January 8, 2024

Mr. Robert Melillo, Building Inspector
Town of North Castle
17 Bedford Road
Armonk, NY 10504

Re: Response to Engineering Comments
45 Bedford Road
Town of North Castle, New York
Langan Project No.: 190085001

Dear Mr. Melillo:

The following is an itemized response to the comments received from James J. Hahn Engineering P.C. in the letter dated November 27, 2023, for the above referenced application. For ease of review, the comments are *italicized,* and our responses are in **bold** text:

James J. Hahn Engineering P.C. Letter, *dated November 27, 2023*

1. *As previously mentioned, the applicant is proposing to fill in the floodplain that will reduce the storage volume for the FEMA 100 year flood event, which includes filling in the regulatory floodway. To offset the reduction in volume, the applicant is proposing to remove fill in another location to construct a "floodplain volume compensation area" to provide additional storage. However, the proposed fill is in the location where the floodplain channel enters the site thereby altering the channel dimensions which may reduce the capacity of the channel. Flow entering the site and the flood rise must be analyzed and demonstrated that the proposed floodway filling and floodplain modifications will not result in flood level rise nor adversely impact storage areas. The demonstration should also include a comparison of pre and post development floodplain volumes and cross sections as applicable. Additionally, the limits of the regulatory floodway should be shown on the plans.*

   Response: The limits of the regulatory floodway are shown on Sheet CD101. We were able to remove the previously proposed fill from the floodway by adding a steeper rip-rap slope behind the two adjacent units. We have also included a plan with this submission that shows the limits of the existing floodplain with the proposed floodplain after the change in grades. It's important to note that we have provided a larger volume of flood storage under the proposed condition than exists on site today.

We also have a meeting scheduled with the Building Inspector on January 10th to review all of the floodplain and floodway issues and will respond accordingly after that meeting.

2. *As previously mentioned and contrary to the response memorandum, the proposed floodplain compensation basin is being used for both new FEMA floodplain volume compensation storage and site stormwater runoff storage as demonstrated by the inclusion of Node 20P in the HydroCAD model. As a result, the stormwater being detained in the basin will reduce the amount floodplain storage volume. If the basin is intended to provide both FEMA floodplain storage and site stormwater runoff storage, then adequate floodplain modeling should be provided to demonstrate how the two volumes interact and that there will be adequate floodplain volume during the FEMA 100 year flood event.*

   Response: The flood compensation area along Maple Avenue has been regraded to remove the previously proposed stormwater storage. The full area is now only used for flood mitigation and is not used for stormwater runoff storage. See Sheet CG101.

3. *As previously mentioned, as the proposed floodplain basin fills it will backfill the infiltration system "#1P" thereby impacting the storage volume of #1P. The overflow for #1P should be set above the floodplain elevation. The same should also be applied to infiltration system "#2P".*

   Response: A flap valve has been added to the end of the outlet pipes from both underground infiltration systems. These valves will not allow flood waters to backflow into underground infiltration. See Sheet CG101.

4. *As previously mentioned, pursuant to Town Board Resolution Condition #8, the requested sidewalk to Armonk Square should be shown. The applicant has stated that they will work with the Town to find a solution.*

   Response: Acknowledged.

5. *As previously mentioned, the proposed project should be reviewed by the local fire department, the Town Water and Sewer Department and the County Department of Health. Any comments from the reviewing agencies and utility easement descriptions should be addressed. The applicant has acknowledged this.*

   Response: Acknowledged.

6. *As previously mentioned, a network map should be provided for the existing conditions hydrologic model. Additionally, the design data used in the model should be provided, including pond sizing data, outlet information, etc. Based on the information provided, it is unclear how the existing condition peak runoff rates were calculated. The applicant has stated in their response that the existing conditions model was previously approved, implying this information is not needed. This office did not review the "previously approved project" and to our knowledge a MS4 SWPPP Acceptance sign-off was not issued for that project.*

Response: A network map and analysis of the updated existing drainage conditions is provided in Appendix D of the SWPPP report. We have re-analyzed the existing conditions using HydroCAD and have included the analysis in the updated SWPPP. See Table 3-9 in the SWPPP narrative for an updated comparison of pre and post development runoff rates.

7. *As previously mentioned, it should be demonstrated that the proposed easement for the widening of Bedford Road is wide enough for a future turning lane. The demonstration should include all pertinent information, such as pavement markings, land widths, queuing, turning movements, etc.*

   Response: The project applicant is willing to provide an easement to accommodate the turn lane. The exact dimensions of the easement are pending the detailed design of the turn lane and any necessary improvements.

8. *As previously mentioned, any footing drain discharge locations should be shown. Footing drains should not discharge into the stormwater management system. Discharge locations were not provided.*

   Response: The buildings have not been fully designed at this point, but conceptual footing drainage locations are shown on Sheet CG101. A note stating that footing drains shall not connect to the drainage system has been added to the plan as well.

9. *As previously mentioned, the location of trees should be coordinated with the utilities plan. Some of the proposed red maple trees are located in close proximity to the sewer main and some of the river birches are located over the infiltration system.*

   Response: The proposed trees have been moved away from the sewer line, and the trees and light moved away from the infiltration system. See the revised sheet LP101 in the plan set.

10. *As previously mentioned, the proposed water main material should be stated on the plans.*

    Response: The water main material is 8" DIP Class 52 as shown on Sheet CU101.

11. *The SWPPP notes that watercourse is USACE jurisdictional. Any required USACE permits must be obtained.*

    Response: There will be no disturbance in the watercourse, therefore USACE permits are not required.

12. *For the 100-year scenario, the peak elevation of 20P is above the provided available storage and resulted in model oscillations. The model should be reviewed for errors.*

    Response: The model has been revised accordingly to remove the storage that was within the floodplain and causing errors in the model. Refer to Appendix F in the SWPPP.

13. *Offsite areas will contribute to the design points, specifically DP-2, and will have an impact on the HydroCAD model. The model should be revised.*

    Response: Offsite areas remain the same after development, therefore their contribution is not included in pre- and post-development analysis. The new bus stop and sidewalk along Maple Avenue will be graded to drain into the catch basin at the Maple Ave-Bedford Rd intersection. See Sheet CG101.

14. *It appears the pre-treatment has been revised to hydrodynamic separators. Pre-treatment sizing should be provided and the SWPPP narrative should be updated.*

    Response: The sizing calculations for the pre-treatment units have been added to Appendix C of the SWPPP and a detail has been added to the plans.

15. *Schedule A referenced in the Stormwater Facility Maintenance Agreement should be provided.*

    Response: Schedule A has been attached to the Stormwater Facilities Maintenance Agreement and is included in this submission.

16. *The wetland buffer disturbance area should include the 12 inch diameter pipe in the flood compensation area.*

    Response: The wetland buffer disturbance area has been revised to include the discharge pipe. See Sheet CS101.

17. *The limits of disturbance have increased from the previous submission. The area should be listed on Sheet CE101 and the NOI should be revised to match. Additionally, the limits of disturbance should be revised to include all proposed work, including sidewalk replacement and wall installation in the right-of-way.*

    Response: The area of disturbance has been revised and added to the plans and coordinated with the SWPPP.

18. *A detail for the proposed decorative stone wall should be provided. The wall should not adversely impact existing or future sight distances.*

    Response: The decorative stone wall is no longer part of the proposed design.

Should you have any questions or require any additional information, please do not hesitate to contact me at (914) 323-7420 or mtucker@langan.com.

Sincerely,

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.

Michael Tucker, PE
Senior Project Engineer

\\langan.com\data\WPW\Data0\190085001\Project Data\Correspondence\Letters\2024-01-08 Response to Engineering Comments.docx

SITE PLAN APPROVAL DOCUMENTS

THE GATEWAY

45 BEDFORD ROAD
TOWN OF NORTH CASTLE
WESTCHESTER COUNTY, NEW YORK

SITE INFORMATION

ADDRESS: 45 BEDFORD ROAD
ARMONK, NY 10504

SECTION: 108.03
BLOCK: 1
LOT(S): 65

BLOCK: R–MF–DA (MULTIFAMILY DOWNTOWN ARMONK)

PROPERTY OWNER

NCD ACQUISITIONS

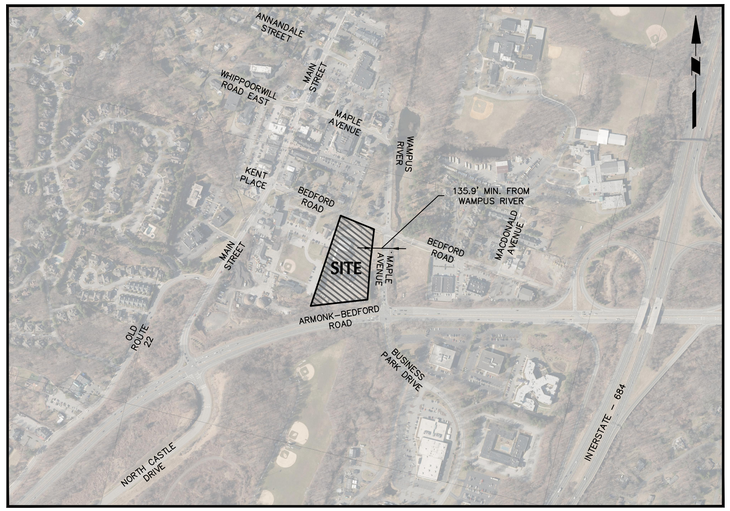
399 KNOLLWOOD ROAD
SUITE 318
WHITE PLAINS, NY 10603

APPLICANT

KINGS CAPITAL CONSTRUCTION GROUP, INC.

660 WHITE PLAINS ROAD
TARRYTOWN, NY 10591

TELEPHONE: 914–345–6799

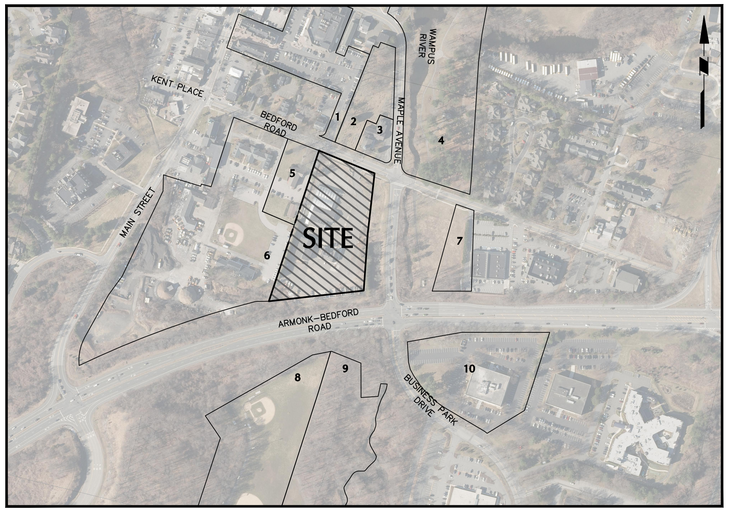


LOCATION MAP

1"=500'

DRAWING LIST		
DRAWING NO.	**SHEET NO.**	**DRAWING TITLE**
CS001	1 OF 18	COVER SHEET
GI101	2 OF 18	LEGEND AND GENERAL NOTES
CD101	3 OF 18	EXISTING CONDITIONS AND REMOVALS PLAN
CS101	4 OF 18	SITE PLAN
CG101	5 OF 18	GRADING AND DRAINAGE PLAN
CG201	6 OF 18	DRAINAGE PROFILES
CG202	7 OF 18	FLOOD PLAIN PROFILE
CU101	8 OF 18	UTILITY PLAN
CU201	9 OF 18	SANITARY SEWER PROFILES
CE101	10 OF 18	EROSION AND SEDIMENT CONTROL PLAN
CS501	11 OF 18	DETAILS (1 OF 3)
CS502	12 OF 18	DETAILS (2 OF 3)
CS503	13 OF 18	DETAILS (3 OF 3)
CS504	14 OF 18	DETAILS (4 OF 4)
LP101	15 OF 18	PLANTING PLAN
LP501	16 OF 18	PLANTING DETAILS AND NOTES
LL101	17 OF 18	LIGHTING PLAN
LL501	18 OF 18	LIGHTING DETAILS AND NOTES

Parking Requirements Table		
Use: Multifamily Dwelling Units		
Requirements	**Required**	**Proposed**
30 Townhouses X 2 spaces per dwelling unit	60	
4 (2BR) AFFH Units - 1+ 0.5/Bedroom = 4 X 2/Unit	8	
Total for units	**68**	
10% visitor	6.8	
TOTAL	**74.8**	**75***
*Includes 2 ADA-accessible spaces		



ADJACENT PROPERTIES MAP

1"=300'

ADJACENT PROPERTY OWNERS					
MAP #	**SECTION**	**BLOCK**	**LOT**	**PROPERTY OWNER**	**PROPERTY LOCATION**
1	108.01	6	41	ASQ LLC	402 Main St
2	108.03	1	13	St Stephens Church	46 Bedford Road
3	108.03	1	14	St Stephens Church	50 Bedford Road
4	108.01	6	20	Town of North Castle	Mt Kisco Road/Maple Avenue
5	108.03	1	66	American Legion	35 Bedford Road
6	108.03	1	67	Town of North Castle	15 Bedford Road
7	108.03	1	46	Town of North Castle	2 Business Park Drive
8	108.03	1	60	Town of North Castle	205 Business Park Drive
9	108.03	1	59	Town of North Castle	Maple Avenue
10	108.03	1	47	Armonk 80 Assoc. LLC	80 Business Park Drive

ZONING COMPLIANCE TABLE			
ZONING DISTRICT:	R-MF-DA (Multifamily-Downtown Armonk Residence District)		
TAX MAP ID(S):	108.03-1-65		
PROPOSED USE:	Multifamily Dwellings		
DESCRIPTION	**REQUIRED/ PERMITTED**	**PROPOSED**	**COMPLIES**
Minimum Lot Area (Acres)	4	4.17[1]	YES
Minimum Lot Frontage on Bedford Road (Feet)	200	280.0	YES
Minimum Lot Width (Feet)	200	330.0	YES
Minimum Lot Depth (Feet)	200	580.0	YES
Maximum Floor Area Ratio	0.4	0.477	NO[2]
Minimum Lot Area/Dwelling Unit (Square Feet)	4200 SF	181653 SF/34 DUs = 5342 SF/DU	YES
Land Area/Bedroom (Square Feet)	2350 SF	181653 SF/68 Beds = 2671 SF/Bed	YES
Principal Building Setbacks (Feet)			
Minimum Front	50	50.0	YES
Minimum Side	25	25.0	YES
Minimum Rear	30	±50	YES
Maximum Building Height	30	30.0	YES
Maximum Building Coverage	20%	23.7%	NO[3]
[1]Net lot area = Total lot area minus 75% wetlands, water bodies and water courses = 183,529SF - 1875SF = 181,653SF = 4.17AC			
[2]Increase in FAR as a result of enclosing parking below building A.			
[3]Increase in coverage as a result of reducing Bedford Road Buildings to 2 stories.			

CIVIL ENGINEER

LANGAN

1 NORTH BROADWAY
SUITE 910
WHITE PLAINS, NY 10604

TEL: 914–323–7400

CONTACT: MICHAEL FINAN, PE

SURVEYOR

SOUND VIEW ENGINEERS AND LAND SURVEYORS LLC

239 GLENVILLE ROAD
SUITE 100
GREENWICH, CT 06831

TEL: 203–532–1300

CONTACT: AIDAN C. McCANN, PLS

LANDSCAPE ARCHITECT

LANGAN

1 NORTH BROADWAY
SUITE 910
WHITE PLAINS, NY 10604

TEL: 914–323–7400

CONTACT: MICHAEL HUNTON, RLA

APPROVED BY A RESOLUTION OF THE NORTH CASTLE TOWN PLANNING BOARD

PLANNING BOARD CHAIRPERSON
CHRISTOPHER CARTHY

DATE

Revisions		
Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

STATE OF NEW YORK · MICHAEL J. FINAN · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature 01/08/2024 Date

MICHAEL J. FINAN, PE, LEED–AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title: COVER SHEET

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CS001
Sheet 1 of 18

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date: 1/8/2024 Time: 11:06 User: lcaserta Style Table: Langan.stb Layout: Cover Sheet Document Code: 190085001-0301-CS001-0101

ABBREVIATIONS

(TYP) – TYPICAL
VIF – VERIFY IN FIELD
NEC. – NECESSARY
PROP. – PROPOSED
EXIST. – EXISTING
HC – HANDI-CAP
SHT. – SHEET
NO. – NUMBER
TW – TOP OF WALL
BW – BOTTOM OF WALL
WV – WATER VALVE
HYD – HYDRANT
YR. – YEAR
AC – ACRE
SF – SQUARE FEET
LF – LINEAR FEET
PT – POINT OF TANGENT
PC – POINT OF CURVATURE
HP – HIGH POINT
LP – LOW POINT
VC – VERTICAL CURVE
PVI – POINT OF VERTICAL INFLECTION
STA – STATION
A.D. – ALGEBRAIC DIFFERENCE
K – CURVE COEFFICIENT
BVCS – BEGINNING VERTICAL CURVE STATION
BVCE – BEGINNING VERTICAL CURVE ELEVATION
EVCS – END VERTICAL CURVE STATION
EVCE – END VERTICAL CURVE ELEVATION
ELEV. – ELEVATION
EL – ELEVATION
HORIZ. – HORIZONTAL
VERT. – VERTICAL
PERF. – PERFORATED
HDPE – HIGH DENSITY POLYETHYLENE
PVC – POLYVINYL CHLORIDE
DIP – DUCTILE IRON PIPE
CIP – CAST IRON PIPE
INV – INVERT
MIN. – MINIMUM
ES – END SECTION
OS – OUTLET STRUCTURE
N.T.S. – NOT TO SCALE
UP – UTILITY POLE
CTGE – CABLE, TELEPHONE, GAS, ELECTRIC
LSE – LOWEST SEWERABLE ELEVATION
R – ARC RADIUS
A – ARC LENGTH
△ – CENTRAL ANGLE
CL – CHORD LENGTH
CB – CHORD BEARING

LEGEND

PROPOSED

BUILDING SETBACK
BUILDING
CURB
DOOR ENTRANCE
CONCRETE PAVEMENT
WALL
590 — CONTOUR
×590.01 — SPOT ELEVATION
STORMWATER CONVEYANCE PIPE
CATCH BASIN
STORMWATER MANHOLE
OUTLET CONTROL STRUCTURE
RIP RAP
SANITARY SEWER
SANITARY MANHOLE
SANITARY CLEANOUT
W — W — WATER MAIN
C-T-E-G — ELECTRIC/TELECOMM SERVICE
FIRE HYDRANT
GATE VALVE
LoD — LoD — LIMIT OF DISTURBANCE
SILT FENCE
CONSTRUCTION FENCE
FIBER ROLL
DIVERSION DITCH
STRAW BALE DIKE
INLET PROTECTION
CHECK DAM
CONCRETE WASHOUT
STABILIZED CONSTRUCTION ENTRANCE
CONSTRUCTION STAGING AND STORAGE AREA
SEDIMENT BASIN
SOIL STOCKPILE

LEGEND

EXISTING

PROPERTY LINE
ADJACENT PROPERTY LINE
RIGHT-OF-WAY LINE
EASEMENT LINE
SA — SANITARY SEWER LINE
ST — DRAINAGE LINE
W — WATER LINE
G — GAS LINE
OHE — OVERHEAD ELECTRIC LINE
EDGE OF PAVEMENT
EDGE OF GRAVEL
BUILDING
WETLAND LINE
TREE LINE
590 — CONTOUR
FENCE LINE
TREES
D E F FM G S ST T U W — MANHOLE (AS LABELED)
HYDRANT
UTILITY POLE
END SECTION
CATCH BASIN
WV — WATER VALVE
LIGHT
SIGN

EROSION & SEDIMENT CONTROL NOTES

1. REFER TO THE SPDES GENERAL PERMIT COMPLIANCE NOTES FOR ADDITIONAL REQUIREMENTS.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE IN STRICT COMPLIANCE WITH "NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL", LATEST REVISIONS.
3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANS. SITE PREPARATION ACTIVITIES SHALL BE PLANNED TO MINIMIZE THE SCOPE AND DURATION OF SOIL DISRUPTION. EXISTING VEGETATION SHALL BE PRESERVED AS MUCH AS IS PRACTICAL.
4. THE CONTRACTOR AND THEIR SUBCONTRACTOR(S) SHALL IDENTIFY THE TRAINED INDIVIDUAL THAT WILL BE RESPONSIBLE FOR THE IMPLEMENTATION AND MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
5. PERMANENT TRAFFIC CORRIDORS SHALL BE ESTABLISHED AND "ROUTES OF CONVENIENCE" SHALL BE AVOIDED. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT ALL POINTS OF ENTRY ONTO THE PROJECT SITE.
6. DAMAGE TO SURFACE WATERS RESULTING FROM EROSION AND SEDIMENTATION SHALL BE MINIMIZED BY STABILIZING DISTURBED AREAS AND BY REMOVING SEDIMENT FROM CONSTRUCTION SITE DISCHARGES.
7. STOCKPILED TOPSOIL SHALL BE TEMPORARILY SEEDED, MULCHED, AND ENCLOSED WITH SILT FENCING. ALL GRASS SEED WILL CONTAIN AT LEAST 25 PERCENT RAPID GERMINATING PERENNIAL RYE GRASS.
8. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST BY SPRINKLING EXPOSED SOIL AREAS PERIODICALLY WITH WATER AS REQUIRED. THE CONTRACTOR IS TO SUPPLY ALL EQUIPMENT AND WATER.
9. EARTHWORK ACTIVITIES SHALL BE CONSISTENT WITH THE PLANS. THE EARTHWORK OPERATION AREAS SHALL BE STABILIZED ON AN ONGOING BASIS WITH NO AREAS, WHICH ARE NOT CURRENTLY UNDER CONSTRUCTION, LEFT WITHOUT AT LEAST TEMPORARY COVER FOR MORE THAN 48 HOURS.
10. EROSIVE MATERIAL TEMPORARILY STOCKPILED ON THE SITE DURING THE CONSTRUCTION PROCESS SHALL BE LOCATED IN AN AREA AWAY FROM STORM DRAINAGE AND SHALL BE PROPERLY PROTECTED BY A SURROUNDING SILT FENCE BARRIER.
11. FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITIES IN ANY PORTION OF THE SITE, PERMANENT VEGETATION SHALL BE ESTABLISHED ON ALL EXPOSED LANDSCAPE SOILS.
12. IF CONSTRUCTION TAKES PLACE IN "WET SOILS", CURTAIN DRAINS OR SUBSURFACE DRAINAGE SHALL BE INSTALLED TO DEWATER THE SOILS. DEWATERING DISCHARGES WILL NOT BE DIRECTED INTO WETLANDS, WATER COURSES, WATER-BODIES, OR STORM SEWER SYSTEMS.
13. TEMPORARY DRAINAGE SWALES WITH A MINIMUM GRADE OF ONE PERCENT SHALL BE INSTALLED TO DIRECT RUNOFF AWAY FROM EXCAVATED AREAS. SWALES SHALL BE INSTALLED WITH STAKED AND SECURED HAY BALE BERMS TO PREVENT DOWNSTREAM SILTATION. LOCATION OF THE DRAINAGE SWALES AND HAY BALES WILL BE AT THE DIRECTION OF THE DESIGN ENGINEER. SILT FENCE SHALL BE PROPERLY INSTALLED DOWN GRADE OF ALL DISTURBED AREAS. SILT FENCE SHALL BE INSTALLED ALONG CONTOURS TO FILTER SEDIMENT FROM RUNOFF. INSPECTION BY CONTRACTOR SHOULD BE FREQUENT AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED. SILT FENCE SHOULD BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
14. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WHEN ALL DISTURBED AREAS HAVE UNDERGONE FINAL STABILIZATION, UPGRADIENT SURFACES HAVE BEEN PROPERLY STABILIZED, AND ALL STORMWATER MANAGEMENT SYSTEMS ARE IN PLACE AND OPERABLE. ALL AREAS DISTURBED BY THE REMOVAL OF THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE FILLED IN, TOPSOILED, SEEDED, AND MULCHED. FINAL STABILIZATION IS ACHIEVED WHEN ALL SOIL DISTURBING ACTIVITIES ARE COMPLETED AND A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 80 PERCENT COVERAGE IS ESTABLISHED, OR EQUIVALENT STABILIZATION MEASURES, SUCH AS PLACEMENT OF MULCH OR GEOTEXTILE, IS COMPLETED ON ALL AREAS NOT PAVED OR COVERED BY PERMANENT STRUCTURES. ENSURE THAT FINAL STABILIZATION OF ALL TRIBUTARY AREAS IS ACHIEVED PRIOR TO THE CONSTRUCTION OF THE BIORETENTION BASINS.
15. THE CONTRACTOR SHALL DELINEATE THE OVERALL LIMIT OF DISTURBANCE WITH ORANGE CONSTRUCTION FENCE PRIOR TO ANY DEMOLITION OR CONSTRUCTION ACTIVITIES. ALL EXISTING WETLANDS TO REMAIN SHALL BE PROTECTED.

POLLUTION PREVENTION CONTROL NOTES

GOOD HOUSEKEEPING PRACTICES ARE DESIGNED TO MAINTAIN A CLEAN AND ORDERLY WORK ENVIRONMENT. GOOD HOUSEKEEPING MEASURES SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS BY THOSE PARTIES INVOLVED WITH THE DIRECT CARE AND DEVELOPMENT OF THE SITE. THE FOLLOWING MEASURES SHOULD BE IMPLEMENTED TO CONTROL THE POSSIBLE EXPOSURE OF HARMFUL SUBSTANCES AND MATERIALS TO STORMWATER RUNOFF:

1. MATERIAL RESULTING FROM THE CLEARING AND GRUBBING OPERATION SHALL BE STOCKPILED AWAY FROM STORM DRAINAGE, WATER BODIES AND/OR WATERCOURSES AND SURROUNDED WITH ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES. SOIL STOCKPILE LOCATIONS SHALL BE EXPOSED NO LONGER THAN 14 DAYS BEFORE SEEDING.
2. EQUIPMENT MAINTENANCE AREAS SHALL BE PROTECTED FROM STORMWATER FLOWS AND SHALL BE SUPPLIED WITH APPROPRIATE WASTE RECEPTACLES FOR SPENT CHEMICALS, SOLVENTS, OILS, GREASES, GASOLINE, AND ANY POLLUTANTS THAT MIGHT CONTAMINATE THE SURROUNDING HABITAT AND/OR WATER SUPPLY. EQUIPMENT WASH-DOWN ZONES SHALL BE LOCATED WITHIN AREAS DRAINING TO SEDIMENT CONTROL DEVICES.
3. THE USE OF DETERGENTS FOR LARGE-SCALE (I.E., VEHICLES, BUILDINGS, PAVEMENT SURFACES, ETC.) WASHING IS PROHIBITED.
4. MATERIAL STORAGE LOCATIONS AND FACILITIES (I.E., COVERED STORAGE AREAS, STORAGE SHEDS, ETC.) SHALL BE LOCATED ON-SITE AND SHALL BE STORED ACCORDING TO THE MANUFACTURER'S STANDARDS IN A DEDICATED STAGING AREA. CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER TOXIC MATERIAL MUST BE STORED IN WATERPROOF CONTAINERS. RUNOFF CONTAINING SUCH MATERIALS MUST BE COLLECTED, REMOVED FROM THE SITE, TREATED AND DISPOSED AT AN APPROVED SOLID WASTE OR CHEMICAL DISPOSAL FACILITY.
5. HAZARDOUS SPILLS SHALL BE IMMEDIATELY CONTAINED TO PREVENT SUCH POLLUTANTS FROM ENTERING THE SURROUNDING HABITAT AND/OR WATER SUPPLY. SPILL KITS SHALL BE PROVIDED ON-SITE AND SHALL BE DISPLAYED IN A PROMINENT LOCATION FOR EASE OF ACCESS AND USE. SPILLS GREATER THAN FIVE (5) GALLONS SHALL BE REPORTED TO THE NYSDEC RESPONSE UNIT AT 1-800-457-7362. IN ADDITION, A RECORD OF THE INCIDENT(S) AND/OR NOTIFICATIONS SHALL BE DOCUMENTED AND ATTACHED TO THE SWPPP.
6. PORTABLE SANITARY WASTE FACILITIES SHALL BE PROVIDED ON-SITE FOR WORKERS AND SHALL BE PROPERLY MAINTAINED.
7. DUMPSTERS AND/OR DEBRIS CONTAINERS SHALL BE LOCATED ON-SITE AND SHALL BE OF ADEQUATE SIZE TO MANAGE RESPECTIVE MATERIALS. REGULAR COLLECTION AND DISPOSAL OF WASTES SHALL OCCUR AS REQUIRED.
8. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE LOCATED A MINIMUM OF 50 FEET FROM STORM DRAIN INLETS, OPEN DRAINAGE FACILITIES, AND WATERCOURSES. EACH FACILITY SHOULD BE LOCATED AWAY FROM CONSTRUCTION TRAFFIC OR ACCESS AREAS TO PREVENT DISTURBANCE OR TRACKING. A SIGN SHOULD BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHALL BE REMOVED AND DISPOSED OF. MATERIALS USED TO CONSTRUCT THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED AND DISPOSED OF. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED AND/OR REPAIRED, SEEDED, AND MULCHED FOR FINAL STABILIZATION.
9. NON-STORMWATER COMPONENTS OF SITE DISCHARGE MUST BE CLEAN WATER. WATER USED FOR CONSTRUCTION, WHICH DISCHARGES FROM THE SITE, MUST ORIGINATE FROM A PUBLIC WATER SUPPLY OR PRIVATE WELL APPROVED BY THE HEALTH DEPARTMENT. WATER USED FOR CONSTRUCTION THAT DOES NOT ORIGINATE FROM AN APPROVED PUBLIC SUPPLY MUST NOT DISCHARGE FROM THE SITE. IT CAN BE RETAINED IN THE TEMPORARY SEDIMENT BASINS UNTIL IT EVAPORATES.
10. DISCHARGES FROM DEWATERING ACTIVITIES, INCLUDING DISCHARGES FROM DEWATERING TRENCHES AND EXCAVATIONS, MUST BE MANAGED BY APPROPRIATE CONTROL MEASURES.
11. WASTEWATER DISCHARGES FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS, AND OTHER CONSTRUCTION MATERIALS IS PROHIBITED.

TOWN OF NORTH CASTLE NOTES

1. THE TOWN OF NORTH CASTLE STORMWATER MANAGEMENT OFFICER MAY REQUIRE SUCH INSPECTIONS AS NECESSARY TO DETERMINE COMPLIANCE WITH THIS CHAPTER 267 OF THE TOWN CODE AND MAY EITHER APPROVE THAT PORTION OF THE WORK COMPLETED OR NOTIFY THE APPLICANT WHEREIN THE WORK FAILS TO COMPLY WITH THE REQUIREMENTS OF THIS CHAPTER 267 OF THE TOWN CODE AND THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS APPROVED. TO OBTAIN INSPECTIONS THE APPLICANT SHALL NOTIFY THE TOWN OF NORTH CASTLE BUILDING DEPARTMENT AT LEAST 48 HOURS BEFORE ANY OF THE FOLLOWING, AS REQUIRED BY THE STORMWATER MANAGEMENT OFFICER:
   - 1.a. START OF CONSTRUCTION.
   - 1.b. INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES.
   - 1.c. COMPLETION OF SITE CLEARING.
   - 1.d. COMPLETION OF ROUGH GRADING.
   - 1.e. COMPLETION OF FINAL GRADING.
   - 1.f. CLOSE OF THE CONSTRUCTION SEASON.
   - 1.g. COMPLETION OF FINAL LANDSCAPE.
   - 1.h. INSTALLATION OF STORMWATER MANAGEMENT FACILITIES.
   - 1.i. SUCCESSFUL ESTABLISHMENT OF LANDSCAPING IN PUBLIC AREAS.
2. BEFORE THE TOWN APPROVES THE PROPOSED STORMWATER MANAGEMENT FACILITIES, THE OWNER MUST EXECUTE A MAINTENANCE EASEMENT AGREEMENT THAT SHALL BE BINDING ON ALL SUBSEQUENT LANDOWNERS SERVED BY THE STORMWATER MANAGEMENT PRACTICE PER SECTION 267.7(B) OF THE TOWN CODE.
3. THE TOWN SHALL APPROVE A FORMAL MAINTENANCE AGREEMENT FOR THE PROPOSED STORMWATER MANAGEMENT PRACTICES BINDING ALL SUBSEQUENT LANDOWNERS AND RECORDED IN THE OFFICE OF YTHE COUNTY CLERK AS DEED RESTRICTION ON THE PROPERTY PRIOR TO FINAL APPROVAL IN ACCORDANCE WITH SECTION 267-7(D) OF THE TOWN CODE.

CONSTRUCTION SEQUENCING NOTES

CLEARING AND GRUBBING ACTIVITIES

1. FLAG THE DISTURBANCE LIMITS PRIOR TO THE COMMENCEMENT OF CLEARING AND GRUBBING ACTIVITIES.
2. ACCESS TO THE SITE WILL BE PROVIDED OFF OF BEDFORD ROAD.
3. INSTALL CONSTRUCTION FENCE, PERIMETER SILT FENCE AND TREE PROTECTION MEASURES AS SHOWN ON THE PROJECT PLANS.
4. CLEARING AND GRUBBING ACTIVITIES SHALL BE PERFORMED WITHIN THE DISTURBANCE LIMITS. STABILIZE CONCURRENTLY WITH THE CLEARING ACTIVITIES. WOODS CHIPS AND/OR SPRAY MULCH SHALL BE USED TO TEMPORARILY STABILIZE THE CLEARED AREA. CHIPPING TREES AND STUMP GRINDINGS GENERATED AS PART OF THE CLEARING OPERATIONS WILL ALSO BE USED TO PRODUCE WOOD CHIPS.
5. INSPECT ALL EROSION CONTROL MEASURES DURING CLEARING AND GRUBBING ACTIVITIES. REPAIR ANY DAMAGED EROSION CONTROL MEASURES UPON DISCOVERY.

BULK GRADING CONSTRUCTION

6. STRIP TOP SOIL AND TEMPORARILY STOCKPILE THE MATERIAL ONSITE. THE LOCATIONS SHOWN ON THE PLANS ARE SUGGESTED LOCATIONS; HOWEVER, LOCATIONS CAN BE ADJUSTED AS THE EARTHWORK OPERATIONS PROGRESSES. STOCKPILES SHALL BE PROTECTED FROM EROSION WITH SEED/MULCH AND SHALL BE COVERED IN RAIN EVENTS. REFER TO PROJECT DETAILS FOR ADDITIONAL INFORMATION.
7. REMOVE EXISTING PAVEMENT, CONCRETE AND OTHER SITE FEATURES IDENTIFIED TO BE REMOVED ON THE PROJECT PLANS.
8. DRAINAGE STRUCTURES SHALL HAVE INLET PROTECTION INSTALLED.
9. ACTIVELY STABILIZE THE DISTURBED AREAS THAT ARE AT FINAL GRADE OR SUBGRADE ELEVATIONS. AREAS THAT WILL BE VEGETATED IN THE FINAL CONDITIONS SHALL NOT BE STABILIZED WITH STONE. VEGETATED AREAS SHALL BE TEMPORARILY STABILIZED WITH HYDRO-SEEDING, MULCHING, HAYING, OR SPREADING WOOD CHIP. PAVED AREAS AND BUILDING PADS ARE TO BE STABILIZED WITH GRAVEL.
10. TEMPORARY SEDIMENT BASINS SHALL REMAIN IN PLACE UNTIL ALL SOIL DISTURBANCE ACTIVITIES THAT CONTRIBUTE TO THE TEMPORARY SEDIMENT BASINS HAVE BEEN COMPLETED.

GENERAL CONSTRUCTION

11. INSTALL INLET PROTECTION MEASURES AT ALL INLETS AND AT THE ENDS OF ALL EXPOSED STORMWATER PIPES AND RIP RAP AT THE LOCATIONS SHOWN ON THE PLANS.
12. DELIVER BUILDING MATERIALS TO DESIGNED STAGING AREAS FOR CONSTRUCTION.
13. INSTALL PROPOSED CURBING AND SIDEWALKS.
14. PREPARE PAVEMENT SUBBASE MATERIAL AND INSTALL BINDER COURSE. INLET PROTECTION MEASURES MAY BE REMOVED TEMPORARILY DURING THIS OPERATION, BUT NO MORE THAN 24-HOURS PRIOR TO PLACEMENT OF THE SUBBASE MATERIAL. INLET PROTECTION MEASURES SHALL BE REPLACED ONCE THE SUBBASE MATERIAL HAS BEEN INSTALLED.
15. FINISH GRADING AND STABILIZE ALL DISTURBED AREAS. ALL CATCH BASINS, DRAINAGE MANHOLES, AND DRAINAGE LINES SHALL BE CLEANED OF ANY ACCUMULATED SILT AND SEDIMENT.
16. REMOVE ALL ACCUMULATED SEDIMENT WITHIN THE TEMPORARY SEDIMENT BASINS. REMOVE THE TEMPORARY PERFORATED RISERS AND CONSTRUCTION FABRIC FROM OUTLET CONTROL STRUCTURES.
17. INSTALL ALL PLANTINGS IN ACCORDANCE WITH THE PROJECT PLANS.
18. CONNECT UNDERGROUND INFILTRATION SYSTEM AFTER ALL CONSTRUCTION IS COMPLETE AND THE WHOLE SITE IS STABILIZED.
19. PLACE PAVEMENT TOP COURSE AND PAVEMENT MARKINGS, AS APPROPRIATE.
20. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES. IMMEDIATELY STABILIZE THE AREAS DISTURBED DURING THEIR REMOVAL. ESTABLISH PERMANENT VEGETATIVE COVER AND INSTALL ALL LANDSCAPING.

STABILIZATION OF DISTURBED SURFACES

1. MULCH (INCLUDING GRAVEL MULCH) – MULCH OFFERS AN EFFECTIVE MEANS OF STABILIZATION. THIS CAN ALSO INCLUDE ROLLED EROSION CONTROL BLANKETS.
2. SPRAY ADHESIVES – THESE ARE PRODUCTS GENERALLY COMPOSED OF POLYMERS IN A LIQUID OR SOLID FORM THAT ARE MIXED WITH WATER TO FORM AN EMULSION THAT IS SPRAYED ON THE SOIL SURFACE WITH TYPICAL HYDROSEEDING EQUIPMENT. THE MIXING RATIOS AND APPLICATION RATES WILL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC SOILS ON THE SITE. IN NO CASE SHOULD THE APPLICATION OF THESE ADHESIVES BE MADE ON WET SOILS OR IF THERE IS A PROBABILITY OF PRECIPITATION WITHIN 48 HOURS OF ITS PROPOSED USE. MATERIAL SAFETY DATA SHEETS WILL BE PROVIDED TO ALL APPLICATORS AND OTHERS WORKING WITH THE MATERIAL.
3. POLYMER ADDITIVES – THESE POLYMERS ARE MIXED WITH WATER AND APPLIED TO THE DRIVING SURFACE BY A WATER TRUCK WITH A GRAVITY FEED DRIP BAR, SPRAY BAR OR AUTOMATED DISTRIBUTOR TRUCK. THE MIXING RATIOS AND APPLICATION RATES WILL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. INCORPORATION OF THE EMULSION INTO THE SOIL WILL BE DONE TO THE APPROPRIATE DEPTH BASED ON EXPECTED TRAFFIC. COMPACTION AFTER INCORPORATION WILL BE BY VIBRATORY ROLLER TO A MINIMUM OF 95%. THE PREPARED SURFACE SHALL BE MOIST AND NO APPLICATION OF THE POLYMER WILL BE MADE IF THERE IS A PROBABILITY OF PRECIPITATION WITHIN 48 HOURS OF ITS PROPOSED USE. MATERIAL SAFETY DATA SHEETS WILL BE PROVIDED TO ALL APPLICATORS WORKING WITH THE MATERIAL.
4. BARRIERS – WOVEN GEOTEXTILES CAN BE PLACED ON THE DRIVING SURFACE TO EFFECTIVELY REDUCE DUST THROW AND PARTICLE MIGRATION ON HAUL ROADS. STONE CAN ALSO BE USED FOR CONSTRUCTION ROADS FOR EFFECTIVE DUST CONTROL.
5. SEEDING – REFER TO LANDSCAPE PLANS AND DETAILS.

DEMOLITION NOTES

1. CLEARING AND GRUBBING OF ALL TRESS (INCLUDING REMOVAL OF ANY ASSOCIATED ROOT SYSTEMS AND STUMPS) AND VEGETATION DESIGNATED FOR REMOVAL SHOULD BE PERFORMED. TOPSOIL SHOULD BE COMPLETELY STRIPPED WITHIN THE LIMITS OF DISTURBANCE AS SHOWN ON THE PLANS.
2. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. THAT ARE INDICATED ON PLANS.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATION, ORDINANCES, AND STATUTES.
4. THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING THEIR BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT, OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES, OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY, OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVER, REMOVAL, ABATEMENT, OR DISPOSAL OR ASBESTOS OR OTHER HAZARDOUS MATERIALS.
6. THE CONTRACTOR SHALL DEMOLISH ALL BUILDINGS, PAVEMENT, ETC., WHERE INDICATED WITHIN THE LIMIT OF DISTURBANCE. EDGES OF PAVEMENT DEMOLITION SHALL BE SAW CUT. DEMOLISHED CONCRETE AND ASPHALT SHALL BE CRUSHED AND STOCKPILED FOR REUSE AS SITE FILL. ALL DEMOLITION AND MATERIAL REUSE SHALL BE IN ACCORDANCE WITH ENVIRONMENTAL REQUIREMENTS FOR THE SITE.
7. THE CONTRACTOR SHALL VERIFY THAT A SOIL EROSION AND SEDIMENT CONTROL PERMIT HAS BEEN OBTAINED FOR DEMOLITION ACTIVITIES. CONTRACTOR SHALL COMPLY WITH THE CONDITIONS THEREON BY INSTALLING AND MAINTAINING ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AND MAKING REQUIRED NOTIFICATIONS.
8. CONTRACTOR TO VERIFY THAT ALL ENVIRONMENTAL CONCERNS (ASBESTOS, LEAD BASED PAINT, HAZMAT MATERIALS, UNDERGROUND STORAGE TANKS, TRANSFORMERS, ETC.) HAVE BEEN REMOVED PRIOR TO COMMENCEMENT OF DEMOLITION ACTIVITIES. THESE POTENTIAL CONCERNS ARE NOT SHOWN ON THIS PLAN. THE CONTRACTOR SHALL REFER TO APPLICABLE FEDERAL, STATE, AND LOCAL REGULATION, ORDINANCES, AND STATUTES FOR APPROPRIATE DISPOSAL PROCEDURES.

GENERAL NOTES

1. THE CONTRACTOR SHALL CALL "DIG SAFELY NEW YORK" PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CALL 1-800-962-7962 OR 811 FOR STAKEOUT REQUESTS.
2. ALL EXISTING UTILITY LINES SHALL BE LOCATED/VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING ANY MATERIALS AND/OR STARTING ANY CONSTRUCTION.
3. THE CONTRACTOR SHALL FURNISH, INSTALL, TEST AND COMPLETE ALL WORK TO THE SATISFACTION OF THE ENGINEER AND OWNER IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION; AS SUCH, THESE PLANS DO NOT COMPLETELY REPRESENT, NOR ARE THEY INTENDED TO REPRESENT, ALL SPECIFIC INSTRUCTIONS REQUIRED FOR SITE WORK CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONSTRUCT ALL IMPROVEMENTS DEPICTED ON THESE PLANS IN ACCORDANCE WITH ALL APPLICABLE RULES, REGULATIONS AND LAWS IN EFFECT AT THE TIME OF CONSTRUCTION.
4. THE CONTRACTOR SHALL ACCEPT THE SITE AS IS. THE CONTRACTOR SHALL ASSESS CONDITIONS, AND THE KIND, QUALITY AND QUANTITY OF WORK REQUIRED. THE OWNER MAKES NO GUARANTEE IN REGARD TO THE ACCURACY OF ANY AVAILABLE INFORMATION WHICH WAS OBTAINED DURING INVESTIGATIONS. THE CONTRACTOR SHALL MAKE A THOROUGH SITE INSPECTION IN ORDER TO FIELD CHECK EXISTING SITE CONDITIONS, CORRELATE CONDITIONS WITH THE DRAWINGS AND RESOLVE ANY POSSIBLE CONSTRUCTION CONFLICTS WITH THE OWNER AND ENGINEER PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR SHALL MAKE ADDITIONAL TOPOGRAPHIC SURVEYS HE DEEMS NECESSARY, PROVIDED THEY ARE COORDINATED WITH THE OWNER. ANY CONDITIONS DETERMINED BY THE CONTRACTOR THAT DIFFER FROM THE INFORMATION SHOW ON THE DRAWINGS THAT ARE NOT BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER PRIOR TO THE START OF WORK SHALL NOT BE CONSIDERED GROUNDS FOR ADDITIONAL PAYMENT OR CHANGES TO THE CONTRACT DURATION, OR ANY OTHER CLAIMS AGAINST THE OWNER OR OWNER'S ENGINEER.
5. THE CONTRACTOR SHALL, WHEN THEY DEEM NECESSARY, PROVIDE WRITTEN REQUESTS FOR INFORMATION (RFI) TO THE OWNER AND ENGINEER PRIOR TO THE CONSTRUCTION OF ANY SPECIFIC SITE WORK ITEM. THE RFI SHALL BE IN A FORM ACCEPTABLE TO OWNER AND ENGINEER AND SHALL ALLOW FOR A MINIMUM OF 10 WORK DAYS OR ADDITIONAL REASONABLE TIME FOR A WRITTEN REPLY. THE RFI SHALL BE NUMBERED CONSECUTIVELY BY DATE SUBMITTED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE WORK ITEMS CONSTRUCTED DIFFERENTLY THAN INTENDED OR AS DEPICTED ON THE PLANS.
6. INFORMATION RELATED TO ELEVATIONS AND PROPOSED UTILITIES (SUCH AS ROADWAY GRADES, INVERT ELEVATIONS, RIM ELEVATIONS, GRATE ELEVATIONS, BUILDING FINISHED FLOOR ELEVATIONS, ETC.) MAY BE FOUND IN MORE THAN ONE LOCATION IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUFFICIENTLY REVIEW ALL PLANS, PROFILES AND ANY OTHER INFORMATION IN THE CONTRACT DOCUMENTS FOR CONSISTENCY PRIOR TO CONSTRUCTION. ANY INCONSISTENCIES OR DISCREPANCIES THAT ARE FOUND BY THE CONTRACTOR OR HIS ASSIGNS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER IN WRITING, IN THE FORMAT OF AN RFI PRIOR TO CONSTRUCTION.
7. THERE ARE ADDITIONAL NOTES, SPECIFICATIONS AND REQUIREMENTS CONTAINED THROUGHOUT THE PLAN SET AS WELL AS REFERENCES TO SPECIFICATIONS FROM APPLICABLE GOVERNING AUTHORITIES AND INDUSTRY STANDARDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN, REVIEW AND ADHERE TO ALL THESE DOCUMENTS.

Revisions

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

STATE OF NEW YORK · MICHAEL J. FINAN · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature — Date 01/08/2024

MICHAEL FINAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title: LEGEND AND GENERAL NOTES

Project No.	190085001
Date	AUGUST 7, 2023
Drawn By	GN
Checked By	MT

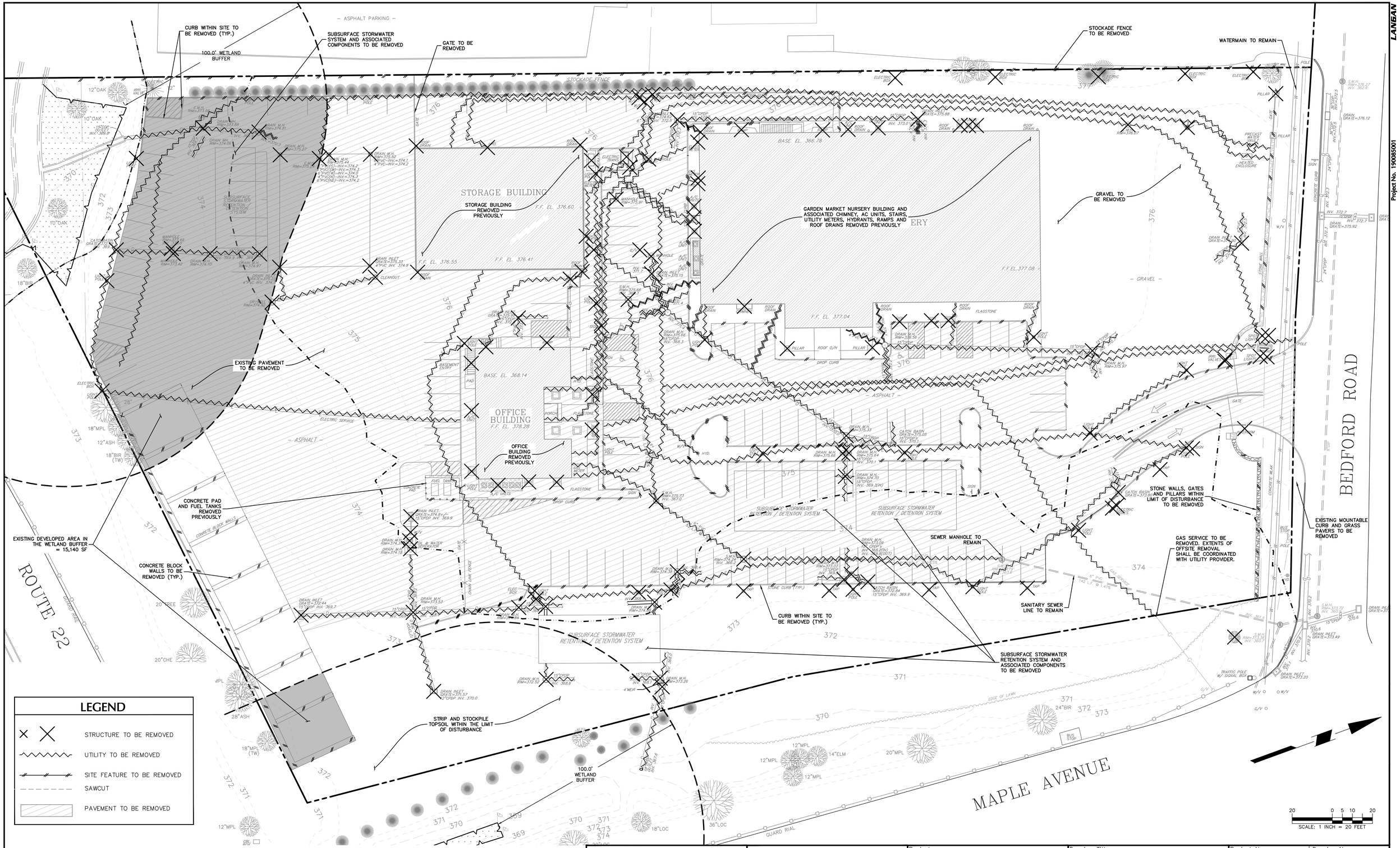
Drawing No. GI101

Sheet 2 of 18

LANGAN

Project No. 190085001

Date: 1/8/2024 Time: 11:06 User: lcaserta Style Table: Langan.stb Layout: GI101 Document Code: 190085001-0301-GI101-0101



LEGEND

- STRUCTURE TO BE REMOVED
- UTILITY TO BE REMOVED
- SITE FEATURE TO BE REMOVED
- SAWCUT
- PAVEMENT TO BE REMOVED

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINA · LICENSED PROFESSIONAL ENGINEER

Signature 081473 — 01/08/2024 Date

MICHAEL J. FINA, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.

One North Broadway, Suite 910
White Plains, NY 10601

T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
EXISTING CONDITIONS AND REMOVALS PLAN

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CD101
Sheet 3 of 18

LANGAN
Project No. 190085001

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

SIGN LEGEND

R7-8	R7-1	R1-1
RESERVED PARKING	NO PARKING ANY TIME	STOP
12"x18"	12"x18"	30"x30"

NOTE: ALL PROPOSED SIGNAGE SHALL CONFORM TO THE CURRENT EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) FOR SIZE, LEGEND AND PLACEMENT.

SCALE: 1 INCH = 20 FEET

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK — MICHAEL J. FINAN — LICENSED PROFESSIONAL ENGINEER — 081473

01/08/2024
Signature Date

MICHAEL J. FINAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title: SITE PLAN

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CS101
Sheet 4 of 18

LANGAN
Project No. 190085001

Date: 1/8/2024 Time: 11:07 User: lcaserta Style Table: Langan.stb Layout: CS101 Document Code: 190085001-0301-CS101-0101

APPROXIMATE STORAGE VOLUMES IN THE FLOOD PLAIN

- PRE-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION: 3,820 CU. YD.
- POST-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION: 3,850 CU. YD.

NOTE:
FOOTING DRAINS SHOWN CONCEPTUALLY - FINAL LOCATIONS WILL BE SHOWN ON BUILDING PERMIT PLANS. DRAINS WILL NOT OUTLET TO DRAINAGE SYSTEM.

20 0 5 10 20
SCALE: 1 INCH = 20 FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Revisions		
Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

STATE OF NEW YORK MICHAEL J. FINA LICENSED PROFESSIONAL ENGINEER

01/08/2024
Signature Date
MICHAEL J. FINA, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

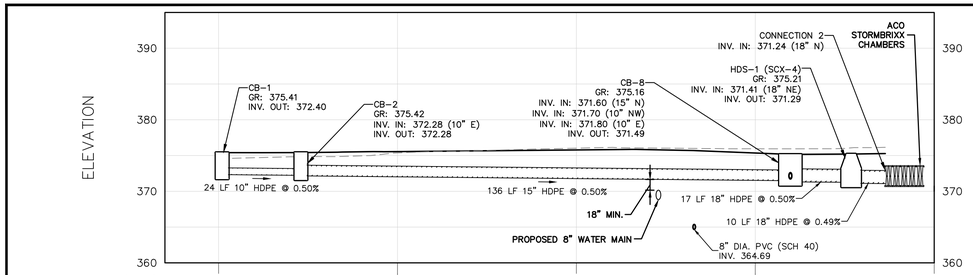
Drawing Title: GRADING AND DRAINAGE PLAN

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CG101
Sheet 5 of 18

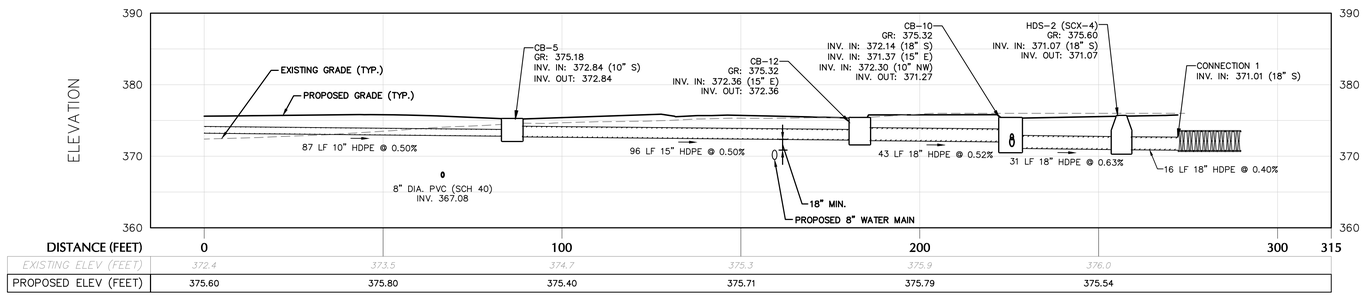
LANGAN
Project No. 190085001

Date: 1/8/2024 Time: 11:07 User: lcaserta Style Table: Langan.stb Layout: CG101 Document Code: 190085001-0301-CG101-0101



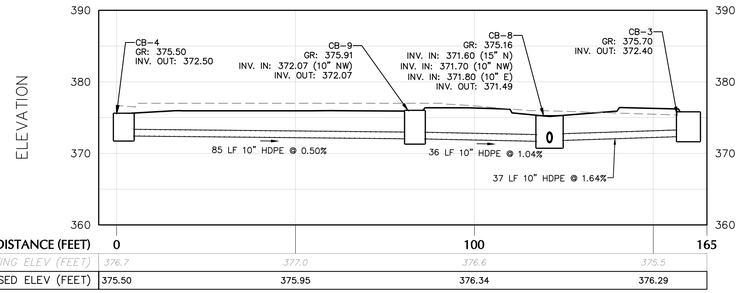
EXISTING ELEV (FEET)	374.7	375.4	376.0	375.9
PROPOSED ELEV (FEET)	375.41	375.55	375.78	375.36

CB-1 - UNDERGROUND STORAGE PROFILE
V: 1" = 10'
H: 1" = 20'



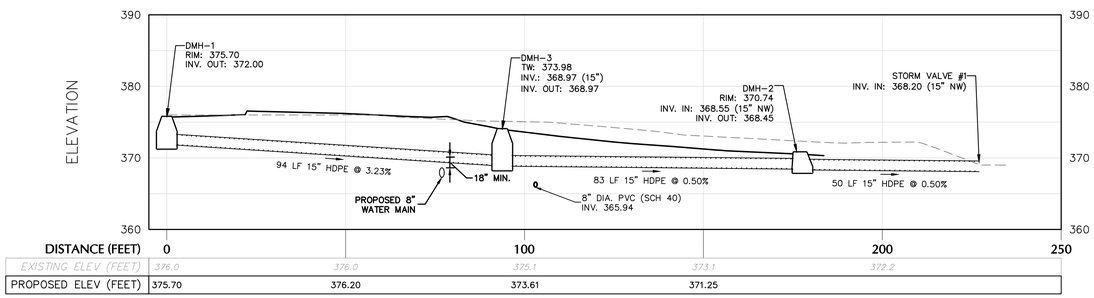
EXISTING ELEV (FEET)	372.4	373.5	374.7	375.3	375.9	376.0
PROPOSED ELEV (FEET)	375.60	375.80	375.40	375.71	375.79	375.54

CB-6 - UNDERGROUND STORAGE PROFILE
V: 1" = 10'
H: 1" = 20'



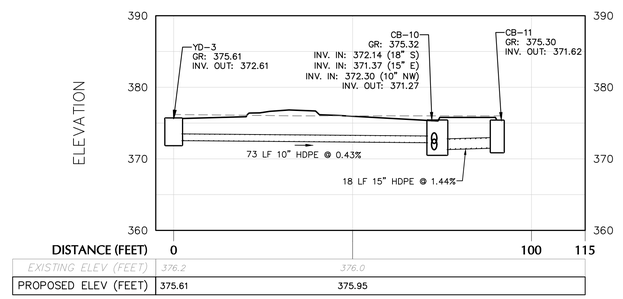
EXISTING ELEV (FEET)	376.7	377.0	376.6	375.5
PROPOSED ELEV (FEET)	375.50	375.95	376.34	376.29

CB-4 - CB-3 PROFILE
V: 1" = 10'
H: 1" = 20'



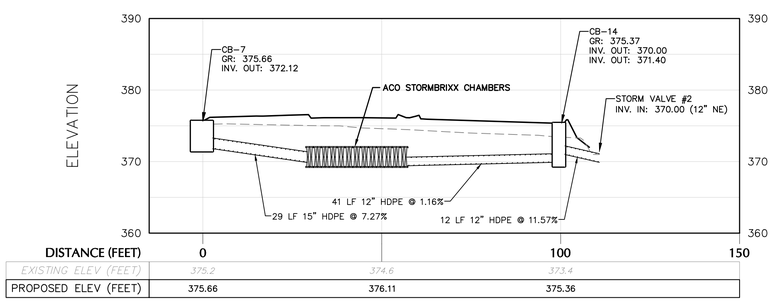
EXISTING ELEV (FEET)	376.0	376.0	375.1	373.1	372.2
PROPOSED ELEV (FEET)	375.70	376.20	373.61	371.25	

UNDERGROUND STORAGE - OUTFALL PROFILE
V: 1" = 10'
H: 1" = 20'



EXISTING ELEV (FEET)	376.2	376.0	
PROPOSED ELEV (FEET)	375.61	375.95	

TD-3 - CB11 PROFILE
V: 1" = 10'
H: 1" = 20'



EXISTING ELEV (FEET)	375.2	374.6	373.4
PROPOSED ELEV (FEET)	375.66	376.11	375.36

CB-7 TO MAPLE AVE OUTFALL PROFILE
V: 1" = 10'
H: 1" = 20'

H: 20 0 5 10 20
V: 10 0 5 10
SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINNAN · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature 01/08/2024 Date

MICHAEL J. FINNAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

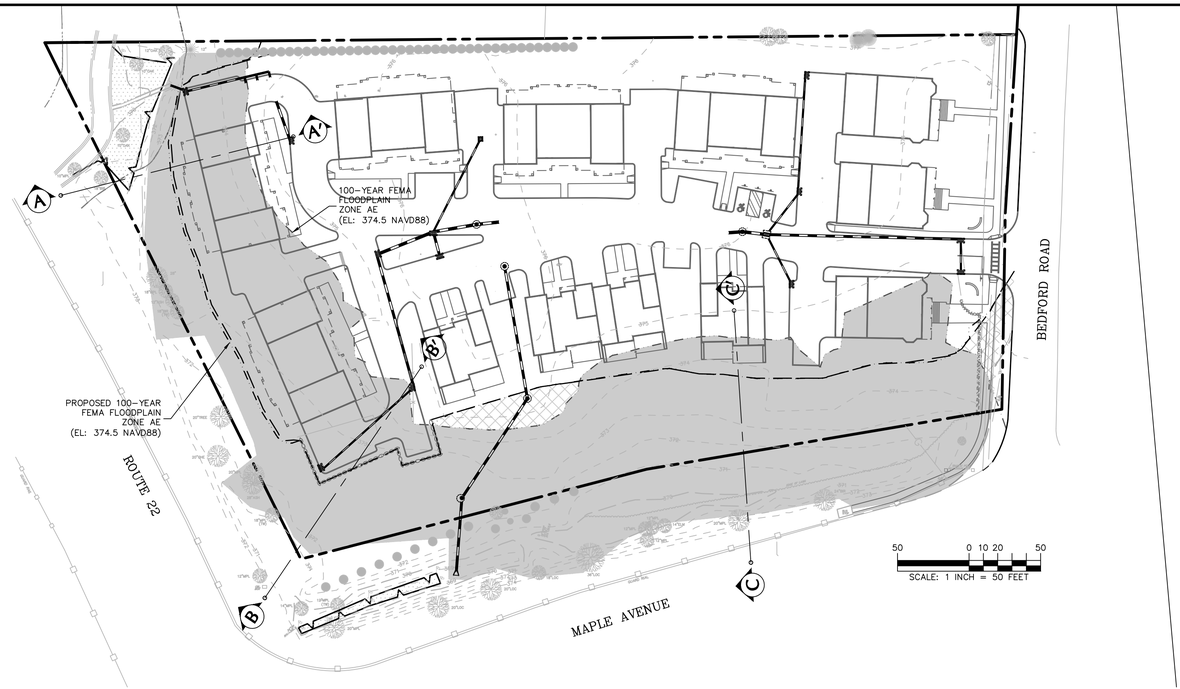
Drawing Title
DRAINAGE PROFILES

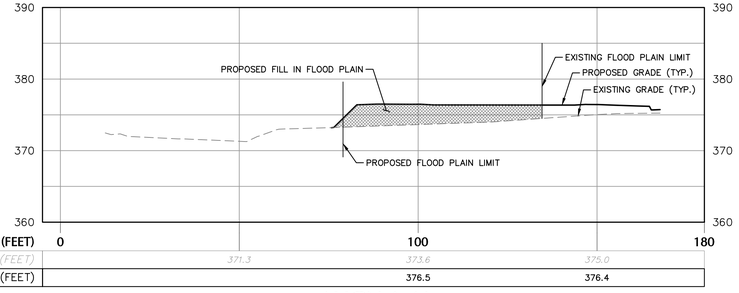
Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CG201
Sheet 6 of 18

LANGAN
Project No. 190085001

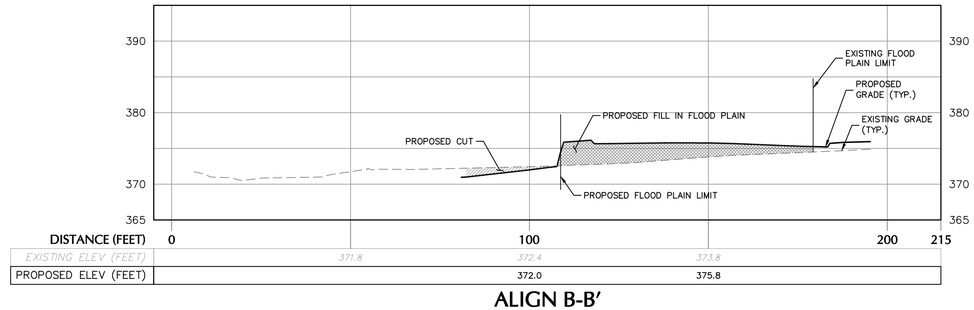
Date: 1/8/2024 Time: 11:07 User: lcaserta Style Table: Langan.stb Layout: CG201 Document Code: 190085001-0301-CG201-0101





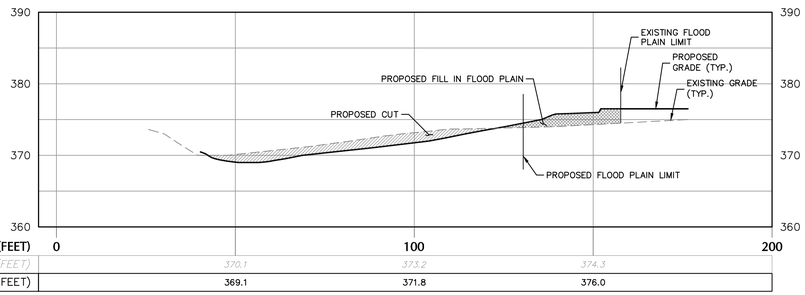
EXISTING ELEV (FEET)	371.3	373.6	375.0
PROPOSED ELEV (FEET)	376.5	376.4	

ALIGN A-A'
SCALE: H: 1"=20'
V: 1"=10'



EXISTING ELEV (FEET)	371.8	372.4	373.8
PROPOSED ELEV (FEET)	372.0	375.8	

ALIGN B-B'
SCALE: H: 1"=20'
V: 1"=10'



EXISTING ELEV (FEET)	370.1	373.2	374.3
PROPOSED ELEV (FEET)	369.1	371.8	376.0

ALIGN C-C'
SCALE: H: 1"=20'
V: 1"=10'

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINNAN · LICENSED PROFESSIONAL ENGINEER · 081473

01/08/2024
Signature Date
MICHAEL J. FINNAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
FLOOD PLAIN PROFILE

Project No. 190085001
Date NOVEMBER 28, 2023
Drawn By GN
Checked By MT

Drawing No. CG202
Sheet 7 of 18

LANGAN
Project No. 190085001

20 0 5 10 20
SCALE: 1 INCH = 20 FEET

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINA · 081473 · LICENSED PROFESSIONAL ENGINEER

01/08/2024
Signature Date

MICHAEL J. FINA, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

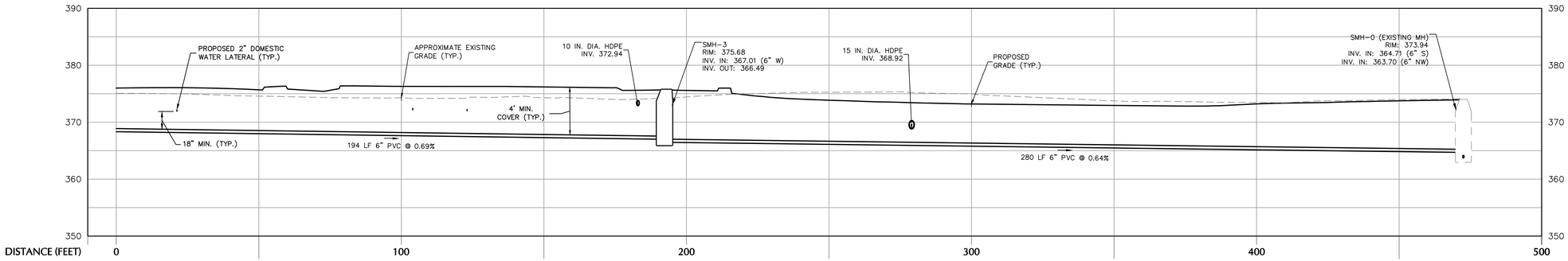
Drawing Title
UTILITY PLAN

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

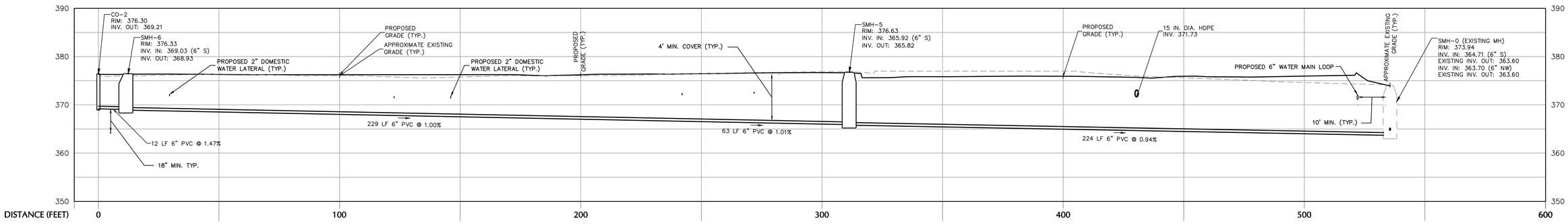
Drawing No. CU101
Sheet 8 of 18

LANGAN
Project No. 190085001

Date: 1/8/2024 Time: 11:07 User: lcaserta Style Table: Langan.stb Layout: CU101 Document Code: 190085001-0301-CU101-0101



SANITARY SEWER RUN - 1



SANITARY SEWER RUN - 2

H: 20 V: 10 — 0 5 10 20 / 0 5 10

SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINNAN · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature 01/08/2024 Date

MICHAEL J. FINNAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

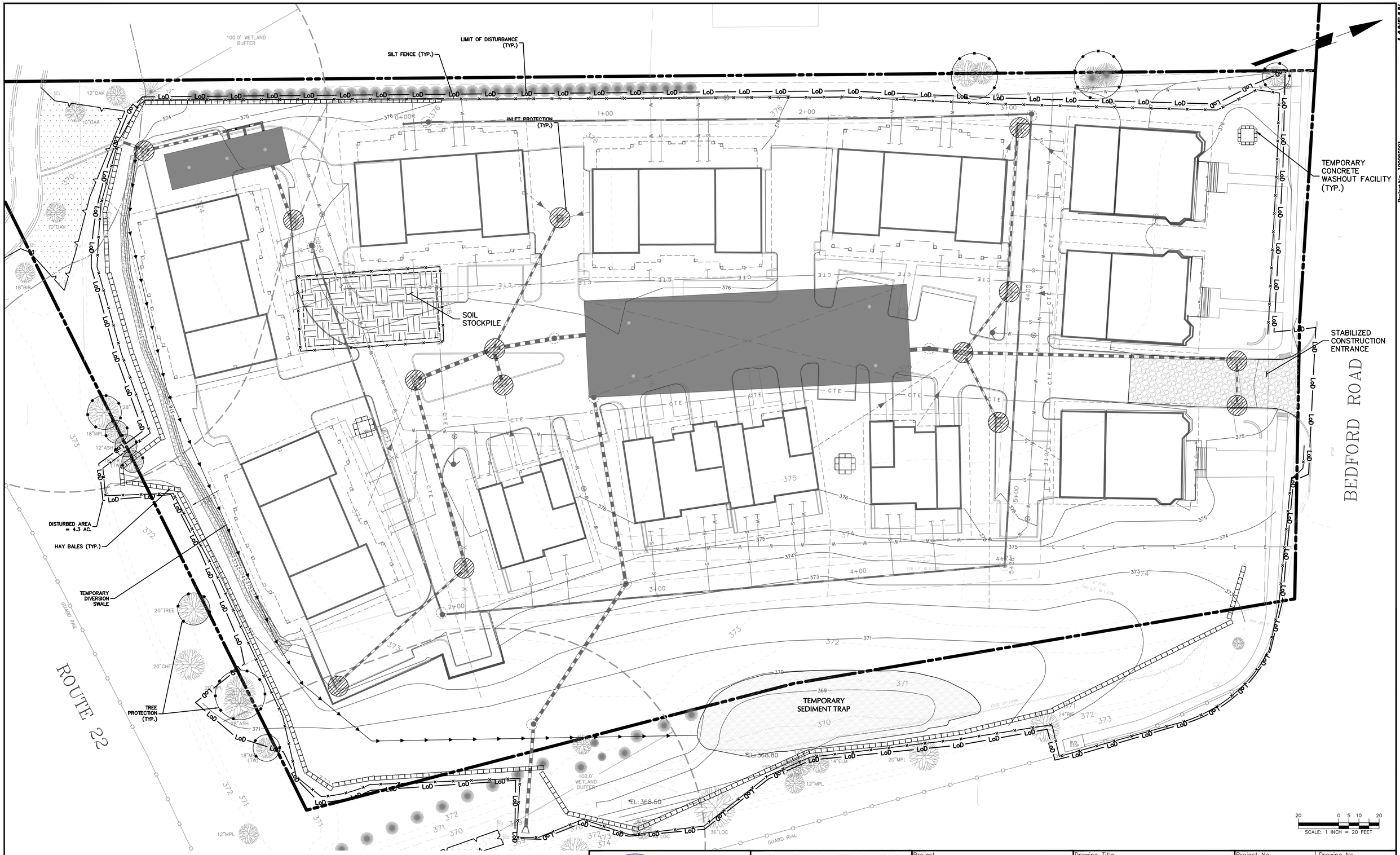
Drawing Title
SANITARY SEWER PROFILE

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CU201
Sheet 9 of 18

LANGAN Project No. 190085001

Date: 1/8/2024 Time: 11:08 User: lcaserta Style Table: Langan.stb Layout: CU201 Document Code: 190085001-0301-CU201-0101



Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

STATE OF NEW YORK · MICHAEL J. FINA · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature 01/08/2024 Date

MICHAEL J. FINA, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

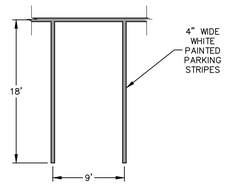
Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
SOIL EROSION & SEDIMENT CONTROL PLAN

Project No.	Drawing No.
190085001	CE101
Date: AUGUST 7, 2023	
Drawn By: GN	
Checked By: MT	
	Sheet 10 of 18

LANGAN
Project No. 190085001

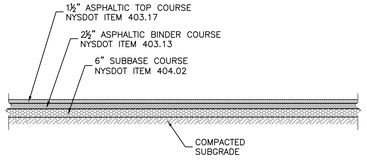
Date: 1/8/2024 Time: 11:08 User: lcaserta Style Table: Langan.stb Layout: CE101 Document Code: 190085001-0301-CE101-0101



TYPICAL STRIPING

PARKING STRIPING

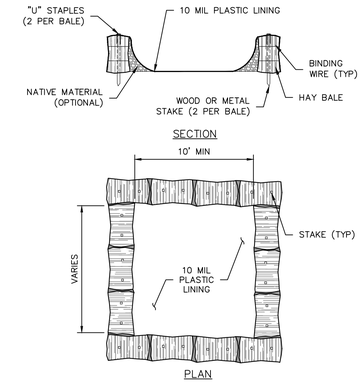
SCALE: NTS



NOTE: MINIMUM SLOPE SHALL BE 1% FOR PARKING LOT.

ASPHALT PAVEMENT DETAIL

SCALE: NTS

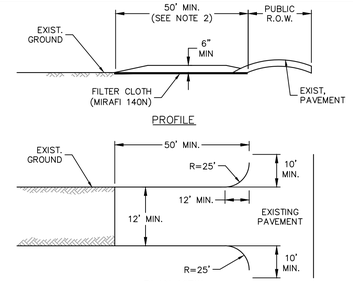


PLAN

NOTES:
1. CONCRETE WASHOUT SIGN TO BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
2. REMOVE HARDEN CONCRETE WHEN WITHIN 4" FROM TOP OF STRUCTURE.
3. CONSTRUCT NEW FACILITIES ONCE CURRENT FACILITIES ARE TWO-THIRDS FULL.
4. LINERS, HAY BALES, ETC. SHALL BE INSPECTED FOR DAMAGE. ANY DAMAGE SHALL BE REPAIR PROMPTLY.

ABOVE GROUND TEMPORARY CONCRETE WASHOUT FACILITY

SCALE: NTS



PLAN VIEW

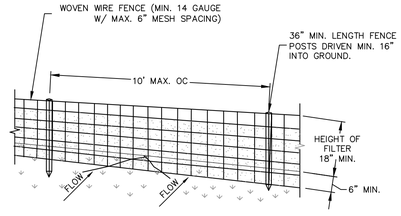
NOTE:
PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND PUBLIC R.O.W.

CONSTRUCTION SPECIFICATIONS

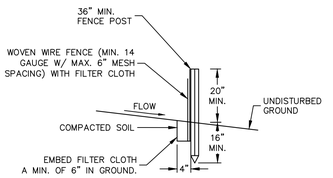
1. STONE SIZE – USE 3" STONE (NYSDOT ITEM #623.11 SIZE DESIGNATION #2, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50-FEET (EXCEPT ON SINGLE FAMILY LOT, 30-FEET MINIMUM LENGTH WOULD APPLY.)
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. WIDTH – TWELVE (12) FOOT MINIMUM. BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SIGHT.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
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 RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A 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 CONSTR. ENTRANCE

SCALE: NTS



PERSPECTIVE VIEW



SECTION VIEW

CONSTRUCTION SPECIFICATIONS:

1. 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.
2. 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, 14 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
4. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
5. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT THAT MEETS THE MINIMUM REQUIREMENTS SHOWN.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

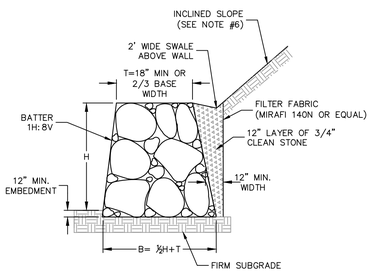
DETAIL NOTES:

1. INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL ("THE BLUE BOOK").
2. ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE, BUT AT LEAST 10 FEET FROM THE TOE OF A SLOPE STEEPER THAN 3H:1V. TO ALLOW FOR MAINTENANCE AND ROLL DOWN. THE AREA BEYOND THE FENCE MUST BE UNDISTURBED OR STABILIZED.
3. THE TYPE OF SILT FENCE SPECIFIED FOR EACH LOCATION ON THE PLAN SHALL NOT EXCEED THE MAXIMUM SLOPE LENGTH AND MAXIMUM FENCE LENGTH REQUIREMENTS SHOWN IN THE TABLE BELOW. IF A TYPE SILT FENCE IS NOT SPECIFIED ON THE PLANS, THE CRITERIA FOR STANDARD SILT FENCE CAN BE APPLIED.
4. SILT FENCE SHALL BE REMOVED AS SOON AS THE DISTURBED AREA HAS ACHIEVED FINAL STABILIZATION.

		SLOPE LENGTH/FENCE LENGTH (FT.)		
SLOPE	STEEPNESS	STANDARD	REINFORCED	SUPER
<2%	<50:1	300/1500	N/A	N/A
2–10%	50:1 TO 10:1	125/1000	250/2000	300/2500
10–20%	10:1 TO 5:1	100/750	150/1000	200/1000
20–33%	5:1 TO 3:1	60/500	80/750	100/1000
33–50%	3:1 TO 2:1	40/250	70/350	100/500
>50%	>2:1	20/125	30/175	50/250

SILT FENCE

SCALE: NTS

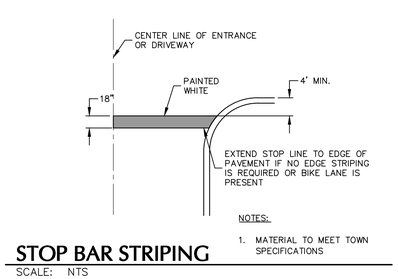


NOTES:

1. BOULDERS AND BLASTED ROCK ARE TO BE PLACED IN SUCH A MANNER THAT THERE ARE NO VOIDS LARGER THAN 4".
2. A VARIETY OF ROCK SIZES ARE TO BE USED TO CREATE AN INTERGRATED INTERLOCKING MASS.
3. AT LEAST ½ OF THE ROCK TO HAVE AT LEAST AN EFFECTIVE DIAMETER OF 2 FT.
4. THE ROCKS/BOULDERS SHALL BE PLACED SO THAT THE RESULTING FACE OF THE WALL IS A REASONABLY FLUSH PLANE
5. ALL ROCK/BOULDERS SHALL BE SOUND ROCK NOT SUSCEPTIBLE TO WEATHERING AND DEGRADATION. ROCK TO BE USED TO BE APPROVED BY THE GEOTECHNICAL ENGINEER.
6. IF THERE IS AN INCLINED SLOPE BEHIND THE WALL THEN THE BASE OF THE WALL TO BE INCREASED TO 1.5 TIMES THE HEIGHT OF THE WALL.
7. FIELD ENGINEER SHALL BE PRESENT DURING THE CONSTRUCTION OF ALL ROCK WALLS.
8. ROCK WALLS TO BE CONSTRUCTED BY A CONTRACTOR EXPERIENCED IN BOULDER WALL CONSTRUCTION.

BOULDER WALL

SCALE: NTS

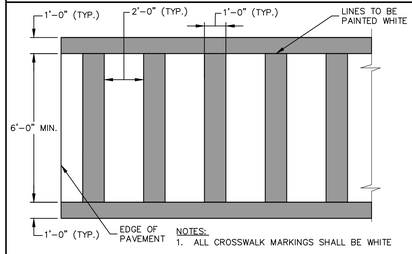


NOTES:

1. MATERIAL TO MEET TOWN SPECIFICATIONS

STOP BAR STRIPING

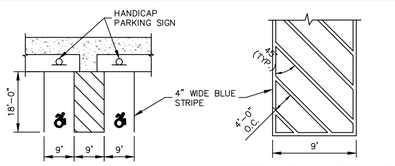
SCALE: NTS



NOTES:
1. ALL CROSSWALK MARKINGS SHALL BE WHITE

CROSSWALK STRIPING (TYPE LS)

SCALE: NTS

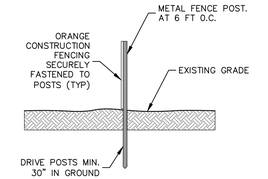


STRIPING DETAIL IN ACCESS AISLE

NOTES:
1. ALL STALLS SHALL BE A MINIMUM OF 8'-0"X18'-0".
2. SPACES DESIGNATED AS BEING "VAN ACCESSIBLE" SHALL BE ADJACENT TO ACCESS AISLES WITH A MIN. WIDTH OF 8'-0".
3. PROPOSED STRIPING SHALL BE BLUE IN COLOR

ADA PARKING SPACE STRIPING

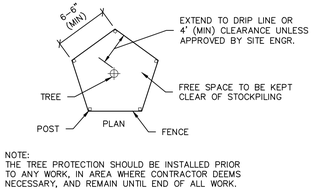
SCALE: NTS



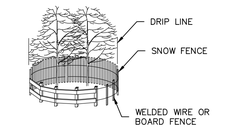
SECTION VIEW

ORANGE CONSTRUCTION FENCE

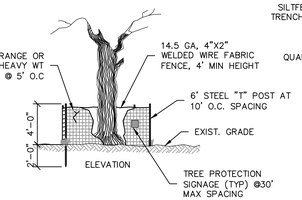
SCALE: NTS



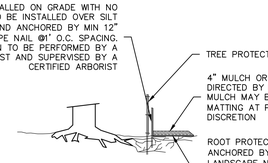
NOTE:
THE TREE PROTECTION SHOULD BE INSTALLED PRIOR TO ANY WORK, IN AREA WHERE CONTRACTOR DEEMS NECESSARY, AND REMAIN UNTIL END OF ALL WORK.



CORRECT METHOD OF TREE FENCING



SILTFENCE TO INSTALLED ON GRADE WITH NO TRENCH. MATTING TO BE INSTALLED OVER SILT FABRIC AND ANCHORED BY MIN 12" LANDSCAPE NAIL @1' O.C. SPACING. INSTALLATION TO BE PERFORMED BY A QUALIFIED ARBORIST AND SUPERVISED BY A CERTIFIED ARBORIST



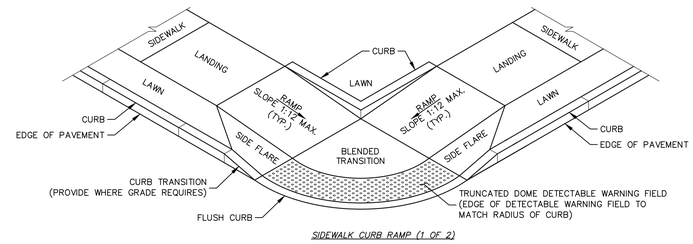
ROOT PROTECTION MATTING DETAIL

CONSTRUCTION SPECIFICATIONS

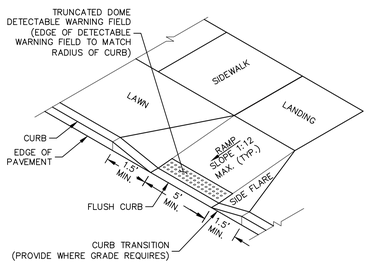
1. TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS. EXACT LOCATION, DEPTH AND METHODS OF ROOT PRUNING TO BE DETERMINED IN FIELD BY PROJECT FORESTER.
2. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING.
3. TRENCH SHOULD BE BACKFILLED IMMEDIATELY OR INCORPORATED WITH SILT FENCE INSTALLATION.
4. ROOTS SHOULD BE SEVERED BY TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT. ROOTS OVER 1.5" DIAMETER SHOULD BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.

TREE VEGETATION PROTECTION BARRIER

SCALE: NTS



SIDEWALK CURB RAMP (1 OF 2)



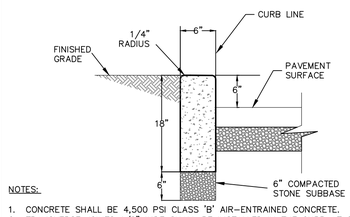
SIDEWALK CURB RAMP (2 OF 2)

SIDEWALK CURB RAMP

SCALE: NTS

SIDEWALK CURB RAMP NOTES:

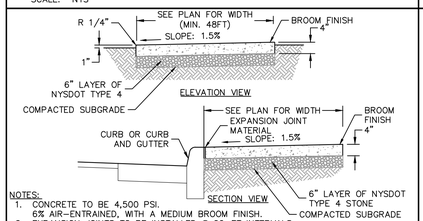
1. THERE SHALL BE A LANDING AT THE TOP OF EACH CURB RAMP.
2. LANDINGS SHALL HAVE A MINIMUM CLEAR DIMENSION OF 5 FEET BY 5 FEET SQUARE. THE MAXIMUM CROSS SLOPE AT LANDINGS IS 2 PERCENT IN ANY DIRECTION. LANDINGS MAY OVERLAP WITH ADJACENT LANDINGS OR A SINGLE LANDING MAY SERVE MULTIPLE CURB RAMPS OR PARALLEL/PERPENDICULAR RAMPS.
3. THE MAXIMUM CROSS SLOPE OF CURB RAMPS SHALL BE 2 PERCENT. CURB RAMPS SURFACES SHALL GENERALLY LIE IN CONTINUOUS PLANES WITH A MINIMUM OF SURFACE WARP.
4. THE RUNNING GRADE OF CURB RAMPS SHOULD BE AS FLAT AS PRACTICABLE. THE MAXIMUM RUNNING GRADE OF ANY PORTION OF ANY CURB SHALL BE 1:12 (8.3%).
5. CURB RAMPS LOCATED WHERE PEDESTRIANS MAY WALK ACROSS THE CURB RAMP SHALL HAVE FLARED SIDES. THE LENGTH OF THE FLARES SHALL BE AT LEAST TEN (10) TIMES THE CURB HEIGHT, MEASURED ALONG THE CURB LINE. WHEN INFEASIBLE OR IMPRACTICABLE TO PROVIDE A LANDING THAT IS AT LEAST 5 FEET WIDE (MEASURED FORM THE TOP OF THE RAMP TO THE BACK OF THE SIDEWALK), THE LENGTH OF THE FLARES SHALL BE TWELVE (12) TIME THE CURB HEIGHT MEASURED ALONG THE CURB LINE.
6. THE SURFACE OF ALL CURB RAMPS SHALL BE STABLE, FIRM AND SLIP RESISTANT. A COARSE BROOM FINISH RUNNING PERPENDICULAR TO THE SLOPE IS RECOMMENDED ON CONCRETE RAMP SURFACES, EXCLUSIVE OF THE DETECTABLE WARNING FIELDS.
7. RAMP TRANSITIONS BETWEEN WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT VERTICAL CHANGES.
8. COORDINATE ALL TRAFFIC CONTROL DEVICES, UTILITY LOCATIONS, SIGNS, STREET FURNITURE AND DRAINAGE TO ENSURE A CONTINUOUS PEDESTRIAN ACCESS ROUTE AT ALL CURB RAMP LOCATIONS. GUIDANCE FOR CROSSWALK MARKINGS AND TRAFFIC CONTROL DEVICES IS PROVIDED IN THE MUTCD. DRAINAGE GRATES AND UTILITY ACCESS COVERS ARE NOTE ALLOWED IN RAMP WALKING SURFACES OR LANDINGS UNLESS APPROVE BY THE DESIGN ENGINEER.
9. AT MARKED CROSSINGS, THE FULL WIDTH OF THE RAMP SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS. THE SIDES OF THE RAMP (THE FLARES) NEED NOT BE WITHIN THE WIDTH OF THE MARKINGS.
10. DETAILS ILLUSTRATE THAT DETECTABLE WARNINGS ARE REQUIRED. SEE THE CURRENT DETECTABLE WARNING STANDARD DETAIL AND NOTES FOR SPECIFIC DETECTABLE WARNING REQUIREMENTS.
11. SLOPES ON BLENDED TRANSITIONS SHALL NOT BE STEEPER THAN 2% (1 ON 50) IN ANY DIRECTION).
12. REFER TO THE SIDEWALK DETAIL FOR REQUIRED CONCRETE STRENGTH.



NOTES:
1. CONCRETE SHALL BE 4,500 PSI CLASS 'B' AIR-ENTRAINED CONCRETE.
2. TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB AT 20 FOOT INTERVALS AND SHALL BE FILLED WITH PREFORMED BITUMINOUS JOINT FILLER.
3. ALL CURBS SHALL BE INSTALLED ON AN APPROVED, COMPACTED SUBGRADE.

6-INCH CONCRETE CURB

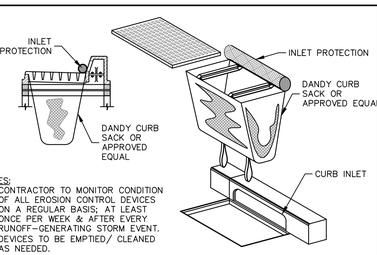
SCALE: NTS



NOTES:
1. CONCRETE TO BE 4,500 PSI. 6% AIR-ENTRAINED, WITH A MEDIUM BROOM FINISH.
2. EXPANSION JOINTS TO BE INSTALLED @ 20-FT INTERVALS
3. 1" TOOLED JOINTS @ 5-FT INTERVALS.
4. EXTERIOR CONCRETE SHALL HAVE A WATER CONTENT RATIO OF 0.45 AND 6% AIR ENTRAINMENT.
5. CONTROL JOINTS SHALL BE SPACED MAXIMUM 15 FEET APART IN BOTH DIRECTIONS.

CONCRETE SIDEWALK

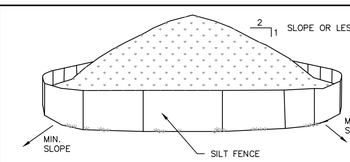
SCALE: NTS



NOTES:
1. CONTRACTOR TO MONITOR CONDITION OF ALL EROSION CONTROL DEVICES ON A REGULAR BASIS; AT LEAST ONCE PER WEEK & AFTER EVERY RUNOFF-GENERATING STORM EVENT.
2. DEVICES TO BE EMPTIED/ CLEANED AS NEEDED.

INLET PROTECTION - DANDY SACK

SCALE: NTS



NOTES:
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1V:2H.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH SILT FENCING, THEN STABILIZED WITH VEGETATION OR COVERED.
4. SEE SPECIFICATIONS FOR INSTALLATION OF SILT FENCE.
5. HAY BALES TO BE USED WHERE STOCKPILES ARE LOCATED ON PAVED AREAS.

TEMPORARY STOCKPILE

SCALE: NTS

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINNEGAN · LICENSED PROFESSIONAL ENGINEER

Signature 081473 — 01/08/2024 Date

MICHAEL J. FINNEGAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

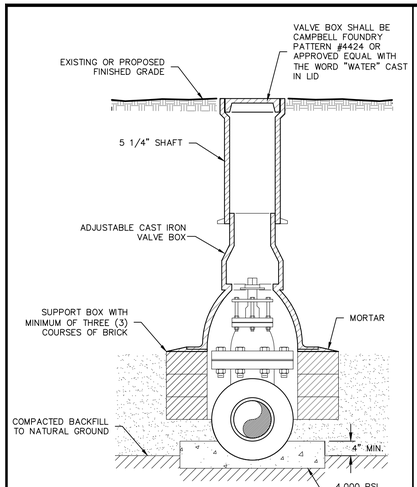
Drawing Title: DETAILS (1 OF 4)

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CS501
Sheet 11 of 18

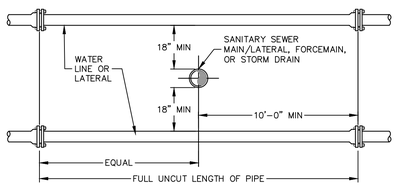
LANGAN
Project No. 190085001

Date: 1/8/2024 Time: 11:08 User: lcaserta Style Table: Langan.stb Layout: Layout1 Document Code: 190085001-0301-CS501-0101

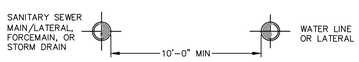


NOTES:
1. SIMILAR INSTALLATION FOR CURB BOX OR SERVICE LINE.
2. REFER TO PLAN FOR SIZE AND LOCATION.
3. VALVES TO BE MUELLER.

VALVE BOX
SCALE: NTS



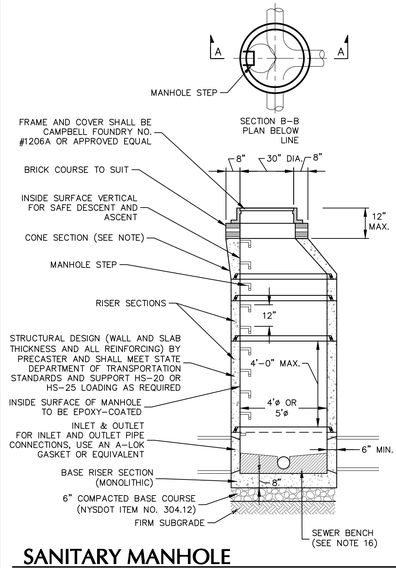
VERTICAL SEPARATION



HORIZONTAL SEPARATION

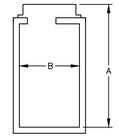
NOTES:
1. NO DEVIATION IN THE SEPARATION REQUIREMENTS WILL BE PERMITTED WITHOUT THE APPROVAL OF THE HEALTH DEPARTMENT.
2. IF THE MINIMUM SEPARATION REQUIREMENTS CANNOT BE ACHIEVED, ONE OF THE FOLLOWING MUST USED:
   A. VERTICAL:
      - OFFSET THE WATER LINE TO PROVIDE 18" MINIMUM VERTICAL SEPARATION FROM THE SEWER/STORM PIPE. ONE FULL LENGTH OF PIPE MUST BE CENTERED OVER THE SEWER/STORM PIPE SO THAT BOTH JOINTS WILL BE AS FAR AWAY FROM THE SEWER/STORM PIPE AS POSSIBLE. REFER TO WATER LINE OFFSET DETAIL FOR ADDITIONAL INFORMATION.
   B. VERTICAL AND HORIZONTAL:
      - CONSTRUCT THE SEWER OF PVC PRESSURE PIPE MATERIAL, 10' ON EACH SIDE OF THE WATER LINE/SEWER CROSSING. THE SEWER PIPE MUST BE PRESSURE TESTED.
      - ENCASE THE WATER LINE IN 50 PSI CONCRETE, 10' ON EACH SIDE OF THE WATER LINE/SEWER CROSSING. CONCRETE ENCASEMENT MUST BE A MINIMUM OF 6" AROUND THE WATER LINE.

WATER LINE SEPARATION
SCALE: NTS

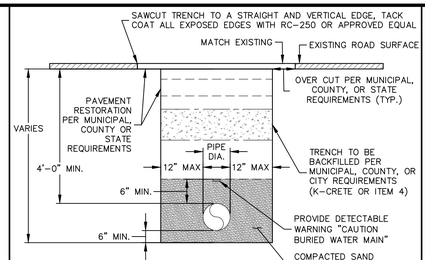


SANITARY MANHOLE
SCALE: NTS

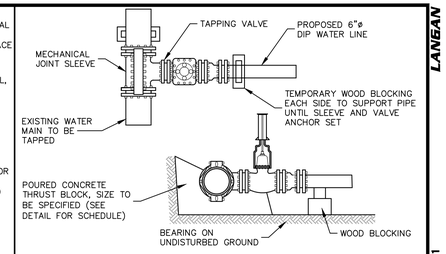
SANITARY MANHOLE NOTES:
1. THE DEPTH OF THE INVERT CHANNEL SHALL BE EQUAL TO 3/4 OF THE DIAMETER OF THE SEWER.
2. THE BENCH SHALL SLOPE TOWARD THE INVERT CHANNEL AT A RATE OF 1" PER FOOT.
3. TYPE "B" MANHOLES (SHALLOW TYPE) TO BE PROVIDED WHERE REQUIRED BY DEPTH CONDITIONS.
4. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLE.
5. ALL CONCRETE SHALL BE 4,000 PSI MINIMUM.
6. ENTIRE OUTSIDE SURFACE OF MANHOLE SHALL RECEIVE TWO COATS OF BITUMINOUS COATING. KOPPERS 300M PENNOXY TAR 32-8-4, OR APPROVED EQUAL.
7. INSTALL 2 LAYERS OF PLASTIC PREFORMED JOINT SEALANT BETWEEN ALL SECTIONS & UNDER FRAME.
8. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR MANHOLE IN ACCORDANCE WITH SPECIFICATIONS.
9. 4' DIA. MANHOLE – FROM 8" TO 30" PIPES
10. MANHOLES THAT RECEIVE FORCE MAIN DISCHARGE OR THAT ARE LOCATED ON INTERCEPTORS OR TRUNK SEWERS SHALL BE CONSTRUCTED WITH A DIP LINE.
11. UNLESS OTHERWISE SPECIFIED, SANITARY SEWER MANHOLES SHALL HAVE LETTERS "SEWER", AND STORM DRAIN MANHOLES SHALL HAVE LETTERS "DRAIN" CAST ON THE COVERS.
12. THE PRECAST CONCRETE STRUCTURE SHALL COMPLY WITH ASTM SPECIFICATIONS C478.
13. ALL SANITARY SEWER MANHOLES ARE TO BE CONSTRUCTED WITH THE COMPRESSION TYPE RESILIENT SEAL ASSEMBLY EQUAL TO "OMEGA CONCRETE PRODUCTS INC.".
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH AND CONSTRUCT THE PROPER SIZE STRUCTURE INCLUDING THE NECESSARY OPENINGS TO ACCOMMODATE THE WORK, AS SHOWN ON THE PLANS OR ORDERED BY THE ENGINEER, AT NO ADDITIONAL COST.
15. ALL NECESSARY PATCHING SHALL BE ACCOMPLISHED WITH A NON-SHRINK CEMENT MORTAR GROUT EQUAL TO "SIKA-SET" AS MANUFACTURED BY THE SIKA CHEMICAL CORPORATION.
16. THE CHANNEL WALLS SHOULD BE FORMED OR SHAPED TO THE FULL HEIGHT OF THE CROWN OF THE OUTLET SEWER IN SUCH A MANNER AS TO NOT OBSTRUCT MAINTENANCE, INSPECTION, OR FLOW IN THE SEWERS.



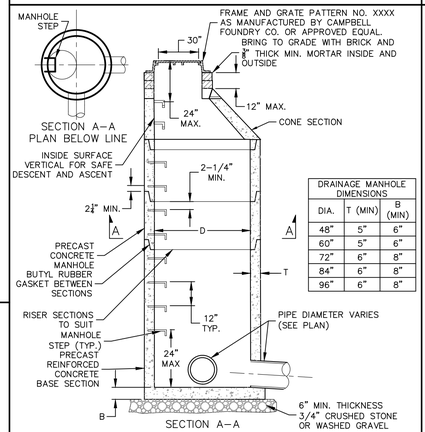
DEPTH 'A'	WIDTH 'B'
< 10'-0"	4'-0"ø
> 10'-0"	5'-0"ø



WATER MAIN TRENCH
SCALE: NTS



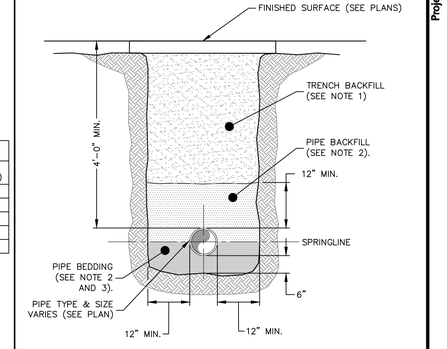
TAPPING SLEEVE AND VALVE ASSEMBLY
SCALE: NTS



DRAINAGE MANHOLE DIMENSIONS		
DIA.	T (MIN)	B (MIN)
48"	5"	6"
60"	5"	6"
72"	6"	8"
84"	6"	8"
96"	6"	8"

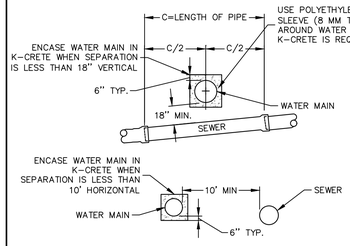
NOTES:
1. MANHOLE TO BE DESIGNED FOR H-20 LOADING.
2. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLE.
3. CONCRETE TO TEST 4,000 PSI MINIMUM @ 28 DAYS IN CONFORMANCE WITH ASTM C-478.
4. INSTALL BUTYL RUBBER BETWEEN ALL SECTIONS OF MANHOLE.
5. STEPS TO ALUMINUM ALLOY WITH DEPRESSED TREAD. STEEL REINFORCED POLYPROPYLENE IS OPTIONAL.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S APPROVAL.
7. SOIL CONDITIONS BELOW STRUCTURE DEEMED UNSUITABLE BY THE FIELD ENGINEER SHALL BE EXCAVATED TO A SUITABLE MATERIAL OR A MAXIMUM OF TWO ADDITIONAL FEET AND BACKFILLED WITH 3/4" CLEAN CRUSHED STONE.

STORMWATER MANHOLE
SCALE: NTS



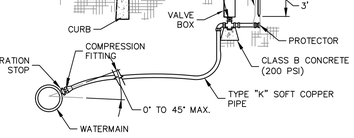
NOTES:
1. PREDOMINATELY GRANULAR FILL MATERIAL. MAX. PARTICLE SIZE 4". COMPACT IN MAX. 8" LOOSE LIFTS TO 95% MODIFIED PROCTOR DENSITY USING ONSITE MATERIALS.
2. MIXTURE OF CRUSHED STONE AND GRAVEL, FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS AND ELONGATED PARTICLES. MAX. PARTICLE SIZE ¾". COMPACT IN MAX. 6" LOOSE LIFTS.
3. WHEN IN LEDGE, USE AASHTO NO. 67 OR EQUAL PROCESSED SAND AND GRAVEL FREE OF DEBRIS, CLAY LUMPS, ORGANIC, OR OTHER DELETERIOUS MATERIAL. COMPACT TO THE SPRINGLINE IN MAX. 6" LOOSE LIFTS.
4. TRENCHING SHALL BE IMPLEMENTED IN ACCORDANCE WITH O.S.H.A. STANDARDS.

SEWER PIPE TRENCH
SCALE: NTS



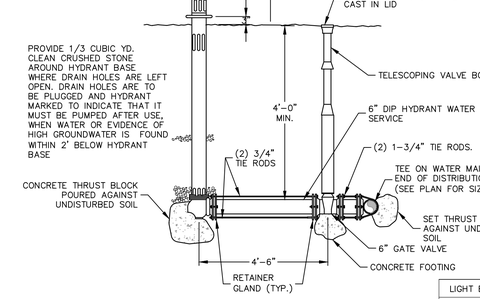
NOTES:
1. WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18" BETWEEN THE OUTSIDE OF THE WATER MAIN & THE OUTSIDE OF THE SEWER. THIS WILL BE THE CASE WHETHER THE WATER MAIN PASSES ABOVE OR BELOW THE SEWER.
2. AT CROSSINGS ONE FULL LENGTH OF SEWER PIPE SHALL BE LAID SO BOTH JOINTS WILL BE AS FAR FROM THE WATER MAIN AS POSSIBLE. SEE DETAIL WHERE THE SEWER HAS ALREADY BEEN INSTALLED. THE WATER MAIN SHALL BE PLACED SO THAT THE JOINTS ON THE WATER MAIN ARE EQUIDISTANT FROM THE SEWER.
3. WATER MAINS SHALL BE LAID AT LEAST 10' HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWER. IN CASES WHERE THIS IS NOT POSSIBLE, THE REVIEWING AUTHORITY MAY ALLOW ENCASEMENT, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER.
4. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY SEWER MANHOLE.
5. IN THE EVENT THAT THERE IS ANY DEVIATION FROM THE ABOVE REQUIREMENTS, SAID CHANGES MUST BE APPROVED BY THE COUNTY HEALTH DEPARTMENT PRIOR TO THE COMPLETION OF ANY SUCH CHANGES.

SEWER - WATER MAIN CROSSING
SCALE: NTS



NOTE:
1. INSTALL WATER SERVICE WITH MIN. 4'-0" COVER
2. COPPER SERVICES SHALL BE CONTINUOUS WITH NO JOINTS FROM CORP. STOP TO QUARTER BEND.
3. ALL COPPER FITTINGS SHALL BE COMPRESSION FITTINGS.

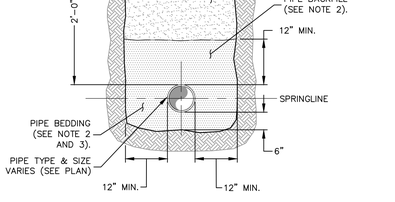
WATER SERVICE LINE
SCALE: NTS



LIGHT BLUE	1,500 GPM OR GREATER
GREEN	1,000 TO 1,499 GPM
ORANGE	500 TO 999 GPM
RED	LESS THAN 500 GPM
WHITE	CROSS ON TOP OF HYDRANT – FOR FILLING TANKERS ONLY

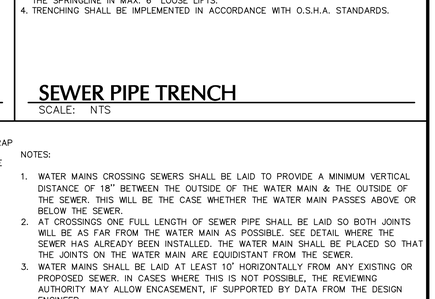
NOTES:
1. PUMPER OUTLET SHALL FACE STREET; HOSE OUTLETS SHALL BE PARALLEL TO STREET.
2. PLUMBNESS OF HYDRANT TO BE CHECKED IN TWO DIRECTIONS, 90 APART.
3. RODDING SHALL CONSIST OF TWO 3/4" THREADED RODS CAREFULLY COATED WITH BITUMASTIC PAINT. RODDING MAY BE OMITTED BETWEEN THE MAIN AND LATERAL VALVE ONLY WHERE A TAPPING VALVE OR HYDRANT VALVE ANCHORING TEE IS USED.
4. 1-1/2" STONE SHALL BE PLACED AROUND THE HYDRANT FROM THE BOTTOM OF THE TRENCH, BUT AT LEAST 6" BELOW THE BASE OF THE HYDRANT TO 6" ABOVE THE WASTE OPENING AND TO A DISTANCE OF 12" AROUND THE ELBOW.
5. HYDRANTS WITH PLUGGED DRAINS SHALL HAVE A 3" BLACK CIRCLE PAINTED DIRECTLY UNDER THE PUMPER OUTLET.
6. IF GROUND WATER IS ENCOUNTERED WITHIN 7' OF SURFACE, DRAIN HOLES SHALL BE PLUGGED. WHEN DRAIN ARE PLUGGED, THE BARRELS MUST BE PUMPED DRY AFTER USE. DURING FREEZING WEATHER, WHERE HYDRANT DRAINS ARE NOT PLUGGED, A GRAVEL POCKET OR DRY WELL SHALL BE PROVIDED UNLESS THE NATURAL SOILS WILL PROVIDE ADEQUATE DRAINAGE. HYDRANT DRAINS SHALL NOT BE CONNECTED TO OR LOCATED WITHIN 10' OF SANITARY SEWER OR STORM DRAINS.
7. TYPE OF HYDRANT TO BE AS APPROVED BY LOCAL FIRE DEPARTMENT, GOVERNMENT AGENCY AND OR WATER COMPANY
8. FOR ALL NEW HYDRANTS THE CONTRACTOR SHALL COLOR CODE THE TOPS OF THE HYDRANT(S) TO DESIGNATE THE LEVEL OF SERVICE BEING PROVIDED BY THAT HYDRANT. COLOR CODING SHALL BE IN ACCORDANCE WITH THE TABLE BELOW.
9. BLUE STREET REFLECTORS SHALL BE INSTALLED TO INDICATE FIRE HYDRANT LOCATIONS

FIRE HYDRANT
SCALE: NTS



NOTES:
1. PREDOMINATELY GRANULAR FILL MATERIAL. MAX. PARTICLE SIZE 4". COMPACT IN MAX. 8" LOOSE LIFTS TO 95% MODIFIED PROCTOR DENSITY USING ONSITE MATERIALS.
2. MIXTURE OF CRUSHED STONE AND GRAVEL, FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS AND ELONGATED PARTICLES. MAX. PARTICLE SIZE ¾". COMPACT IN MAX. 6" LOOSE LIFTS.
3. WHEN IN LEDGE, USE AASHTO NO. 67 OR EQUAL PROCESSED SAND AND GRAVEL FREE OF DEBRIS, CLAY LUMPS, ORGANIC, OR OTHER DELETERIOUS MATERIAL. COMPACT TO THE SPRINGLINE IN MAX. 6" LOOSE LIFTS.
4. TRENCHING SHALL BE IMPLEMENTED IN ACCORDANCE WITH O.S.H.A. STANDARDS.

DRAINAGE PIPE TRENCH
SCALE: NTS



NOTES:
1. PREDOMINATELY GRANULAR FILL MATERIAL. MAX. PARTICLE SIZE 4". COMPACT IN MAX. 8" LOOSE LIFTS TO 95% MODIFIED PROCTOR DENSITY USING ONSITE MATERIALS.
2. MIXTURE OF CRUSHED STONE AND GRAVEL, FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS AND ELONGATED PARTICLES. MAX. PARTICLE SIZE ¾". COMPACT IN MAX. 6" LOOSE LIFTS.
3. WHEN IN LEDGE, USE AASHTO NO. 67 OR EQUAL PROCESSED SAND AND GRAVEL FREE OF DEBRIS, CLAY LUMPS, ORGANIC, OR OTHER DELETERIOUS MATERIAL. COMPACT TO THE SPRINGLINE IN MAX. 6" LOOSE LIFTS.
4. TRENCHING SHALL BE IMPLEMENTED IN ACCORDANCE WITH O.S.H.A. STANDARDS.

SEWER PIPE TRENCH
SCALE: NTS

NOTE:
IF UNABLE TO PROVIDE REQUIRED DIMENSIONS, THEN PROVIDE SAME AREA BASED UPON THE REQUIRED DIMENSIONS.

RIP RAP OUTLET PROTECTION
SCALE: NTS

NOTES:
1. BUILDING LATERAL SEWER PIPE MATERIAL SHALL BE CONSTRUCTED FROM THE SAME MATERIAL AS THE SEWER MAIN.
2. WYE BRANCH CONNECTION SHALL BE A FITTING CONSTRUCTED SPECIFICALLY FOR THE INSTALLED MAIN LINE SEWER MATERIAL CLASS (OR APPROVED EQUAL).

BUILDING LATERAL SEWER CONNECTION
SCALE: NTS

SANITARY CLEANOUT
SCALE: NTS

PROPOSED SEWER CONNECTION TO EXISTING SEWER MANHOLE DETAIL
SCALE: NTS

SEWER SERVICE LINE TRENCH DETAIL
SCALE: NTS

No.	Description	Date
3	RESPONSE TO COMMENTS	01/08/24
2	RESPONSE TO COMMENTS	11/13/23
1	RESPONSE TO COMMENTS	10/06/23

Revisions

STATE OF NEW YORK · MICHAEL J. FINAN · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature 01/08/2024 Date

MICHAEL J. FINAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

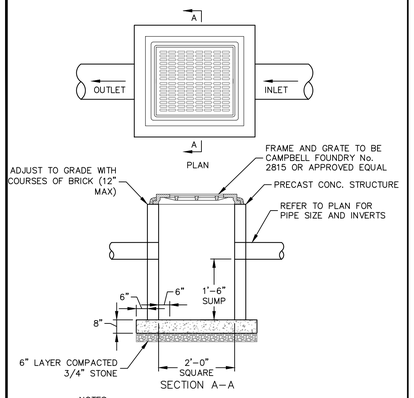
Drawing Title: DETAILS (2 OF 4)

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

Drawing No. CS502
Sheet 12 of 18

LANGAN
Project No. 190085001

Date: 1/8/2024 Time: 11:08 User: lcaserta Style Table: Langan.stb Layout: Layout1 Document Code: 190085001-0301-CS501-0102

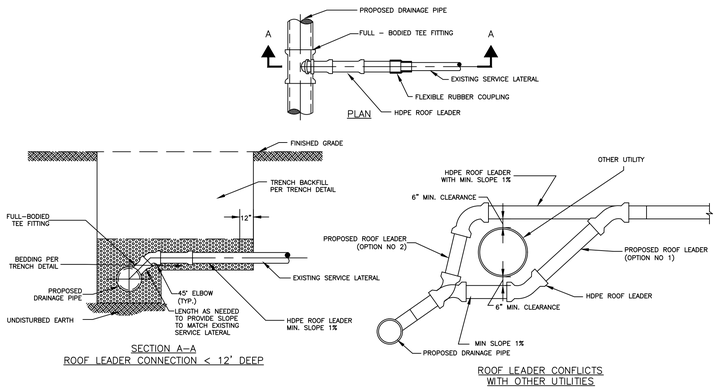


NOTES:

1. FOUNDATION TO BE 4000 PSI CONCRETE.
2. THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER.
3. FRAME AND GRATE TO BE CAMPBELL FOUNDRY CASTING NUMBER 2815.
4. PROVIDE LADDER RUNGS AT 12" CENTER TO CENTER.
5. WHEN THE DEPTH OF AN INLET EXCEEDS 10 FEET AS MEASURED FROM TOP OF GRATE TO INVERT, WALLS BELOW A DEPTH OF 8 FEET SHALL BE 12" THICK AND THE DEPTH OF FOUNDATION INCREASED TO 12".

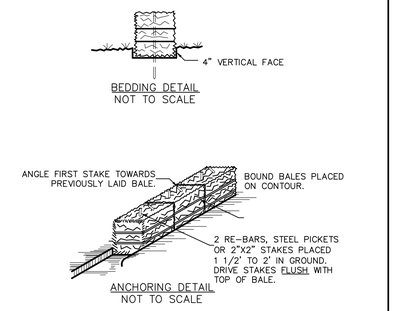
YARD DRAIN

SCALE: NTS



ROOF LEADER CONNECTION

SCALE: NTS

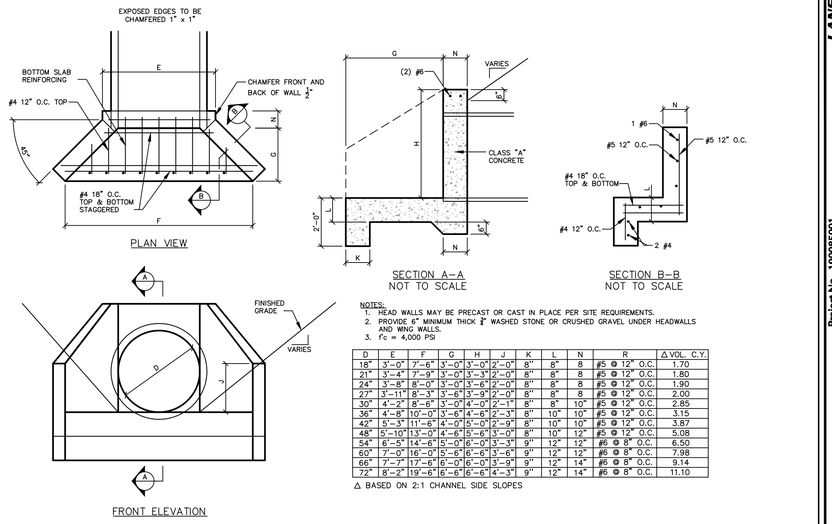


CONSTRUCTION SPECIFICATIONS:

1. BALES SHALL BE PLACED AT THE LOCATIONS SHOWN ON THE PLAN.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4 INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

HAY BALE DIKE

SCALE: NTS



NOTES:

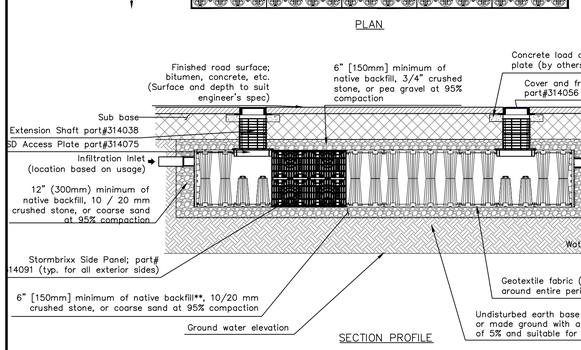
1. HEAD WALLS MAY BE PRECAST OR CAST IN PLACE PER SITE REQUIREMENTS.
2. PROVIDE 6" MINIMUM THICK ¾" WASHED STONE OR CRUSHED GRAVEL UNDER HEADWALLS AND WING WALLS.
3. f'c = 4,000 PSI

D	E	F	G	H	J	K	L	N	R	△VOL. C.Y.
18"	3'-0"	7'-6"	3'-0"	3'-0"	2'-0"	8"	8"	8	#5 @ 12" O.C.	1.70
21"	3'-4"	7'-9"	3'-0"	3'-3"	2'-0"	8"	8"	8	#5 @ 12" O.C.	1.80
24"	3'-8"	8'-0"	3'-0"	3'-6"	2'-0"	8"	8"	8	#5 @ 12" O.C.	1.90
27"	3'-11"	8'-3"	3'-6"	3'-9"	2'-0"	8"	8"	8	#5 @ 12" O.C.	2.00
30"	4'-2"	8'-6"	3'-0"	4'-0"	2'-1"	8"	8"	10"	#5 @ 12" O.C.	2.85
36"	4'-8"	10'-0"	3'-6"	4'-6"	2'-3"	8"	10"	10"	#5 @ 12" O.C.	3.15
42"	5'-3"	11'-6"	4'-0"	5'-0"	2'-9"	8"	10"	10"	#5 @ 12" O.C.	3.87
48"	5'-10"	13'-0"	4'-6"	5'-6"	3'-0"	8"	10"	12"	#5 @ 12" O.C.	5.08
54"	6'-5"	14'-6"	5'-0"	6'-0"	3'-3"	9"	12"	12"	#6 @ 8" O.C.	6.50
60"	7'-0"	16'-0"	5'-6"	6'-6"	3'-6"	9"	12"	12"	#6 @ 8" O.C.	7.98
66"	7'-7"	17'-6"	6'-0"	6'-0"	3'-9"	9"	12"	14"	#6 @ 8" O.C.	9.14
72"	8'-2"	19'-6"	6'-6"	6'-6"	4'-3"	9"	12"	14"	#6 @ 8" O.C.	11.10

△ BASED ON 2:1 CHANNEL SIDE SLOPES

CONCRETE HEADWALL

SCALE: NTS

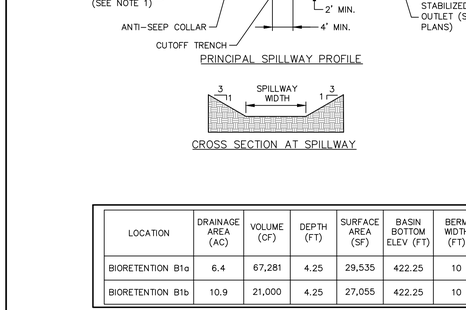


Installation depths of ACO StormBrixx SD	
Installation Location	Minimum cover depth[4] ft (m)
Non-trafficked areas i.e. landscaping [2]	1.65 (0.5)
Parking lots, vehicles up to 5,512lbs gross mass [1]	1.8 (0.55)
Parking lots, occasional vehicles greater than 5,512lbs gross mass [3]	2.0 (0.6)
Occasional heavy truck traffic up to HS-20 loading	Please consult with ACO
Maximum cover depth of ACO StormBrixx SD	6.5 (2)
Maximum depth to invert of ACO StormBrixx SD two layer system	12.56 (3.8)
Notes	
(1) Assumes 27 degree load distribution through fill material and overlaying surface asphalt or block paving	
(2) Minimum cover depth to avoid accidental damage from gardening/landscaping work	
(3) Occasional sanitation trucks or similar vehicles (typically one per week)	
(4) Please check minimum frost cover depths and water table heights for geographical location	

ACO StormBrixx SD Module
48"x24"x36" [1200x602.5x914mm (H)]
22.54cuft net volume per completed module
Brick or Cross Bonded (where applicable)
48" [1200mm]
24" [602.5mm]
Part# 314090
36" [914mm]

ACO STORMBRIXX SD ONE LAYER - INFILTRATION

SCALE: NTS



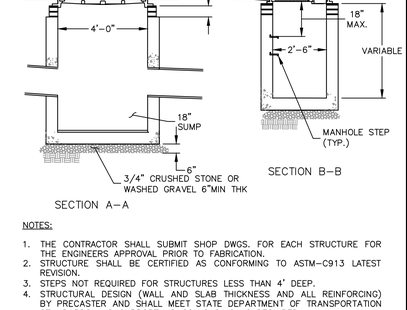
NOTES:

1. INSTALL OUTLET CONTROL STRUCTURE. BOARD UP ORIFICES, SLOTS, AND TOP OF STRUCTURE.
2. TEMPORARY SEDIMENT BASIN TO BE EXCAVATED TO THE TOP OF THE GRAVEL LAYER OF THE BIORETENTION AREA AND AQUATIC BENCH OF THE STORMWATER POND. SOIL RESTORATION TO BE PERFORMED AS NECESSARY. SOILS TO BE RESTORED SHALL BE AERATED. AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOILS, A ROLLER WITH MAHY SPIKES MAKING INDENTATION IN THE SOILS, OR PRONGS WHICH FUNCTION LIKE A MINI-SUBSOILER.
3. ONCE SITE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, THE TEMPORARY SEDIMENT BASIN SHALL BE CLEANED AND EXCAVATED FOR THE INSTALLATION OF THE BIORETENTION AREAS AND STORMWATER POND. ALL ACCUMULATED SEDIMENT WITHIN THE TEMPORARY SEDIMENT BASIN SHALL BE REMOVED.
4. SEE SEDIMENT BASIN DEWATERING STRUCTURE FOR ADDITIONAL INFORMATION ON DEWATERING THE TEMPORARY SEDIMENT BASIN.

LOCATION	DRAINAGE AREA (AC)	VOLUME (CF)	DEPTH (FT)	SURFACE AREA (SF)	BASIN BOTTOM ELEV (FT)	BERM WIDTH (FT)	BERM ELEV (FT)	SPILLWAY ELEV (FT)	SPILLWAY WIDTH (FT)	OUTLET DIA. (IN)	BASIN CLEANOUT ELEV (FT)
BIORETENTION B1a	6.4	67,281	4.25	29,535	422.25	10	427.5	426.5	10	30	424.0
BIORETENTION B1b	10.9	21,000	4.25	27,055	422.25	10	427.5	426.5	10	30	424.0

TEMPORARY SEDIMENT TRAP (USING OUTLET CONTROL STRUCTURES)

SCALE: NTS



NOTES:

1. THE CONTRACTOR SHALL SUBMIT SHOP DWGS. FOR EACH STRUCTURE FOR THE ENGINEERS APPROVAL PRIOR TO FABRICATION.
2. STRUCTURE SHALL BE CERTIFIED AS CONFORMING TO ASTM-C913 LATEST REVISION.
3. STEPS NOT REQUIRED FOR STRUCTURES LESS THAN 4' DEEP.
4. STRUCTURAL DESIGN (WALL AND SLAB THICKNESS AND ALL REINFORCING) BY PRECASTER AND SHALL MEET STATE DEPARTMENT OF TRANSPORTATION STANDARDS AND SUPPORT HS-20 LOADING AS REQUIRED

CATCH BASIN

SCALE: NTS

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK MICHAEL J. FINNAN 081473 LICENSED PROFESSIONAL ENGINEER

01/08/2024
Signature Date
MICHAEL J. FINNAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

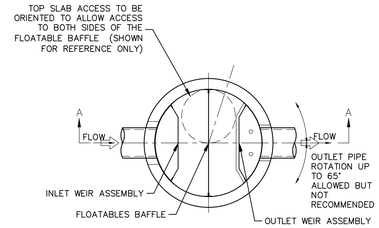
Drawing Title: DETAILS (3 OF 4)

Project No. 190085001
Date AUGUST 7, 2023
Drawn By GN
Checked By MT

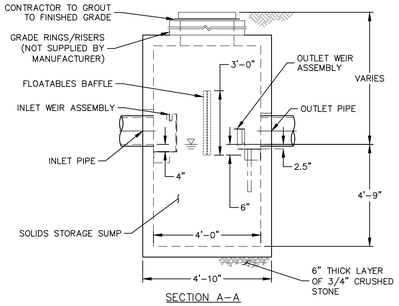
Drawing No. CS503
Sheet 13 of 18

LANGAN
Project No. 190085001

Date: 1/8/2024 Time: 11:09 User: lcaserta Style Table: Langan.stb Layout: Layout1 Document Code: 190085001-0301-CS501-0103



PLAN VIEW
TOP SLAB NOT SHOWN



SECTION A–A

FRAME AND COVER
(MAY VARY)
NOT TO SCALE

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. SCICLONEX WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. SCICLONEX STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' – 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. SCICLONEX STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.

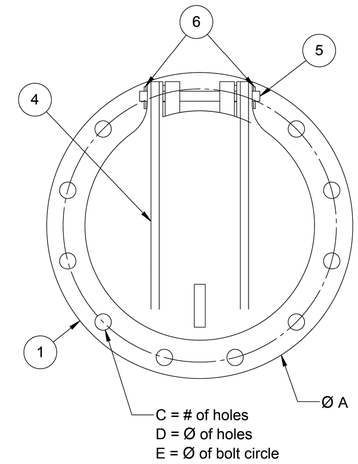
INSTALLATION NOTES
A. ANY SUB–BASE, BACKFILL DEPTH, AND/OR ANTI–FLOTATION PROVISIONS ARE SITE–SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE SCICLONEX MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

SCX-04 SCICLONEX HDS UNIT

SCALE: NTS

DIMENSIONS ARE IN INCHES					
SIZE	14	16	18	20	24
A	21	23 1/2	25	27 1/2	32
B	14	16	18	20	24
C	12	16	16	20	20
D	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8
E	18 3/4	21 1/4	22 3/4	25	29 1/2
F	1 3/16	1 1/4	1 1/8	1 1/8	1 3/8
G	4 5/8	4 1/2	7 1/2	6	6 9/16

Item	Description	QTY.	MAT'L
1	Body	1	CI-A126
2	Seat Ring	1	BRZ-B62
3	Disc Ring	1	BRZ-B62
4	Disc	1	CI-A126
5	Hinge Pin	1	304SS
6	Cotter Pin	2	18-8SS



Notes:
- 125# ANSI flange
- Two Part Epoxy Coating
- 10° Offset from verticle

TROY VALVE
A DIVISION OF FERN-TECH MANUFACTURING INC.
MANUFACTURING TRUST.

www.TroyValve.com
PHONE: 1-570-297-2125
DO NOT SCALE DRAWING

TITLE: **14"-24" Flap Valve**
DWN: TE
MAT'L: CI
PART NO: A25406
DATE: 5/28/2020
PAGE:

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

STATE OF NEW YORK · MICHAEL J. FINNAN · 081473 · LICENSED PROFESSIONAL ENGINEER

Signature 01/08/2024 Date

MICHAEL J. FINNAN, PE, LEED–AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project: 45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title: DETAILS (4 OF 4)

Project No. 190085001
Date January 5, 2024
Drawn By LC
Checked By MT

Drawing No. CS504
Sheet 14 of 18

LANGAN
Project No. 190085001

LANGAN

Project No. 190085001

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

REGISTERED LANDSCAPE ARCHITECT · MICHAEL HUNTON · 2926 · STATE OF NEW YORK

Signature 01/08/2024 Date

MICHAEL HUNTON, RLA
LANDSCAPE ARCHITECT NY Lic. No.2926

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
PLANTING PLAN

Project No.	190085001
Date	AUGUST 7, 2023
Drawn By	MJ
Checked By	MH

Drawing No.
LP101
Sheet 15 of 18

Date: 1/5/2024 Time: 13:37 User: acassella Style Table: Langan.stb Layout: LP101 Document Code: 190085001-0301-LP101-0101

TOWN OF NORTH CASTLE - ZONING BYLAW REGULATIONS COMPLIANCE CHART

REGULATION SECTION	REQUIRED / PERMITTED	PROVIDED / PROPOSED	COMPLIANCE
355–56.H.	THE COMMISSION MAY REQUIRE THE PLANTING OF TREES, OF AN APPROVED SPECIES, OF NOT LESS THAN THREE INCH CALIPER AT TIME OF PLANTING, SHALL BE PROVIDED WITHIN SUCH A PARKING AREA FOR EACH 10 PARKING SPACES.	1 TREE/ EVERY 10 PARKING SPACE. 75 PARKING SPACES IN PARKING AREA. 75 PARKING SPACES/ 10 = 7.5 7.5 = 8 PARKING LOT TREES REQUIRED. 24 PARKING LOT TREES PROVIDED.	COMPLIES
355–56 H.2.	IN ALL OFF–STREET PARKING AREAS CONTAINING 25 OR MORE PARKING SPACES, AT LEAST 10 % OF THE INTERIOR OF THE PARKING AREA SHALL BE CURBED AND LANDSCAPED WITH TREES, SHRUBS AND OTHER PLANT MATERIAL.	10 % OF INTERIOR LANDSCAPING PER PARKING AREA CONTAINING 25 OR MORE PARKING SPACES REQUIRED AREA OF PARKING LOT = 40,228 AREA OF INTERIOR LANDSCAPE=8,233 8,233/40,228X100%=20.5% OVER 20% OF INTERIOR LANDSCAPING PROVIDED	COMPLIES

GENERAL LANDSCAPE PLANTING NOTES

1. NAMES OF PLANTS AS DESCRIBED ON THIS PLAN CONFORM TO THOSE GIVEN IN "STANDARDIZED PLANT NAMES", 1942 EDITION, PREPARED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE. NAMES OF PLANT VARIETIES NOT INCLUDED THEREIN CONFORM TO NAMES GENERALLY ACCEPTED IN NURSERY TRADE.
2. ALL EXPOSED GROUND SURFACES THAT ARE NOT PAVED WITHIN THE CONTRACT LIMIT LINE, AND THAT ARE NOT COVERED BY LANDSCAPE PLANTING OR SEEDING AS SPECIFIED, SHALL BE COVERED BY A NATURAL MULCH THAT WILL PREVENT SOIL EROSION AND THE EMANATION OF DUST.
3. NO PLANT SHALL BE PUT INTO THE GROUND BEFORE ROUGH GRADING HAS BEEN COMPLETED AND APPROVED BY THE PROJECT LANDSCAPE ARCHITECT OR PROJECT ENGINEER.
4. STANDARDS FOR TYPE, SPREAD, HEIGHT, ROOT BALL AND QUALITY OF NEW PLANT MATERIAL SHALL BE IN ACCORDANCE WITH GUIDELINES AS SET FORTH IN THE "AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIAL SHALL HAVE NORMAL HABIT OF GROWTH AND BE HEALTHY, VIGOROUS, AND FREE FROM DISEASES AND INSECT INFESTATION.
5. NEW PLANT MATERIAL SHALL BE NURSERY GROWN UNLESS SPECIFIED OTHERWISE. ALL PLANTS SHALL BE SET PLUMB AND SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS THE PLANT'S ORIGINAL GRADE BEFORE DIGGING. PLANT MATERIAL OF THE SAME SPECIES AND SPECIFIED AS THE SAME SIZE SHOULD BE SIMILAR IN SHAPE, COLOR AND HABIT. THE LANDSCAPE ARCHITECT HAS THE RIGHT TO REJECT PLANT MATERIAL THAT DOES NOT CONFORM TO THE TYPICAL OR SPECIFIED HABIT OF THAT SPECIES.
6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITY AND SEWER LINES PRIOR TO THE START OF EXCAVATION ACTIVITIES. NOTIFY THE PROJECT ENGINEER AND OWNER IMMEDIATELY OF ANY CONFLICTS WITH PROPOSED PLANTING LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE.
7. THE CONTRACTOR SHALL NOT MAKE SUBSTITUTIONS. IF THE SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE, THE CONTRACTOR SHALL SUBMIT PROOF OF NON–AVAILABILITY TO THE LANDSCAPE ARCHITECT AND OWNER, TOGETHER WITH A WRITTEN PROPOSAL FOR USE OF AN EQUIVALENT MATERIAL.
8. LANDSCAPE CONTRACTOR TO STAKE OUT PLANTING LOCATIONS, FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT AND/OR OWNER BEFORE PLANTING WORK BEGINS. THE LANDSCAPE ARCHITECT AND/OR OWNER SHALL DIRECT THE CONTRACTOR IN THE FINAL PLACEMENT OF ALL PLANT MATERIAL AND LOCATION OF PLANTING BEDS TO ENSURE COMPLIANCE WITH DESIGN INTENT UNLESS OTHERWISE INSTRUCTED.
9. THE LANDSCAPE ARCHITECT MAY REVIEW PLANT MATERIALS AT THE SITE, BEFORE PLANTING, FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, SIZE, AND QUALITY. THE LANDSCAPE ARCHITECT RETAINS THE RIGHT TO FURTHER REVIEW PLANT MATERIALS FOR SIZE AND CONDITION OF BALLS AND ROOT SYSTEM, INSECTS, INJURIES, AND LATENT DEFECTS, AND TO REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING PROGRESS OF WORK. THE CONTRACTOR SHALL REMOVE REJECTED PLANT MATERIALS IMMEDIATELY FROM PROJECT SITE AS DIRECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
10. DELIVERY, STORAGE, AND HANDLING
    A. PACKAGED MATERIALS: PACKAGED MATERIALS SHALL BE DELIVERED IN CONTAINERS SHOWING WEIGHT, ANALYSIS, AND NAME OF MANUFACTURER. MATERIALS SHALL BE PROTECTED FROM DETERIORATION DURING DELIVERY, AND WHILE STORED AT SITE.
    B. TREES AND SHRUBS: THE CONTRACTOR SHALL PROVIDE TREES AND SHRUBS DUG FOR THE GROWING SEASON FOR WHICH THEY WILL BE PLANTED. DO NOT PRUNE PRIOR TO DELIVERY UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT. DO NOT BEND OR BIND–TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DAMAGE BARK, BREAK BRANCHES, OR DESTROY NATURAL SHAPE. PROVIDE PROTECTIVE COVERING DURING TRANSIT. DO NOT DROP BALLED AND BURLAPPED STOCK DURING DELIVERY OR HANDLING.
    C. ALL PLANTS SHALL BE BALLED AND BURLAPPED OR CONTAINER GROWN AS SPECIFIED. NO CONTAINER GROWN STOCK WILL BE ACCEPTED IF IT IS ROOT BOUND. ALL ROOTBALL WRAPPING AND BINDING MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED FROM THE TOP OF THE BALL AT THE TIME OF PLANTING. IF THE PLANT IS SHIPPED WITH A WIRE BASKET AROUND THE ROOT BALL, THE WIRE BASKET SHALL BE CUT AND FOLDED DOWN 8 INCHES INTO THE PLANTING HOLE. WITH CONTAINER GROWN STOCK, THE CONTAINER SHALL BE REMOVED AND THE ROOT BALL SHALL BE CUT THROUGH THE SURFACE IN TWO LOCATIONS.
    D. THE CONTRACTOR SHALL HAVE TREES AND SHRUBS DELIVERED TO SITE AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY, THE CONTRACTOR SHALL SET TREES AND SHRUBS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE AND KEEP ROOTS MOIST BY COVERING WITH MULCH, BURLAP OR OTHER ACCEPTABLE MEANS OF RETAINING MOISTURE.
11. ALL LANDSCAPED AREAS TO BE CLEARED OF ROCKS, STUMPS, TRASH AND OTHER UNSIGHTLY DEBRIS. ALL FINE GRADED AREAS SHOULD BE HAND RAKED SMOOTH ELIMINATING ANY CLUMPS AND AND UNEVEN SURFACES PRIOR TO PLANTING OR MULCHING.
12. ALL PLANT MATERIAL SHALL BE INSTALLED AS PER DETAILS, NOTES AND CONTRACT SPECIFICATIONS. THE LANDSCAPE ARCHITECT MAY REVIEW INSTALLATION AND MAINTENANCE PROCEDURES.
13. NEW PLANT MATERIAL SHALL BE GUARANTEED TO BE ALIVE AND IN VIGOROUS GROWING CONDITION FOR A PERIOD OF ONE YEAR FOLLOWING ACCEPTANCE BY THE OWNER. PLANT MATERIAL FOUND TO BE UNHEALTHY, DYING OR DEAD DURING THIS PERIOD, SHALL BE REMOVED AND REPLACED IN KIND BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
14. THE CONTRACTOR SHALL KEEP AREA CLEAN DURING DELIVERY AND INSTALLATION OF PLANT MATERIALS. REMOVE AND DISPOSE OF OFF–SITE ANY ACCUMULATED DEBRIS OR UNUSED MATERIALS. REPAIR DAMAGE TO ADJACENT AREAS CAUSED BY LANDSCAPE INSTALLATION OPERATIONS.
15. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24–HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL THEN BE WATERED WEEKLY OR AS REQUIRED BY SITE AND WEATHER CONDITIONS TO MAINTAIN VIGOROUS AND HEALTHY PLANT GROWTH.
16. THE BACKFILL MIXTURE AND SOIL MIXES TO BE INSTALLED PER THE SPECIFICATIONS.
17. AFTER PLANT IS PLACED IN TREE PIT LOCATION, ALL TWINE HOLDING ROOT BALL TOGETHER SHOULD BE COMPLETELY REMOVED AND THE BURLAP SHOULD BE PULLED DOWN SO 1/3 OF THE ROOT BALL IS EXPOSED. SYNTHETIC BURLAP SHOULD BE COMPLETELY REMOVED AFTER INSTALLATION.
18. MULCH SHOULD NOT BE PILED UP AROUND THE TRUNK OF ANY PLANT MATERIAL. NO MULCH OR TOPSOIL SHOULD BE TOUCHING THE BASE OF THE TRUNK ABOVE THE ROOT COLLAR.
19. ALL FENCE INSTALLATION SHALL BE COMPLETED PRIOR TO COMMENCEMENT OF ANY LANDSCAPE PLANTING, LAWN AND GRASSES, OR IRRIGATION WORK.
20. FOR ANY DISCREPANCIES BETWEEN THE PLANT SCHEDULE AND PLANTING PLAN THE GRAPHIC QUANTITY SHOWN SHALL GOVERN.
21. PLANT MATERIALS SHALL NOT BE PLANTED UNTIL THE FINISHED GRADING HAS BEEN COMPLETED.
22. ALL PLANT INSTALLATIONS SHALL BE COMPLETED EITHER BETWEEN APRIL 1 – JUNE 15 OR AUGUST 15 – NOVEMBER 1, UNLESS OTHERWISE DIRECTED BY THE PROJECT LANDSCAPE ARCHITECT. SEE LAWN SEEDING DATES IN SEEDING NOTES.

LANDSCAPE MAINTENANCE NOTES

1. MAINTENANCE OPERATIONS BEFORE APPROVAL:
   A. PLANT CARE SHALL BEGIN IMMEDIATELY AFTER EACH PLANT IS SATISFACTORILY INSTALLED AND SHALL CONTINUE THROUGHOUT THE LIFE OF THE CONTRACT UNTIL FINAL ACCEPTANCE OF THE PROJECT.
   B. CARE SHALL INCLUDE, BUT NOT BE LIMITED TO, REPLACING MULCH THAT HAS BEEN DISPLACED BY EROSION OR OTHER MEANS, REPAIRING AND RESHAPING WATER RINGS OR SAUCERS, MAINTAINING STAKES AND GUYS AS ORIGINALLY INSTALLED, WATERING WHEN NEEDED OR DIRECTED, AND PERFORMING ANY OTHER WORK REQUIRED TO KEEP THE PLANTS IN A HEALTHY CONDITION.
   C. CONTRACTOR SHALL REMOVE AND REPLACE ALL DEAD, DEFECTIVE AND/OR REJECTED PLANTS AS REQUIRED BEFORE FINAL ACCEPTANCE.
2. MAINTENANCE DURING CONSTRUCTION:
   A. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER PLANTING. PLANTS SHALL BE WATERED, MULCHED, WEEDED, PRUNED, SPRAYED, FERTILIZED, CULTIVATED, AND OTHERWISE MAINTAINED AND PROTECTED UNTIL PROVISIONAL ACCEPTANCE. SETTLED PLANTS SHALL BE RESET TO PROPER GRADE AND POSITION, PLANTING SAUCER RESTORED AND DEAD MATERIAL REMOVED. STAKES AND WIRES SHALL BE TIGHTENED AND REPAIRED. DEFECTIVE WORK SHALL BE CORRECTED AS SOON AS POSSIBLE AFTER IT BECOMES APPARENT AND WEATHER AND SEASON PERMIT.
   B. IF A SUBSTANTIAL NUMBER OF PLANTS ARE SICKLY OR DEAD AT THE TIME OF INSPECTION, ACCEPTANCE SHALL NOT BE GRANTED AND THE CONTRACTOR'S RESPONSIBILITY FOR MAINTENANCE OF ALL PLANTS SHALL BE EXTENDED FROM THE TIME REPLACEMENTS ARE MADE OR EXISTING PLANTS ARE DEEMED ACCEPTABLE BY THE LANDSCAPE ARCHITECT.
   C. ALL REPLACEMENTS SHALL BE PLANTS OF THE SAME KIND AND SIZE SPECIFIED ON THE PLANT LIST OR THAT WHICH WAS TO REMAIN OR BE RELOCATED. THEY SHALL BE FURNISHED AND PLANTED AS SPECIFIED. THE COST SHALL BE BORNE BY THE CONTRACTOR. REPLACEMENTS RESULTING FROM REMOVAL, LOSS, OR DAMAGE DUE TO OCCUPANCY OF THE PROJECT IN ANY PART, VANDALISM, PHYSICAL DAMAGE BY ANIMALS, VEHICLES, ETC., AND LOSSES DUE TO CURTAILMENT OF WATER BY LOCAL AUTHORITIES SHALL BE APPROVED AND PAID FOR BY THE OWNER.
   D. PLANTS SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS AFTER INSPECTION AND PROVISIONAL ACCEPTANCE.
   E. AT THE END OF THE ESTABLISHMENT PERIOD, INSPECTION SHALL BE MADE AGAIN. ANY PLANT REQUIRED UNDER THIS CONTRACT THAT IS DEAD OR UNSATISFACTORY TO THE LANDSCAPE ARCHITECT OR OWNER SHALL BE REMOVED FROM THE SITE AND REPLACED DURING THE NORMAL PLANTING SEASON.
3. LAWN MAINTENANCE:
   A. BEGIN MAINTENANCE IMMEDIATELY AFTER EACH PORTION OF LAWN IS PLANTED AND CONTINUE FOR 8 WEEKS AFTER ALL LAWN PLANTING IS COMPLETED.
   B. WATER TO KEEP SURFACE SOIL MOIST, REPAIR WASHED OUT AREAS BY FILLING WITH TOPSOIL, LIMING, FERTILIZING AND RE–SEEDING; MOW TO 2 1/2 – 3 INCHES AFTER GRASS REACHES 3 1/2 INCHES IN HEIGHT, AND MOW FREQUENTLY ENOUGH TO KEEP GRASS FROM EXCEEDING 3 1/2 INCHES. WEED BY LOCAL SPOT APPLICATION OF SELECTIVE HERBICIDE ONLY AFTER GRASS IS WELL–ESTABLISHED.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

LAWN SEED MIX:

1. LAWN SEED MIX: 3 TURF–TYPE TALL–FESCUE GRASSES

   NOTES:
   A) SEED RATE:
      1) NEW ESTABLISHMENT: SEED AT A RATE OF 6–8 LBS/1000 SQ FT
      2) RENOVATION: 20–50% EXISTING COVER: 5–7 LBS/1000 SQ FT
         50–75% EXISTING COVER: 4–6 LBS/1000 SQ FT

2. GENERAL SEED NOTES:
   A) FINAL SEED MIXTURES, RATES, AND SPECIES TO BE DETERMINED BASED ON PROJECT LANDSCAPE ARCHITECT REVIEW.
   B) SEEDING SHALL TAKE PLACE IN THE SPRING (APRIL 1 TO JUNE 15) OR THE FALL (SEPTEMBER 1 TO OCTOBER 15).
   C) ELIMINATE UNWANTED VEGETATION PRIOR TO SEEDING USING A NON–SELECTIVE HERBICIDE PER MANUFACTURER'S SPECIFICATIONS.
   D) IT IS RECOMMENDED THAT CONTRACTOR INSTALL SEED MIXTURE USING A NO–TILL TRUAX–TYPE DRILL SEEDER WHERE APPLICABLE.
   E) THERE MUST BE CONTINUOUS SOIL MOISTURE FOR 4–6 WEEKS TO ALLOW FOR PROPER GERMINATION.
   F) ALL SEED MIXES TO BE 100% PURE LIVE SEED.

LAWN WATERING SCHEDULE

THE FOLLOWING WATERING SCHEDULE COVERS ROUGHLY 8 WEEKS TO ESTABLISH A HEALTHY STAND OF GRASS FROM SEED. THE CONTRACTOR SHALL BE OBLIGATED TO ENSURE A HEALTHY STAND OF GRASS AT THE END OF THE MAINTENANCE/BOND PERIOD. ANY BARE OR DEAD AREAS IN THE LAWN SHALL BE PREPARED, RESEEDED AND REESTABLISHED PRIOR TO THE END OF THE MAINTENANCE/BOND PERIOD AND TO THE SATISFACTION OF THE PROJECT LANDSCAPE ARCHITECT AND THE OWNER.

IMPORTANT ASPECTS TO ATTAINING AND SUSTAINING A HEALTHY STAND OF GRASS ARE THE INSTALLATION OF TOPSOIL, SEED BED PREPARATION, ATTAINING OPTIMAL pH FOR THE INTENDED PLANT SPECIES, FERTILIZING, MULCH COVERING, AND SUFFICIENT WATERING PER THESE NOTES AND/OR PROJECT SPECIFICATIONS.

1. SEEDING SHALL BE DONE DURING THE SEASONS SPECIFIED IN THE LAWN SEED MIX NOTES AND/OR PROJECT SPECIFICATIONS.
2. AFTER THE SEEDBED IS PREPARED, SEED IS INSTALLED, AND MULCH IS APPLIED, WATER LIGHTLY TO KEEP THE TOP 2 INCHES OF SOIL CONSISTENTLY MOIST, NOT SATURATED. AT NO TIME SHOULD WATER BE APPLIED TO THE POINT OF RUNOFF OR THE DISPLACEMENT OF SEED.
3. DEPENDING ON SOIL TEMPERATURES, IT MAY TAKE SEVERAL WEEKS FOR GERMINATION TO OCCUR. DIFFERENT SPECIES WITHIN THE MIX GERMINATE AT DIFFERENT TIMES AND THEREFORE CONTRACTOR SHOULD CONTINUE THE LIGHT WATERING, AS DESCRIBED ABOVE, UNTIL THERE IS AT LEAST 2 INCHES OF GROWTH THROUGHOUT.
4. AT THIS POINT, WATERING FREQUENCY MAY BE REDUCED TO EVERY 3 TO 5 DAYS. WATER SHALL BE APPLIED TO WET A 6 INCH MINIMUM SOIL DEPTH TO PROMOTE HEALTHY DEEP ROOTS.
5. BEGIN MOWING ONCE PER WEEK AFTER THE GRASS HAS REACHED 3 INCHES HEIGHT. MOW TO A HEIGHT OF NO LESS THAN 2–½ INCHES. AFTER 2 TO 3 WEEKS OF MOWING, CONTINUE TO WATER TO A 6 INCH MINIMUM SOIL DEPTH AS NECESSARY PER WEATHER CONDITIONS, AND SOIL MOISTURE SENSORS IF APPLICABLE.

IRRIGATION NOTES:

1. THE IRRIGATION CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE IRRIGATION INSTALLATION PLAN AND CUT–SHEETS FOR ALL COMPONENTS FOR REVIEW AND APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION. THE IRRIGATION INSTALLATION PLAN SHALL BE COMPLETE WITH ZONE DESIGNATIONS AND WATER USAGE IN GALLONS PER MINUTE PER ZONE, RUN TIME SCHEDULE, LEGEND OF COMPONENTS AND PLAN GRAPHICS WITH QUANTITIES, MINIMUM SYSTEM REQUIREMENTS INCLUDING STATIC PRESSURE AT THE WATER CONNECTION POINT, ESTIMATED WATER BUDGET, CONSTRUCTION DETAILS AND IRRIGATION NOTES. THE PLAN SHALL ALSO INCLUDE LOCATIONS OF ALL PROPOSED SLEEVES AND THEIR SIZES, LOCATIONS OF ALL LATERAL LINE SIZE STEP–DOWNS WITH SIZE INDICATIONS, LOCATION OF ALL SOIL MOISTURE SENSORS, CONTROLLER, VALVES AND ALL OTHER COMPONENTS NECESSARY FOR THE SYSTEMS OPERATION.
2. LANDSCAPE AREAS SHALL BE IRRIGATED WITH POP–UP SPRAY AND ROTARY IRRIGATION HEADS IN SUFFICIENT DENSITY TO COVER THE ENTIRE AREA.
3. CONTRACTOR TO AVOID DISTURBANCE OF EXISTING PLANT MATERIAL WHEN LOCATING VALVES AND PIPE LINES. ANY PLANT MATERIAL DAMAGED AS A RESULT OF IRRIGATION INSTALLATION SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
4. ALL EXCAVATION MATERIAL SHALL BE PLACED BACK IN TRENCHES.
5. ALL DISTURBED LANDSCAPE AND PAVED AREAS SHALL BE RESTORED TO THE CONDITION FOUND PRIOR TO START OF INSTALLATION.
6. DEPTH OF TRENCHES SHALL BE SUFFICIENT OR PROVIDE A MINIMUM COVER ABOVE THE TOP OF PIPE AS FOLLOWS:
   – 12" OVER NON–PRESSURE LATERAL LINES
   – 18" OVER NON–PRESSURE LATERAL LINES UNDER PAVING
   – 18" OVER CONTROL WIRES
   – 18" OVER MAIN LINE
   – 24" OVER MAIN LINE UNDER PAVING
7. THE IRRIGATION CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LOCATION OF THE PLUMBING TIE–INS, SLEEVES UNDER PAVEMENTS (AS NECESSARY), AND CONTROL DEVICES WITH THE GENERAL CONTRACTOR, OWNER, AND OWNER'S REPRESENTATIVE.
8. CONTRACTOR TO COORDINATE INSTALLATION OF IRRIGATION SYSTEM WITH EXISTING AND PROPOSED UTILITIES, SITE DRAINAGE SYSTEMS, AND PAVING.
9. CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER'S REPRESENTATIVE SHOULD ANY UTILITIES, NOT SHOWN ON THE PLANS, BE FOUND DURING INSTALLATION WORK.
10. WATERPROOF ALL WIRE CONNECTORS USING 3M 'DBY' WATERPROOF CONNECTORS OR EQUIVALENT.
11. DRAIN VALVES ARE TO BE PROVIDED AT SUFFICIENT INTERVALS TO PROVIDE COMPLETE DRAINAGE OF ALL PIPING.
12. COORDINATE THE LOCATION OF CONTROLS, IRRIGATION CONTROLLER, AND SOIL MOISTURE SENSORS WITH THE PROJECT MEP AND OWNER PRIOR TO INSTALLATION.
13. IRRIGATION CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS TO IRRIGATION DESIGN WHERE REQUIRED TO PROVIDE 100% COVERAGE OF ALL LANDSCAPE AREAS, AS DESIGNATED ON THIS PLAN.
14. INSTALLATION MUST COMPLY WITH ALL LOCAL CODES AND CONDITIONS.
15. ALL IRRIGATION WORK SHALL BE GUARANTEED FOR 1 YEAR AFTER COMPLETION OF ALL WORK.
16. CONTRACTOR TO PROVIDE THREE (3) COPIES OF AS–BUILTS, SERVICE MANUALS AND INSTRUCTIONS TO THE OWNER OR OWNERS REPRESENTATIVE.
17. ALL SPRINKLER HEADS SHALL BE SET BACK 4" MINIMUM FROM BACK OF ALL CURBS.
18. CONTRACTOR MAY SUBMIT ALTERNATE EQUIVALENT MATERIALS FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE OR PROJECT LANDSCAPE ARCHITECT.

MEADOW SEED NOTES

SEED MIX A – NATIVE DETENTION AREA MIX

26.0%% PANICUM CLANDESTINUM	DEERTONGUE, TIOGA
25.0% PANICUM VIRGATUM, 'CARTHAGE'	SWITCHGRASS, 'CARTHAGE'
20.0% CAREX VULPINOIDEA, PA ECOTYPE	FOX SEDGE, PA ECOTYPE
20.0% ELYMUS VIRGINICUS, MADISON	VIRGINIA WILDRYE
4.0% AGROSTIS PERENNANS, ALBANY PINE	AUTMUN BENTGRASS
3.0% JUNCUS EFFUSUS	SOFT RUSH
1.0% JUNCUS TENUIS, PA ECOTYPE	PATH RUSH, PA ECOTYPE
1.0% PANICUM RIGIDULUM, PA ECOTYPE	REDTOP PANICGRASS, PA ECOTYPE

NOTES:
SEED AT A RATE OF 20–40 LB/ACRE OF 100% PURE LIVE SEED , REFER TO SUPPLIER RECOMMENDATIONS FOR ADDITIONAL INFORMATION

GENERAL SEEDING NOTES:

1. FINAL SEED MIXTURES, RATES & SPECIES TO BE DETERMINED BASED ON LOCAL SITE CONDITIONS.
2. ALL SEEDING RATES ARE BASED ON PURE LIVE SEED (PLS.) CONTRACTOR SHALL ADJUST ANY SUPPLIER BULK SEEDING RATES (BSR) TO PROVIDE PLS EQUIVALENTS.
3. SEEDING SHALL TAKE PLACE IN THE SPRING (APRIL 1 TO JUNE 1) OR THE FALL (SEPTEMBER 1 TO OCTOBER 1).
4. ELIMINATE UNWANTED VEGETATION PRIOR TO SEEDING USING A BROAD–SPECTRUM NON–SELECTIVE HERBICIDE PER MANUFACTURER'S SPECIFICATIONS.
5. IT IS RECOMMENDED THAT CONTRACTOR INSTALL SEED MIXTURE USING A NO–TILL TRUAX–TYPE DRILL WHERE APPLICABLE.
6. MULCHING/TACKING IS REQUIRED ON ALL SEEDING IN ACCORDANCE WITH THE STANDARDS. AN EROSION CONTROL BLANKET WITH A MINIMUM 12–MONTH BIODEGRADABLE LIFE SPAN MAY BE USED IN LIEU OF STANDARD MULCHING/TACKING. PERMANENT BLANKETS WILL NOT BE ACCEPTED UNLESS OTHERWISE NOTED.
7. CONTINUOUS MOISTURE MUST BE ENSURED DURING ESTABLISHMENT TO ALLOW PROPER GERMINATION. SOIL WILL REMAIN CONTINUOUSLY MOIST FOR THE TOP 4 INCHES OF TOPSOIL. DO NOT SATURATE OR WATER TO THE POINT OF RUNOFF OR THE DISPLACEMENT OF SEED.
8. DEPENDING ON SOIL TEMPERATURES, IT MAY TAKE SEVERAL WEEKS FOR GERMINATION TO OCCUR. DIFFERENT SPECIES WITHIN THE MIX GERMINATE AT DIFFERENT TIMES AND THEREFORE CONTRACTOR SHOULD CONTINUE THE LIGHT WATERING, AS DESCRIBED ABOVE, UNTIL THERE IS AT LEAST 2 INCHES OF GROWTH THROUGHOUT.
9. AT THIS POINT, WATERING FREQUENCY MAY BE REDUCED TO EVERY 3 TO 5 DAYS. WATER SHALL BE APPLIED TO WET A 6 INCH MINIMUM SOIL DEPTH TO PROMOTE HEALTHY DEEP ROOTS.

WEED CONTROL / MAINTENANCE

1. MOWING MEADOW AREAS SHALL BE DONE VIA STRING TRIMMER, WHERE LARGER MACHINES CANNOT REASONABLY BE USED AND WHERE DAMAGE OR RUTTING COULD OCCUR.
2. DURING THE ESTABLISHMENT YEAR, CONTRACTOR SHALL MOW SEEDING IF WEED HEIGHT EXCEEDS MEADOW MIX HEIGHT. MOW AT A HEIGHT OF 8"–10". DO NOT MOW CLOSE, AS SOME OF THE MEADOW MIX MAY BE DAMAGED.
3. AFTER THE FIRST GROWING SEASON, AND IF MEADOW MIX IS WELL ESTABLISHED, THE MEADOW MIX SHALL BE MOWED ONLY ONCE ANNUALLY. ANNUAL MAINTENANCE MOWING SHALL BE DONE IN LATE WINTER DURING THE MONTH OF MARCH.
4. DURING THE FIRST 2–4 YEARS OF ESTABLISHMENT, AND AFTER ESTABLISHMENT DEPENDING ON THE LOOK DESIRED, SELECTIVE WEEDING WITH A BROADLEAF WEED–CONTROL HERBICIDE, OVER–SEEDING BARE SPOTS AND WATERING TO PROMOTE A UNIFORM DROUGHT–TOLERANT STAND OF PLANTS MAY BE NECESSARY.
5. FERTILIZERS ARE NOT GENERALLY NEEDED OR RECOMMENDED FOR NATIVE MEADOWS UNLESS SOIL TEST RESULTS SHOW A SIGNIFICANT LACK OF NUTRIENTS. USE ONLY SLOW–RELEASE FERTILIZERS WITH LITTLE TO NO NITROGEN IN APRIL OR SEPTEMBER.

PLANTING SOIL SPECIFICATIONS

1. PLANTING SOIL, ALTERNATELY MAY BE REFERRED TO AS TOPSOIL, SHOULD BE FRIABLE, FERTILE, WELL DRAINED, FREE OF DEBRIS, TOXINS, TRASH AND STONES OVER 1/2" DIA., IT SHOULD HAVE A HIGH ORGANIC CONTENT SUITABLE TO SUSTAIN HEALTHY PLANT GROWTH AND SHOULD LOOK AESTHETICALLY PLEASING HAVING NO NOXIOUS ODORS.
2. PLANTING SOIL:

   REUSE SURFACE SOILS STOCKPILED ON SITE, VERIFYING COMPLIANCE WITH PLANTING SOIL AND TOPSOIL CRITERIA IN THIS SPECIFICATION THROUGH TESTING. CLEAN SURFACE SOIL OF ALL ROOTS, PLANTS, SOD, AND GRAVEL OVER 1" IN DIAMETER AND DELETERIOUS MATERIALS. IF ON–SITE SOILS ARE TO BE USED FOR PROPOSED PLANTING, THE CONTRACTOR SHALL DEMONSTRATE, THROUGH SOIL TESTING, THAT ON–SITE SOILS MEET THE SAME CRITERIA AS INDICATED IN NOTES PLANS AND SPECIFICATIONS.

   SUPPLEMENT WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF SITE SOURCES WHEN TOPSOIL AND PLANTING SOIL QUANTITIES ARE INSUFFICIENT. OBTAIN SOIL DISPLACED FROM NATURALLY WELL–DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 4" DEEP. DO NOT OBTAIN FROM AGRICULTURAL LAND, BOGS, MARSHES OR CONTAMINATED SITES.

   CONTRACTOR SHALL TEST SOILS AND FURNISH SAMPLES UPON REQUEST. PACKAGED MATERIALS SHALL BE UNOPENED BAGS OR CONTAINERS, EACH BEARING A NAME, GUARANTEE, AND TRADEMARK OF THE PRODUCER, MATERIAL COMPOSITION, MANUFACTURER'S CERTIFIED ANALYSIS, AND THE WEIGHT OF THE MATERIALS. SOIL OR AMENDMENT MATERIALS SHALL BE STORED ON SITE TEMPORARILY IN STOCKPILES PRIOR TO PLACEMENT AND SHALL BE PROTECTED FROM INTRUSION OF CONTAMINANTS AND EROSION. AFTER MIXING, SOIL MATERIALS SHALL BE COVERED WITH A TARPAULIN UNTIL TIME OF ACTUAL USE.

   ALL PLANTING SOILS SHALL BE SUBMITTED FOR TESTING TO THE STATE COOPERATIVE EXTENSION SERVICE, OR APPROVED EQUAL, PRIOR TO DELIVERY TO THE SITE. CONTRACTOR SHALL FURNISH SOIL SAMPLES AND SOIL TEST RESULTS TO LANDSCAPE ARCHITECT OR OWNER AT A RATE OF ONE SAMPLE PER 500 CUBIC YARDS TO ENSURE CONSISTENCY ACROSS THE TOTAL VOLUME OF PLANTING SOIL REQUIRED. TEST RESULTS SHALL EVALUATE FOR ALL CRITERIA LISTED IN THIS SPECIFICATION. IF TESTING AGENCY DETERMINES THAT THE SOILS ARE DEFICIENT IN ANY MANNER AND MAY BE CORRECTED BY ADDING AMENDMENTS, THE CONTRACTOR SHALL FOLLOW STATED RECOMMENDATIONS FOR SOIL IMPROVEMENT AND FURNISH SUBMITTALS FOR ALL AMENDMENTS PRIOR TO DELIVERY OF SOIL TO THE PROJECT SITE.

   A. THE FOLLOWING TESTING SHOULD BE PERFORMED AND RESULTS GIVEN TO THE LANDSCAPE ARCHITECT FOR APPROVAL BEFORE INSTALLATION:
      a. PARTICLE SIZE ANALYSIS – LOAMY SAND: 60–75% SAND, 25–40% SILT, AND 5–15% CLAY.
      b. FERTILITY ANALYSIS: pH (5.5–6.5), SOLUBLE SALTS (LESS THAN 2 MMHO/CM), NITRATE, PHOSPHATE, POTASSIUM, CALCIUM AND MAGNESIUM
      c. ORGANIC MATTER CONTENT: 2.5–5% IN NATIVE SOILS; UP TO 10% IN AMENDED SOILS
      d. TOXIC SUBSTANCE ANALYSIS
      e. MATERIAL DRAINAGE RATE: 60% PASSING IN 2 MINUTES, 40% RETAINED
      f. NOT MORE THAN 1% OF MATERIAL SHALL BE RETAINED BY A #4 SIEVE
3. BIORETENTION SOIL MIX
   a. BIORETENTION SOIL MIX IS TO BE USED IN ALL DETENTION BASINS AND RAIN GARDENS.
   b. MIX TO CONSIST OF 60% COARSE SAND, 40% SUBMITTED TOPSOIL/HORTICULTURAL SOIL MIX
   c. TOPSOIL/HORTICULTURAL SOIL MIX: REFER TO SPECIFICATIONS LISTED IN SECTION ABOVE

   d. COARSE SAND

   1) PARTICLE SIZE ANALYSIS

SIEVE	PERCENT PASSING
3/8 INCH (9.5 MM)	100
NO 4 (4.75 MM)	95–100
NO 8 (2.36 MM)	80–100
NO 16 (1.18 MM)	50–85
NO 30 (.60 MM)	25–60
NO 50 (.30 MM)	10–30
NO 100 (.15 MM)	2–10
NO 200 (0.75 MM	2–5

   2) CHEMICAL ANALYSIS
      PH: LOWER THAN 7.0
      TOXIC SUBSTANCE ANALYSIS

   e. FINAL BIORETENTION MIX

   1) PARTICLE SIZE ANALYSIS
      a) SAND – 80–85%
      b) SILT – 10–15%
      c) CLAY – 2–5%

      NOT MORE THAN 1% OF MATERIAL TO BE RETAINED BY A #4 SIEVE

   2) CHEMICAL ANALYSIS
      a) PH – 5.5–6.5
      b) SOLUBLE SALTS: LESS THAN 2 MMHO/CM

   3) CONTRACTOR TO SUBMIT TOXIC SUBSTANCE ANALYSIS AND MATERIAL DRAINAGE RATE IN ADDITION TO INFORMATION LISTED ABOVE. DRAINAGE RATE OF MATERIAL TO EXCEED 1 INCH/HOUR
4. SOIL AMENDMENT FOR PLANT MATERIAL:
   IF SOIL ORGANIC CONTENT IS INADEQUATE, SOIL SHALL BE AMENDED WITH COMPOST OR ACCEPTABLE, WEED FREE, ORGANIC MATTER. ORGANIC AMENDMENT SHALL BE WELL COMPOSTED, PH RANGE OF 6–8; MOISTURE CONTENT 35–55% BY WEIGHT 100% PASSING THROUGH 1" SIEVE; SOLUBLE SALT CONTENT LESS THAN 0.5 MM HOS/CM; MEETING ALL APPLICABLE ENVIRONMENTAL CRITERIA FOR CLEAN FILL.

   A. ORGANIC MATTER AS A SOIL AMENDMENT: LEAF MOLD WITH 60–90% ORGANIC CONTENT BY WEIGHT. SHREDDED LEAF LITTER, COMPOSTED FOR A MINIMUM OF 1 YR. SHOULD BE FREE OF DEBRIS, STONES OVER 1/2", WOOD CHIPS OVER 1".

   B. SOIL IN BEDS AND PLANTING ISLANDS OTHER THAN BACKFILL MATERIAL AND TOPSOIL, SHOULD BE FRIABLE, WELL DRAINED, AND FREE OF DEBRIS, INCLUDING STONES AND TRASH.

   C. AMENDMENTS FOR BACK FILL IN TREE AND SHRUB PITS:
      a. GROUND LIMESTONE (WITH A MIN. OF 88% OF CALCIUM AND MAGNESIUM CARBONATES) USED PENDING RESULTS OF SOIL ANALYSIS.
         – BRING pH LEVELS TO 5.5 MIN. TO 6.5 FOR NON–ERICACEOUS PLANTS
         – BRING pH LEVELS TO 4.5 MIN. TO 5.5 FOR ERICACEOUS PLANTS
      b. TERRA–SORB BY 'PLANT HEALTH CARE' 800–421–9051 (SEE MANUFACTURER RECOMMENDATIONS) USED IN PLANTER BACKFILL MIXTURE WITH TREES AND SHRUBS.
      c. MYCOR–ROOT SAVER BY 'PLANT HEALTH CARE' 800–421–9051 (SEE MANUFACTURER RECOMMENDATIONS) USED IN BACKFILL MIXTURE WITH TREES.
5. WHERE PLANTING AREAS ARE PROPOSED FOR FORMER PAVED OR GRAVEL AREAS, BEDS SHALL BE EXCAVATED TO A MINIMUM 30" DEPTH AND, AT A MINIMUM, BE BACKFILLED WITH BOTTOM LAYER OF SANDY LOAM (ORGANIC CONTENT LESS THAN 2%) OVER WHICH TOPSOIL AND PLANTING SOILS WILL BE PLACED AT DEPTHS INDICATED IN PLANS, DETAILS AND NOTES.
6. CLEAN SOIL FILL IN LANDSCAPE AREAS:
   LANDSCAPE FILL MATERIAL, BELOW PLANTING SOILS, SHALL HAVE THE PHYSICAL PROPERTIES OF A SANDY LOAM WITH AN ORGANIC CONTENT OF LESS THAN 2% AND A PH BETWEEN 5 – 7.
7. SOIL PLACEMENT:
   A. CONTRACTOR TO PROVIDE SIX INCHES (6") MINIMUM DEPTH PLANTING SOIL LAYER IN LAWN AREAS, TWELVE INCHES (12") MINIMUM DEPTH PLANTING SOIL LAYER IN GROUNDCOVER AND PERENNIAL AREAS, EIGHTEEN INCHES (18") MINIMUM DEPTH PLANTING SOIL LAYER IN SHRUB AREAS, AND THIRTY–SIX INCHES (36") MINIMUM DEPTH PLANTING SOIL LAYER IN TREE PLANTING AREAS.

   B. SCARIFY AND/OR TILL COMPACTED SUBSOILS TO A MINIMUM DEPTH OF 6 INCHES. THOROUGHLY MIX A 6 INCH DEPTH LAYER OF PLANTING SOIL INTO THE SUBSOIL PRIOR TO PLACING PLANTING SOIL AT THE DEPTHS INDICATED ABOVE. PLANTING SOIL SHALL BE PLACED IN 12–18" LIFTS AND WATER THOROUGHLY BEFORE INSTALLING NEXT LIFT. REPEAT UNTIL DEPTHS AND FINISH GRADES HAVE BEEN ACHIEVED. NO SOILS SHALL BE PLACED IN A FROZEN OR MUDDY CONDITION.

   C. PLANTING SOIL PRESENT AT THE SITE, IF ANY, MAY BE USED TO SUPPLEMENT TOTAL AMOUNT REQUIRED. CONTRACTOR TO FURNISH AN ANALYSIS OF ON–SITE PLANTING SOIL UTILIZED IN ALL PLANTING AREAS.
8. SOIL CONDITIONING:
   A. ADJUST pH AND NUTRIENT LEVELS AS REQUIRED TO ENSURE AN ACCEPTABLE GROWING MEDIUM. LOWER pH USING ELEMENTAL SULFUR ONLY. PEAT MOSS OR COPPER SULFATE MAY NOT BE USED. GROUND LIMESTONE AS A SOIL AMENDMENT MATERIAL WILL ONLY BE USED PENDING RESULTS OF SOIL ANALYSIS. PROVIDE WITH MINIMUM 88% CALCIUM AND MAGNESIUM CARBONATES AND SHALL HAVE TOTAL 100% PASSING THE 10 MESH SIEVE, MINIMUM 90% PASSING 20 MESH SIEVE, AND MINIMUM 60% PASSING 100 MESH SIEVE.

   B. ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

   C. SOIL MODIFICATIONS (PENDING RESULTS OF SOIL ANALYSIS):
      a. THOROUGHLY TILL ORGANIC MATTER (LEAF COMPOST) INTO THE TOP 6 TO 12 IN. OF MOST PLANTING SOILS TO IMPROVE THE SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A pH HIGHER THAN 7.0. PEAT MOSS MAY NOT BE USED AS ORGANIC MATTER AMENDMENT.
      b. MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. IMPROVE DRAINAGE IN HEAVY SOILS BY PLANTING ON RAISED MOUNDS OR BEDS AND INCLUDING SUBSURFACE DRAINAGE LINES.
      c. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
      d. PER CHAPTER 863, ARTICLE XXVIII OF THE WESTCHESTER COUNTY CODE OF ORDINANCES, NO FERTILIZER CONTAINING PHOSPHOROUS SHALL BE USED ON SITE UNLESS NECESSITATED BY SOIL TESTING. ALL SOIL TESTING RESULTS ARE TO BE REVIEWED BY PROJECT LANDSCAPE ARCHITECT PRIOR TO PLANTING INSTALLATION.

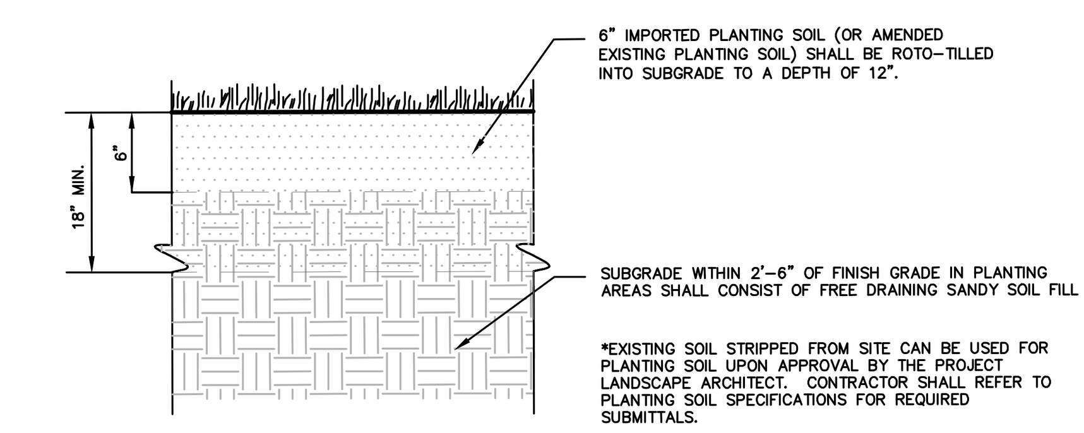
PLANT SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
SHADE TREE(S)						
AR	21	ACER RUBRUM	RED MAPLE	3 1/2–4" CAL.	B+B	–
LSR	17	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	SEEDLESS SWEETGUM	3 1/2–4" CAL.	B+B	–
QR	6	QUERCUS RUBRA	RED OAK	3 1/2–4" CAL.	B+B	–
ORNAMENTAL TREE(S)						
BN	21	BETULA NIGRA	MULTI STEM RIVER BIRCH	12–14'	B+B	–
EVERGREEN TREE(S)						
IO	18	ILEX OPACA	AMERICAN HOLLY	8–10'	B+B	–
IOBJ	6	ILEX OPACA 'BIG JOHN'	BIG JOHN HOLLY	8–10'	B+B	–
JV	17	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	8–10'	B+B	–
PGL	26	PICEA GLAUCA	WHITE SPRUCE	8–10'	B+B	–
PGNS	7	PICEA GLAUCA 'NORTH STAR'	NORTH STAR WHITE SPRUCE	8–10'	B+B	–
EVERGREEN SHRUB(S)						
IGS	38	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY HOLLY	24–30"	CONTAINER	–
DECIDUOUS SHRUB(S)						
AMLM	145	ARONIA MELANOCARPA 'LOW MOUND'	'LOW MOUND' BLACK CHOKEBERRY	2–3'	CONTAINER	spaced @ 24" o.c.
CA	66	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	2–3'	CONTAINER	–
CEA	109	CEANOTHUS AMERICANUS	NEW JERSEY TEA	2–3'	CONTAINER	spaced @ 18" o.c.
CS	30	CORNUS SERICEA	RED OSIER DOGWOOD	2–3'	CONTAINER	–
CSF	26	CORNUS SERICEA 'FLAVIRAMEA'	YELLOW TWIG DOGWOOD	2–3'	CONTAINER	–
HVCW	10	HAMAMELIS VIRGINIANA	COMMON WITCHHAZEL	2–3'	CONTAINER	–
RAG	97	RHUS AROMATICA 'GRO LOW'	GRO LOW FRAGRANT SUMAC	2–3'	CONTAINER	spaced @ 36" o.c.
ORNAMENTAL GRASS(ES)						
BGG	1477	BOUTELOUA GRACILIS	BLUE GRAMA GRASS	2 GAL.	CONTAINER	spaced @ 18" o.c.
SSCO	684	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	2 GAL.	CONTAINER	spaced @ 24" o.c.

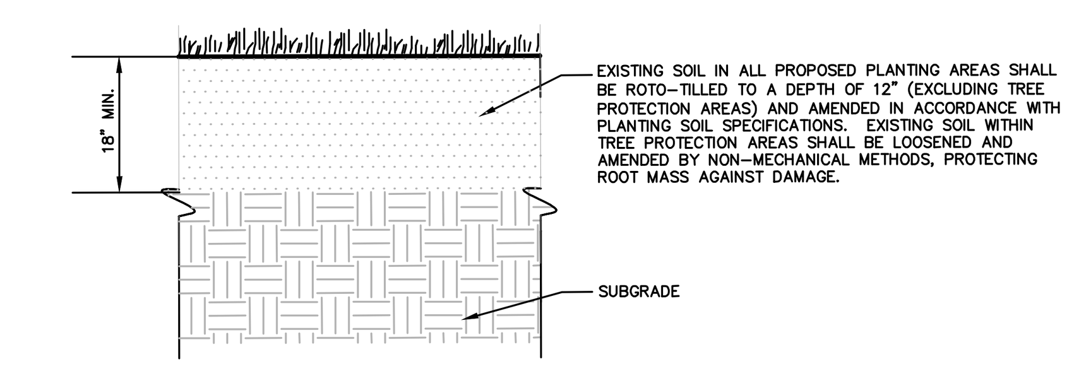
NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

GENERAL NOTE:

DUE TO GENERAL CONSTRUCTION ACTIVITIES AND ADJACENT SITE COMPACTION REQUIREMENTS, SUBGRADE SOILS WITHIN PROPOSED PLANTING AREAS TEND TO BECOME HIGHLY COMPACTED AND CAN PREVENT DRAINAGE. THIS CONDITION CREATES A SATURATED SOIL THAT CAN CAUSE ROOT ROT THAT CAN BE DETRIMENTAL TO TREE HEALTH. IF SUBGRADE SOILS ARE NOT VISIBLY DRAINING, CONTRACTOR SHALL PERFORM REPRESENTATIVE PERCOLATION TESTS AT A RATE OF 1 TEST PER 2,000 SQUARE FEET TO VERIFY DRAINAGE RATES IN INCHES PER HOUR. PERCOLATION TESTS SHOULD BE IN ACCORDANCE WITH THE MOST CURRENT LOCAL, APPLICABLE STORMWATER MANUAL AND DEEP REQUIREMENTS. IN LOCATIONS WHERE SUBSOILS ARE DRAINING LESS THAN 1" PER HOUR, CONTRACTOR IS REQUIRED TO INSTALL UNDERDRAINAGE IN ADDITION TO WHAT IS CURRENLTY SHOWN IN PLANTING PLANS.



PLANTING SOIL WITHIN AREAS OF CUT OR RAISED GRADE



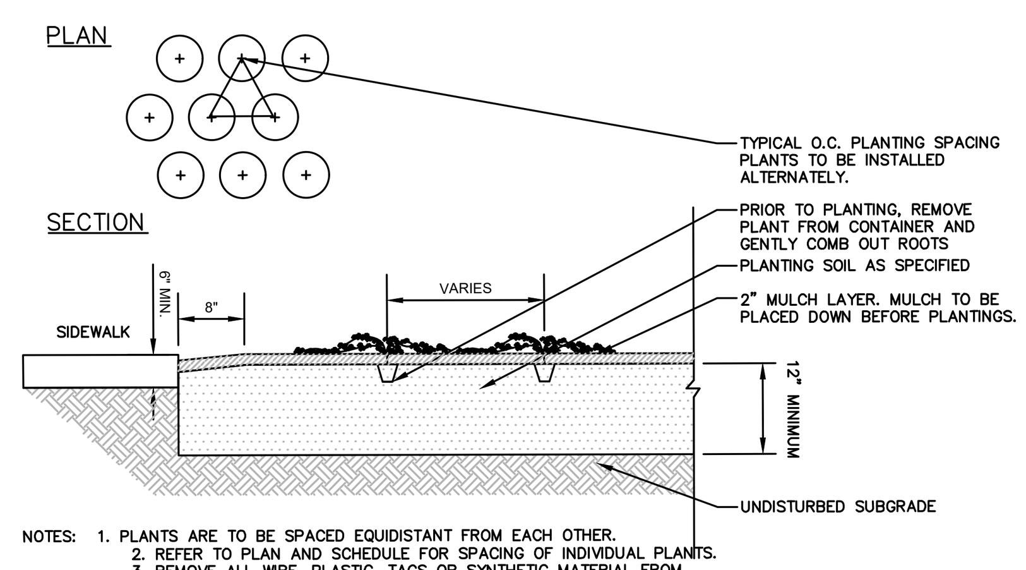
PLANTING SOIL WITHIN AREAS OF UNCHANGED GRADE

NOTES:

1. CONTRACTOR IS RESPONSIBLE TO SEND SAMPLES OF EXISTING SOILS INTENDED FOR USE IN PLANTING AREAS (1 PER 500 CY.) TO TESTING LABORATORY OR UNIVERSITY COOPERATIVE EXTENSION FOR TESTING. ALL TESTING COSTS ARE AT THE CONTRACTOR'S EXPENSE.
2. RECYCLED CRUSHED CONCRETE AND ASPHALT MILLINGS SHALL NOT BE PLACED WITHIN 2'–6" OF FINISH GRADE IN PROPOSED LANDSCAPE AREAS.
3. IMPORTED FILL SHALL CONTAIN NO CONTAMINATION IN EXCEEDENCE OF THE APPLICABLE STATE ENVIRONMENTAL STANDARDS AND MEET THE ENVIRONMENTAL REQUIREMENTS FOR THE PROJECT. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION OF COMPLIANCE PRIOR TO DELIVERY OF ANY FILL TO THE SITE.
4. CONTRACTOR TO LIGHTLY COMPACT ALL PLACED PLANTING SOILS AND RAISE GRADES ACCORDINGLY TO ALLOW FOR FUTURE SETTLEMENT OF PLANTING SOILS (TYP.)
5. NO STONES, WOOD CHIPS, OR DEBRIS LARGER THAN 1/2" SHALL BE ACCEPTABLE WITHIN PLANTING AREAS.

1 PLANTING SOIL

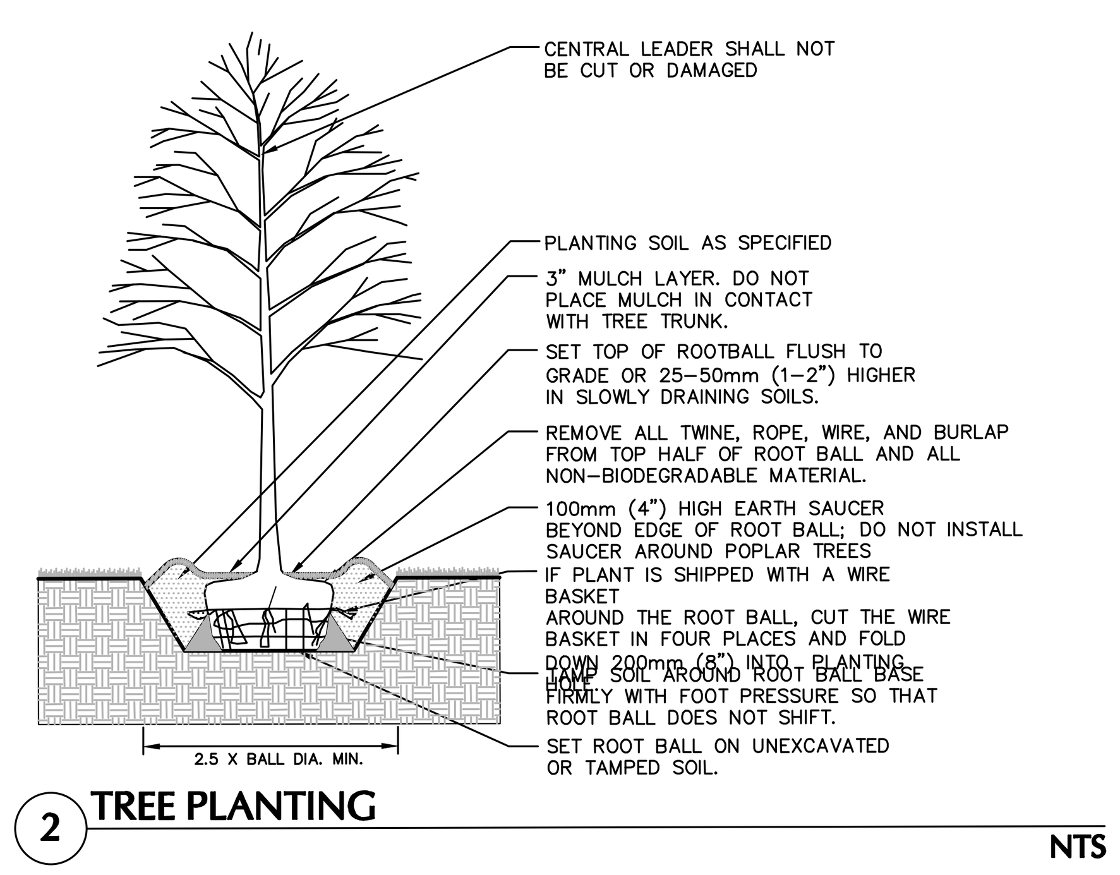
NTS



NOTES: 1. PLANTS ARE TO BE SPACED EQUIDISTANT FROM EACH OTHER.
2. REFER TO PLAN AND SCHEDULE FOR SPACING OF INDIVIDUAL PLANTS.
3. REMOVE ALL WIRE, PLASTIC, TAGS OR SYNTHETIC MATERIAL FROM PLANTS PRIOR TO PLANTING.

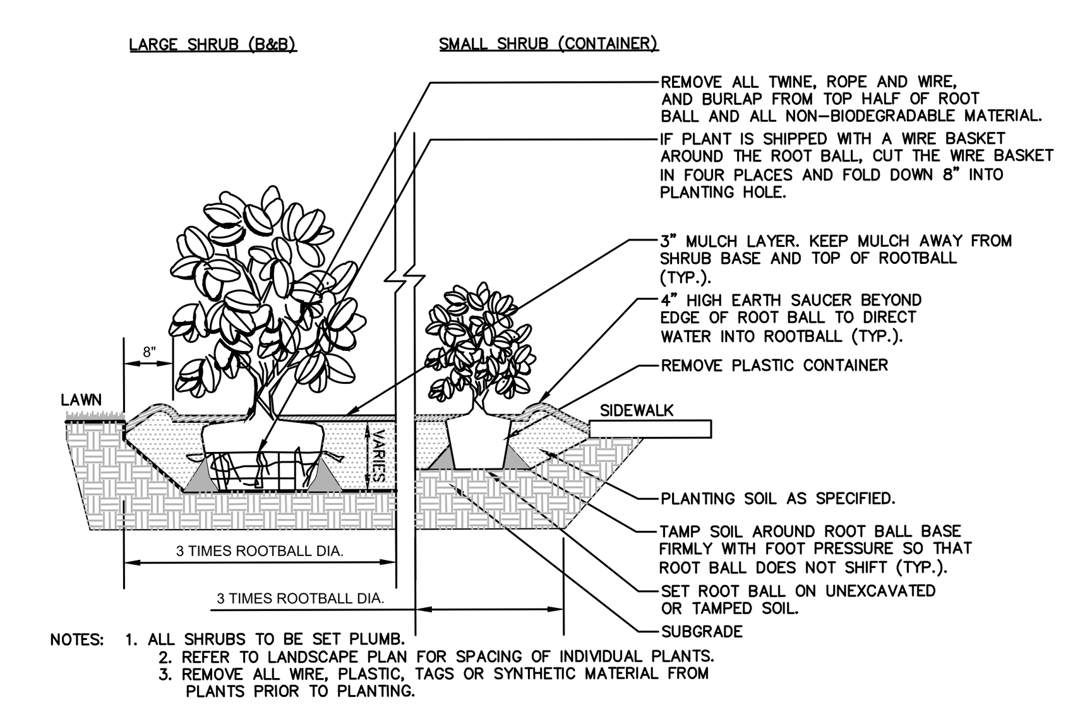
3 GROUNDCOVER / PERENNIAL PLANTING

NTS



2 TREE PLANTING

NTS



NOTES: 1. ALL SHRUBS TO BE SET PLUMB.
2. REFER TO LANDSCAPE PLAN FOR SPACING OF INDIVIDUAL PLANTS.
3. REMOVE ALL WIRE, PLASTIC, TAGS OR SYNTHETIC MATERIAL FROM PLANTS PRIOR TO PLANTING.

4 SHRUB AND ORNAMENTAL GRASS PLANTING

NTS

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

REGISTERED LANDSCAPE ARCHITECT · MICHAEL HUNTON · 2926 · STATE OF NEW YORK

Signature 01/08/2024 Date

MICHAEL HUNTON, RLA
LANDSCAPE ARCHITECT NY Lic. No.2926

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
PLANTING DETAILS AND NOTES

Project No. 190085001
Date AUGUST 7, 2023
Drawn By MJ
Checked By MH

Drawing No.
LP501

Sheet 16 of 18

LANGAN
Project No. 190085001

Date: 1/5/2024 Time: 13:37 User: acassella Style Table: Langan.stb Layout: LP501 Document Code: 190085001-0301-LP501-0101

WALL MOUNTED LIGHT FIXTURE (TYP.)

1.0 FOOTCANDLES (TYP.)

0.5 FOOTCANDLES (TYP.)

POLE MOUNTED POST TOP LIGHT FIXTURE (TYP.)

BEDFORD ROAD

ROUTE

CONRAIL

EDGE OF LAWN

SCALE: 1 INCH = 20 FEET

SITE LIGHTING SCHEDULE

SYMBOL	KEY	QTY.	FIXTURE MANUFACTURER	FIXTURE MODEL	FIXTURE DESCRIPTION	FIXTURE MOUNTING HEIGHT	WATTS	LUMENS	LIGHT LOSS FACTOR	OPTICS	COLOR TEMPERATURE	FIXTURE CATALOGUE NO.	POLE MANUFACTURER	POLE DESCRIPTION	POLE LENGTH	POLE CATALOGUE NO.	NOTES/REMARKS
●	A	13	STERNBERG LIGHTING	1843LED	POLE MOUNTED POST TOP LIGHT; COLOR – BLACK	12'–0"	71	5,710	0.90	TYPE 5	3000 K	1843LED–12L–40–T4 –MDL014–CSA	STERNBERG LIGHTING	ROUND TAPERED ALUMINUM WITH DECORATIVE BASE; COLOR – BLACK	12'–0"	4500 DECATUR SERIES	N/A
●	B	22	STERNBERG LIGHTING	1843LED	POLE MOUNTED POST TOP LIGHT; COLOR – BLACK	12'–0"	71	8,212	0.90	TYPE 4	3000 K	1843LED–12L–40–T5 –MDL008–CSA	STERNBERG LIGHTING	ROUND TAPERED ALUMINUM WITH DECORATIVE BASE; COLOR – BLACK	12'–0"	4500 DECATUR SERIES	N/A
▬	C	52	PERFORMANCE IN LIGHTING	QUASAR 10 1WB	WALL MOUNTED POST TOP LIGHT; COLOR – BLACK	8'–6"	3.5	150	0.90	ROUND	3000 K	QUASAR10–1WB –30335690104	–	–	–	–	N/A

NOTES:
1. POLES SHALL BE FACTORY CUT TO SPECIFIED LENGTH BY MANUFACTURER.
2. CONTRACTOR TO CONFIRM AND COORDINATE FINAL LINE VOLTAGE WITH MEP PLANS PRIOR TO PURCHASING FIXTURES.

SITE LIGHTING STATISTICS

DESCRIPTION	AVG. (FC)	MAX. (FC)	MIN. (FC)	AVG./MIN.	MAX./MIN.
PROPERTY LINE	0.01	0.1	0.0	N/A	N/A
NORTH DRIVEWAY	1.93	4.3	0.5	3.86	8.60
SOUTH DRIVEWAY	1.67	4.6	0.5	3.34	9.20

NOTES:
LIGHT PHOTOMETRY AND CALCULATIONS FOR EXISTING AND ADJACENT LIGHTING TO REMAIN ARE NOT INCLUDED IN THE ABOVE STATISTICS.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

REGISTERED LANDSCAPE ARCHITECT MICHAEL HUNTON 2926 STATE OF NEW YORK

Signature 01/08/2024 Date

MICHAEL HUNTON, RLA
LANDSCAPE ARCHITECT NY Lic. No.2926

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
SITE LIGHTING PLAN

Project No. 190085001
Date AUGUST 7, 2023
Drawn By SH
Checked By MH

Drawing No. LL101
Sheet 17 of 18

TOWN OF NORTH CASTLE - ZONING BYLAW REGULATIONS COMPLIANCE CHART

REGULATION SECTION	REQUIRED / PERMITTED	COMPLIANCE
355-45.M.1	NO USE SHALL PRODUCE ILLUMINATION BEYOND THE BOUNDARIES OF THE PROPERTY ON WHICH IT IS LOCATED IN EXCESS OF 0.5 FOOTCANDLE, MEASURED VERTICALLY AT FIVE FEET ABOVE THE GROUND, AT THE PROPERTY LINE. NOTWITHSTANDING THE ABOVE, WHERE TWO COMMERCIAL PROPERTIES ABOUT EACH OTHER, A MAXIMUM VERTICAL ILLUMINATION AT FIVE FEET ABOVE THE GROUND AT THE PROPERTY LINE, OF 1.0 FOOTCANDLE IS PERMITTED.	COMPLIES
355-45.M.3	ALL EXTERIOR LUMINAIRES, INCLUDING LUMINAIRES INSTALLED UNDER CANOPIES, SHALL BE FULL-CUTOFF FIXTURES.	COMPLIES
355-45.M.4	THE MOUNTING HEIGHT FOR ANY LIGHTING FIXTURE SHALL BE NOT GREATER THAN 25 FEET	COMPLIES

SITE LIGHTING NOTES

GENERAL

1. POINT-BY-POINT CALCULATIONS PROVIDED WITHIN HAVE BEEN PREPARED IN ACCORDANCE TO IESNA STANDARDS AND IN CONSIDERATION OF THE VARIABLES WITHIN THESE NOTES AND SITE LIGHTING SCHEDULE. THE VALUES SHOWN ON THE PLANS ARE NOT AN INDICATION OF THE INITIAL LIGHT INTENSITIES OF THE LAMPS. THESE VALUES ARE AN APPROXIMATION OF THE MAINTAINED INTENSITIES DELIVERED TO THE GROUND PLANE USING INDUSTRY STANDARD LIGHT LOSS FACTORS (LLF) WHICH COVER LAMP DEGRADATION AND NATURAL BUILDUP/ DIRT DEGRADATION ON THE FIXTURE LENS. THE LIGHTING PLAN IS DESIGNED WITH AN INDUSTRY STANDARD LLF IN ACCORDANCE WITH GUIDANCE AS PROVIDED BY IESNA. MINOR VARIATIONS IN TOPOGRAPHY, PHYSICAL OBSTRUCTIONS, AMBIENT OR ADJACENT LIGHT SOURCES AND/OR OTHER POTENTIAL IMPACTS HAVE NOT BEEN INCLUDED IN THESE CALCULATIONS. THEREFORE, AS-BUILT LIGHT INTENSITIES MAY VARY, IN EITHER DIRECTION, FROM WHAT IS EXPLICITLY PORTRAYED WITHIN THESE DRAWINGS.NO GUARANTEE OF LIGHT LEVELS IS EXPRESSED OR IMPLIED BY THE POINT BY POINT CALCULATIONS SHOWN ON THESE PLANS.
2. LIGHT LEVEL POINT SPACING IS 10 FT. LEFT TO RIGHT AND 10 FT. TOP TO BOTTOM. POINT BY POINT CALCULATIONS ARE BASED ON THE LIGHT LOSS FACTOR AS STATED IN THE LIGHTING SCHEDULE.

COMPLIANCE

3. ALL SITE LIGHTING RELATED WORK AND MATERIALS SHALL COMPLY WITH CITY, COUNTY, AND OTHER APPLICABLE GOVERNING AUTHORITY REQUIREMENTS.
4. LIGHTING LAYOUT COMPLIES WITH THE ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) SAFETY STANDARDS FOR LIGHT LEVELS.

COORDINATION

5. CONTRACTOR TO COORDINATE POWER SOURCE WITH LIGHT FIXTURES TO ENSURE ALL SITE LIGHTING IS OPERATING EFFECTIVELY, EFFICIENTLY AND SAFELY.
6. REFER TO ELECTRIFICATION PLAN FOR PROVIDING ADEQUATE POWER FOR SITE LIGHTING.
7. CONTRACTOR TO COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
8. INSTALLATION OF ALL LIGHTING FIXTURES, POLES, FOOTINGS, AND FEEDER CABLE TO BE COORDINATED WITH ALL SITE WORK TRADES TO AVOID CONFLICT WITH FINISHED AND PROPOSED WORK.
9. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND FEEDER CABLE FOR EXTERIOR LIGHTING WITH EXISTING AND PROPOSED UTILITIES, SITE DRAINAGE SYSTEMS, AND PAVING. CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER'S REPRESENTATIVE SHOULD ANY UTILITIES, NOT SHOWN ON THE PLANS, BE FOUND DURING EXCAVATIONS.

POLES AND FOOTINGS

10. PROVIDE A CONCRETE BASE FOR EACH LIGHT POLE AT THE LOCATIONS INDICATED ON THE CONSTRUCTION DRAWINGS AND/OR IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS RELATING DIRECTLY TO CAST-IN-PLACE CONCRETE. THE USE OF ALTERNATE LIGHTING FOUNDATIONS, SUCH AS PRECAST, MAY CHANGE THE SIZING AND REINFORCEMENT REQUIREMENTS FROM THOSE SHOWN ON THESE PLANS. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO ORDERING ANY SUBSTITUTED PRODUCTS.
11. CONTRACTOR SHALL EXAMINE AND VERIFY THAT SOIL CONDITIONS ARE SUITABLE TO SUPPORT LOADS EXERTED UPON THE FOUNDATIONS DURING EXCAVATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY UNSATISFACTORY CONDITIONS.
12. POLE FOUNDATIONS SHALL NOT BE POURED IF FREE STANDING WATER IS PRESENT IN EXCAVATED AREA.
13. ALL POLES HIGHER THAN 25 FT. SHALL BE EQUIPPED WITH FACTORY INSTALLED VIBRATION DAMPENERS.

WALL MOUNTED FIXTURES

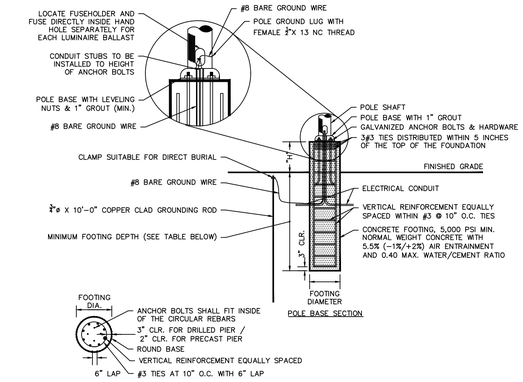
14. CONTRACTOR TO COORDINATE INSTALLATION OF ALL THE WALL MOUNTED FIXTURES AND ELECTRICAL CONNECTIONS TO SITE STRUCTURE(S) WITH BUILDING MEP, ARCHITECT, AND/OR OWNER.
15. INSTALLATION AND ELECTRICAL CONNECTIONS FOR WALL MOUNTED FIXTURES TO BE COORDINATED WITH ARCHITECTURAL, STRUCTURAL, UTILITY AND SITE PLANS AND TO BE IN ACCORDANCE WITH ALL APPLICABLE CODES.

ADJUSTMENT AND INSPECTION

16. CONTRACTOR TO OPERATE EACH LUMINAIRE AFTER INSTALLATION AND CONNECTION. INSPECT FOR IMPROPER CONNECTIONS AND OPERATION.
17. CONTRACTOR TO AIM AND ADJUST ALL LUMINAIRES TO PROVIDE ILLUMINATION LEVELS AND DISTRIBUTION AS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE LANDSCAPE ARCHITECT AND/OR OWNER.
18. CONTRACTOR TO CONFIRM THAT LIGHT FIXTURES, TILT ANGLE AND AIMING MATCH SPECIFICATIONS ON THE PLANS.

REQUIREMENTS FOR ALTERNATES

19. ALL LIGHTING SUBSTITUTIONS MUST BE MADE WITHIN 14 DAYS PRIOR TO THE BID DATE TO PROVIDE AMPLE TIME FOR REVIEW AND TO ISSUE AN ADDENDUM INCORPORATING THE SUBSTITUTION WITH THE FOLLOWING REQUIREMENTS:
   A. ANY SUBSTITUTION TO LIGHTING FIXTURES, POLES, ETC. MUST BE APPROVED BY THE OWNER, ENGINEER AND TENANTS. ANY COST ASSOCIATED WITH REVIEW AND/OR APPROVAL OF THE SUBSTITUTIONS SHALL BE ENTIRELY BORNE BY THE CONTRACTOR
   B. COMPUTER PREPARED PHOTOMETRIC LAYOUT OF THE PROPOSED LIGHTED AREA WHICH INDICATES, BY ISOFOOTCANDLE, THE SYSTEM'S PERFORMANCE.
   C. A PHOTOMETRIC REPORT FROM A NATIONAL INDEPENDENT TESTING LABORATORY WITH REPORT NUMBER, DATE, FIXTURE CATALOG NUMBER, LUMINAIRE AND LAMP SPECIFICATIONS: IES CALCULATIONS, POINT BY POINT FOOT CANDLE PLAN, STATISTIC ZONES SHOWING AVERAGE, MAXIMUM, MINIMUM AND UNIFORMITY RATIOS, SUMMARY, ISOLUX PLOT, AND CATALOGUE CUTS. CATALOGUE CUTS MUST IDENTIFY OPTICS, LAMP TYPE, DISTRIBUTION TYPE, REFLECTOR, LENS, BALLASTS, WATTAGE, VOLTAGE, FINISH HOUSING DESCRIPTION AND ALL OTHER PERTINENT INFORMATION.
   D. POLE MANUFACTURER AASHTO CALCULATIONS INDICATING THE POLE AND ANCHOR BOLTS BEING SUBMITTED ARE CAPABLE OF SUPPORTING THE POLE AND FIXTURE SYSTEMS BEING UTILIZED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
   E. THE UNDERWRITERS LABORATORY LISTING AND FILE NUMBER FOR THE SPECIFIC FIXTURE(S) TO BE UTILIZED.
   F. A COLOR PHOTOGRAPH THAT CLEARLY SHOWS THE REPLACEMENT FIXTURE POLE MOUNTED, THE FIXTURE'S COLOR, FINISH, AND PHYSICAL CHARACTERISTICS.



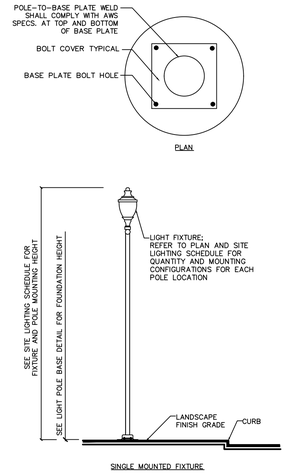
MOUNTING HEIGHT	FOOTING DEPTH	FOOTING DIAMETER	EXPOSED HEIGHT "H"	VERTICAL REINFORCEMENT
14'-0"	2'-0"	5'-0"	0'-2"	6#5 BARS

NOTES:

1. SHAFT CAP, ARMS, BASE FLANGE, ANCHOR BOLTS, LEVELING NUTS, CONNECTION HARDWARE, BOLT COVERS, HANDHOLE COVER, AND BOLT CIRCLE TEMPLATE SHALL BE FURNISHED BY POLE MANUFACTURER.
2. EACH STANDARD TO BE PROTECTED AGAINST LIGHTNING WITH AN INTERCONNECTED GROUND ROD. THIS ROD SHALL BE BONDED PER SECTION NUMBER 250-86, N.E.C.
3. CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENT OF ACI 318. CAST-IN-PLACE SHALL HAVE UNCONFINED COMPRESSIVE STRENGTH OF AT LEAST 5,000 PSI AT 28-DAYS. DEFORMED REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60.
4. CONTRACTOR TO ENSURE CONCRETE POLE BASES ARE POURED / PLACED ABSOLUTELY VERTICAL & LEVEL.
5. IF POLE BASE IS CAST-IN-PLACE, POLE BASE SHALL BE ONE CONTINUOUS POUR. EXPOSED PORTION OF BASE SHALL BE HAND-RUBBED SMOOTH.
6. CONTRACTOR TO COMPACT SUBGRADE AROUND POLE BASE PER EARTHWORK SPECIFICATIONS / GEOTECH REPORT.
7. THE INFORMATION ILLUSTRATED IN THE LIGHT POLE FOUNDATION DETAIL HAS BEEN PROVIDED FOR GENERAL REFERENCE AND PRELIMINARY COST ESTIMATE PURPOSES. LIGHT POLE FOUNDATIONS SHOULD BE DESIGNED AND DETAILED BY A LICENSED STRUCTURAL ENGINEER BASED ON EXISTING SOIL CONDITIONS, LOCAL DESIGN STANDARDS AND MANUFACTURERS RECOMMENDATIONS.
8. CONTRACTOR TO CONFIRM GROUNDING DESIGN WITH MEP.

1 LIGHT POLE BASE

NTS



2 LIGHT FIXTURE AND POLE

NTS

1843LED CARSON CITY SERIES

LED

EPA 3.77 (ft²) | 7 YEAR WARRANTY | LUMEN RANGE 2,580 to 15,325 | LIFE SPAN L70 UP TO 100,000 HOURS | CLICK FOR FAQ's

JOB NAME

FIXTURE TYPE

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 2A-1843LED-12L40T5-MDHO08-CSA-PEC-FHD/48DPM/361OFP4/BKT

Mounting Config.	Fixture	LED	CCT	Type	Driver	Lens	Option Photocontrol	Option Fuse	Option Hangchraight	Option House Side Shield	Option Chimney	Option Flat Lens	Arm Dia Arm Dark Sheets	Pole Dia Pole Dark Sheets	Finish

Mounting Configuration (Click here to link to mounting configuration specification page)

- 1W
- PT
- 1A
- 1APT
- 2A
- 2A90
- 2APT
- 3A
- 3A90
- 3APT
- 4A
- 4APT
- 1AM
- 2AM
- 3APT
- 4SP018
- SH44
- AA44
- CH44
- CAT

W - Wall Mount PT - Post Top APT - Post Top Arm Mid-Mount 1A - 1 Arm, 2A - 2 Arm, AM - Arm Mid-Mount PB - Pier Base SH - Semi Hung CH - Chain Hung CAT - Catenary

Fixture

- 1843LED
- 1843LED8E
- 1843LEDT
- 1843LEDH

(I) - Hanging style fixture.

LED

- 32L
- 24L
- 16L
- 12L

CCT - Color Temperature (K)

- 27(00)
- 30(00)
- 40(00)
- 50(00)

Type

- T2
- T3
- T4
- T5

Driver

- MDLO18F (120V-277V, 180mA)
- MDHO08F (347V-480V, 080mA)
- MDLO16F (120V-277V, 160mA)
- MDHO16F (347V-480V, 160mA)
- MDLO14F (120V-277V, 140mA)
- MDHO14F (347V-480V, 140mA)
- MDLO08F (120V-277V, 80mA)
- MDHO08F (347V-480V, 80mA)

*3KL systems only.
*32L and 8L systems only.
*8L systems only.
*12L systems only.

Lens (Click here to link to lens specification page)

- SV1 (Flat Soft Vue Light Diffused Acrylic)
- SV2 (Flat Soft Vue Moderate Diffused Acrylic)
- SV4 (Flat Soft Vue Maximum Diffused Acrylic)
- CTA (Clear Textured Acrylic)
- CSA (Clear Seeded Acrylic)
- PA (Prismatic Acrylic)
- ATA (Amber Textured Acrylic)

Options

- PEC Electronic Button Photocontrol (120V-277V)
- PECA Electronic Button Photocontrol (480V)
- FHD* Dual Fuse and Holder
- EZ Vertical Hangstraight, Large, "EZ" Mount
- HSS 120° House Side Shield
- BLOC Bach Light Optical Control
- FHC Frosted Chimney
- SVIF Light diffused internal flat lens
- SVZF Moderate diffused internal flat lens

* Ships loose for installation in base

Arm (Click here to link to arm specification page)

See Arms & Wall Brackets specification sheets.

- 4284
- 480
- 62C
- 6236
- 579
- TA
- TASC8
- TA79
- BA

Pole (Click here to link to pole specification page)

See Pole specification sheets.

Finish (Click here to view paint finish sheet)

Standard Finishes*

- BKT Black Textured
- WHT White Textured
- PGT Park Green Textured
- ABZT Architectural Medium Bronze Textured
- DBT Dark Bronze Textured

*Smooth finishes are available upon request.

Custom Finishes*

- CM Custom Match
- OI Oil Iron
- RT Rust
- WBR Weathered Brown
- CD Cedar
- WBK Weathered Black
- TT Two Tone

*Custom colors require upcharge.

Sternberg Select Finishes

- VG Verde Green
- SI Swedish Iron
- OWGT Old World Gray Textured

Specifications

Fixture

The 1843LED Carson City series measures 18-1/4" wide and 41-3/4" tall. The luminaire shall be made of heavy wall cast aluminum alloy. The luminaire shall be provided with a cast aluminum hinged roof with optimized heat sinks to provide maximum life and performance for the LED light sources. The luminaire shall be UL listed in US and Canada.

Fitter - Standard

The fitter or base shall be heavy wall cast aluminum, alloy for high tensile strength. The fitter shall have an inside diameter opening to accept a 3" OD x 3" tall pole or tenon.

LED's

The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be roof mounted to minimize up-light. The LED's and printed circuit boards shall be shall be environmentally friendly and 100% recyclable, they shall also be protected from moisture and corrosion by a conformal coating of 1 to 3 mils. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. They shall operate in a -40°C (-40°F) to +50°C (122°F) ambient air temperature range. The High Performance white LED's will have a life expectancy of approximately 70,000 hours with not less than 70% of original brightness (lumen maintained), rated at 25°C. The High Brightness, High Output LED's shall be 2700K, 3000K, 4000K or 5000K apiece color temperature with a minimum CRI of 70. The luminaire shall have a minimum _____ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

See next page

SternbergLighting
ESTABLISHED 1923 / EMPLOYEE OWNED
800-621-3376
555 Lawrence Ave., Roselle, IL 60172
info@sternberglighting.com
www.sternberglighting.com

3 POLE MOUNTED LIGHT FIXTURE

NTS

date: 4/8/2023

PERFORMANCE IN LIGHTING powered by GEWISS

QUASAR 10 1WB

Part number 3033569014

IP 44 | CLASS I | ENEC | CE | EAC | UK CA

Description

Wall-mounted LED luminaire, comprising:

- Die-cast aluminium housing, polyester powder coat finish ISO 9227/12944 - ISO 9223 IC5/
- Secured diffuser in printed transparent flat glass
- Foam polymer sealing gasket
- Stainless steel locking hardware
- Built-in driver
- Operable and maintainable luminaire (future-proof)
- Photometric data measure according to UNI EN 13032-4 and IES LM-79-08

To maintain the regular updating of our products, PERFORMANCE IN LIGHTING reserves the right to make changes without prior notice. For the most up to date information we always recommend you read the latest version published on the website www.performanceinlighting.com. Delivered luminaire lumen outputs and power consumptions, including losses, are subject to a tolerance of +/- 7%, and unless otherwise stated the values apply to an ambient temperature of 25°C. Terms of warranty are available at www.performanceinlighting.com/scripts/company/terms-and-conditions

PERFORMANCE IN LIGHTING S.p.A. Headquarters - Italy
Viale del Lavoro 8/11
37030 Colognola ai Colli Verona - Italy
Tel. +39 045 61 59 251
Fax +39 045 61 59 252

info.it@pil.lighting
www.performanceinlighting.com

4 WALL MOUNTED LIGHT FIXTURE

NTS

4500 DECATUR SERIES

ORNAMENTAL POLE

DIMENSIONS 10-1/2" Ø 29' TALL | 5 YEAR WARRANTY | UL LISTED | ETL LISTED | CLICK FOR FAQ's

JOB NAME

FIXTURE TYPE

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 4S14FP4-18B-BCC-GFILPIUC-SH/BKT

Base Model	Height	Shaft	Wall Thickness	Post Center Cap	Option Burial	Option Photocell	Option Ground Fault Breaker	Option Flag Pole Holder	Option Banner Arms	Option Planter Arms	Option Sign Arms	Option Speaker Hub	Option Sign Bracket	Option Steel Wreath Hook	Finish

Base Model

- 4S

Height (in feet)

- 8
- 10
- 12
- 14
- 16

Shaft

- T4: 4"- 3" Tapered Smooth
- P4: 4" Straight Smooth
- FP4*: 4" Straight Fluted

*Not available in 25D wall.

Wall Thickness

- 125: 1/8" Wall Thickness
- 188: 3/16" Wall Thickness
- 250: 1/4" Wall Thickness

Post Center Cap (if required) (Click here to view post cap sheet)

- BCC
- SSCC
- FCC
- RCC
- SCC
- PCC
- TFCC

Options (Click here to view accessories sheet)

- DB4 Direct Burial mounting style pole, with 4' direct burial section (or advise other length)
- HXD Helix Base mounting style pole
- PCD Electronic Button Photocontrol, mounted on an access door (120v-277v)
- PCD4 Electronic Button Photocontrol, mounted on an access door (480v)
- GFI IUC 15 Amp duplex GFCI receptacles with a standard in-use cover
- GFI LPIUC 15 Amp duplex GFCI receptacles with a low-profile in-use cover
- GFB Remote Ground Fault Breaker installed in pole base (for use with NON-GFCI receptacles)
- FH Cast Aluminum flag holder mount, for use with 1" diameter flag pole
- SBA Single Banner Arm, "PM" style mount
- DBA Double Banner Arms, "PM" style mount
- SBAR Single Banner Arm and Ring, for triangle banners, "PM" style mount
- HSBA Single Banner Arm, HUB mount style
- HDBA Double Banner Arms, HUB mount style mount
- BDBA6 Double Banner Arms, Break-Away style, to break with 60MPH wind gust
- BDBA9 Double Banner Arms, Break-Away style, to break with 90MPH wind gust
- C4SBA Single Banner Arm, Clamp-Style mount, for 4" diameter poles
- C4DBA Double Banner Arms at 180°, Clamp-Style mount, for 4" diameter poles
- DHPA Double Hooded Planter Arm
- SHPA Single Hooded Planter Arm
- DSPA Double Stepped Planter Arm
- SSPA Single Stepped Planter Arm
- PA47B Cast aluminum decorative planter arm
- SA7B Small cast aluminum decorative sign arm, with 24" long channel for blade sign by others
- SA47B Large cast aluminum decorative sign arm, with 24" long channel for blade sign by others
- SABA Banner arm style sign arm, with 24" long channel for blade sign by others
- SH Female threaded speaker hub, advise thread size
- SB Sign Bracket, vertically mounted on pole shaft
- WHK Steel wreath hook

Finish (Click here to view paint finish sheet)

Standard Finishes*

- BKT Black Textured
- WHT White Textured
- PGT Park Green Textured
- ABZT Architectural Medium Bronze Textured
- DBT Dark Bronze Textured

*Smooth finishes are available upon request.

Custom Finishes*

- CM Custom Match
- OI Oil Iron
- RT Rust
- WBR Weathered Brown
- CD Cedar
- WBK Weathered Black
- TT Two Tone

*Custom colors require upcharge.

Sternberg Select Finishes

- VG Verde Green
- SI Swedish Iron
- OWGT Old World Gray Textured

Specifications

Construction

The one piece base is made of heavy wall 356 alloy cast aluminum with a 3/4" thich floor cast as an integral part of the base. The high tensile aluminum shaft shall be double circumferentially welded internally and externally to the base for added strength. This base includes a two-piece cast aluminum anchor bolt cover.

SternbergLighting
ESTABLISHED 1923 / EMPLOYEE OWNED
800-621-3376
555 Lawrence Ave., Roselle, IL 60172
info@sternberglighting.com
www.sternberglighting.com

5 LIGHT POLE

NTS

Date	Description	No.
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1

Revisions

REGISTERED LANDSCAPE ARCHITECT MICHAEL HUNTON 2926 STATE OF NEW YORK

Signature 01/08/2024 Date

MICHAEL HUNTON, RLA
LANDSCAPE ARCHITECT NY Lic. No.2926

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
SITE LIGHTING DETAILS AND NOTES

Project No.	Drawing No.
190085001	LL501
Date: AUGUST 7, 2023	
Drawn By: SH	
Checked By: MH	

Sheet 18 of 18

Date: 1/5/2024 Time: 13:36 User: acassella Style Table: Langan.stb Layout: LL501 Document Code: 190085001-0301-LL501-0101

LANGAN Project No. 190085001

NORTH

20 0 10 20

1"=20'

JANUARY 2024

45 BEDFORD

PLAN RENDERING

ARMONK, WESTCHESTER COUNTY, NEW YORK

LANGAN

STORMWATER POLLUTION PREVENTION PLAN

for

The Gateway
45 Bedford Road
Town of North Castle, New York

Prepared For:

Kings Capital Construction
660 White Plains Road
Tarrytown, NY 10591

Prepared By:

Langan Engineering, Environmental, Surveying
Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, New York 10601

August 7th, 2023
Revised October 6th, 2023
Revised November 13th, 2023
Revised January 8th, 2024

Preparer of the SWPPP

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the SPDES General Permit for Stormwater Discharges from Construction Activity. Furthermore, I understand that certifying false, incorrect, or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil or administrative proceedings.

Name: Michael Finan, PE, LEED-AP

Date: January 8, 2023

Table of Contents

Table of Contents

Tables

Figures

Appendices

1 Executive Summary

This Stormwater Pollution Prevention Plan (SWPPP) and accompanying project plans have been prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (General Permit) latest revision, the *New York State Stormwater Management Design Manual* (*Design Manual*) latest revision, and the *New York State Standards and Specifications for Erosion and Sediment Control* latest revision. The Applicant, Kings Capital Construction, is proposing to redevelop 4.2-acre property at 45 Bedford Road in the Town of North Castle, New York. The project, The Gateway, is a multi-family residential development that consists of 34 townhouse units and associated site improvements including parking, landscaping, and lighting.

The project is a redevelopment that reduces the existing impervious coverage by a minimum of 25 percent of the total disturbed, existing impervious area. The reduction in the site impervious area will reduce the volume of stormwater runoff generated by the project thus achieving the stormwater management criteria for both water quality and quantity. In addition, the project will maintain existing drainage patterns as much as practical, control the rate of stormwater runoff resulting from the development, and mitigate potential impacts on water quality and erosion generated during and after construction.

Coverage under the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (General Permit) latest revision will be required (see Appendix A), since the project involves soil disturbance of 1 or more acres. The proposed project is also in a municipal separate storm sewer system (MS4); therefore, the Town of North Castle will review and accept the SWPPP. The Notice of Intent (NOI) form and signed "MS4 SWPPP Acceptance" form will be submitted to the NYSDEC before construction begins to obtain coverage under the SPDES General Permit. The forms have been provided in Appendix B.

The pre-development conditions were analyzed in a previously approved SWPPP dated June 11, 2019, which was used in this analysis. This analysis is provided in Appendix D. Post-development conditions was analyzed using the USDA Soil Conservation Service Publication Technical Release (TR-55) "Urban Hydrology for Small Watersheds", which provides procedures for estimating runoff and peak discharges in small watersheds. The analysis is based upon the watershed areas, land coverage, soil group types, curve numbers (CN), times of concentration (Tc), rainfall distribution type, and rainfall amount for the design storm events. The post-development peak discharge rates of runoff have been evaluated utilizing stormwater modeling software. An overall comparison of the pre- and post-development peak discharge rates for each of the design storms analyzed is provided in the table below.

Table 1-1: Overall Summary of Peak Discharge Rates

Storm Event	Pre (cfs)	Post (cfs)	Diff (cfs)
1-year	0.44	0.19	-0.25
10-year	4.84	2.07	-2.77
100-year	39.18	8.63	-30.55

The overall comparison of the pre- and post-development stormwater runoff peak discharge rates demonstrates no significant adverse impacts to the design points analyzed. In addition, the erosion control, sediment control, pollution-prevention, and stormwater management measures to be implemented during construction as outlined in this SWPPP and project drawings will minimize soil erosion and control sediment transport off site, and after construction will control the water quality and quantity of stormwater runoff.

2 Project Information

2.1 Project Summary

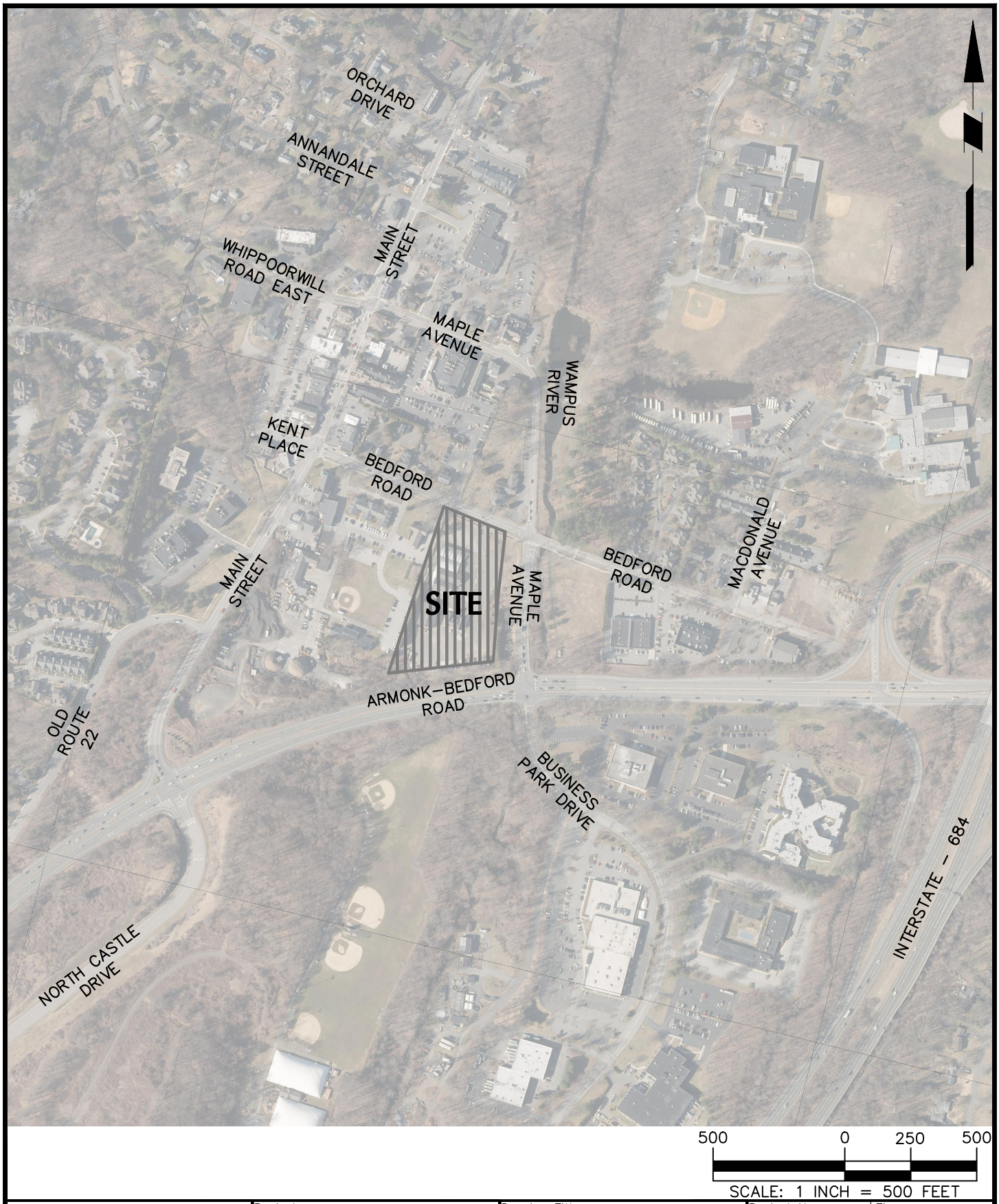
Below is a summary of the project information:

Table 2-1: Project Summary

Project Name:	The Gateway
Project Location:	45 Bedford Road, Armonk, NY Town of North Castle
Property Tax ID No.:	Section 108.03 Block 1 Lot 65
Property Acreage:	4.6 acres
Municipality:	Town of North Castle, which is a municipal separate storm sewer system (MS4).
Project Description:	Residential development that consists of 34 townhouse units and associated site developments including parking, landscaping and lighting.
Estimated Disturbed Area:	4.3 acres, which does require coverage under the SPDES General Permit.
Existing Site Conditions:	Grass (fair condition), impervious area (gravel, pavement, existing buildings) 3.18 acres of existing impervious area
Proposed Site Conditions:	Grass (fair condition), meadow (good condition), impervious area (gravel, pavement, buildings) 2.23 acres of proposed impervious area (30% decrease)
Stormwater Management Practices:	Underground infiltration
Construction Duration:	From April 2024 to April 2025, including planned winter shutdowns.

2.2 Site Conditions

The Site is bounded by Bedford Road to the North; Maple Avenue to the east; Armonk-Bedford Road (NY State Highway 22) to the south; and commercial properties, a baseball field, and Town of North Castle offices to the west. (See Figure 1).



LANGAN

Project No. 190085001

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project	45 BEDFORD ROAD TOWN OF NORTH CASTLE WESTCHESTER COUNTY NEW YORK
Drawing Title	SITE LOCATION MAP
Project No.	190085001
Date	01/30/2023
Drawn By	GN
Checked By	MT
Figure	FG01
Sheet	1 of 1

Date: 8/7/2023 Time: 09:31 User: gnyambura Style Table: Langan.stb Layout: Layout1 Document Code: FG01-190085001-0201-CS101-0101

Site Soils

The United States Department of Agriculture (USDA) Soil Conservation Service Soil Survey for Westchester County has been reviewed. The surficial soil conditions are shown in Figure 2 and are summarized in the table below.

Table 2-2: USDA Soil Data

Map Symbol	Description	Depth to Groundwater (ft.)	Depth to Bedrock (in)	Hydrologic Soil Group
UvB	Urban land – Riverhead complex, 2 to 8 percent slopes	>6	>78	--[1]

1. A hydrological soil group is not given for Urban land – Riverhead complex. The hydrologic soils group will be assumed to be the same as the surrounding soil groups. In this instance, the surrounding soil groups are Type B and A/D; therefore, the hydrological soil group will be assumed to be Type B.

Deep tests and infiltration tests were performed on site on 09/27/2023. Groundwater was encountered at various points around the site at depths of 75"-108" below the ground surface. See Appendix E for infiltration and test pit data.

Water Resources

One wetland - a stream - was identified within the property area, in the southwest. This wetland is USACE jurisdictional. The stream is classified by the NYSDEC as a Class C waterbody. Although classified by the NYSDEC, Class C waterbodies are not regulated by the NYSDEC, therefore the stream is not subject to NYSDEC setback requirements.

Aquifer mapping was reviewed to determine whether the site is over a sole source, primary or principal aquifer. According to the Environmental Protection Agency "Sole Source Aquifers" map, the site is not over a sole-source aquifer. According to the NYSDEC "Primary and Principal Aquifers in New York State" map, the site is not over a primary aquifer or a principal aquifer.

Floodplains

The Flood Insurance Rate Map (FIRM) was reviewed, and parts of the property is located within a floodplain (see Figure 3). The base flood elevation is 374.5 ft (NAVD88).

Cultural Resources

According to the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) Cultural Resource Information System (CRIS) database, the site is within an archaeologically sensitive area (see Figure 4). A no-impact letter from the State Historic Preservation Office is attached in Appendix J.

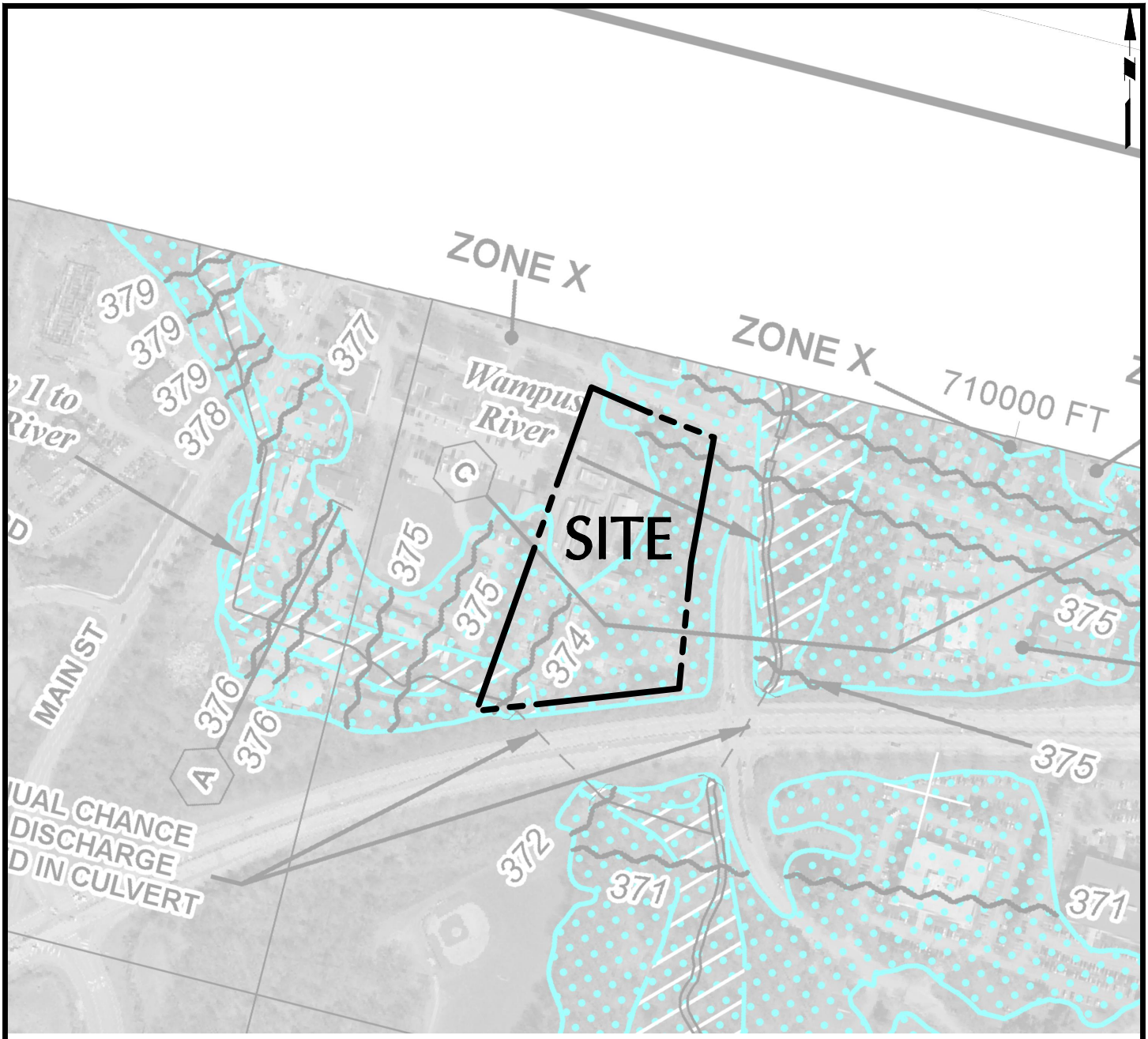
WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

LANGAN

Project No. 190085001

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project	45 BEDFORD ROAD ARMONK WESTCHESTER COUNTY NEW YORK
Drawing Title	SOILS MAP
Project No.	190085001
Date	01/30/2023
Drawn By	GN
Checked By	MT
Figure	FG02
Sheet	2 of 6



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

300 0 150 300

SCALE: 1 INCH = 300 FEET

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

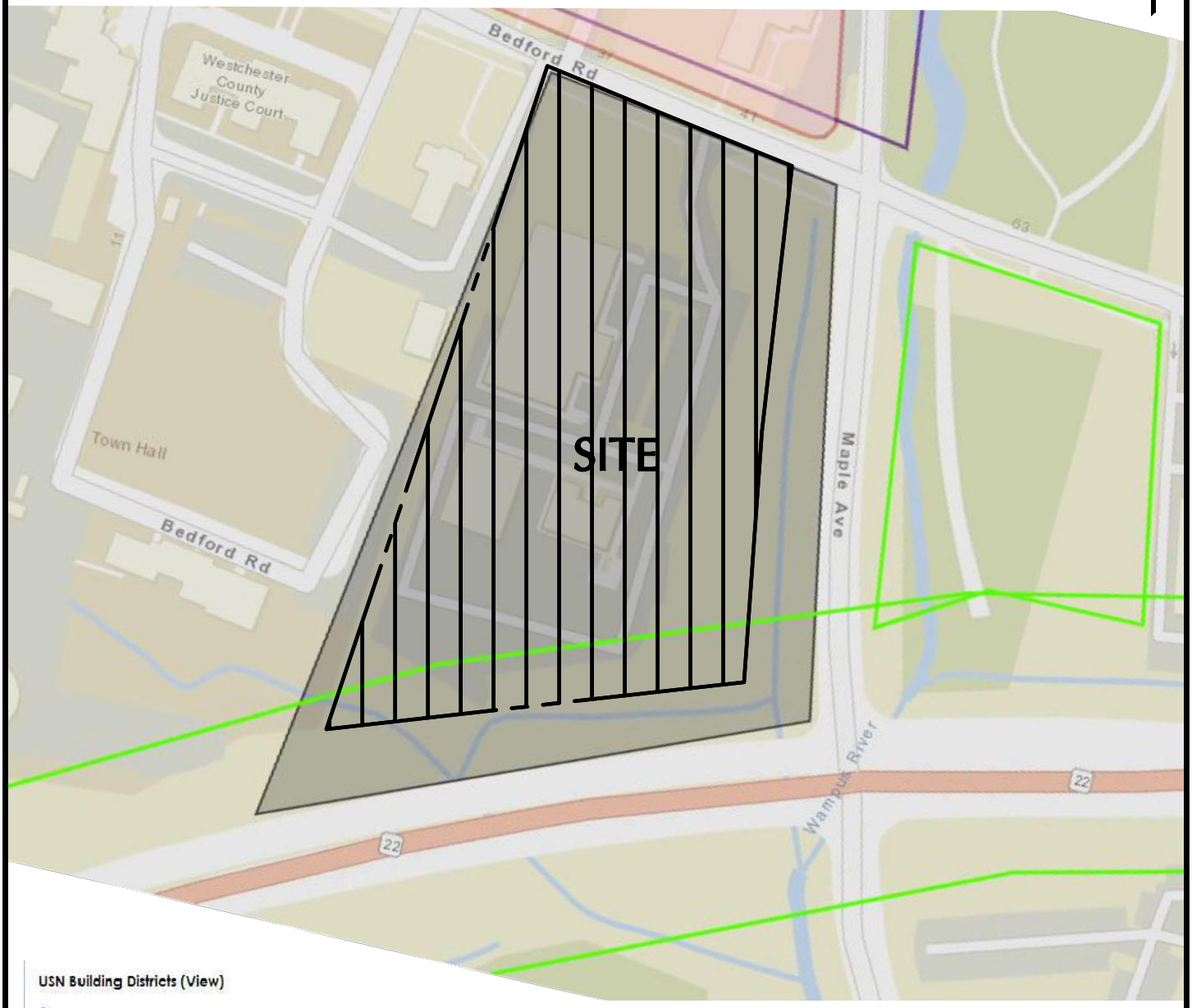
Project
45 BEDFORD ROAD
TOWN OF NORTH CASTLE
WESTCHESTER COUNTY NEW YORK

Drawing Title
FLOOD INSURANCE RATE MAP

Project No. 190085001
Date 01/30/2023
Drawn By GN
Checked By MT

Figure
FG03
Sheet 1 of 1

Project No. 190085001



USN Building Districts (View)

Eligible

Other Statuses

National Register Building Sites (View)

Survey Archaeology Areas (View)

150 0 50 100 150

SCALE: 1 INCH = 150 FEET

LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.

One North Broadway, Suite 910
White Plains, NY 10601

T: 914.323.7400 F: 914.323.7401 www.langan.com

Project

45 BEDFORD ROAD

TOWN OF NORTH CASTLE
WESTCHESTER COUNTY NEW YORK

Drawing Title

CULTURAL RESOURCES MAP

Project No. 190085001

Date 01/30/2023

Drawn By GN

Checked By MT

Figure

FG04

Sheet 1 of 1

Project No. 190085001

Date: 8/7/2023 Time: 09:44 User: gnyambura Style Table: Langan.stb Layout: Layout1 Document Code: FG04-190085001-0201-CS101-0101

3 Stormwater Management Plan

3.1 Stormwater Site Planning

3.1.1 Preservation of Natural Features and Conservation

Preservation of natural features includes techniques to identify and preserve natural areas that can be used to protect water, habitat, and vegetative resources. Conservation includes designing elements of the development in a way that the site design takes advantage of a site's natural features, preserves sensitive areas, and identifies constraints and opportunities to prevent or reduce negative effects of a development. An evaluation of the preservation of natural features and conservation planning practices is provided in the table below.

Table 3-1: Preservation of Natural Features and Conservation

Practice	Description	Incorporated	Reason
Preservation of Undisturbed Areas	Delineate and place into permanent conservation undisturbed forests, native vegetated areas, riparian corridors, wetlands, and natural terrain.	N/A	Most of the site is already developed.
Preservation of Buffers	Define, delineate, and preserve naturally vegetated buffers along perennial streams, rivers, shorelines and wetlands.	Considered and Not Applied	The project has minimal unavoidable disturbance in the 100-foor buffer of adjacent streams. Mitigation measures have been taken to preserve the wetlands and buffers.
Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.	N/A	Most of the site is already developed.
Locating Development in Less Sensitive Areas	Avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.	N/A	Most of the site is in the flood plain.
Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.	Considered and Applied	The proposed development will reduce existing impervious area.
Soil Restoration	Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of post construction practices.	Considered and Applied	N/A

3.1.2 Reduction of Impervious Cover

Reduction of impervious cover includes methods to reduce the amount of rooftops, parking lots, roadways, sidewalks, and other surfaces that do not allow rain to infiltrate into the soil. An evaluation of the reduction of impervious cover techniques is provided in the table below.

Table 3-2: Reduction of Impervious Cover

Practice	Description	Incorporated	Reason
Roadway Reduction	Minimize roadway widths and lengths to reduce site impervious area	N/A	
Sidewalk Reduction	Minimize sidewalk lengths and widths to reduce site impervious area	N/A	
Driveway Reduction	Minimize driveway lengths and widths to reduce site impervious area	N/A	
Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.	N/A	There are no cul-de-sacs in the proposed development.
Building Footprint Reduction	Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.	Considered and Applied.	The project proposes two- and three-story buildings.
Parking Reduction	Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, minimizing stall dimensions, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where appropriate.	Considered and Applied.	The project proposes compact parking spaces below some buildings to avoid creating more impervious area for those parking spaces.

3.1.3 Runoff Reduction Techniques

Green infrastructure techniques use the natural features of the site and promote runoff reduction through micromanaging runoff, promoting groundwater recharge, increasing losses through evapotranspiration, and emulating the existing hydrology. An evaluation of the runoff reduction practices is provided in the table below.

Table 3-3: Runoff-Reduction Practices

Practice	Description	Incorporated	Reason
Conservation of Natural Areas	Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/or permanently conserving these areas on a site.	N/A	The wetland buffers are preserved as much as practical, but they are not placed in a permanent conservation easement.
Sheet flow to Riparian Buffers or Filter Strips	Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.	N/A	The project area is not big enough to incorporate undisturbed natural areas with sheet flow.
Vegetated Open Swale	The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.	N/A	The project area does not have enough space to incorporate an open swale.
Tree Planting/ Tree Box	Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.	Considered and applied.	The project includes new trees in the project area as part of the landscaping plan.

Practice	Description	Incorporated	Reason
Disconnection of Rooftop Runoff	Direct runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas.	Considered and not applied.	The project area does not have enough space to have significant overland flow from rooftops.
Stream Daylighting for Redevelopment Projects	Stream daylight previously culverted/ piped streams to restore natural habitats, better attenuate runoff by increasing the storage size and promoting infiltration.	N/A	
Rain Garden	Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.	N/A	The project area does not have enough space to incorporate a rain garden.
Green Roof	Capture runoff through a layer of vegetation and soil installed on top of a conventional flat or sloped roof.	N/A	
Stormwater Planter	Small, landscaped stormwater treatment devices that can be designed as infiltration or filtering practices.	N/A	
Rain Tank/Cistern	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.	N/A	
Porous Pavement	Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface.	Considered and not applied.	

3.1.4 Standard Stormwater Management Practices

Standard stormwater management practices (SMPs) are structural practices that are designed to capture and treat the water quality volume. Some of the standard SMPs can also provide runoff reduction or water quantity controls. An evaluation of the standard SMPs is provided in the table below.

Table 3-4: Standard Stormwater Management Practices

Practice	Description	Incorporated	Reason
Stormwater Ponds	Constructed stormwater retention basins that have a permanent pool (or micropool). Runoff from each rain event is detained and treated in the pool. Can be used to treat hotspot runoff if 2 feet minimum separation to seasonally groundwater is provided or if a permeable liner is provided.	N/A	There is not enough space in the project area to construct a stormwater pond.
Stormwater Wetlands	Constructed stormwater wetlands that are structural practices that incorporate wetland plants to store and treat runoff. Can be used to treat hotspot runoff if 2 feet minimum separation to seasonally groundwater is provided.	N/A	There is not enough space in the project area to construct a stormwater wetland.

Practice	Description	Incorporated	Reason
Stormwater Infiltration	Excavated trench or basin used to capture and allow for infiltration into the surrounding soils from the bottom and sides of the basin or trench. Also, a standard stormwater practice that also provides runoff reduction volume capacity.	N/A	There is not enough space in the project area to construct an open stormwater infiltration trench or basin.
Underground Infiltration System	An underground perforated piping or chambers used to capture and allow for infiltration into the surrounding soils from the bottom and sides. Also, a standard stormwater practice that also provides runoff reduction volume capacity.	Considered and applied.	Stormtech chambers are proposed for this project.
Stormwater Filtering Systems – Sand or Organic	Aboveground or underground multi-chamber practice designed to treat stormwater runoff through filtration using a sediment forebay, primary filter media and underdrain. Can be used to treat hotspot runoff if a permeable liner is provided.	Considered and not applied.	Other practices were chosen for the site.
Stormwater Filtering Systems – Bioretention	Shallow basin or landscaped area that uses engineered soils and vegetation to capture and treat runoff. Can be used to treat hotspot runoff if a permeable liner is provided. Also, a standard stormwater practice that also provides runoff reduction volume capacity.	Considered and not applied.	Other practices were chosen for the site.
Stormwater Open Channel Systems - Dry Swale	Vegetated channel that captures and treats runoff within dry cells formed by check dams or other means. Can be used to treat hotspot runoff if a permeable liner is provided. Also, a standard stormwater practice that also provides runoff reduction volume capacity.	N/A	There is not enough space in the project area to construct an open swale.
Stormwater Open Channel Systems - Wet Swale	Vegetated channel that captures and treats runoff within wet cells formed by check dams or other means.	N/A	There is not enough space in the project area to construct an open swale.

3.2 Hydrologic Analysis

3.2.1 Stormwater Modeling

The USDA Soil Conservation Service Publication Technical Release (TR-55) "Urban Hydrology for Small Watersheds" has been used to analyze the pre- and post-development rainfall runoff rates and volumes. Watershed areas, curve numbers (CN), and times of concentration (T_C) were calculated for each contributing watershed. The curve number is a land-sensitive coefficient that dictates the relationship between total rainfall depth and direct storm runoff. Based on the land coverage and soil group types, the average CN has been determined for each of the subcatchments for both the existing and proposed conditions.

The T_C is defined as the time for runoff to travel from the hydraulically most distant point in the watershed to a Design Point (DP). Values of the time of concentration were determined for both the pervious and impervious area of each watershed for the proposed conditions based on land cover and slope of the flow path using methods outlined in TR-55. As per TR-55, the minimum T_C used is 0.1 hours (or 6 minutes).

An overall watershed boundary was developed for the post-development conditions (see Figure 6). The pre-development watershed boundary and conditions are in the previously approved SWPPP shown in Appendix D. The overall watershed was broken down into smaller watersheds, or subcatchments to allow for analysis of runoff conditions at several locations. Each of these locations is defined as a Design Point (DP) to compare the proposed development to the existing conditions. Descriptions of each of the selected design points are provided below:

- Design Point 1: Stream south-west of the site.
- Design Point 2: Wetland south-east of the site.
- Design point 3: Catch basin on Bedford Road northeast of the site.

Rainfall data used in the modeling and analysis was obtained from the isohyet maps provided in the *Design Manual* and the Northeast Regional Climate Center (NRCC). A Type III rainfall distribution was used to evaluate the pre- and post-development stormwater runoff conditions for the 1-, 10-, and 100-year 24-hour storm events. The rainfall data used in the stormwater management design and analysis is provided in the table below.

Table 3-5: Rainfall Data

Storm Event	24-Hour Rainfall
90th Percentile (1,2)	1.50 inches
1-year	2.80 inches
2-year (3)	3.43 inches
10-year	5.13 inches
100-year	9.16 inches

1. The 90th percentile 24-hour rainfall value was taken from the *New York State Stormwater Management Design Manual*. The other 24-hour rainfall values are taken from NRCC.
2. The 90th percentile 24-hour rainfall amount was used to calculate the required total water quality volume.
3. The 2-year 24-hour rainfall amount was used to calculate the sheet flow component in the time of concentration.

The rainfall data used in the stormwater management design and analysis is provided in Appendix C. The results of the computer modeling used to analyze the post-development watershed conditions are provided in Appendix F. The pre-development watershed conditions analysis is provided in the previously approved SWPPP in Appendix D.

3.2.2 Water Quality Control

The water quality volumes have been determined based on the methodology described in the Design Manual. The total water quality volume is provided in the table below.

Table 3-6: Total Water Quality Volume

Subcatchment	Area (ac)	Impervious Area (ac)	WQ_v (cf)
10	0.50	0.24	1,332
20A	2.41	1.87	9,824
20B&C	1.05	0.00	285
Total	**3.95**	**2.12**	**11,441**

Detailed design calculations have been provided in Appendix C. Stormtech Isolator Row Plus™ units are used for pretreatment. The infiltration rate on the site is greater than 5 inches/hour, therefore pre-treatment is provided for 100% of the water quality volume. All underground pre-treatment and infiltration units were sized using 75% of the lowest soil infiltration rate.

Subcatchment 30 was not included as part of the total water quality volume calculations, since it has a smaller post-development total area and impervious area than in pre-development conditions. This subcatchment discharges to an existing catch basin on Bedford Road to the northeast of the site.

3.2.3 Hydrodynamic Separator Sizing

Two hydrodynamic Separators are proposed for pretreatment to the primary underground infiltration system. The pretreatment units are selected using a flow-based sizing approach, based on the peak rate of discharge for the water quality design storm. HDS-1 has a peak flow rate of 0.6 cfs and HDS-2 has a peak flow rate of 1.18 cfs. Analysis is provided in Appendix C. The 4-ft diameter SciClone (SCX-4) has an approved treatment capacity of 1.82 CFS, therefore the SCX-4 will be sufficient for both pretreatment units. Adequate bypass capacity for the 100-year storm has been verified with the unit manufacturer.

3.2.4 Runoff Reduction Volume

Runoff reduction is achieved by infiltration, groundwater recharge, reuse, recycle, evaporation and evapotranspiration of 100 percent of the post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, and minimizing concentrated flow by using runoff-control techniques to provide treatment in a distributed manner before runoff reaches the collection system. The runoff-reduction-volume techniques that were used to reduce the total required water quality volume are in the table below.

Table 3-7: Implemented Runoff Reduction Volume Techniques

Techniques/ Practices	RRv Reduction Method	Reduction Amount
Underground Infiltration System	Standard SMP with RRv capacity	100% of the WQv provided by the practice

3.2.5 Water Quantity Control

A comparison of the required and provided channel protection volume is provided in the table below.

Table 3-8: Summary of Channel Protection Volume

Water Quantity Parameter	Required (cf)	Provided (cf)
Channel Protection Volume	9,918	16,339

Detailed channel protection volume calculations have been provided in Appendix C.

A comparison of the pre- and post-development peak discharge rates is provided in the table below.

Table 3-9: Summary of Peak Discharge Rates

Storm Event	Design Point	Pre (cfs)	Post (cfs)	Diff (cfs)
1-year	1	0.00	0.00	0.00
	2	0.08	0.08	0.00
	3	0.36	0.11	-0.25
10-year	1	2.37	0.66	-1.71
	2	1.60	1.07	-0.53
	3	0.87	0.34	-0.53
100-year	1	6.24	2.43	-3.81
	2	31.17	5.39	-25.78
	3	1.77	0.81	-0.96

Comparison of the peak discharge rates for pre- and post-development watershed conditions demonstrates that the peak rate of runoff from the proposed development will not be increased. The pre-development stormwater model is provided in the previously approved SWPPP submission in Appendix D. The post-development stormwater model is provided in Appendix F.

4 Erosion and Sediment Control Plan

4.1 Construction Sequencing Schedule and Phasing

The project will be completed in one phase. The general construction sequencing is shown on the project plans. In addition, the Applicant is not requesting to disturb more than 5 acres of soil at any one time.

4.2 Erosion and Sediment Control Measures

Temporary erosion and sediment control measures to be used during construction will include the following:

- **Stabilized Construction Access** - Before construction, the stabilized construction access shall be installed as shown on the plans to reduce the tracking of sediment onto adjacent roadways. Construction traffic must enter and exit the site at the stabilized construction access. The stabilized construction access shall be maintained in good condition to control tracking of sediment onto rights-of-way or streets. When necessary, the placement of additional aggregate atop the filter fabric shall be done to maintain the

minimum thickness. Sediments and soils spilled, dropped, or washed onto the public rights-of-way shall be removed immediately.

- **Dust Control** - Water trucks or other approved water source shall be used, as needed, during construction to reduce dust generated on the site. Dust control shall be provided by the general contractor to a degree acceptable to the owner/operator, and in compliance with the applicable local and state dust control requirements.

- **Temporary Soil Stockpile** - Materials, such as topsoil, shall be temporarily stockpiled (if necessary) on site during construction. Stockpiles shall be located away from storm drainage, water bodies or courses, and shall be properly protected from erosion in accordance with the NYSDEC standard detail.

- **Silt Fencing** - Before initiation of and during construction, silt fencing shall be established along the perimeter of areas to be disturbed because of the construction up gradient of water courses or adjacent properties. These barriers may extend into non-impact areas to adequately protect adjacent lands. Clearing and grubbing shall be performed only as necessary for the installation of the sediment control barrier. To maximize effectiveness of the silt fencing, daily inspections shall be performed by site personnel. Maintenance of the fence shall be performed as needed and when directed by the Qualified Inspector.

- **Temporary Seeding** - Within seven days after construction ceases on any particular area of the site, all disturbed areas where there shall be no construction for longer than 14 days shall be temporarily seeded and mulched to minimize erosion and sediment loss. Other stabilization methods maybe approved by the Qualified Inspector.

- **Inlet Protection** – Inlet protection shall be installed around existing and proposed catch basins (once installed) to keep sediment from entering the storm-sewer system. During construction, the inlet protection measures shall be replaced as needed to ensure proper function of the structure.

- **Temporary Sediment Basins and Traps** - Temporary sediment basins and traps shall be constructed to intercept sediment laden runoff, reduce the amount of sediment leaving the disturbed areas, and protect drainage ways, properties, and rights-of-way. Projects that have proposed stormwater ponds can be used as temporary sediment basins during construction. Temporary sediment basins and traps shall be inspected at least every seven days. All damage caused by soil erosion and construction equipment shall be repaired upon discovery. Accumulated sediment shall be removed from the sediment basin or trap when it reaches 50 percent of the design capacity and must not exceed 50 percent. Sediment must not be placed downstream from the embankment, adjacent to a stream, or floodplain.

- **Dewatering** - Dewatering, if required, must not be discharged directly into wetlands, water courses, water bodies, and storm sewer systems without appropriate protection or authorizations. Proper methods and devices shall be used to the extent permitted by law, such as pumping water into temporary sediment basins, providing surge protection at the inlet and outlet of pumps, floating the intake of the pump, or other methods to minimize and retain the suspended solids.

Permanent erosion and sediment control measures to be used after construction generally include the following:

- **Establish Permanent Vegetation** - Disturbed areas not covered by impervious surfaces shall be seeded in accordance with the accompanying plans. The type of seed, mulch, and maintenance measures shall be followed. All areas at final grade shall be seeded and mulched within 14 days after completion of the major construction. All seeded areas shall be protected with mulch or hay. Final site stabilization is achieved when soil-disturbing activities have been completed and a uniform, perennial vegetative cover with a density of 80 percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on the disturbed unpaved areas and areas not covered by permanent structures.

- **Rock Outlet Protection** - Rock outlet protection shall be installed at the locations as shown on the accompanying plans. The installation of rock outlet protection will reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving water course or water body.

Specific erosion and sediment control measures, inspection frequency, and remediation procedures are provided in the subsequent sections and on the accompanying project plans.

4.3 Pollution Prevention Controls

Good housekeeping practices are designed to maintain a clean and orderly work environment. Good housekeeping measures shall be maintained throughout the construction process by those parties involved with the direct care and development of the site. The following measures shall be implemented to control the possible exposure of harmful substances and materials to stormwater runoff:

1. Material resulting from the clearing and grubbing operation shall be stockpiled away from storm drainage, water bodies or watercourses and surrounded with adequate erosion and sediment control measures. Soil stockpile locations shall be exposed no longer than 14 days before seeding.

2. Equipment maintenance areas shall be protected from stormwater flows and shall be supplied with appropriate waste receptacles for spent chemicals, solvents, oils, greases, gasoline, and any pollutants that might contaminate the surrounding habitat or water supply. Equipment wash-down zones shall be within areas draining to sediment control devices.

3. The use of detergents for large-scale (e.g., vehicles, buildings, pavement surfaces) washing is prohibited.

4. Material storage locations and facilities (e.g., covered storage areas, storage sheds) shall be on-site and shall be stored according to the manufacturer's standards in a dedicated staging area. Chemicals, paints, solvents, fertilizers, and other toxic material shall be stored in waterproof containers. Runoff containing such materials shall be collected, removed from the site, treated and disposed of at an approved solid waste or chemical disposal facility.

5. Hazardous spills shall be immediately contained to prevent pollutants from entering the surrounding habitat or water supply. Spill Kits shall be provided on site and shall be displayed in a prominent location for ease of access and use. Spills greater than 5 gallons shall be reported to the NYSDEC Response Unit at 1-800-457-7362. In addition, a record of the incidents or notifications shall be documented and attached to the SWPPP.

6. Portable sanitary waste facilities shall be provided on site for workers and shall be properly maintained.

7. Dumpsters or debris containers shall be on site and shall be of adequate size to manage respective materials. Regular collection and disposal of wastes must occur as required.

8. Temporary concrete washout facilities shall be a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses. Each facility should be away from construction traffic or access areas to prevent disturbance or tracking. A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to use the proper facilities. When temporary concrete washout facilities are no longer required for the work, the hardened concrete shall be removed and disposed of. Materials used to construct the temporary concrete washout facilities shall be removed and disposed of. Holes, depressions, or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled or repaired, seeded, and mulched for final stabilization. Wastewater discharges from washout of concrete is prohibited.

9. Non-stormwater components of site discharge shall be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or approved private well. Water used for construction that does not originate from an approved public supply must not discharge from the site.

10. Discharges from dewatering activities, including discharges from dewatering trenches and excavations, shall be managed by appropriate control measures.

11. Wastewater discharges from washout and cleanout of stucco, paint, form-release oils, curing compounds, and other construction materials is prohibited.

4.4 Soil Stabilization and Restoration

Stabilization

In areas where soil disturbance has temporarily or permanently ceased, the application of soil stabilization measures shall be initiated by the end of the next business day and completed within 14 days from the date the current soil disturbance ceased. The soil-stabilization measures shall be in conformance with the *New York State Standards and Specifications for Erosion and Sediment Control*, latest edition.

Restoration

Soil restoration shall be performed in the disturbed areas. The soils shall be restored in accordance with the table below.

Table 4-1: Soil Restoration

Type of Soil Disturbance	Soil Restoration Requirement
No Soil Disturbance (e.g., preservation of natural features)	Restoration not required.
Minimal Soil Disturbance (e.g., clearing and grubbing)	Restoration not required.
Areas where topsoil is stripped only (e.g., no change in grade)	Apply 6 inches of topsoil in Type A and B soils
Areas of cut or fill	Aerate and apply 6 inches of topsoil in Type A and B soils
Heavy traffic areas on site (Especially in 5 to 25 feet around buildings, but not within a 5-foot perimeter around foundation walls)	Apply full soil restoration (see below).
Areas where runoff reduction or infiltration practices are applied	Restoration not required, but can be applied to enhance soil infiltration.
Redevelopment projects	Soil restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.

Full Soil Restoration

Before applying full soil restoration, all construction, including construction equipment and material storage, site cleanup and trafficking, should be finished and the site closed to further disturbance. Full soil restoration should be performed with a heavy-duty agricultural-grade deep ripper, deep angled-leg subsoiler, or equivalent machinery to achieve de-compaction.

Full soil restoration is implemented in a two-phase process:

1. Deep rip the affected thickness of exposed subsoil, aggressively fracturing it before the protected topsoil is reapplied on the site.
2. De-compact simultaneously through the restored topsoil layer and upper half of the affected subsoil.

Low to Moderate Subsoil Moisture

The disturbed soils are returned to rough grade and the following is applied:

1. Apply 3 inches of compost over the subsoil.
2. Till compost a minimum of 12 inches into the subsoil using a cat-mounted ripper, tractor-mounted disc, or tiller mixing and circulating air and compost into subsoils.
3. Rock-pick until uplifted stone and rock of 4 inches or larger size are cleaned off the site. All construction material and foreign debris and existing root masses shall be removed from proposed planting areas.
4. Apply 6 inches of topsoil. Newly installed planting soils shall be mixed with existing soils where they meet in order to create a transitional gradient to allow for proper drainage.
5. Install plants and vegetation in accordance with the Landscaping Plan.

5 Stormwater Pollution Prevention Plan Implementation

5.1 Certification Statements

Before starting construction, the owner/operator, contractors, and subcontractors are required to sign the certification statements provided in Appendix H.

The owner/operator must sign a copy of the Owner's/Operator's certification before submitting the Notice of Intent. The owner/operator acknowledges that the SWPPP has been developed and will be implemented as the first element of construction and agrees to comply with the terms and conditions of the general permit for which the Notice of Intent is being submitted.

The owner/operator must identify the contractors and subcontractors that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices; and constructing the post-construction stormwater management practices included in the SWPPP. The contractors and subcontractors must identify at least one trained individual from their company who will be responsible for implementation of the SWPPP. This person will be known as the trained contractor. At least one trained contractor will be on site daily when soil disturbing activities are being performed. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has begun, they must also sign the certification statement and identify their responsibilities.

5.2 Pre-Construction Meeting

Before beginning construction, the owner/operator must set up a pre-construction meeting with the Town representative, qualified professional, qualified inspector, contractors, and subcontractors. The primary purpose of the pre-construction meeting is to discuss the responsibilities of each party as they relate to the implementation of the SWPPP and to clarify any questions.

5.3 Construction Site Log

The owner/operator must maintain a copy of the following, including but not limited to: General Permit, signed NOI, signed MS4 Acceptance form, NOI Acknowledgement Letter, SWPPP, signed certification statements, and inspections reports. The documents must be maintained in a secure location on site. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

5.4 Construction Inspections and Maintenance

5.4.1 Contractor Maintenance Inspection Requirements

The trained contractor must inspect the erosion and sediment control practices and pollution-prevention measures to verify that they are being maintained in effective operating condition. The inspections will be conducted as follows:

- For construction sites where soil disturbance is on-going, the trained contractor must inspect the measures within the active work area daily. If deficiencies are identified, the

contractor will begin implementing corrective actions within one business day and must complete the corrective actions by the end of the day.

- For construction sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the trained contractor can stop conducting the maintenance inspections. The trained contractor must conduct the daily maintenance inspections as soil disturbance resumes.

- For construction sites where soil disturbance has been shut down with partial project completion, the trained contractor can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed part of the project have been constructed in conformance with the SWPPP and are operational.

5.4.2 Qualified Inspector Inspection Requirements

The owner/operator must have a Qualified Inspector conduct site inspections to verify the stability and effectiveness of protective measures and practices employed during construction. The site inspections will be conducted as follows:

- For construction sites where soil disturbance is ongoing, the Qualified Inspector must conduct a site inspection at least once every seven days.

- For construction sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the Qualified Inspector must conduct a site inspection at least once every 30 days. The owner/operator must notify the NYSDEC or MS4 in writing before reducing the frequency of the inspections.

- For construction sites where soil disturbance activities have been shut down with partial project completion, the Qualified Inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices are operational. The owner/operator must notify the NYSDEC or the MS4 in writing before the shutdown.

All erosion and sediment control inspections shall be performed in accordance with this SWPPP, accompanying project plans, latest revision of *New York State Standards and Specifications for Erosion and Sediment Control,* and procedures outlined in Appendix H of the latest revision of the *New York State Stormwater Management Design Manual*. Inspection reports must identify and document the maintenance of the erosion and sediment control measures. An Example inspection report has been provided in Appendix H.

Specific maintenance components, schedule frequency, inspection parameters and remediation procedures are provided on the accompanying project plans. Any adjustments or modifications to the maintenance plan shall be noted in the inspection reports and submitted to the Town for approval.

5.4.3 Town of North Castle Inspection Requirements

The Town of North Castle Stormwater Management Officer may require site inspections to ensure compliance with Chapter 267 of the Town Code. The Officer may either approve the portion of work completed or notify the Owner/Operator where the work fails to comply with Chapter 267 of the Town Code or the approved SWPPP. The Owner/Operator shall notify the Town of North Castle Building Department at least 48 hours before the following construction activities to schedule inspections, as required by the Stormwater Management Officer:

1. Start of construction
2. Installation of sediment and erosion control measures
3. Completion of site clearing
4. Completion of rough grading
5. Completion of final grading
6. Close of the construction season
7. Completion of final landscape
8. Installation of stormwater management facilities
9. Successful establishment of landscaping in public areas

Prior to the Town of North Castle giving any approval that has a stormwater management facility as one of the requirements, the owner/contractor must execute a maintenance easement agreement that shall be binding on all subsequent landowners served by the stormwater management facility as per Section 267.7(B) of the Town Code. The Town shall also approve a formal maintenance agreement for stormwater management facilities binding all subsequent landowners and recorded in the office of the County Clerk as a deed restriction on the property prior to final plan approval as per Section 267.7(D) of the Town Code.

6 Termination of Coverage

The owner/operator may terminate coverage when:

a. Total project completion has occurred.
b. A planned shutdown with partial project completion has occurred.
c. Property ownership changes or when there is a change in operational control over the construction plans and specifications; and the new owner/operator has obtained coverage under the SPDES General Permit.
d. Coverage under an alternative SPDES general permit or an individual SPDES permit has been obtained.

The completed NOT must be submitted to the NYSDEC to cancel coverage. A blank copy of the NOT has been provided in Appendix B.

7 Post-Construction Requirements

7.1 Record Retention

Following construction, the owner/operator must retain a copy of the signed NOI, signed MS4 SWPPP Acceptance, NOI Acknowledgement Letter, SWPPP, project plans, and any inspection reports that were prepared in conjunction with the General Permit for at least five years from the date that the NYSDEC receives a complete NOT.

7.2 Inspection and Maintenance

Post-construction inspections and maintenance will be performed by Kings Capital Construction. Inspections and maintenance for the various site components and stormwater management facilities shall be performed in accordance with the accompanying project plans and this SWPPP. Detailed post-construction inspections and maintenance procedures are provided in Appendix I.

8 Conclusion

This Stormwater Pollution Prevention Plan has been developed in accordance with the requirements of the Town of North Castle and the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Phase II technical guidelines. This SWPPP identifies the erosion control, sediment control, pollution-prevention, and stormwater management measures to be implemented during construction to minimize soil erosion and control sediment transport off site, and after construction to control and treat stormwater runoff from the developed site.

In the opinion of the SWPPP preparer, the proposed project will not have adverse impacts if the measures for erosion control, sediment control, pollution prevention, and stormwater management measures are properly constructed and maintained in accordance with the requirements outlined herein and on the accompanying project plans.

Appendix A: NYSDEC SPDES General Permit

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In 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 fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, 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. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In 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. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - 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 applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

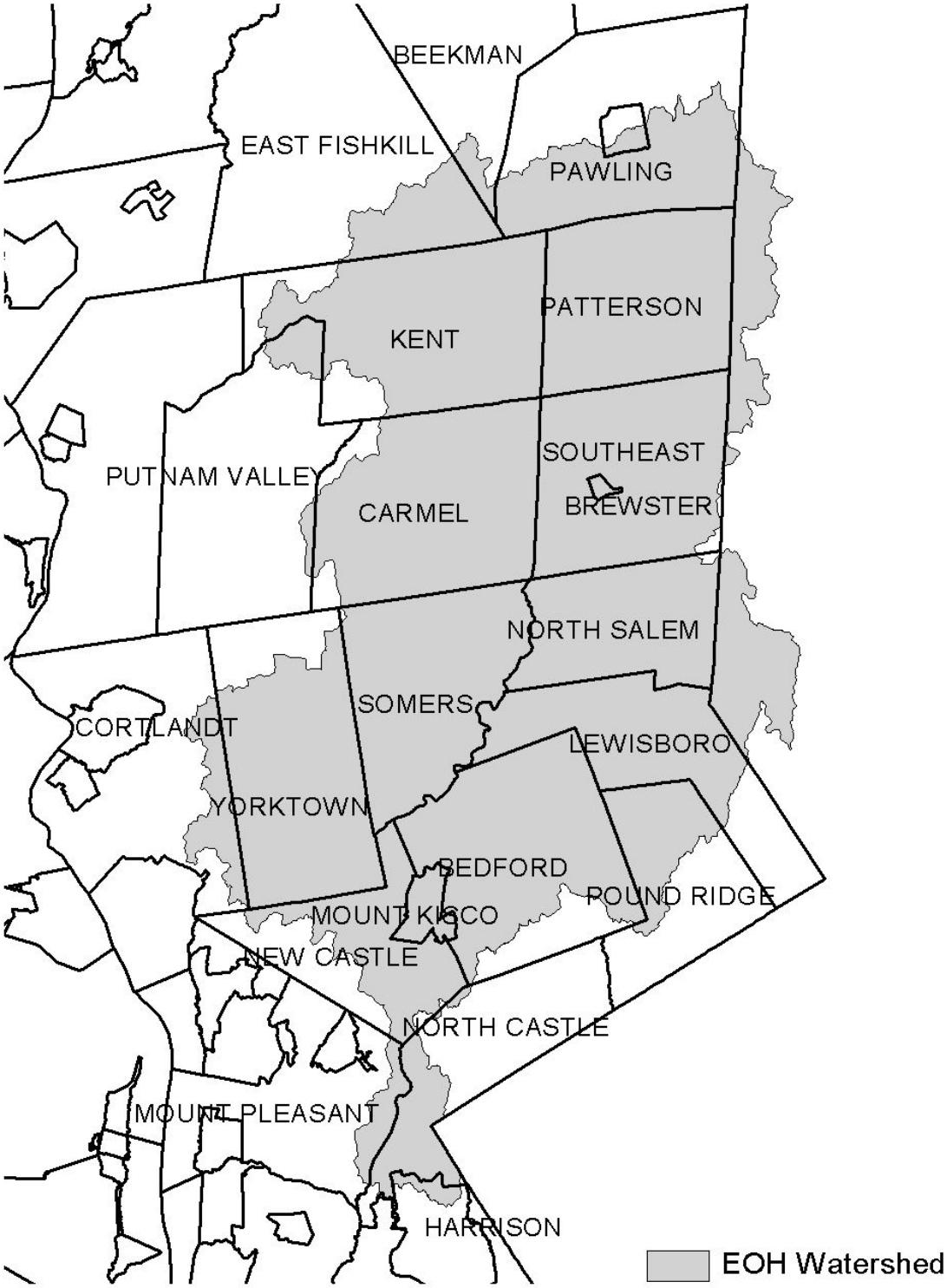


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

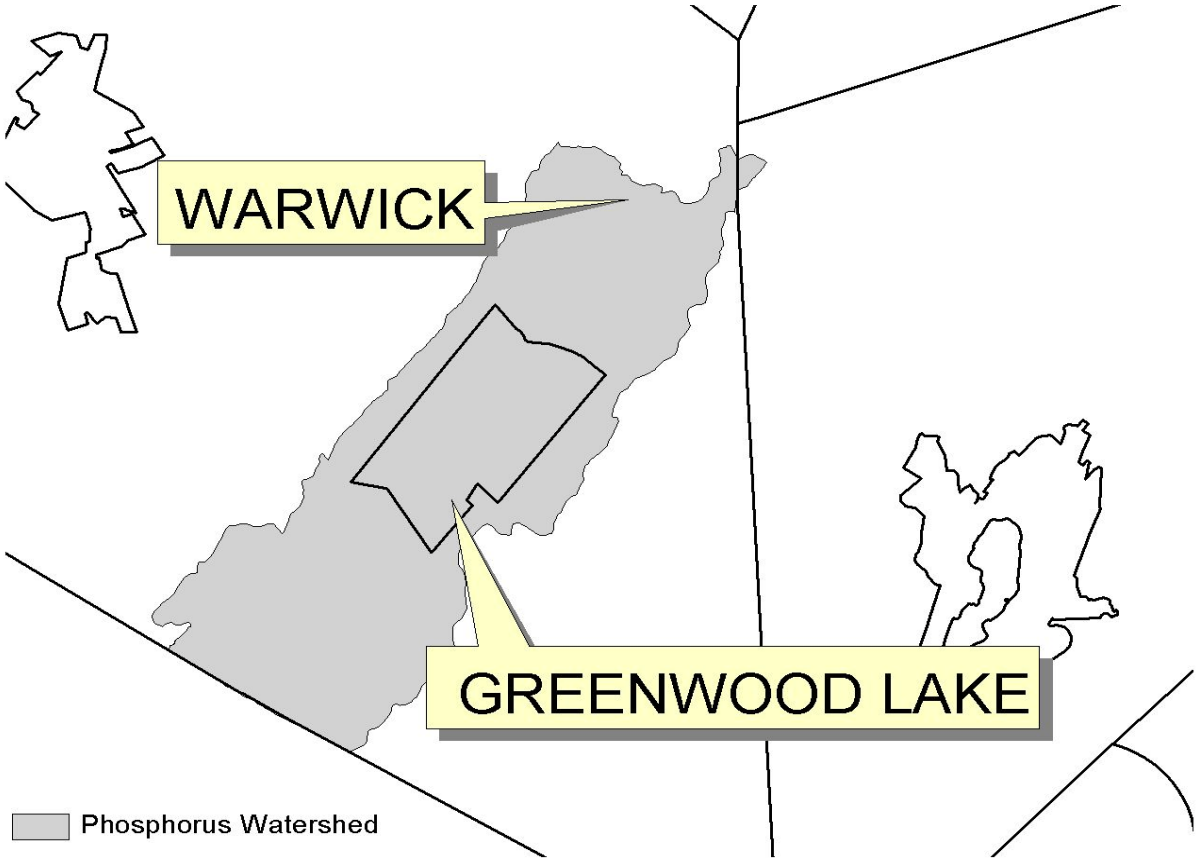


Figure 4 - Oscawana Lake Watershed

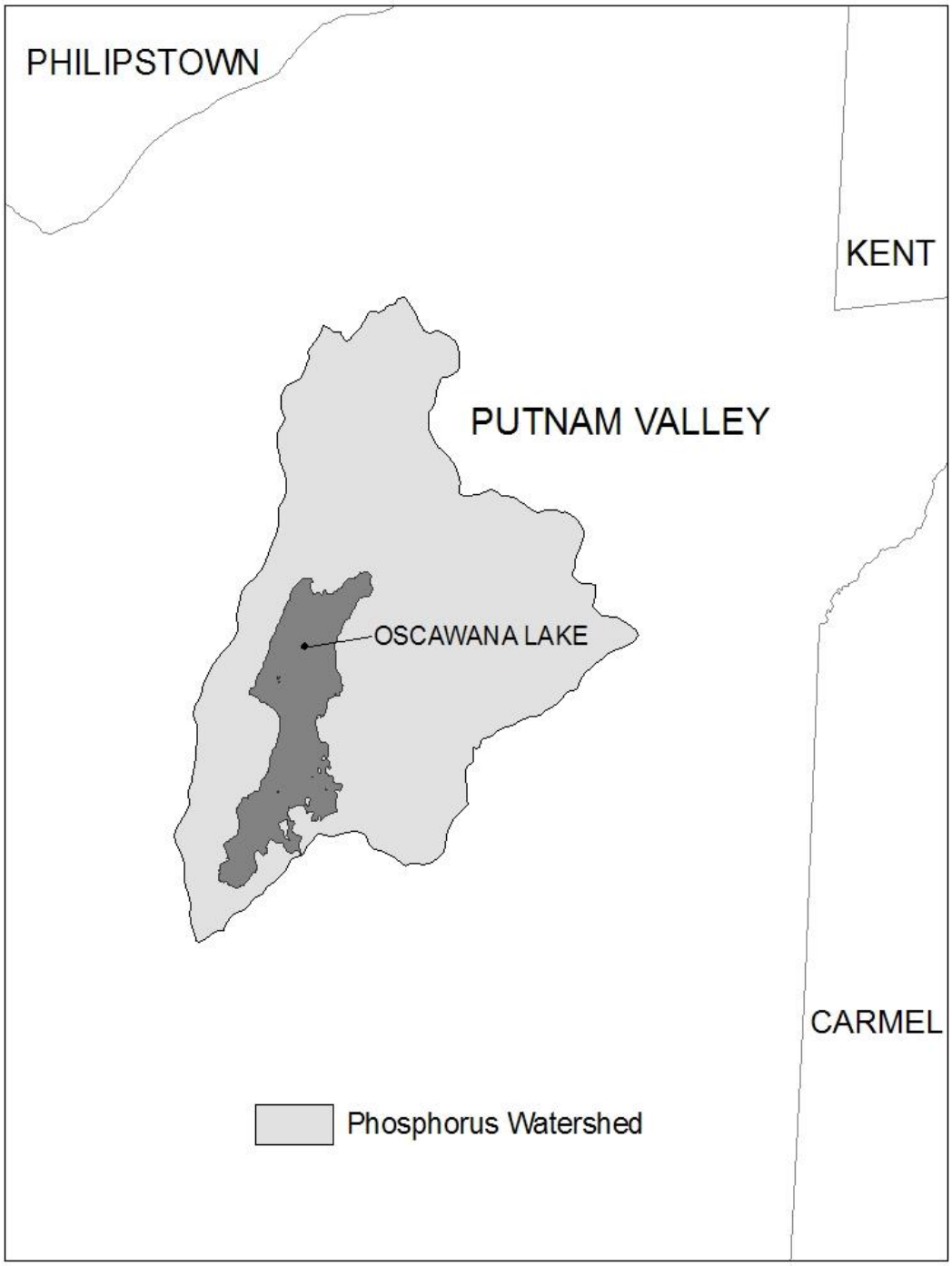
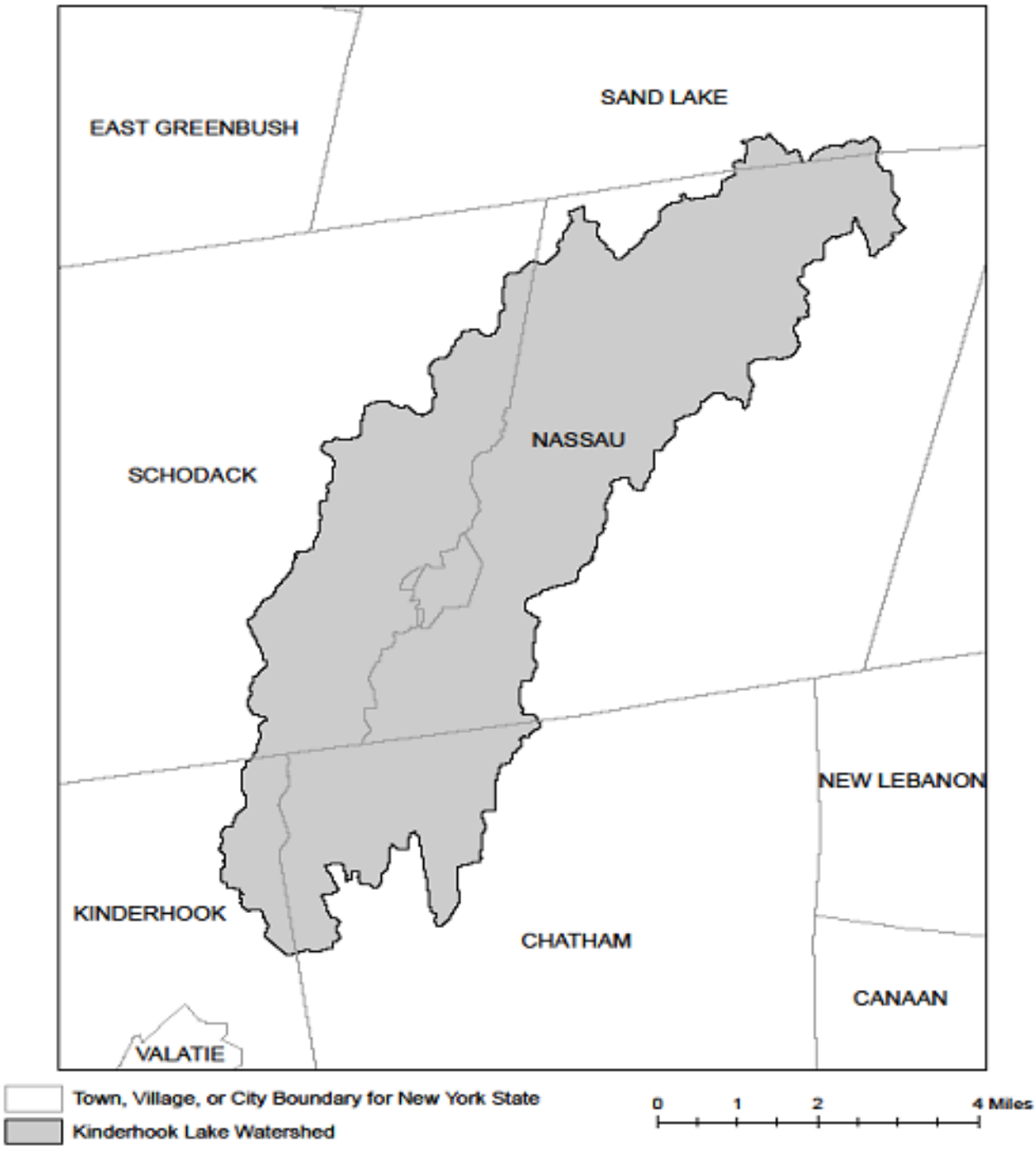


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Appendix B: NYSDEC SPDES General Permit Forms

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
KINGS CAPITAL CONSTRUCTION

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
SPERDUTI

Owner/Operator Contact Person First Name
JOHN

Owner/Operator Mailing Address
660 WHITE PLAINS ROAD

City
TARRYTOWN

State: NY Zip: 10591-____

Phone (Owner/Operator): 973-229-4103 Fax (Owner/Operator): ___-___-____

Email (Owner/Operator)
j.sperduti@kingscapitalgroup.com

FED TAX ID
__-_____ (not required for individuals)

Project Site Information

Project/Site Name
THE GATEWAY

Street Address (NOT P.O. BOX)
45 BEDFORD ROAD

Side of Street
○ **North** ● **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
NORTH CASTLE

State: NY
Zip: 10504 -
County: WESTCHESTER
DEC Region: 3

Name of Nearest Cross Street
MAPLE AVENUE

Distance to Nearest Cross Street (Feet)
50

Project In Relation to Cross Street
○ **North** ○ **South** ○ **East** ● **West**

Tax Map Numbers
Section-Block-Parcel
108.03-1-65

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting): 608146

Y Coordinates (Northing): 4553310

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ● COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME — Number of Lots
- ○ SINGLE FAMILY SUBDIVISION
- ● TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
4.6	4.3	3.2	2.2

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
0 %	100 %	0 %	0 %

7. Is this a phased project? ○ **Yes** ● **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 05/01/2024 – **End Date** 05/01/2025

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

WAMPUS RIVER

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ● Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ● Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ○ **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

TOWN OF NORTH CASTLE

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ● **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ● **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
LANGAN ENGINEERING

Contact Name (Last, Space, First)
TUCKER, MICHAEL

Mailing Address
1 NORTH BROADWAY SUITE 910

City
WHITE PLAINS

State NY Zip 10601-

Phone 914-323-7400

Fax 914-323-7401

Email
MTUCKER@LANGAN.COM

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name MICHAEL **MI**

Last Name FINAN

Signature

Date 10/06/2023

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ● Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ● **Roadway Reduction**
- ● **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ● **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	2	6	3	**acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			2.12
○ Bioretention (F-5)			
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other** [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name [ ]

Manufacturer [ ]

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.256 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.103 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.023 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 0.279

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ◉ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.375 **acre-feet**

CPv Provided

0.38 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

4.84 **CFS**

Post-development

2.07 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

39.18 **CFS**

Post-development

8.63 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

K	I	N	G	S		C	A	P	I	T	A	L		C	O	N	S	T	R	U	C	T	I	O	N										

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

N/A

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date / /

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

MS4 Signatory Authorization

Your SPDES permit requires you to annually submit a report. The Municipal Compliance Certification Form (MCC) must be signed as follows:

1.) For a municipality, state, federal, or other public agency: by either a principal or executive officer or ranking elected official. A principal executive officer includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency; or

2.) A duly authorized representative of the person described in item (1).

NOTE: A person is a duly authorized representative only if

(i) the authorization is made in writing by a person described in paragraph 1 above; and

(ii) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(iii) the written authorization is submitted to the Department.

Initial authorization or changes to authorization: The initial authorization should be submitted to the Department with any reports to be signed by an authorized representative. If an authorization under paragraph (2) is no longer accurate because a different individual, or position, has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (2) must be submitted to the Department with any reports to be signed by an authorized representative.

Signature Authorization Form

Permittee Name:

SPDES NO. NYR20A Date:

Name of person described in paragraph (1):	Title:
Signature of person described in paragraph (1):	Date:

THE PERMITTEE MUST NOTIFY THE DEPARTMENT OF ANY CHANGE IN THIS INFORMATION. THIS FORM SHOULD ONLY BE SENT IN WITH THE ANNUAL REPORT.

Name and/or title of person responsible for signing and submitting official documents including reports, certifications or information required by the NYS Small MS4 General Permit:	Phone:		
Signature (if individual named above):			
Mailing Address:	City:	State:	Zip:

* Note: Notices of Intent (NOI) associated with permit coverage under the NYS Small MS4 General Permit must be signed by a principal executive officer or ranking elected official. See paragraph (1) for definition of a principal executive officer.

Return to: MS4 Coordinator
Bureau of Water Permits
New York State Department of Environmental Conservation 625
Broadway
Albany, NY 12233-3505

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

The Gateway - 45 Bedford Road

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Kings Capital Construction

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First name | MI | Last Name

Signature | Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: The Gardens - 45 Bedford Road

eNOI Submission Number: _____

eNOI Submitted by: ☐ **Owner/Operator** ☐ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

_____

Signature

_____

Date

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

The Gateway
45 Bedford Road
Town of North Castle, New York

Appendix C: Design Calculations

LANGAN

Total Required Water Quality Volume Calculation Worksheet

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	*no*
Design Point(s):	1,2
P=	1.50 *inch*

Manually enter the information below.

Breakdown of Subcatchments

Subcatchment Number	Subcatchment Model Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	10	0.50	0.24	49%	0.49	1,332	Underground Infiltration System
2	20A	2.41	1.87	78%	0.75	9,824	Underground Infiltration System
3	20B	1.05	0.00	0%	0.05	285	
4							
5							
6							
7							
8							
9							
10							
Subtotal		3.95	2.12	54%	0.53	11,441	Subtotal 1
Total		**3.95**	**2.12**	**54%**	**0.53**	**11,441**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
Initial WQv	3.95	2.12	54%	0.53	11,441
Subtract Area	0.00	0.00	--	--	--
WQv adjusted after Area Reductions	**3.95**	**2.12**	54%	0.53	11,441
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	3.95	2.12	54%	0.53	**11,441**
WQv reduced by Area Reduction techniques					0

LANGAN

Minimum Runoff Reduction Volume Worksheet

Minimum Runoff Reduction Volume

1. Construction activities that cannot achieve 100% reduction of the total water quality volume due to site limitation shall direct runoff from all newly constructed impervious areas to a runoff reduction technique or standard stormwater management practice with runoff reduction volume capacity unless infeasible.
2. In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the minimum runoff reduction (RRv_{min}).
3. The minimum runoff reduction volume is calculated as follows:

$$RRv_{min} = \frac{P * \bar{R}v * Aic * S}{12}$$

Where:

RRv_{min} = Minimum runoff reduction required from impervious area

$\bar{R}v$ = 0.05 + 0.009 (I), where I is 100% impervious

Aic = Total area of new impervious cover

S = Hydrologic Soil Group Specific Reduction Factor

Enter the Soils Data for the site

Soil Group	Acres	S	
A	0.00	55%	*(new impervious area in Type A Soils)*
B	2.16	40%	*(new impervious area in Type B Soils)*
C	0.00	30%	*(new impervious area in Type C Soils)*
D	**0.00**	20%	*(new impervious area in Type D Soils)*
Total Area	2.16		

Calculate the Minimum RRv

Soil Group Speific Reduction Factor (S)	**0.40**		*(weighted average)*
Total Area of New Impervious Cover (Aic)	2.16	*acre*	
Precipitation (P)	1.50	*in*	
Rv	0.95		
Minimum RRv	**4,468**	***ft3***	*(P * Rv x Aic * S)/12*
	0.10	af	

LANGAN

Underground Infiltration System Worksheet

Design Point(s):	1

Enter Site Data For Drainage Area to be Treated by Practice								
Subcatchment Number	**Subcatchment Model Number**	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	10	0.50	0.24	0.49	0.49	1,332	1.50	Underground Infiltration System
Enter Impervious Area Reduced by Disconnection of Rooftops			0.00	49%	0.49	1,332	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						0	*ft^3*	

Design Elements Pretreatment Techniques to Prevent Clogging			
Infiltration Rate	7.50	*in/hour*	*Okay*
Pretreatment Sizing	100	*% WQv*	*25% minimum; 50% if >2 in/hr; 100% if >5in/hour*
Pretreatment Required Volume	1,332	*ft^3*	
Pretreatment Provided	1,332	*ft^3*	
Pretreatment Techniques utilized	*Other*		*Hydrodynamic Separator*

Size An Infiltration Basin				
Design Volume		1,332	*ft^3*	WQv
Volume Provided		1,340	*ft^3*	*Storage Volume provided in underground infiltration system below lowest outlet (not including pretreatment)*
Sizing √		OK		*The underground infiltration system must provide storage equal to or greater than the WQv of the contributing area.*

Determine Runoff Reduction			
Runoff Reduction	**1,332**	***ft^3***	***100% of the storage provided in the basin or WQv, whichever is smaller***
Volume Treated	**8**	***ft^3***	***This is the portion of the WQv that is not reduced/infiltrated***

LANGAN

Underground Infiltration System Worksheet

Design Point(s):	2

Enter Site Data For Drainage Area to be Treated by Practice								
Subcatchment Number	**Subcatchment Model Number**	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	20A	2.41	1.87	0.78	0.75	9,824	1.50	Underground Infiltration System
Enter Impervious Area Reduced by Disconnection of Rooftops			0.00	78%	0.75	9,824	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						0	*ft^3*	

Design Elements Pretreatment Techniques to Prevent Clogging			
Infiltration Rate	9.00	*in/hour*	*Okay*
Pretreatment Sizing	100	*% WQv*	*25% minimum; 50% if >2 in/hr; 100% if >5in/hour*
Pretreatment Required Volume	9,824	*ft^3*	
Pretreatment Provided	9,825	*ft^3*	
Pretreatment Techniques utilized	*Other*		*Hydrodynamic Separator*

Size An Infiltration Basin				
Design Volume		9,824	*ft^3*	WQv
Volume Provided		10,834	*ft^3*	*Storage Volume provided in underground infiltration system below lowest outlet (not including pretreatment)*
Sizing √		OK		*The underground infiltration system must provide storage equal to or greater than the WQv of the contributing area.*

Determine Runoff Reduction			
Runoff Reduction	**9,824**	***ft^3***	***100% of the storage provided in the basin or WQv, whichever is smaller***
Volume Treated	**1,010**	***ft^3***	***This is the portion of the WQv that is not reduced/infiltrated***

LANGAN

Channel Protection Volume Worksheet

Design Point(s):			
Channel Protection Volume			
Area	3.95	*ac*	*0.006 sq. miles*
Curve Number (CN)	89		
Precipitation for 1 yr storm ($P_{1\ yr\ storm}$)	2.83	*in*	
Ia (200 / CN - 2)	0.25		
Ia / $P_{1\ yr\ storm}$	0.09		
S (Ia / 0.2)	1.24		
Time of Concentration	6.00	*min*	*0.100 hours*
Unit peak discharge (q_u)	650	*csm/in*	*from Exhibit 4-III of TR-55*
Ratio of Outflow to Inflow (q_o/q_i)	0.022		*from Figure B.1 of Design Manual*
Unit Volume (V_S/V_r)	0.65		*$0.683 - 1.43*(q_o/q_i) + 1.64*(q_o/q_i)^2 - 0.804*(q_o/q_i)^3$*
Runoff for 1 yr storm ($Q_{1\ yr\ runoff}$)	1.75	*in*	*$(P_{1\ yr\ storm} - 0.2*S)^2/(P_{1\ yr\ storm} + 0.8*S)$*
Channel Protection Volume	**16,339**	***cf***	*$[((V_s/V_r) * (Q_{1\ yr\ runoff}) * A)/12]*43560$*
Average Release Rate over 24 hours	**0.19**	***cfs***	

LANGAN

Subcat Reach Pond Link

Routing Diagram for 2024-01-05 HDS Sizing
Prepared by Langan Engineering, Printed 1/5/2024

Summary for Subcatchment HDS-1:

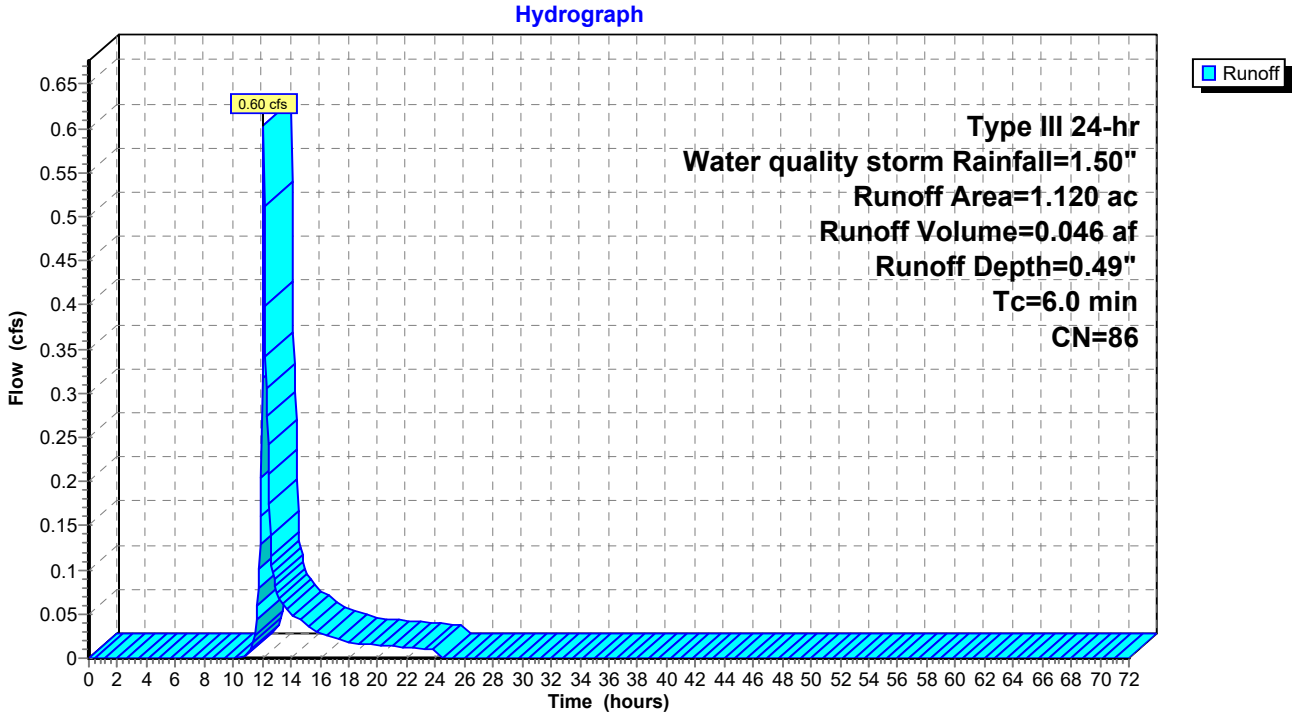
Runoff = 0.60 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 0.49"
Routed to nonexistent node #1P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr Water quality storm Rainfall=1.50"

	Area (ac)	CN	Description
*	0.750	98	Impervious
	0.370	61	>75% Grass cover, Good, HSG B
	1.120	86	Weighted Average
	0.370		33.04% Pervious Area
	0.750		66.96% Impervious Area

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

Subcatchment HDS-1:



Summary for Subcatchment HDS-2:

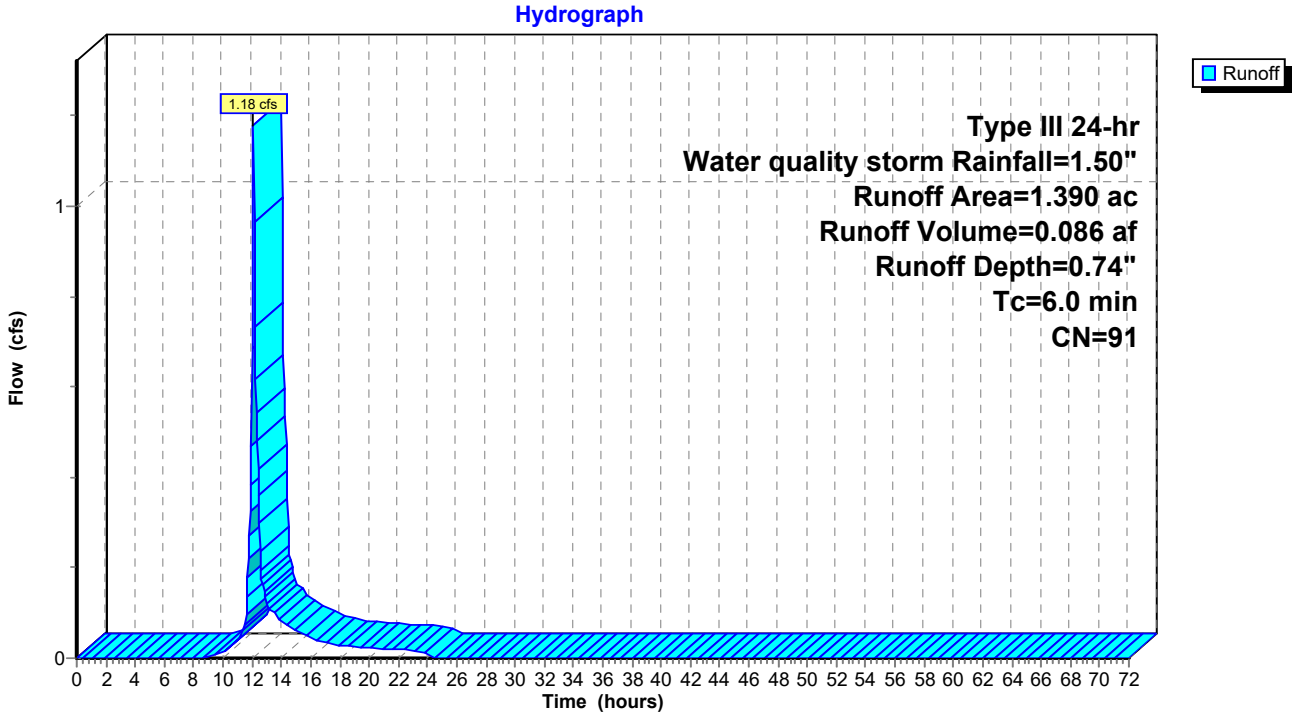
Runoff = 1.18 cfs @ 12.09 hrs, Volume= 0.086 af, Depth= 0.74"
Routed to nonexistent node #1P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr Water quality storm Rainfall=1.50"

	Area (ac)	CN	Description
*	1.120	98	Impervious
	0.270	61	>75% Grass cover, Good, HSG B
	1.390	91	Weighted Average
	0.270		19.42% Pervious Area
	1.120		80.58% Impervious Area

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

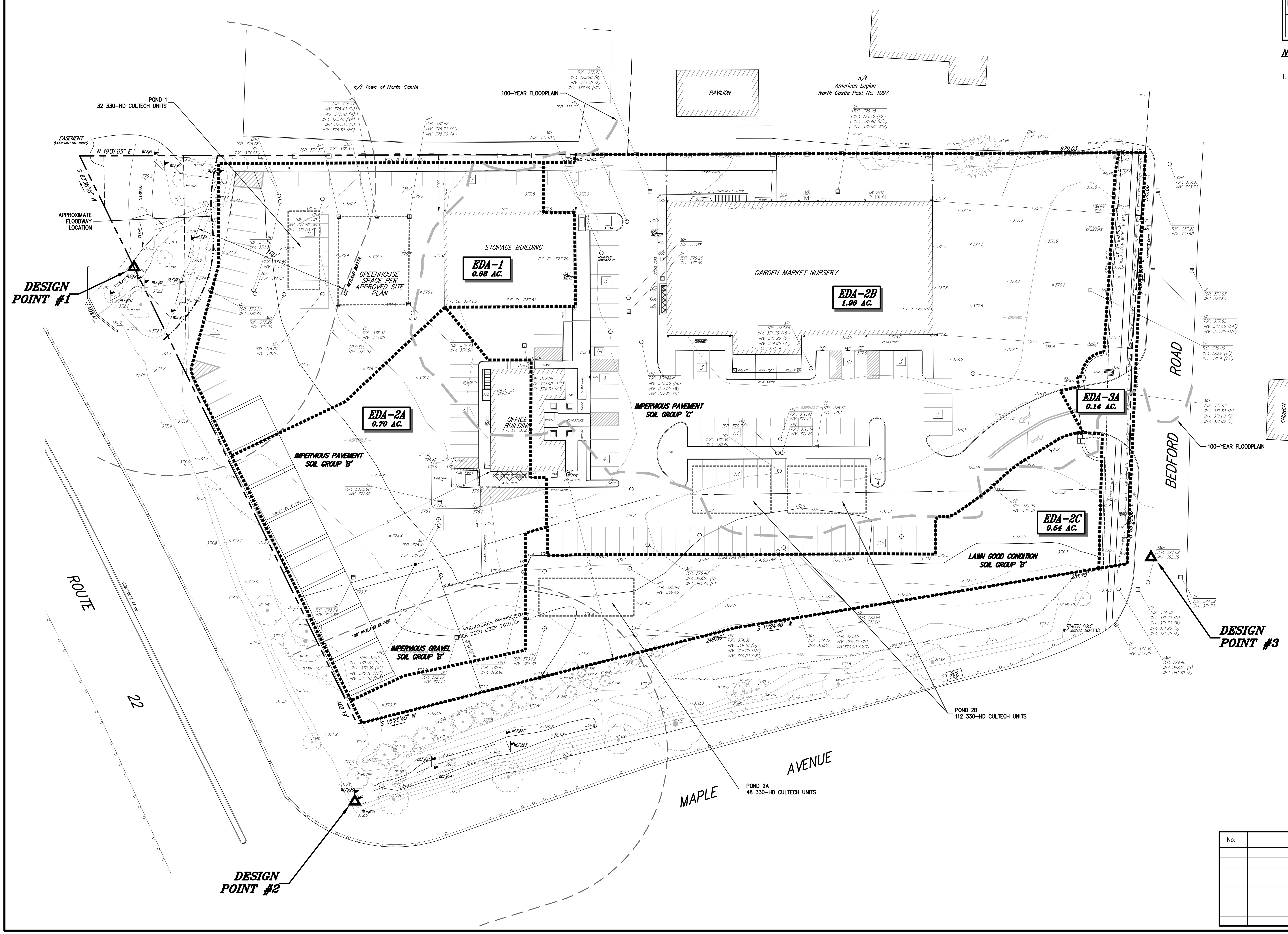
Subcatchment HDS-2:



The Gateway
45 Bedford Road
Town of North Castle, New York

Appendix D: Pre-Development Stormwater Analysis

LANGAN



EXISTING DRAINAGE LEGEND

- EXISTING GRADE
- FLAGGED WETLANDS WITH FLAG NUMBERS
- EXISTING STONE WALL
- WATERSHED BOUNDARY LINE
- BOUNDARY OF COVER TYPE LINE
- LIMIT OF SOIL GROUPS LINE

SOIL TYPE TABLE

DESIGNATION	HYDROLOGIC GROUP	DESCRIPTION
UvB	B	URBAN LAND–RIVERHEAD COMPLEX 2 TO 8 PERCENT SLOPES

NOTES:

1. EXISTING CONDITIONS DEPICTED ON THIS PLAN HAVE BEEN TAKEN FROM SURVEY TITLED, "TOPOGRAPHIC SURVEY," PREPARED BY SOUND VIEW ENGINEERS & LAND SURVEYORS LLC, DATED 06/04/2018.

APPLICANT/OWNER:
45 BEDFORD ROAD LLC
45 BEDFORD ROAD
TOWN OF NORTH CASTLE, NY

ARCHITECT:
HALPER ARCHITECTS LLC
225 MILL STREET
GREENWICH, CT 06830

JMC Planning, Engineering, Landscape Architecture & Land Surveying, PLLC
JMC Site Development Consultants, LLC
John Meyer Consulting, Inc.
120 BEDFORD ROAD • ARMONK, NY 10504
voice 914.273.5225 • fax 914.273.2102
www.jmcpllc.com

EXISTING DRAINAGE AREA MAP

MARIANI GARDENS REDEVELOPMENT
45 BEDFORD ROAD
TOWN OF NORTH CASTLE, NEW YORK

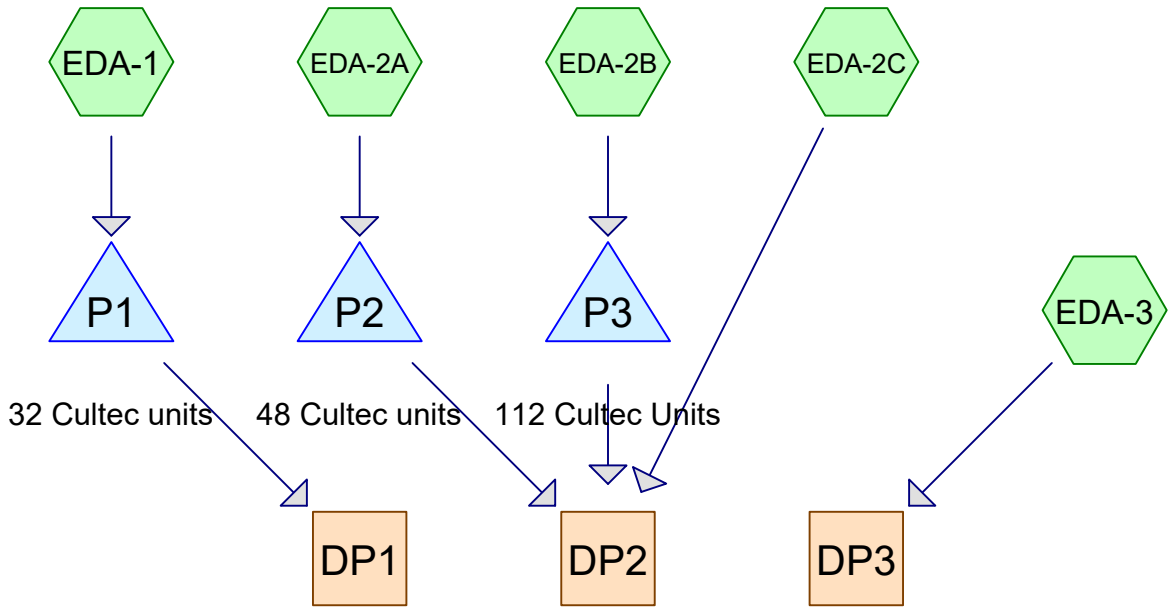
PROGRESS PLOTTING

Drawing: 18053-DRAINAGE-TK
Date: 2019-02-26
Time: 1:30 PM
By:

No.	Revision	Date	By

Previous Editions Obsolete

Drawn: TK	Approved: RA
Scale: 1" = 30'	
Date: 11/28/2018	
Project No: 18053	
18053-DRAINAGE-TK	EDA / EDA.LS
Drawing No: DA-1	



Subcat Reach Pond Link

Routing Diagram for 2024-01-08 Pre Development Watershed Analysis
Prepared by Langan Engineering, Printed 1/4/2024

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 yr-24hr	Type III 24-hr		Default	24.00	1	2.81	2
2	10 yr-24 hr	Type III 24-hr		Default	24.00	1	5.13	2
3	100 yr-24 hr	Type III 24-hr		Default	24.00	1	9.16	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.180	61	>75% Grass cover, Good, HSG B (EDA-2B, EDA-2C, EDA-3)
0.150	85	Gravel, HSG B (EDA-2A)
2.770	98	Impervious (EDA-1, EDA-2A, EDA-2B, EDA-3)
4.100	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.330	HSG B	EDA-2A, EDA-2B, EDA-2C, EDA-3
0.000	HSG C	
0.000	HSG D	
2.770	Other	EDA-1, EDA-2A, EDA-2B, EDA-3
4.100		**TOTAL AREA**

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	1.180	0.000	0.000	0.000	1.180	>75% Grass cover, Good	EDA-2B, EDA-2C, EDA-3
0.000	0.150	0.000	0.000	0.000	0.150	Gravel	EDA-2A
0.000	0.000	0.000	0.000	2.770	2.770	Impervious	EDA-1, EDA-2A, EDA-2B, EDA-3
0.000	**1.330**	**0.000**	**0.000**	**2.770**	**4.100**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentEDA-1: Runoff Area=0.680 ac 100.00% Impervious Runoff Depth=2.58"
Tc=6.0 min CN=98 Runoff=1.80 cfs 0.146 af

SubcatchmentEDA-2A: Runoff Area=0.700 ac 78.57% Impervious Runoff Depth=2.26"
Tc=6.0 min CN=95 Runoff=1.73 cfs 0.132 af

SubcatchmentEDA-2B: Runoff Area=1.960 ac 71.43% Impervious Runoff Depth=1.57"
Tc=15.3 min CN=87 Runoff=2.71 cfs 0.257 af

SubcatchmentEDA-2C: Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=0.30"
Flow Length=100' Slope=0.0300 '/' Tc=8.0 min CN=61 Runoff=0.08 cfs 0.013 af

SubcatchmentEDA-3: Runoff Area=0.220 ac 63.64% Impervious Runoff Depth=1.43"
Tc=6.0 min CN=85 Runoff=0.36 cfs 0.026 af

Reach DP1: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach DP2: Inflow=0.08 cfs 0.013 af
Outflow=0.08 cfs 0.013 af

Reach DP3: Inflow=0.36 cfs 0.026 af
Outflow=0.36 cfs 0.026 af

Pond P1: 32 Cultec units Peak Elev=372.15' Storage=1,977 cf Inflow=1.80 cfs 0.146 af
Discarded=0.22 cfs 0.146 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.146 af

Pond P2: 48 Cultec units Peak Elev=370.25' Storage=1,506 cf Inflow=1.73 cfs 0.132 af
Discarded=0.32 cfs 0.132 af Primary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.132 af

Pond P3: 112 Cultec Units Peak Elev=371.05' Storage=2,741 cf Inflow=2.71 cfs 0.257 af
Discarded=0.71 cfs 0.257 af Primary=0.00 cfs 0.000 af Outflow=0.71 cfs 0.257 af

Total Runoff Area = 4.100 ac Runoff Volume = 0.575 af Average Runoff Depth = 1.68"
32.44% Pervious = 1.330 ac 67.56% Impervious = 2.770 ac

Summary for Subcatchment EDA-1:

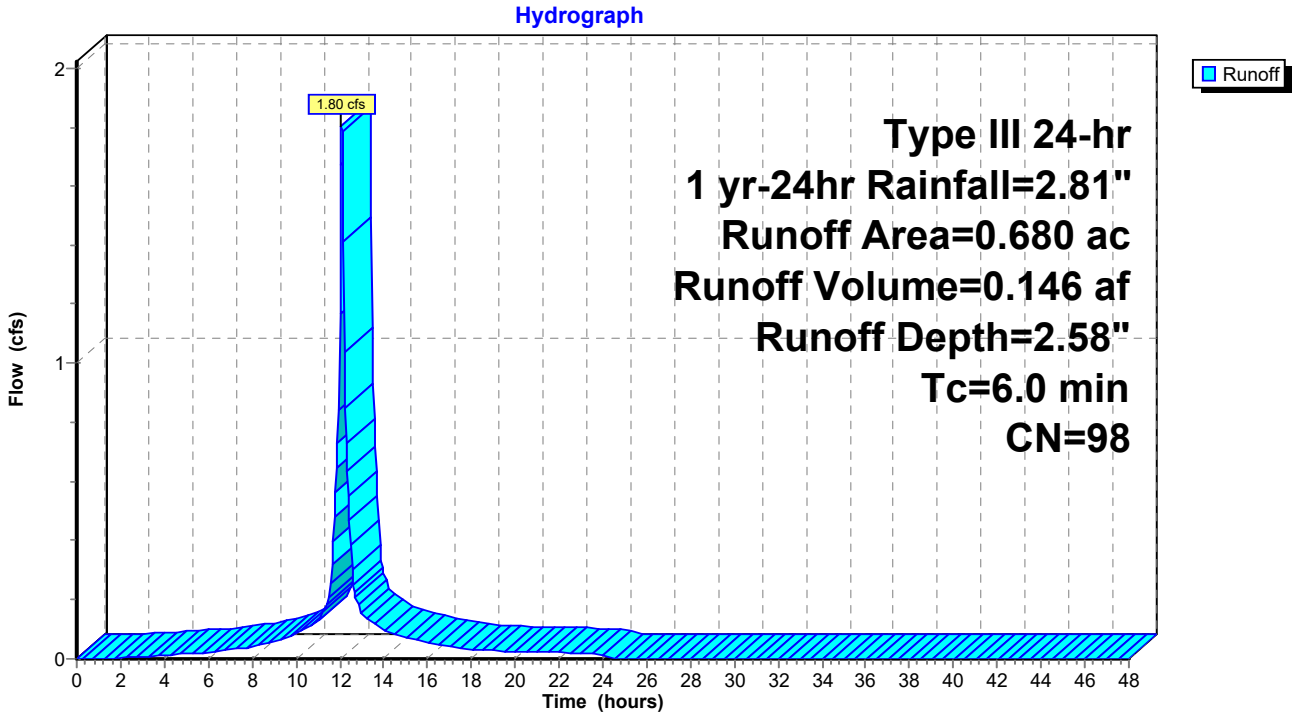
Runoff = 1.80 cfs @ 12.09 hrs, Volume= 0.146 af, Depth= 2.58"
Routed to Pond P1 : 32 Cultec units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (ac)	CN	Description
*	0.680	98	Impervious
	0.680		100.00% Impervious Area

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

Subcatchment EDA-1:



Summary for Subcatchment EDA-2A:

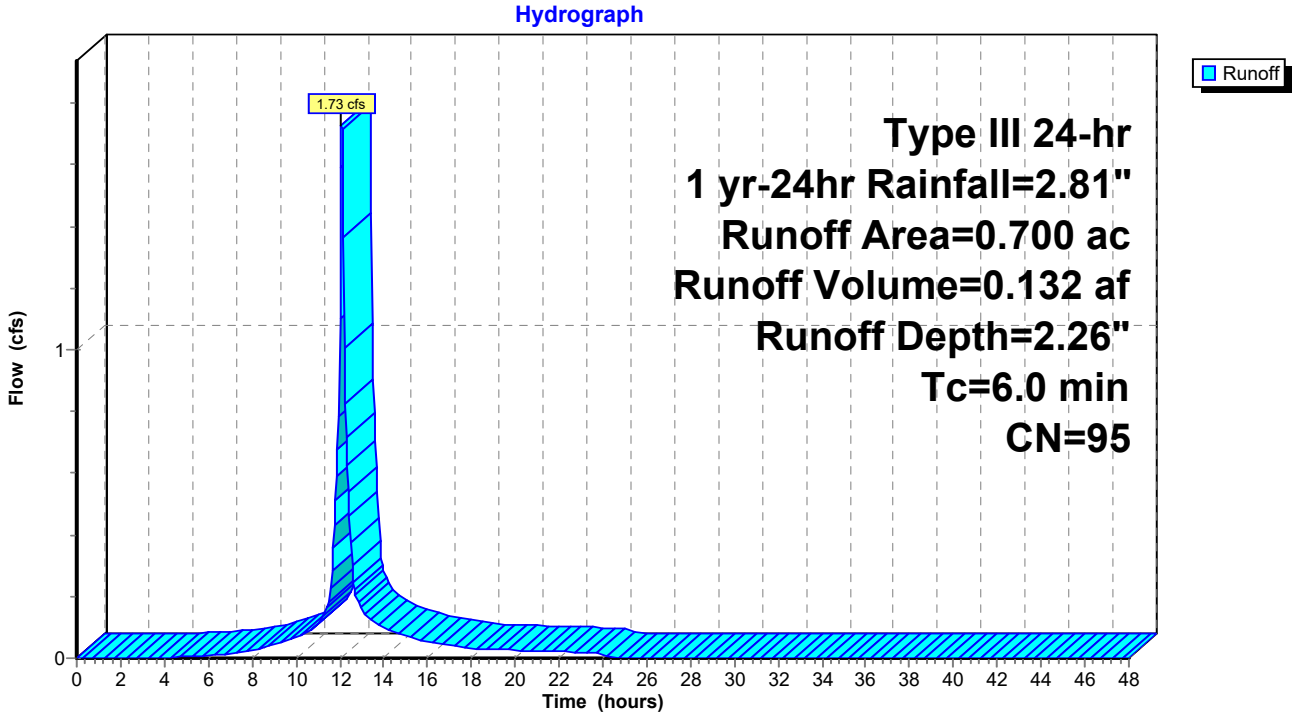
Runoff = 1.73 cfs @ 12.09 hrs, Volume= 0.132 af, Depth= 2.26"
Routed to Pond P2 : 48 Cultec units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (ac)	CN	Description
*	0.550	98	Impervious
*	0.150	85	Gravel, HSG B
	0.700	95	Weighted Average
	0.150		21.43% Pervious Area
	0.550		78.57% Impervious Area

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

Subcatchment EDA-2A:



Summary for Subcatchment EDA-2B:

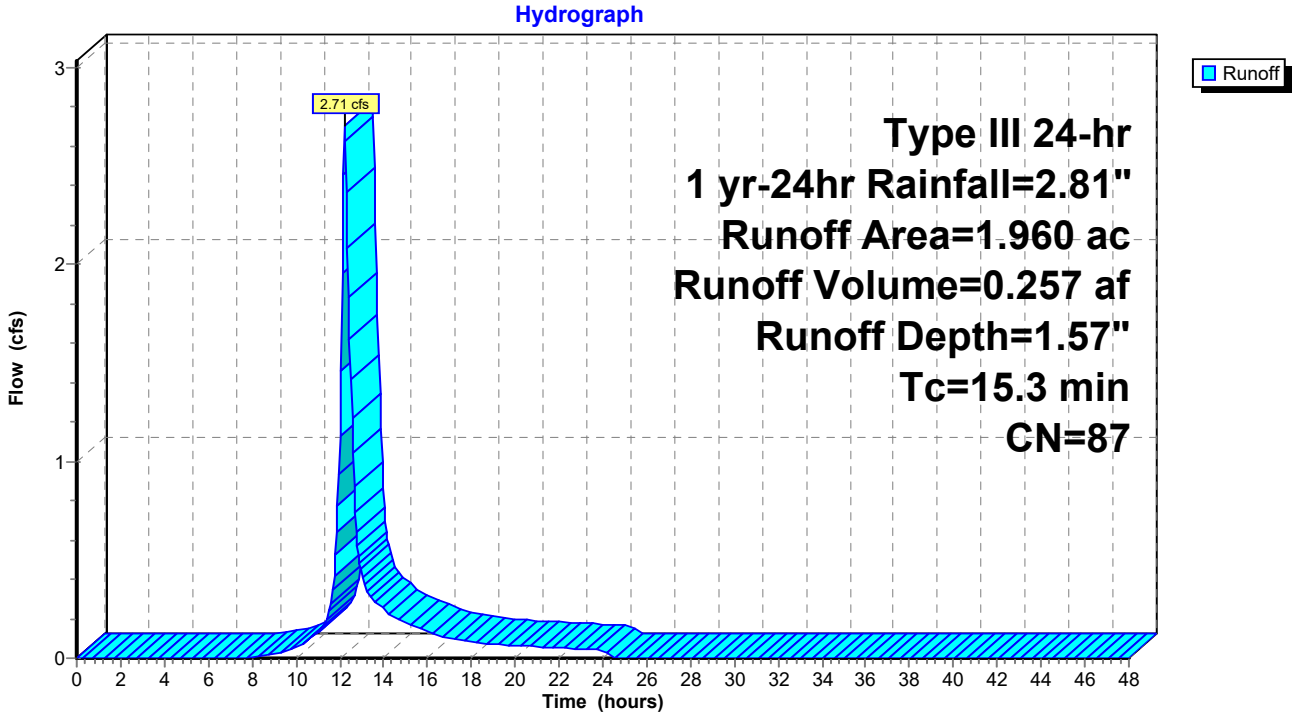
Runoff = 2.71 cfs @ 12.21 hrs, Volume= 0.257 af, Depth= 1.57"
Routed to Pond P3 : 112 Cultec Units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (ac)	CN	Description
*	1.400	98	Impervious
	0.560	61	>75% Grass cover, Good, HSG B
	1.960	87	Weighted Average
	0.560		28.57% Pervious Area
	1.400		71.43% Impervious Area

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

Subcatchment EDA-2B:



Summary for Subcatchment EDA-2C:

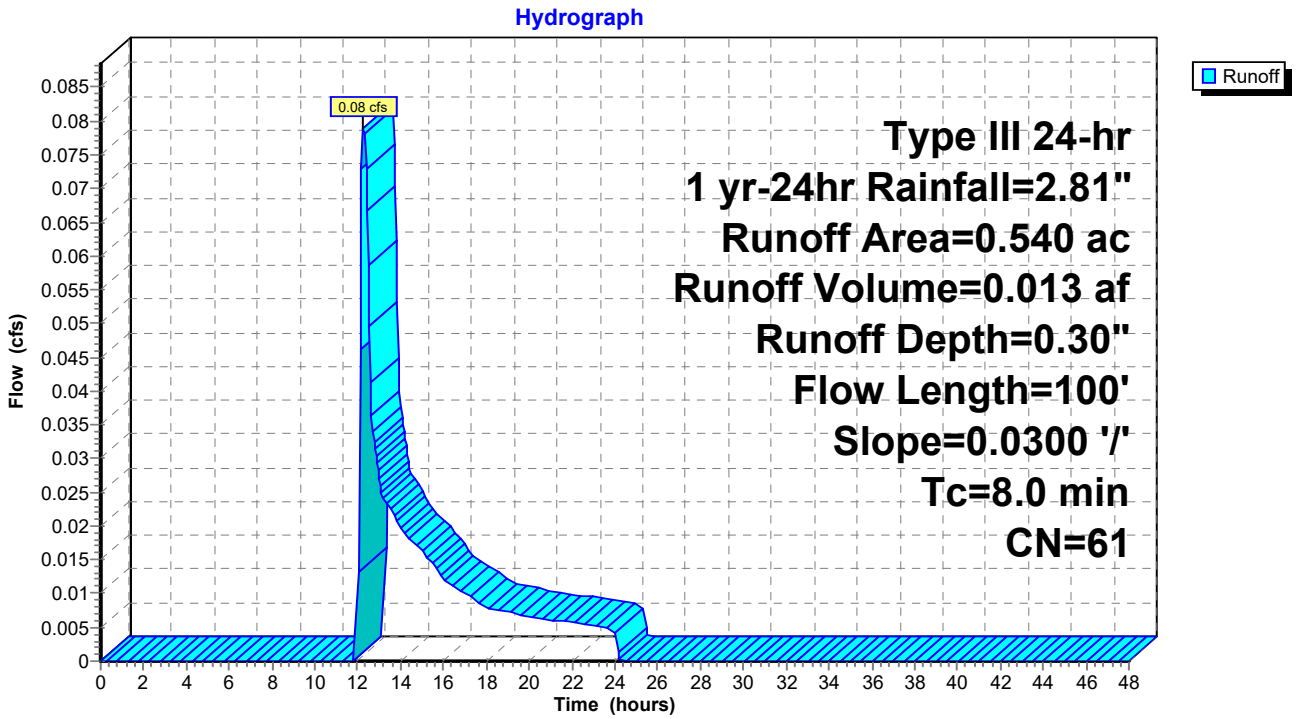
Runoff = 0.08 cfs @ 12.23 hrs, Volume= 0.013 af, Depth= 0.30"
Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

Area (ac)	CN	Description
0.540	61	>75% Grass cover, Good, HSG B
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0300	0.21		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.43"

Subcatchment EDA-2C:



Summary for Subcatchment EDA-3:

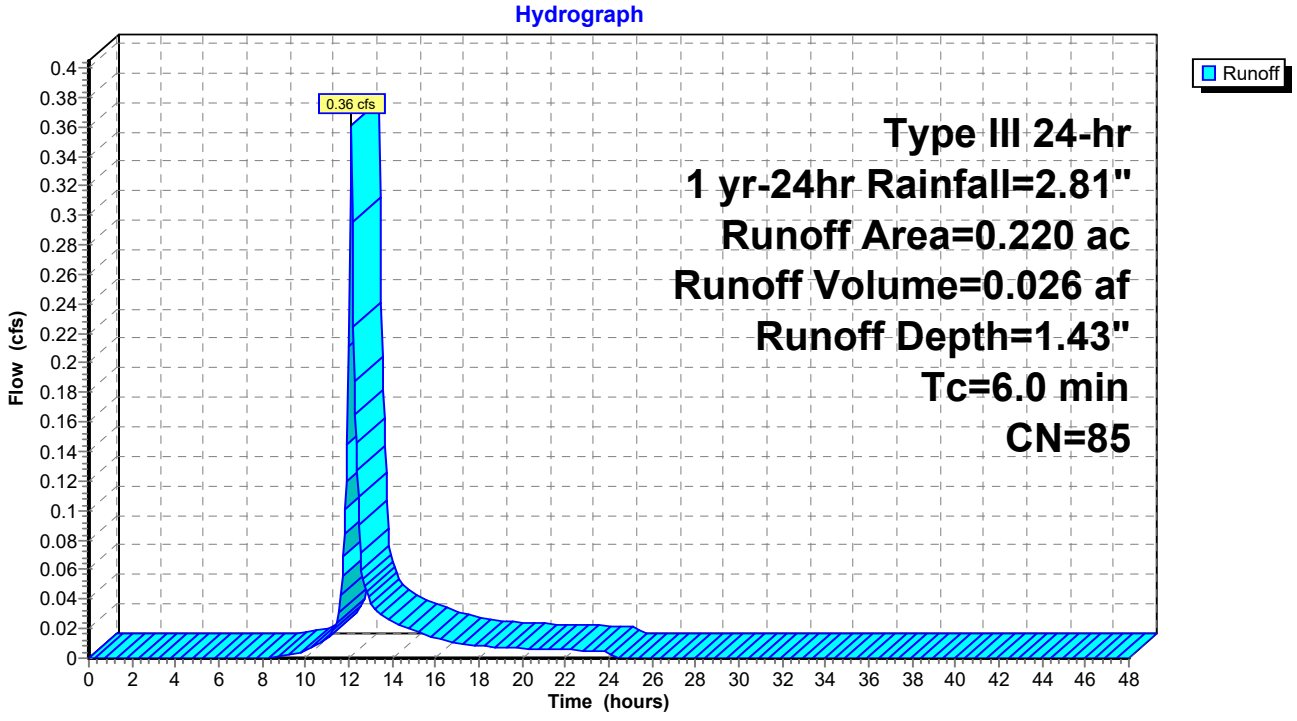
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 1.43"
Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (ac)	CN	Description
*	0.140	98	Impervious
	0.080	61	>75% Grass cover, Good, HSG B
	0.220	85	Weighted Average
	0.080		36.36% Pervious Area
	0.140		63.64% Impervious Area

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

Subcatchment EDA-3:



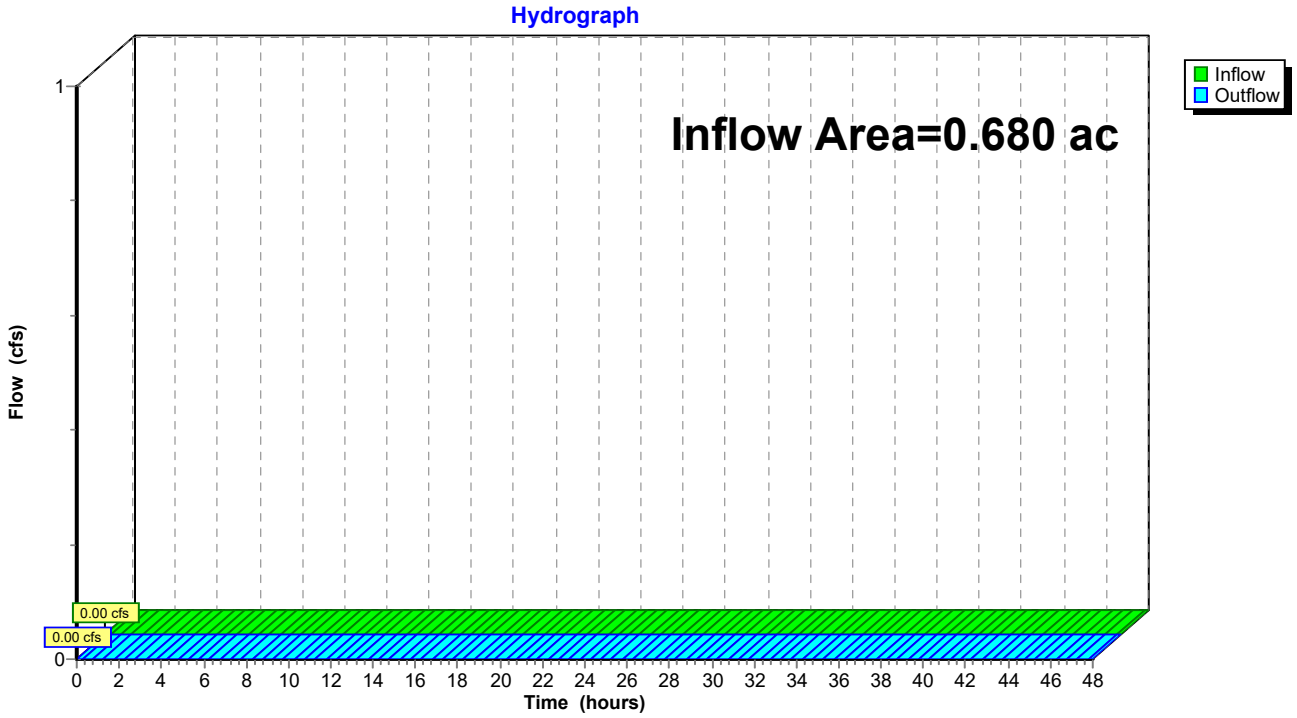
Summary for Reach DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac,100.00% Impervious, Inflow Depth = 0.00" for 1 yr-24hr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP1:



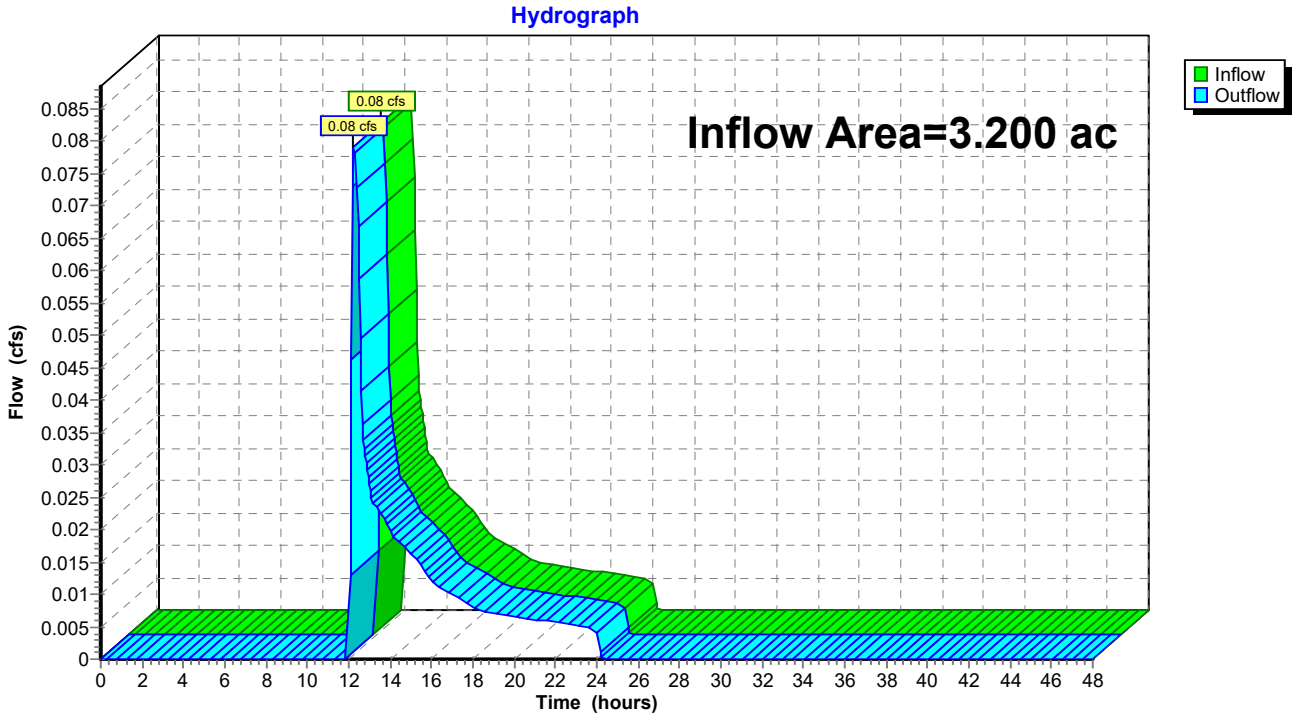
Summary for Reach DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.200 ac, 60.94% Impervious, Inflow Depth = 0.05" for 1 yr-24hr event
Inflow = 0.08 cfs @ 12.23 hrs, Volume= 0.013 af
Outflow = 0.08 cfs @ 12.23 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP2:



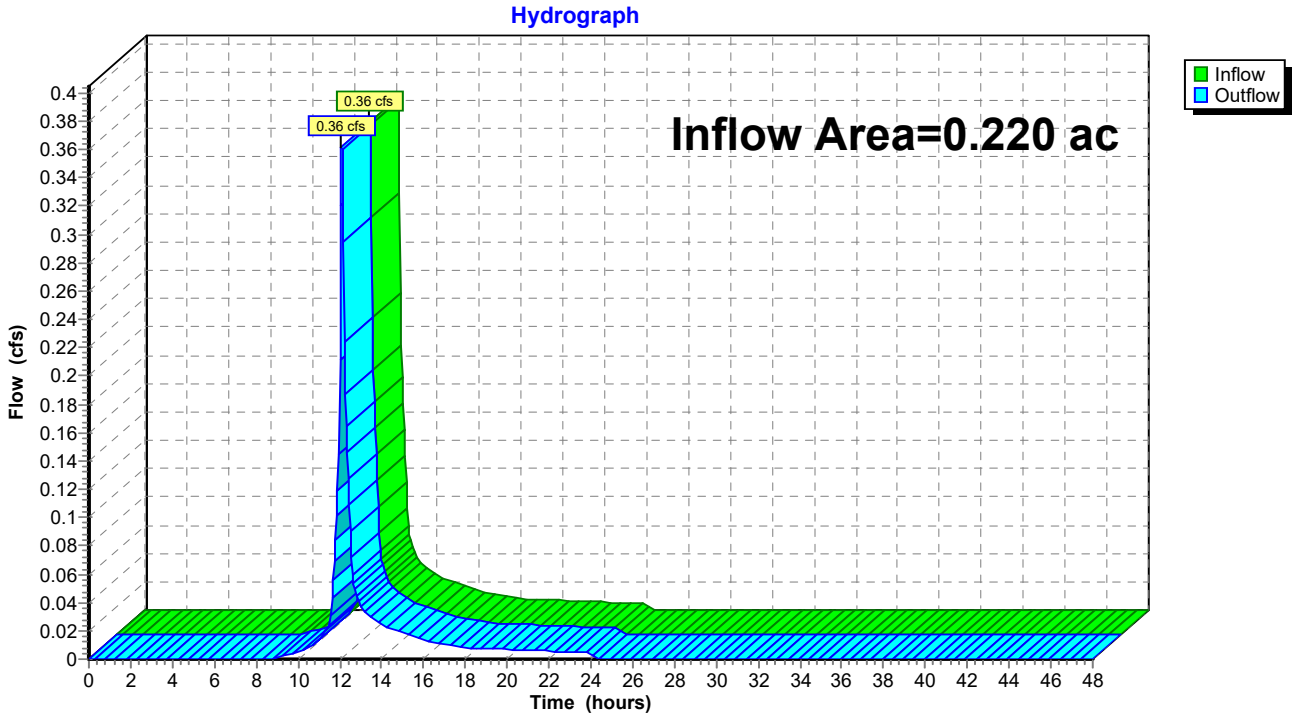
Summary for Reach DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.220 ac, 63.64% Impervious, Inflow Depth = 1.43" for 1 yr-24hr event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP3:



Summary for Pond P1: 32 Cultec units

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 0.680 ac,100.00% Impervious, Inflow Depth = 2.58" for 1 yr-24hr event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.146 af
Outflow = 0.22 cfs @ 11.65 hrs, Volume= 0.146 af, Atten= 88%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.65 hrs, Volume= 0.146 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 372.15' @ 12.68 hrs Surf.Area= 1,240 sf Storage= 1,977 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 57.8 min (817.0 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	369.90'	1,071 cf	**20.83'W x 59.50'L x 3.54'H Field A** 4,390 cf Overall - 1,714 cf Embedded = 2,676 cf x 40.0% Voids
#2A	370.40'	1,714 cf	**Cultec R-330XLHD** x 32 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 4 rows
		2,784 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	369.90'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	373.40'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 11.65 hrs HW=369.94' (Free Discharge)
↑└**1=Infiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=369.90' TW=0.00' (Dynamic Tailwater)
↑└**2=Assumed Overflow** (Controls 0.00 cfs)

Pond P1: 32 Cultec units - Chamber Wizard Field A

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

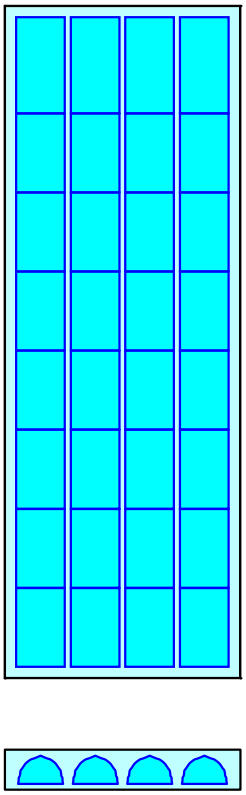
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

32 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 1,713.7 cf Chamber Storage

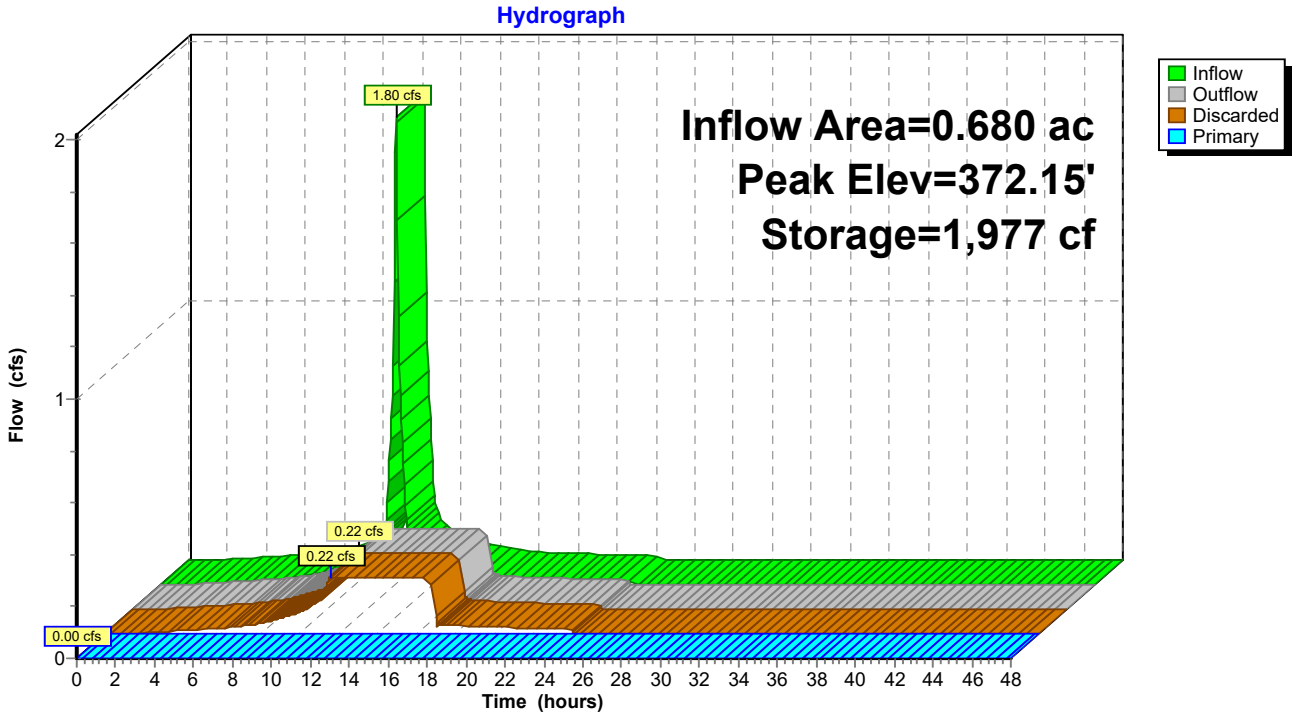
4,390.2 cf Field - 1,713.7 cf Chambers = 2,676.5 cf Stone x 40.0% Voids = 1,070.6 cf Stone Storage

Chamber Storage + Stone Storage = 2,784.3 cf = 0.064 af
Overall Storage Efficiency = 63.4%
Overall System Size = 59.50' x 20.83' x 3.54'

32 Chambers
162.6 cy Field
99.1 cy Stone



Pond P1: 32 Cultec units



Summary for Pond P2: 48 Cultec units

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 0.700 ac, 78.57% Impervious, Inflow Depth = 2.26" for 1 yr-24hr event
Inflow = 1.73 cfs @ 12.09 hrs, Volume= 0.132 af
Outflow = 0.32 cfs @ 11.80 hrs, Volume= 0.132 af, Atten= 82%, Lag= 0.0 min
Discarded = 0.32 cfs @ 11.80 hrs, Volume= 0.132 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 370.25' @ 12.54 hrs Surf.Area= 1,815 sf Storage= 1,506 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 26.8 min (811.8 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	369.00'	1,543 cf	**30.50'W x 59.50'L x 3.54'H Field A** 6,427 cf Overall - 2,571 cf Embedded = 3,857 cf x 40.0% Voids
#2A	369.50'	2,571 cf	**Cultec R-330XLHD** x 48 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 6 rows
		4,113 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	369.00'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	372.50'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.32 cfs @ 11.80 hrs HW=369.07' (Free Discharge)
↑**1=Infiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=369.00' TW=0.00' (Dynamic Tailwater)
↑**2=Assumed Overflow** (Controls 0.00 cfs)

Pond P2: 48 Cultec units - Chamber Wizard Field A

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 6 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

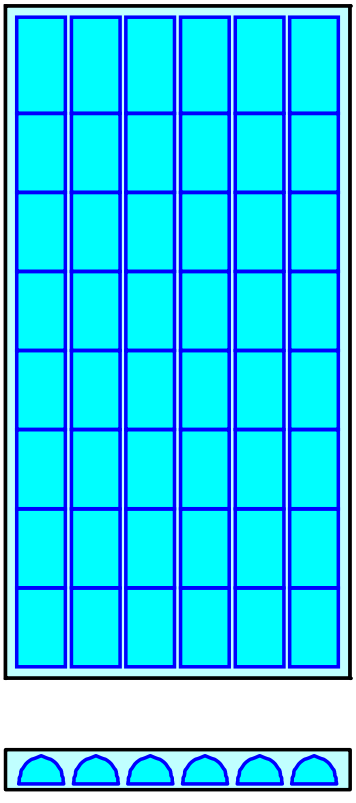
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
6 Rows x 52.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.50' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

48 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 6 Rows = 2,570.6 cf Chamber Storage

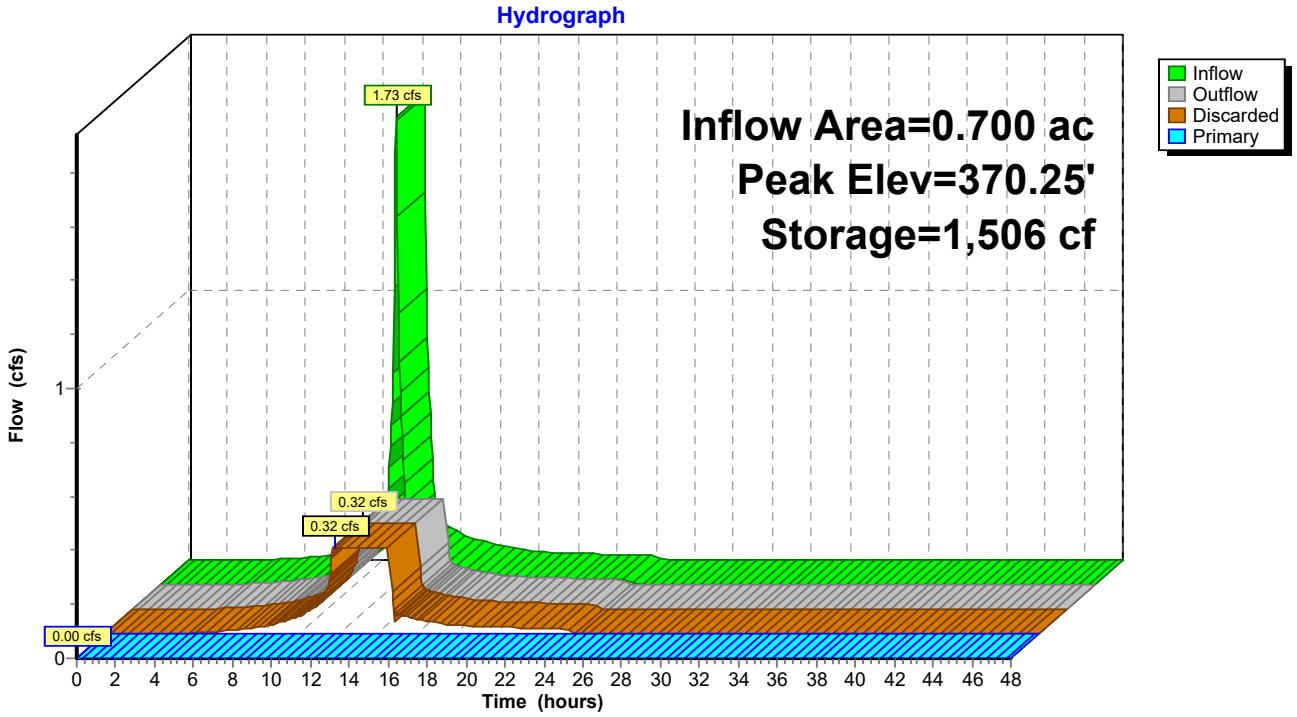
6,427.2 cf Field - 2,570.6 cf Chambers = 3,856.6 cf Stone x 40.0% Voids = 1,542.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,113.3 cf = 0.094 af
Overall Storage Efficiency = 64.0%
Overall System Size = 59.50' x 30.50' x 3.54'

48 Chambers
238.0 cy Field
142.8 cy Stone



Pond P2: 48 Cultec units



Summary for Pond P3: 112 Cultec Units

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 1.960 ac, 71.43% Impervious, Inflow Depth = 1.57" for 1 yr-24hr event
Inflow = 2.71 cfs @ 12.21 hrs, Volume= 0.257 af
Outflow = 0.71 cfs @ 12.00 hrs, Volume= 0.257 af, Atten= 74%, Lag= 0.0 min
Discarded = 0.71 cfs @ 12.00 hrs, Volume= 0.257 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 371.05' @ 12.72 hrs Surf.Area= 4,081 sf Storage= 2,741 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 22.8 min (855.9 - 833.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	370.00'	3,413 cf	**35.33'W x 115.50'L x 3.54'H Field A** 14,454 cf Overall - 5,920 cf Embedded = 8,534 cf x 40.0% Voids
#2A	370.50'	5,920 cf	**Cultec R-330XLHD** x 112 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 7 rows
		9,333 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	370.00'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	373.50'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.71 cfs @ 12.00 hrs HW=370.06' (Free Discharge)
↑**1=Infiltration** (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=370.00' TW=0.00' (Dynamic Tailwater)
↑**2=Assumed Overflow** (Controls 0.00 cfs)

Pond P3: 112 Cultec Units - Chamber Wizard Field A

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 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

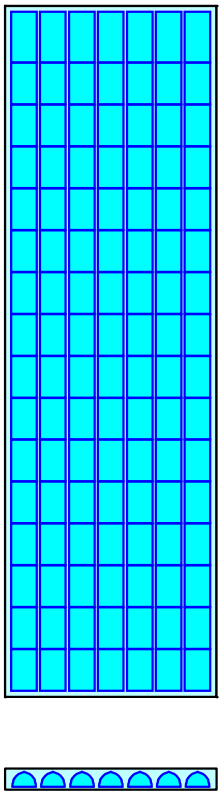
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

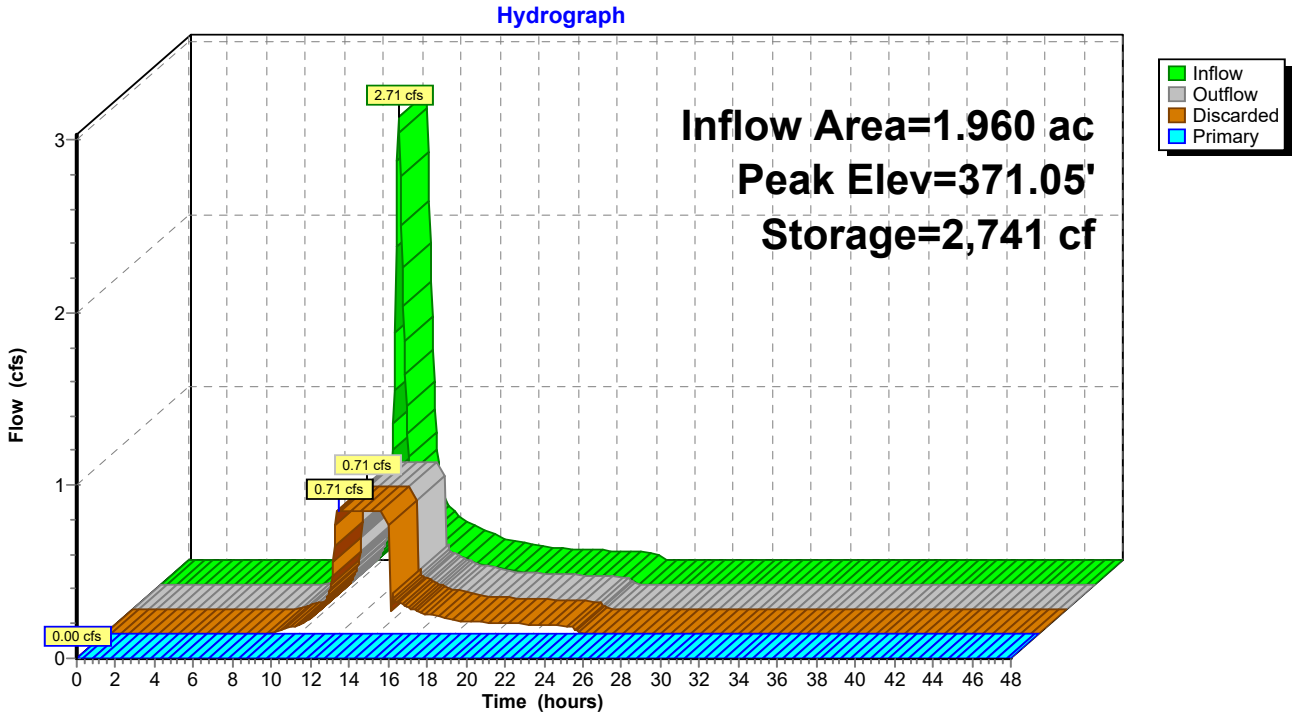
14,453.5 cf Field - 5,919.8 cf Chambers = 8,533.7 cf Stone x 40.0% Voids = 3,413.5 cf Stone Storage

Chamber Storage + Stone Storage = 9,333.3 cf = 0.214 af
Overall Storage Efficiency = 64.6%
Overall System Size = 115.50' x 35.33' x 3.54'

112 Chambers
535.3 cy Field
316.1 cy Stone



Pond P3: 112 Cultec Units



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentEDA-1: Runoff Area=0.680 ac 100.00% Impervious Runoff Depth=4.89"
Tc=6.0 min CN=98 Runoff=3.33 cfs 0.277 af

SubcatchmentEDA-2A: Runoff Area=0.700 ac 78.57% Impervious Runoff Depth=4.55"
Tc=6.0 min CN=95 Runoff=3.34 cfs 0.265 af

SubcatchmentEDA-2B: Runoff Area=1.960 ac 71.43% Impervious Runoff Depth=3.69"
Tc=15.3 min CN=87 Runoff=6.24 cfs 0.603 af

SubcatchmentEDA-2C: Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=1.45"
Flow Length=100' Slope=0.0300 '/' Tc=8.0 min CN=61 Runoff=0.76 cfs 0.065 af

SubcatchmentEDA-3: Runoff Area=0.220 ac 63.64% Impervious Runoff Depth=3.49"
Tc=6.0 min CN=85 Runoff=0.87 cfs 0.064 af

Reach DP1: Inflow=2.37 cfs 0.047 af
Outflow=2.37 cfs 0.047 af

Reach DP2: Inflow=1.60 cfs 0.082 af
Outflow=1.60 cfs 0.082 af

Reach DP3: Inflow=0.87 cfs 0.064 af
Outflow=0.87 cfs 0.064 af

Pond P1: 32 Cultec units Peak Elev=373.54' Storage=2,784 cf Inflow=3.33 cfs 0.277 af
Discarded=0.22 cfs 0.230 af Primary=2.37 cfs 0.047 af Outflow=2.59 cfs 0.277 af

Pond P2: 48 Cultec units Peak Elev=372.46' Storage=4,055 cf Inflow=3.34 cfs 0.265 af
Discarded=0.32 cfs 0.265 af Primary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.265 af

Pond P3: 112 Cultec Units Peak Elev=373.61' Storage=9,333 cf Inflow=6.24 cfs 0.603 af
Discarded=0.71 cfs 0.586 af Primary=1.45 cfs 0.017 af Outflow=2.16 cfs 0.603 af

Total Runoff Area = 4.100 ac Runoff Volume = 1.274 af Average Runoff Depth = 3.73"
32.44% Pervious = 1.330 ac 67.56% Impervious = 2.770 ac

Summary for Subcatchment EDA-1:

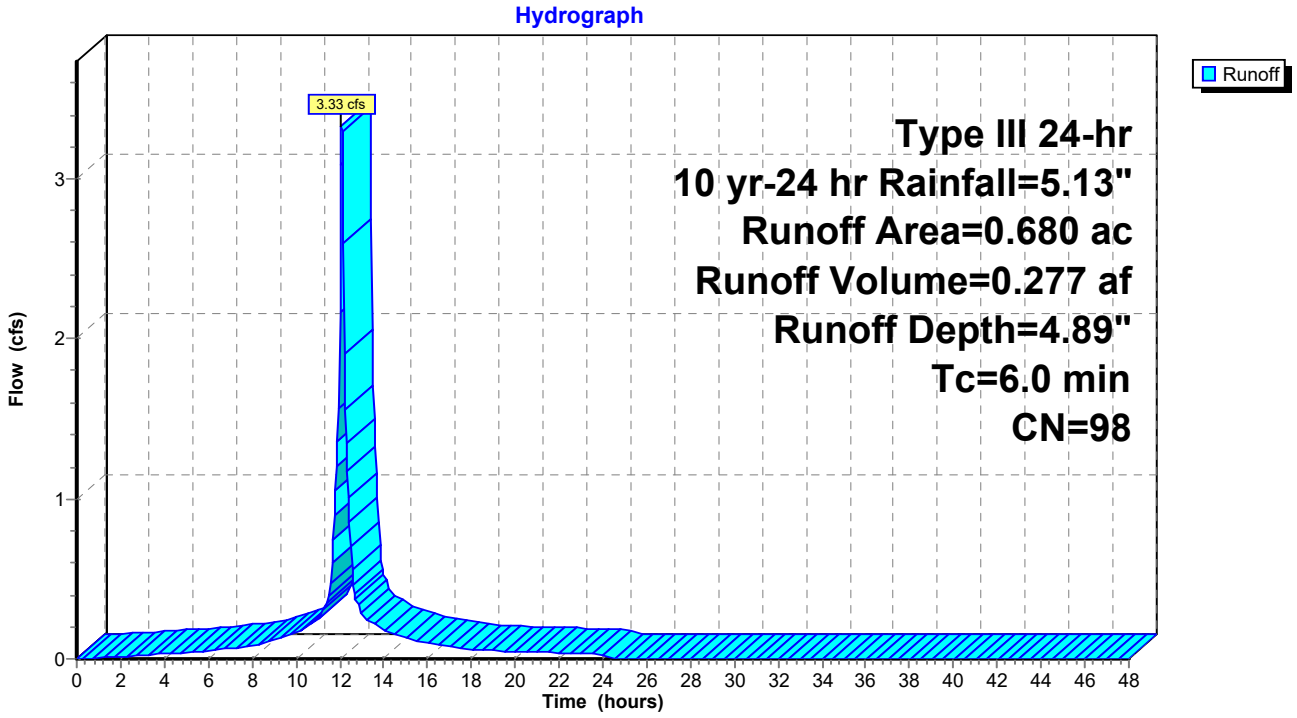
Runoff = 3.33 cfs @ 12.09 hrs, Volume= 0.277 af, Depth= 4.89"
Routed to Pond P1 : 32 Cultec units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (ac)	CN	Description
*	0.680	98	Impervious
	0.680		100.00% Impervious Area

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

Subcatchment EDA-1:



Summary for Subcatchment EDA-2A:

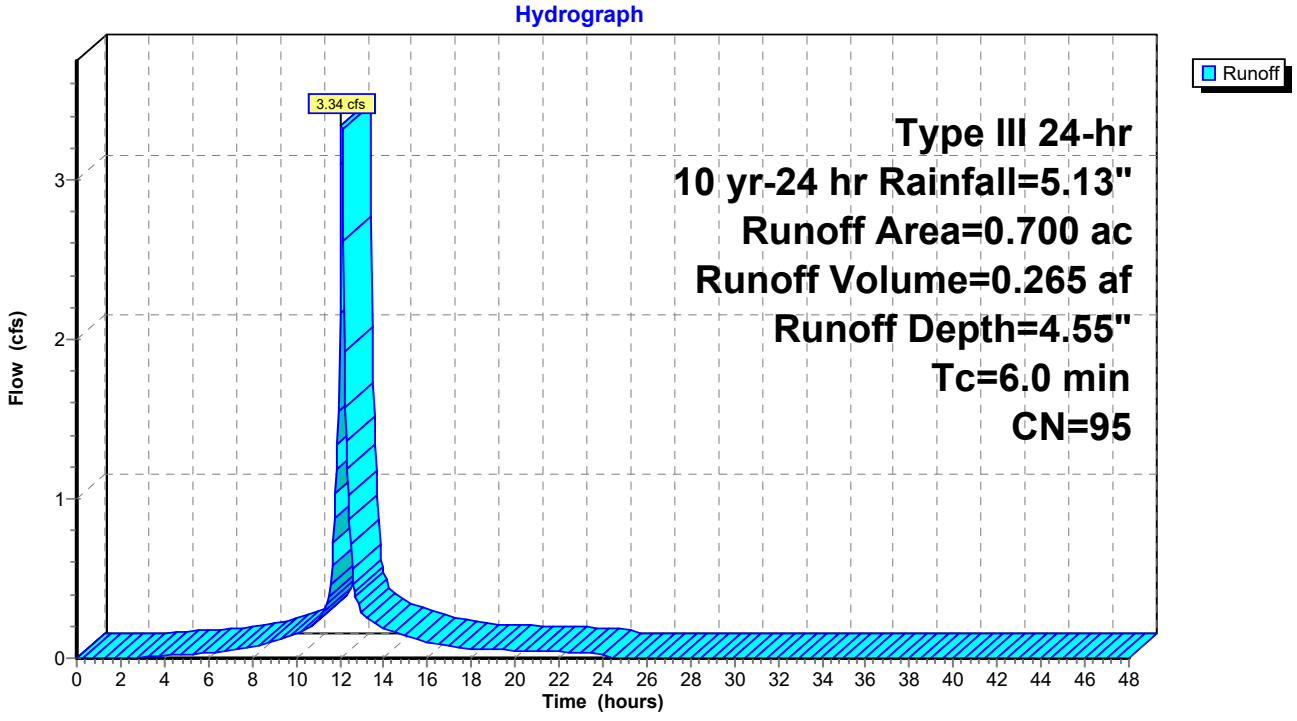
Runoff = 3.34 cfs @ 12.09 hrs, Volume= 0.265 af, Depth= 4.55"
Routed to Pond P2 : 48 Cultec units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (ac)	CN	Description
*	0.550	98	Impervious
*	0.150	85	Gravel, HSG B
	0.700	95	Weighted Average
	0.150		21.43% Pervious Area
	0.550		78.57% Impervious Area

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

Subcatchment EDA-2A:



Summary for Subcatchment EDA-2B:

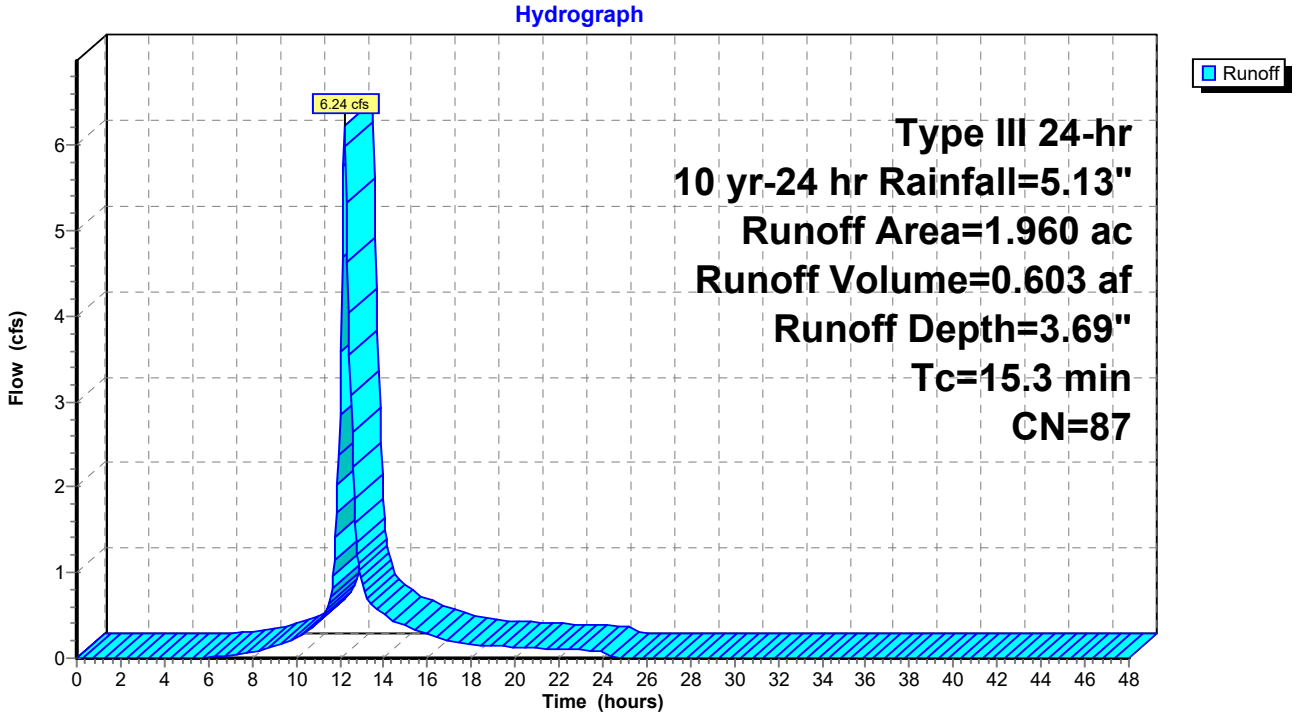
Runoff = 6.24 cfs @ 12.21 hrs, Volume= 0.603 af, Depth= 3.69"
Routed to Pond P3 : 112 Cultec Units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (ac)	CN	Description
*	1.400	98	Impervious
	0.560	61	>75% Grass cover, Good, HSG B
	1.960	87	Weighted Average
	0.560		28.57% Pervious Area
	1.400		71.43% Impervious Area

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

Subcatchment EDA-2B:



Summary for Subcatchment EDA-2C:

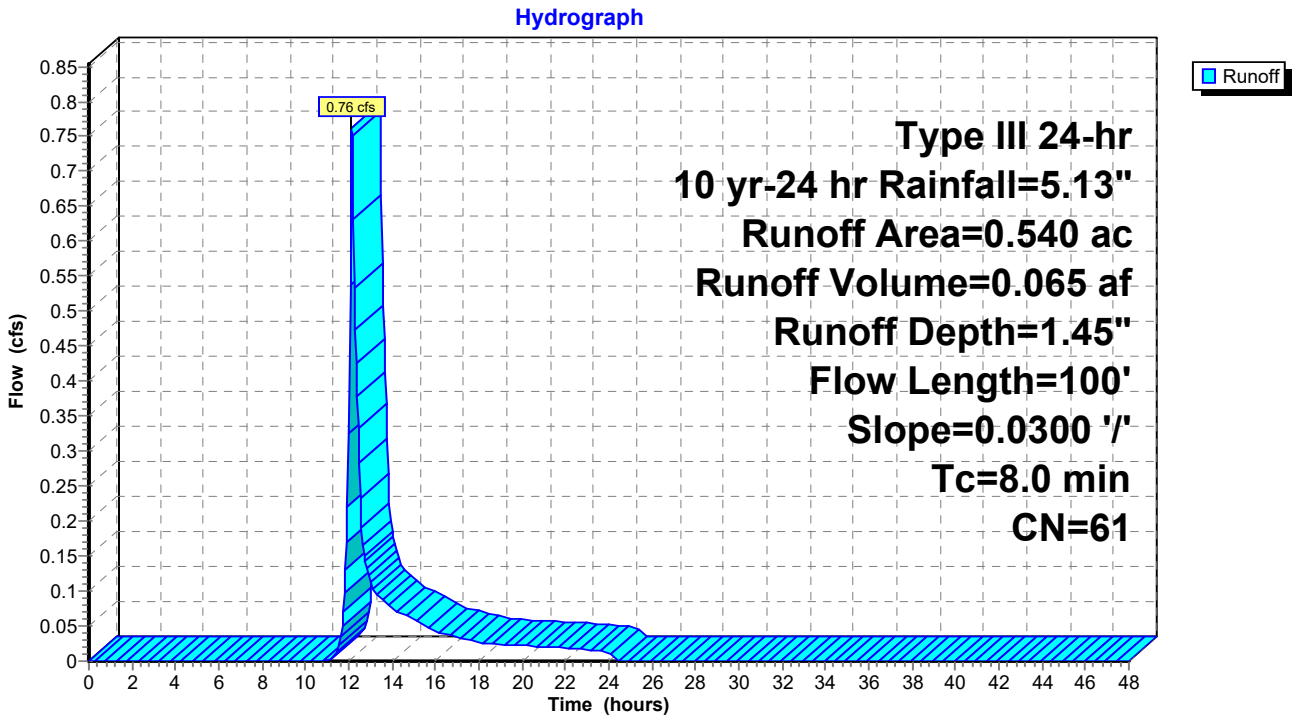
Runoff = 0.76 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 1.45"
Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

Area (ac)	CN	Description
0.540	61	>75% Grass cover, Good, HSG B
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0300	0.21		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.43"

Subcatchment EDA-2C:



Summary for Subcatchment EDA-3:

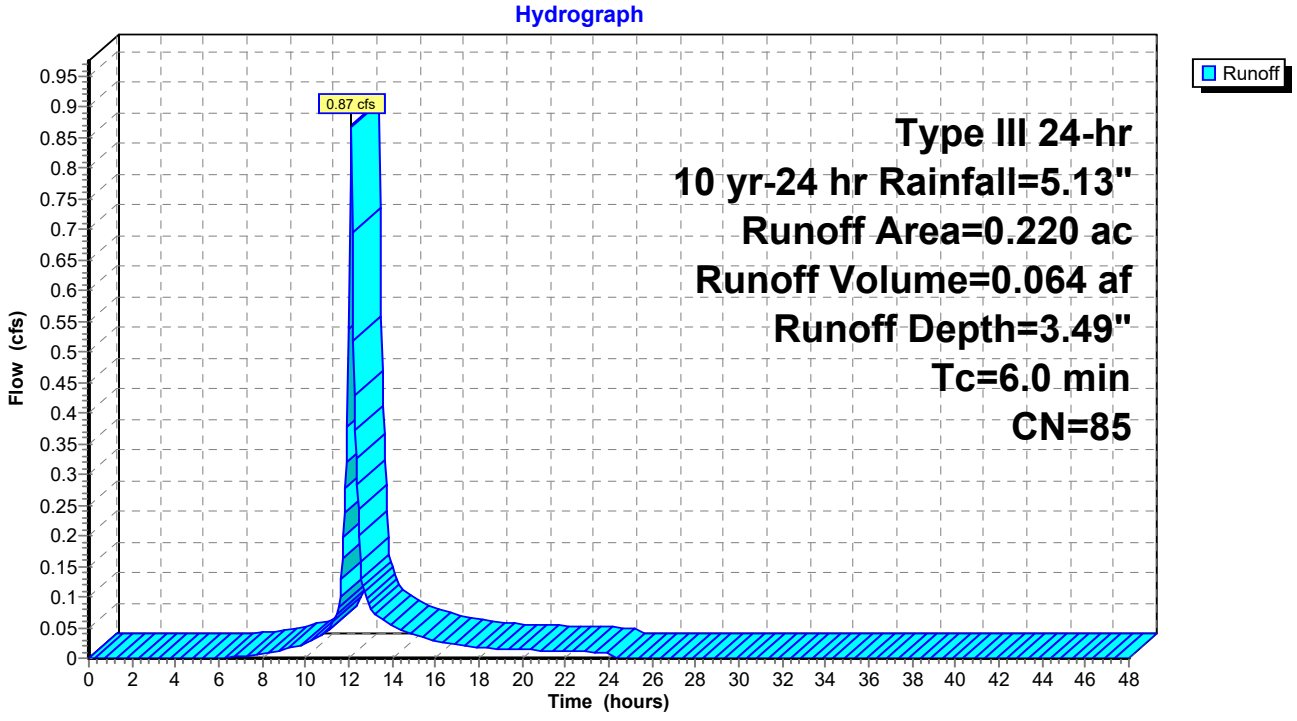
Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.064 af, Depth= 3.49"
Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (ac)	CN	Description
*	0.140	98	Impervious
	0.080	61	>75% Grass cover, Good, HSG B
	0.220	85	Weighted Average
	0.080		36.36% Pervious Area
	0.140		63.64% Impervious Area

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

Subcatchment EDA-3:



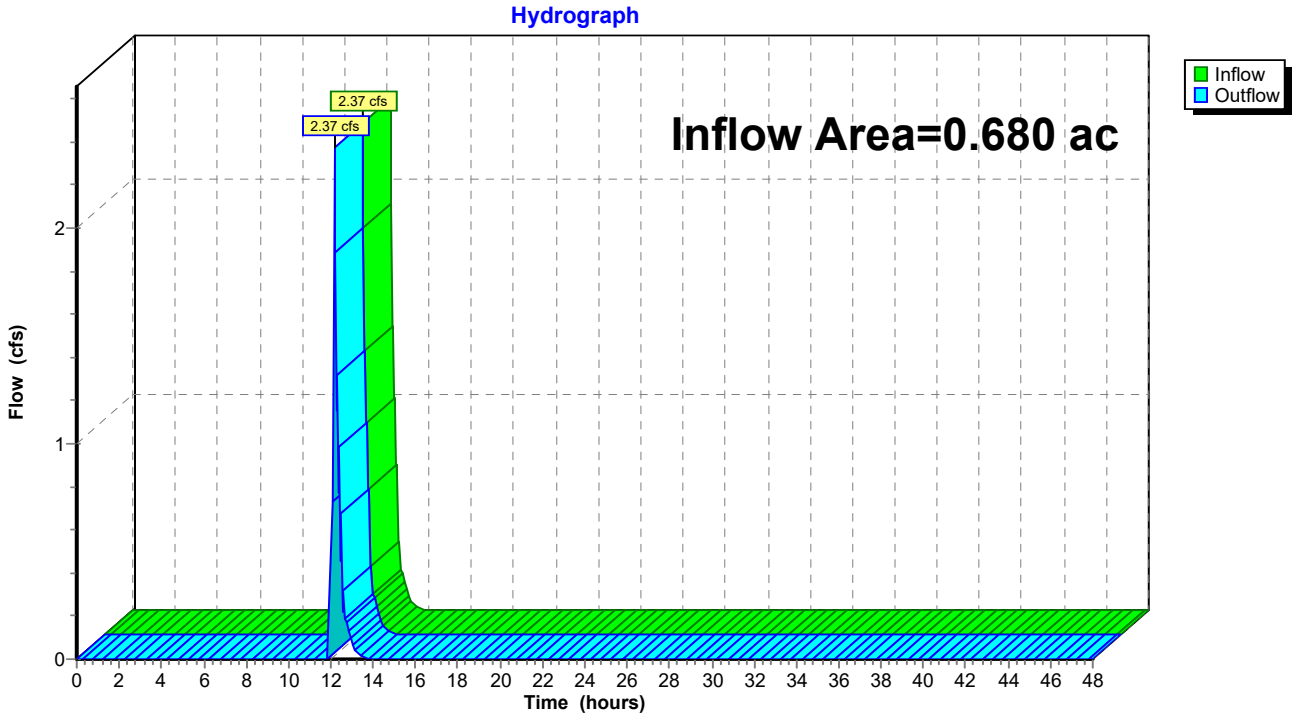
Summary for Reach DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac,100.00% Impervious, Inflow Depth = 0.83" for 10 yr-24 hr event
Inflow = 2.37 cfs @ 12.17 hrs, Volume= 0.047 af
Outflow = 2.37 cfs @ 12.17 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP1:



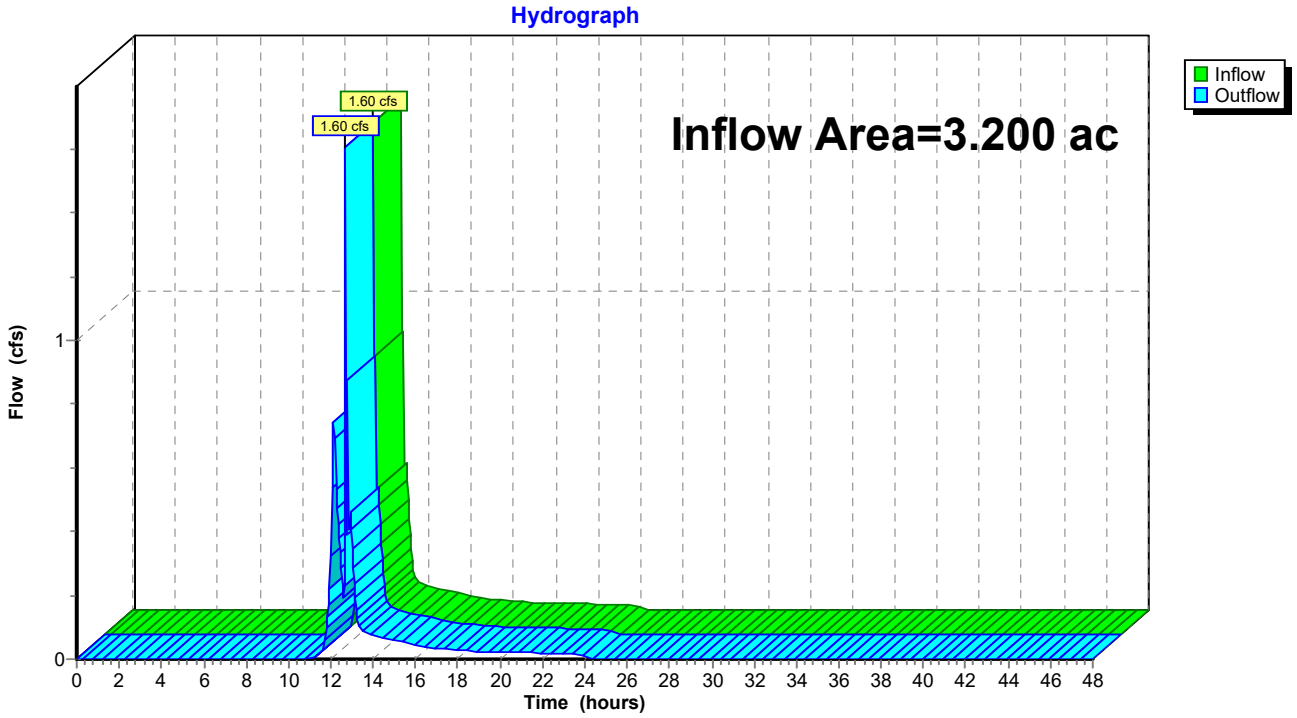
Summary for Reach DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.200 ac, 60.94% Impervious, Inflow Depth = 0.31" for 10 yr-24 hr event
Inflow = 1.60 cfs @ 12.70 hrs, Volume= 0.082 af
Outflow = 1.60 cfs @ 12.70 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP2:



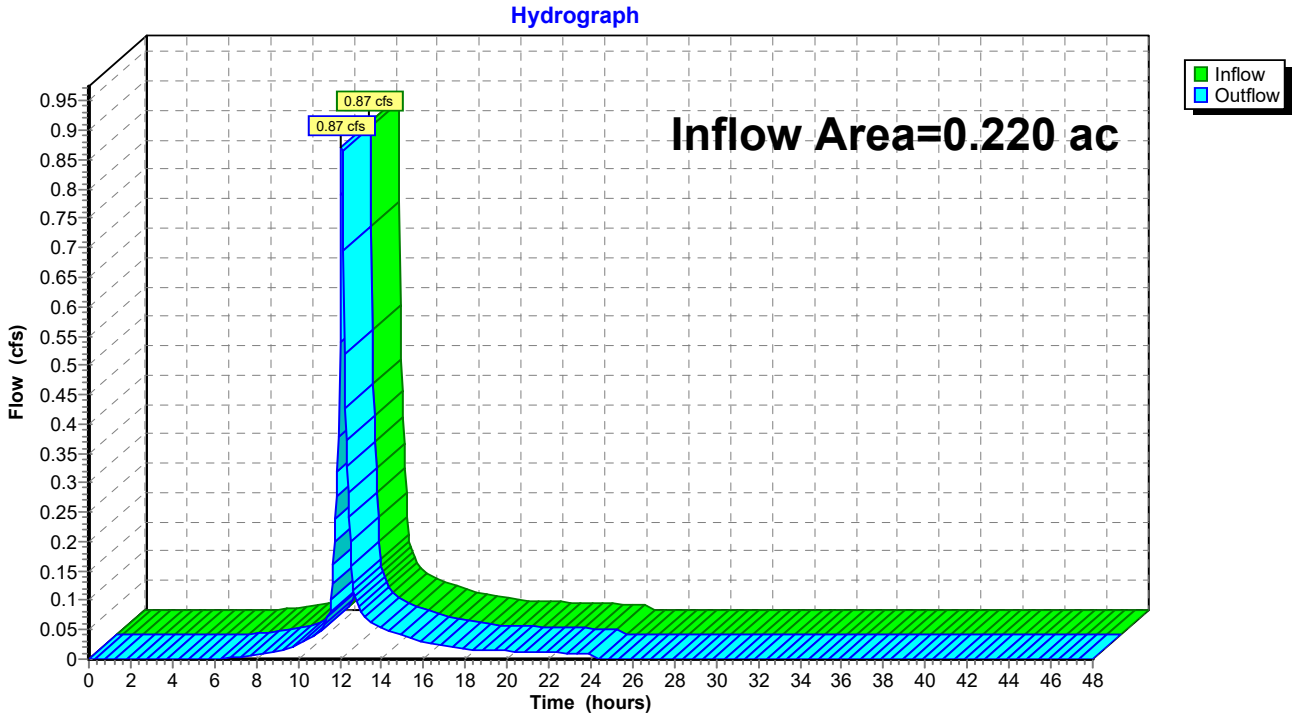
Summary for Reach DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.220 ac, 63.64% Impervious, Inflow Depth = 3.49" for 10 yr-24 hr event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.87 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP3:



Summary for Pond P1: 32 Cultec units

[93] Warning: Storage range exceeded by 0.10'
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)

Inflow Area = 0.680 ac,100.00% Impervious, Inflow Depth = 4.89" for 10 yr-24 hr event
Inflow = 3.33 cfs @ 12.09 hrs, Volume= 0.277 af
Outflow = 2.59 cfs @ 12.17 hrs, Volume= 0.277 af, Atten= 22%, Lag= 4.9 min
Discarded = 0.22 cfs @ 11.00 hrs, Volume= 0.230 af
Primary = 2.37 cfs @ 12.17 hrs, Volume= 0.047 af
Routed to Reach DP1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 373.54' @ 12.15 hrs Surf.Area= 1,240 sf Storage= 2,784 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 76.3 min (823.9 - 747.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	369.90'	1,071 cf	**20.83'W x 59.50'L x 3.54'H Field A** 4,390 cf Overall - 1,714 cf Embedded = 2,676 cf x 40.0% Voids
#2A	370.40'	1,714 cf	**Cultec R-330XLHD** x 32 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 4 rows
		2,784 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	369.90'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	373.40'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 11.00 hrs HW=369.94' (Free Discharge)
↑—**1=Infiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=2.07 cfs @ 12.17 hrs HW=373.53' TW=0.00' (Dynamic Tailwater)
↑—**2=Assumed Overflow** (Weir Controls 2.07 cfs @ 1.19 fps)

Pond P1: 32 Cultec units - Chamber Wizard Field A

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

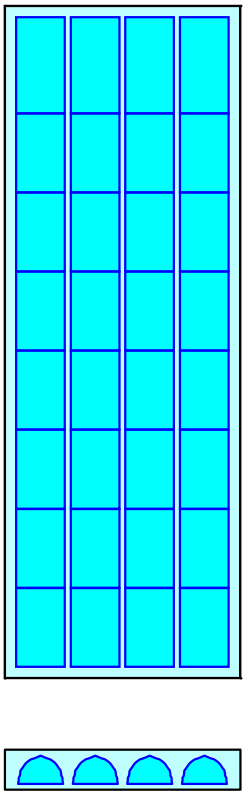
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

32 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 1,713.7 cf Chamber Storage

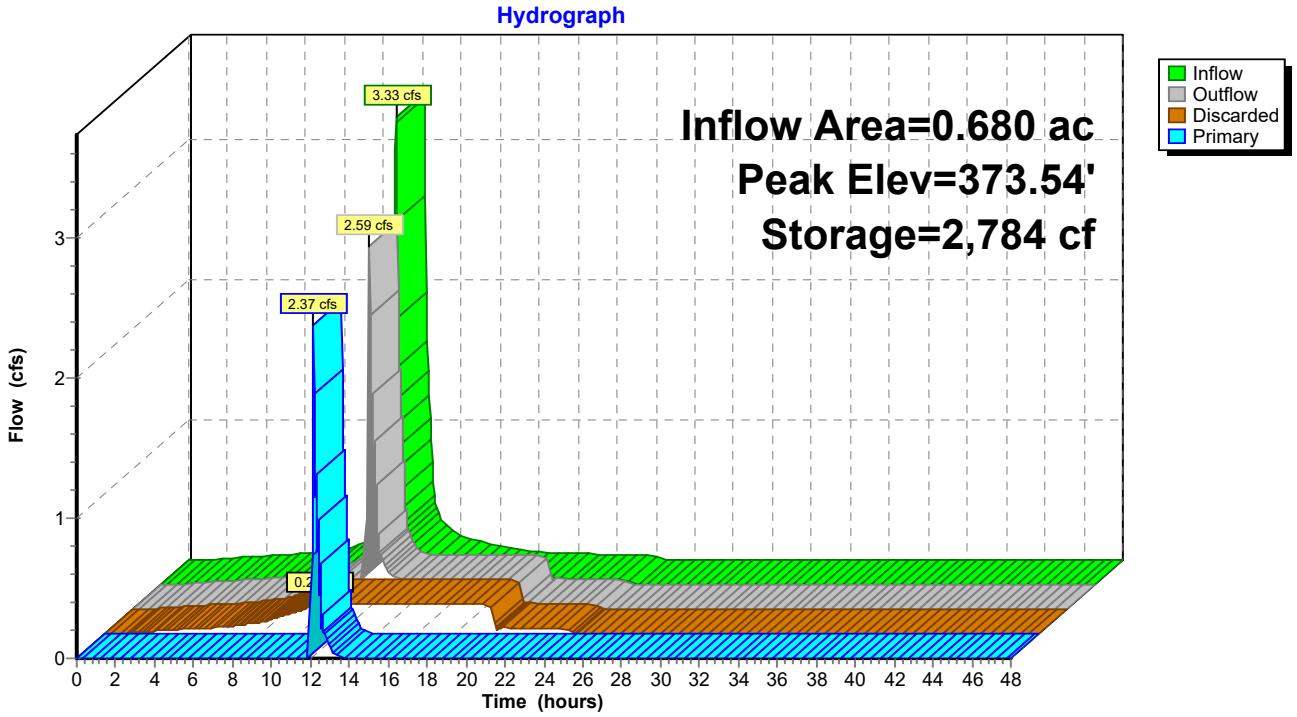
4,390.2 cf Field - 1,713.7 cf Chambers = 2,676.5 cf Stone x 40.0% Voids = 1,070.6 cf Stone Storage

Chamber Storage + Stone Storage = 2,784.3 cf = 0.064 af
Overall Storage Efficiency = 63.4%
Overall System Size = 59.50' x 20.83' x 3.54'

32 Chambers
162.6 cy Field
99.1 cy Stone



Pond P1: 32 Cultec units



Summary for Pond P2: 48 Cultec units

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 0.700 ac, 78.57% Impervious, Inflow Depth = 4.55" for 10 yr-24 hr event
Inflow = 3.34 cfs @ 12.09 hrs, Volume= 0.265 af
Outflow = 0.32 cfs @ 11.55 hrs, Volume= 0.265 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.32 cfs @ 11.55 hrs, Volume= 0.265 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 372.46' @ 12.93 hrs Surf.Area= 1,815 sf Storage= 4,055 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 90.7 min (858.2 - 767.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	369.00'	1,543 cf	**30.50'W x 59.50'L x 3.54'H Field A** 6,427 cf Overall - 2,571 cf Embedded = 3,857 cf x 40.0% Voids
#2A	369.50'	2,571 cf	**Cultec R-330XLHD** x 48 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 6 rows
		4,113 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	369.00'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	372.50'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.32 cfs @ 11.55 hrs HW=369.05' (Free Discharge)
↑**1=Infiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=369.00' TW=0.00' (Dynamic Tailwater)
↑**2=Assumed Overflow** (Controls 0.00 cfs)

Pond P2: 48 Cultec units - Chamber Wizard Field A

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 6 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

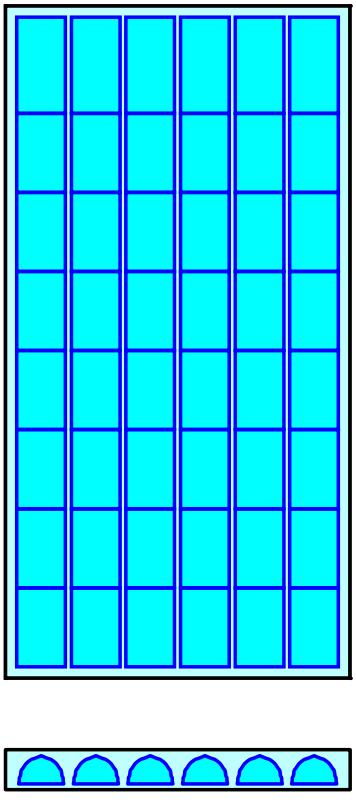
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
6 Rows x 52.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.50' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

48 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 6 Rows = 2,570.6 cf Chamber Storage

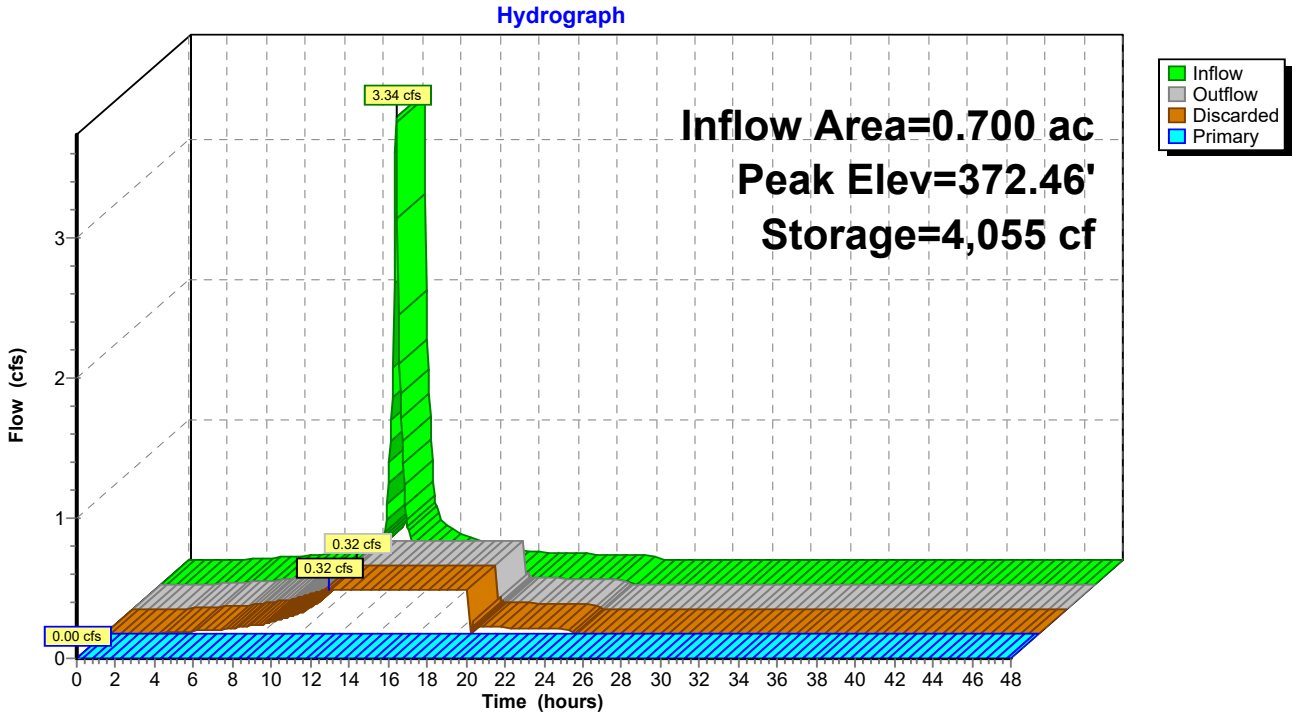
6,427.2 cf Field - 2,570.6 cf Chambers = 3,856.6 cf Stone x 40.0% Voids = 1,542.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,113.3 cf = 0.094 af
Overall Storage Efficiency = 64.0%
Overall System Size = 59.50' x 30.50' x 3.54'

48 Chambers
238.0 cy Field
142.8 cy Stone



Pond P2: 48 Cultec units



Summary for Pond P3: 112 Cultec Units

[93] Warning: Storage range exceeded by 0.06'
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 1.960 ac, 71.43% Impervious, Inflow Depth = 3.69" for 10 yr-24 hr event
Inflow = 6.24 cfs @ 12.21 hrs, Volume= 0.603 af
Outflow = 2.16 cfs @ 12.70 hrs, Volume= 0.603 af, Atten= 65%, Lag= 29.7 min
Discarded = 0.71 cfs @ 11.70 hrs, Volume= 0.586 af
Primary = 1.45 cfs @ 12.70 hrs, Volume= 0.017 af
Routed to Reach DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 373.61' @ 12.70 hrs Surf.Area= 4,081 sf Storage= 9,333 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 101.1 min (910.0 - 808.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	370.00'	3,413 cf	**35.33'W x 115.50'L x 3.54'H Field A** 14,454 cf Overall - 5,920 cf Embedded = 8,534 cf x 40.0% Voids
#2A	370.50'	5,920 cf	**Cultec R-330XLHD** x 112 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 7 rows
		9,333 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	370.00'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	373.50'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.71 cfs @ 11.70 hrs HW=370.04' (Free Discharge)
↑—**1=Infiltration** (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=1.40 cfs @ 12.70 hrs HW=373.60' TW=0.00' (Dynamic Tailwater)
↑—**2=Assumed Overflow** (Weir Controls 1.40 cfs @ 1.05 fps)

Pond P3: 112 Cultec Units - Chamber Wizard Field A

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 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

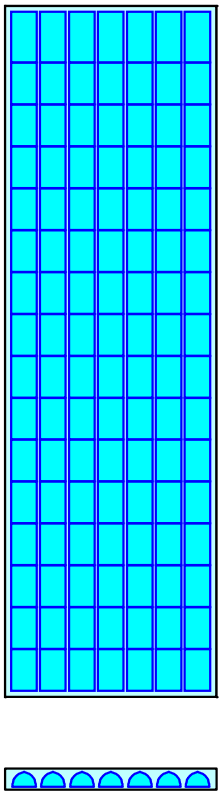
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

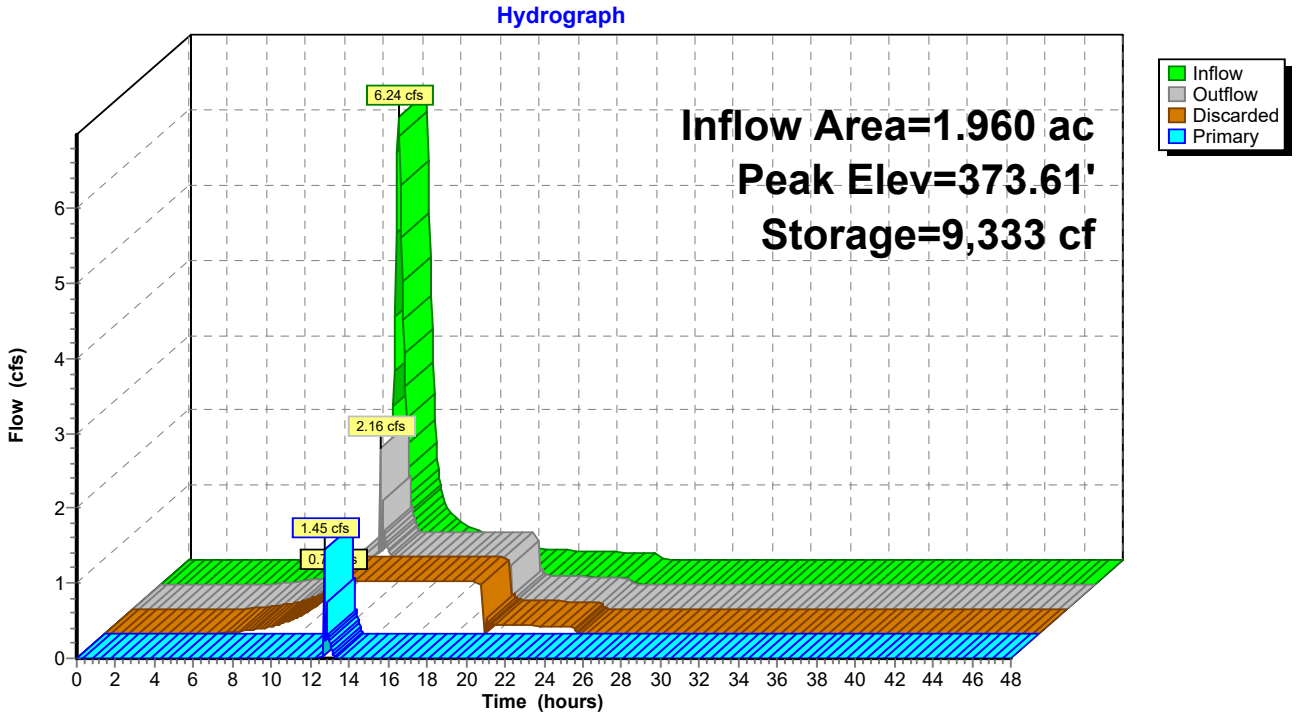
14,453.5 cf Field - 5,919.8 cf Chambers = 8,533.7 cf Stone x 40.0% Voids = 3,413.5 cf Stone Storage

Chamber Storage + Stone Storage = 9,333.3 cf = 0.214 af
Overall Storage Efficiency = 64.6%
Overall System Size = 115.50' x 35.33' x 3.54'

112 Chambers
535.3 cy Field
316.1 cy Stone



Pond P3: 112 Cultec Units



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentEDA-1: Runoff Area=0.680 ac 100.00% Impervious Runoff Depth=8.92"
Tc=6.0 min CN=98 Runoff=5.97 cfs 0.505 af

SubcatchmentEDA-2A: Runoff Area=0.700 ac 78.57% Impervious Runoff Depth=8.56"
Tc=6.0 min CN=95 Runoff=6.09 cfs 0.499 af

SubcatchmentEDA-2B: Runoff Area=1.960 ac 71.43% Impervious Runoff Depth=7.58"
Tc=15.3 min CN=87 Runoff=12.40 cfs 1.238 af

SubcatchmentEDA-2C: Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=4.35"
Flow Length=100' Slope=0.0300 '/' Tc=8.0 min CN=61 Runoff=2.52 cfs 0.196 af

SubcatchmentEDA-3: Runoff Area=0.220 ac 63.64% Impervious Runoff Depth=7.34"
Tc=6.0 min CN=85 Runoff=1.77 cfs 0.135 af

Reach DP1: Inflow=6.24 cfs 0.197 af
Outflow=6.24 cfs 0.197 af

Reach DP2: Inflow=31.17 cfs 0.731 af
Outflow=31.17 cfs 0.731 af

Reach DP3: Inflow=1.77 cfs 0.135 af
Outflow=1.77 cfs 0.135 af

Pond P1: 32 Cultec units Peak Elev=373.68' Storage=2,784 cf Inflow=5.97 cfs 0.505 af
Discarded=0.22 cfs 0.309 af Primary=6.24 cfs 0.197 af Outflow=6.45 cfs 0.505 af

Pond P2: 48 Cultec units Peak Elev=372.87' Storage=4,113 cf Inflow=6.09 cfs 0.499 af
Discarded=0.32 cfs 0.370 af Primary=9.62 cfs 0.129 af Outflow=9.93 cfs 0.499 af

Pond P3: 112 Cultec Units Peak Elev=374.15' Storage=9,333 cf Inflow=12.40 cfs 1.238 af
Discarded=0.71 cfs 0.832 af Primary=22.15 cfs 0.406 af Outflow=22.86 cfs 1.238 af

Total Runoff Area = 4.100 ac Runoff Volume = 2.573 af Average Runoff Depth = 7.53"
32.44% Pervious = 1.330 ac 67.56% Impervious = 2.770 ac

Summary for Subcatchment EDA-1:

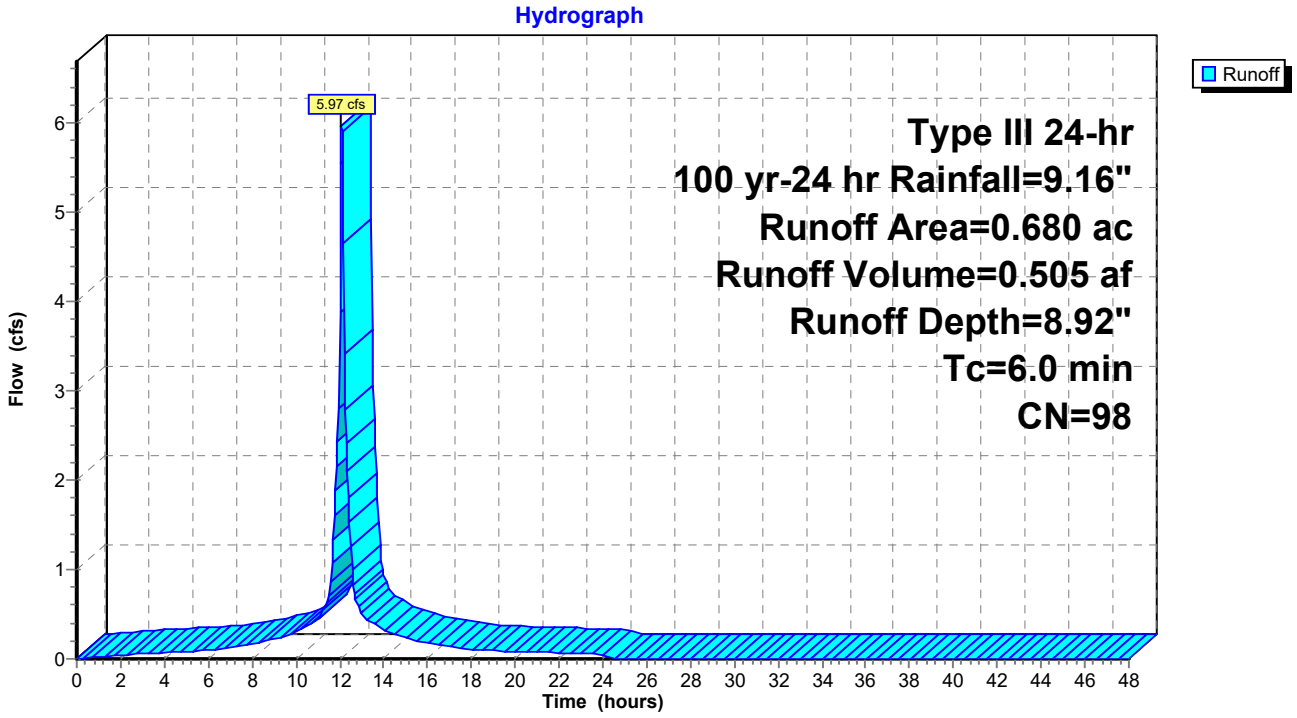
Runoff = 5.97 cfs @ 12.09 hrs, Volume= 0.505 af, Depth= 8.92"
Routed to Pond P1 : 32 Cultec units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (ac)	CN	Description
*	0.680	98	Impervious
	0.680		100.00% Impervious Area

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

Subcatchment EDA-1:



Summary for Subcatchment EDA-2A:

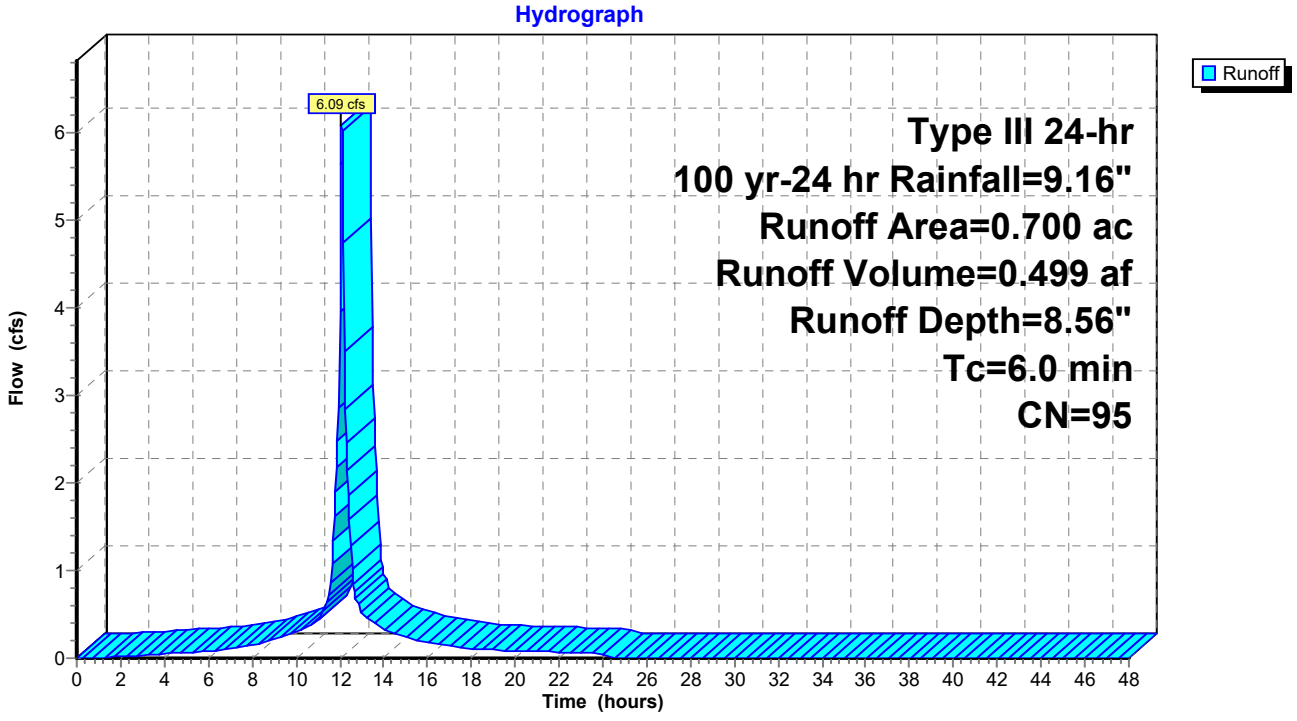
Runoff = 6.09 cfs @ 12.09 hrs, Volume= 0.499 af, Depth= 8.56"
Routed to Pond P2 : 48 Cultec units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (ac)	CN	Description
*	0.550	98	Impervious
*	0.150	85	Gravel, HSG B
	0.700	95	Weighted Average
	0.150		21.43% Pervious Area
	0.550		78.57% Impervious Area

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

Subcatchment EDA-2A:



Summary for Subcatchment EDA-2B:

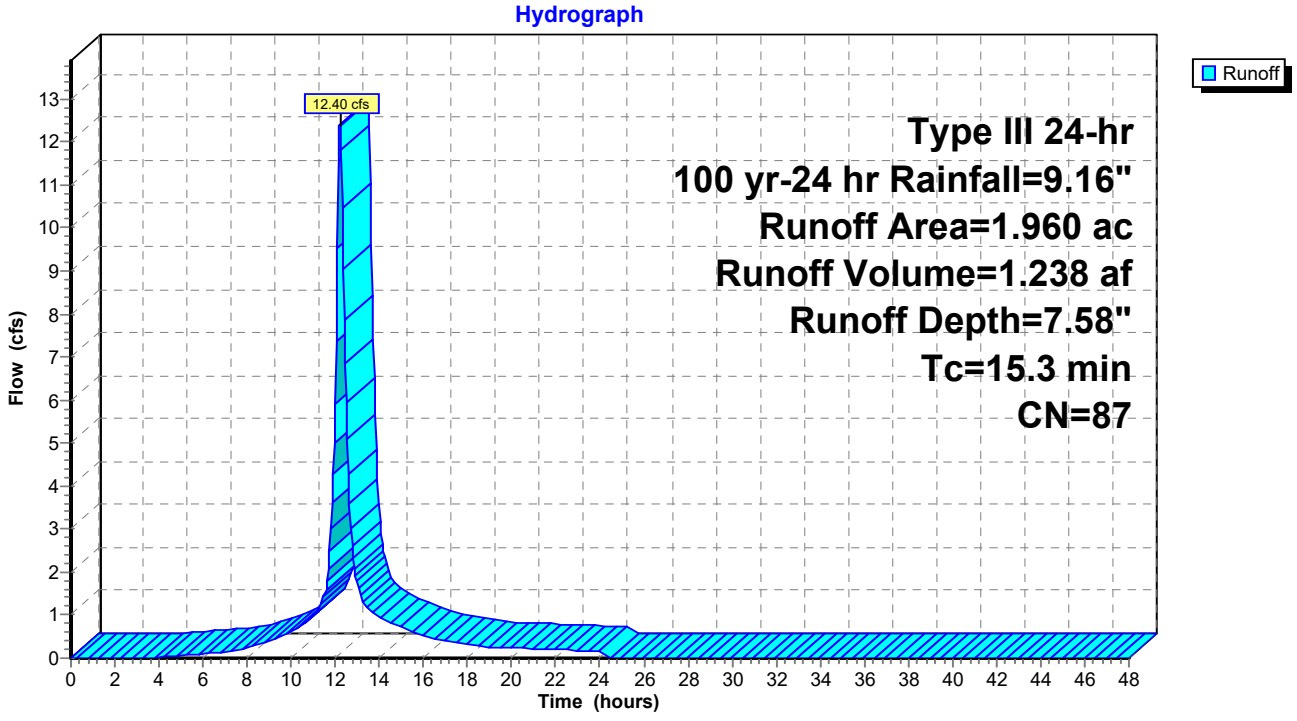
Runoff = 12.40 cfs @ 12.20 hrs, Volume= 1.238 af, Depth= 7.58"
Routed to Pond P3 : 112 Cultec Units

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (ac)	CN	Description
*	1.400	98	Impervious
	0.560	61	>75% Grass cover, Good, HSG B
	1.960	87	Weighted Average
	0.560		28.57% Pervious Area
	1.400		71.43% Impervious Area

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

Subcatchment EDA-2B:



Summary for Subcatchment EDA-2C:

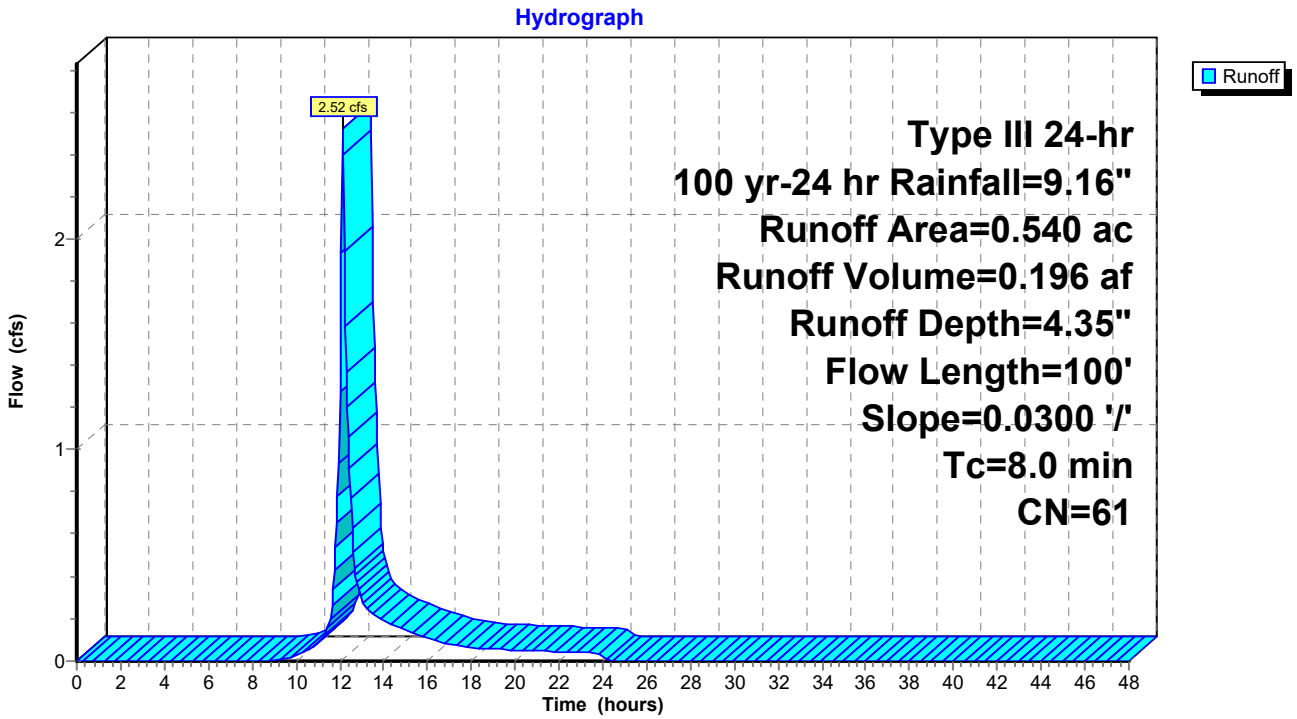
Runoff = 2.52 cfs @ 12.12 hrs, Volume= 0.196 af, Depth= 4.35"
Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

Area (ac)	CN	Description
0.540	61	>75% Grass cover, Good, HSG B
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0300	0.21		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.43"

Subcatchment EDA-2C:



Summary for Subcatchment EDA-3:

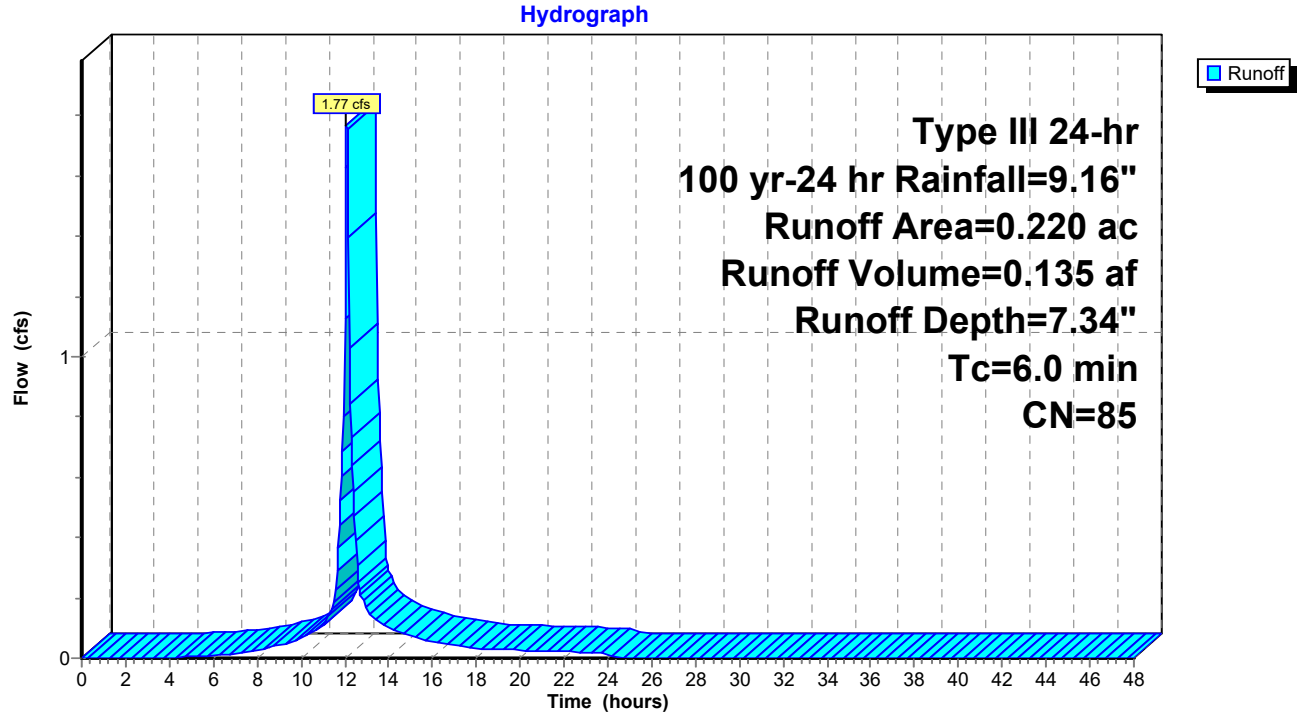
Runoff = 1.77 cfs @ 12.09 hrs, Volume= 0.135 af, Depth= 7.34"
Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (ac)	CN	Description
*	0.140	98	Impervious
	0.080	61	>75% Grass cover, Good, HSG B
	0.220	85	Weighted Average
	0.080		36.36% Pervious Area
	0.140		63.64% Impervious Area

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

Subcatchment EDA-3:



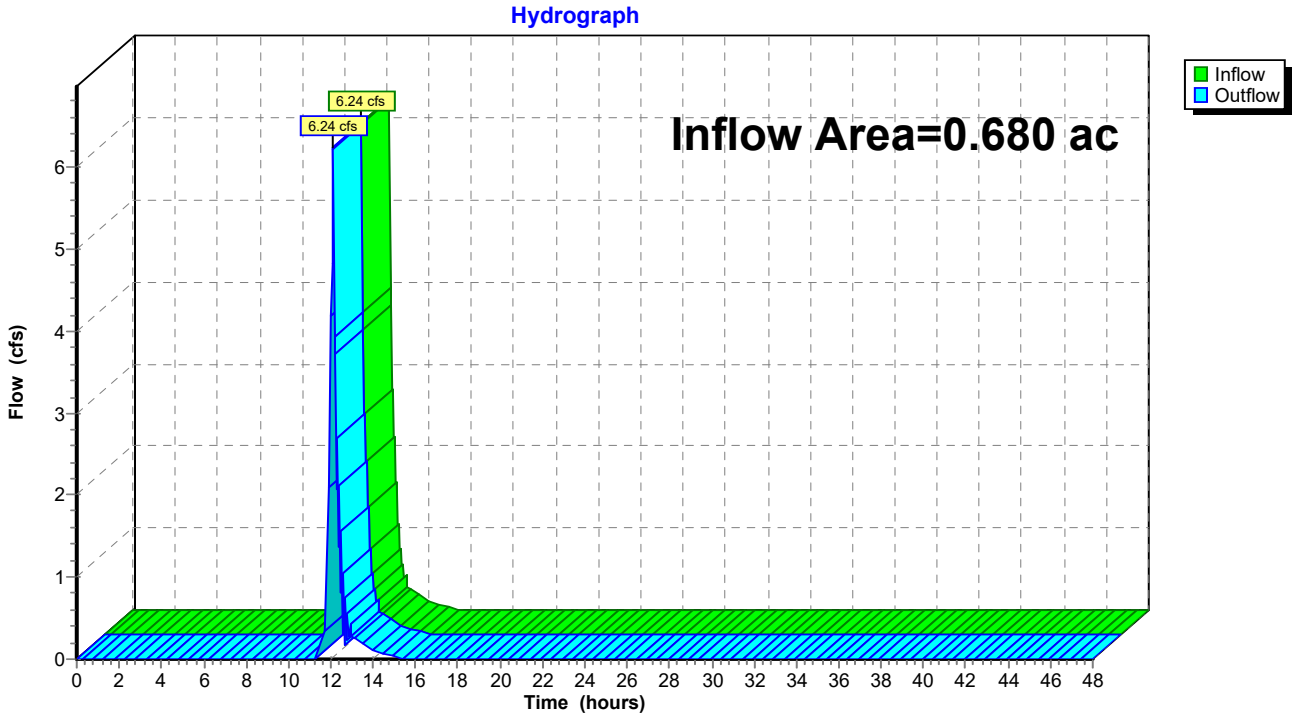
Summary for Reach DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac,100.00% Impervious, Inflow Depth = 3.47" for 100 yr-24 hr event
Inflow = 6.24 cfs @ 12.09 hrs, Volume= 0.197 af
Outflow = 6.24 cfs @ 12.09 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP1:



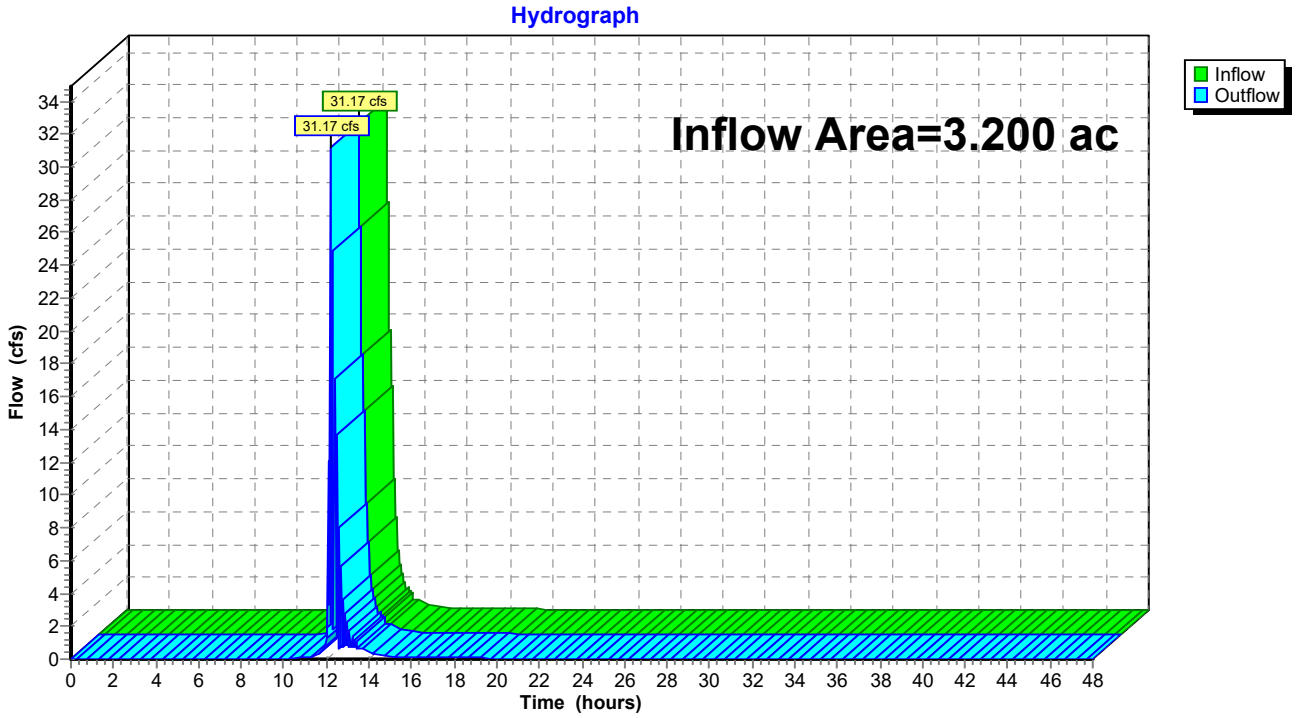
Summary for Reach DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.200 ac, 60.94% Impervious, Inflow Depth = 2.74" for 100 yr-24 hr event
Inflow = 31.17 cfs @ 12.20 hrs, Volume= 0.731 af
Outflow = 31.17 cfs @ 12.20 hrs, Volume= 0.731 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP2:



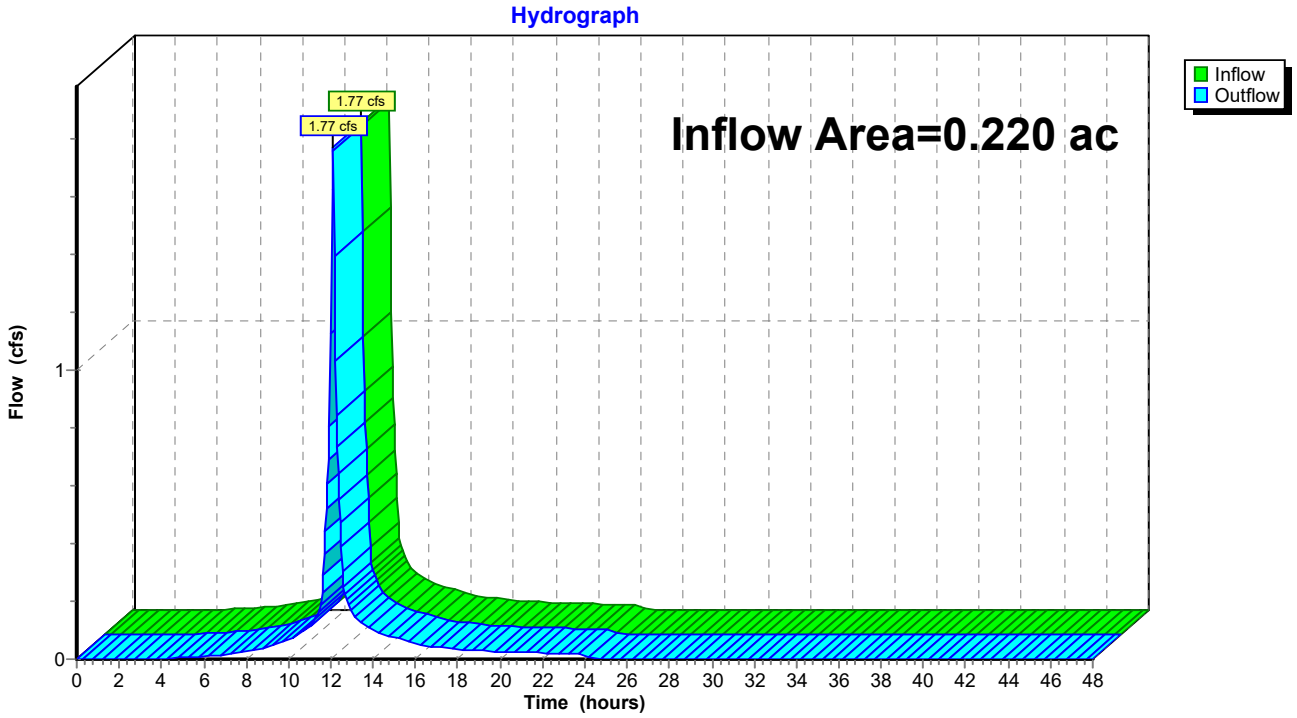
Summary for Reach DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.220 ac, 63.64% Impervious, Inflow Depth = 7.34" for 100 yr-24 hr event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 0.135 af
Outflow = 1.77 cfs @ 12.09 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2

Reach DP3:



Summary for Pond P1: 32 Cultec units

[93] Warning: Storage range exceeded by 0.24'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)

Inflow Area = 0.680 ac,100.00% Impervious, Inflow Depth = 8.92" for 100 yr-24 hr event
Inflow = 5.97 cfs @ 12.09 hrs, Volume= 0.505 af
Outflow = 6.45 cfs @ 12.09 hrs, Volume= 0.505 af, Atten= 0%, Lag= 0.5 min
Discarded = 0.22 cfs @ 9.20 hrs, Volume= 0.309 af
Primary = 6.24 cfs @ 12.09 hrs, Volume= 0.197 af
Routed to Reach DP1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 373.68' @ 12.09 hrs Surf.Area= 1,240 sf Storage= 2,784 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 62.7 min (802.3 - 739.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	369.90'	1,071 cf	**20.83'W x 59.50'L x 3.54'H Field A** 4,390 cf Overall - 1,714 cf Embedded = 2,676 cf x 40.0% Voids
#2A	370.40'	1,714 cf	**Cultec R-330XLHD** x 32 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 4 rows
		2,784 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	369.90'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	373.40'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 9.20 hrs HW=369.94' (Free Discharge)
↑—**1=Infiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=6.03 cfs @ 12.09 hrs HW=373.67' TW=0.00' (Dynamic Tailwater)
↑—**2=Assumed Overflow** (Weir Controls 6.03 cfs @ 1.71 fps)

Pond P1: 32 Cultec units - Chamber Wizard Field A

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

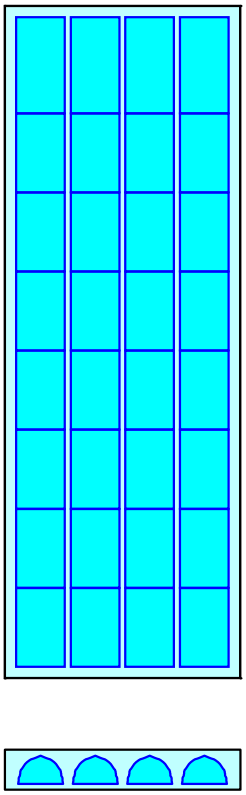
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

32 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 1,713.7 cf Chamber Storage

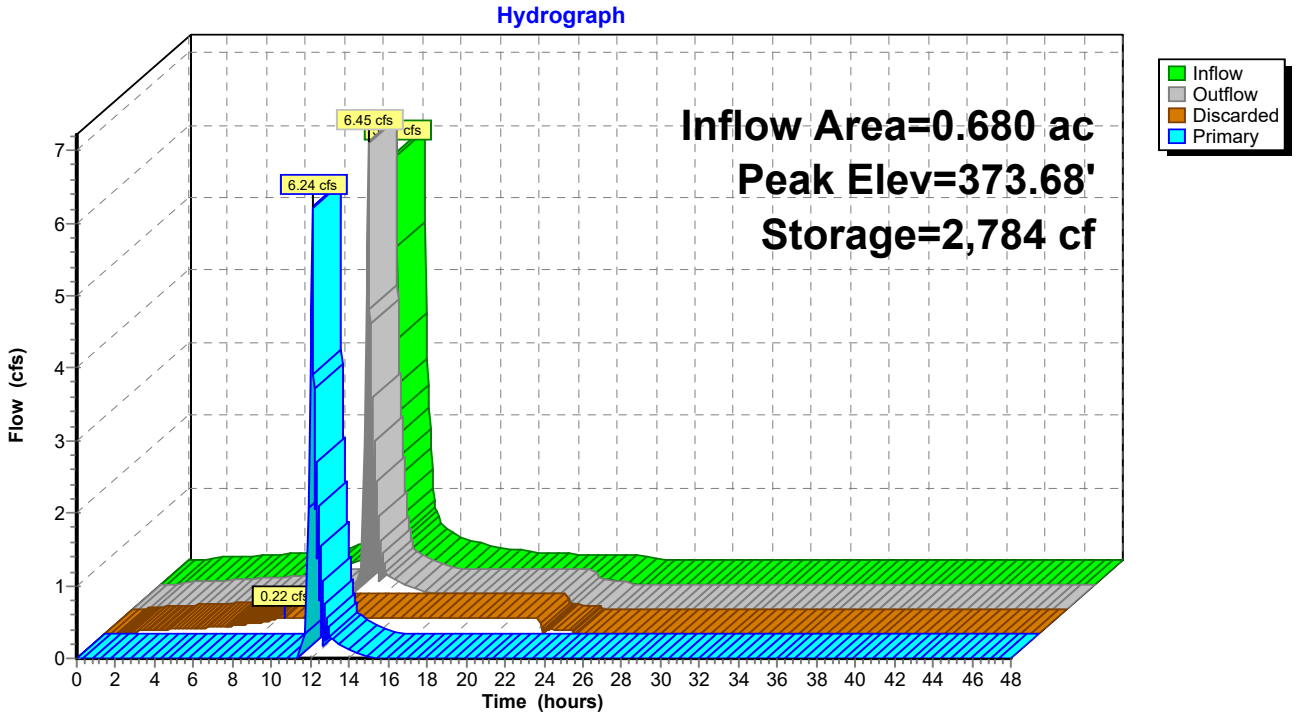
4,390.2 cf Field - 1,713.7 cf Chambers = 2,676.5 cf Stone x 40.0% Voids = 1,070.6 cf Stone Storage

Chamber Storage + Stone Storage = 2,784.3 cf = 0.064 af
Overall Storage Efficiency = 63.4%
Overall System Size = 59.50' x 20.83' x 3.54'

32 Chambers
162.6 cy Field
99.1 cy Stone



Pond P1: 32 Cultec units



Summary for Pond P2: 48 Cultec units

[93] Warning: Storage range exceeded by 0.33'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

Inflow Area = 0.700 ac, 78.57% Impervious, Inflow Depth = 8.56" for 100 yr-24 hr event
Inflow = 6.09 cfs @ 12.09 hrs, Volume= 0.499 af
Outflow = 9.93 cfs @ 12.10 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.9 min
Discarded = 0.32 cfs @ 10.50 hrs, Volume= 0.370 af
Primary = 9.62 cfs @ 12.10 hrs, Volume= 0.129 af
Routed to Reach DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 372.87' @ 12.10 hrs Surf.Area= 1,815 sf Storage= 4,113 cf

Plug-Flow detention time= 73.1 min calculated for 0.499 af (100% of inflow)
Center-of-Mass det. time= 73.0 min (827.3 - 754.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	369.00'	1,543 cf	**30.50'W x 59.50'L x 3.54'H Field A** 6,427 cf Overall - 2,571 cf Embedded = 3,857 cf x 40.0% Voids
#2A	369.50'	2,571 cf	**Cultec R-330XLHD** x 48 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 6 rows
		4,113 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	369.00'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	372.50'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.32 cfs @ 10.50 hrs HW=369.04' (Free Discharge)
↑—**1=Infiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=9.44 cfs @ 12.10 hrs HW=372.87' TW=0.00' (Dynamic Tailwater)
↑—**2=Assumed Overflow** (Weir Controls 9.44 cfs @ 1.98 fps)

Pond P2: 48 Cultec units - Chamber Wizard Field A

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 6 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

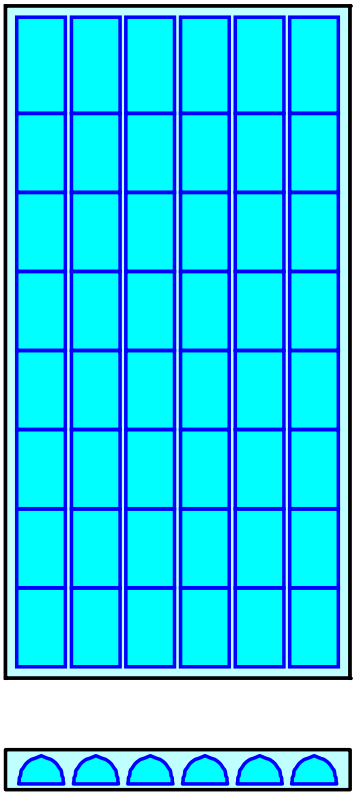
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
6 Rows x 52.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.50' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

48 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 6 Rows = 2,570.6 cf Chamber Storage

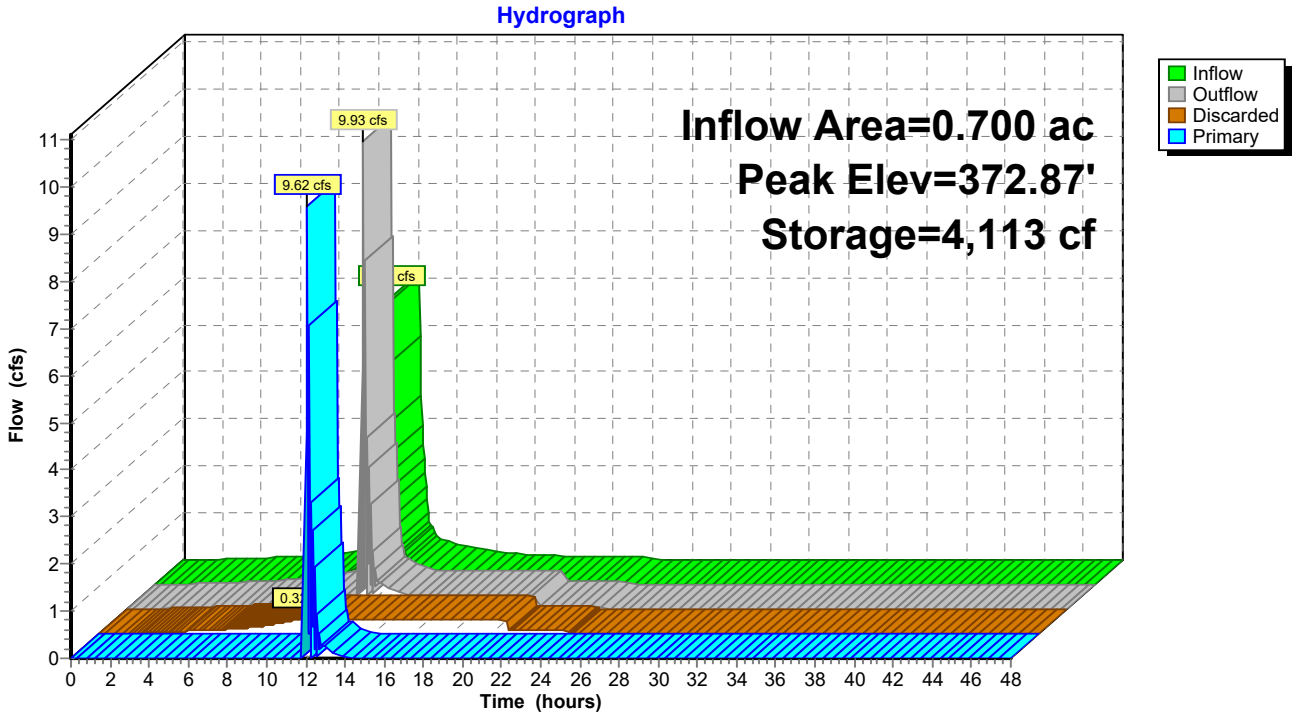
6,427.2 cf Field - 2,570.6 cf Chambers = 3,856.6 cf Stone x 40.0% Voids = 1,542.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,113.3 cf = 0.094 af
Overall Storage Efficiency = 64.0%
Overall System Size = 59.50' x 30.50' x 3.54'

48 Chambers
238.0 cy Field
142.8 cy Stone



Pond P2: 48 Cultec units



Summary for Pond P3: 112 Cultec Units

[93] Warning: Storage range exceeded by 0.61'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=13)

Inflow Area = 1.960 ac, 71.43% Impervious, Inflow Depth = 7.58" for 100 yr-24 hr event
Inflow = 12.40 cfs @ 12.20 hrs, Volume= 1.238 af
Outflow = 22.86 cfs @ 12.20 hrs, Volume= 1.238 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.71 cfs @ 10.65 hrs, Volume= 0.832 af
Primary = 22.15 cfs @ 12.20 hrs, Volume= 0.406 af
Routed to Reach DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 374.15' @ 12.20 hrs Surf.Area= 4,081 sf Storage= 9,333 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 75.3 min (864.6 - 789.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	370.00'	3,413 cf	**35.33'W x 115.50'L x 3.54'H Field A** 14,454 cf Overall - 5,920 cf Embedded = 8,534 cf x 40.0% Voids
#2A	370.50'	5,920 cf	**Cultec R-330XLHD** x 112 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 7 rows
		9,333 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	370.00'	**7.500 in/hr Infiltration over Horizontal area** Phase-In= 0.01'
#2	Primary	373.50'	**30.0" x 48.0" Horiz. Assumed Overflow** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.71 cfs @ 10.65 hrs HW=370.05' (Free Discharge)
↑—**1=Infiltration** (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=22.07 cfs @ 12.20 hrs HW=374.15' TW=0.00' (Dynamic Tailwater)
↑—**2=Assumed Overflow** (Weir Controls 22.07 cfs @ 2.63 fps)

Pond P3: 112 Cultec Units - Chamber Wizard Field A

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 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

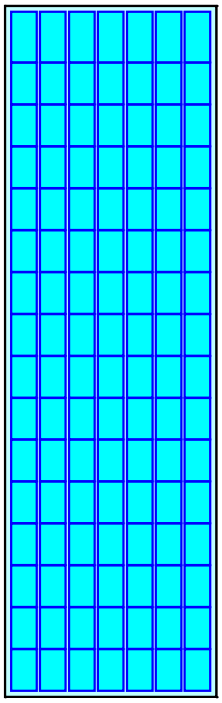
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

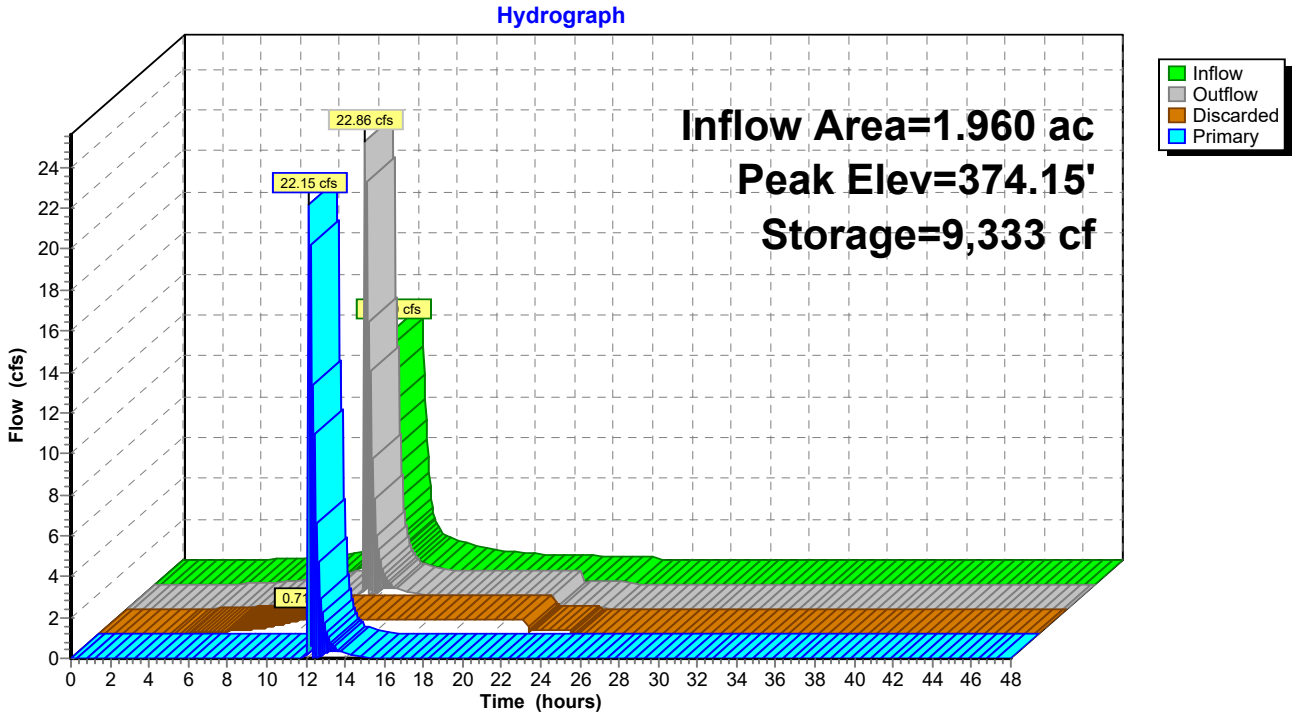
14,453.5 cf Field - 5,919.8 cf Chambers = 8,533.7 cf Stone x 40.0% Voids = 3,413.5 cf Stone Storage

Chamber Storage + Stone Storage = 9,333.3 cf = 0.214 af
Overall Storage Efficiency = 64.6%
Overall System Size = 115.50' x 35.33' x 3.54'

112 Chambers
535.3 cy Field
316.1 cy Stone



Pond P3: 112 Cultec Units



The Gateway
45 Bedford Road
Town of North Castle, New York

Appendix E: Infiltration Test Results

Infiltration & Test Pit Data								
Date:	9/27/2023							
Address:	45 Bedford Road, Armonk NY							
Test done by:	Luke Caserta, Grace Nyambura							
					Depth to Water from Ground Surface (Inches)			
Hole Number	**Run Number**	**Start**	**Stop**	**Elapsed Time (Min)**	**Start**	**Stop**	**Water Level Drop in Inches**	**Soil Rate (In/Hr)**
1	1	10:11	11:11	60	38	62	24	24
	2	11:27	12:27	60	38	62	24	24
	3	12:32	13:32	60	38	62	24	24
	Groundwater encountered 96" below ground surface.							
2	1	9:57	10:57	60	38	62	24	24
	2	11:31	12:31	60	38	56	18	18
	3	12:37	13:37	60	38	56	18	18
	4	13:39	14:49	60	38	54	16	16
	5	14:49	15:49	60	38	50	12	12
	6	15:50	16:50	60	38	50	12	12
	Groundwater encountered 108" below ground surface.							
3	1	11:41	12:41	60	38	55	17	17
	2	12:48	13:48	60	38	53	15	15
	3	13:53	14:53	60	38	50	12	12
	4	14:57	15:57	60	38	50	12	12
	5	16:01	17:01	60	38	48	10	10
	Groundwater encountered 132" below ground surface.							
4	1	14:08	15:08	60	49	56	7	7
	2	15:10	16:10	60	49	56	7	7
	3	16:15	17:15	60	49	55	6	6
	Groundwater encountered 75" below ground surface.							

Test Pit Data	
Date:	11/8/2023
Address:	45 Bedford Road, Armonk NY
Test done by:	Elbin Madera Jr., Grace Nyambura
Hole Number	**Depth to Groundwater below Existing Grade (Inches)**
5	84
6	76
7	84
8	84

The Gateway
45 Bedford Road
Town of North Castle, New York

Appendix F: Post-Development Stormwater Analysis

LANGAN

LEGEND

HvE (C)	SOIL CLASSIFICATION AND HYDROLOGIC SOIL GROUP
	HYDROLOGIC SOIL GROUP BOUNDARY
	TIME OF CONCENTRATION
10	SUB-CATCHMENT ID
	SUBCATCHMENT BOUNDARY
DP-1	DISCHARGE POINT
2	INFILTRATION TEST AND DEEP TEST

30 0 10 20 30
SCALE: 1 INCH = 30 FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Date	Description	No.
Revisions		

Signature Date
MICHAEL FINAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473-1

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
POST DEVELOPMENT WATERSHED MAP

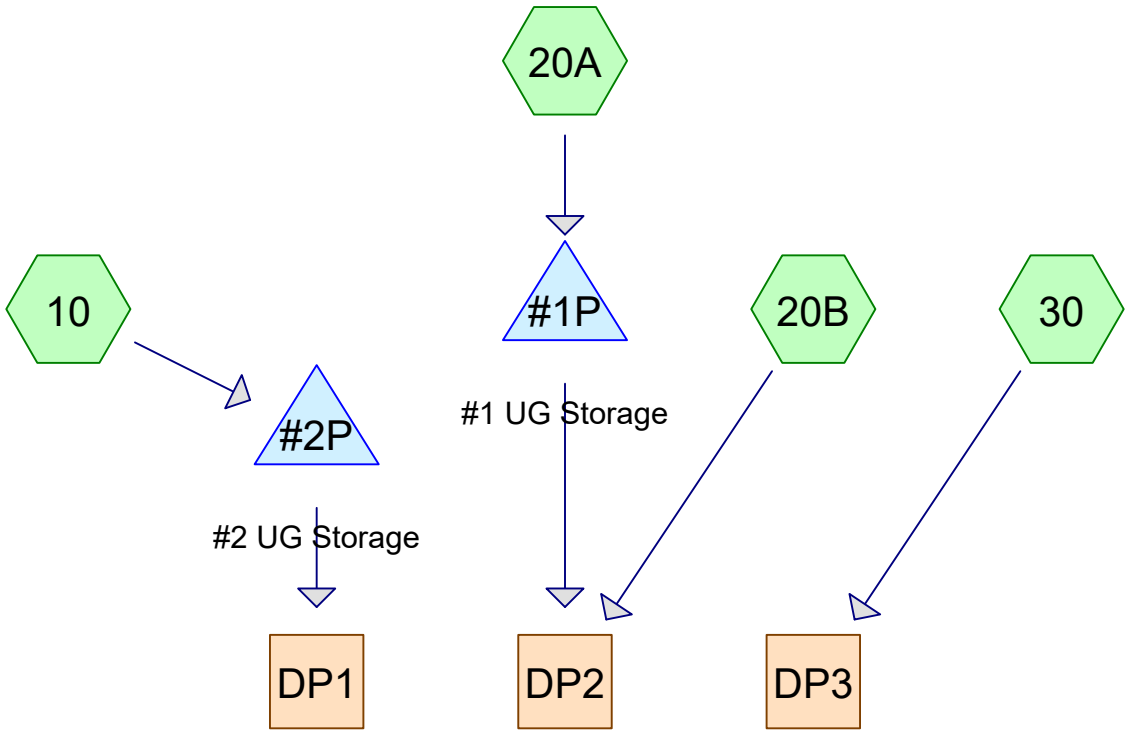
Project No. 190085001
Date 01/30/2023
Drawn By GN
Checked By MT

Figure FG06
Sheet 1 of 6

Project No. 190085001

LANGAN

Date: 1/4/2024 Time: 17:36 User: lmcmahon Style Table: Langan.stb Layout: Layout1 Document Code: FG06-190085001-0201-CS101-0101



Subcat Reach Pond Link

Routing Diagram for 2024-01-04 Post Development Watershed Analysis
Prepared by Langan Engineering, Printed 1/4/2024

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 yr-24hr	Type III 24-hr		Default	24.00	1	2.81	2
2	10 yr-24 hr	Type III 24-hr		Default	24.00	1	5.13	2
3	100 yr-24 hr	Type III 24-hr		Default	24.00	1	9.16	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.272	61	>75% Grass cover, Good, HSG B (10, 20A, 20B, 30)
2.159	98	Impervious (10, 20A, 30)
0.289	55	Landscape (20B)
0.349	58	Meadow, non-grazed, HSG B (20B)
4.069	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.621	HSG B	10, 20A, 20B, 30
0.000	HSG C	
0.000	HSG D	
2.448	Other	10, 20A, 20B, 30
4.069		**TOTAL AREA**

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	1.272	0.000	0.000	0.000	1.272	>75% Grass cover, Good	10, 20A, 20B, 30
0.000	0.000	0.000	0.000	2.159	2.159	Impervious	10, 20A, 30
0.000	0.000	0.000	0.000	0.289	0.289	Landscape	20B
0.000	0.349	0.000	0.000	0.000	0.349	Meadow, non-grazed	20B
0.000	**1.621**	**0.000**	**0.000**	**2.448**	**4.069**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	#1P	372.00	368.97	94.0	0.0322	0.013	0.0	15.0	0.0	
2	#2P	369.34	370.00	41.0	-0.0161	0.013	0.0	12.0	0.0	

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment10: Runoff Area=21,665 sf 49.10% Impervious Runoff Depth=1.05"
Flow Length=187' Slope=0.0100 '/' Tc=14.6 min CN=79 Runoff=0.45 cfs 0.044 af

Subcatchment20A: Runoff Area=109,414 sf 74.48% Impervious Runoff Depth=1.73"
Tc=6.0 min CN=89 Runoff=4.97 cfs 0.362 af

Subcatchment20B: Runoff Area=41,049 sf 0.00% Impervious Runoff Depth=0.22"
Flow Length=100' Slope=0.0650 '/' Tc=8.6 min CN=58 Runoff=0.08 cfs 0.017 af

Subcatchment30: Runoff Area=5,108 sf 37.67% Impervious Runoff Depth=0.84"
Tc=6.0 min CN=75 Runoff=0.11 cfs 0.008 af

Reach DP1: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach DP2: Inflow=0.08 cfs 0.017 af
Outflow=0.08 cfs 0.017 af

Reach DP3: Inflow=0.11 cfs 0.008 af
Outflow=0.11 cfs 0.008 af

Pond #1P: #1 UG Storage Peak Elev=370.91' Storage=2,637 cf Inflow=4.97 cfs 0.362 af
Discarded=1.62 cfs 0.362 af Primary=0.00 cfs 0.000 af Outflow=1.62 cfs 0.362 af

Pond #2P: #2 UG Storage Peak Elev=369.04' Storage=451 cf Inflow=0.45 cfs 0.044 af
Discarded=0.13 cfs 0.044 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.044 af

Total Runoff Area = 4.069 ac Runoff Volume = 0.431 af Average Runoff Depth = 1.27"
46.93% Pervious = 1.909 ac 53.07% Impervious = 2.159 ac

Summary for Subcatchment 10:

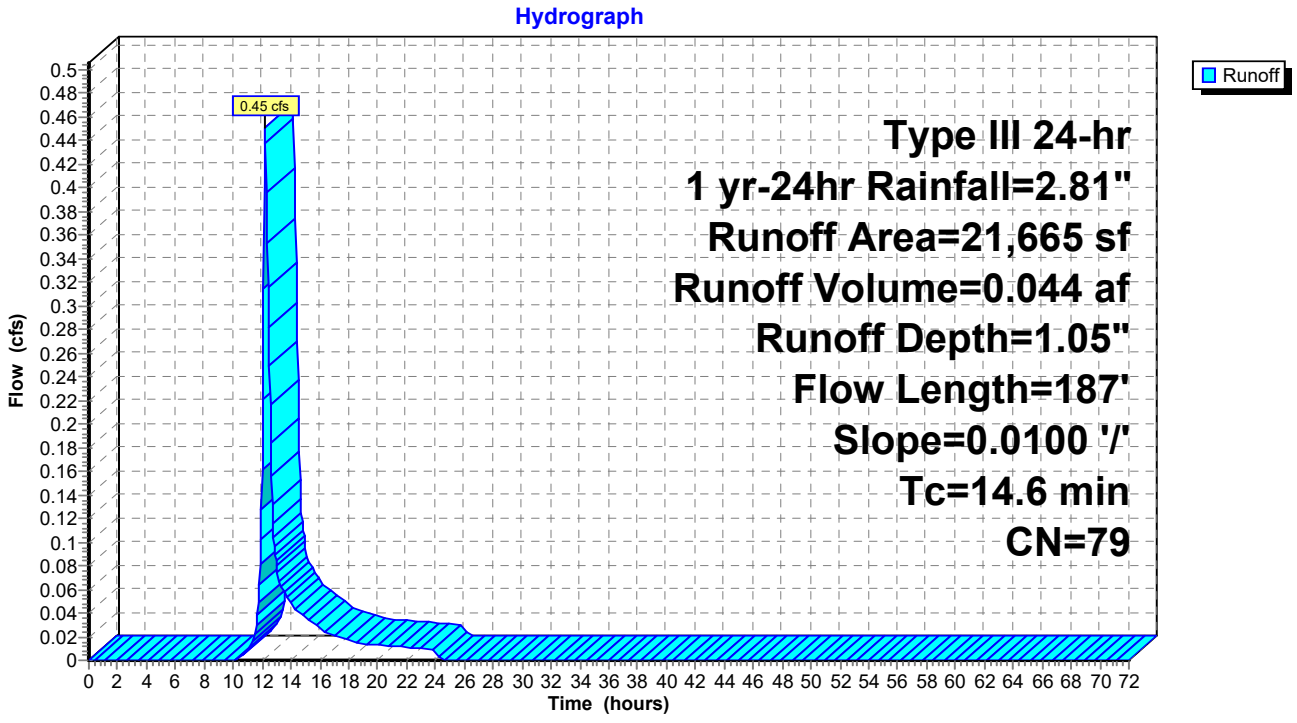
Runoff = 0.45 cfs @ 12.21 hrs, Volume= 0.044 af, Depth= 1.05"
Routed to Pond #2P : #2 UG Storage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (sf)	CN	Description
	11,027	61	>75% Grass cover, Good, HSG B
*	10,638	98	Impervious
	21,665	79	Weighted Average
	11,027		50.90% Pervious Area
	10,638		49.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0100	0.13		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.43"
2.1	87	0.0100	0.70		**Shallow Concentrated Flow, b-c** Short Grass Pasture Kv= 7.0 fps
14.6	187	Total			

Subcatchment 10:



Summary for Subcatchment 20A:

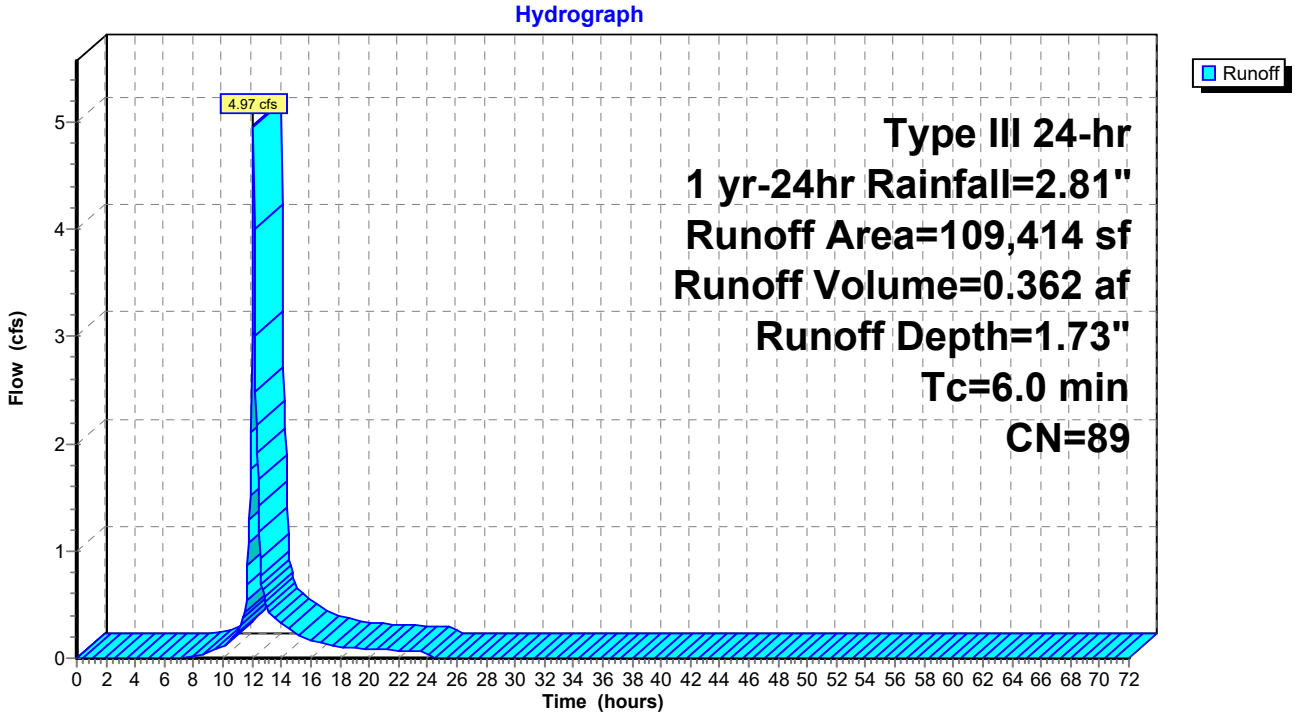
Runoff = 4.97 cfs @ 12.09 hrs, Volume= 0.362 af, Depth= 1.73"
Routed to Pond #1P : #1 UG Storage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (sf)	CN	Description
*	81,497	98	Impervious
	27,917	61	>75% Grass cover, Good, HSG B
	109,414	89	Weighted Average
	27,917		25.52% Pervious Area
	81,497		74.48% Impervious Area

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

Subcatchment 20A:



Summary for Subcatchment 20B:

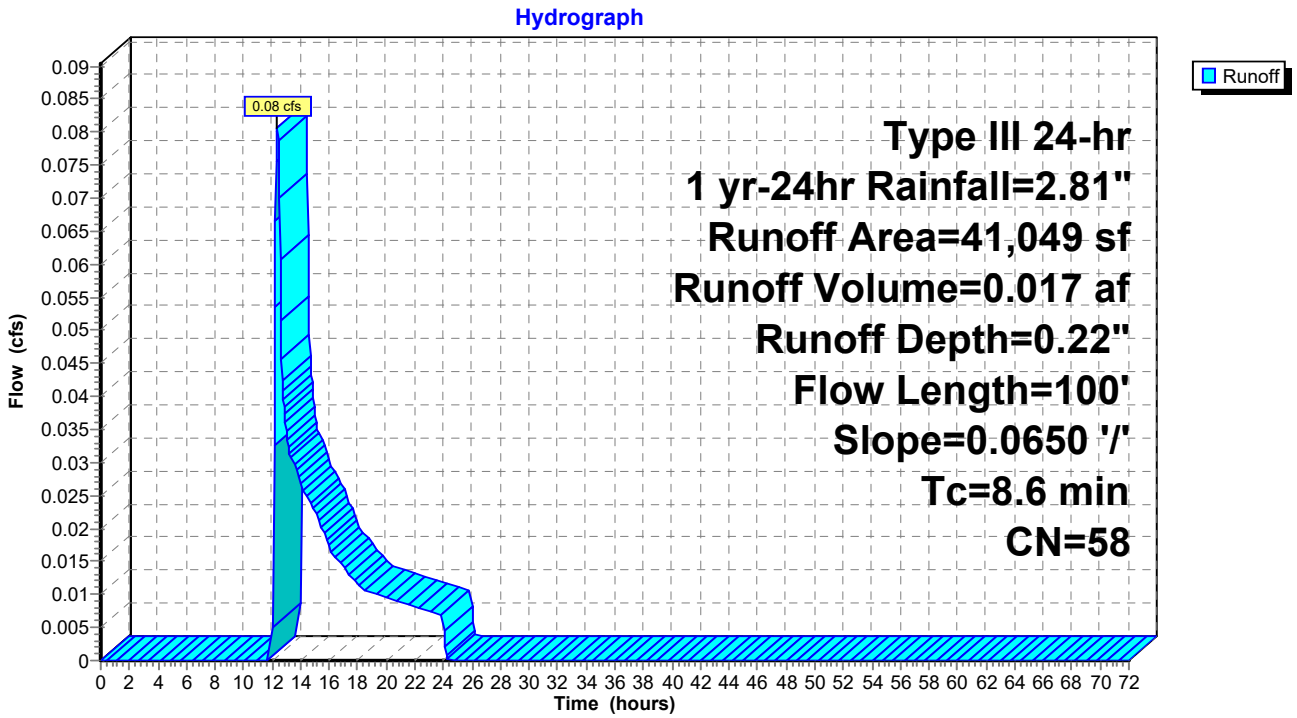
Runoff = 0.08 cfs @ 12.38 hrs, Volume= 0.017 af, Depth= 0.22"
Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (sf)	CN	Description
	13,276	61	>75% Grass cover, Good, HSG B
*	12,578	55	Landscape
	15,195	58	Meadow, non-grazed, HSG B
	41,049	58	Weighted Average
	41,049		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0650	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.43"

Subcatchment 20B:



Summary for Subcatchment 30:

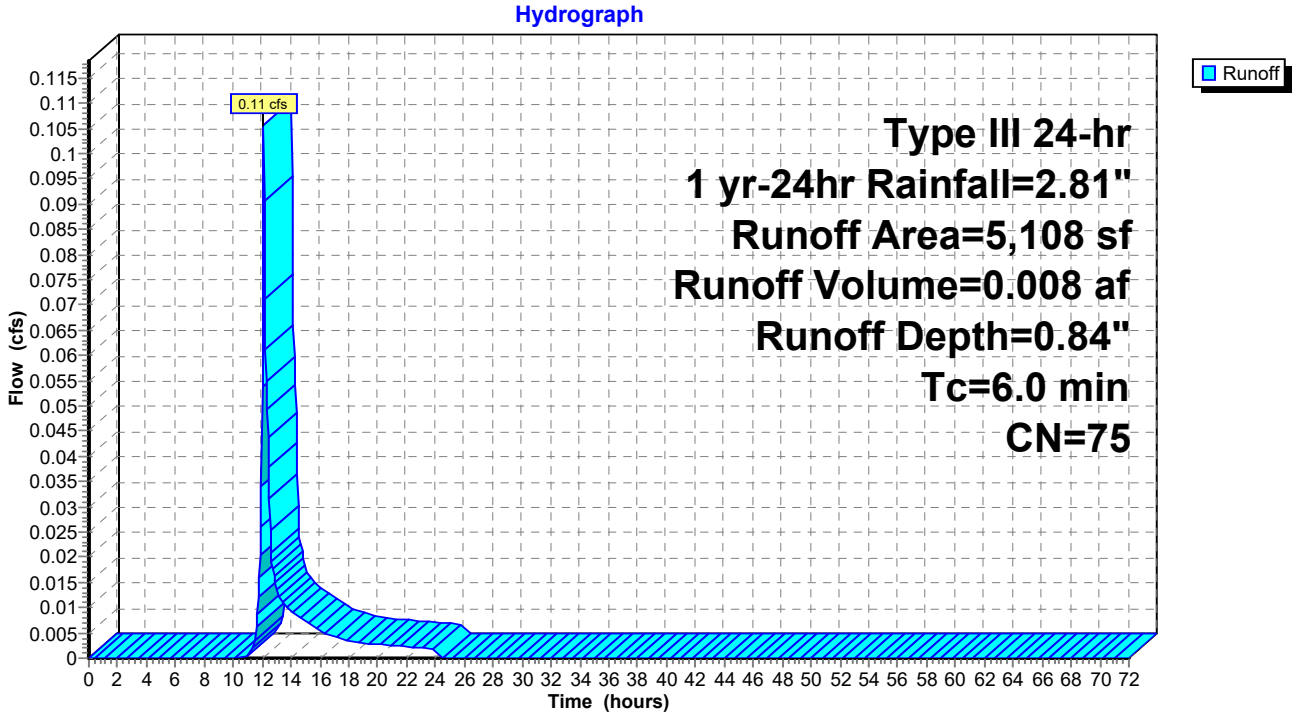
Runoff = 0.11 cfs @ 12.10 hrs, Volume= 0.008 af, Depth= 0.84"
Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 yr-24hr Rainfall=2.81"

	Area (sf)	CN	Description
*	1,924	98	Impervious
	3,184	61	>75% Grass cover, Good, HSG B
	5,108	75	Weighted Average
	3,184		62.33% Pervious Area
	1,924		37.67% Impervious Area

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

Subcatchment 30:



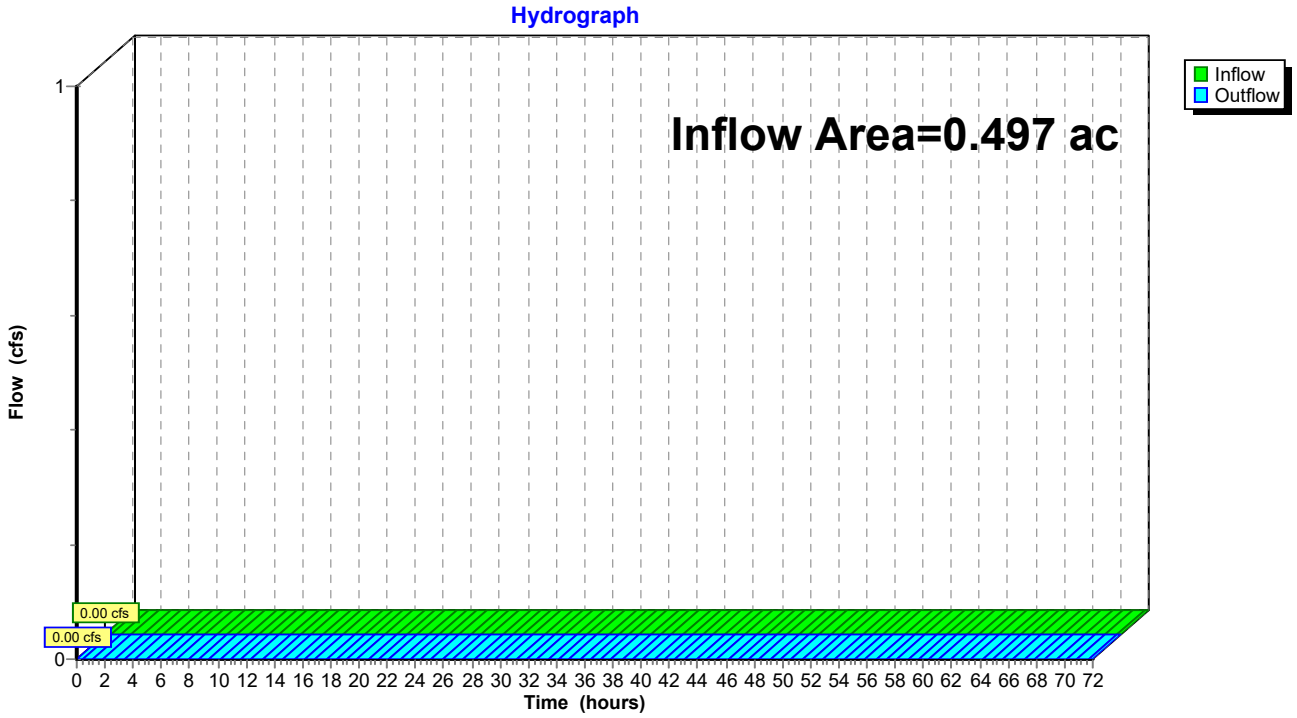
Summary for Reach DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.497 ac, 49.10% Impervious, Inflow Depth = 0.00" for 1 yr-24hr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

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

Reach DP1:



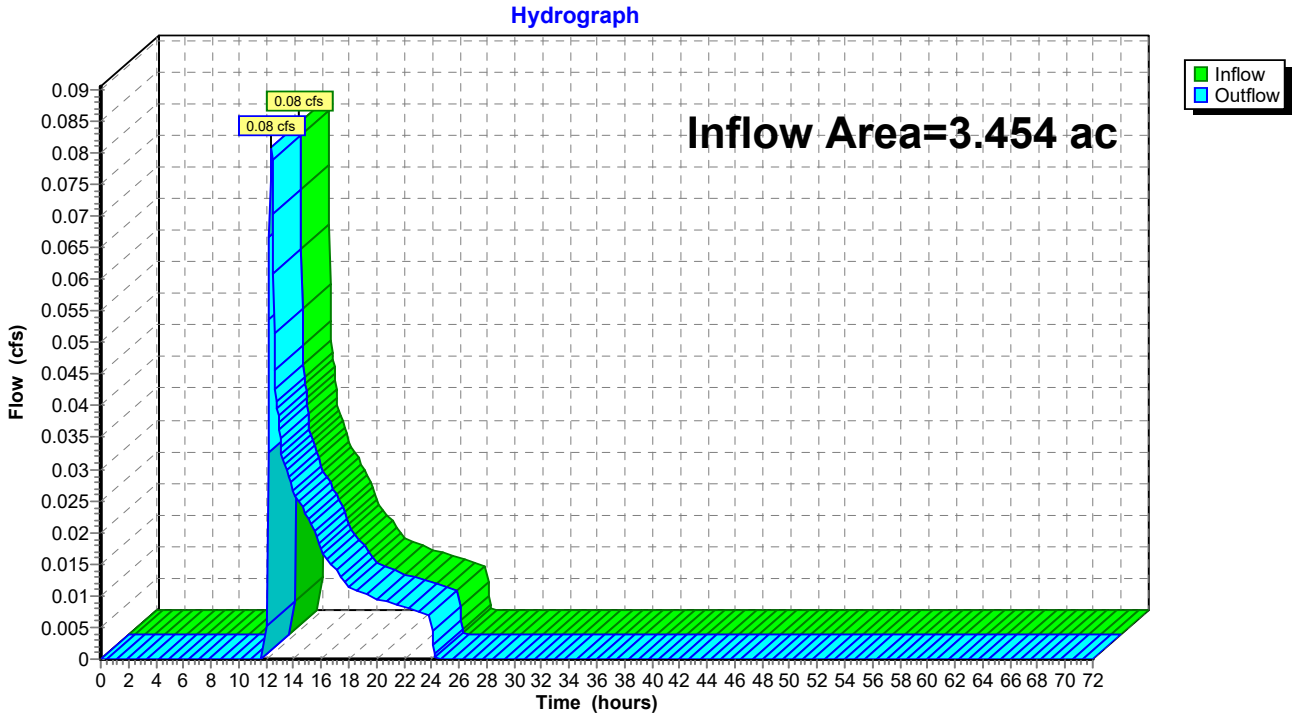
Summary for Reach DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.454 ac, 54.16% Impervious, Inflow Depth = 0.06" for 1 yr-24hr event
Inflow = 0.08 cfs @ 12.38 hrs, Volume= 0.017 af
Outflow = 0.08 cfs @ 12.38 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

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

Reach DP2:



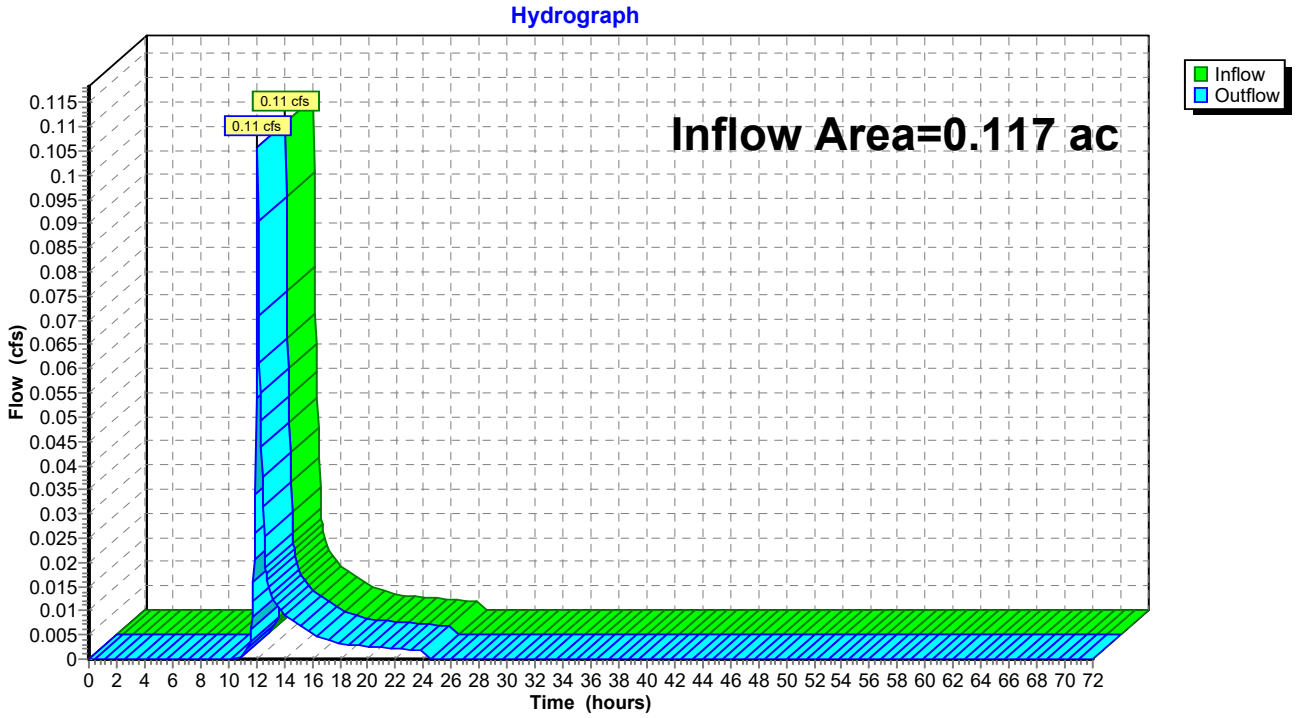
Summary for Reach DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.117 ac, 37.67% Impervious, Inflow Depth = 0.84" for 1 yr-24hr event
Inflow = 0.11 cfs @ 12.10 hrs, Volume= 0.008 af
Outflow = 0.11 cfs @ 12.10 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

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

Reach DP3:



Summary for Pond #1P: #1 UG Storage

Inflow Area = 2.512 ac, 74.48% Impervious, Inflow Depth = 1.73" for 1 yr-24hr event
Inflow = 4.97 cfs @ 12.09 hrs, Volume= 0.362 af
Outflow = 1.62 cfs @ 12.41 hrs, Volume= 0.362 af, Atten= 67%, Lag= 19.1 min
Discarded = 1.62 cfs @ 12.41 hrs, Volume= 0.362 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 370.91' @ 12.41 hrs Surf.Area= 7,502 sf Storage= 2,637 cf

Plug-Flow detention time= 8.5 min calculated for 0.362 af (100% of inflow)
Center-of-Mass det. time= 8.5 min (824.8 - 816.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	370.25'	3,001 cf	**47.44'W x 158.14'L x 4.00'H Field A** 29,999 cf Overall - 22,497 cf Embedded = 7,502 cf x 40.0% Voids
#2A	370.75'	21,822 cf	**ACO StormBrixx SD 1** x 960 Inside #1 Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf 960 Chambers in 24 Rows
		24,823 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**15.0" Round Culvert** L= 94.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 368.97' S= 0.0322 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Discarded	370.25'	**9.000 in/hr Infiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=1.62 cfs @ 12.41 hrs HW=370.91' (Free Discharge)
↑**2=Infiltration** (Exfiltration Controls 1.62 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=370.25' TW=374.50' (Fixed TW Elev= 374.50')
↑**1=Culvert** (Controls 0.00 cfs)

Pond #1P: #1 UG Storage - Chamber Wizard Field A

Chamber Model = ACO StormBrixx SD 1 (ACO StormBrixx® SD)
Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf
Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf

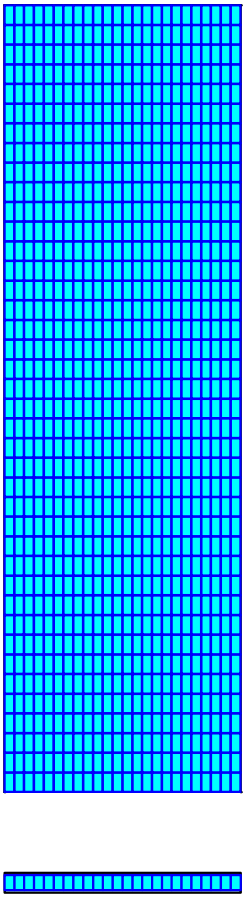
40 Chambers/Row x 3.95' Long = 158.14' Row Length
24 Rows x 23.7" Wide = 47.44' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

960 Chambers x 22.7 cf = 21,821.7 cf Chamber Storage
960 Chambers x 23.4 cf = 22,496.6 cf Displacement

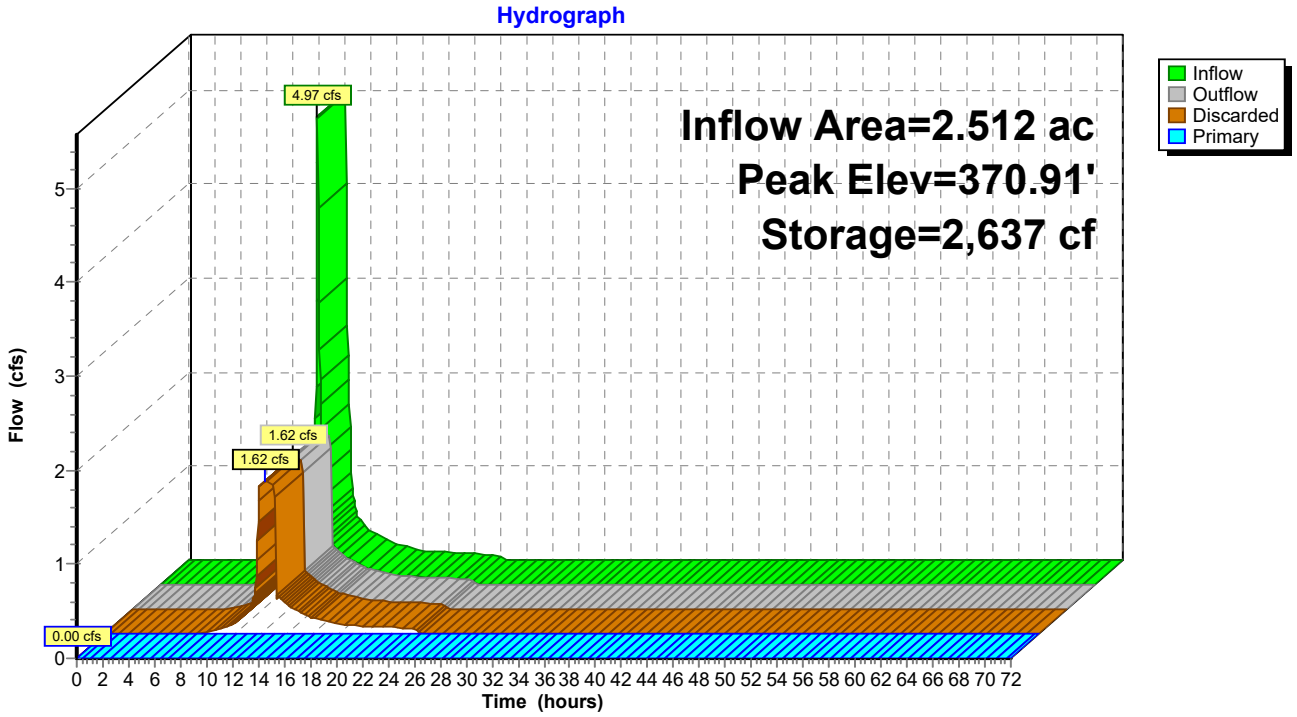
29,998.7 cf Field - 22,496.6 cf Chambers = 7,502.1 cf Stone x 40.0% Voids = 3,000.9 cf Stone Storage

Chamber Storage + Stone Storage = 24,822.5 cf = 0.570 af
Overall Storage Efficiency = 82.7%
Overall System Size = 158.14' x 47.44' x 4.00'

960 Chambers
1,111.1 cy Field
277.9 cy Stone



Pond #1P: #1 UG Storage



Summary for Pond #2P: #2 UG Storage

Inflow Area = 0.497 ac, 49.10% Impervious, Inflow Depth = 1.05" for 1 yr-24hr event
Inflow = 0.45 cfs @ 12.21 hrs, Volume= 0.044 af
Outflow = 0.13 cfs @ 12.71 hrs, Volume= 0.044 af, Atten= 72%, Lag= 29.9 min
Discarded = 0.13 cfs @ 12.71 hrs, Volume= 0.044 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 369.04' @ 12.71 hrs Surf.Area= 625 sf Storage= 451 cf

Plug-Flow detention time= 22.8 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 22.7 min (883.9 - 861.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	368.00'	250 cf	**15.81'W x 39.53'L x 4.00'H Field A** 2,500 cf Overall - 1,875 cf Embedded = 625 cf x 40.0% Voids
#2A	368.50'	1,818 cf	**ACO StormBrixx SD 1** x 80 Inside #1 Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf 80 Chambers in 8 Rows
		2,069 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	370.00'	**12.0" Round Culvert** L= 41.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 369.34' / 370.00' S= -0.0161 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	368.00'	**7.500 in/hr Infiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.13 cfs @ 12.71 hrs HW=369.04' (Free Discharge)
↑**2=Infiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=368.00' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)

Pond #2P: #2 UG Storage - Chamber Wizard Field A

Chamber Model = ACO StormBrixx SD 1 (ACO StormBrixx® SD)
Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf
Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf

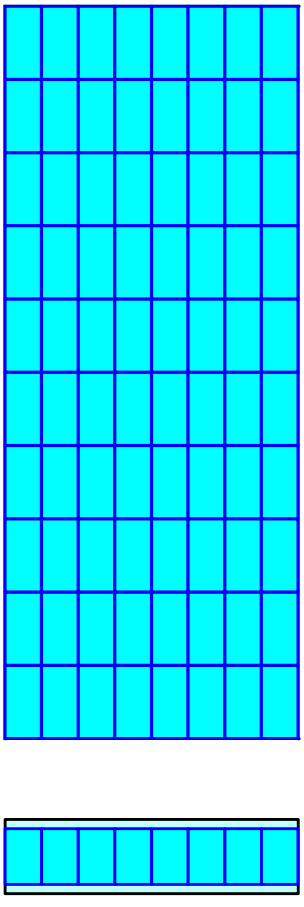
10 Chambers/Row x 3.95' Long = 39.53' Row Length
8 Rows x 23.7" Wide = 15.81' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

80 Chambers x 22.7 cf = 1,818.5 cf Chamber Storage
80 Chambers x 23.4 cf = 1,874.7 cf Displacement

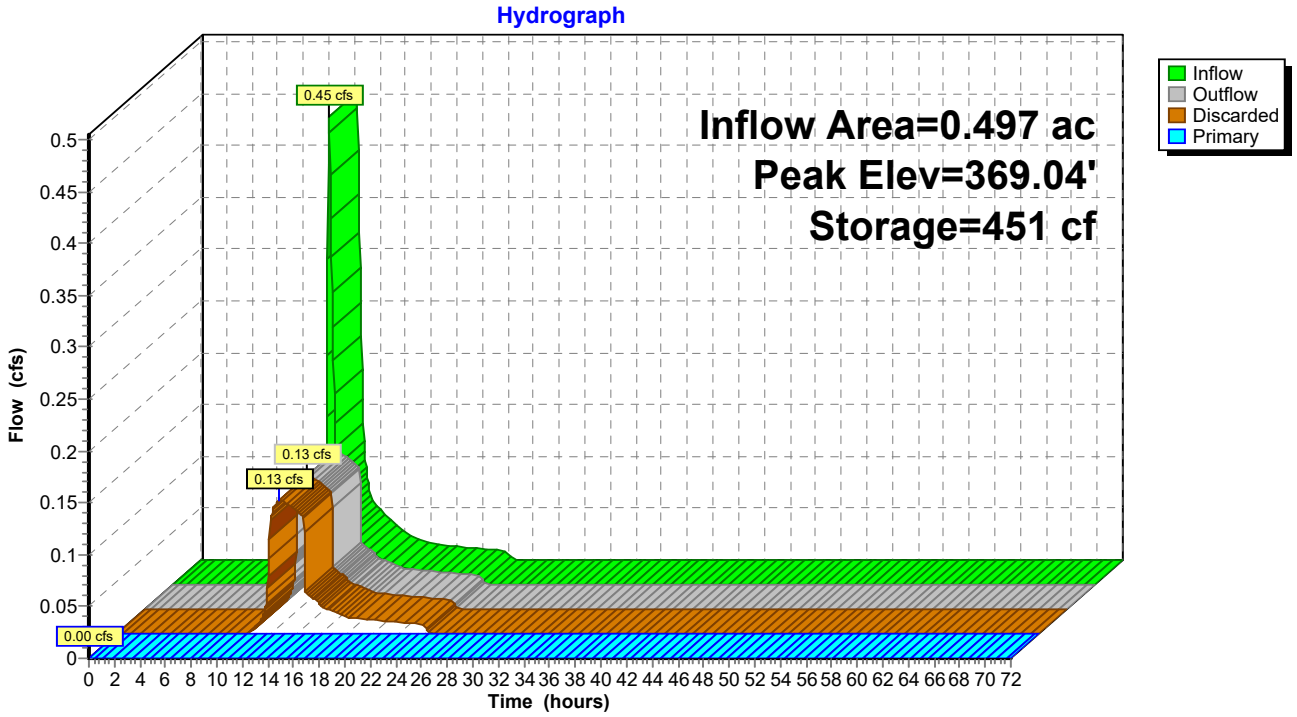
2,499.9 cf Field - 1,874.7 cf Chambers = 625.2 cf Stone x 40.0% Voids = 250.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,068.5 cf = 0.047 af
Overall Storage Efficiency = 82.7%
Overall System Size = 39.53' x 15.81' x 4.00'

80 Chambers
92.6 cy Field
23.2 cy Stone



Pond #2P: #2 UG Storage



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment10: Runoff Area=21,665 sf 49.10% Impervious Runoff Depth=2.91"
Flow Length=187' Slope=0.0100 '/' Tc=14.6 min CN=79 Runoff=1.29 cfs 0.121 af

Subcatchment20A: Runoff Area=109,414 sf 74.48% Impervious Runoff Depth=3.90"
Tc=6.0 min CN=89 Runoff=10.88 cfs 0.816 af

Subcatchment20B: Runoff Area=41,049 sf 0.00% Impervious Runoff Depth=1.24"
Flow Length=100' Slope=0.0650 '/' Tc=8.6 min CN=58 Runoff=1.07 cfs 0.097 af

Subcatchment30: Runoff Area=5,108 sf 37.67% Impervious Runoff Depth=2.56"
Tc=6.0 min CN=75 Runoff=0.34 cfs 0.025 af

Reach DP1: Inflow=0.66 cfs 0.023 af
Outflow=0.66 cfs 0.023 af

Reach DP2: Inflow=1.07 cfs 0.097 af
Outflow=1.07 cfs 0.097 af

Reach DP3: Inflow=0.34 cfs 0.025 af
Outflow=0.34 cfs 0.025 af

Pond #1P: #1 UG Storage Peak Elev=372.00' Storage=10,567 cf Inflow=10.88 cfs 0.816 af
Discarded=1.71 cfs 0.816 af Primary=0.00 cfs 0.000 af Outflow=1.71 cfs 0.816 af

Pond #2P: #2 UG Storage Peak Elev=370.47' Storage=1,317 cf Inflow=1.29 cfs 0.121 af
Discarded=0.16 cfs 0.097 af Primary=0.66 cfs 0.023 af Outflow=0.81 cfs 0.121 af

Total Runoff Area = 4.069 ac Runoff Volume = 1.059 af Average Runoff Depth = 3.12"
46.93% Pervious = 1.909 ac 53.07% Impervious = 2.159 ac

Summary for Subcatchment 10:

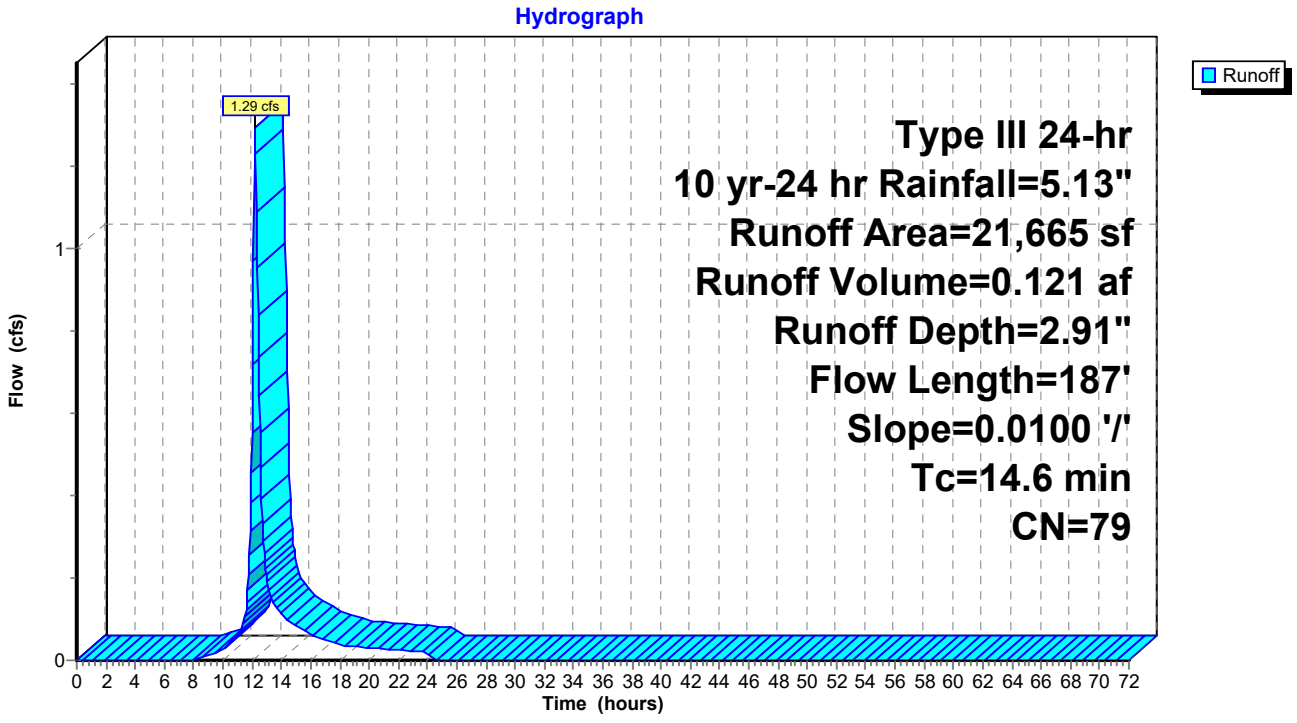
Runoff = 1.29 cfs @ 12.20 hrs, Volume= 0.121 af, Depth= 2.91"
Routed to Pond #2P : #2 UG Storage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (sf)	CN	Description
	11,027	61	>75% Grass cover, Good, HSG B
*	10,638	98	Impervious
	21,665	79	Weighted Average
	11,027		50.90% Pervious Area
	10,638		49.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0100	0.13		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.43"
2.1	87	0.0100	0.70		**Shallow Concentrated Flow, b-c** Short Grass Pasture Kv= 7.0 fps
14.6	187	Total			

Subcatchment 10:



Summary for Subcatchment 20A:

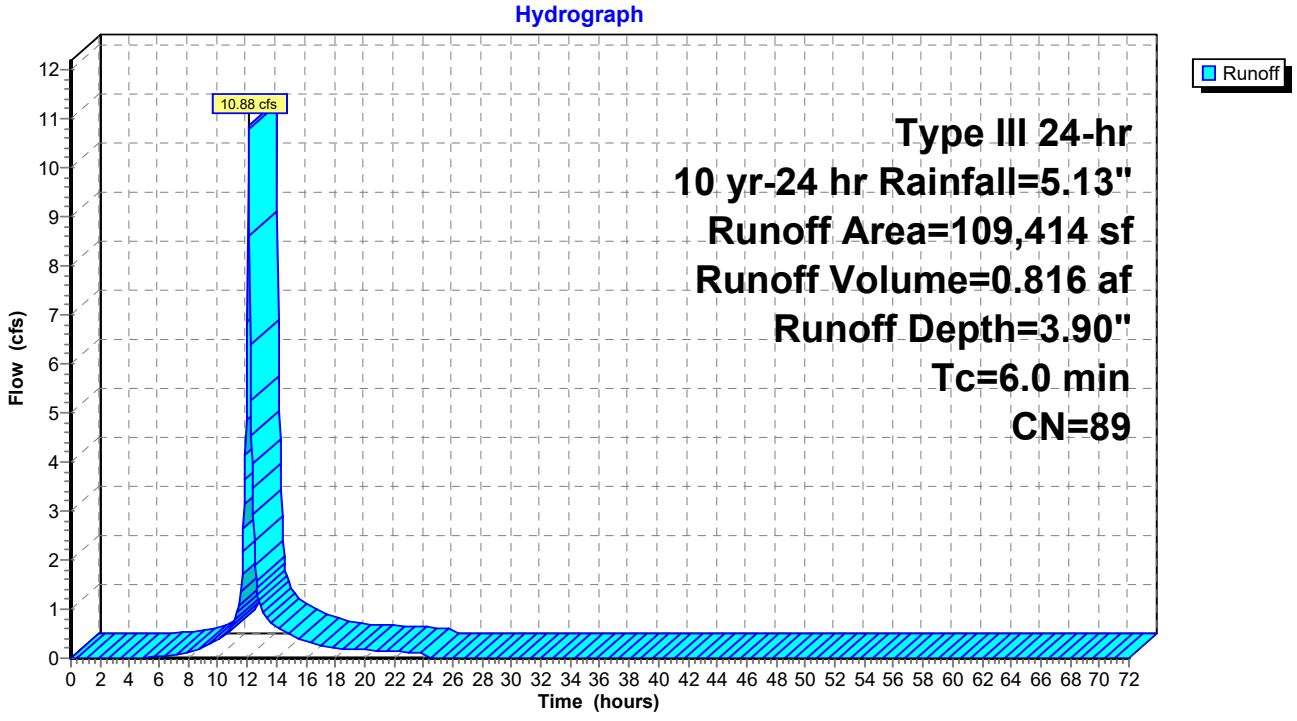
Runoff = 10.88 cfs @ 12.09 hrs, Volume= 0.816 af, Depth= 3.90"
Routed to Pond #1P : #1 UG Storage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (sf)	CN	Description
*	81,497	98	Impervious
	27,917	61	>75% Grass cover, Good, HSG B
	109,414	89	Weighted Average
	27,917		25.52% Pervious Area
	81,497		74.48% Impervious Area

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

Subcatchment 20A:



Summary for Subcatchment 20B:

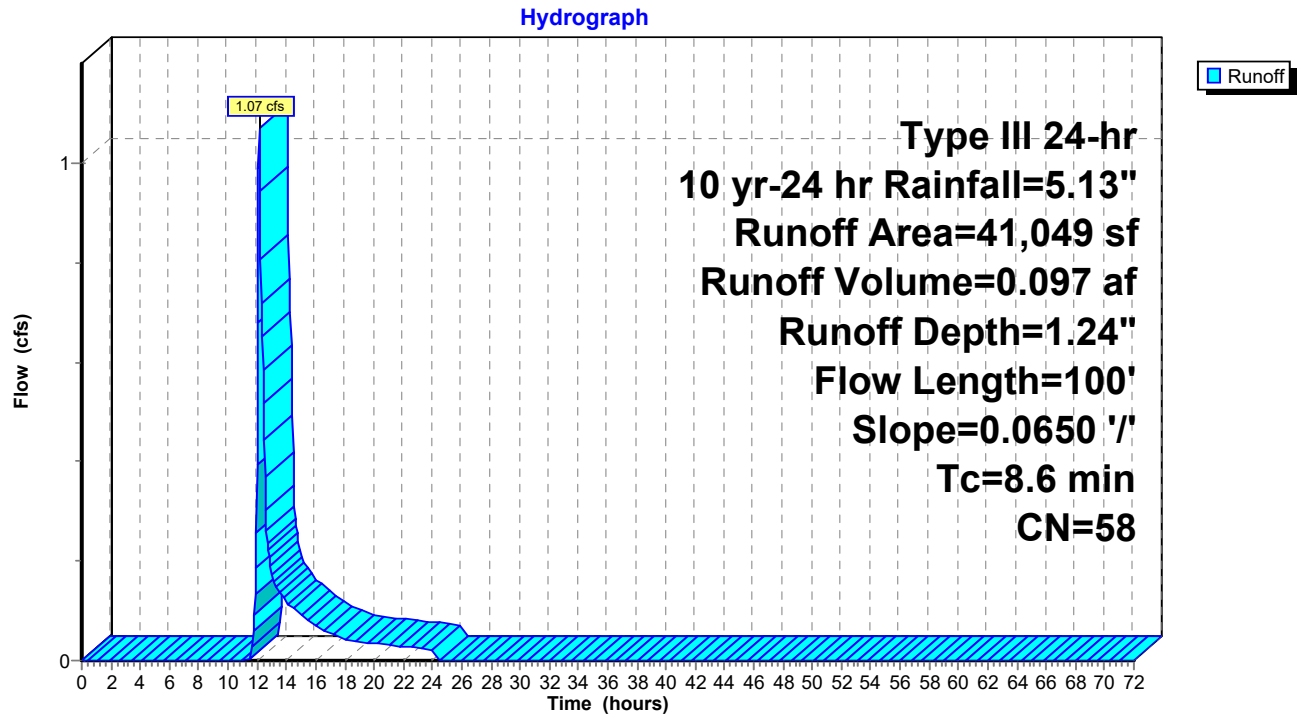
Runoff = 1.07 cfs @ 12.14 hrs, Volume= 0.097 af, Depth= 1.24"
Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (sf)	CN	Description
	13,276	61	>75% Grass cover, Good, HSG B
*	12,578	55	Landscape
	15,195	58	Meadow, non-grazed, HSG B
	41,049	58	Weighted Average
	41,049		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0650	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.43"

Subcatchment 20B:



Summary for Subcatchment 30:

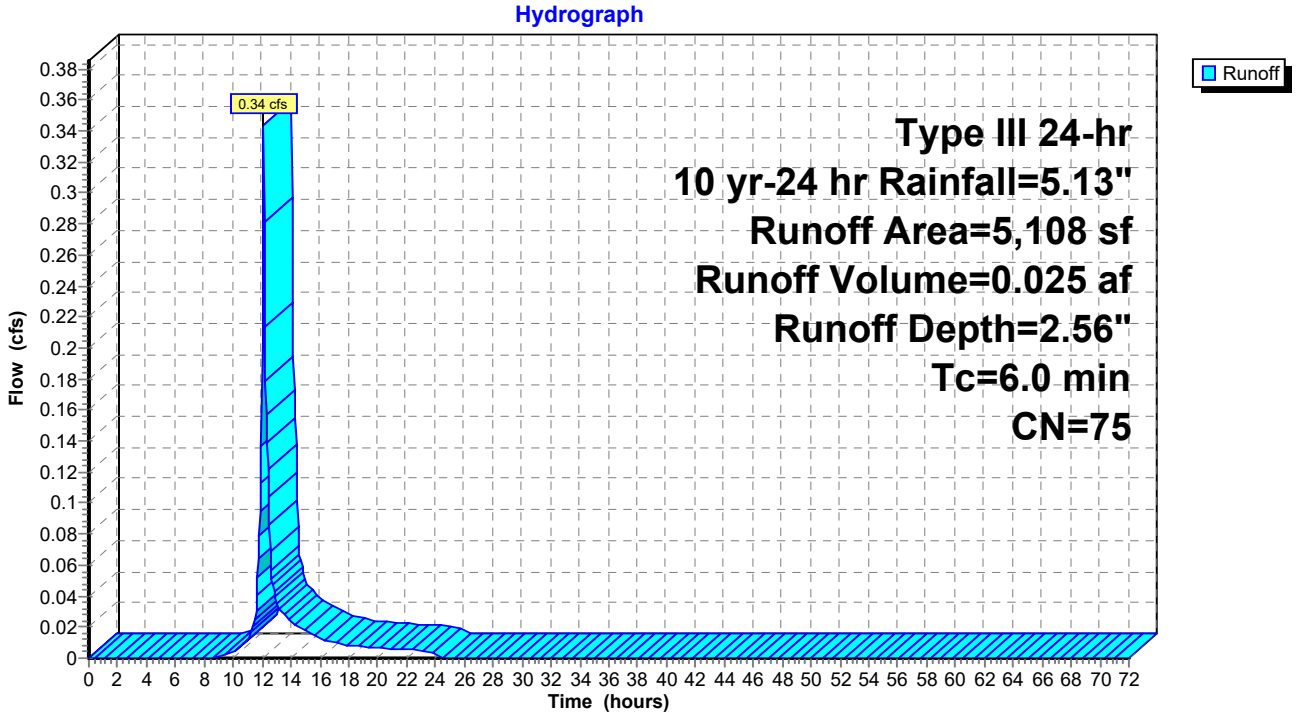
Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Depth= 2.56"
Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr-24 hr Rainfall=5.13"

	Area (sf)	CN	Description
*	1,924	98	Impervious
	3,184	61	>75% Grass cover, Good, HSG B
	5,108	75	Weighted Average
	3,184		62.33% Pervious Area
	1,924		37.67% Impervious Area

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

Subcatchment 30:



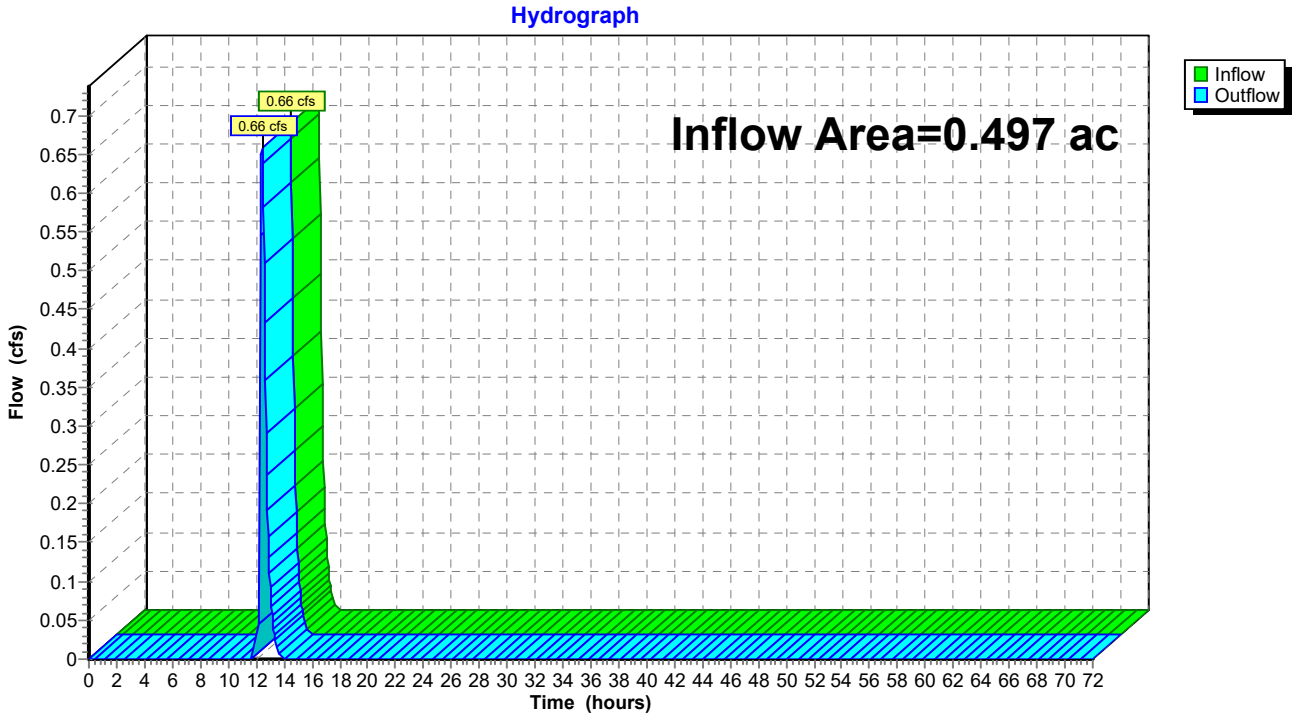
Summary for Reach DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.497 ac, 49.10% Impervious, Inflow Depth = 0.56" for 10 yr-24 hr event
Inflow = 0.66 cfs @ 12.42 hrs, Volume= 0.023 af
Outflow = 0.66 cfs @ 12.42 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

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

Reach DP1:



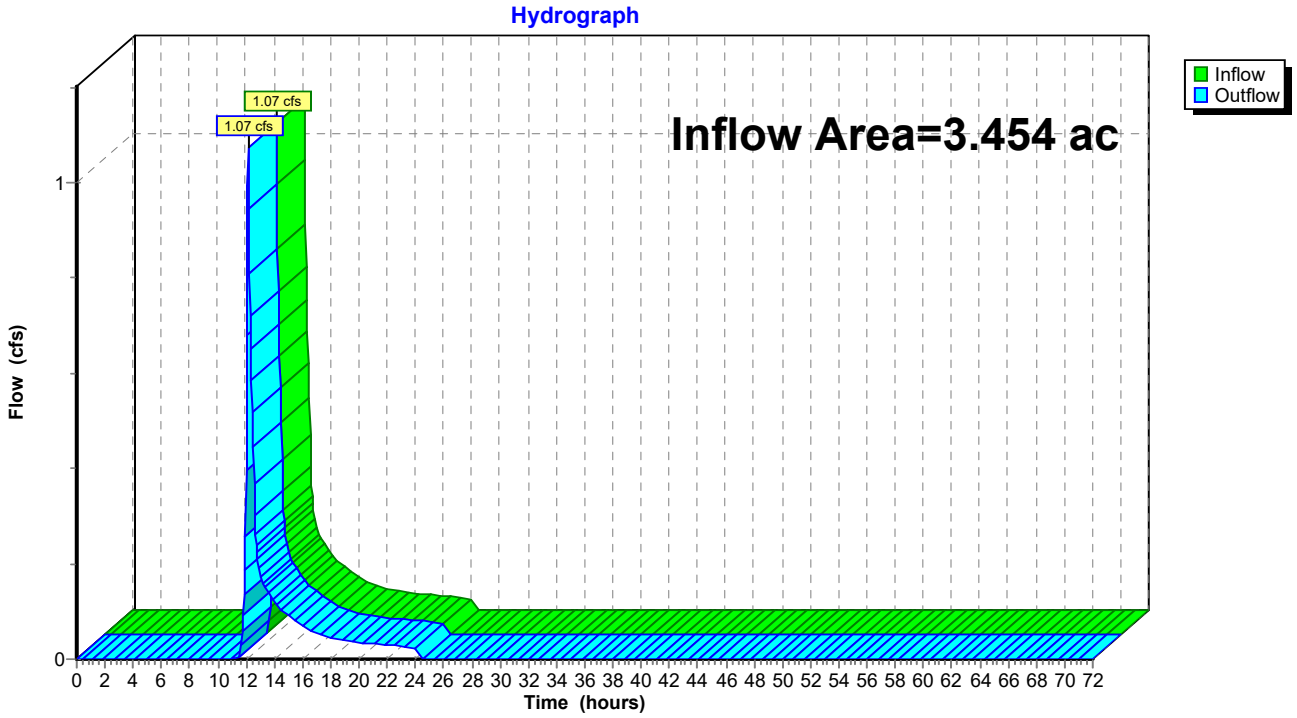
Summary for Reach DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.454 ac, 54.16% Impervious, Inflow Depth = 0.34" for 10 yr-24 hr event
Inflow = 1.07 cfs @ 12.14 hrs, Volume= 0.097 af
Outflow = 1.07 cfs @ 12.14 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

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

Reach DP2:



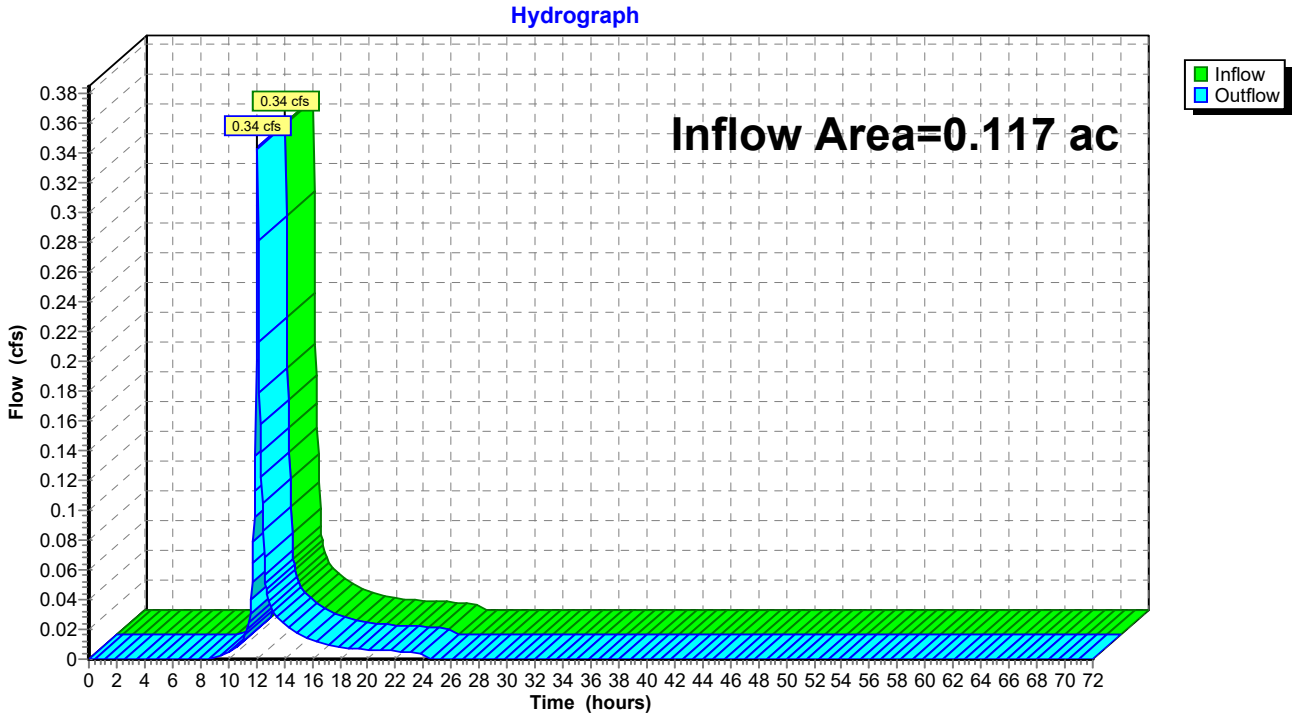
Summary for Reach DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.117 ac, 37.67% Impervious, Inflow Depth = 2.56" for 10 yr-24 hr event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

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

Reach DP3:



Summary for Pond #1P: #1 UG Storage

Inflow Area = 2.512 ac, 74.48% Impervious, Inflow Depth = 3.90" for 10 yr-24 hr event
Inflow = 10.88 cfs @ 12.09 hrs, Volume= 0.816 af
Outflow = 1.71 cfs @ 12.58 hrs, Volume= 0.816 af, Atten= 84%, Lag= 29.5 min
Discarded = 1.71 cfs @ 12.58 hrs, Volume= 0.816 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 372.00' @ 12.58 hrs Surf.Area= 7,502 sf Storage= 10,567 cf

Plug-Flow detention time= 39.6 min calculated for 0.815 af (100% of inflow)
Center-of-Mass det. time= 39.6 min (833.1 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	370.25'	3,001 cf	**47.44'W x 158.14'L x 4.00'H Field A** 29,999 cf Overall - 22,497 cf Embedded = 7,502 cf x 40.0% Voids
#2A	370.75'	21,822 cf	**ACO StormBrixx SD 1** x 960 Inside #1 Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf 960 Chambers in 24 Rows
		24,823 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**15.0" Round Culvert** L= 94.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 368.97' S= 0.0322 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Discarded	370.25'	**9.000 in/hr Infiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=1.71 cfs @ 12.58 hrs HW=372.00' (Free Discharge)
↑**2=Infiltration** (Exfiltration Controls 1.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=370.25' TW=374.50' (Fixed TW Elev= 374.50')
↑**1=Culvert** (Controls 0.00 cfs)

Pond #1P: #1 UG Storage - Chamber Wizard Field A

Chamber Model = ACO StormBrixx SD 1 (ACO StormBrixx® SD)
Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf
Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf

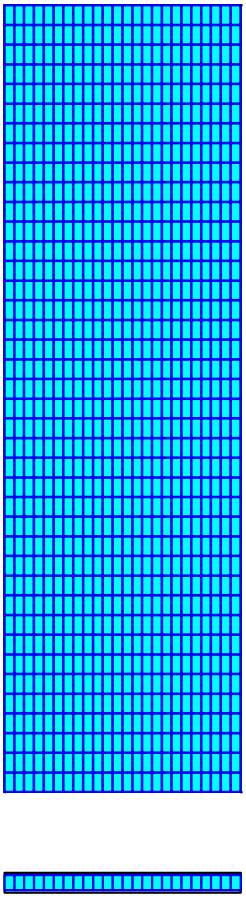
40 Chambers/Row x 3.95' Long = 158.14' Row Length
24 Rows x 23.7" Wide = 47.44' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

960 Chambers x 22.7 cf = 21,821.7 cf Chamber Storage
960 Chambers x 23.4 cf = 22,496.6 cf Displacement

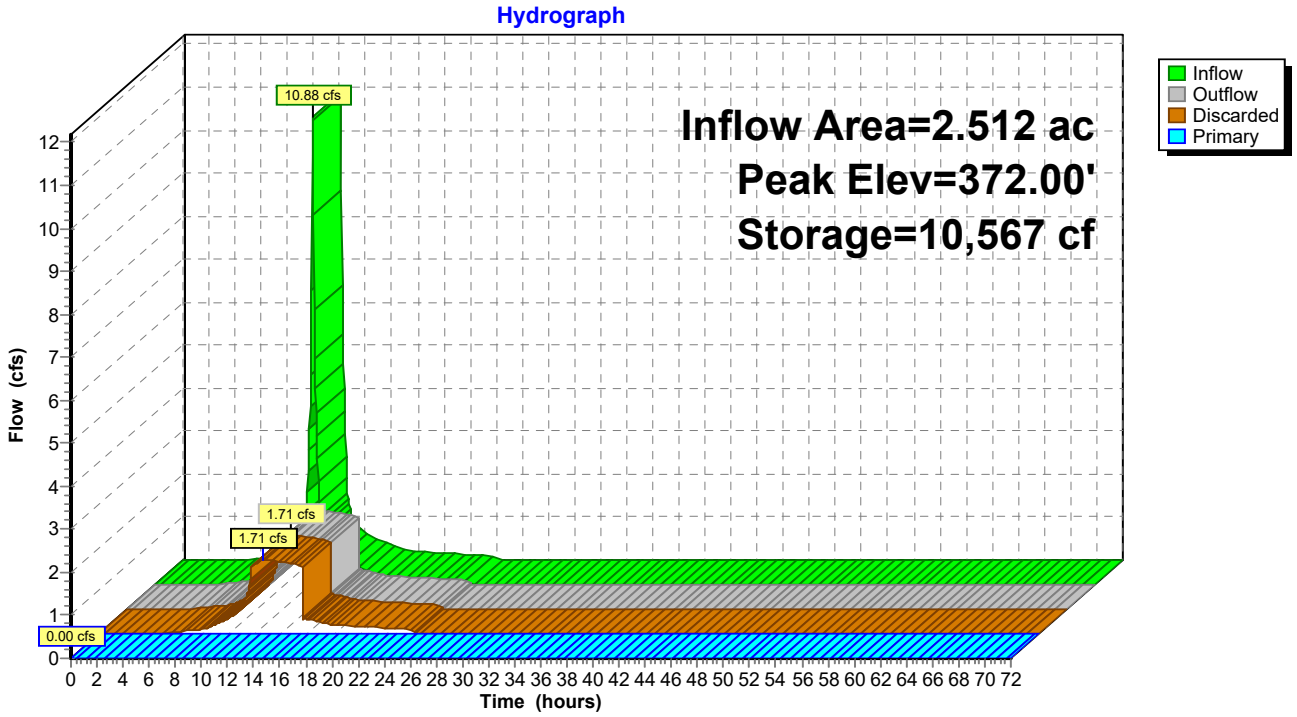
29,998.7 cf Field - 22,496.6 cf Chambers = 7,502.1 cf Stone x 40.0% Voids = 3,000.9 cf Stone Storage

Chamber Storage + Stone Storage = 24,822.5 cf = 0.570 af
Overall Storage Efficiency = 82.7%
Overall System Size = 158.14' x 47.44' x 4.00'

960 Chambers
1,111.1 cy Field
277.9 cy Stone



Pond #1P: #1 UG Storage



Summary for Pond #2P: #2 UG Storage

Inflow Area = 0.497 ac, 49.10% Impervious, Inflow Depth = 2.91" for 10 yr-24 hr event
Inflow = 1.29 cfs @ 12.20 hrs, Volume= 0.121 af
Outflow = 0.81 cfs @ 12.42 hrs, Volume= 0.121 af, Atten= 37%, Lag= 13.0 min
Discarded = 0.16 cfs @ 12.42 hrs, Volume= 0.097 af
Primary = 0.66 cfs @ 12.42 hrs, Volume= 0.023 af
Routed to Reach DP1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 370.47' @ 12.42 hrs Surf.Area= 625 sf Storage= 1,317 cf

Plug-Flow detention time= 52.7 min calculated for 0.121 af (100% of inflow)
Center-of-Mass det. time= 52.7 min (884.0 - 831.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	368.00'	250 cf	**15.81'W x 39.53'L x 4.00'H Field A** 2,500 cf Overall - 1,875 cf Embedded = 625 cf x 40.0% Voids
#2A	368.50'	1,818 cf	**ACO StormBrixx SD 1** x 80 Inside #1 Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf 80 Chambers in 8 Rows
		2,069 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	370.00'	**12.0" Round Culvert** L= 41.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 369.34' / 370.00' S= -0.0161 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	368.00'	**7.500 in/hr Infiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.16 cfs @ 12.42 hrs HW=370.46' (Free Discharge)
↑**2=Infiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.64 cfs @ 12.42 hrs HW=370.46' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.64 cfs @ 1.82 fps)

Pond #2P: #2 UG Storage - Chamber Wizard Field A

Chamber Model = ACO StormBrixx SD 1 (ACO StormBrixx® SD)
Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf
Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf

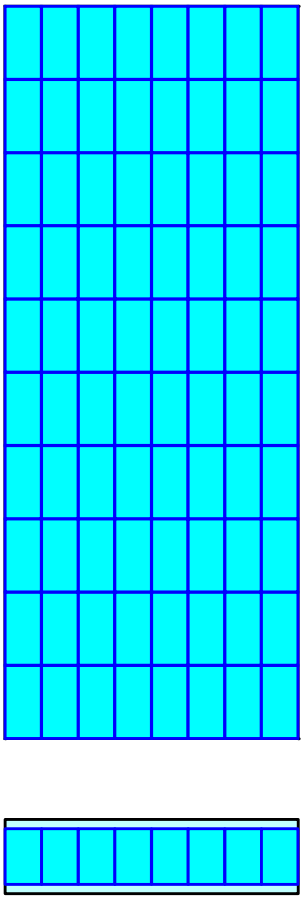
10 Chambers/Row x 3.95' Long = 39.53' Row Length
8 Rows x 23.7" Wide = 15.81' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

80 Chambers x 22.7 cf = 1,818.5 cf Chamber Storage
80 Chambers x 23.4 cf = 1,874.7 cf Displacement

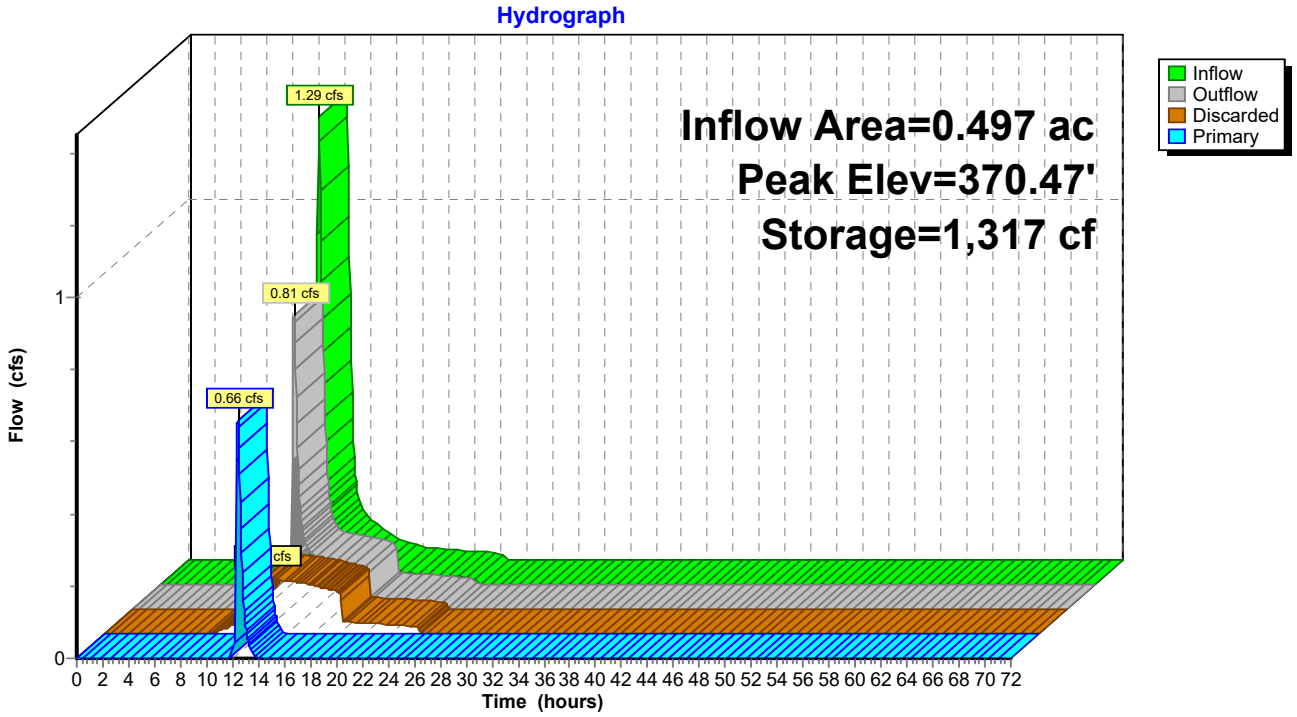
2,499.9 cf Field - 1,874.7 cf Chambers = 625.2 cf Stone x 40.0% Voids = 250.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,068.5 cf = 0.047 af
Overall Storage Efficiency = 82.7%
Overall System Size = 39.53' x 15.81' x 4.00'

80 Chambers
92.6 cy Field
23.2 cy Stone



Pond #2P: #2 UG Storage



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment10: Runoff Area=21,665 sf 49.10% Impervious Runoff Depth=6.60"
Flow Length=187' Slope=0.0100 '/' Tc=14.6 min CN=79 Runoff=2.88 cfs 0.273 af

Subcatchment20A: Runoff Area=109,414 sf 74.48% Impervious Runoff Depth=7.83"
Tc=6.0 min CN=89 Runoff=21.01 cfs 1.638 af

Subcatchment20B: Runoff Area=41,049 sf 0.00% Impervious Runoff Depth=3.98"
Flow Length=100' Slope=0.0650 '/' Tc=8.6 min CN=58 Runoff=3.88 cfs 0.312 af

Subcatchment30: Runoff Area=5,108 sf 37.67% Impervious Runoff Depth=6.10"
Tc=6.0 min CN=75 Runoff=0.81 cfs 0.060 af

Reach DP1: Inflow=2.43 cfs 0.123 af
Outflow=2.43 cfs 0.123 af

Reach DP2: Inflow=5.39 cfs 0.360 af
Outflow=5.39 cfs 0.360 af

Reach DP3: Inflow=0.81 cfs 0.060 af
Outflow=0.81 cfs 0.060 af

Pond #1P: #1 UG Storage Peak Elev=375.19' Storage=24,823 cf Inflow=21.01 cfs 1.638 af
Discarded=1.91 cfs 1.590 af Primary=3.91 cfs 0.048 af Outflow=5.82 cfs 1.638 af

Pond #2P: #2 UG Storage Peak Elev=371.16' Storage=1,741 cf Inflow=2.88 cfs 0.273 af
Discarded=0.17 cfs 0.150 af Primary=2.43 cfs 0.123 af Outflow=2.60 cfs 0.273 af

Total Runoff Area = 4.069 ac Runoff Volume = 2.284 af Average Runoff Depth = 6.74"
46.93% Pervious = 1.909 ac 53.07% Impervious = 2.159 ac

Summary for Subcatchment 10:

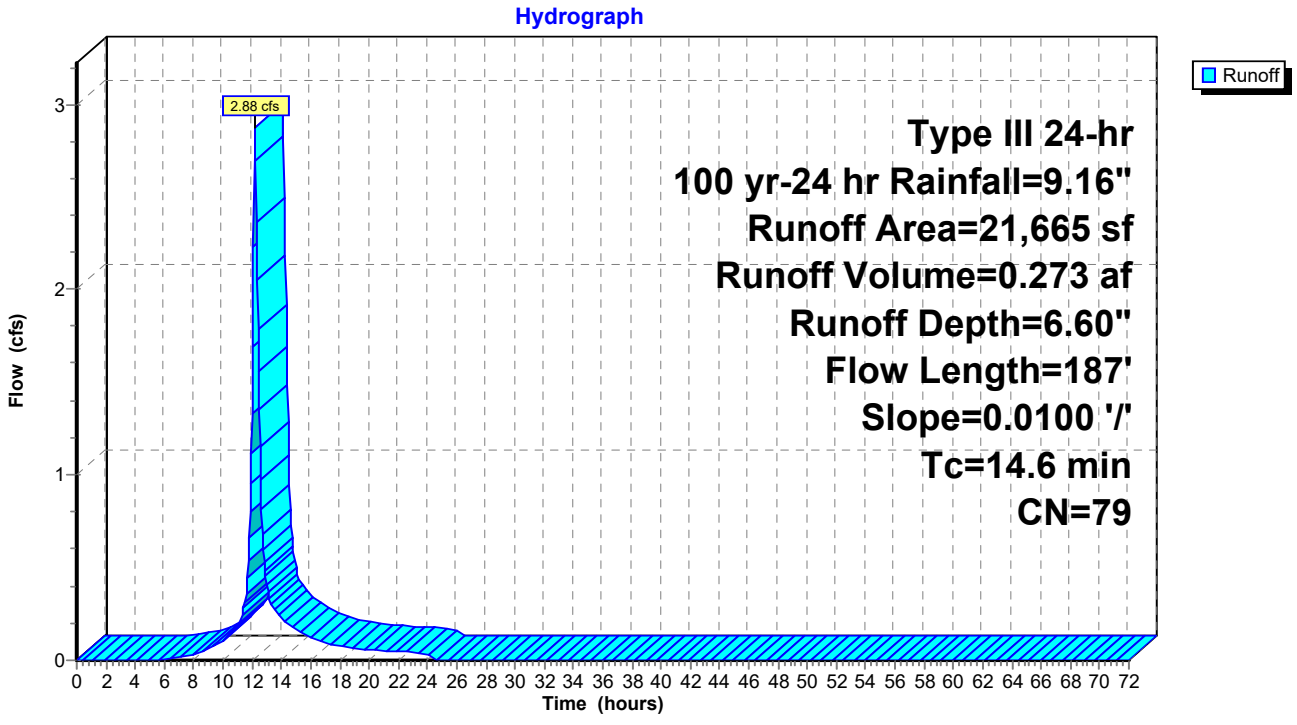
Runoff = 2.88 cfs @ 12.20 hrs, Volume= 0.273 af, Depth= 6.60"
Routed to Pond #2P : #2 UG Storage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (sf)	CN	Description
	11,027	61	>75% Grass cover, Good, HSG B
*	10,638	98	Impervious
	21,665	79	Weighted Average
	11,027		50.90% Pervious Area
	10,638		49.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	100	0.0100	0.13		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.43"
2.1	87	0.0100	0.70		**Shallow Concentrated Flow, b-c** Short Grass Pasture Kv= 7.0 fps
14.6	187	Total			

Subcatchment 10:



Summary for Subcatchment 20A:

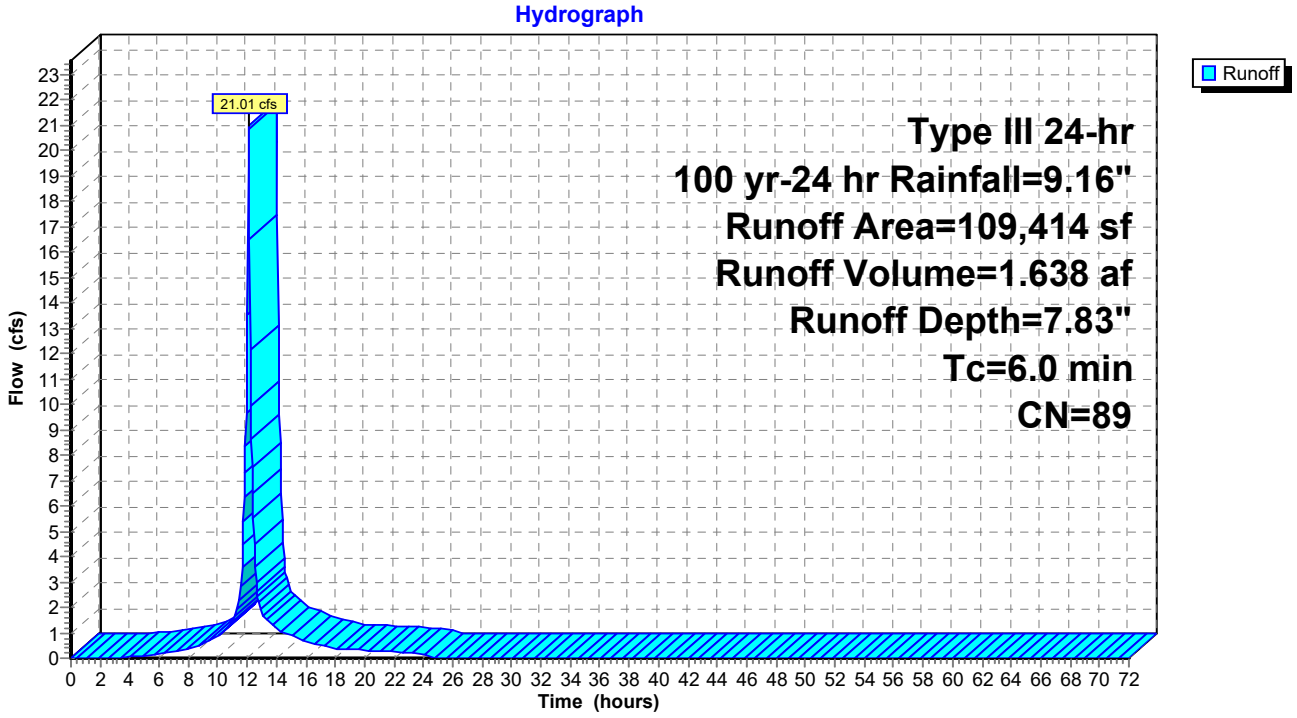
Runoff = 21.01 cfs @ 12.09 hrs, Volume= 1.638 af, Depth= 7.83"
Routed to Pond #1P : #1 UG Storage

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (sf)	CN	Description
*	81,497	98	Impervious
	27,917	61	>75% Grass cover, Good, HSG B
	109,414	89	Weighted Average
	27,917		25.52% Pervious Area
	81,497		74.48% Impervious Area

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

Subcatchment 20A:



Summary for Subcatchment 20B:

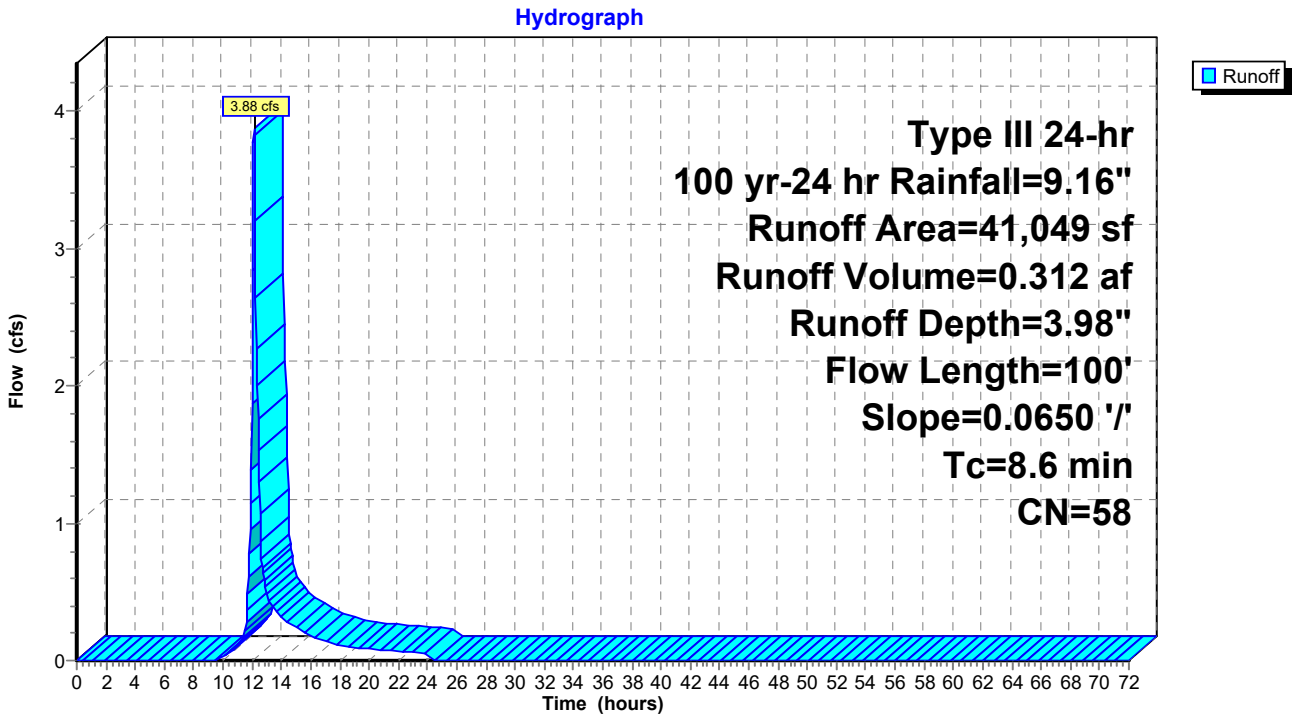
Runoff = 3.88 cfs @ 12.13 hrs, Volume= 0.312 af, Depth= 3.98"
Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (sf)	CN	Description
	13,276	61	>75% Grass cover, Good, HSG B
*	12,578	55	Landscape
	15,195	58	Meadow, non-grazed, HSG B
	41,049	58	Weighted Average
	41,049		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0650	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.43"

Subcatchment 20B:



Summary for Subcatchment 30:

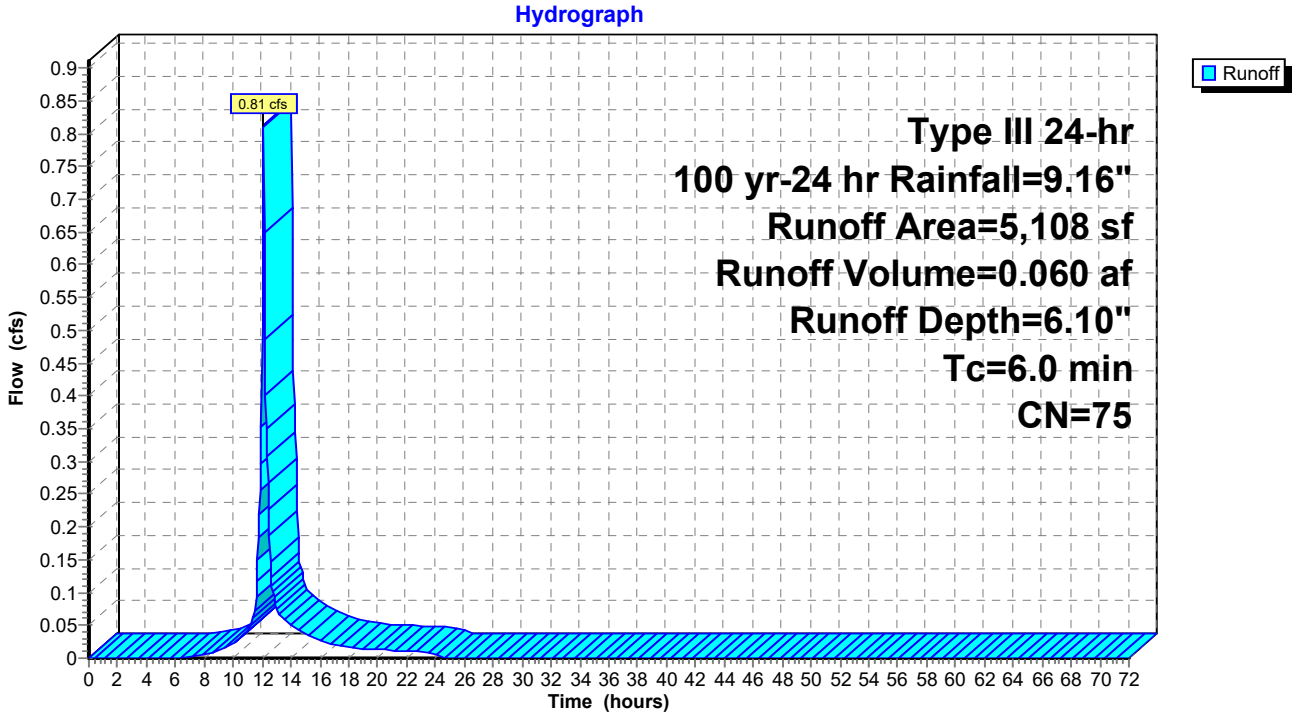
Runoff = 0.81 cfs @ 12.09 hrs, Volume= 0.060 af, Depth= 6.10"
Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr-24 hr Rainfall=9.16"

	Area (sf)	CN	Description
*	1,924	98	Impervious
	3,184	61	>75% Grass cover, Good, HSG B
	5,108	75	Weighted Average
	3,184		62.33% Pervious Area
	1,924		37.67% Impervious Area

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

Subcatchment 30:



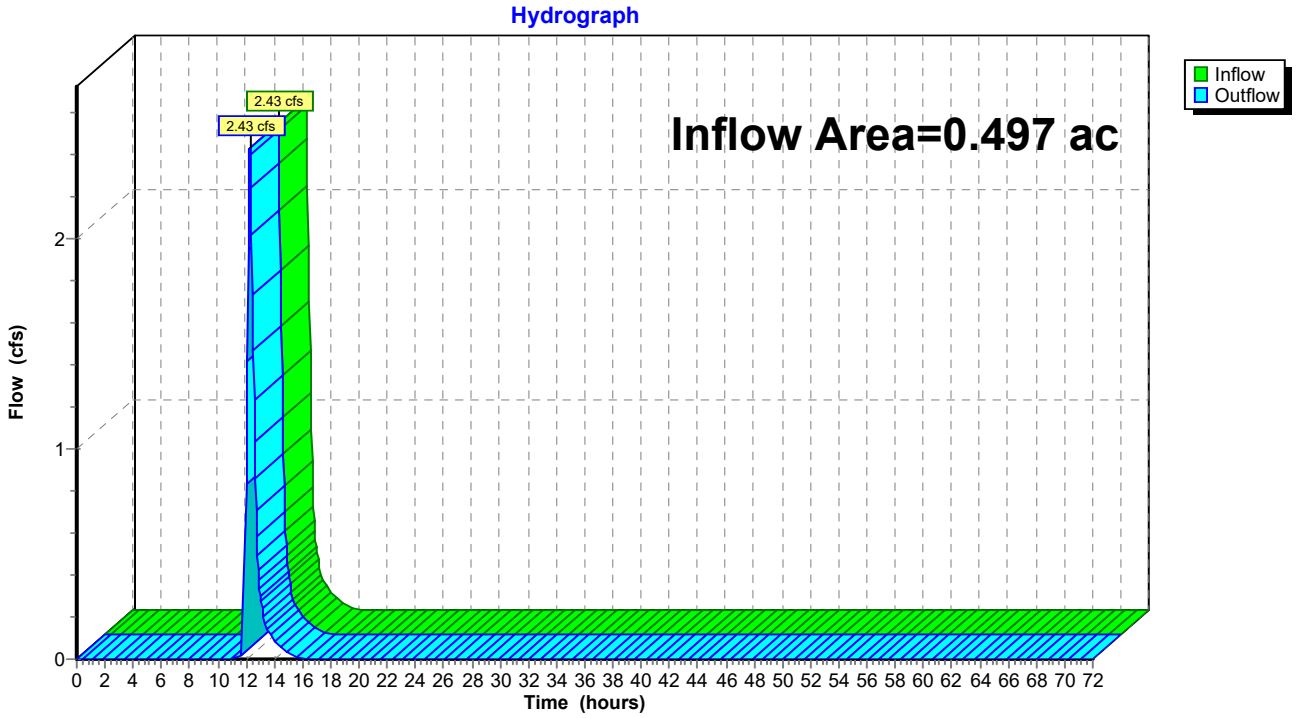
Summary for Reach DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.497 ac, 49.10% Impervious, Inflow Depth = 2.98" for 100 yr-24 hr event
Inflow = 2.43 cfs @ 12.27 hrs, Volume= 0.123 af
Outflow = 2.43 cfs @ 12.27 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min

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

Reach DP1:



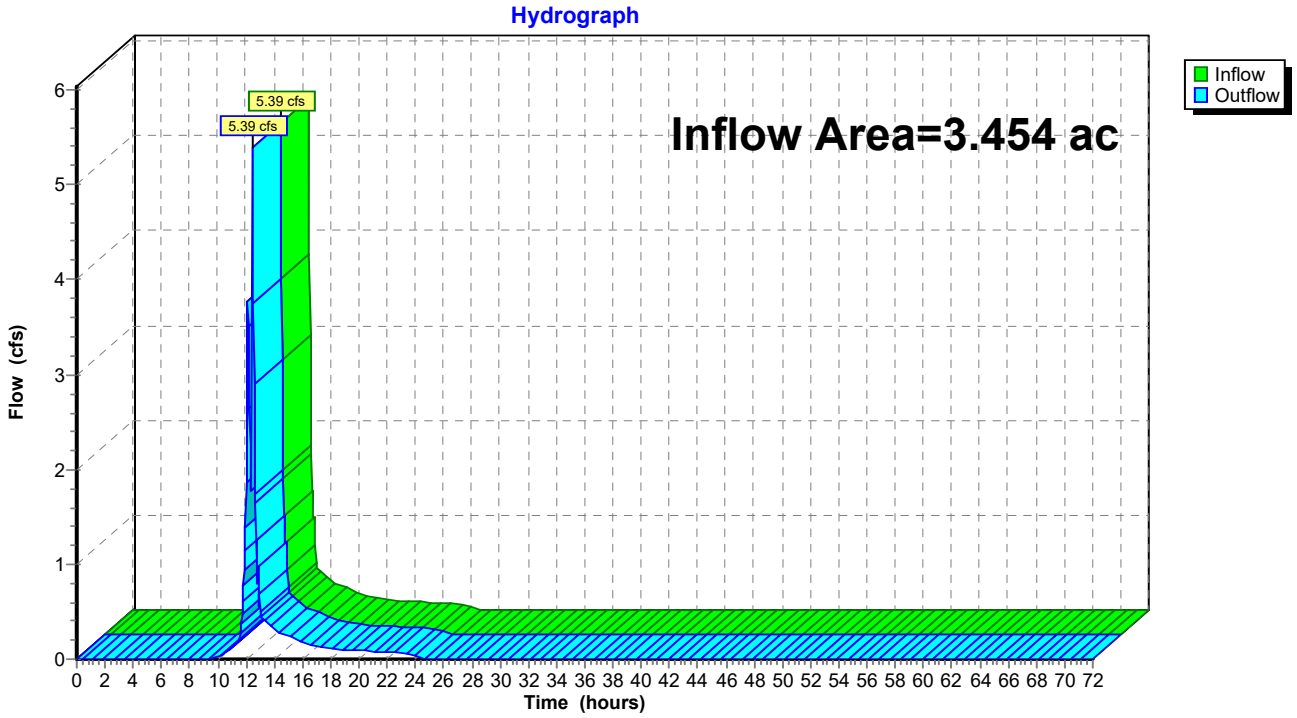
Summary for Reach DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.454 ac, 54.16% Impervious, Inflow Depth = 1.25" for 100 yr-24 hr event
Inflow = 5.39 cfs @ 12.46 hrs, Volume= 0.360 af
Outflow = 5.39 cfs @ 12.46 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min

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

Reach DP2:



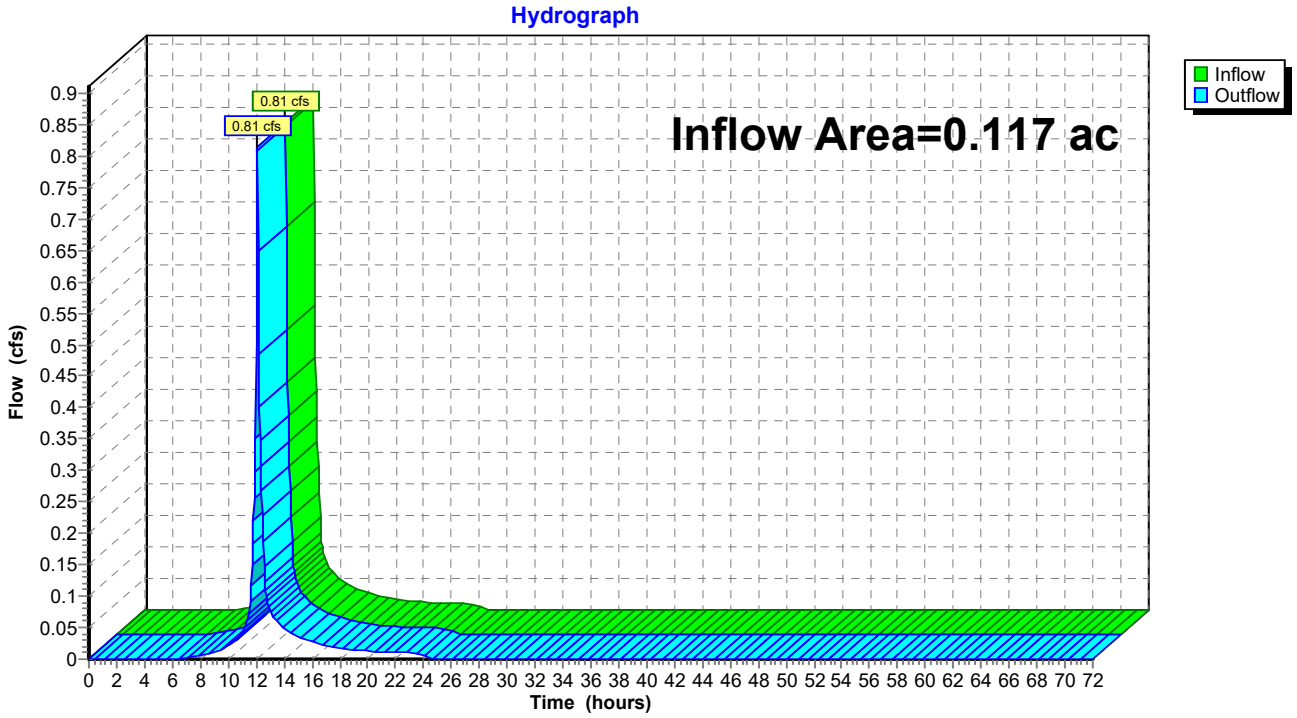
Summary for Reach DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.117 ac, 37.67% Impervious, Inflow Depth = 6.10" for 100 yr-24 hr event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

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

Reach DP3:



Summary for Pond #1P: #1 UG Storage

[93] Warning: Storage range exceeded by 0.94'
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 2.512 ac, 74.48% Impervious, Inflow Depth = 7.83" for 100 yr-24 hr event
Inflow = 21.01 cfs @ 12.09 hrs, Volume= 1.638 af
Outflow = 5.82 cfs @ 12.46 hrs, Volume= 1.638 af, Atten= 72%, Lag= 22.5 min
Discarded = 1.91 cfs @ 12.45 hrs, Volume= 1.590 af
Primary = 3.91 cfs @ 12.46 hrs, Volume= 0.048 af
Routed to Reach DP2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 375.19' @ 12.46 hrs Surf.Area= 7,502 sf Storage= 24,823 cf

Plug-Flow detention time= 99.5 min calculated for 1.637 af (100% of inflow)
Center-of-Mass det. time= 99.4 min (874.5 - 775.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	370.25'	3,001 cf	**47.44'W x 158.14'L x 4.00'H Field A** 29,999 cf Overall - 22,497 cf Embedded = 7,502 cf x 40.0% Voids
#2A	370.75'	21,822 cf	**ACO StormBrixx SD 1** x 960 Inside #1 Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf 960 Chambers in 24 Rows
		24,823 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	372.00'	**15.0" Round Culvert** L= 94.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 372.00' / 368.97' S= 0.0322 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Discarded	370.25'	**9.000 in/hr Infiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=1.91 cfs @ 12.45 hrs HW=375.15' (Free Discharge)
2=Infiltration (Exfiltration Controls 1.91 cfs)

Primary OutFlow Max=3.49 cfs @ 12.46 hrs HW=375.06' TW=374.50' (Fixed TW Elev= 374.50')
1=Culvert (Inlet Controls 3.49 cfs @ 2.84 fps)

Pond #1P: #1 UG Storage - Chamber Wizard Field A

Chamber Model = ACO StormBrixx SD 1 (ACO StormBrixx® SD)
Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf
Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf

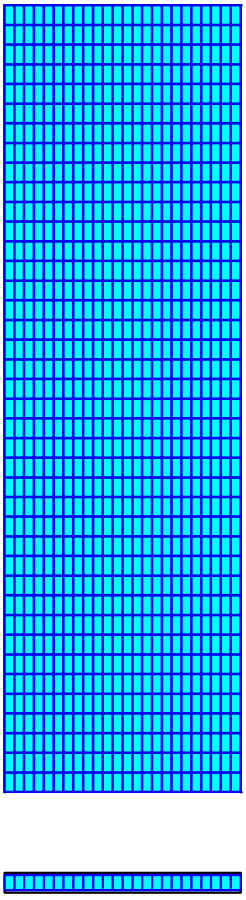
40 Chambers/Row x 3.95' Long = 158.14' Row Length
24 Rows x 23.7" Wide = 47.44' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

960 Chambers x 22.7 cf = 21,821.7 cf Chamber Storage
960 Chambers x 23.4 cf = 22,496.6 cf Displacement

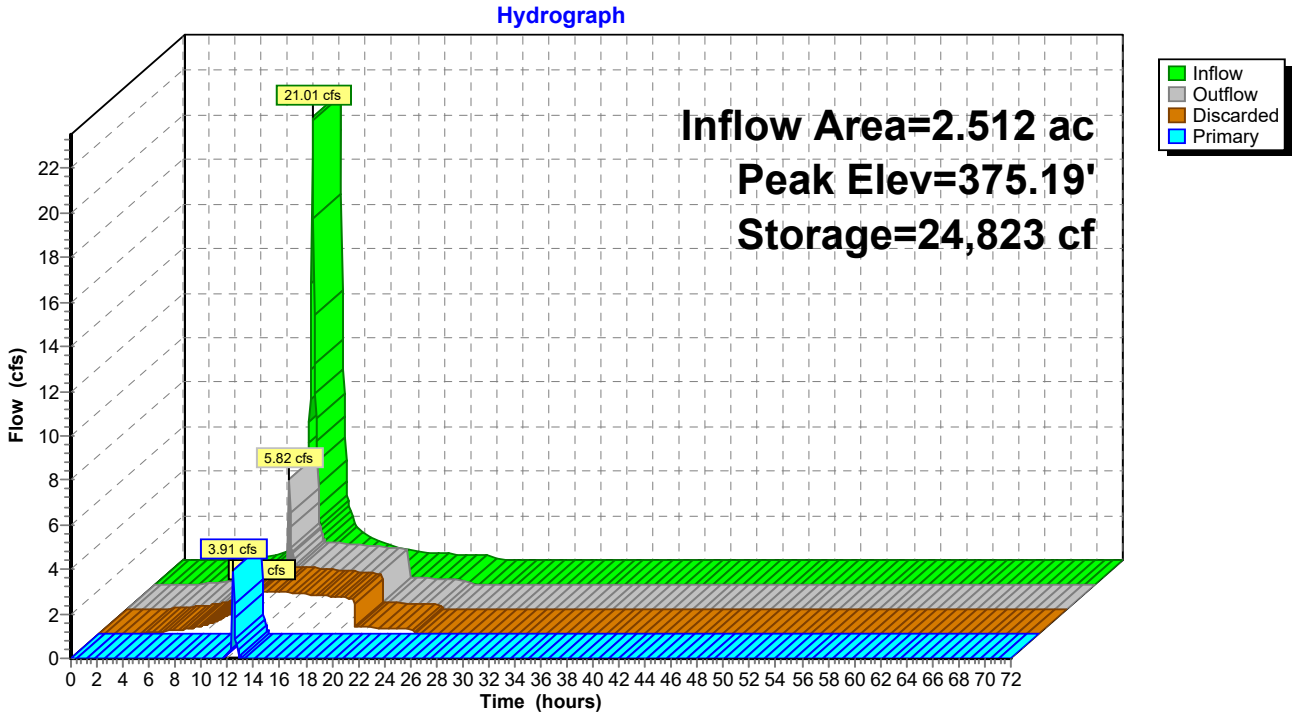
29,998.7 cf Field - 22,496.6 cf Chambers = 7,502.1 cf Stone x 40.0% Voids = 3,000.9 cf Stone Storage

Chamber Storage + Stone Storage = 24,822.5 cf = 0.570 af
Overall Storage Efficiency = 82.7%
Overall System Size = 158.14' x 47.44' x 4.00'

960 Chambers
1,111.1 cy Field
277.9 cy Stone



Pond #1P: #1 UG Storage



Summary for Pond #2P: #2 UG Storage

Inflow Area = 0.497 ac, 49.10% Impervious, Inflow Depth = 6.60" for 100 yr-24 hr event
Inflow = 2.88 cfs @ 12.20 hrs, Volume= 0.273 af
Outflow = 2.60 cfs @ 12.27 hrs, Volume= 0.273 af, Atten= 10%, Lag= 4.2 min
Discarded = 0.17 cfs @ 12.27 hrs, Volume= 0.150 af
Primary = 2.43 cfs @ 12.27 hrs, Volume= 0.123 af
Routed to Reach DP1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 371.16' @ 12.27 hrs Surf.Area= 625 sf Storage= 1,741 cf

Plug-Flow detention time= 40.9 min calculated for 0.273 af (100% of inflow)
Center-of-Mass det. time= 40.9 min (849.0 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	368.00'	250 cf	**15.81'W x 39.53'L x 4.00'H Field A** 2,500 cf Overall - 1,875 cf Embedded = 625 cf x 40.0% Voids
#2A	368.50'	1,818 cf	**ACO StormBrixx SD 1** x 80 Inside #1 Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf 80 Chambers in 8 Rows
		2,069 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	370.00'	**12.0" Round Culvert** L= 41.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 369.34' / 370.00' S= -0.0161 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	368.00'	**7.500 in/hr Infiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.17 cfs @ 12.27 hrs HW=371.15' (Free Discharge)
2=Infiltration (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=2.41 cfs @ 12.27 hrs HW=371.15' (Free Discharge)
1=Culvert (Inlet Controls 2.41 cfs @ 3.07 fps)

Pond #2P: #2 UG Storage - Chamber Wizard Field A

Chamber Model = ACO StormBrixx SD 1 (ACO StormBrixx® SD)
Inside= 23.7"W x 36.0"H => 5.75 sf x 3.95'L = 22.7 cf
Outside= 23.7"W x 36.0"H => 5.93 sf x 3.95'L = 23.4 cf

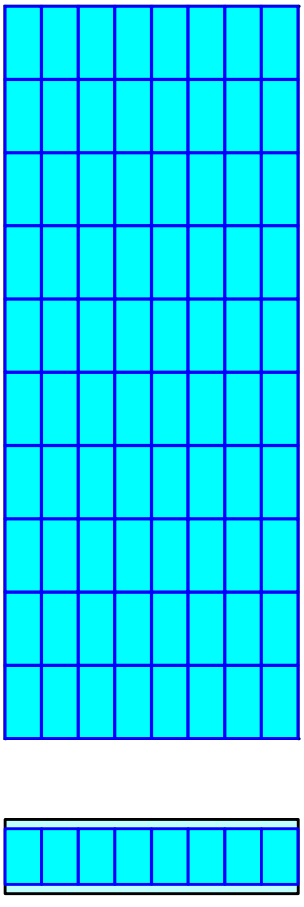
10 Chambers/Row x 3.95' Long = 39.53' Row Length
8 Rows x 23.7" Wide = 15.81' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

80 Chambers x 22.7 cf = 1,818.5 cf Chamber Storage
80 Chambers x 23.4 cf = 1,874.7 cf Displacement

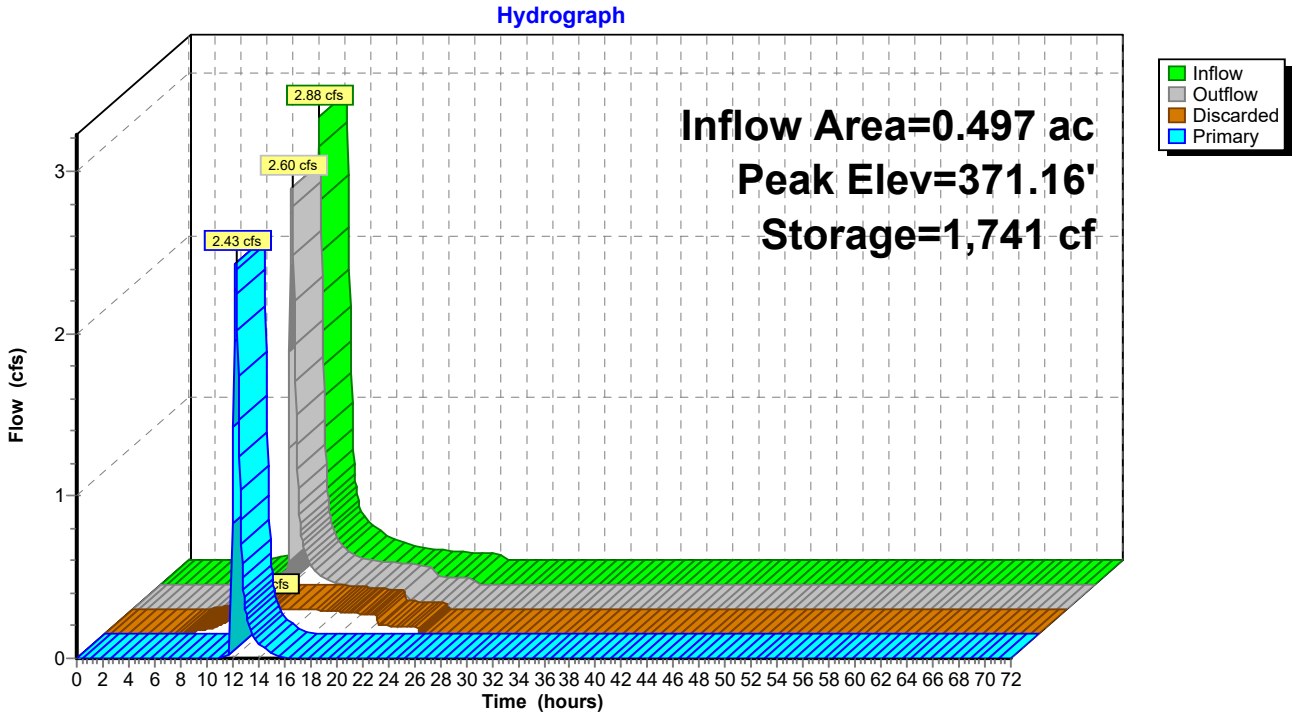
2,499.9 cf Field - 1,874.7 cf Chambers = 625.2 cf Stone x 40.0% Voids = 250.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,068.5 cf = 0.047 af
Overall Storage Efficiency = 82.7%
Overall System Size = 39.53' x 15.81' x 4.00'

80 Chambers
92.6 cy Field
23.2 cy Stone



Pond #2P: #2 UG Storage



Appendix G: Certification Statements

The Gateway
45 Bedford Road, Armonk NY
Town of North Castle, New York

Owner's/Operator's Certification

"I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted."

Name (please print) _____

Title _____ **Date** _____

Address _____

Phone _____ **Email** _____

Signature _____

The Gateway
45 Bedford Road, Armonk NY
Town of North Castle, New York

Contractor's Certification

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contracting Firm Name _____

Address _____

Phone _____ **Fax** _____

Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

_____

_____

_____

Trained Individual Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

_____

_____

Note: All Contractors involved with Stormwater related activities shall sign a Contractor's Certification.

The Gateway
45 Bedford Road, Armonk NY
Town of North Castle, New York

Subcontractor's Certification

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Subcontracting Firm Name _____

Address _____

Phone _____ **Fax** _____

Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

_____

_____

_____

Trained Individual Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

_____

_____

Note: All subcontractors involved with Stormwater related activities shall sign a Subcontractor's Certification.

Appendix H: Example Inspection Form

EXAMPLE EROSION CONTROL REPORT

PROJECT NO: _____ PROJECT NAME: _____ DATE: _____

MUNICIPALITY: _____ LOCATION: _____

CONTRACTOR: _____ OWNER: _____

DATE OF PREVIOUS INSPECTION: _____ INSPECTOR'S NAME: _____

DATE OF MOST RECENT STORM 0.5" OR GREATER: _____ DATE OF INSPECTION: _____

LAST RAIN EVENT: _____ DEPTH: _____

WEATHER: _____ TEMPERATURE: _____ °F

SPECIAL NOTES: _____

EROSION CONTROL CHECKLIST

ADDITIONAL ACTION REQUIRED BY PROJECT MANAGER OR PROJECT ENGINEER ☐ YES ☐ NO

PHOTOS OR SKETCHES ATTACHED ☐ ADDITIONAL REMARKS ATTACHED ☐

_____ _____

Inspector (print name) **Inspection Date**

_____ _____

Qualified Professional (print name) **Qualified Professional 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?
☐	☐	☐	Is there residue from oil and floating substances, visible oil film, or globules of grease?
☐	☐	☐	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 and debris 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 properties?
☐	☐	☐	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.

Runoff Control Practices

1. Excavation Dewatering

Yes	No	NA	
☐	☐	☐	Upstream and downstream berms (sandbags, inflatable damns, 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.

2. Level 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 occuring.
☐	☐	☐	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. Stabilized Construction Entrance

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 the site?
☐	☐	☐	Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

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.

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes	No	NA	
☐	☐	☐	Installed concrete blocks lengthwise so open ends face outward, not upward.
☐	☐	☐	Place 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.

Sediment accumulation is ____% of design capacity.

4. 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 accumulation is ____% of design capacity.

5. Temporary Sediment Basin

Yes	No	NA	
☐	☐	☐	Basin and outlet structure constructed per the approved plan.
☐	☐	☐	Basin side slopes are stablized with seed/mulch.
☐	☐	☐	Drainage structure is flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ____% of design capacity.

The Gateway
45 Bedford Road
Town of North Castle, New York

Appendix I: Post-Construction Inspection & Maintenance

LANGAN

Post Construction Inspection and Maintenance Checklist
Underground Infiltration System

1. Inlet and Outlet Structures

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Concrete structure	☐	☐	☐
i. In good condition, no need for repairs.	☐	☐	☐
a. Cracks or displacement. *Maintenance: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months. Replace structure if major cracks or significant displacement is observed.*	☐	☐	☐
b. Minor spalling (<1"). *Maintenance: Repair any minor spalling.*	☐	☐	☐
c. Major spalling (rebars exposed). *Maintenance: Replace structure.*	☐	☐	☐
d. Joint failures. *Maintenance: Replace structure.*	☐	☐	☐
e. Water tightness. *Maintenance: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐

2. Header System

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Clear of debris and litter. *Maintenance: Use a high pressure nozzle with rear facing jets to wash the sediment and debris into the upstream structure. Remove sediment and debris from the sump of the upstream structure.*	☐	☐	☐
b. Clear of sediment. *Maintenance: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.*	☐	☐	☐

3. Isolator/Containment Row

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Clear of debris and litter. *Maintenance: Remove and properly dispose of any debris and trash. Use a high pressure nozzle with rear facing jets to wash the debris into the upstream structure. Remove debris from the sump of the upstream structure.*	☐	☐	☐
b. Clear of sediment. *Maintenance: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.*	☐	☐	☐

4. Underground Chambers

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Chambers are in good condition. *Maintenance: Inspect the interior of the chambers using a CCTV or comparable inspection method through the inspection port. If deficiencies are noted immediately contact a NYS licensed Professional Engineer.*	☐	☐	☐
b. Clear of debris and litter. *Maintenance: Remove and properly dispose of any debris and trash. Use a high pressure nozzle with rear facing jets to wash the debris into the upstream structure. Remove debris from the sump of the upstream structure.*	☐	☐	☐
c. Clear of sediment. *Maintenance: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.*	☐	☐	☐
d. Dewaters between storms. *Maintenance: If standing water during inspection, recheck after 48 hours. If standing water is still present, contact a NYS licensed Professional Engineer.*	☐	☐	☐

5. Surrounding Site

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area by their removal.*	☐	☐	☐
b. Area free from depressions. *Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.*	☐	☐	☐

	Yes	No	NA
c. Unauthorized plants over system. *<u>Maintenance</u>: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
d. Unauthorized structures over system. *<u>Maintenance</u>: Remove any unauthorized structures. Immediately inspect the interior of the chambers using a CCTV or comparable inspection method through the inspection port. If deficiencies are noted immediately contact a NYS licensed Professional Engineer.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.

Comments:

Actions to be taken:

CONTECH®
ENGINEERED SOLUTIONS

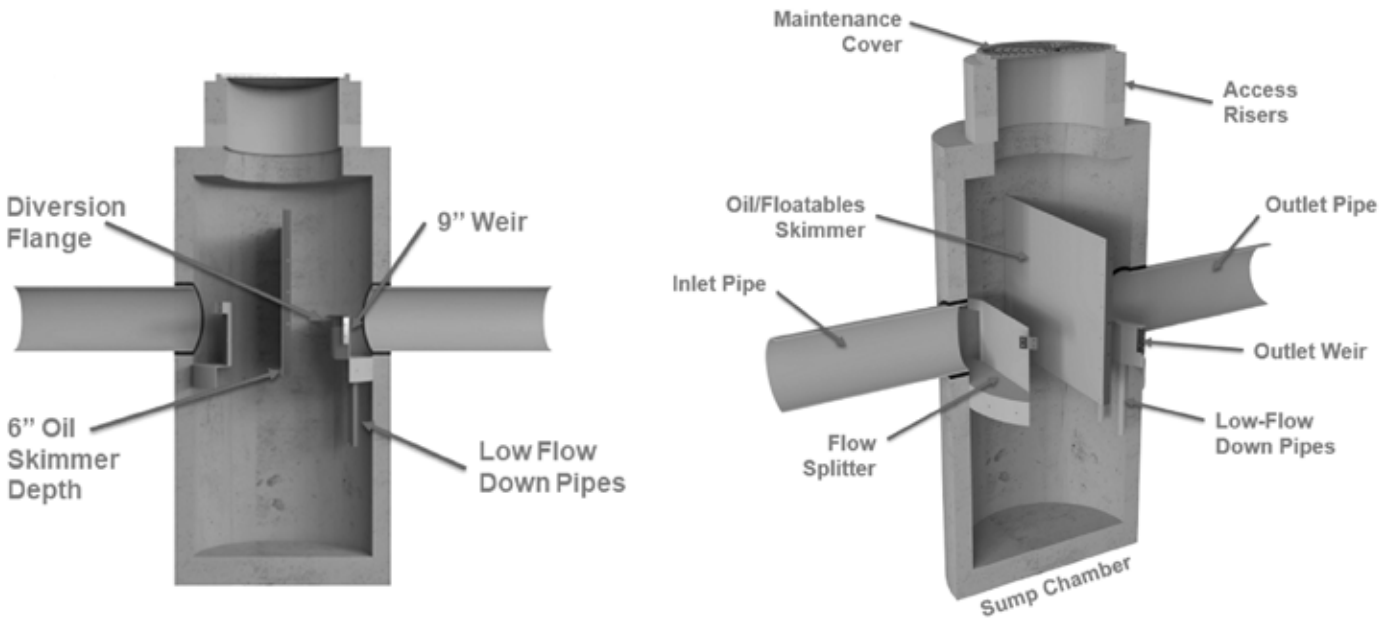
SciCloneX™ Separator
Operation & Maintenance Manual

Operation & Maintenance

The SciCloneX™ Separator is designed to remove high levels of trash, debris, sediments and hydrocarbons. Its efficient design and construction maximize longevity and minimize maintenance requirements. The simple design of the system allows for unimpeded access for quick and easy maintenance. The SciCloneX™ Separator is able to effectively capture and store sediment with no maintenance or loss of treatment capacity for several years based on annual average loading in most regions.

Yet, as with all stormwater BMPs, inspection and maintenance on the SciCloneX™ Separator is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess site-specific loading conditions.

This is recommended because pollutant loading can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding of roads, amount of daily traffic and land use can increase pollutant loading on the system. Observations made during the first year of inspections can be used to set inspection and maintenance intervals for subsequent years. Without appropriate maintenance, a BMP can exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.



System Diagrams

Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the SciCloneX™ Separator:

- Contech Inspection Form (contained within this manual)
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure
- Protective clothing and eye protection
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections or maintenance of the system.

Inspection Steps

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the SciCloneX™ Separator are quick and easy. As mentioned above, the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a basis for long-term inspection and maintenance interval expectations.

The SciCloneX™ Separator can be inspected through visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened, the inspection process can proceed:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired, utilize a flashlight to see inside the system.
- Look for any out of the ordinary obstructions in the inflow pipe, sump chamber, or outflow pipe. Write down any observations on the inspection form.
- Through observation, and/or digital photographs, estimate the amount of floatable debris accumulated on the influent side of the oil/floatables skimmer. Record this information on the inspection form. Next, utilizing a tape measure or measuring stick, estimate the amount of sediment accumulated in the sump. Record this depth on the inspection form.
- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components
- Obstructions in the system or its inlet or outlet
- Excessive accumulation of floatables in the sump chambers in which the length and width of the chambers behind oil/floatables skimmer is fully impacted extending down more than 9”
- Excessive accumulation of sediment in the sump chamber of more than 18” in depth

Maintenance Equipment

It is recommended that a vacuum truck be utilized to minimize the time required to maintain the SciCloneX™ Separator:

- Contech Maintenance Form (contained in O&M Manual)
- Flashlight
- Manhole hook or appropriate tools to access hatches and covers
- Appropriate traffic control signage and procedures
- Protective clothing and eye protection
- Vacuum truck (with pressure washer attachment preferred)

Maintenance Procedures

It is recommended that maintenance occurs at least three days after the most recent rain event to allow for drain down of any associated upstream detention systems. Maintaining the system while flows are still entering it will increase the time and complexity required for maintenance. Cleaning of the sump chamber can be performed from finish surface without entry into the vault utilizing a vacuum truck. Once all safety measures have been set up cleaning of the sump chamber can proceed as followed:

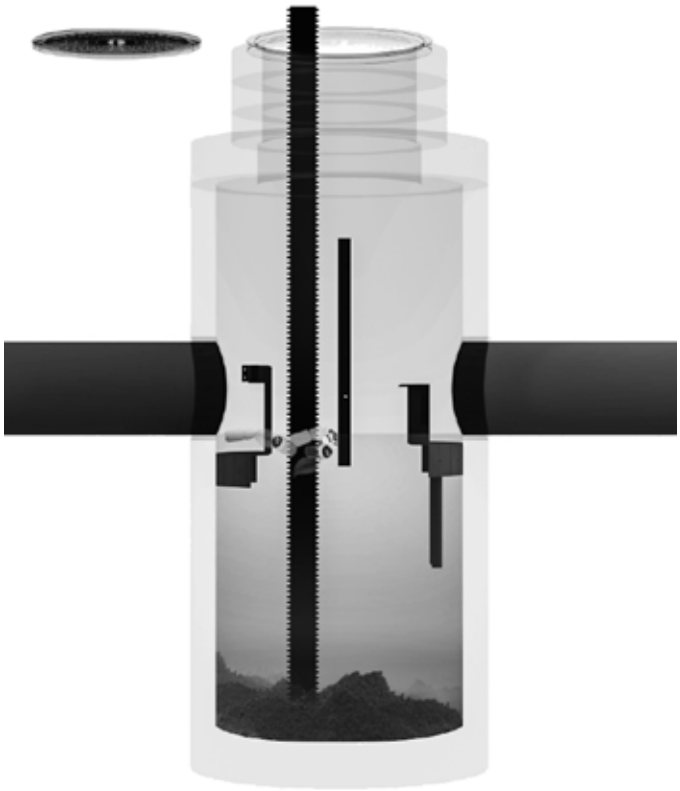
- Remove all access hatches (requires traffic control and safety measures to be completed prior).
- Using an extension on a vacuum truck position the hose over the opened access hatch and lower into the center of the sump chamber on the inlet side of the oil/floatables skimmer.
- Remove all floating debris, standing water and sediment from the sump chamber. Access to the bottom of the sump chamber is unimpeded. The vac hose can be moved from side-to-side to fully remove sediments at the corners. A power washer can be used to assist if sediments have become hardened and stuck to the walls or the floor of the chamber. Repeat the same procedure on the effluent side of the oil/floatables skimmer to remove any remaining sediment. This completes the maintenance procedure required on the sump chamber and the SciCloneX™ Separator.
- Close up and replace all access hatches and remove all traffic control.

Note: Entering a confined space requires appropriate safety and certification. It is generally not required for routine maintenance of the system.

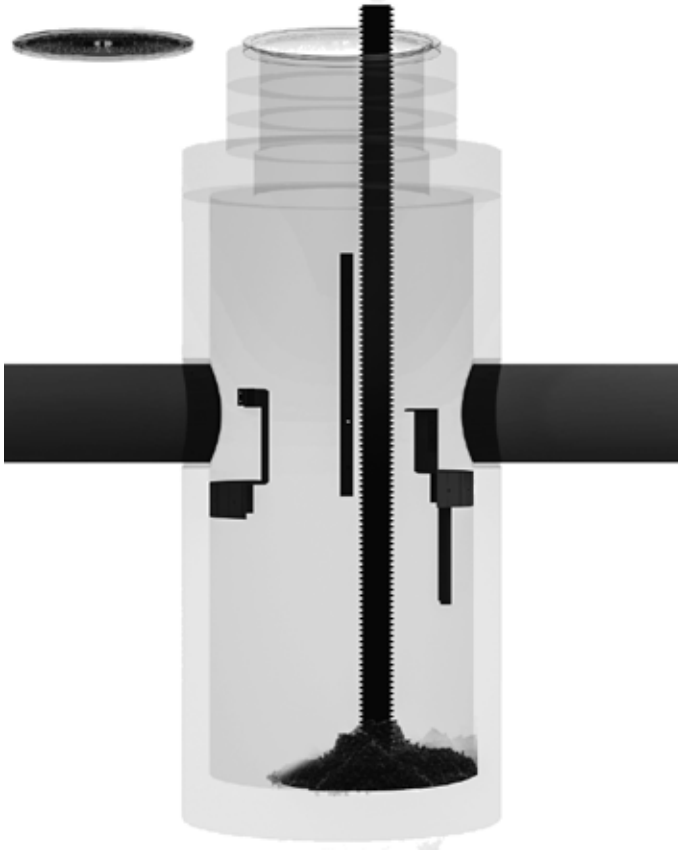
- All removed debris and pollutants shall be disposed of following local and state requirements.
- Disposal requirements for recovered pollutants may vary depending on local guidelines. In most areas the sediment, once dewatered, can be disposed of in a sanitary landfill. It is not anticipated that the sediment would be classified as hazardous waste.
- In the case of damaged components, replacement parts can be ordered by the manufacturer.

Maintenance Sequence

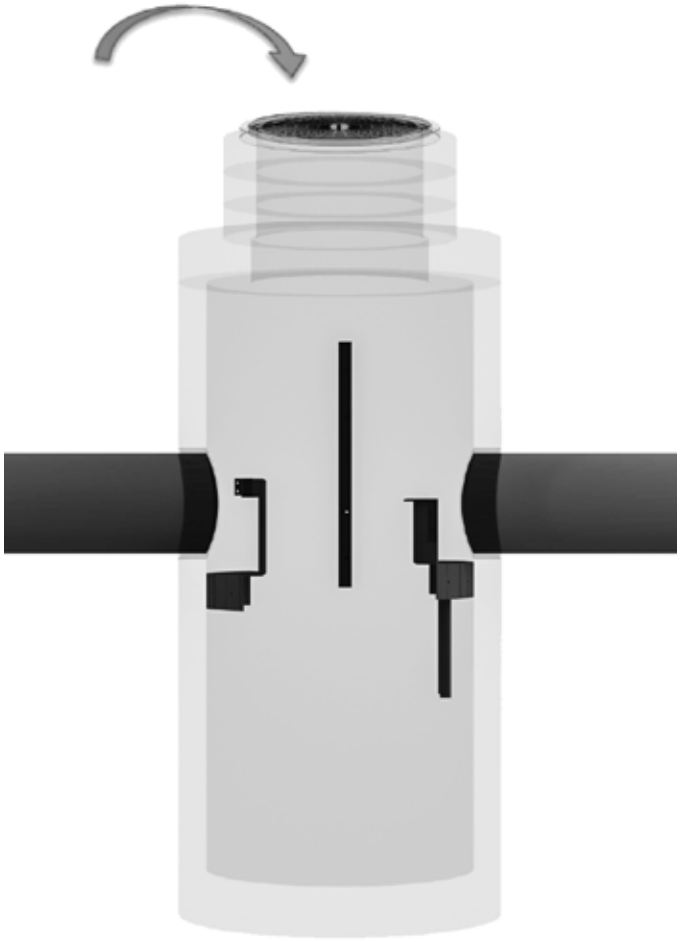
1. Remove Access Hatches Set Up Vacuum Truck to Clean the Sump Chamber.



2. Insert Vacuum Hose On the Inlet Side of the Oil Floatables Skimmer and Vacuum Out All Trash, Sediment and Standing Water.



3. Insert Vacuum Hose On the Outlet Side of the Oil/Floatables Skimmer and Vacuum Out Any Remaining Sediment.



4. Replace Access Hatches and Remove Traffic Control and Safety Equipment.

CONTECH® ENGINEERED SOLUTIONS

Inspection and Maintenance Report
Bio Clean SciCloneX™ Separator

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

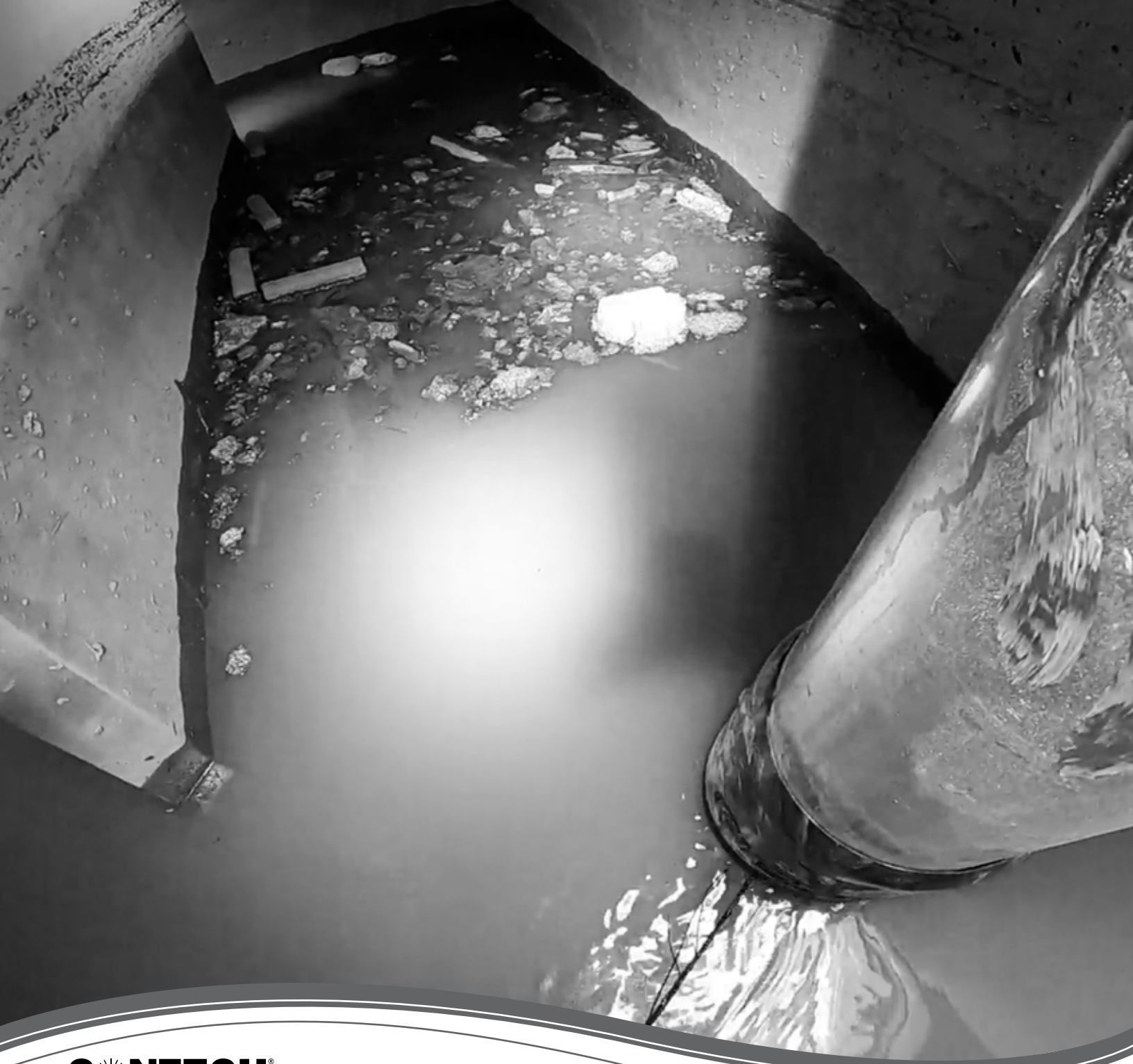
For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____ / ____ / _____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Stor Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Site Map #	GPS Coordinates of Vault	Model #	Oils and Floatables Accumilation on Inlet Side of Oil/Floatables Skimmers (lbs)	Sediment Accumulation In Sump Chamber (lbs) & Depth (inches)	Structural Notes	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:					
	Lat: Long:					
	Lat: Long:					
Comments:						



CONTECH®
ENGINEERED SOLUTIONS

800-338-1122

WWW.CONTECHES.COM

CONTECH ENGINEERED SOLUTIONS LLC PROVIDES SITE SOLUTIONS FOR THE CIVIL ENGINEERING INDUSTRY. CONTECH'S PORTFOLIO INCLUDES BRIDGES, DRAINAGE, SANITARY SEWER, STORMWATER AND EARTH STABILIZATION PRODUCTS. FOR INFORMATION ON OTHER CONTECH DIVISION OFFERINGS, VISIT CONTECHES.COM OR CALL 800-338-1122.

SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

SciCloneX Maintenance Guide PDF / 08/22

Appendix J: NYS SHPO No Impact Letter

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

October 16, 2023

Adam R. Kaufman
Director of Planning
Town of North Castle (Armonk)
15 Bedford Road
Armonk, NY 10504

Re: SEQRA
The Gateway
23PR08680

Dear Adam R. Kaufman:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the submitted documents under the State Environmental Quality Review Act (SEQRA) as requested. These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (NY Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR § 617).

We note that the project area is located across Bedford Road from the Bedford Road Historic District, listed in the State and National Registers of Historic Places (S/NRHP), and directly adjacent to the S/NRHP-eligible Town Hall. Therefore, under SEQRA, our office as subject matter experts have reviewed the proposed project, and offer the following comments regarding potential impacts to architectural or archaeological resources:

1. Our office cannot provide comments on the demolition of Mariani Gardens as the demolition has already taken place.

2. Our office cannot provide comments on the proposed design and materials of the planned multi-family residential development unless we are provided further details regarding the project, including exterior elevations and a finishes schedule, however, we can provide parameters for development for a location adjacent to historic resources.

3. Our office recommends taking visual cues from the adjacent historic district as far as the layout of the buildings, the space between buildings/built space versus open space, the types of existing vegetation, the setback from the sidewalk, the potential reuse of the existing stone walls which can also be found within the historic district, exterior finish materials, massing and building heights, and building styles. The use of similar exterior colors, roof shapes and profiles, building materials, heights, and massing can help ensure new buildings are compatible within or adjacent to a historic district. The Bedford Road Historic District primarily has single-family residential properties that are two

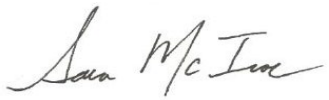
stories high with wood clapboard exteriors, symmetrical facades and proportions, classical architectural components, setbacks from the sidewalk, and landscaped vegetation such as hedgerows and other types of plantings.

Please be aware that if this project will involve state or federal permits, funding or licenses it may be subject to a more rigorous review by those agencies and this office for impacts to historic and archaeological resources under Section 106 of the National Historic Preservation Act or Section 14.09 of the NYS Parks, Recreation and Historic Preservation Law.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

If you have any questions, you can call or e-mail me at the contact information below.

Sincerely,



Sara McIvor
Historic Site Restoration Coordinator
518-268-2127 | sara.mcivor@parks.ny.gov

Cc: G. Nyambura – Langan Engineering
L. Zawacki – Town of North Castle

The Gateway
45 Bedford Road
Town of North Castle, New York

Appendix K: Floodplain Comparison

LANGAN

LEGEND

- EXISTING 100-YR FEMA FLOODPLAIN
- PROPOSED 100-YR FEMA FLOODPLAIN
- PRE-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION
- POST-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION

APPROXIMATE STORAGE VOLUMES IN THE FLOOD PLAIN

- PRE-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION: 3,820 CU. YD.
- POST-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION: 3,850 CU. YD.

NOTE:
FOOTING DRAINS SHOWN CONCEPTUALLY - FINAL LOCATIONS WILL BE SHOWN ON BUILDING PERMIT PLANS. DRAINS WILL NOT OUTLET TO DRAINAGE SYSTEM.

20 0 5 10 20
SCALE: 1 INCH = 20 FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Revisions		
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1
Date	Description	No.

Signature Date
MICHAEL FINAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
FLOOD PLAIN COMPARISON

Project No. 190085001
Date JANUARY 3, 2024
Drawn By LC
Checked By MT

Drawing No. FG07
Sheet 1 of 17

LANGAN
Project No. 190085001

Date: 1/5/2024 Time: 11:21 User: lcaserta Style Table: Langan.stb Layout: CG101 Document Code: 190085001-0301-CG101-0103

Print Form

SCHEDULE A

- DRAFT -

STORMWATER CONTROL
FACILITY MAINTENANCE AGREEMENT
FOR The Gateway **PROJECT**

Whereas, the Town of North Castle (the "Municipality") and NCD Acquisitions hereinafter "facility owner", want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Municipality; and

Whereas, the Municipality and the facility owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components.

Now therefore, the Municipality and the facility owner agree as follows:

1. This agreement binds the Municipality and the facility owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.

2. The facility owner shall maintain, clean, repair, replace and continue the stormwater control measures depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices and retention ponds.

3. The facility owner shall be responsible for all expenses related to the maintenance of the stormwater control measures and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.

4. The facility owner shall provide for the periodic inspection of the stormwater control measures, not less than once in every five-year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a PE or RLA licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures.

5. The facility owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Municipality.

6. The facility owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.

7. This agreement shall be recorded in the Office of the County Clerk, County of Westchester together with the deed for the common property and site plat and shall be included in the offering plan and/or prospectus approved pursuant to the conditions of the project's final approval.

8. If ever the Municipality determines that the facility owner has failed to construct or maintain the stormwater control measures in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and to affix the expenses thereof as a lien against the property.

9. This agreement is effective as of the latest date below.

Dated: _____

_____
Developer/Facility Owner Authorized Signature

_____
(Print Name)

Dated: _____

_____
Town of North Castle Authorized Signature

_____
(Print Name)

Schedule A
Stormwater Control Measures

The stormwater control measures utilized for the Gateway project are shown on the approved site plans dated_____, and include the following:

- Catch basins and yard drains
- Drainage manholes
- HDPE drainage pipes
- Hydrodynamic separators
- “Stormbrixx” storage and infiltration units
- Rip-rap stone outlet protection

LEGEND

- EXISTING 100-YR FEMA FLOODPLAIN
- PROPOSED 100-YR FEMA FLOODPLAIN
- PRE-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION
- POST-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION

APPROXIMATE STORAGE VOLUMES IN THE FLOOD PLAIN

- PRE-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION: 3,820 CU. YD.
- POST-DEVELOPMENT VOLUME BELOW 100-YEAR FLOOD ELEVATION: 3,850 CU. YD.

NOTE:
FOOTING DRAINS SHOWN CONCEPTUALLY - FINAL LOCATIONS WILL BE SHOWN ON BUILDING PERMIT PLANS. DRAINS WILL NOT OUTLET TO DRAINAGE SYSTEM.

20 0 5 10 20
SCALE: 1 INCH = 20 FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.

Revisions		
01/08/24	RESPONSE TO COMMENTS	3
11/13/23	RESPONSE TO COMMENTS	2
10/06/23	RESPONSE TO COMMENTS	1
Date	Description	No.

Signature Date
MICHAEL FINAN, PE, LEED-AP
PROFESSIONAL ENGINEER NY Lic. No. 081473

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
45 BEDFORD ROAD
ARMONK
WESTCHESTER COUNTY NEW YORK

Drawing Title
FLOOD PLAIN COMPARISON

Project No. 190085001
Date JANUARY 3, 2024
Drawn By LC
Checked By MT

Drawing No. FG07
Sheet 1 of 17

LANGAN
Project No. 190085001

Date: 1/5/2024 Time: 11:21 User: lcaserta Style Table: Langan.stb Layout: CG101 Document Code: 190085001-0301-CG101-0103