Sent from my iPhone

## Ciorsdan Conran

---

**From:** Daniela Goldman <dgoldman7@yahoo.com>  
**Sent:** Saturday, January 22, 2022 9:23 AM  
**To:** planning@lewisborogov.com; Tony Goncalves  
**Subject:** South salem storage

I am writing in regards to the recent request to expand south salem storage and encroachment on wetlands. As a resident of the area I strongly encourage you to decline this request.

Expansion of a business that does not add any additional benefit to the community and is asking for exception to the wetlands rule is wrong. When we added a small porch on to the front of our home, we followed the rules and did appropriate wetlands mitigation. Why would we allow a business to get special privileges? Expansion of this business will not add jobs to the people of the area, does not add to the small town feel- let alone it's an eye sore.

I urge you to decline this project.

Daniela Goldman  
Sent from my iPhone