EMH&T

Engineers, Surveyors, Planners, Scientists

March 8, 2021

Administrator, DOSD
Attn: Mr. Greg Fedner, P.E.
Section Manager, Plan Review Section
1250 Fairwood Avenue
Columbus, Ohio 43206

Subject: Columbus Country Club Basin Modifications
Type II Variance from Stormwater Drainage Manual

Dear Mr. Fedner,

On behalf of the Columbus Country Club, EMH&T is submitting an application for a Type II variance from the City of Columbus Stormwater Drainage Manual for the proposed Basin Modifications (CC-18786).

The project site is located on the Par 3 course on the Columbus Country Club property. A Type II variance is requested for the aquatic bench required by the Stormwater Drainage Manual for Wet Detention basins. The application includes an explanation of why the variance is requested as well impacts to the Country Club.

The following information is provided in support of the application:

- Project Name: Columbus Country Club Basin Modifications
- Address, PID, Site Disturbance and Total Site Area
    - Address: 4831 East Broad Street, Columbus, OH 43213
    - PID: 010-109334
    - Site Disturbance: 6.18 Ac.
    - Site Area: 229.44 Ac.
- Primary (Owner) Contact:
  Columbus Country Club
  Jay Frank, PGA
  4831 East Broad Street,
  Columbus, OH 43213
  (614) 861-0800 x-730
  jfrank@columbuscc.com

Additional infomraiton pertaining to the requested variance is included in the enclosed application document. Please contact me with any questions you may have at (614) 775-4369 or at mstypula@emht.com.

Matthew J. Stypula
Senior Project Manager

Copies: JR Lynn, Columbus Country Club

EMH&T
Engineers, Surveyors, Planners, Scientists
Delivering Solutions.

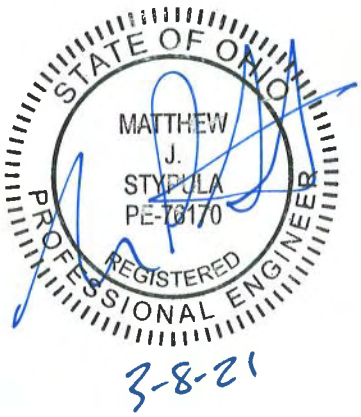
5500 New Albany Rd., Columbus, OH 43054
p. 614.775.4500
f. 614.775.4800
info@emht.com
Job Number: 2016-0393

COLUMBUS COUNTRY CLUB BASIN MODIFICATIONS

City of Columbus Type II Variance Application

Prepared For: Columbus Country Club

March 8, 2021



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APPENDICES

1.0 INTRODUCTION

The following report provides information pertaining to a requested variance from the City of Columbus Stormwater Drainage Manual (the Manual) for the proposed Columbus Country Club Basin Modifications located within the Columbus Country Club located at 4831 E. Broad Street, Columbus, OH 43213. The plans were reviewed and all comments addressed, however when circulating for signature, it was determined that the plans would require a variance for the proposed slopes within the basin. Appendix A and Appendix B are the CC Plans and Stormwater Management report as submitted for signature.

The Columbus Country Club is planning for the modification of an existing basin located within the property as shown in Appendix A. This basin is used primarily for irrigation, though as a part of the CC plan preparation it also meets the City and Ohio EPA requirements for detention and water quality. As a part of this project did not add any new impervious area, except for the basin itself, and only disturbs the basin area and adjacent open space for mounding associated with the spoils for the pond. See Appendix B for the stormwater report.

Figure 1 – Site Location Map

2.0 TYPE II VARIANCE REQUEST

The project seeks a variance from the section 3.2.3.3.2 requiring an aquatic bench extending 8-15 feet outward, with an average depth of 6" for the first 8 feet of shoreline and a maximum depth

of 15 inches for the remainder. This projects seeks to omit the aquatic bench for a variety of reasons.

The proposed variance will have no impact on the water quality or quantity treatment that is provided by the basin. As outlined in the Stormwater Management Plan in Appendix B, all City and State requirements for water quality and quantity are met with the proposed basin modifications.

The Columbus Country Club was originally designed in 1903, and has had several modifications since, but has functioned as a golf course and country club since that date. The proposed basin modification is located within the Par 3 course on the country club property. The basin modification will provide additional volume for irrigation for the course as a separate project constructed a pump house adjacent to the modified basin. As a result of the basins function as an irrigation pond, the normal pool of the basin will fluctuate and have the potential to lower below the gravity outfall. Installation of a bench with this situation may result in a bench that could have a low depth or be dry, which would defeat the purpose of the bench and provide maintenance issues as this would result in an area that would be difficult to maintain as the varying conditions will limit growth potentially creating a muddy shoreline for the pond. This would also serve as an area that could collect golf balls which would add to the maintenance and aesthetic concerns. The aesthetics for the golf course are a concern as members have an expectation for maintenance of this course for golf, but the Country Club also hosts dinners and special events which also require well maintained aesthetics of the property. Therefore the aesthetics of the course are critical to the operations and based upon the pond's use for irrigation, the bench would have a negative impact on the course function and aesthetics.

Based upon these hardships omission of the bench is requested with this variance. All other requirements of the City and Ohio EPA would be met. Thus, the Columbus Country Club requests approval of the Preferred Alternative Plan outlined in section 3.0.

3.0 SITE DEVELOPMENT ALTERNATIVES

Due to the nature of the requested variances, the project would either comply or not comply with section 3.2.3.3.2 of the SWDM and therefor options are only provided for the Preferred Alternative Plan and the Fully Compliant Alternative.

A. PREFERRED ALTERNATE PLAN

The preferred alternated as shown on the plans within Appendix A, and the typical section in Appendix C, is to construct the basin with 4:1 side slopes with no bench.

B. FULLY COMPLIANT PLAN

The fully compliant plan would utilize the same basin footprint as shown in Appendix A, with a modified typical section to include the minimum bench area in accordance with the City of Columbus Drainage Manual. This typical section is shown in Appendix D.

4.0 CONCLUSION

The Columbus Country Club respectfully requests approval of the Type II variance for the Preferred Alternate Plan for the development. The project will meet the requirements of the City of Columbus and the Ohio EPA, while also fulfilling the Country Club's needs for irrigation and aesthetics.

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APPENDIX A:

CC-18786 Columbus Country Club Basin Modifications Plan

ESTIMATE OF QUANTITIES

The Quantities Have Been Established As A Means For The City To Estimate The Necessary Development Fees. The Contractor Shall Be Solely Responsible For Determining The Required Bid Quantities Necessary For The Completion Of The Plan Improvements.

ITEM	QUANTITY	UNIT	DESCRIPTION
202	70	LF	8" Pipe Removed
202	1	EA	Headwall Removed
203	Lump	Sum	Excavation and Embankment
207	1	EA	Stabilized Construction Entrance
207	3,750	LF	Sediment Fence
207	1	EA	Skimmer
604	2	EA	Precast Headwall Per AA-S168
604	1	EA	Orifice, As Per Plan (AA-S145)
SPEC	3	EA	Monitor Post for Sediment Accumulation, As Per Plan
SPEC	Lump	Sum	Modification/Reconfiguration of an existing Wet Detention Basin

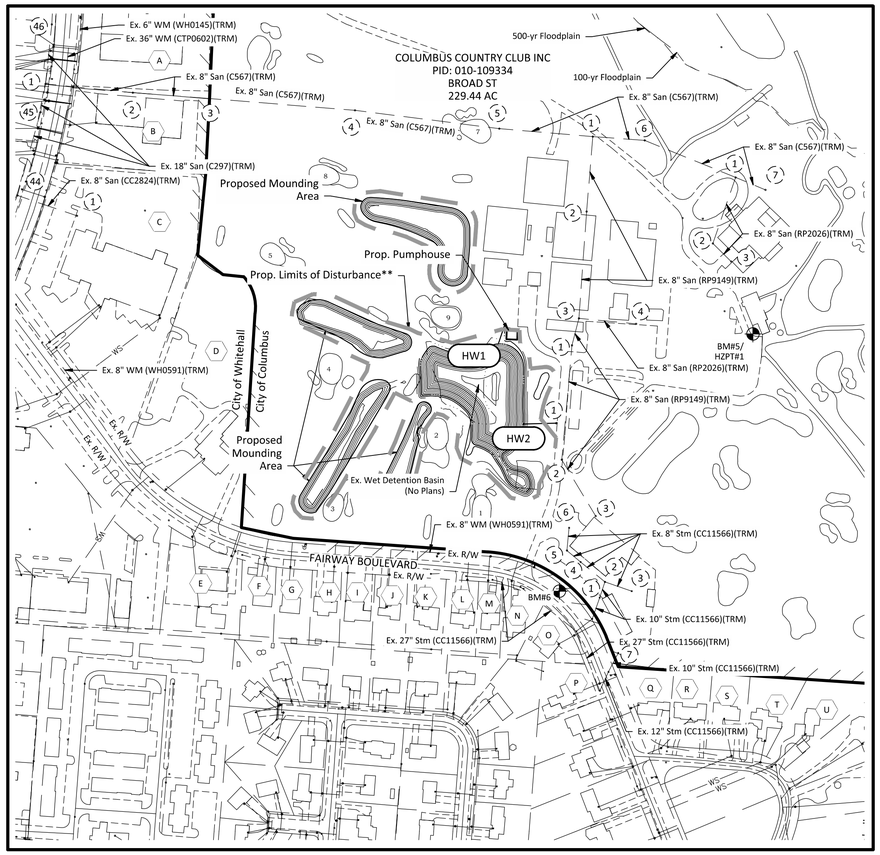
** This project involves mounding/regrading at this Golf Course, and modifications/reconfiguration of an existing Wet Detention Basin which was not built with a Storm Detention Plan. This basin will be modified as an Extended Wet Detention Basin.

BENCH MARKS

The Vertical Datum is based on the elevations established by the Franklin County Engineering Department, at monument FRANK 45, being 785.898 feet in elevation. The said elevations were transferred from said Franklin County Engineering Department monuments using static GPS procedures to the site. The said monuments being source bench marks with elevations that are based on the North American Vertical Datum of 1988.

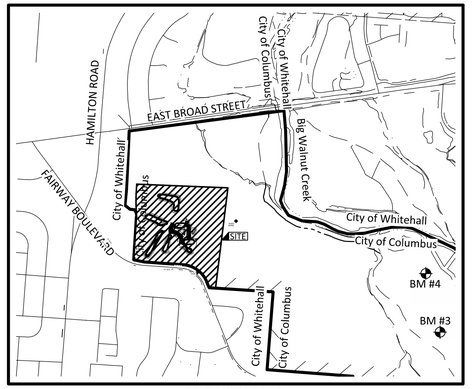
SOURCE BM	ELEVATION	DESCRIPTION
BM #1	767.07	-Control point is period "." after abbreviation of No. for the tee box marker on golf hole #14.
BM #2	762.63	-Control point is the center of sanitary manole lid (bolted) between hole #11 green and hole #12 tee box.
BM #3	765.90	-Control point is on hole #11, the center of dimple at the 164 yard marker sprinkler head in center of fairway.
BM #4	767.28	-Control point is on Hole #6, the center of dimple at the 82 yard marker sprinkler head in center of fairway.
BM #5/HZPT #1	799.74	-Chiseled 'X' on N corner of concrete collar of C.B. N:718812.8309 E:1865481.2767
BM#6	802.08	-North flange bolt on fire hydrant.

Horizontal Reference Datum = NAD83 (NSRS 2007)



INDEX MAP
Scale: 1" = 200'

Final Site Compliance Plan: 19345-828



VICINITY MAP
Not to Scale

GRAPHIC SCALE
0 100 200 400
1 inch = 200 feet

SHEET INDEX

PROPERTY INFORMATION

A	WHITEHALL ASSISTED LIVING LLC	090-001568	BROAD ST	3.52 AC
B	KOSTRESKI DIMCHE & GORDA	090-001054	HAMILTON RD	1.91 AC
C	KOLA PROPERTIES LTD	090-000044	HAMILTON RD	5.60 AC
D	THE CHURCH OF ST EDWARD	090-001524	FAIRWAY BL	3.46 AC
E	BRONZEVILLE HOLDINGS LLC	090-002152	FAIRWAY BL	1.12 AC
F	ALLEN EBLE	090-005617	FAIRWAY BL	0.42 AC
G	CARMEN S CLITES	090-005110	FAIRWAY BL	0.43 AC
H	SANDRA KUNZ	090-005161	FAIRWAY BL	0.36 AC
I	AMALEE SOTERIADES	090-005112	FAIRWAY BL	0.40 AC
J	NICHOLAS DESPAS III	090-004439	FAIRWAY BL	0.40 AC
K	JEFFREY FULLER	090-005113	FAIRWAY BL	0.45 AC
L	XIAO YU HUANG	090-005114	FAIRWAY BL	0.40 AC
M	JOSEPH BLAIES	090-005118	FAIRWAY BL	0.29 AC
N	STACY GLEASON	090-004446	FAIRWAY BL	0.33 AC
O	PATRICIA HICKS	090-005163	FAIRWAY BL	0.36 AC
P	WILLIAM SAPP	090-001740	FAIRWAY BL	0.42 AC
Q	JANE DAVIS	090-001754	FAIRWAY CR	0.44 AC
R	CANDACE SCHNEIDER	090-001755	FAIRWAY CR	0.47 AC
S	THOMAS NEEDLES	090-001756	FAIRWAY CR	0.46 AC
T	NANCY & CLARK ROBERT	090-001757	FAIRWAY CR	0.50 AC
U	MICHAEL WAGENBRENNER	090-001758	FAIRWAY CR	0.73 AC

FEMA NOTE

According to the Federal Emergency Management Agency's Flood Insurance Rate Map (dated June 17, 2008), the improvements lie within Zone X, Community Panel No. 39049C0351K.

WATER QUALITY BMP NOTE:

The Water Quality Structure HW1 is a Stormwater Quality BMP and is an integral part of the private storm sewer system and existing wet detention basin (Shown on CC 12410, not built with a plan) depicted in these drawings. Responsibility and assurance of periodic maintenance and the continuous functionality of these stormwater quality control devices is perpetual, beginning with the Owner at the time of installation and continuing to all Future Owners of said private storm sewer system. See sheet 3 of 5 for post construction maintenance and inspection requirements.

OHIO EPA PERMIT NOTE:

The project disturbs more than 1 acre and requires coverage under the Ohio EPA NPDES General Permit OHC000005. Ohio EPA Facility Permit Number: 4GC06962*AG

SITE DATA TABLE

Site Total:	229.44 Ac
Disturbed Area: (No Disturbance in R/W)	6.18 Ac
Pre-developed Impervious Area	12.79 Ac.
Post-Developed Impervious Area	13.51 Ac.

100 YEAR DETENTION TABLE*

LOCATION	VOLUME REQUIRED AC/FT	VOLUME PROVIDED AC/FT	ELEVATION	EMERGENCY ## OVERFLOW SPILLWAY ELEVATION	REMARKS
Existing Wet Detention Basin	3.40	7.67	800.79	800.95	
Total:	3.40	7.67			

*See Storm Water Management Plan/Report for Details.

Refer to details on sheet 3 for Emergency Overflow. Top of Basin/Bank to be 801.79.

SUMMARY OF POST-CONSTRUCTION STORMWATER CONTROL FACILITIES - (BMPs REQUIRED)

CONTROL/ OUTLET STRUCTURE NO.	PLAN VIEW & DETAIL PAGE NUMBERS FOR BMP	CONTROL FUNCTION	DRAINAGE AREA TO CONTROL FACILITY (ACRES)	FACILITY TYPE	GREEN INFRASTRUCTURE (SQUARE FEET)
HW1 (CC18786)	3	Water Quality and Quantity	19.75	Existing Wet Detention Basin*	N/A

* No Plan to reference - Being modified/reconfigured into Extended Wet Detention Basin.

STANDARD CONSTRUCTION DRAWINGS

The Standard Drawings listed on these plans shall be considered a part thereof:

City of Columbus
2230 4/30/18

AA-S145 AA-S149 AA-S150
AA-S151 AA-S168

OWNER
Columbus Country Club
Jay Frank, PGA
4831 East Broad Street
Columbus, Ohio 43213
Tel: (614) 861-0800 ext 730
jfrank@columbuscc.com

ENGINEER
EMHT Inc.
Matt Stypula, PE
5500 New Albany Road
Columbus, Ohio 43054
Tel: (614) 775-4369
mstypula@emht.com

PM - 247, 248

EASEMENT REFERENCE

CITY NO.	COUNTY RECORDER VOL.	COUNTY RECORDER PAGE	GRANTOR

NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
emht.com

REGISTERED ENGINEER NO. DATE

APPROVALS:

SIGNATURES BELOW SIGNIFY ONLY CONCURRENCE WITH THE GENERAL PURPOSES AND GENERAL LOCATIONS OF THE PROJECT. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE ENGINEER PREPARING THE PLANS. APPROVAL FOR STORM SEWERS ONLY.

CITY ENGINEER/ADMINISTRATOR, DIVISION OF DESIGN & CONSTRUCTION — DATE

ADMINISTRATOR, DIVISION OF POWER — DATE

ADMINISTRATOR, DIVISION OF SEWERAGE & DRAINAGE — DATE

ADMINISTRATOR, DIVISION OF WATER — DATE

PROJECT TITLE:

CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
TITLE SHEET

DIVISION USE ONLY	OWNER
	CONTRACTOR
	INSPECTOR
	AGREEMENT / COMPLETED
	RPD / CKD / CID / CON.DR.
	INDEX DETAIL / RECORD FILE

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE

DIVISION USE ONLY

SCALE: As Noted
SHEET: 1/5
CONTRACT DRAWING NO.: CC-18786
RECORD PLAN NO.:

GENERAL NOTES
The City of Columbus Construction and Materials Specifications (CMSC), 2018 edition including Supplemental Specification 1100 and all other revisions and supplements thereto, shall govern all construction items that are a part of the plans unless noted otherwise.

Any modifications to the specifications or changes to the work as shown on the drawings, must have prior written approval by the Administrator, Division of Sewerage and Drainage and the owner.

The sewers shown on this plan shall be constructed as a private storm system. Therefore, the City will not assume maintenance thereof after completion. Stand by inspection is mandatory during construction.

All items of work called for on the plans for which no specific method of payment is provided shall be performed by the Contractor and the cost shall be included in the various unit prices bid for the project improvement.

The Contractor shall carefully preserve bench marks, property corners, reference points, stakes and other survey reference monuments or markers. In cases of willful or careless destruction, the Contractor shall be responsible for restorations. Resetting of markers shall be performed by an Ohio Professional Surveyor as approved by the City Engineer.

Immediately after placement of any conduits, the contractor shall construct the end treatments required by the plans at both the outlet and inlet ends. This shall include headwalls, concrete, rip rap, rock channel protection, sodding, pouring bottoms, mudding lift holes, etc.

INSPECTION
Stand by inspection by the Division of Design and Construction is mandatory during construction.

The Contractor shall, prior to starting any construction operation, deposit with the City the total estimated cost for inspection and, where required, a re-paving guarantee.

The Contractor shall ensure there is a surveyor's level and rod on the project for use in performing grade checks whenever sewer line structures or pipe are being installed. The Contractor shall make this equipment available for use and assist the City Inspector in performing grade checks when requested by the Inspector. The Inspector will make all reasonable attempts to confine requests for assistance in performing grade checks to times convenient to the Contractor.

These checks will be performed to ensure the following:

a. Proper placement of each structure.
b. Proper installation of pipe runs.
c. Grade, after an overnight or longer shutdown.
d. Grade, at any other time the Inspector has reason to question grade of installation.

Grade checks performed by the City Inspector in no way relieve the Contractor of the ultimate responsibility to ensure construction to the plan grade.

The Contractor shall notify the following Divisions at least 24 hours in advance of the anticipated start of construction and/or demolition:

a. Division of Sewerage and Drainage (614) 645-7102
b. Division of Design and Construction (Construction) (614) 645-0433

Immediately after placement of any conduits

NOTIFICATIONS
The Contractor shall be responsible for the notification of all adjacent landowners at least seven working days prior to construction near or on their property.

SAFETY REQUIREMENTS
The Contractor and Sub-Contractor shall be solely responsible for complying with all federal, state, and local safety requirements, together with exercising precautions at all times for the protection of persons (including employees) and property. It is also the sole responsibility of the Contractor and Sub-Contractor to initiate, maintain, and supervise safety requirements, precautions, and programs in connection with the work.

CONFINED SPACE ENTRY
The Contractor shall be solely responsible for following the OSHA requirements for "Confined Space Entry" (CSE), Title #29 of the Code of Federal Regulations, Part 1910.146, while performing work inside any manhole or other confined space requiring a permit. Copies of all CSE permits shall be given to the City upon project completion.

FEES
The appropriate fees for the following shall be provided by the Contractor:

a. Standby inspection fee for the applicable plan improvements.
b. System capacity and meter fees associated with the installation of the fire protection and domestic waterline service tap.
c. Sanitary capacity and tap fees associated with the installation of the sanitary services.

TESTING
The Contractor shall coordinate all work with the Testing Agency, and allow the Testing Agency free access to the work. The Owner shall receive a copy of all test reports the day the tests are performed.

All subgrade compaction shall conform to Item 203. If compaction cannot be obtained, the Contractor shall remove the unsuitable soil and replace it with suitable soil or granular material. Removal and replacement shall be performed only as directed by the Testing Agency and shall be ordered only with the permission of the Engineer.

At all points of crossing water mains or other sewers, the backfill shall be of granular material between the deeper and shallower pipes.

PERMITS
The Contractor is to obtain all necessary permits and licenses needed for construction of this project. An original permit with red signatures shall be kept onsite at all times.

When occupying or excavating within public rights of way limits, the Contractor shall obtain an excavation permit from the City of Columbus, Department of Public Service - Permit Office between the hours of 7:30 am and 4:00 pm Monday through Friday. Phone: (614) 645-7497; Fax: (614) 645-1876; Email: ColsPermits@columbus.gov

CONTRACT WORK PERFORMED BY THE CITY
In the event that it becomes necessary for the City to perform work of an immediate nature (such as the placement of barricades or replacement of signs or other warning or protective devices) required of the Contractor by this contract because of failure or refusal of the Contractor to perform such work, the Contractor shall reimburse the City at the rate of 2.5 times the actual cost of labor, materials and equipment necessary to perform such work. If the Contractor refuses or fails within a reasonable time to perform or cause the performance of such work, The City shall be reimbursed by the Contractor by way of a deduction from the Contractor's net payment under the Contract. Reasonable time for all streets involved on this Contract is a maximum of 4 hours from the time of notification by the City.

STORAGE OF EQUIPMENT AND MATERIALS
Equipment, Materials, including pipe, shall NOT at any time (working or non-working hours) be stored within the right-of-way or within one hundred (100) feet of any intersecting street or driveway, without prior written approval from the City of Columbus. Compliance with this requirement along with additional provisions of the Contract Specifications shall not in any way relieve the Contractor of his legal responsibilities or liabilities for the safety of the public.

SITE VISIT
The Contractor shall perform field reconnaissance to become acquainted with the existing site conditions and the potential effects upon the work scope. Any performance of additional site subsurface investigations (test holes) shall be coordinated in advance with the Owner as warranted. Excavated material shall be replaced in a controlled manner to minimize impact on field earthwork operations.

CONSTRUCTION LAYOUT
All construction layout services for this project shall be provided by the Contractor in accordance with the project specifications.

RIGHTS-OF-WAY
In addition to direct requirements of the contract specifications, the Contractor shall observe and conform to the specific requirements of all rights-of-way including easements, court entries, rights-of-entry or action filed in court in accordance with the code of applicable governing agency. The cost of the operations necessary to fulfill such requirements shall be included in the price bid for the storm sewer improvement.

Excavated materials shall not be stored on existing roadway pavement.

WORK LIMITS
The Contractor is responsible for containing all performed work and all equipment, materials, vehicles, etc., used to carry out the work within the right-of-way of the streets, roadways and permanent storm sewer easements as shown on these plans.

The Contractor is responsible for cost of restoration for any area outside of the right-of-way or permanent easement to former condition and to the satisfaction of the Property Owner.

CONVENIENCE FACILITIES
The Contractor shall furnish and maintain sanitary convenience facilities for the workmen and inspectors for the duration of the work. Cost shall be included in the price bid for the storm sewer and grading improvements.

CONSTRUCTION DEBRIS
The Contractor shall be responsible for the immediate cleanup of any debris, mud or dirt tracked or spilled on City and/or public streets or private drives whether inside or outside the project area. The Contractor is responsible for the cost of any services contracted and/or completed by the City of Columbus in the cleanup of any tracking or spillage anytime during project construction.

MAIL SERVICE
The Contractor shall be responsible for maintaining mail service in the construction area. Prior to disturbing any mail boxes, the Contractor shall contact the Postal Authorities and shall temporarily relocate mail boxes in accordance with Postal requirements. The Contractor shall re-store mail boxes to their former condition and location. Cost to be included in the price bid for the various items.

TRASH COLLECTION SERVICE
The Contractor shall contact the City of Columbus, Division of Refuse (614) 645-4729 for current collection date each week prior to starting work and be responsible for maintaining a 20 foot wide clear area for trash can placement in the front of each lot for trash collection service in the construction area on the designated trash pick-up day.

SIGNS, MAILBOXES, FENCES, ETC.
The Contractor shall be responsible for restoring all signs, mailboxes, fences, guardrail, shrubs, drainage structures, or other physical features disturbed or damaged during construction whether shown on the plans or not to their former location and condition. Cost to be included in the price bid for the various items.

OPEN EXCAVATION IN ROADWAYS - STEEL PLATES
Excavations and trenches over 24 inches deep shall be securely plated, or backfilled with Item 304 during non-working hours.

All excavations shall be maintained as safe as possible by the Contractor at all times and backfilled at the end of each work day. Open excavations over 24 inches after work hours require traffic plates, and/or lighted barricades and construction fence.

NON-RUBBER TIRED VEHICLES
Non-rubber tired vehicles shall not be moved on public streets, existing private roadways, or parking lots. Exceptions may be granted by the City where short distances and special circumstances are involved. Granting of exceptions must be in writing and any resulting damage must be repaired to the satisfaction of the City, and at the Contractor's expense.

UTILITY POLE SUPPORT
Utility poles within influence of the construction operations shall be reinforced by the utility company prior to these construction activities. Notification of the utility company prior to construction shall be the responsibility of the Contractor. Cost of said reinforcement shall be included in the bid items associated with the work.

ABANDONMENT OF UNDERGROUND STRUCTURES
Provisions for abandonment of any underground structure (septic tank. cistern, etc.) shall be considered at warranted. The work shall conform with all applicable federal, state and local requirements and shall include plugging/sealing of any outlet pipes, pumping out and disposing of contents, along with the placement of suitable backfill to fill the structure. (At 100% Standard Proctor Density unless otherwise specified by the Site Soil Engineer).

MAINTAIN DRAINAGE
The flow in all sewers, drains, field tiles and watercourses encountered shall be maintained by the Contractor at his own expense, and whenever such watercourses and drains are disturbed or destroyed during the prosecution of the work, they shall be restored by the Contractor at his own expense to a condition satisfactory to the owner.

All drain tile and storm sewers damaged, disturbed, or removed as a result of the Contractor's operations shall be replaced with the same quality pipe or better, maintaining the same gradient as existing. Work to be performed during backfill operations.

Any drain tile and/or storm sewer encountered by construction, not shown on plans, shall be connected with the curb underdrain, storm sewer system or provided with an outlet into the roadway ditch as applicable. Replaced drain tile/storm sewer shall be laid on compacted bedding equal in density to surrounding stratum. Replacement shall be done at the time of the backfill operation. Cost of this work to be included in the price bid for the storm sewer improvements.

EXISTING UTILITIES
The existing conditions shown on the plan drawings were taken from aerial mapping (Franklin); aerial survey (Franklin County) and/or available records and do not reflect field verified conditions. The existing elevations and/or physical features (utilities, obstacles, structures, etc.) are shown for graphical purposes only and shall not be construed as being accurate or complete.

The Contractor is responsible for the investigation, location, support, protection, and restoration of all existing utilities and appurtenances whether shown on these plans or not. The Contractor shall expose all utilities and structures prior to construction to verify the vertical and horizontal effect on the proposed construction. The Contractor shall call, toll free, the Ohio Utilities Protection Service (1-800-362-2764) and to the owners of underground utility facilities shown on the plans who are not members of a registered underground protection services in a accordance with section 153.64 of the revised code 72 hours prior to construction and shall notify all utility companies at least 48 hours prior to work in the vicinity of their underground lines.

Mechanical digging equipment shall not be used to exposing any underground utility, only hand tools may be used to uncover the utility and the utility company shall be notified and have a representative present when the utility is exposed.

The Contractor shall be responsible for coordinating the relocation and/or protection of any utilities as required by the plan with the owner of the affected utility. Private utility manholes within the limits of the work shall be adjusted to grade by the respective utility company at the Contractor's expense.

Where potential grade conflicts might occur with existing utilities and at locations noted thus, expose, the Contractor will be required to uncover such utilities sufficiently in advance of laying pipe or duct and provide the Engineer the location and elevation of said utility so the Engineer can determine if any adjustments are necessary.

In all conflicts in grade between water mains and gravity sewers, the water main shall be lowered during construction. All existing water mains shall be located at least 10' horizontally and at least 18" vertically from storm sewers, unless otherwise approved by the City.

The Contractor shall locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protecting during excavation operations.

Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the Engineer immediately for directions. Cooperate with the owner and public utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility Owner.

Do not interrupt existing utilities serving facilities occupied and owned by the Owner except when permitted in writing by the Owner and then only after acceptable temporary utility services have been provided.

The following utilities may be located within the work limits of this project and subscribe to the Ohio Utilities Protection Service (OUPS).

Support and protection of all utilities and appurtenances shall be the responsibility of the Contractor. Costs for repair and restoration of existing utilities damage by the Contractor shall be the responsibility of the Contractor. The City of Columbus utilities will only locate and mark main line facilities. The Contractor is responsible for locating all service laterals and lines. Costs associated with the above work and responsibilities shall be included in the price bid of various items.

UTILITY	ADDRESS	TELEPHONE
American Electric Power Solution Center	850 Tech Center Drive Gahanna, OH 43230	(800) 277-2177
Columbia Gas	920 West Goodale Boulevard Columbus, OH 43212 24-Hour Contact	(800) 460-2223
Columbus FiberNet	1366 Dublin Road Columbus, OH 43215	(614) 274-8100
Water Facilities	City of Columbus Division of Water 910 Dublin Road Columbus, OH 43215	(614) 645-7788
Sewer Facilities	City of Columbus Division of Sewerage and Drainage 1250 Fairwood Avenue Columbus, OH 43208	(614) 645-7102
Electric Facilities	City of Columbus Division of Power 3500 Indianola Avenue Columbus, OH 43214	(614) 645-7627
City of Columbus Division of Traffic Management	1820 Seventeenth Avenue Columbus, OH 43219	Phone: (614) 645-7393 Fax: (614) 645-5967
City of Columbus Department of Technology	90 W. Broad St. Columbus, OH 43215	Phone: (614) 645-7756 Fax: (614) 645-6627
City of Columbus Communication Section	4211 Groves Road Columbus, OH 43232	Phone: (614) 724-7047 Fax: (614) 645-6588 Radio Room: (614) 724-4006

CITY WATER
The Contractor must obtain from the Division of Water a fire hydrant permit prior to connection of their water supply lines to any fire hydrant. The Contractor shall provide all the necessary gate valves, back flow preventers, and flow meter for each hydrant location. All equipment, fittings, and valves shall be in accordance with Division of Water Standards. The Contractor shall pay for water at the current City Rates. Use of water from fire hydrants and associated fees are outlined in the City of Columbus Rule and Regulation No. 01-01. A copy of this regulation is available from the Division of Water, Permit Office, (614) 645-7695. No attached hoses shall be left unattended.

Fire hydrant permits may not be available within project limits. Contractor shall contact the Division of Water to locate available hydrants prior to bidding. All costs associated with trucking water to the site shall be included in related items.

EROSION AND SEDIMENT CONTROL
Erosion and sediment control measures are required as part of this project. Erosion and Sediment Control measures specific to this site may be found on Sheet Nos. 4-5 of this plan. Land-disturbing activities must comply with all provisions of the Division of Sewerage and Drainage EROSION AND SEDIMENT POLLUTION CONTROL REGULATION. All land-disturbing activities shall be subject to inspection and site investigation by the City of Columbus and/or the Ohio EPA.

All Erosion Sedimentation Control Practices are subject to field modifications at the discretion of the City of Columbus, Project Engineer and/or the Ohio EPA.

It is the responsibility of the Contractor to notify the City of Columbus two (2) working days prior to commencement of initial site land disturbance on any site of one (1) or more acres. This includes site clearing, grubbing and any earth moving. Primary erosion and sediment control practices are mandated by regulations to be in place from the beginning of the construction activity. Please contact The Stormwater Management Office @ (614) 645-6700 or fax @ (614) 645-1506. Details of this requirement may be found in the EROSION AND SEDIMENT POLLUTION CONTROL REGULATION (adopted June 1, 1994). Failure to comply may result in enforcement action as detailed in the Columbus City Codes Section 1145.80.

The NPDES permit holder shall provide qualified personnel to conduct site inspections ensuring proper functionality of the erosion and sedimentation controls. All erosion and sedimentation controls are to be inspected once every seven (7) calendar days and within 24 hours of a 1/2 inch storm event or greater that occurs over a 24 hour period. Records of the site inspections shall be kept by the Contractor and made available to jurisdictional agencies if requested.

This plan must be posted on-site. A copy of the SWPPP plan and the approved EPA Stormwater Permit (with the site-specific NOI number) shall be kept on-site at all times.

SEEDING
All areas that are disturbed by the project shall be restored to original or better condition, per Item 659 (Seeding and Mulching) or the applicable specifications.

RESTORATION AND CLEAN UP
Inconvenience to the adjacent property owners and to the traveling public shall be kept to an absolute minimum. All work is to continue on a uniform basis and on schedule, particularly the restoration and clean up of disturbed areas after construction.

Contractor shall provide at a minimum daily street cleaning and immediately for specific events described in "Construction Debris" general note. Cleaning shall be performed on adjacent public roadways at the end of each day.

All fences, signs, drainage structures, valves, landscaping, etc. removed, disturbed or damaged during work within PUBLIC RIGHT-OF-WAYS, EASEMENT AREAS and/or under the project improvements shall be restored to their original condition by the Contractor unless otherwise specified. Payment for same shall be included in the price bid for the various improvement items.

All Existing pavement markings, including raised pavement markers, removed, rendered unserviceable or destroyed shall be replaced in like kind.

DEWATERING
In the event that dewatering is necessary, the Contractor is required to prepare a dewatering plan that will describe how the dewatering operation will be completed and how the pump effluent will be managed. Reference the soils report for discussion of groundwater consideration. The cost for dewatering operations shall be included in the price bid for the storm sewer improvement.
This plan will be presented to the City for review prior to any dewatering operations. The Contractor shall be solely responsible to the O.D.N.R. for the registry, maintenance and abandonment of any withdrawal device used in the construction of this project.

Installation of any well, well point pit, or other withdrawal device used for the purpose of removing groundwater from any aquifer shall be in accordance with the applicable requirements of the Ohio Department of Natural Resources.

Installation of any well, well point, pit or other device used for the purpose of lowering the groundwater level to facilitate construction of this project shall be properly abandoned in the provisions of Section 3745-9-10 of the Ohio Administrative Code or as directed by the Ohio Department of Natural Resources Director or his representatives. The Contractor is solely responsible to the Ohio Department of Natural Resources (O.D.N.R.) for registry, maintenance, and abandonment of any withdrawal devices used in the construction of this project.

The Contractor shall be required to complete and file a Well Log and a Drilling Report Form with O.D.N.R., Division of Water, within 30 days of the completion of installation of any well, well point, pit or other device used for the purpose of removing groundwater from an aquifer. This in accordance with Sections 1521.01 and 1521.05 of the Ohio Revised Code. In addition, any such facility that has a capacity to withdraw waters of the state in an amount greater than 100,000 gallons per day from all sources shall be registered by the Contractor with the Chief of the O.D.N.R., Division of Water, within three months of the completion of the facility in accordance with Section 1521.16 of the Ohio Revised Code. Copies of the necessary paperwork can be obtained at O.D.N.R., Division of Water, Fountain Square, Columbus, Ohio, 43224-1387, Phone: (614)265-6717.

The Contractor shall furnish and operate suitable pumping equipment of such capacity adequate to dewater the trench should water be encountered. The trench shall be sufficiently dewatered so that the placement of bedding and the laying and joining of pipe is made on firm, dry ground. If dewatering cannot produce acceptable subgrade, and only as directed by the Engineer, unsuitable materials shall be removed and replaced by Item 906, stone foundation and shall be included in the price bid for the various sewer items.

The Contractor shall convey all trench water to a natural drainage channel or storm sewer without damage to property. The Contractor shall be responsible to place and maintain the necessary sediment control measures to filter the dewatering discharge. Direct Discharge of sediment laden water to the City's sewer system or a receiving stream is a violation of Ohio EPA and City of Columbus regulations; the Contractor will be held liable for the violation and subsequent fines.

The cost of any dewatering operations required for the construction of the storm sewer shall be included in the price bid for the various sewer items.

If during construction of the sewer, the water wells belonging to nearby residences are dewatered, the Contractor shall provide potable water to the residents and if the well is unable to be recommissioned after construction, a tap to a waterline shall be provided if available or another well dug, at no extra cost to the residents.

EARTHWORK - GENERAL
The Contractor shall be responsible for the suitability of soils to be used for embankments.

Stockpiling of top soil and/or excess material for these improvements or offsite hauling of topsoil/suitable material, etc. shall be coordinated with the Owner. Appropriate means for sedimentation control of the onsite stockpiles shall be provided as a matter of general practice in accordance with the required standards referenced as a part of the details shown on Sheet 4. It is the Contractors responsibility to assure that a sufficient amount of topsoil remains as shown on the plans.

Grading shown on the approved grading plan is necessary to provide surface drainage of the proposed development and shall be maintained during construction.

The Contractor shall strip topsoil from all grading areas prior to construction. The Contractor shall be responsible for rough grading the topsoil stockpile as required to maintain positive drainage of and around the stockpile.

All fill shall be placed in uniform 8-inch lifts and compacted in a controlled manner to at least 98% of the maximum dry unit weight obtained in the laboratory by the "standard" proctor compaction test (ASTM D 698). Moisture content of the new fill shall be in the range of +/-2 percent of the optimum moisture content determined by ASTM D 698. Fill shall not be placed in a frozen condition or upon a frozen subgrade. The Contractor shall endeavor to separate topsoil and unsuitable material from suitable fill material.

The proposed elevations/contours shown on the plans are finished grade.

All work shall be monitored and observed by a registered soils engineer employed and paid for by the Owner. It shall be the Contractors responsibility to contact the soils engineer prior to commencement of any fill placement. The Contractor shall contact the soils engineer as many times as necessary during construction to ensure the soils engineer is on-site during all fill operations.

CLEARING LIMITS
Clearing and Grubbing within the designated work limits shall be completed as a part of this contract. The Contractor is encouraged to visit the site to verify extent of clearing and grubbing limits. Additional clearing and/or grubbing shall be performed at the direction of the Construction Manager in accordance with Item 202 during construction operations. No burning is permitted unless appropriate permits are obtained by the Contractor. Cost for the above shall be included in the price bid for Item 201.

FOR THE DIVISION OF POWER
The Division of Power (DOP) may have overhead and underground primary, secondary, and street lighting at this work location. The contractor is hereby required to contact OUPS at 811 or 1-800-362-2764 forty-eight hours prior to conducting any activity within the construction area.

Any required relocation, support, protection, or any other activity concerned with the City's electrical facilities in the construction area is to be performed by the contractor under the direction of the DOP personnel and at the expense of the project. DOP shall make all final connections to DOP's existing electrical system at the expense of the project. The contractor shall use material and make repairs to a City of Columbus street lighting system by following DOP's "Material and Installation Specifications" (MIS) and the City of Columbus "Construction and Material Specifications" (CMSC). Any new or re-installed underground streetlight system shall require testing as referred to in section 1000.18 of the CMSC manual. The contractor shall conform to DOP's existing Street Light Lockout/Tagout (LOTO) Procedure, MIS-1, copies of which are available from DOP.

If any electric facility belonging to DOP is damaged in any manner by the contractor, its agents, servants, or employees, and requires emergency repairs, the DOP Dispatch Office should be contacted immediately at (614)-645-7627. DOP shall make all necessary repairs and other related costs shall be paid by the contractor to the Division of Power, City of Columbus , Ohio.

TREE PROTECTION DURING CONSTRUCTION
All trees will be protected against injury or damage to branches, trunks, or roots from construction and excavation. City of Columbus Forestry Section can be contacted @ 614-645-6640.

All pruning and removal must be done in accordance to ANSI A300 and ANSI Z133.1 standards. The Contractor performing the work must be a professional tree care company with certified arborist on staff and available to direct the on-site crew.

Heavy equipment will not be allowed over (or to compact the soil over) the root zone of existing trees. Restricted equipment access routes will be established before work has begun. Temporary paving materials such as plywood, lumber, or rubber matting spread over the root zone may be required to prevent compaction.

Installation of utilities under the dripline of existing trees must be directionally bored or drilled below the root zone. The top of the bore or tunnel should be no less than 3 feet deep. Open trenches within the root zone must be avoided.

Where grade change is required within the root zone of public trees, a sufficient residual root zone to provide for the good health of the trees should remain undisturbed and protected by either a dry well or retaining wall if the grade is to be raised or lowered.

Construction materials, excavation debris, chemicals, fuel, equipment, or vehicles are not to be stockpiled, stored, dumped, or parked within the area of the dripline of any tree.

Fires are not permitted within the dripline of any trees.

All existing trees designated for preservation will be protected with a good, substantial fence, frame or box not less than four feet high and as far from the tree as possible. Dripline is preferable, however, actual location will be determined by site limitations.

Fencing will be installed before commencing site preparation work. Fence must be maintained during the full construction period.

Interfering branches of trees may be removed when acceptable to the City Forester and shall be pruned in accordance with the City Forester's standards.

Any trees damaged or destroyed due to the Contractor's negligence will be treated or removed at the contractor's expense. If damaged beyond repair, the City will require reimbursement for the value of the tree as determined by the current edition of the "Guide for Plant Appraisal," published by the International Society of Arboriculture.

DUST CONTROL
The Contractor shall be responsible for providing dust control measures in accordance with Item 616. Dust control operations shall be performed on a periodic basis and/or as directed by the Engineer to alleviate or prevent the dust nuisance originating within the project work limits. Calcium chloride on areas to be seeded and mulched will not be permitted. The cost for all dust control measures shall be included in the price bid for the storm sewer improvements.

PAVEMENT CUTTING, SAWING AND EXCAVATION OPERATIONS NOTE:
All public agencies and private contractors performing pavement-cutting operations on City of Columbus streets and roadways shall protect the environment from discharges created by their pavement cutting operations. Note that Columbus City Code 1145 prohibits non-stormwater discharge into the City of Columbus sewer system, curb inlets and any part of its MS4 (municipal separate storm sewer system).

The requirement includes but is not limited to wet or dry saw-cutting, jack hammering, excavation equipment use, etc. The public agency and/or private contractor work crews shall recover and dispose of detritus, polluted waters, or other such discharges resulting from their pavement cutting operations and protect all storm sewer inlets from receiving any discharges from the construction operations. The agency or contractor responsible for each pavement cutting activity shall be solely liable for Notice of Violations (NOV/s) and fines issued by City of Columbus and/or State of Ohio Authorities.

Equipment, materials and methods shall be provided by the responsible public agency and/or private contractor to work crews performing the pavement cutting activity and made available to work crews for use in cleaning up discharges resulting from such cutting activities and preventing runoff. All work crews shall be trained to exercise and employ equipment, materials, and environmental protective measures to prevent polluted discharges from entering the City of Columbus storm sewer system and waters of the State of Ohio.

The public agency and/or private contractor is solely responsible for ensuring that the inlet protection is adequate. The most stringent project plans, notes and/or drawings including Stormwater Pollution Prevention Plan (SWP3) or Spill Prevention/Remediation Plan shall apply to all pavement cutting, sawing or excavation operations.

PM - 247, 248

EASEMENT REFERENCE

CITY NO.	COUNTY RECORDER		GRANTOR
	VOL.	PAGE	

REVISIONS

NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMH&T
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
emht.com

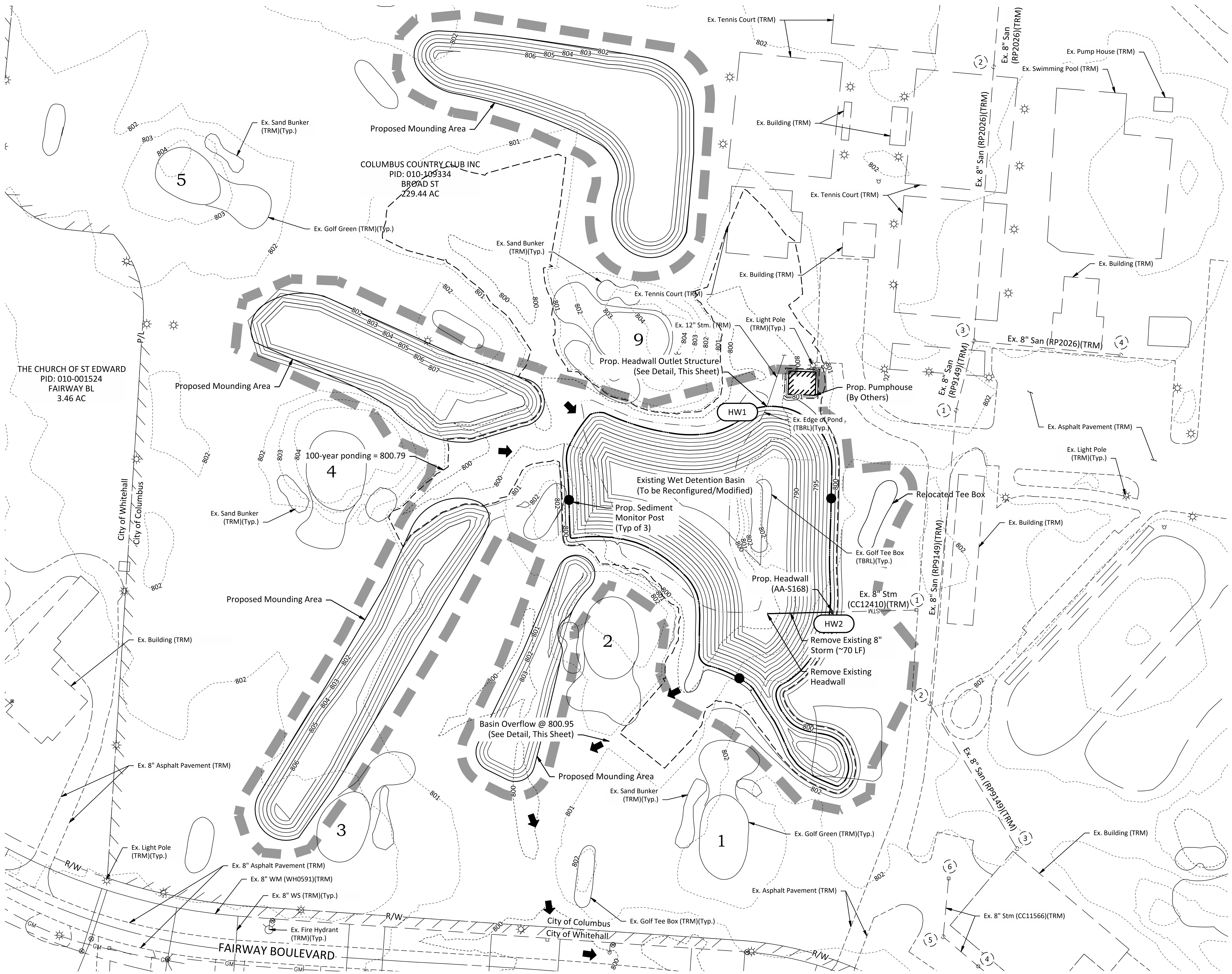
PROJECT TITLE:
CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
GENERAL NOTES

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE

DIVISION USE ONLY

DIVISION USE ONLY				OWNER	
				CONTRACTOR	
				INSPECTOR	
				AGREEMENT	COMPLETED
				RPD / CKD	CID / CON.DR.
				INDEX DETAIL	RECORD FILE

SCALE: As Noted	SHEET 2/5
CONTRACT DRAWING NO. CC-18786	RECORD PLAN NO.



PLAN VIEW

Scale: 1" = 60'

LEGEND

Symbol	Description
	Right of Way
	Ex. Right of Way
Ex. Valve — W	Ex. Water Main
Ex. Manhole — SD	Ex. Storm Sewer
Ex. Manhole — SS	Ex. Sanitary Sewer
NG	Ex. Gas Line
	Ex. Street Light
	Ex. Water Valve
	Ex. Fire Hydrant
	Ex. Storm Inlet
	Limits of Disturbance
	Flood Routing (Greater than 100-yr Event)
Ex.	Existing
P/L	Property Line
R/W	Right-Of-Way
San.	Sanitary Sewer
Serv.	Service
Stm.	Storm Sewer
TRM	To Remain
TBRL	To Be Relocated
Typ.	Typical
WM	Water Main
WS	Water Service
	Sediment Monitor Post, See Detail - This sheet

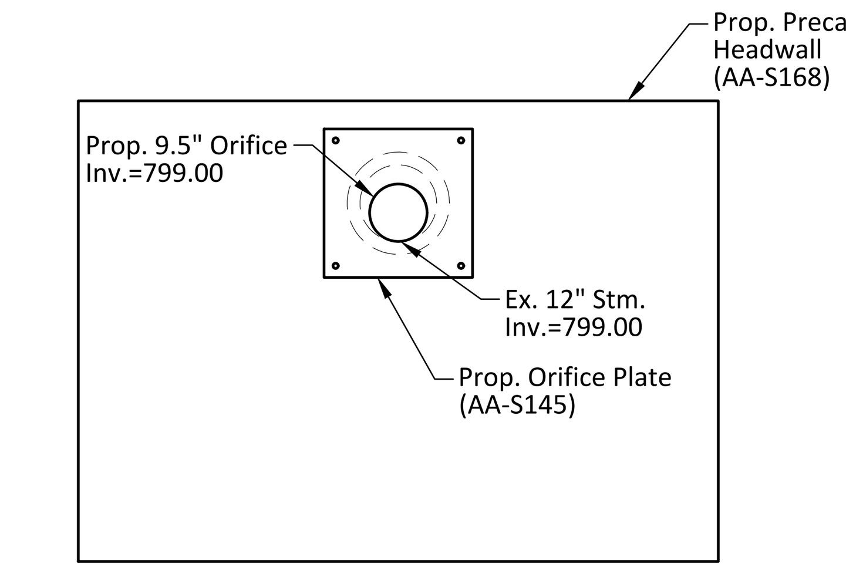
NOTES:

1. No fill will be added in the 100-year floodplain.

GRAPHIC SCALE

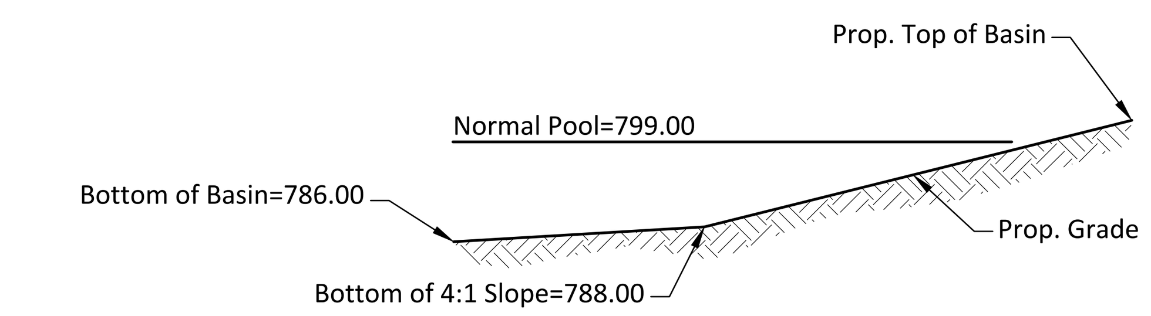
0 30 60 120

1 inch = 60 feet



HW1 DETAIL

Scale: Not to Scale



BASIN TYPICAL SECTION

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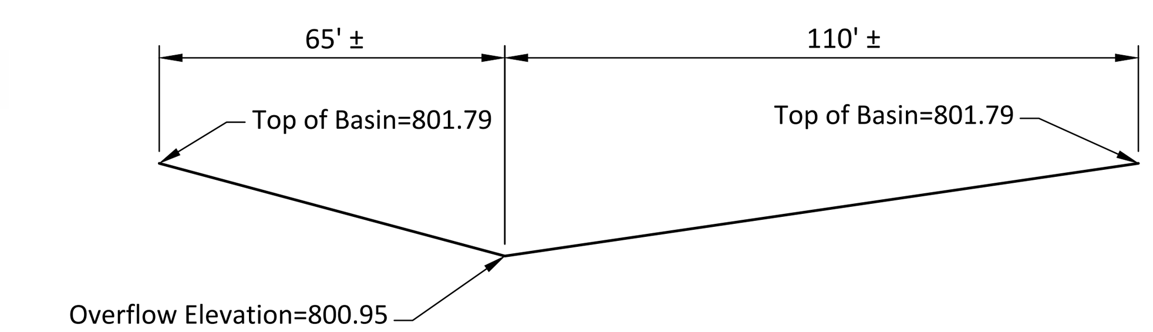
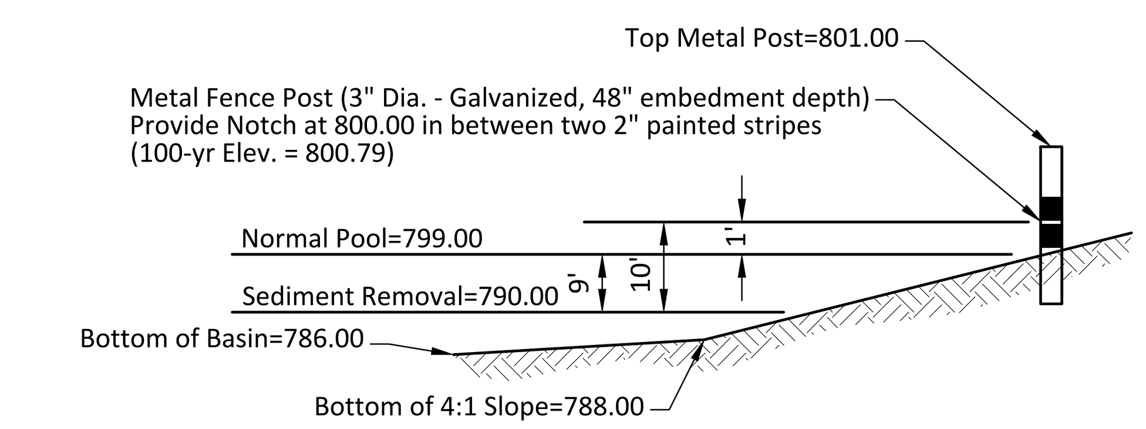


EMERGENCY SPILLWAY SECTION

Scale: Not to Scale



SEDIMENT POST DETAIL

Scale: Not to Scale

Maintenance and Inspection Schedule

Inspection Item	Maintenance Procedures	Frequency of Inspection
Inlet/Outlet Structure & Side Slopes	• Do not fertilize vegetation surrounding basin. • Remove accumulated sediment and debris from inlet and outlet structures. • Mow side slopes.	Monthly
Basin Embankment	• Repair undercut/eroded areas and stabilize.	Every 6 months
Storm Sewer System	• Remove debris from the sewer system to ensure positive flow to the basin.	Every 6 months
Stormwater Basin	• Inspect for damage, paying particular attention to the outlet control structure • Check for signs of eutrophic conditions (algae buildup) • Note signs of hydrocarbon build-up, remove appropriately • Monitor sediment accumulation in the facility • Examine to ensure inlet and outlet devices are free of debris and are operational. • Inspect for invasive vegetation if wetland components included.	Annually
Stormwater Basin Sediment Accumulation	• Monitor sediment accumulations, and remove sediment when the pool volume has become reduced significantly (25% of permanent pool volume lost), or the pond becomes eutrophic.	5 to10 years

PM - 247, 248

EASEMENT REFERENCE			
CITY NO.	COUNTY RECORDER VOL.	COUNTY RECORDER PAGE	GRANTOR

REVISIONS		
NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMH&T
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
emht.com

PROJECT TITLE:

CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
STORM SEWER & GRADING PLAN & POST CONSTRUCTION MAINTENANCE & INSPECTION SCHEDULE

DIVISION USE ONLY | OWNER | CONTRACTOR | INSPECTOR | AGREEMENT | COMPLETED | RPD | CKD | CID | CON.DR. | INDEX DETAIL | RECORD FILE

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE

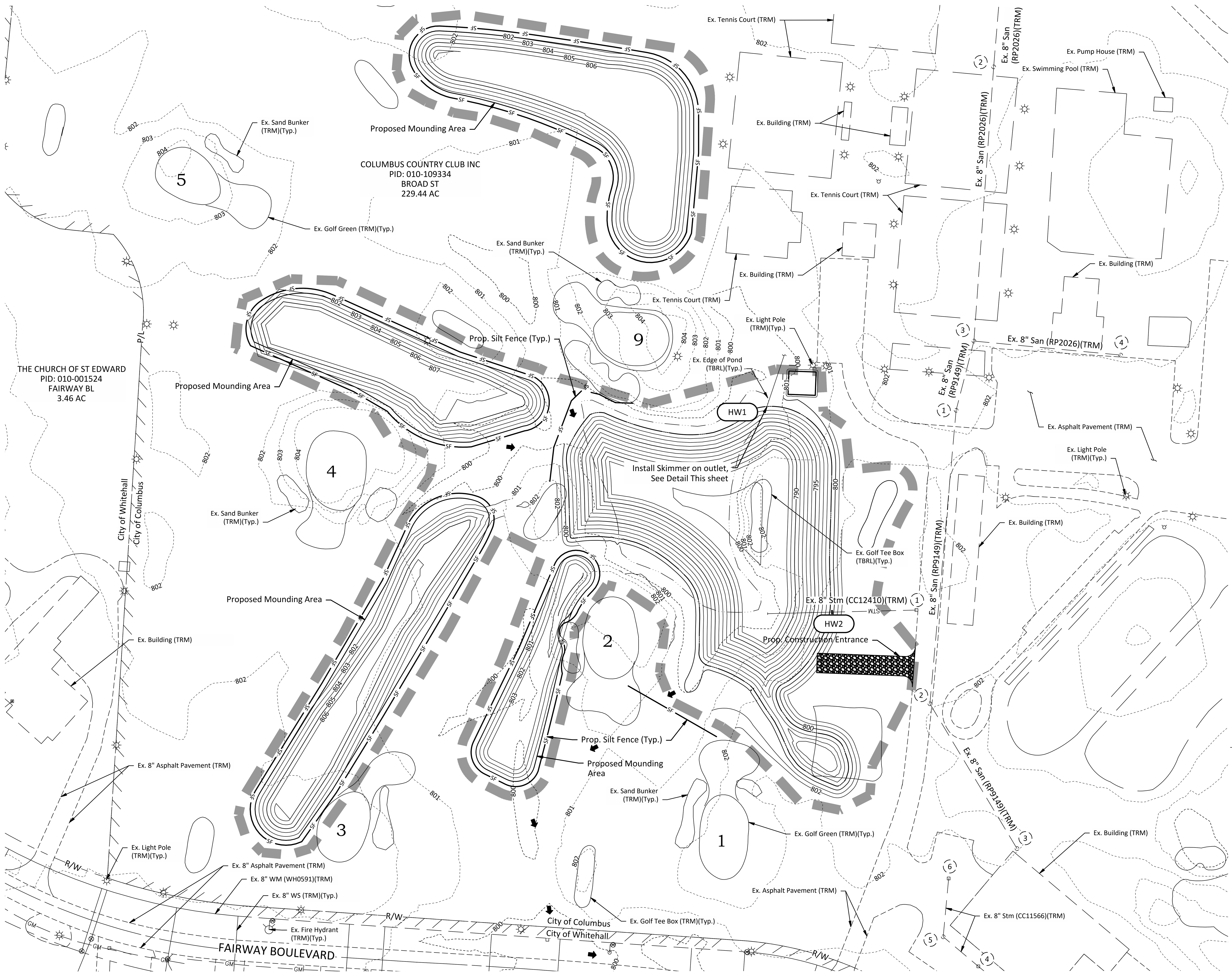
DIVISION USE ONLY

SCALE: As Noted

SHEET 3/5

CONTRACT DRAWING NO. CC-18786

RECORD PLAN NO.



PLAN VIEW
Scale: 1" = 60'

LEGEND

	Right of Way
	Ex. Right of Way
Ex. Valve — W	Ex. Water Main
Ex. Manhole — SD	Ex. Storm Sewer
SS — Ex. Manhole	Ex. Sanitary Sewer
NG	Ex. Gas Line
	Ex. Street Light
	Ex. Water Valve
	Ex. Fire Hydrant
	Ex. Storm Inlet
Ex.	Existing
P/L	Property Line
R/W	Right-Of-Way
San.	Sanitary Sewer
Serv.	Service
Stm.	Storm Sewer
TRM	To Remain
TBRL	To Be Relocated
Typ.	Typical
WM	Water Main
WS	Water Service

LEGEND

	Flood Routing Arrow
XX1 / XX5	Existing Contours
XX1 / XX5	Proposed Contours
	Limits of Disturbance
	Stabilized Construction Entrance (See COC Std Dwg 2230)
SF	Silt Fence (See Detail, Sheet 5)

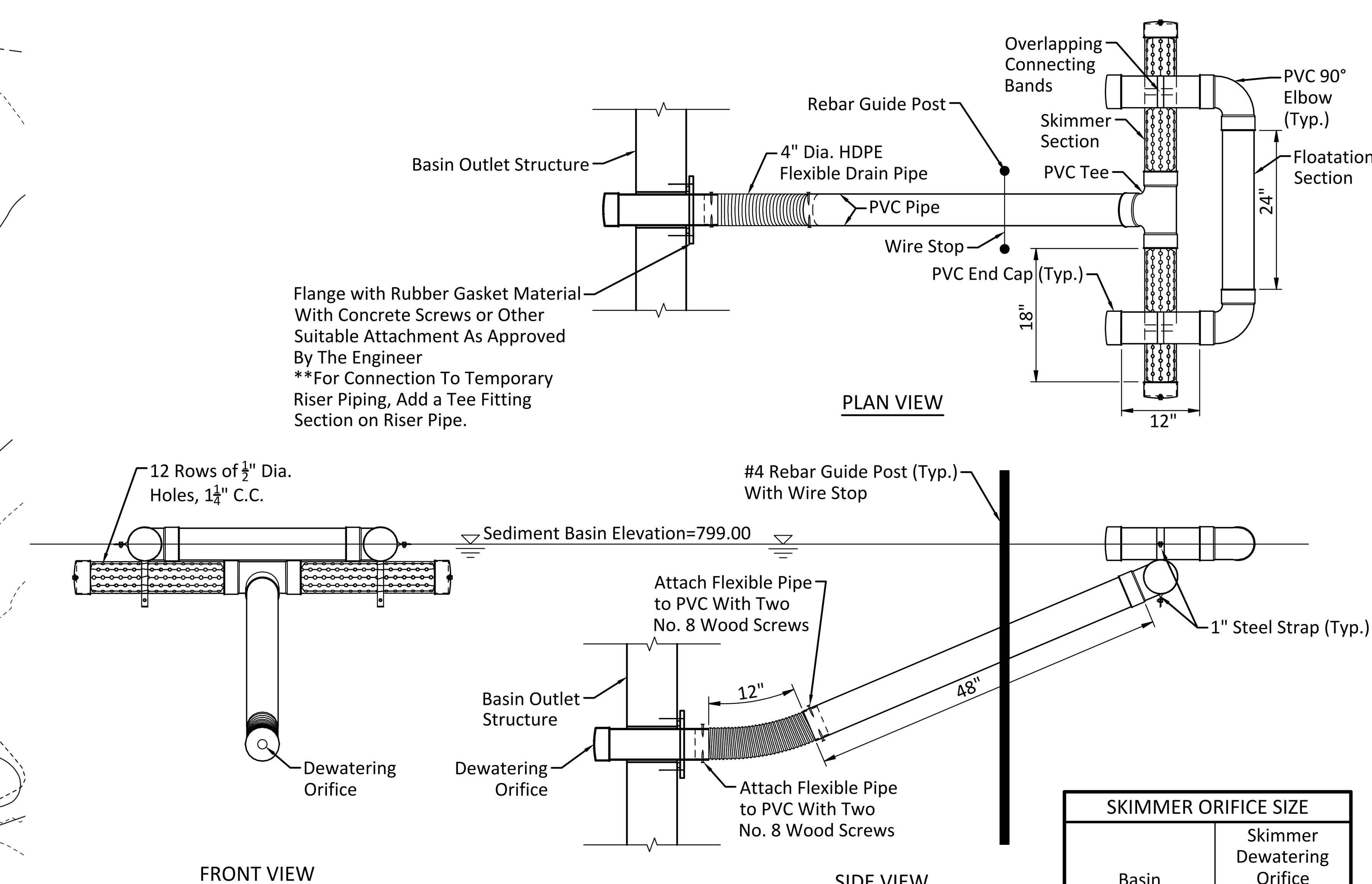
NOTES:

1. Upper bank above normal water elevation should be stabilized quickly with straw blankets, jute matting or similar geotextile.
2. Any existing storm inlets impacted by the new construction activity will need the appropriate inlet protection for sediment control.

GRAPHIC SCALE

0 30 60 120

1 inch = 60 feet



SKIMMER ORIFICE SIZE	
Basin	Skimmer Dewatering Orifice Diameter (Inches)
Outlet 1	4.00

TEMPORARY SEDIMENT BASIN SKIMMER DEWATERING DEVICE
(No Scale)

PM - 247, 248

EASEMENT REFERENCE			
CITY NO.	COUNTY RECORDER VOL.	COUNTY RECORDER PAGE	GRANTOR

REVISIONS		
NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMH&T
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
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PROJECT TITLE:

CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
EROSION CONTROL PLAN

DIVISION USE ONLY — OWNER — CONTRACTOR — INSPECTOR

AGREEMENT		COMPLETED	
RPD	CKD	CID	CON.DR.
INDEX DETAIL		RECORD FILE	

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE

DIVISION USE ONLY

SCALE: As Noted
SHEET 4/5
CONTRACT DRAWING NO. CC-18786
RECORD PLAN NO.

SITE NARRATIVE

PLAN DESIGNER: EMHT Inc.
Matt Stypula
5500 New Albany Road
Columbus, Ohio 43054
Tel: (614) 775-4500
Fax: (614) 775-4800

OWNER/DEVELOPER: Columbus Country Club
Jay Frank
4831 East Broad Street
Columbus, OH 43213
Tel: (614) 861-0800 ext 730

PROJECT DESCRIPTION: Expanding an existing retention pond onsite and creating berms nearby onsite with the excavated soil.

EXISTING SITE CONDITIONS: Golf Course

RECEIVING STREAM: Big Walnut Creek

ADJACENT AREAS: Big Walnut to east and south, Broad Street to the North and Fairway Boulevard to west and south

EROSION AND SEDIMENT MEASURES: Silt fence

SOILS: Soil consist of Bennington-Urban land complex (BfA) per the Web Soil Survey

MAINTENANCE: It is the Contractor's responsibility to maintain the sediment control features used on this project. The site shall be inspected at a minimum of once per every 7 days and within 24 hours of 0.5" or greater rain event over a 24 hour period. Records of these inspections shall be kept and made available to jurisdictional agencies if requested. Any sediment or debris which has reduced the efficiency of a structure shall be removed immediately. Should a structure or feature become damaged, the Contractor shall repair or replace at no additional cost to the Owner.

CONSTRUCTION SEQUENCE:
1. Install construction entrance.
2. Install sediment fence.
3. Commence grading activities.
4. Install skimmer following basin construction.
5. Remove sediment control following stabilization of disturbed area.

SCHEDULE: The Contractor shall provide a schedule of operations to the owner. Sedimentation and erosion control features shall be placed in accordance with this schedule.

OHIO EPA NPDES FACILITY PERMIT NUMBER 4GC06962*AG

SITE CONTACT: JR Lynn
4831 East Broad Street
Columbus, Ohio 43213
Tel: (614) 300-3599
Email: jlynn@columbuscc.com

BMP Installation	#	Tel: (###) ###-###	Email: #
BMP Maintenance	Same as above	Same as above	Same as above
Site Stabilization and BMP Removal	Same as above	Same as above	Same as above

Note:
All erosion and sediment control practices are subject to field modification at the discretion of the City of Columbus and/or the Ohio EPA.

PERMANENT AND TEMPORARY SEEDING

The limits of seeding and mulching are as shown within the plan as indicated by the limits of disturbance. All areas not designated to be seeded shall remain under natural ground cover. Those areas disturbed outside the seeding limits shall be seeded and mulched at the Contractor's expense.

Seeding Provided Per Item 659.

TABLE 1: PERMANENT STABILIZATION

AREA REQUIRING PERMANENT STABILIZATION	TIME FRAME TO APPLY EROSION CONTROL
Any areas that will lie dorment for one year or more	Within seven days of the most recent disturbance
Any areas within 50 feet of a surface water of the state and at final grade	Within two days of reaching final grade
Any areas at final grade	Within seven days of reaching final grade within that area

TABLE 2: TEMPORARY STABILIZATION

AREA REQUIRING PERMANENT STABILIZATION	TIME FRAME TO APPLY EROSION CONTROL
Any areas within 50 feet of a surface water of the state and at final grade	Within two days of the most recent disturbance if the area will remain idle for more than fourteen days
For all construction activities, any disturbed areas that will be dormant for more than 14 days but less than one year, and not within 50 feet of a surface water of the state	Within seven days of the most recent disturbance within the area For residential subdivisions, disturbed areas must be stabilized at least seven days prior to transfer of permit coverage for the individual lot(s)
Disturbed areas that will be idle over winter	Prior to the onset of winter weather

SEDIMENT AND EROSION CONTROL NOTES

MAINTENANCE:
It is the Contractor's responsibility to maintain the sedimentation and erosion control features on this project. Any sediment or debris which has reduced the efficiency of a control shall be removed immediately. Should a structure or feature become damaged, the Contractor shall repair or replace at no additional cost to the Owner.

INSPECTIONS:
The NPDES permit holder along with the Contractor shall provide qualified personnel to conduct site inspections ensuring proper functionality of the erosion and sedimentation controls. All erosion and sedimentation controls are to be inspected once per every seven calendar days and within 24 hours of a 0.5" storm event or greater that occurs over a 24 hour period. Records of the site inspections shall be kept and made available to jurisdictional agencies if requested.

CONTRACTORS RESPONSIBILITIES:
Details have been provided on the plans in an effort to help the Contractor provide erosion and sedimentation control. The details shown on the plan shall be considered a minimum. Additional or alternate details may be found in the ODNR Manual "Rainwater and Land Development". The Contractor shall be solely responsible for providing necessary and adequate measures for proper control of erosion and sediment runoff from the site along with proper maintenance and inspection in compliance with the NPDES General Permit for Storm Discharges Associated with Construction Activity.

The Contractor shall provide a schedule of operations to the Owner. The schedule should include a sequence of the placement of the sedimentation and erosion control measures that provides for continual protection of the site throughout the earth moving activities.

Prior to construction operations in a particular area, all sedimentation and erosion control features shall be in place. Field adjustments with respect to locations and dimensions may be made by the Engineer, City of Columbus and the Ohio EPA.

The Contractor shall place inlet protection for the sedimentation control immediately after construction of the catch basins or inlets.

It may become necessary to remove portions of sedimentation controls during construction to facilitate the grading operations in certain areas. However, the controls shall be replaced upon grading or during any inclement weather.

The Contractor shall be responsible to have the current Storm Water Pollution Prevention Plan immediately available or posted on site.

The contractor is responsible for ensuring that offsite soil borrow and export areas have Ohio EPA NPDES permit coverage and that appropriate erosion and sediment controls are properly installed and maintained.

Street cleaning (on an as-needed basis) is required through the duration of this construction project. This includes sweeping, power cleaning and (if necessary) manual removal of dirt or mud in the street gutters.

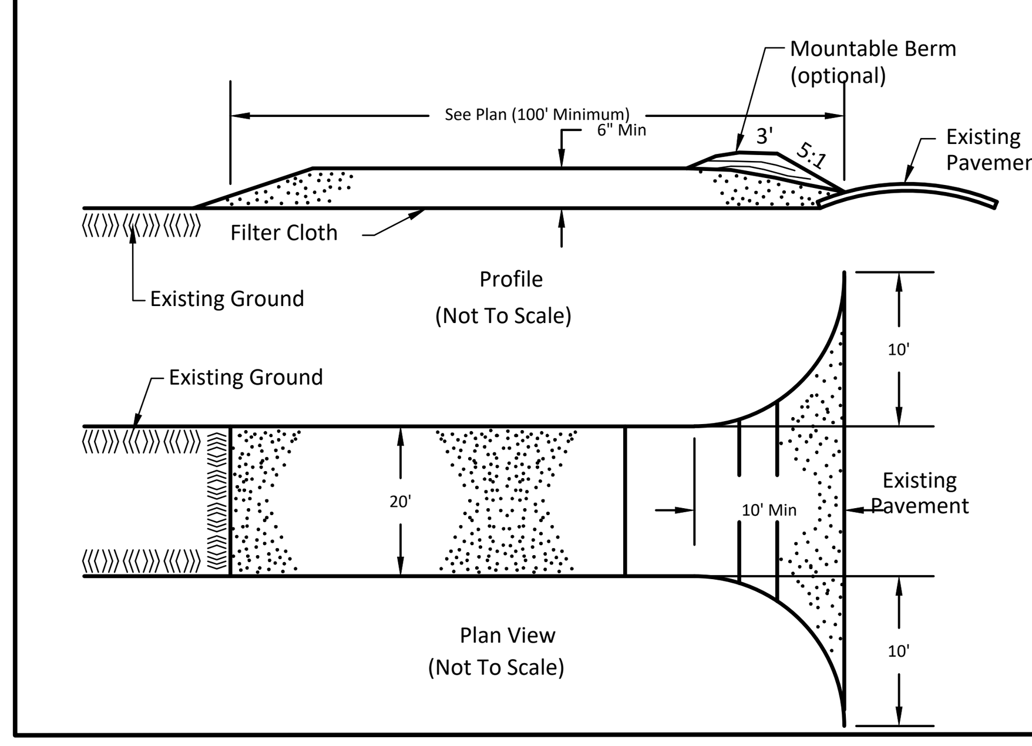
The Contractor shall be responsible to ensure that no solid or liquid waste is discharged into storm water runoff. Untreated sediment-laden runoff shall not flow off of site without being directed through a control practice.

Direct discharge of sediment laden water to the City's sewer system or a receiving stream is a violation of Ohio EPA and City of Columbus regulation; the Contractor will be held liable for the violation and subsequent fines.

The cost for temporary channels, sediment dams, sediment basins, and other appurtenant earth moving operations shall be included in the price bid for erosion and sedimentation control quantities.

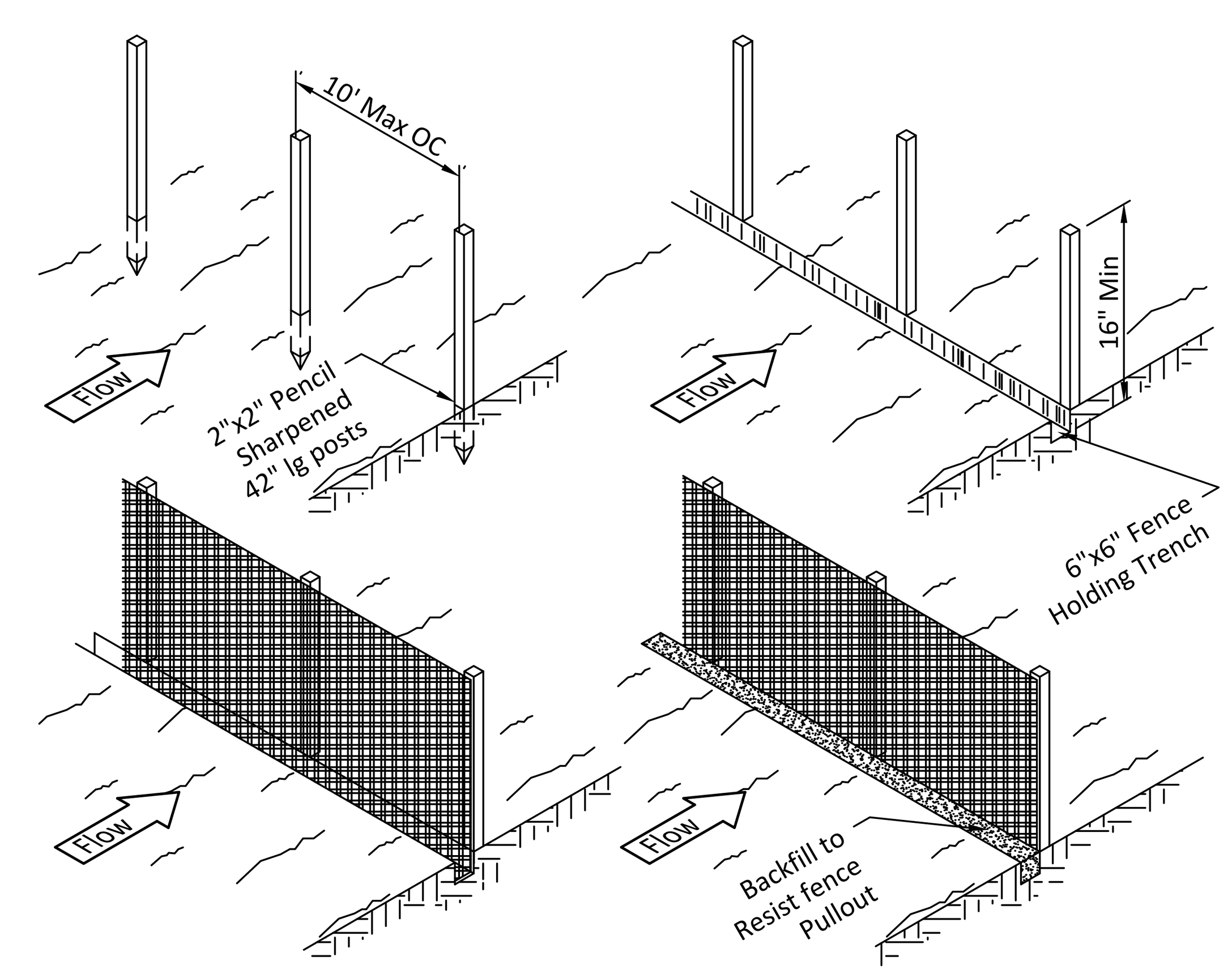
This plan must be posted on-site. A copy of the SWPPP plan and the approved EPA Stormwater Permit (with the site-specific NOI number) shall be kept on-site at all times.

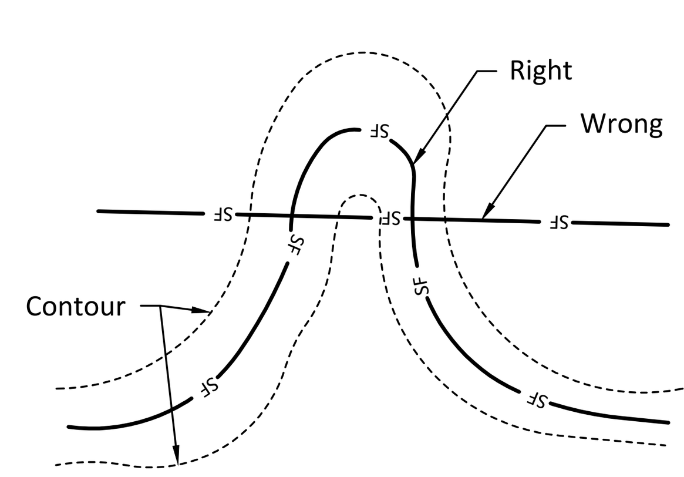
TEMPORARY CONSTRUCTION ENTRANCE



Construction Specifications

1. Stone Size - Use 2" Stone, or Reclaimed or Recycled Concrete Equivalent.
2. Length - as Required.
3. Thickness - not Less than Dix (6) Inches.
4. Width - Twenty (20) Foot Minimum, but not Less than the Full Width at Points where Ingress or Egress Occurs.
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. Cost of Pipe shall be Included in the Price Bid for the Stabilized Construction Entrance.
7. Maintenance - The Entrance shall be Maintained in a Condition which will Prevent Tracking or Flowing of Sediment onto Public Right-of-Way. This may Require Periodic Top Dressing with Additional Stone as conditions Demand and Repair and/or Cleanout of any Measures used to Trap Sediment. All Sediment Spilled, Dropped, Washed or Tracked onto Public Rights-of-Way must be Removed Immediately.
8. Washing - Wheels shall be Cleaned to Remove Sediment Prior to Entrance onto Public Right-of-Ways. When Washing is Required, it shall be Done on an Area Stabilized with Stone and which Drains into an Approved Sediment Trapping Device.
9. Periodic Inspection and Needed Maintenance shall be Provided After Each Rain.





Level Contour - For silt fence to promote deposition, it must be placed on the level contour of the land, so that flows are distributed into uniform sheet flow that has less energy for transporting sediment. Silt fence should never concentrate runoff, which will result if it is placed up and down slopes rather than on the level contour.

Material Properties:
1. The height of a silt fence shall not exceed 36-inches (higher fences may impound volumes of water sufficient to cause failure of the structure).
2. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum of a 6 inch overlap, and securely sealed. At a minimum, filter fabric shall meet the guidelines set forth by the O.D.N.R. Storm Water Manual.
3. Posts shall be spaced a maximum of 10 feet apart at the barrier location and driven securely into the ground (minimum of 16-inches). Wood posts will be a minimum of 42" long.
4. A trench shall be excavated approximately 6-inches wide and 6 inches deep along the line of posts and upslope from the barrier.
5. The standard strength filter fabric shall be stapled or wired to the fence, and 8-inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36-inches above the original ground surface.
6. Filter fabric shall not be stapled to existing trees.
7. The trench shall be backfilled and soil compacted over the filter fabric.
8. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.
9. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
10. To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed upslope so that the ends are at a higher elevation.

Maintenance:
1. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
2. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.
3. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

NOTES:

The use of straw wattles has proven to be a versatile and effective ESC BMP, especially in residential settings. Straw wattles may be substituted for silt fence in linear installation. Straw wattles to have a minimum diameter of 12 inches.

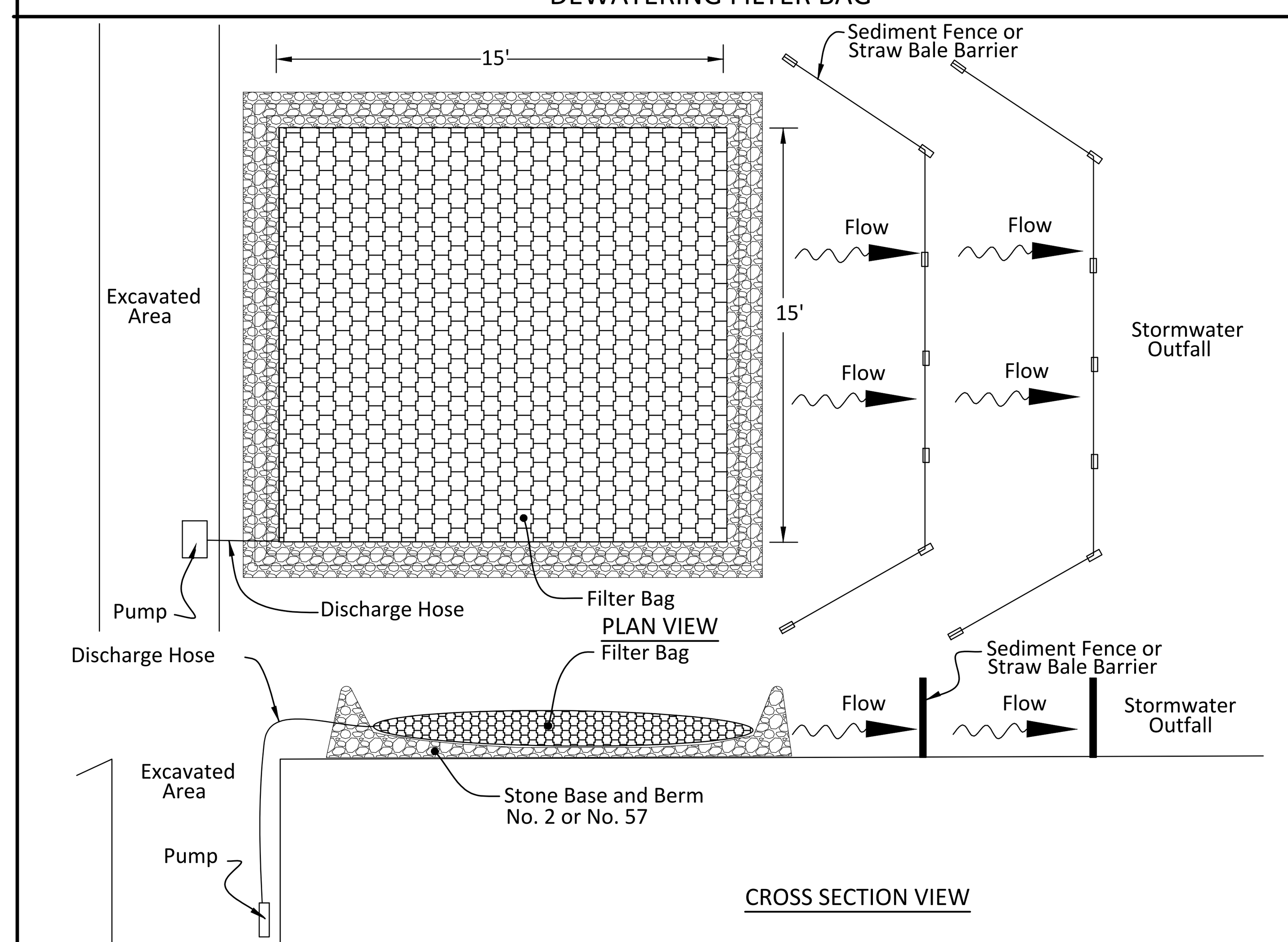
The use of compost filter socks and compost blankets are gaining wider acceptance nationwide. They are now approved for use on all Columbus SWP3 plans and construction sites. Compost filter socks to have a minimum diameter of 12 inches.

For minimum criteria for the Silt Fence Fabric, reference ODOT 712.09, Type C.

Leave a minimum distance of 5' between silt fence and toe of slope.

SILT FENCE
Scale: Not to Scale

DEWATERING FILTER BAG



Notice:
The pumping or direct discharge of sediment-laden (muddy) water to the City's sewer system or a receiving stream is a violation of Ohio EPA and City of Columbus regulations.

All inlets receiving flow from runoff, pumping activities, or other direct discharges shall be fitted with an inlet protection device that is properly sized and secured to reduce the discharge of sediment into the storm sewer system and receiving stream. Inlet protection is required on all inlets receiving discharge regardless of whether or not the inlet is tributary to any downstream erosion and sediment controls.

Discharge hoses used during pumping activities shall be fitted with sediment bags that are properly sized per manufacturer's recommendations regardless of what other sediment controls are in place further downstream. Sediment bags must be properly secured to the discharge hose and placed over vegetated areas, where feasible, during discharge. See detail above of a typical sediment bag installation.

Installation:
The Contractor shall pump muddy water encountered within excavated areas that are not tributary to sediment basins into a filter fabric bag. The bag shall be placed within a level undisturbed area as far away from the stormwater outfall as possible. The bag shall be placed on top of a aggregate pad. Additionally, a perimeter aggregate berm shall be constructed around the bag. Perimeter controls such as straw bale barriers or sediment fence shall be utilized along the downstream side of the bag. The perimeter controls shall be installed to ensure that the water flowing out of the bag does not flow around the ends of the controls. Upon completion, the bag shall be removed to an area away from the stormwater outfall and opened. The accumulated sediment shall be spread out to allow to dry and mix with onsite topsoil stockpile. Filterbag shall be JMD Enviro-Protection Filter Bag, size is 15'x15' or equal.

Maintenace:
The filter bag shall be replaced when the bag is half filled with sediment.

The Contractor shall contact the Owner/Engineer for consultative services if dewatering activities overwhelm the filter bag and perimeter controls.

PM - 247, 248

EASEMENT REFERENCE			
CITY NO.	COUNTY RECORDER VOL.	COUNTY RECORDER PAGE	GRANTOR

REVISIONS		
NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMH&T
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
emht.com

PROJECT TITLE:
CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
EROSION CONTROL PLAN NOTES & DETAILS

DIVISION USE ONLY | OWNER | CONTRACTOR | INSPECTOR | AGREEMENT | COMPLETED | RPD | CKD | CID | CON.DR. | INDEX DETAIL | RECORD FILE

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE

DIVISION USE ONLY

SCALE: As Noted
SHEET 5/5
CONTRACT DRAWING NO. CC-18786
RECORD PLAN NO.

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APPENDIX B:

CC-18786 Columbus Country Club Basin Modifications SWMP

EMH&T
Engineers, Surveyors, Planners, Scientists
DeliveringSolutions.

5500 New Albany Rd., Columbus, OH 43054
p. 614.775.4500
f. 614.775.4800
info@emht.com
Job Number: 2016-0393

COLUMBUS COUNTRY CLUB BASIN MODIFICATIONS (CC-18786)

Stormwater Management Plan (SWMP)

Prepared For: Columbus Country Club

April 27, 2020

emht.com

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PROJECT SUMMARY

Project Name:	Columbus Country Club Stormwater Modifications
Location:	City of Columbus, Franklin County, Ohio
Type:	Stormwater Management Plan
Reviewing Agency:	City of Columbus, Ohio EPA

HYDROLOGIC SUMMARY

Rainfall Data: NOAA Atlas 14, Volume 2, Version 3, 2004

1-yr	2.20”
2-yr	2.63”
5-yr	3.24”
10-yr	3.74”
25-yr	4.44”
50-yr	5.02”
100-yr	5.63”

Rainfall Distribution:	NRCS Type II 24 hour
Detention Policy:	City of Columbus
Water Quality:	City of Columbus, Ohio EPA
Hydrology Modeling Program:	HydroCAD 10.0

DESIGN SUMMARY

Detention:	Wet Basin
Water Quality:	Wet Basin
Receiving Water Body:	Big Walnut Creek

REVISIONS

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TABLE OF CONTENTS

TABLES

APPENDICES

1.0 INTRODUCTION

The following report provides a detailed analysis and design of the Stormwater Management Plan for the Columbus Country Club Modifications. The proposed site is located within the Columbus Country Club, north of Fairway Boulevard. The proposed project area involves the modification of an existing pond and the construction of a new pump house. The Stormwater Management Plan was prepared in accordance with the requirements of both the City of Columbus and the Ohio EPA. The runoff from this site will be routed through a wet basin for water quality and quantity control before discharging Big Walnut Creek.

Figure 1 – Site Location Map

2.0 HYDROLOGIC ANALYSIS

Hydrologic parameters such as Runoff Curve Number (RCN) and Time of Concentration were determined using standard Natural Resources Conservation Service (NRCS) methodology. The 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storm event discharge amounts were calculated using the NRCS TR-55 method. This analysis reflects the NRCS Type II distribution, 24-hr storm duration. Rainfall depths were obtained from NOAA Atlas 14, Volume 2, Version 3, 2004. The peak flow rates were computed using the HydroCAD 10.0 computer program.

3.0 PRE-DEVELOPED ANALYSIS

The pre-developed condition, as seen on Exhibit 1 in Appendix D, consists of existing grass in good condition, a pond, and miscellaneous buildings and pavement in Type "C" soils which corresponds

to a Runoff Curve Number of 77. Pre-developed 01 naturally drain to the existing pond which discharge to Big Walnut Creek through and exsiting 12" outlet pipe. Water from this pond is also pumped for irrigation and will continue to be used for irrigation in the future, but this is not included in the analysis.

All pre-developed subarea characteristics are summarized in Table 1. Pre-developed peak flow rates and existing basin functionality are provided in Table 2. All time of concentration calculations can be found in the HydroCAD output in Appendix C.

Table 1 -Pre-developed Subarea Characteristics

Subarea Identifier	Tributary Area (acres)	Land Usage	Runoff Curve Number	% Impervious (%)	Time of Concentration (min)	1-year Runoff Volume (ac-ft)
Subarea 01	19.64	Open Space, Impervious cover, Pond	77	11.25%	68.4	0.916
Total	**19.64**	**-**	**77**	**11.25%**	**-**	**0.916**

Table 2 -Pre-developed Peak Flow Rates

Storm Event (yr.)	Existing Pond Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 801.00 (feet)	Storage Volume Utilized (ac-ft)
1	0.84	799.58	0.439
2	1.42	799.79	0.642
5	2.31	800.08	0.980
10	2.94	800.29	1.306
25	6.99	800.45	1.611
50	11.90	800.53	1.779
100	17.87	800.60	1.929

4.0 POST-DEVELOPED ANALYSIS

Exhibit 2, provided within Appendix D, shows the post-developed condition. The Columbus Country Club basin modification project will utilize a modified existing basin provide water quality and quantity control for the proposed development. Subarea 01 will drain to Basin 01 which discharges to Big Walnut Creek. The post-developed subarea characteristics are summarized in Table 3. The post-developed allowable release rates and proposed release rates can be found in Tables 4.

Table 3 -Post-developed Subarea Characteristics

Subarea Identifier	Tributary Area (acres)	Land Usage	Runoff Curve Number	% Impervious (%)	Time of Concentration (min)	1-year Runoff Volume (ac-ft)
Subarea 01	19.75	Open Space, Impervious cover, Wet Basin	78	14.84%	73.5	0.988
Total	**19.75**	**-**	**78**	**14.84%**	**-**	**0.988**

The 1-year runoff volume for the post-developed site increases to 1.736 ac-ft, an increase of 245.82% from the existing condition, which results in 25-year critical storm event.

% Increase = [(0.988 – 0.916)/0.916] x 100 = 7.9%
1-Yr Critical Storm

Table 4 -Proposed Release Rates

Storm Event (yr.)	Pre-developed 01 Peak Flow Rates (cfs.)	Allowable Release Rates (cfs.)	Wet Basin Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 801.00 (feet)	Storage Volume Utilized (ac-ft)
1	0.84	<0.84	0.52	799.45	0.60
2	1.42	<1.42	0.92	799.61	0.83
5	2.31	<2.31	1.62	799.86	1.21
10	2.94	<2.94	1.99	800.10	1.59
25	6.99	<2.94	2.35	800.38	2.20
50	11.90	<2.94	2.59	800.59	2.77
100	17.87	2.94	2.80	800.79	3.40

Storage Utilized (100-yr event): 3.40 ac-ft
Storage Provided (Top of Bank = 801.80 ft.): 7.67 ac-ft

5.0 OUTLET DESIGN

The outlet structure for the Existing Basin is located on the northeast corner of the basin. The location of this structures can be seen on Exhibit 2 in Appendix D.

Wet Basin - Outlet Control Structure

- Bottom of Basin –787.00 ft.
- Top of Bank – 801.80 ft.
- 1st stage outlet – 9.5-inch orifice on 12" Outlet, invert at 799.00 ft.
- 2nd stage outlet – Overflow Weir at 800.79 ft.
- Tailwater Control –12-inch outlet pipe

6.0 WATER QUALITY

The Ohio EPA requires that the water quality volume for dry basins be detained for a period of 48 hours while not discharging more than the first half of the water quality volume in less than 16 hours. Water quality drawdown for the basin will be provided by the basin's 1st stage outlet listed in Section 5.0.

Table 5 -Water Quality Calculations

Basin Identifier	Tributary area (acres)	Percent Impervious (%)	Water Quality Volume (ac-ft)	Water Quality Elevation (feet)
Wet Basin	19.75	14.84%	0.272	799.21

7.0 CONCLUSION

The proposed stormwater management plan for Columbus Country Club Basin Modifications meets all requirements for detention and water quality as set forth by the City of Columbus and the Ohio EPA.

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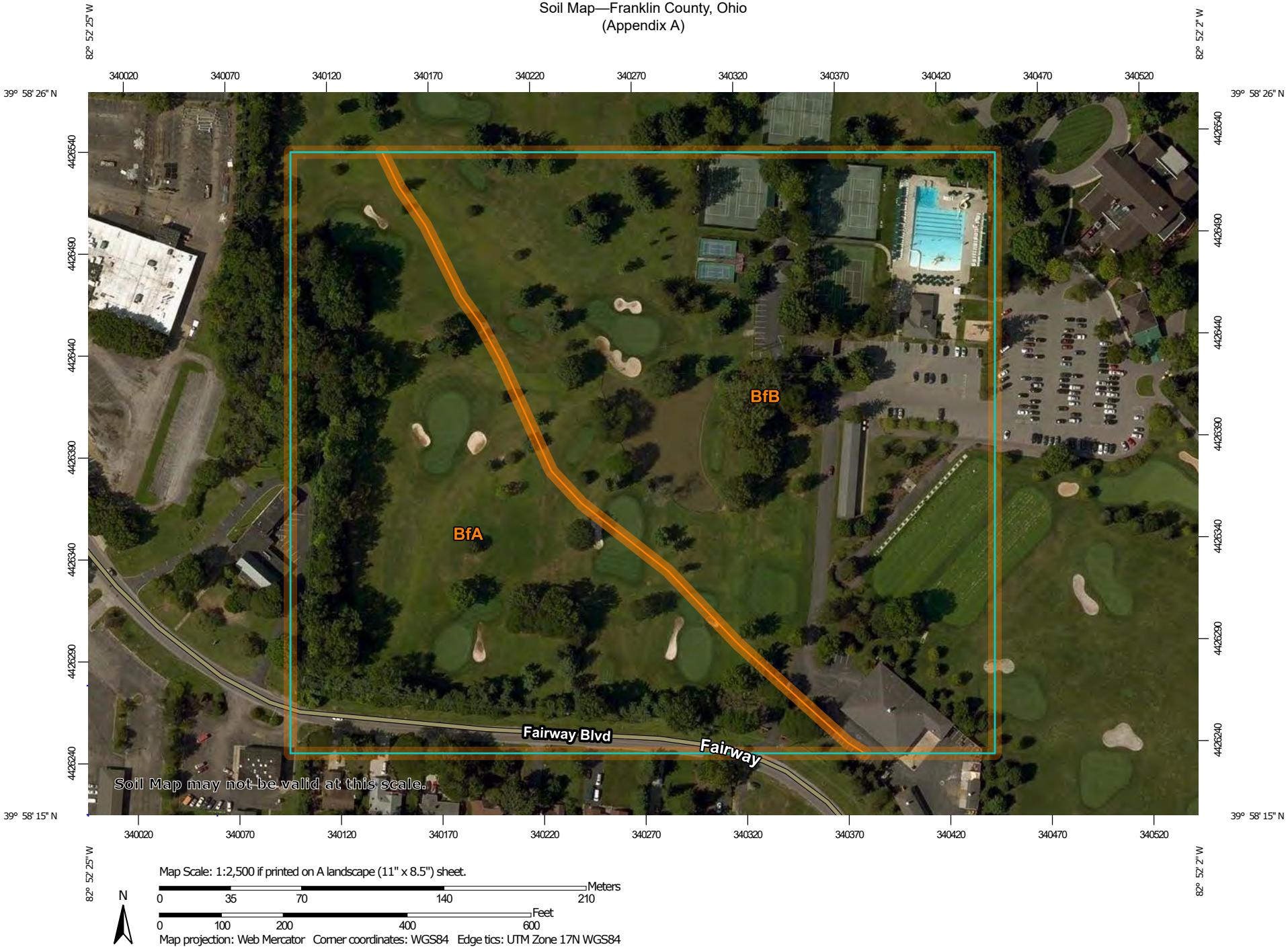
APPENDIX A:

USDA Soils Report



Map Scale: 1:2,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Franklin County, Ohio
Survey Area Data: Version 18, Sep 16, 2019

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

Date(s) aerial images were photographed: Aug 4, 2014—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BfA	Bennington-Urban land complex, 0 to 2 percent slopes	10.5	41.2%
BfB	Bennington-Urban land complex, 0 to 6 percent slopes	14.9	58.8%
Totals for Area of Interest		**25.4**	**100.0%**

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APPENDIX B:

Water Quality Calculations

Water Quality Volume Calculation Spreadsheet

Project Name: Columbus Country Club Basin Modification

Wet Basin

Provided Treatment Area

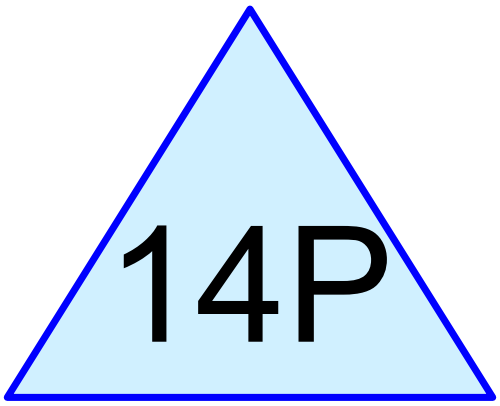
Tributary Area =	19.75	acres	
% impervious =	0.15		*2.93 acres of Impervious area*
Rv =	0.18		
WQv =	0.272	ac-ft	
or…	11841	ft^3	

Treated WQv = **11904** ft^3

The "Rv" coefficient was calculated using the ASCE method:
Rv = 0.05+.9i

Ohio EPA formula:
WQv = Rv x P x A / 12

A = area (acres)
P = 0.90"
Rv = (see above)



Prop Pond WQ

Subcat Reach Pond Link

Routing Diagram for CCC CC Calculations-2
Prepared by Symanetc, Printed 3/4/2020

Summary for Pond 14P: Prop Pond WQ

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af
Outflow	=	0.12 cfs @	5.00 hrs, Volume=	0.197 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.12 cfs @	5.00 hrs, Volume=	0.197 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Starting Elev= 799.21' Surf.Area= 58,044 sf Storage= 11,904 cf
Peak Elev= 799.21' @ 5.00 hrs Surf.Area= 58,044 sf Storage= 11,904 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

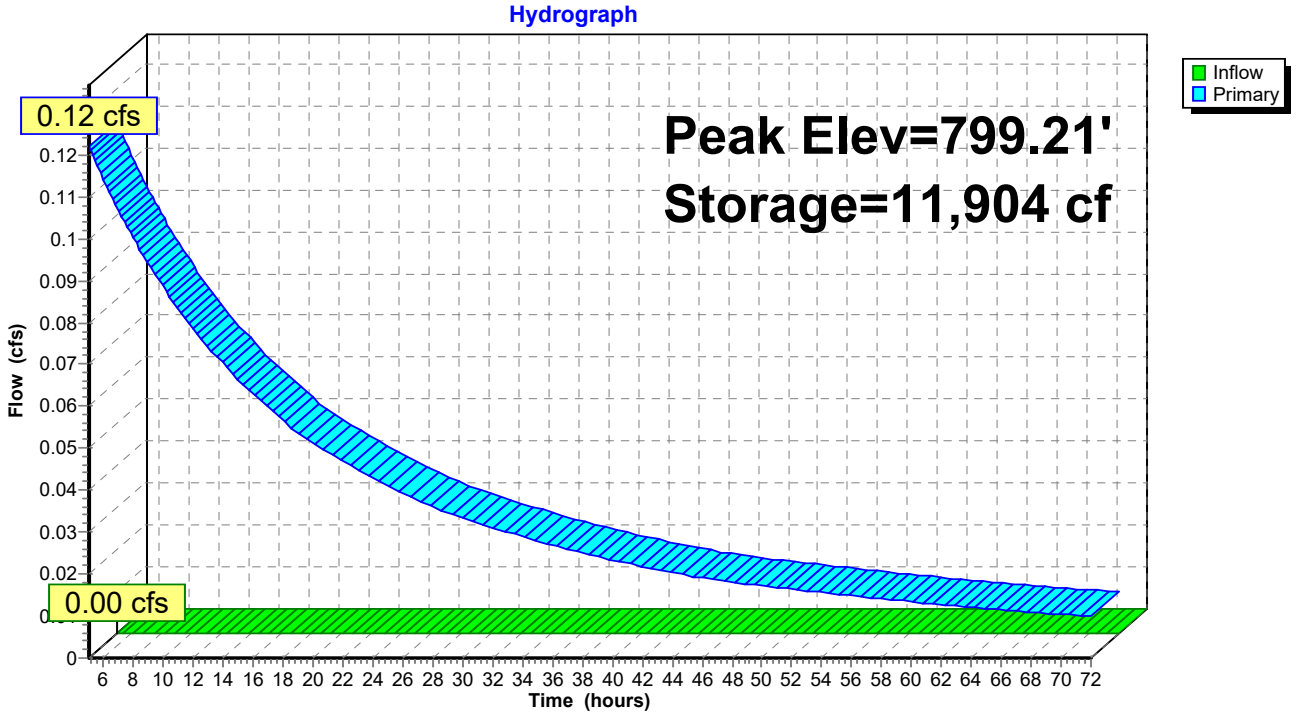
Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 5.00 hrs HW=799.21' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.12 cfs @ 1.54 fps)
↑—**2=Orifice/Grate** (Passes 0.12 cfs of 0.16 cfs potential flow)

Pond 14P: Prop Pond WQ



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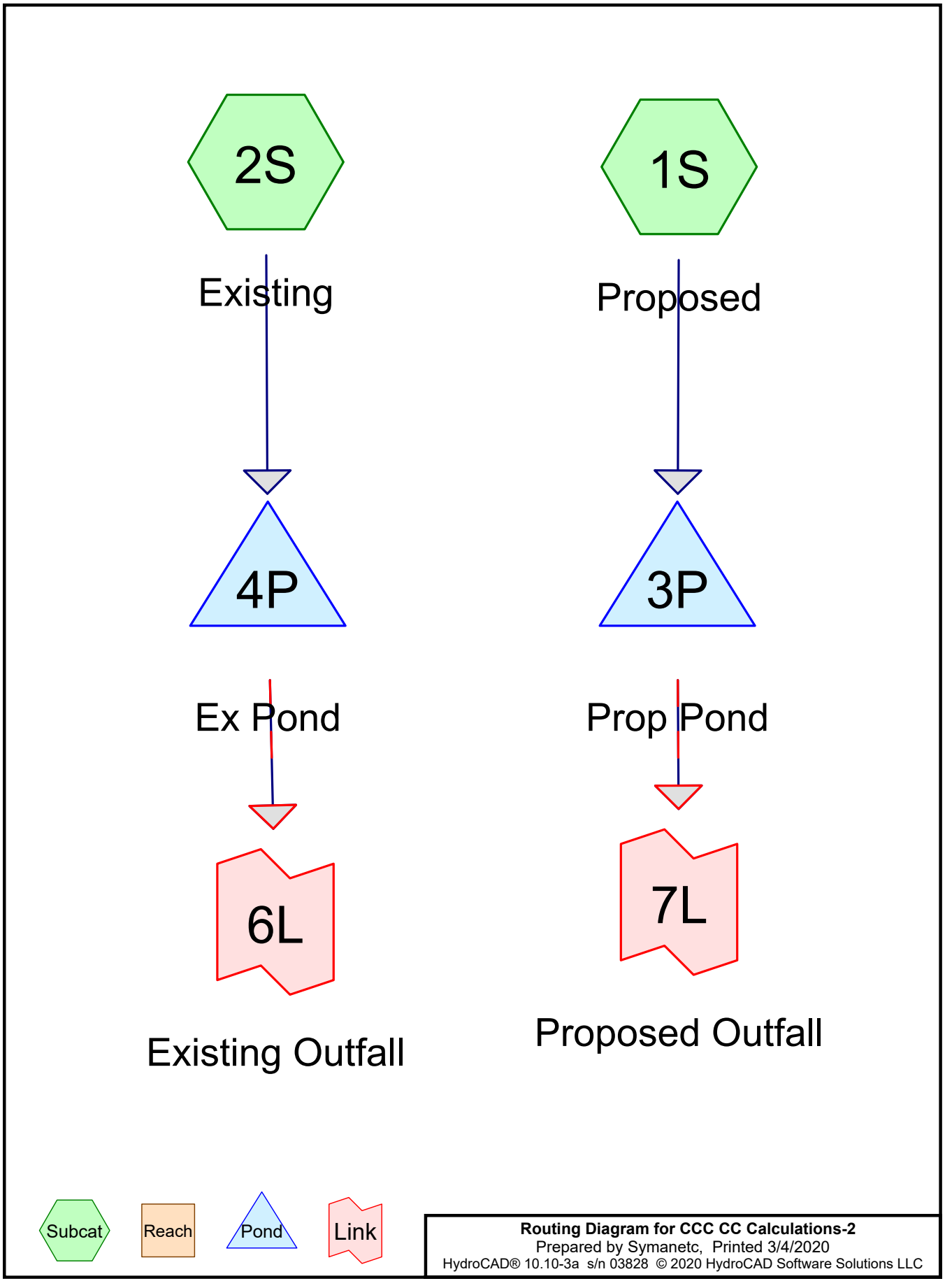
APPENDIX C:

HydroCAD Output



Routing Diagram for CCC CC Calculations-2
Prepared by Symanetc, Printed 3/4/2020

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr 24hr	Type II 24-hr		Default	24.00	1	2.20	2
2	2-yr 24hr	Type II 24-hr		Default	24.00	1	2.63	2
3	5-yr 24hr	Type II 24-hr		Default	24.00	1	3.24	2
4	10-yr 24hr	Type II 24-hr		Default	24.00	1	3.74	2
5	25-yr 24hr	Type II 24-hr		Default	24.00	1	4.44	2
6	50-yr 24hr	Type II 24-hr		Default	24.00	1	5.02	2
7	100-yr 24hr	Type II 24-hr		Default	24.00	1	5.63	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
34.250	74	>75% Grass cover, Good, HSG C (1S, 2S)
3.280	98	Paved parking, HSG C (1S, 2S)
0.020	98	Roofs, HSG C (1S)
1.840	98	Water Surface, HSG C (1S, 2S)
39.390	**77**	**TOTAL AREA**

Summary for Subcatchment 1S: Proposed

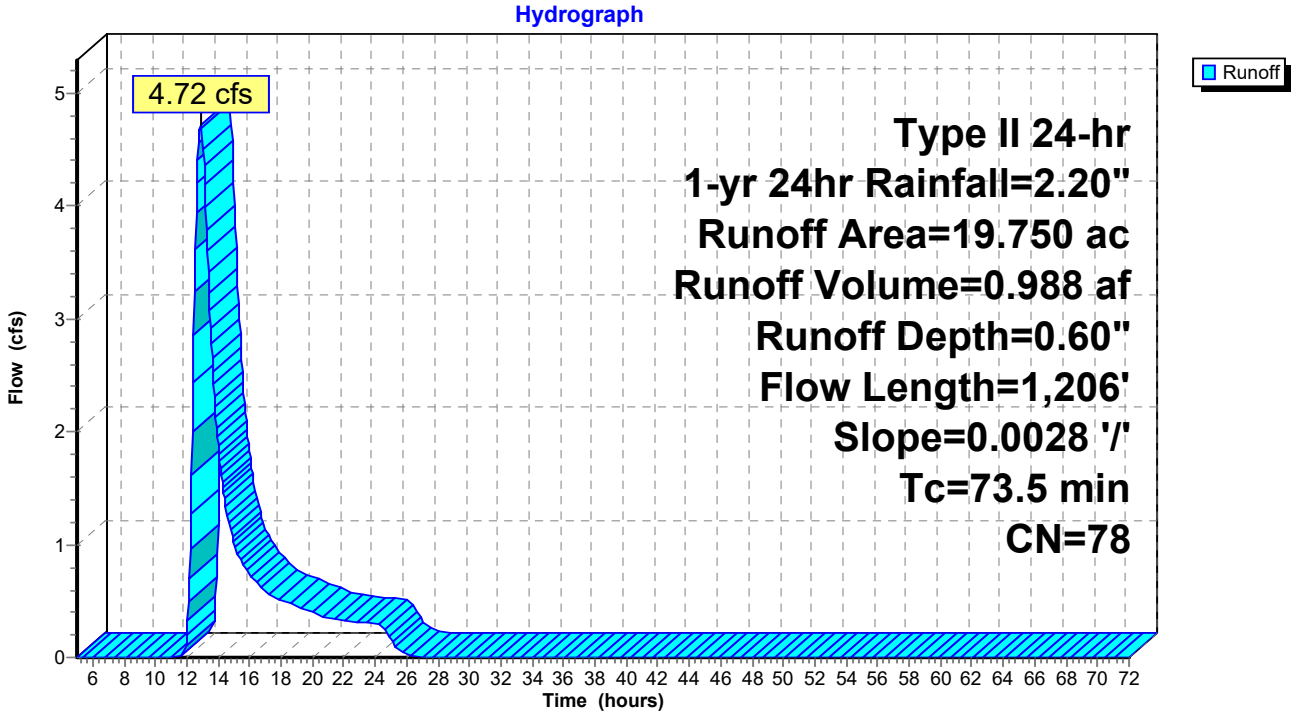
Runoff = 4.72 cfs @ 12.87 hrs, Volume= 0.988 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.20"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.14	0.00	0.00	57.00	2.20	0.60	0.00
6.00	0.18	0.00	0.00	58.00	2.20	0.60	0.00
7.00	0.22	0.00	0.00	59.00	2.20	0.60	0.00
8.00	0.26	0.00	0.00	60.00	2.20	0.60	0.00
9.00	0.32	0.00	0.00	61.00	2.20	0.60	0.00
10.00	0.40	0.00	0.00	62.00	2.20	0.60	0.00
11.00	0.52	0.00	0.00	63.00	2.20	0.60	0.00
12.00	1.46	0.22	**0.20**	64.00	2.20	0.60	0.00
13.00	1.70	0.33	**4.61**	65.00	2.20	0.60	0.00
14.00	1.80	0.38	1.88	66.00	2.20	0.60	0.00
15.00	1.88	0.42	1.01	67.00	2.20	0.60	0.00
16.00	1.94	0.45	0.74	68.00	2.20	0.60	0.00
17.00	1.98	0.48	0.59	69.00	2.20	0.60	0.00
18.00	2.03	0.50	0.51	70.00	2.20	0.60	0.00
19.00	2.06	0.52	0.45	71.00	2.20	0.60	0.00
20.00	2.09	0.54	0.40	72.00	2.20	0.60	0.00
21.00	2.12	0.55	0.35				
22.00	2.15	0.57	0.32				
23.00	2.18	0.59	0.31				
24.00	**2.20**	**0.60**	0.30				
25.00	2.20	0.60	0.16				
26.00	2.20	0.60	0.02				
27.00	2.20	0.60	0.00				
28.00	2.20	0.60	0.00				
29.00	2.20	0.60	0.00				
30.00	2.20	0.60	0.00				
31.00	2.20	0.60	0.00				
32.00	2.20	0.60	0.00				
33.00	2.20	0.60	0.00				
34.00	2.20	0.60	0.00				
35.00	2.20	0.60	0.00				
36.00	2.20	0.60	0.00				
37.00	2.20	0.60	0.00				
38.00	2.20	0.60	0.00				
39.00	2.20	0.60	0.00				
40.00	2.20	0.60	0.00				
41.00	2.20	0.60	0.00				
42.00	2.20	0.60	0.00				
43.00	2.20	0.60	0.00				
44.00	2.20	0.60	0.00				
45.00	2.20	0.60	0.00				
46.00	2.20	0.60	0.00				
47.00	2.20	0.60	0.00				
48.00	2.20	0.60	0.00				
49.00	2.20	0.60	0.00				
50.00	2.20	0.60	0.00				
51.00	2.20	0.60	0.00				
52.00	2.20	0.60	0.00				
53.00	2.20	0.60	0.00				
54.00	2.20	0.60	0.00				
55.00	2.20	0.60	0.00				
56.00	2.20	0.60	0.00				

Summary for Subcatchment 2S: Existing

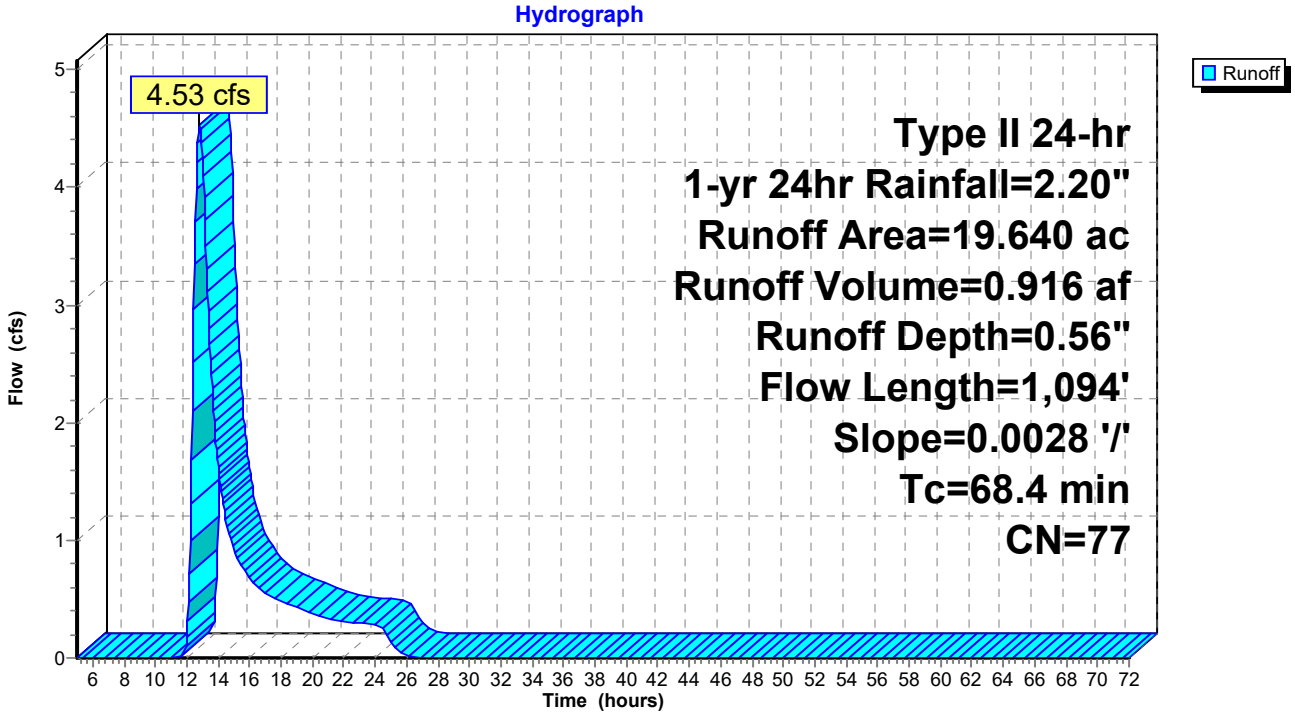
Runoff = 4.53 cfs @ 12.83 hrs, Volume= 0.916 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.20"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.14	0.00	0.00	57.00	2.20	0.56	0.00
6.00	0.18	0.00	0.00	58.00	2.20	0.56	0.00
7.00	0.22	0.00	0.00	59.00	2.20	0.56	0.00
8.00	0.26	0.00	0.00	60.00	2.20	0.56	0.00
9.00	0.32	0.00	0.00	61.00	2.20	0.56	0.00
10.00	0.40	0.00	0.00	62.00	2.20	0.56	0.00
11.00	0.52	0.00	0.00	63.00	2.20	0.56	0.00
12.00	1.46	0.19	**0.18**	64.00	2.20	0.56	0.00
13.00	1.70	0.30	**4.25**	65.00	2.20	0.56	0.00
14.00	1.80	0.35	1.63	66.00	2.20	0.56	0.00
15.00	1.88	0.38	0.91	67.00	2.20	0.56	0.00
16.00	1.94	0.41	0.68	68.00	2.20	0.56	0.00
17.00	1.98	0.44	0.55	69.00	2.20	0.56	0.00
18.00	2.03	0.46	0.48	70.00	2.20	0.56	0.00
19.00	2.06	0.48	0.43	71.00	2.20	0.56	0.00
20.00	2.09	0.50	0.37	72.00	2.20	0.56	0.00
21.00	2.12	0.52	0.33				
22.00	2.15	0.53	0.31				
23.00	2.18	0.55	0.30				
24.00	**2.20**	**0.56**	0.29				
25.00	2.20	0.56	0.13				
26.00	2.20	0.56	0.02				
27.00	2.20	0.56	0.00				
28.00	2.20	0.56	0.00				
29.00	2.20	0.56	0.00				
30.00	2.20	0.56	0.00				
31.00	2.20	0.56	0.00				
32.00	2.20	0.56	0.00				
33.00	2.20	0.56	0.00				
34.00	2.20	0.56	0.00				
35.00	2.20	0.56	0.00				
36.00	2.20	0.56	0.00				
37.00	2.20	0.56	0.00				
38.00	2.20	0.56	0.00				
39.00	2.20	0.56	0.00				
40.00	2.20	0.56	0.00				
41.00	2.20	0.56	0.00				
42.00	2.20	0.56	0.00				
43.00	2.20	0.56	0.00				
44.00	2.20	0.56	0.00				
45.00	2.20	0.56	0.00				
46.00	2.20	0.56	0.00				
47.00	2.20	0.56	0.00				
48.00	2.20	0.56	0.00				
49.00	2.20	0.56	0.00				
50.00	2.20	0.56	0.00				
51.00	2.20	0.56	0.00				
52.00	2.20	0.56	0.00				
53.00	2.20	0.56	0.00				
54.00	2.20	0.56	0.00				
55.00	2.20	0.56	0.00				
56.00	2.20	0.56	0.00				

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 0.60" for 1-yr 24hr event
Inflow = 4.72 cfs @ 12.87 hrs, Volume= 0.988 af
Outflow = 0.52 cfs @ 17.89 hrs, Volume= 0.868 af, Atten= 89%, Lag= 301.3 min
Primary = 0.52 cfs @ 17.89 hrs, Volume= 0.868 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 799.45' @ 17.89 hrs Surf.Area= 61,115 sf Storage= 26,057 cf

Plug-Flow detention time= 819.1 min calculated for 0.867 af (88% of inflow)
Center-of-Mass det. time= 760.3 min (1,692.1 - 931.9)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

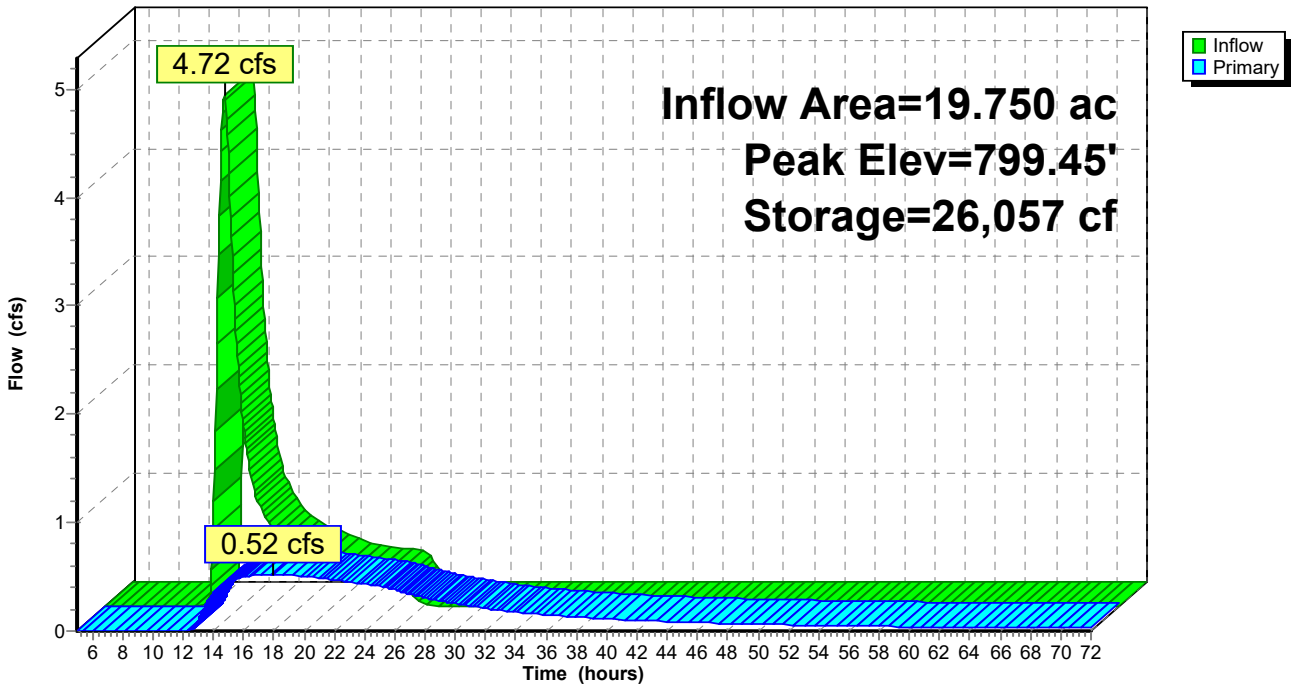
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.52 cfs @ 17.89 hrs HW=799.45' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.52 cfs @ 2.24 fps)
↑—**2=Orifice/Grate** (Passes 0.52 cfs of 0.65 cfs potential flow)

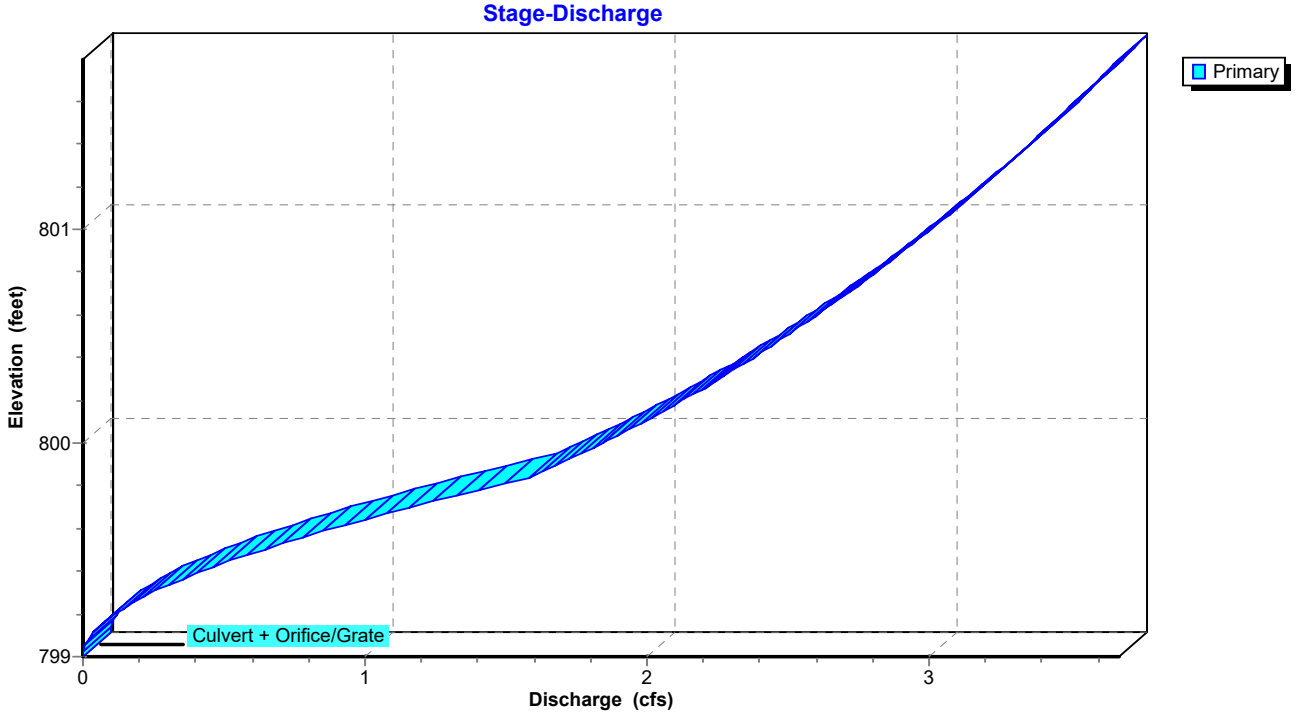
Pond 3P: Prop Pond

Hydrograph

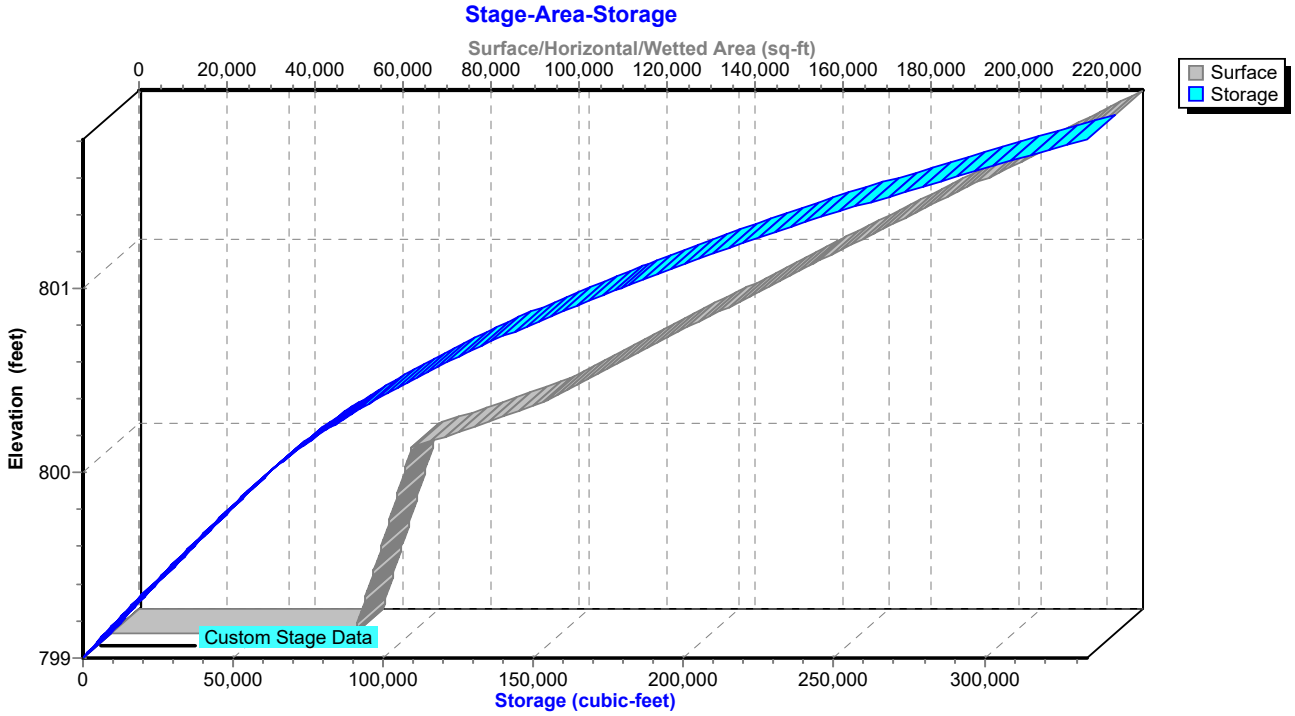


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.00	0	799.00	0.00
12.50	**3.25**	2,650	799.05	0.01
15.00	**1.01**	24,045	799.41	0.45
17.50	0.54	**26,039**	**799.45**	**0.52**
20.00	0.40	**25,635**	**799.44**	**0.50**
22.50	0.32	24,393	799.42	0.46
25.00	0.16	23,034	799.40	0.42
27.50	0.00	20,000	799.35	0.32
30.00	0.00	17,444	799.30	0.25
32.50	0.00	15,431	799.27	0.20
35.00	0.00	13,812	799.24	0.16
37.50	0.00	12,486	799.22	0.13
40.00	0.00	11,381	799.20	0.11
42.50	0.00	10,451	799.18	0.10
45.00	0.00	9,655	799.17	0.08
47.50	0.00	8,970	799.16	0.07
50.00	0.00	8,371	799.15	0.06
52.50	0.00	7,848	799.14	0.05
55.00	0.00	7,385	799.13	0.05
57.50	0.00	6,970	799.12	0.04
60.00	0.00	6,600	799.12	0.04
62.50	0.00	6,269	799.11	0.03
65.00	0.00	5,969	799.11	0.03
67.50	0.00	5,694	799.10	0.03
70.00	0.00	5,442	799.10	0.03

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 0.56" for 1-yr 24hr event
Inflow = 4.53 cfs @ 12.83 hrs, Volume= 0.916 af
Outflow = 0.84 cfs @ 15.23 hrs, Volume= 0.885 af, Atten= 81%, Lag= 144.1 min
Primary = 0.84 cfs @ 15.23 hrs, Volume= 0.885 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 799.58' @ 15.23 hrs Surf.Area= 40,765 sf Storage= 19,115 cf

Plug-Flow detention time= 456.4 min calculated for 0.885 af (97% of inflow)
Center-of-Mass det. time= 439.5 min (1,371.1 - 931.6)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

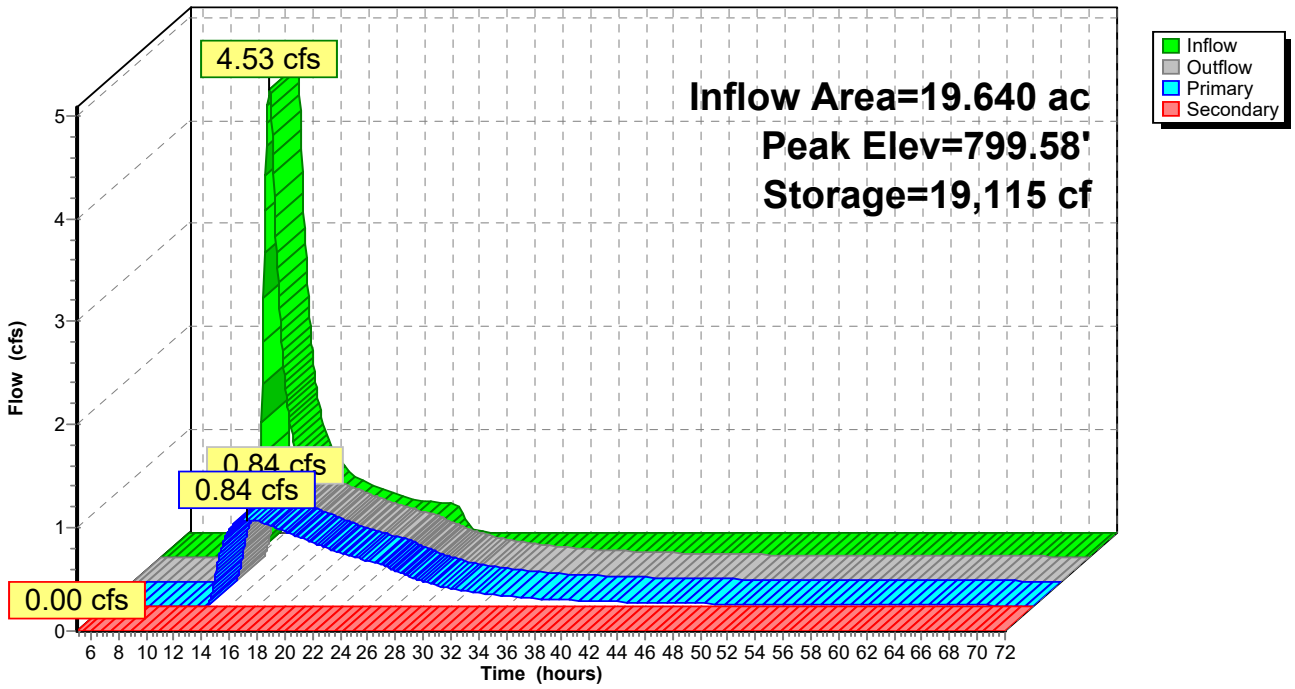
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=0.84 cfs @ 15.23 hrs HW=799.58' (Free Discharge)
1=Culvert (Barrel Controls 0.84 cfs @ 2.54 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=799.00' (Free Discharge)
2=Custom Weir/Orifice (Controls 0.00 cfs)

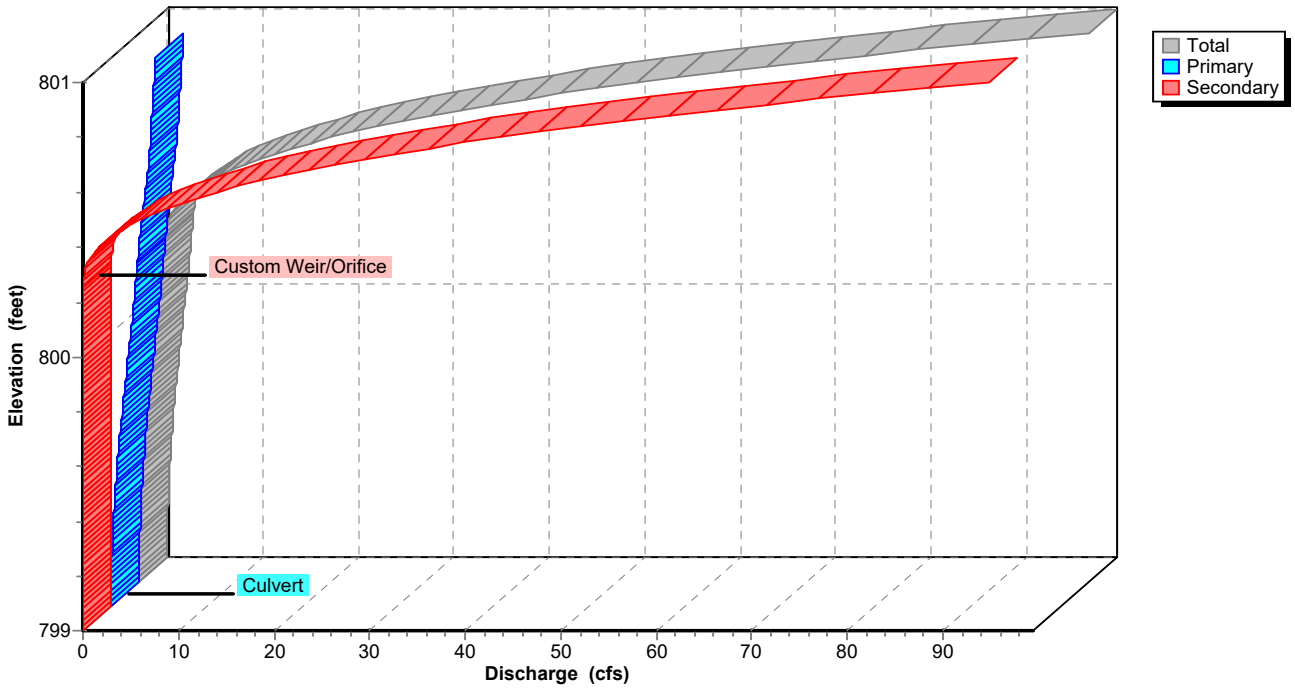
Pond 4P: Ex Pond

Hydrograph

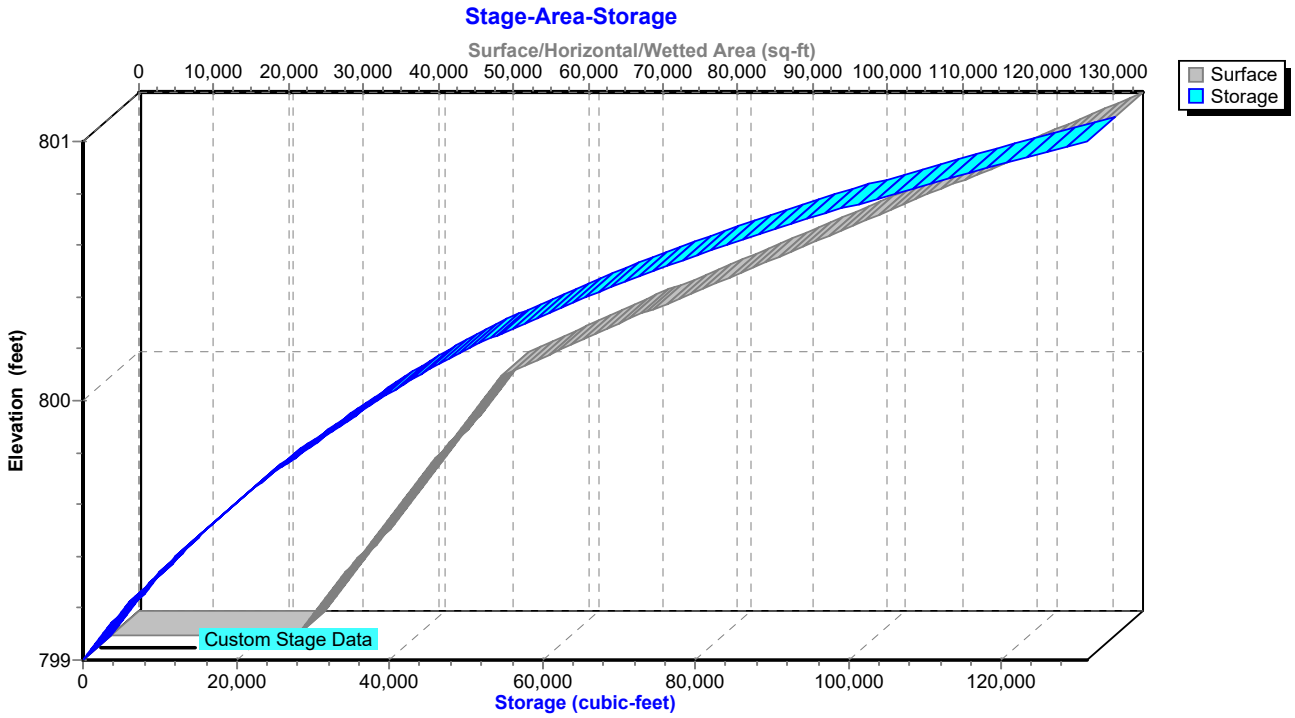


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

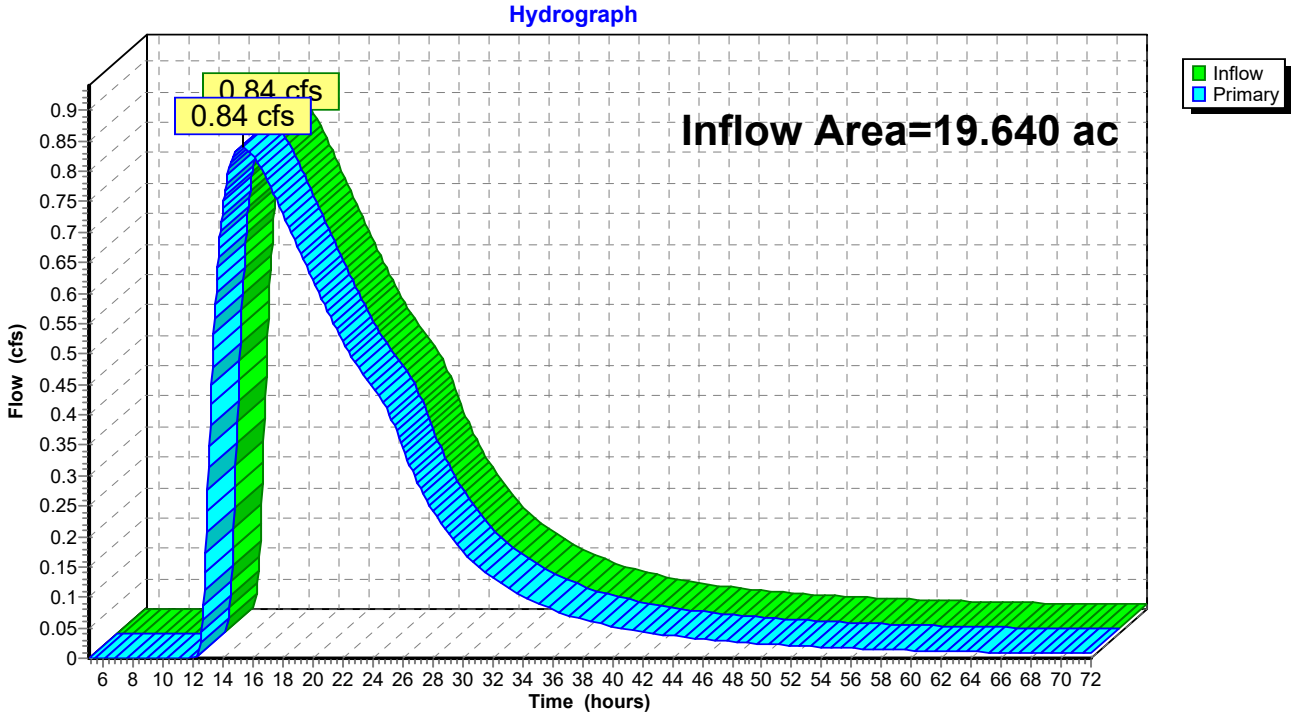
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	**0.00**
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.00	0	799.00	0.00	0.00	0.00
12.50	**3.36**	2,714	799.10	0.03	0.03	0.00
15.00	**0.91**	**19,087**	**799.58**	**0.84**	**0.84**	0.00
17.50	0.51	**17,751**	**799.55**	**0.75**	**0.75**	0.00
20.00	0.37	15,547	799.49	0.62	0.62	0.00
22.50	0.30	13,484	799.44	0.50	0.50	0.00
25.00	0.13	11,858	799.39	0.41	0.41	0.00
27.50	0.00	9,091	799.31	0.26	0.26	0.00
30.00	0.00	7,150	799.25	0.18	0.18	0.00
32.50	0.00	5,826	799.21	0.12	0.12	0.00
35.00	0.00	4,881	799.18	0.09	0.09	0.00
37.50	0.00	4,181	799.16	0.07	0.07	0.00
40.00	0.00	3,645	799.14	0.05	0.05	0.00
42.50	0.00	3,225	799.12	0.04	0.04	0.00
45.00	0.00	2,887	799.11	0.03	0.03	0.00
47.50	0.00	2,612	799.10	0.03	0.03	0.00
50.00	0.00	2,382	799.09	0.02	0.02	0.00
52.50	0.00	2,189	799.08	0.02	0.02	0.00
55.00	0.00	2,025	799.08	0.02	0.02	0.00
57.50	0.00	1,882	799.07	0.01	0.01	0.00
60.00	0.00	1,758	799.07	0.01	0.01	0.00
62.50	0.00	1,649	799.06	0.01	0.01	0.00
65.00	0.00	1,554	799.06	0.01	0.01	0.00
67.50	0.00	1,469	799.06	0.01	0.01	0.00
70.00	0.00	1,393	799.05	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 0.54" for 1-yr 24hr event
Inflow = 0.84 cfs @ 15.23 hrs, Volume= 0.885 af
Primary = 0.84 cfs @ 15.23 hrs, Volume= 0.885 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

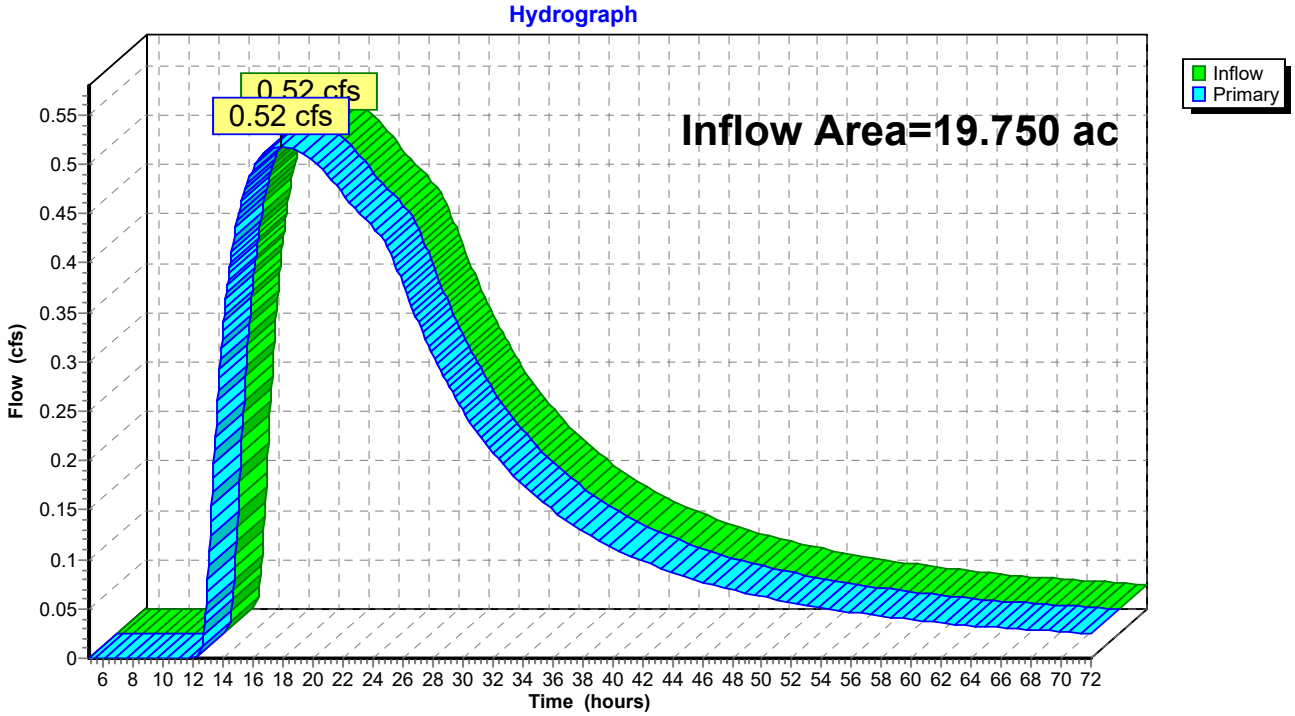
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00
13.00	0.31	0.00	0.31
14.00	0.75	0.00	0.75
15.00	**0.84**	0.00	**0.84**
16.00	**0.83**	0.00	**0.83**
17.00	0.78	0.00	0.78
18.00	0.73	0.00	0.73
19.00	0.67	0.00	0.67
20.00	0.62	0.00	0.62
21.00	0.57	0.00	0.57
22.00	0.52	0.00	0.52
23.00	0.48	0.00	0.48
24.00	0.44	0.00	0.44
25.00	0.41	0.00	0.41
26.00	0.34	0.00	0.34
27.00	0.29	0.00	0.29
28.00	0.24	0.00	0.24
29.00	0.21	0.00	0.21
30.00	0.18	0.00	0.18
31.00	0.15	0.00	0.15
32.00	0.13	0.00	0.13
33.00	0.11	0.00	0.11
34.00	0.10	0.00	0.10
35.00	0.09	0.00	0.09
36.00	0.08	0.00	0.08
37.00	0.07	0.00	0.07
38.00	0.06	0.00	0.06
39.00	0.06	0.00	0.06
40.00	0.05	0.00	0.05
41.00	0.05	0.00	0.05
42.00	0.04	0.00	0.04
43.00	0.04	0.00	0.04
44.00	0.04	0.00	0.04
45.00	0.03	0.00	0.03
46.00	0.03	0.00	0.03
47.00	0.03	0.00	0.03
48.00	0.03	0.00	0.03
49.00	0.03	0.00	0.03
50.00	0.02	0.00	0.02
51.00	0.02	0.00	0.02
52.00	0.02	0.00	0.02
53.00	0.02	0.00	0.02
54.00	0.02	0.00	0.02
55.00	0.02	0.00	0.02
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.01	0.00	0.01
59.00	0.01	0.00	0.01
60.00	0.01	0.00	0.01
61.00	0.01	0.00	0.01
62.00	0.01	0.00	0.01
63.00	0.01	0.00	0.01
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 0.53" for 1-yr 24hr event
Inflow = 0.52 cfs @ 17.89 hrs, Volume= 0.868 af
Primary = 0.52 cfs @ 17.89 hrs, Volume= 0.868 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall



Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00
13.00	0.09	0.00	0.09
14.00	0.34	0.00	0.34
15.00	0.45	0.00	0.45
16.00	0.50	0.00	0.50
17.00	**0.51**	0.00	**0.51**
18.00	**0.52**	0.00	**0.52**
19.00	0.51	0.00	0.51
20.00	0.50	0.00	0.50
21.00	0.49	0.00	0.49
22.00	0.47	0.00	0.47
23.00	0.45	0.00	0.45
24.00	0.44	0.00	0.44
25.00	0.42	0.00	0.42
26.00	0.38	0.00	0.38
27.00	0.34	0.00	0.34
28.00	0.31	0.00	0.31
29.00	0.28	0.00	0.28
30.00	0.25	0.00	0.25
31.00	0.23	0.00	0.23
32.00	0.21	0.00	0.21
33.00	0.19	0.00	0.19
34.00	0.18	0.00	0.18
35.00	0.16	0.00	0.16
36.00	0.15	0.00	0.15
37.00	0.14	0.00	0.14
38.00	0.13	0.00	0.13
39.00	0.12	0.00	0.12
40.00	0.11	0.00	0.11
41.00	0.10	0.00	0.10
42.00	0.10	0.00	0.10
43.00	0.09	0.00	0.09
44.00	0.09	0.00	0.09
45.00	0.08	0.00	0.08
46.00	0.08	0.00	0.08
47.00	0.07	0.00	0.07
48.00	0.07	0.00	0.07
49.00	0.07	0.00	0.07
50.00	0.06	0.00	0.06
51.00	0.06	0.00	0.06
52.00	0.06	0.00	0.06
53.00	0.05	0.00	0.05
54.00	0.05	0.00	0.05
55.00	0.05	0.00	0.05
56.00	0.05	0.00	0.05
57.00	0.04	0.00	0.04
58.00	0.04	0.00	0.04
59.00	0.04	0.00	0.04
60.00	0.04	0.00	0.04
61.00	0.04	0.00	0.04
62.00	0.04	0.00	0.04
63.00	0.03	0.00	0.03
64.00	0.03	0.00	0.03
65.00	0.03	0.00	0.03
66.00	0.03	0.00	0.03
67.00	0.03	0.00	0.03
68.00	0.03	0.00	0.03
69.00	0.03	0.00	0.03
70.00	0.03	0.00	0.03
71.00	0.03	0.00	0.03
72.00	0.02	0.00	0.02

Summary for Subcatchment 1S: Proposed

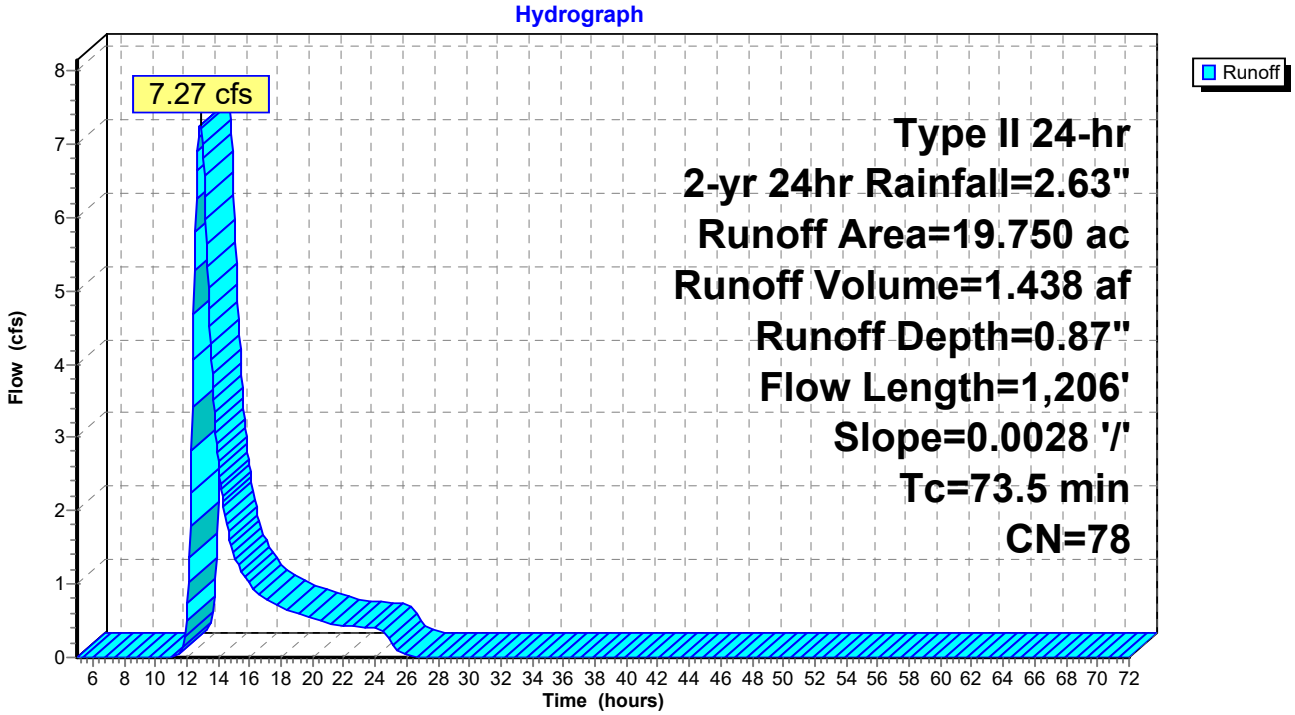
Runoff = 7.27 cfs @ 12.85 hrs, Volume= 1.438 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr 24hr Rainfall=2.63"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
6.00	0.21	0.00	0.00
7.00	0.26	0.00	0.00
8.00	0.32	0.00	0.00
9.00	0.39	0.00	0.00
10.00	0.48	0.00	0.00
11.00	0.62	0.00	0.00
12.00	1.74	0.35	**0.50**
13.00	2.03	0.50	**7.00**
14.00	2.16	0.57	2.68
15.00	2.24	0.63	1.40
16.00	2.31	0.67	1.00
17.00	2.37	0.71	0.79
18.00	2.42	0.74	0.69
19.00	2.47	0.77	0.61
20.00	2.50	0.79	0.53
21.00	2.54	0.81	0.46
22.00	2.57	0.83	0.43
23.00	2.60	0.85	0.42
24.00	**2.63**	**0.87**	0.40
25.00	2.63	0.87	0.21
26.00	2.63	0.87	0.03
27.00	2.63	0.87	0.00
28.00	2.63	0.87	0.00
29.00	2.63	0.87	0.00
30.00	2.63	0.87	0.00
31.00	2.63	0.87	0.00
32.00	2.63	0.87	0.00
33.00	2.63	0.87	0.00
34.00	2.63	0.87	0.00
35.00	2.63	0.87	0.00
36.00	2.63	0.87	0.00
37.00	2.63	0.87	0.00
38.00	2.63	0.87	0.00
39.00	2.63	0.87	0.00
40.00	2.63	0.87	0.00
41.00	2.63	0.87	0.00
42.00	2.63	0.87	0.00
43.00	2.63	0.87	0.00
44.00	2.63	0.87	0.00
45.00	2.63	0.87	0.00
46.00	2.63	0.87	0.00
47.00	2.63	0.87	0.00
48.00	2.63	0.87	0.00
49.00	2.63	0.87	0.00
50.00	2.63	0.87	0.00
51.00	2.63	0.87	0.00
52.00	2.63	0.87	0.00
53.00	2.63	0.87	0.00
54.00	2.63	0.87	0.00
55.00	2.63	0.87	0.00
56.00	2.63	0.87	0.00
57.00	2.63	0.87	0.00
58.00	2.63	0.87	0.00
59.00	2.63	0.87	0.00
60.00	2.63	0.87	0.00
61.00	2.63	0.87	0.00
62.00	2.63	0.87	0.00
63.00	2.63	0.87	0.00
64.00	2.63	0.87	0.00
65.00	2.63	0.87	0.00
66.00	2.63	0.87	0.00
67.00	2.63	0.87	0.00
68.00	2.63	0.87	0.00
69.00	2.63	0.87	0.00
70.00	2.63	0.87	0.00
71.00	2.63	0.87	0.00
72.00	2.63	0.87	0.00

Summary for Subcatchment 2S: Existing

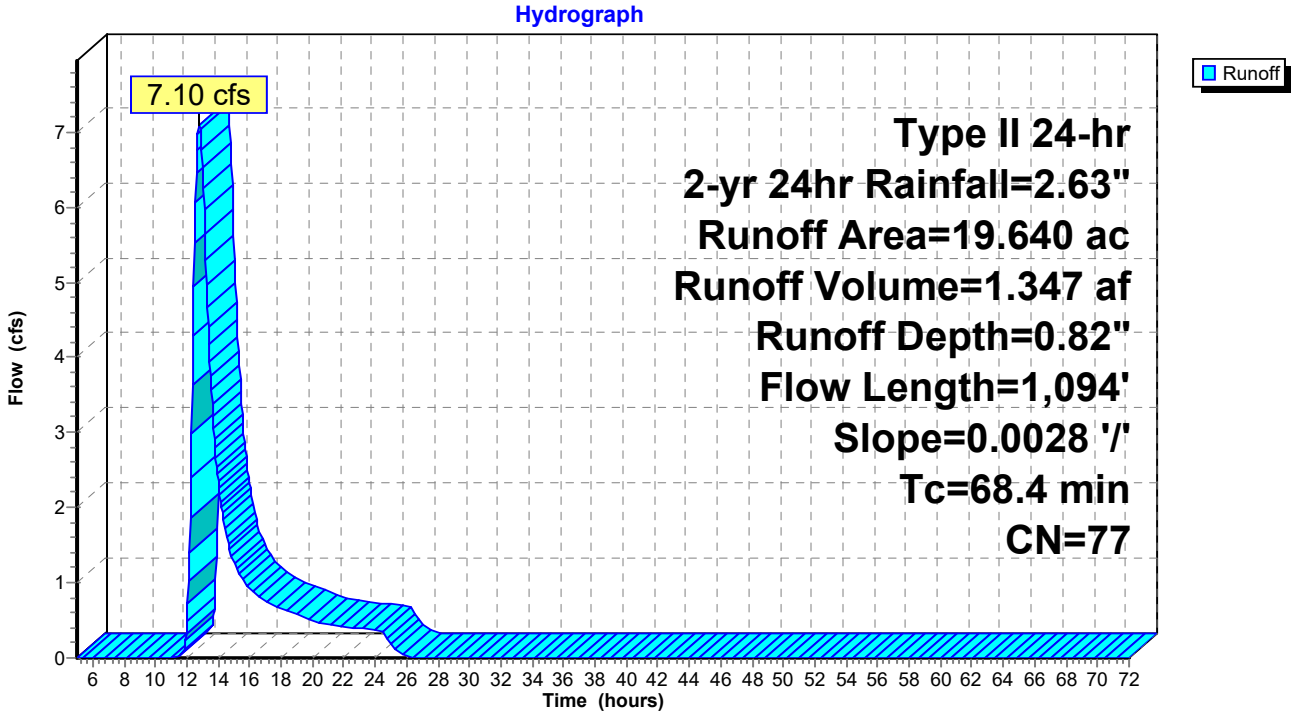
Runoff = 7.10 cfs @ 12.80 hrs, Volume= 1.347 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr 24hr Rainfall=2.63"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00	57.00	2.63	0.82	0.00
6.00	0.21	0.00	0.00	58.00	2.63	0.82	0.00
7.00	0.26	0.00	0.00	59.00	2.63	0.82	0.00
8.00	0.32	0.00	0.00	60.00	2.63	0.82	0.00
9.00	0.39	0.00	0.00	61.00	2.63	0.82	0.00
10.00	0.48	0.00	0.00	62.00	2.63	0.82	0.00
11.00	0.62	0.00	0.00	63.00	2.63	0.82	0.00
12.00	1.74	0.32	**0.48**	64.00	2.63	0.82	0.00
13.00	2.03	0.46	**6.53**	65.00	2.63	0.82	0.00
14.00	2.16	0.53	2.34	66.00	2.63	0.82	0.00
15.00	2.24	0.59	1.27	67.00	2.63	0.82	0.00
16.00	2.31	0.63	0.93	68.00	2.63	0.82	0.00
17.00	2.37	0.66	0.75	69.00	2.63	0.82	0.00
18.00	2.42	0.69	0.65	70.00	2.63	0.82	0.00
19.00	2.47	0.72	0.58	71.00	2.63	0.82	0.00
20.00	2.50	0.74	0.51	72.00	2.63	0.82	0.00
21.00	2.54	0.76	0.44				
22.00	2.57	0.78	0.41				
23.00	2.60	0.80	0.40				
24.00	**2.63**	**0.82**	0.38				
25.00	2.63	0.82	0.18				
26.00	2.63	0.82	0.02				
27.00	2.63	0.82	0.00				
28.00	2.63	0.82	0.00				
29.00	2.63	0.82	0.00				
30.00	2.63	0.82	0.00				
31.00	2.63	0.82	0.00				
32.00	2.63	0.82	0.00				
33.00	2.63	0.82	0.00				
34.00	2.63	0.82	0.00				
35.00	2.63	0.82	0.00				
36.00	2.63	0.82	0.00				
37.00	2.63	0.82	0.00				
38.00	2.63	0.82	0.00				
39.00	2.63	0.82	0.00				
40.00	2.63	0.82	0.00				
41.00	2.63	0.82	0.00				
42.00	2.63	0.82	0.00				
43.00	2.63	0.82	0.00				
44.00	2.63	0.82	0.00				
45.00	2.63	0.82	0.00				
46.00	2.63	0.82	0.00				
47.00	2.63	0.82	0.00				
48.00	2.63	0.82	0.00				
49.00	2.63	0.82	0.00				
50.00	2.63	0.82	0.00				
51.00	2.63	0.82	0.00				
52.00	2.63	0.82	0.00				
53.00	2.63	0.82	0.00				
54.00	2.63	0.82	0.00				
55.00	2.63	0.82	0.00				
56.00	2.63	0.82	0.00				

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 0.87" for 2-yr 24hr event
Inflow = 7.27 cfs @ 12.85 hrs, Volume= 1.438 af
Outflow = 0.92 cfs @ 16.36 hrs, Volume= 1.310 af, Atten= 87%, Lag= 210.6 min
Primary = 0.92 cfs @ 16.36 hrs, Volume= 1.310 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 799.61' @ 16.36 hrs Surf.Area= 63,239 sf Storage= 36,275 cf

Plug-Flow detention time= 709.0 min calculated for 1.310 af (91% of inflow)
Center-of-Mass det. time= 662.8 min (1,582.6 - 919.8)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

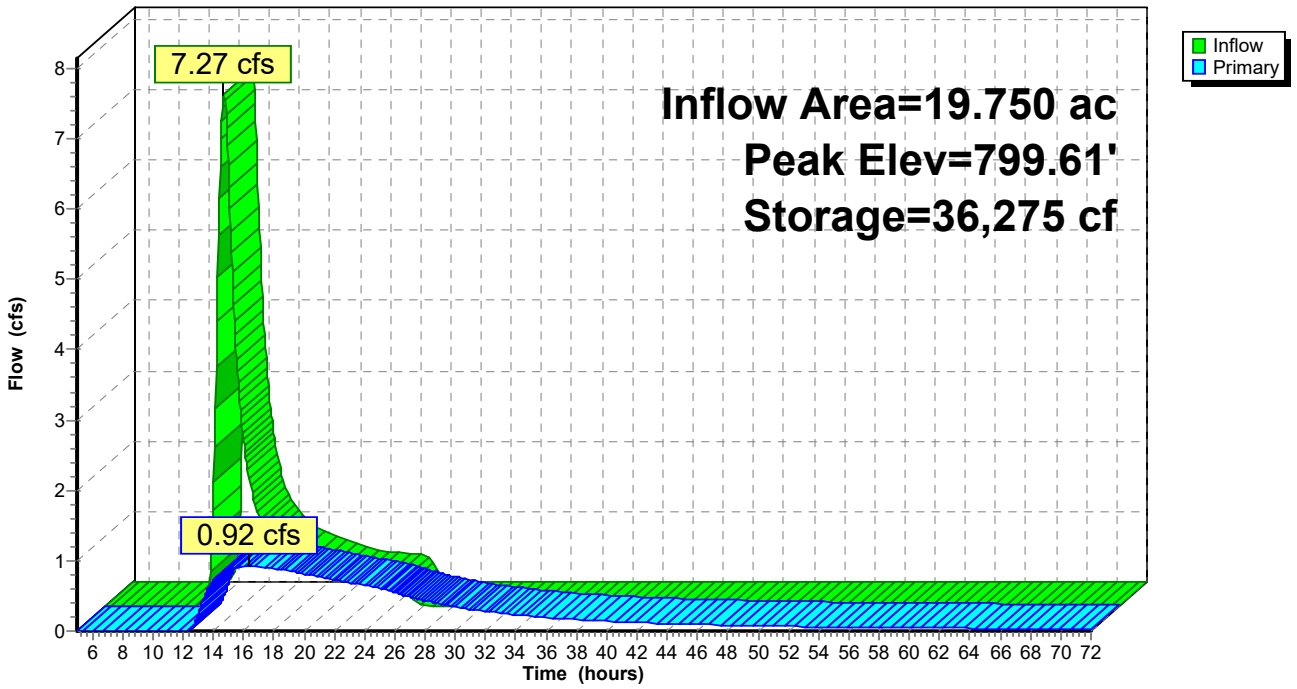
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.92 cfs @ 16.36 hrs HW=799.61' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.92 cfs @ 2.60 fps)
↑—**2=Orifice/Grate** (Passes 0.92 cfs of 1.09 cfs potential flow)

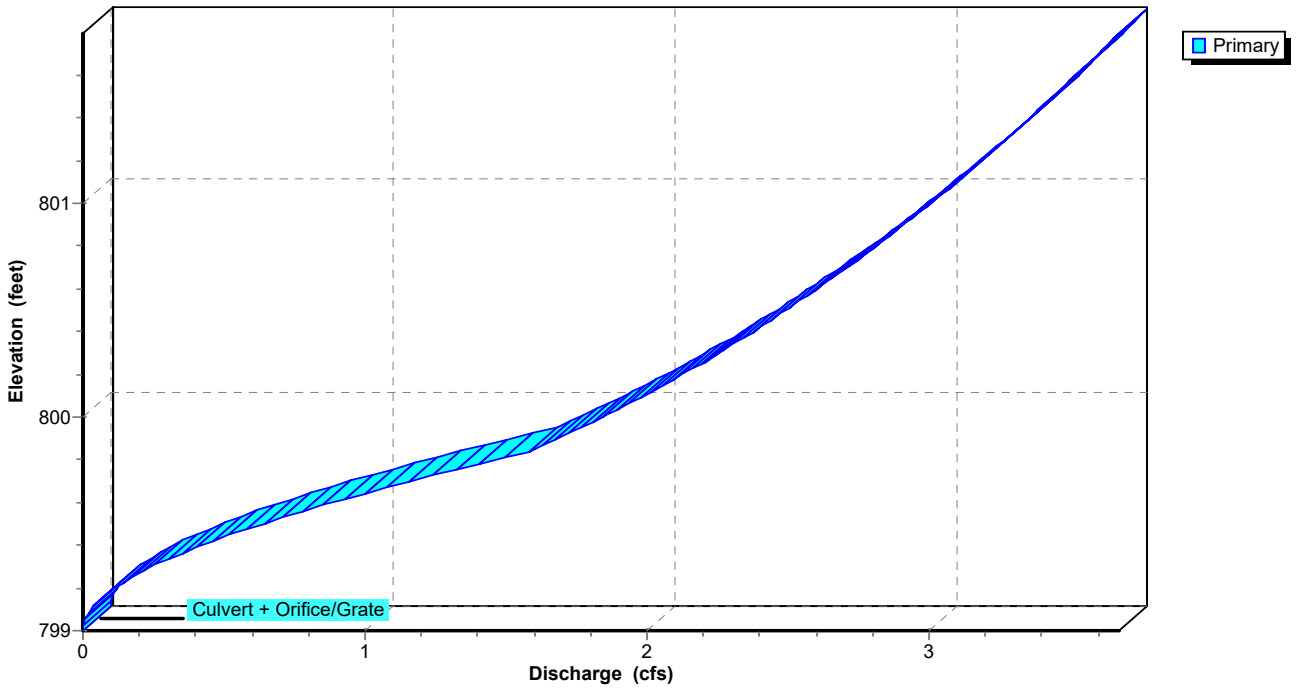
Pond 3P: Prop Pond

Hydrograph

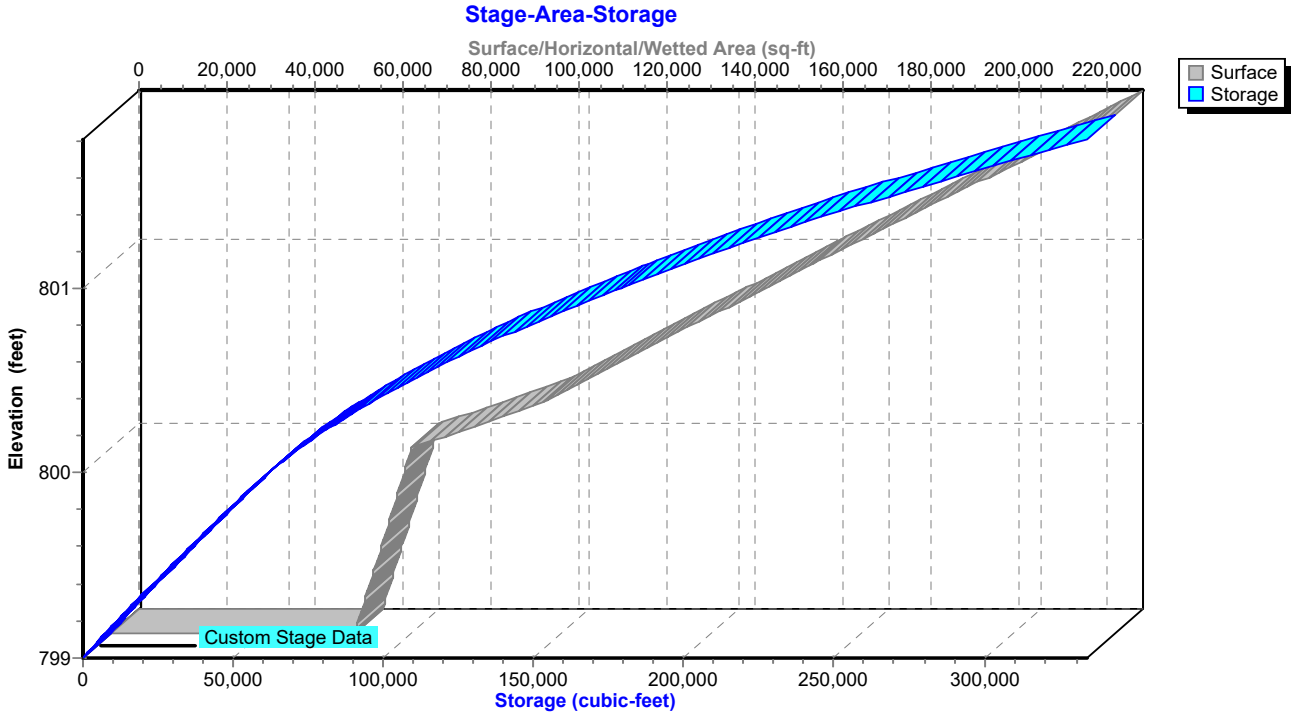


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.00	0	799.00	0.00
12.50	**5.27**	4,781	799.09	0.02
15.00	**1.40**	**35,220**	**799.60**	**0.87**
17.50	0.73	**35,875**	**799.61**	**0.90**
20.00	0.53	33,816	799.57	0.81
22.50	0.42	31,133	799.53	0.71
25.00	0.21	28,653	799.49	0.61
27.50	0.00	24,241	799.42	0.46
30.00	0.00	20,685	799.36	0.34
32.50	0.00	17,974	799.31	0.26
35.00	0.00	15,852	799.28	0.21
37.50	0.00	14,153	799.25	0.17
40.00	0.00	12,767	799.22	0.14
42.50	0.00	11,617	799.21	0.12
45.00	0.00	10,651	799.19	0.10
47.50	0.00	9,826	799.17	0.08
50.00	0.00	9,119	799.16	0.07
52.50	0.00	8,501	799.15	0.06
55.00	0.00	7,962	799.14	0.06
57.50	0.00	7,486	799.13	0.05
60.00	0.00	7,061	799.13	0.04
62.50	0.00	6,681	799.12	0.04
65.00	0.00	6,341	799.11	0.04
67.50	0.00	6,035	799.11	0.03
70.00	0.00	5,755	799.10	0.03

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 0.82" for 2-yr 24hr event
Inflow = 7.10 cfs @ 12.80 hrs, Volume= 1.347 af
Outflow = 1.42 cfs @ 14.76 hrs, Volume= 1.315 af, Atten= 80%, Lag= 117.4 min
Primary = 1.42 cfs @ 14.76 hrs, Volume= 1.315 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 799.79' @ 14.76 hrs Surf.Area= 46,344 sf Storage= 27,978 cf

Plug-Flow detention time= 401.0 min calculated for 1.315 af (98% of inflow)
Center-of-Mass det. time= 387.4 min (1,306.3 - 918.8)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

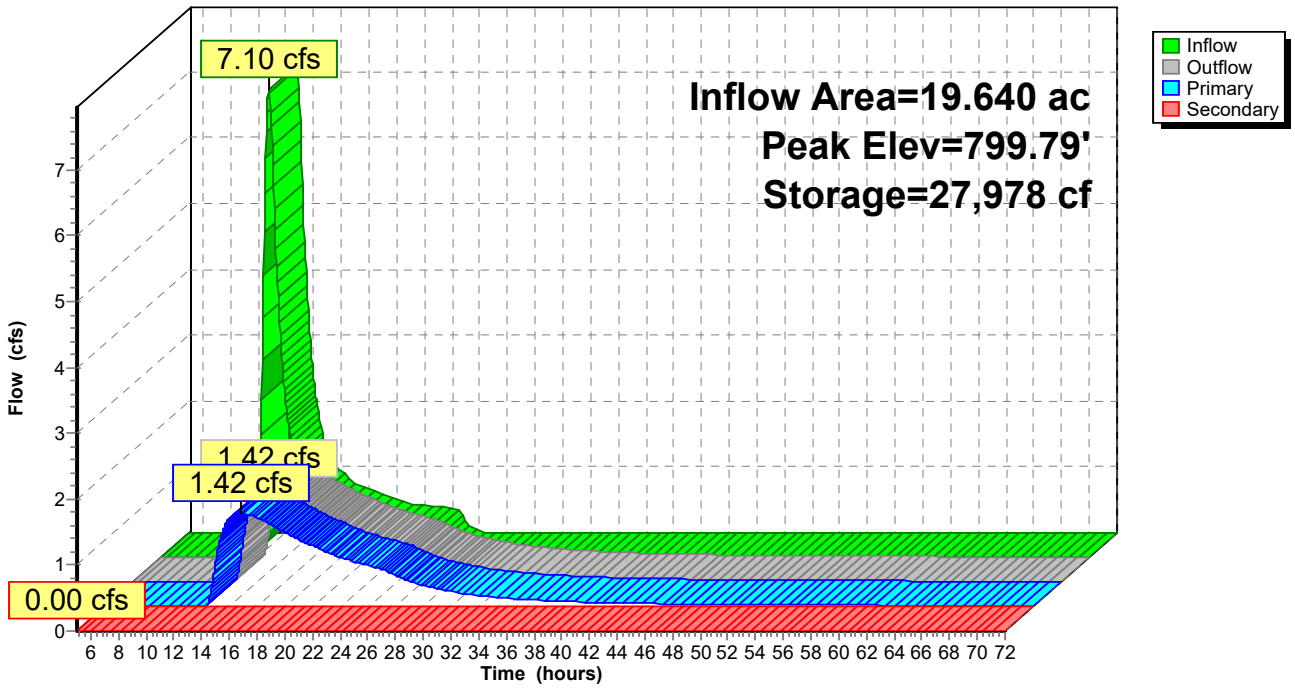
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=1.42 cfs @ 14.76 hrs HW=799.79' (Free Discharge)
1=Culvert (Barrel Controls 1.42 cfs @ 2.94 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=799.00' (Free Discharge)
2=Custom Weir/Orifice (Controls 0.00 cfs)

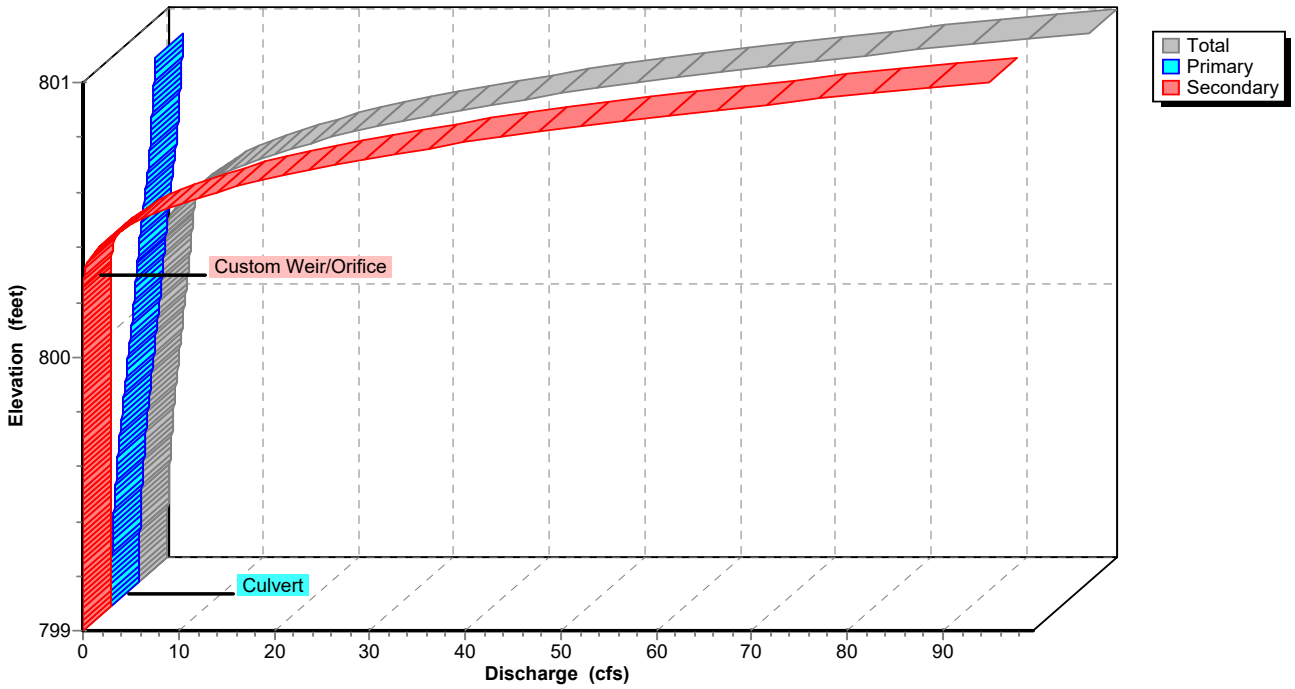
Pond 4P: Ex Pond

Hydrograph

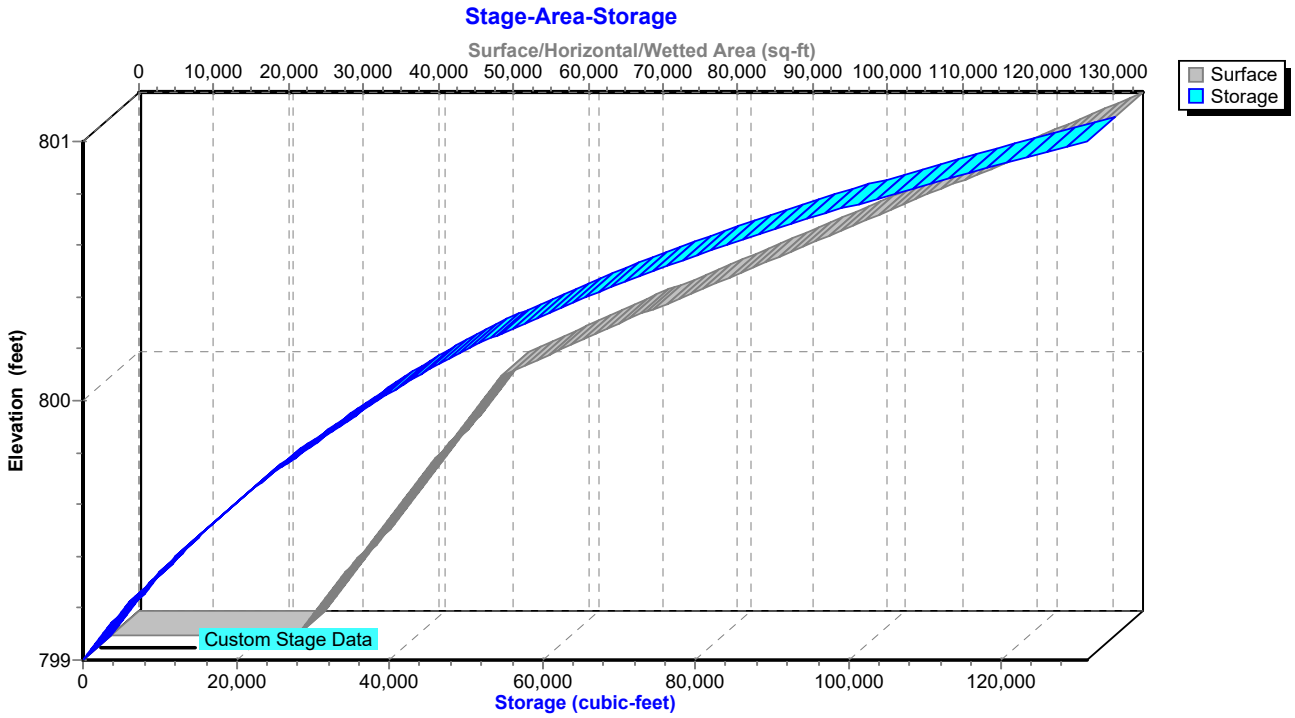


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

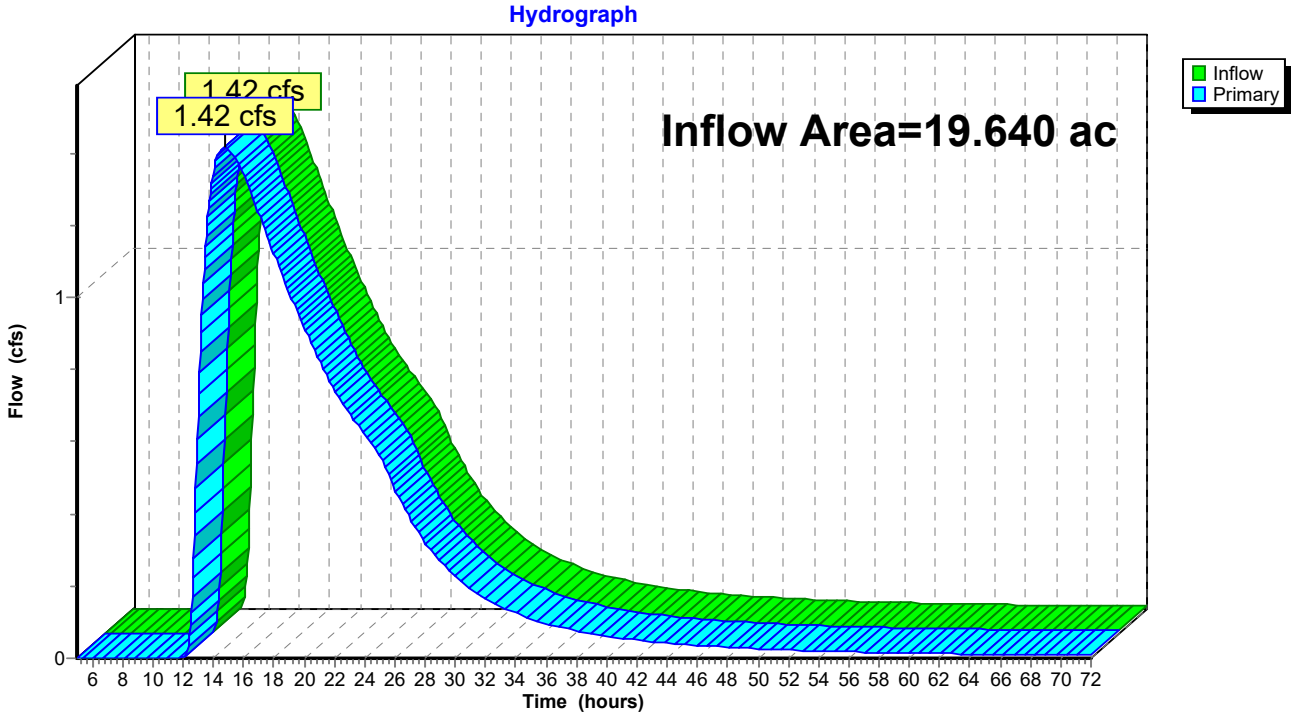
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	**0.00**
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.00	0	799.00	0.00	0.00	0.00
12.50	**5.54**	**4,926**	**799.18**	**0.09**	**0.09**	0.00
15.00	**1.27**	**27,914**	**799.79**	**1.41**	**1.41**	0.00
17.50	0.69	24,309	799.71	1.18	1.18	0.00
20.00	0.51	20,315	799.61	0.92	0.92	0.00
22.50	0.41	17,013	799.53	0.71	0.71	0.00
25.00	0.18	14,585	799.47	0.56	0.56	0.00
27.50	0.00	10,822	799.36	0.35	0.35	0.00
30.00	0.00	8,281	799.29	0.23	0.23	0.00
32.50	0.00	6,605	799.24	0.15	0.15	0.00
35.00	0.00	5,442	799.20	0.11	0.11	0.00
37.50	0.00	4,599	799.17	0.08	0.08	0.00
40.00	0.00	3,967	799.15	0.06	0.06	0.00
42.50	0.00	3,479	799.13	0.05	0.05	0.00
45.00	0.00	3,092	799.12	0.04	0.04	0.00
47.50	0.00	2,779	799.11	0.03	0.03	0.00
50.00	0.00	2,522	799.10	0.03	0.03	0.00
52.50	0.00	2,307	799.09	0.02	0.02	0.00
55.00	0.00	2,125	799.08	0.02	0.02	0.00
57.50	0.00	1,970	799.08	0.02	0.02	0.00
60.00	0.00	1,835	799.07	0.01	0.01	0.00
62.50	0.00	1,716	799.07	0.01	0.01	0.00
65.00	0.00	1,612	799.06	0.01	0.01	0.00
67.50	0.00	1,521	799.06	0.01	0.01	0.00
70.00	0.00	1,440	799.06	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 0.80" for 2-yr 24hr event
Inflow = 1.42 cfs @ 14.76 hrs, Volume= 1.315 af
Primary = 1.42 cfs @ 14.76 hrs, Volume= 1.315 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

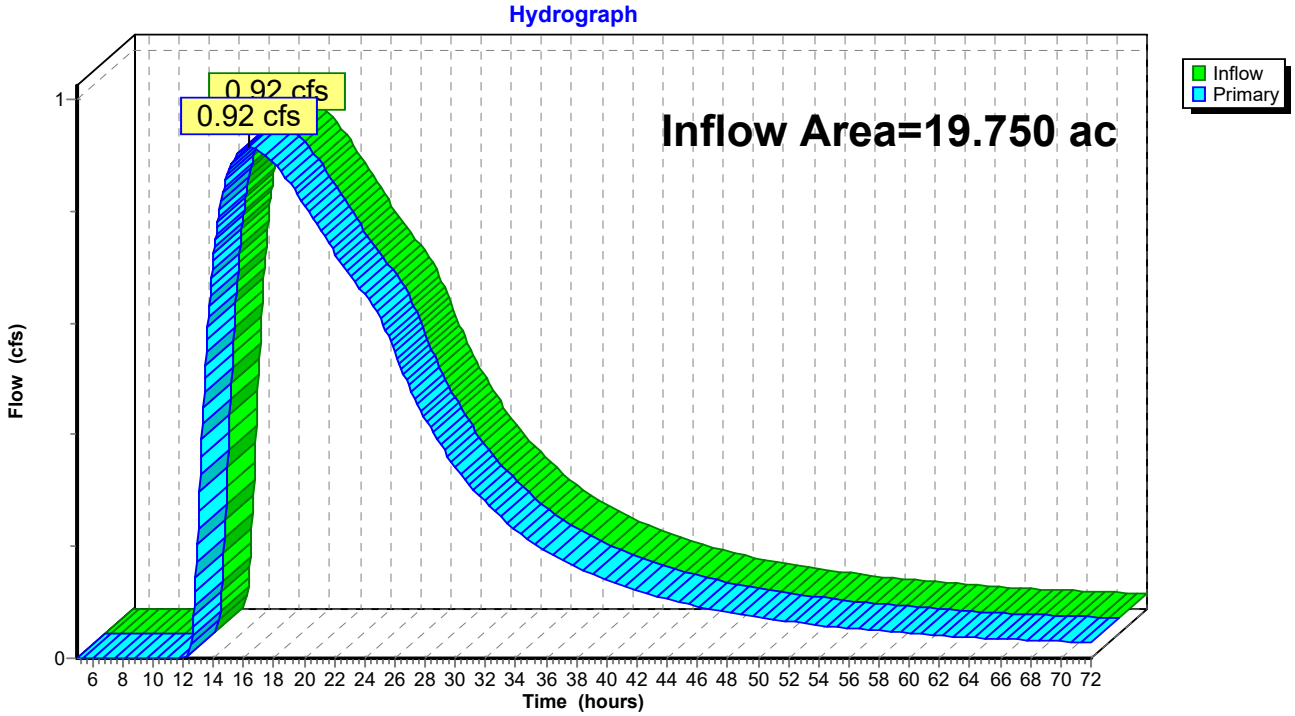
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00
13.00	0.67	0.00	0.67
14.00	**1.34**	0.00	**1.34**
15.00	**1.41**	0.00	**1.41**
16.00	1.34	0.00	1.34
17.00	1.23	0.00	1.23
18.00	1.12	0.00	1.12
19.00	1.02	0.00	1.02
20.00	0.92	0.00	0.92
21.00	0.82	0.00	0.82
22.00	0.74	0.00	0.74
23.00	0.68	0.00	0.68
24.00	0.62	0.00	0.62
25.00	0.56	0.00	0.56
26.00	0.47	0.00	0.47
27.00	0.39	0.00	0.39
28.00	0.32	0.00	0.32
29.00	0.27	0.00	0.27
30.00	0.23	0.00	0.23
31.00	0.19	0.00	0.19
32.00	0.16	0.00	0.16
33.00	0.14	0.00	0.14
34.00	0.12	0.00	0.12
35.00	0.11	0.00	0.11
36.00	0.10	0.00	0.10
37.00	0.09	0.00	0.09
38.00	0.08	0.00	0.08
39.00	0.07	0.00	0.07
40.00	0.06	0.00	0.06
41.00	0.06	0.00	0.06
42.00	0.05	0.00	0.05
43.00	0.05	0.00	0.05
44.00	0.04	0.00	0.04
45.00	0.04	0.00	0.04
46.00	0.04	0.00	0.04
47.00	0.03	0.00	0.03
48.00	0.03	0.00	0.03
49.00	0.03	0.00	0.03
50.00	0.03	0.00	0.03
51.00	0.02	0.00	0.02
52.00	0.02	0.00	0.02
53.00	0.02	0.00	0.02
54.00	0.02	0.00	0.02
55.00	0.02	0.00	0.02
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.02	0.00	0.02
59.00	0.01	0.00	0.01
60.00	0.01	0.00	0.01
61.00	0.01	0.00	0.01
62.00	0.01	0.00	0.01
63.00	0.01	0.00	0.01
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 0.80" for 2-yr 24hr event
Inflow = 0.92 cfs @ 16.36 hrs, Volume= 1.310 af
Primary = 0.92 cfs @ 16.36 hrs, Volume= 1.310 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall



Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00
13.00	0.23	0.00	0.23
14.00	0.71	0.00	0.71
15.00	0.87	0.00	0.87
16.00	**0.91**	0.00	**0.91**
17.00	**0.91**	0.00	**0.91**
18.00	0.89	0.00	0.89
19.00	0.85	0.00	0.85
20.00	0.81	0.00	0.81
21.00	0.77	0.00	0.77
22.00	0.73	0.00	0.73
23.00	0.69	0.00	0.69
24.00	0.65	0.00	0.65
25.00	0.61	0.00	0.61
26.00	0.55	0.00	0.55
27.00	0.48	0.00	0.48
28.00	0.43	0.00	0.43
29.00	0.38	0.00	0.38
30.00	0.34	0.00	0.34
31.00	0.31	0.00	0.31
32.00	0.28	0.00	0.28
33.00	0.25	0.00	0.25
34.00	0.23	0.00	0.23
35.00	0.21	0.00	0.21
36.00	0.19	0.00	0.19
37.00	0.18	0.00	0.18
38.00	0.16	0.00	0.16
39.00	0.15	0.00	0.15
40.00	0.14	0.00	0.14
41.00	0.13	0.00	0.13
42.00	0.12	0.00	0.12
43.00	0.11	0.00	0.11
44.00	0.11	0.00	0.11
45.00	0.10	0.00	0.10
46.00	0.09	0.00	0.09
47.00	0.09	0.00	0.09
48.00	0.08	0.00	0.08
49.00	0.08	0.00	0.08
50.00	0.07	0.00	0.07
51.00	0.07	0.00	0.07
52.00	0.07	0.00	0.07
53.00	0.06	0.00	0.06
54.00	0.06	0.00	0.06
55.00	0.06	0.00	0.06
56.00	0.05	0.00	0.05
57.00	0.05	0.00	0.05
58.00	0.05	0.00	0.05
59.00	0.05	0.00	0.05
60.00	0.04	0.00	0.04
61.00	0.04	0.00	0.04
62.00	0.04	0.00	0.04
63.00	0.04	0.00	0.04
64.00	0.04	0.00	0.04
65.00	0.04	0.00	0.04
66.00	0.03	0.00	0.03
67.00	0.03	0.00	0.03
68.00	0.03	0.00	0.03
69.00	0.03	0.00	0.03
70.00	0.03	0.00	0.03
71.00	0.03	0.00	0.03
72.00	0.03	0.00	0.03

Summary for Subcatchment 1S: Proposed

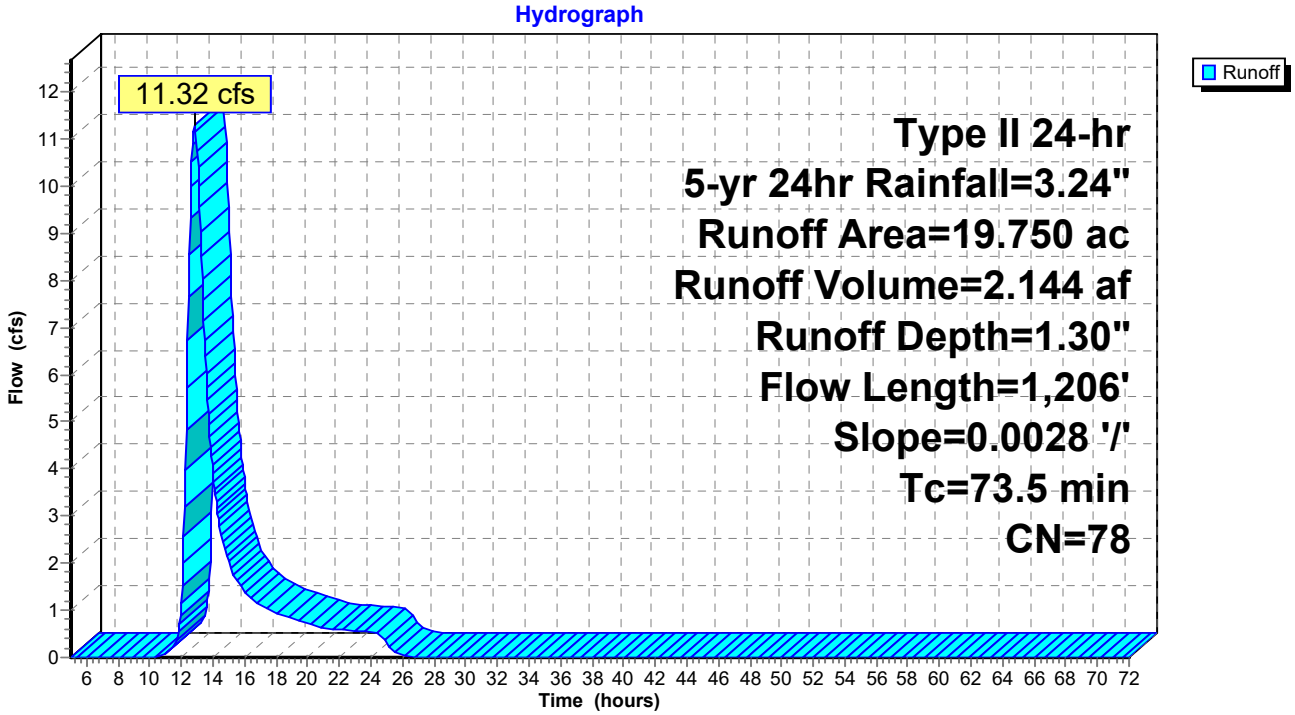
Runoff = 11.32 cfs @ 12.83 hrs, Volume= 2.144 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.24"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.20	0.00	0.00	57.00	3.24	1.30	0.00
6.00	0.26	0.00	0.00	58.00	3.24	1.30	0.00
7.00	0.32	0.00	0.00	59.00	3.24	1.30	0.00
8.00	0.39	0.00	0.00	60.00	3.24	1.30	0.00
9.00	0.48	0.00	0.00	61.00	3.24	1.30	0.00
10.00	0.59	0.00	0.00	62.00	3.24	1.30	0.00
11.00	0.76	0.01	0.07	63.00	3.24	1.30	0.00
12.00	2.15	0.57	**1.16**	64.00	3.24	1.30	0.00
13.00	2.50	0.79	**10.75**	65.00	3.24	1.30	0.00
14.00	2.66	0.89	3.90	66.00	3.24	1.30	0.00
15.00	2.77	0.96	1.98	67.00	3.24	1.30	0.00
16.00	2.85	1.02	1.39	68.00	3.24	1.30	0.00
17.00	2.92	1.07	1.10	69.00	3.24	1.30	0.00
18.00	2.98	1.12	0.95	70.00	3.24	1.30	0.00
19.00	3.04	1.16	0.84	71.00	3.24	1.30	0.00
20.00	3.08	1.19	0.73	72.00	3.24	1.30	0.00
21.00	3.13	1.22	0.63				
22.00	3.17	1.25	0.59				
23.00	3.20	1.28	0.57				
24.00	**3.24**	**1.30**	0.55				
25.00	3.24	1.30	0.28				
26.00	3.24	1.30	0.04				
27.00	3.24	1.30	0.00				
28.00	3.24	1.30	0.00				
29.00	3.24	1.30	0.00				
30.00	3.24	1.30	0.00				
31.00	3.24	1.30	0.00				
32.00	3.24	1.30	0.00				
33.00	3.24	1.30	0.00				
34.00	3.24	1.30	0.00				
35.00	3.24	1.30	0.00				
36.00	3.24	1.30	0.00				
37.00	3.24	1.30	0.00				
38.00	3.24	1.30	0.00				
39.00	3.24	1.30	0.00				
40.00	3.24	1.30	0.00				
41.00	3.24	1.30	0.00				
42.00	3.24	1.30	0.00				
43.00	3.24	1.30	0.00				
44.00	3.24	1.30	0.00				
45.00	3.24	1.30	0.00				
46.00	3.24	1.30	0.00				
47.00	3.24	1.30	0.00				
48.00	3.24	1.30	0.00				
49.00	3.24	1.30	0.00				
50.00	3.24	1.30	0.00				
51.00	3.24	1.30	0.00				
52.00	3.24	1.30	0.00				
53.00	3.24	1.30	0.00				
54.00	3.24	1.30	0.00				
55.00	3.24	1.30	0.00				
56.00	3.24	1.30	0.00				

Summary for Subcatchment 2S: Existing

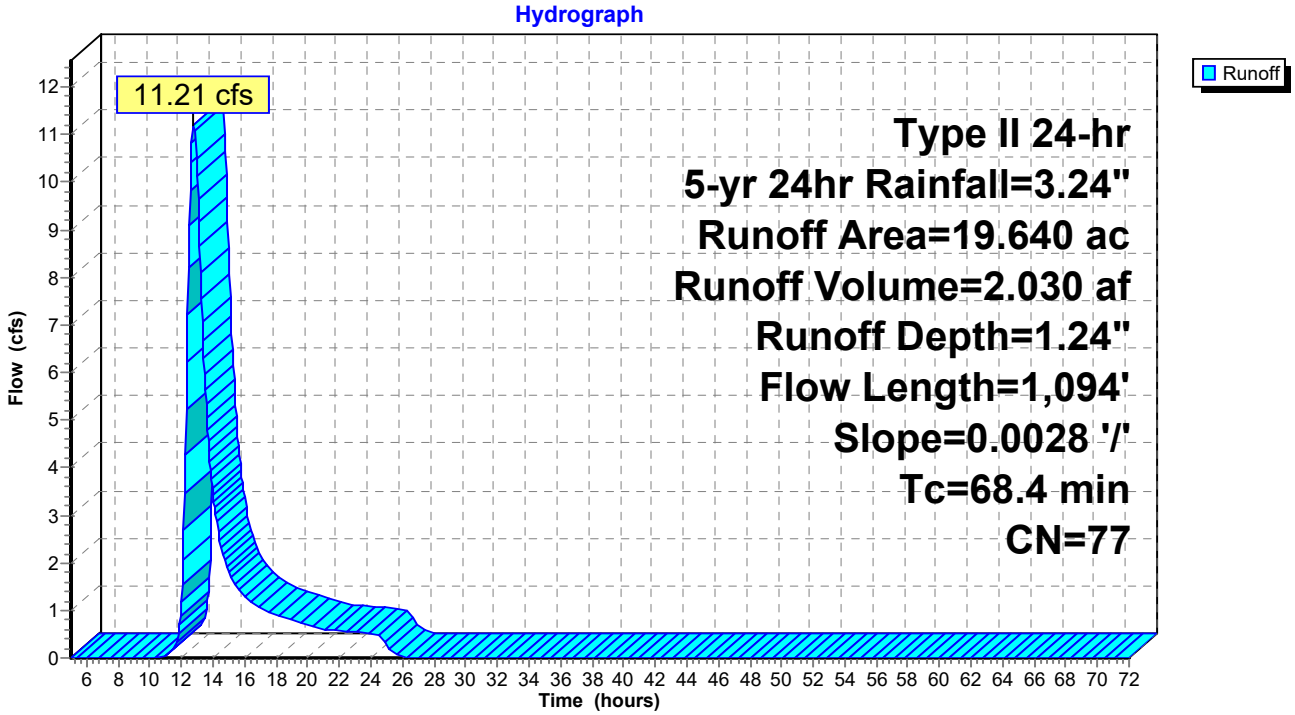
Runoff = 11.21 cfs @ 12.77 hrs, Volume= 2.030 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.24"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.20	0.00	0.00	57.00	3.24	1.24	0.00
6.00	0.26	0.00	0.00	58.00	3.24	1.24	0.00
7.00	0.32	0.00	0.00	59.00	3.24	1.24	0.00
8.00	0.39	0.00	0.00	60.00	3.24	1.24	0.00
9.00	0.48	0.00	0.00	61.00	3.24	1.24	0.00
10.00	0.59	0.00	0.00	62.00	3.24	1.24	0.00
11.00	0.76	0.01	0.04	63.00	3.24	1.24	0.00
12.00	2.15	0.53	**1.17**	64.00	3.24	1.24	0.00
13.00	2.50	0.74	**10.12**	65.00	3.24	1.24	0.00
14.00	2.66	0.84	3.43	66.00	3.24	1.24	0.00
15.00	2.77	0.91	1.80	67.00	3.24	1.24	0.00
16.00	2.85	0.97	1.31	68.00	3.24	1.24	0.00
17.00	2.92	1.02	1.04	69.00	3.24	1.24	0.00
18.00	2.98	1.06	0.91	70.00	3.24	1.24	0.00
19.00	3.04	1.10	0.80	71.00	3.24	1.24	0.00
20.00	3.08	1.13	0.70	72.00	3.24	1.24	0.00
21.00	3.13	1.16	0.61				
22.00	3.17	1.19	0.57				
23.00	3.20	1.21	0.55				
24.00	**3.24**	**1.24**	0.53				
25.00	3.24	1.24	0.24				
26.00	3.24	1.24	0.03				
27.00	3.24	1.24	0.00				
28.00	3.24	1.24	0.00				
29.00	3.24	1.24	0.00				
30.00	3.24	1.24	0.00				
31.00	3.24	1.24	0.00				
32.00	3.24	1.24	0.00				
33.00	3.24	1.24	0.00				
34.00	3.24	1.24	0.00				
35.00	3.24	1.24	0.00				
36.00	3.24	1.24	0.00				
37.00	3.24	1.24	0.00				
38.00	3.24	1.24	0.00				
39.00	3.24	1.24	0.00				
40.00	3.24	1.24	0.00				
41.00	3.24	1.24	0.00				
42.00	3.24	1.24	0.00				
43.00	3.24	1.24	0.00				
44.00	3.24	1.24	0.00				
45.00	3.24	1.24	0.00				
46.00	3.24	1.24	0.00				
47.00	3.24	1.24	0.00				
48.00	3.24	1.24	0.00				
49.00	3.24	1.24	0.00				
50.00	3.24	1.24	0.00				
51.00	3.24	1.24	0.00				
52.00	3.24	1.24	0.00				
53.00	3.24	1.24	0.00				
54.00	3.24	1.24	0.00				
55.00	3.24	1.24	0.00				
56.00	3.24	1.24	0.00				

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 1.30" for 5-yr 24hr event
Inflow = 11.32 cfs @ 12.83 hrs, Volume= 2.144 af
Outflow = 1.62 cfs @ 15.52 hrs, Volume= 2.010 af, Atten= 86%, Lag= 161.3 min
Primary = 1.62 cfs @ 15.52 hrs, Volume= 2.010 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 799.86' @ 15.52 hrs Surf.Area= 66,494 sf Storage= 52,608 cf

Plug-Flow detention time= 609.6 min calculated for 2.010 af (94% of inflow)
Center-of-Mass det. time= 575.4 min (1,483.1 - 907.7)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

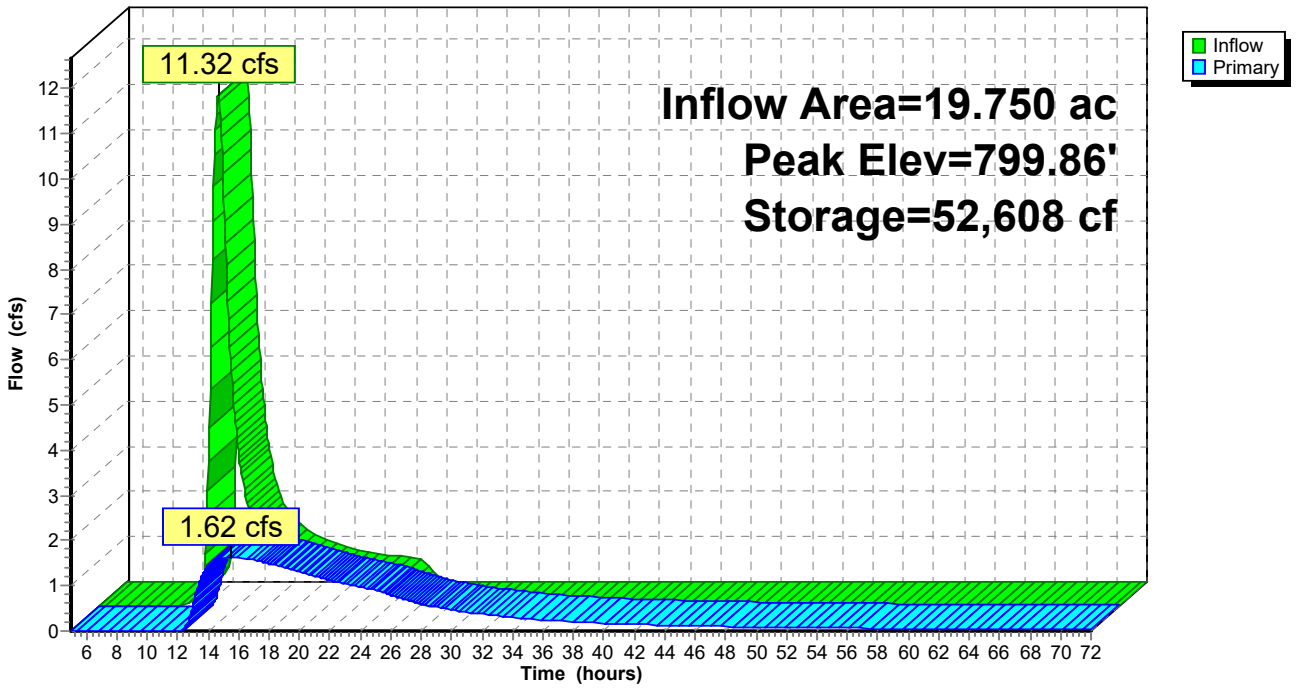
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 15.52 hrs HW=799.86' (Free Discharge)
↑—**1=Culvert** (Passes 1.62 cfs of 1.65 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 1.62 cfs @ 3.29 fps)

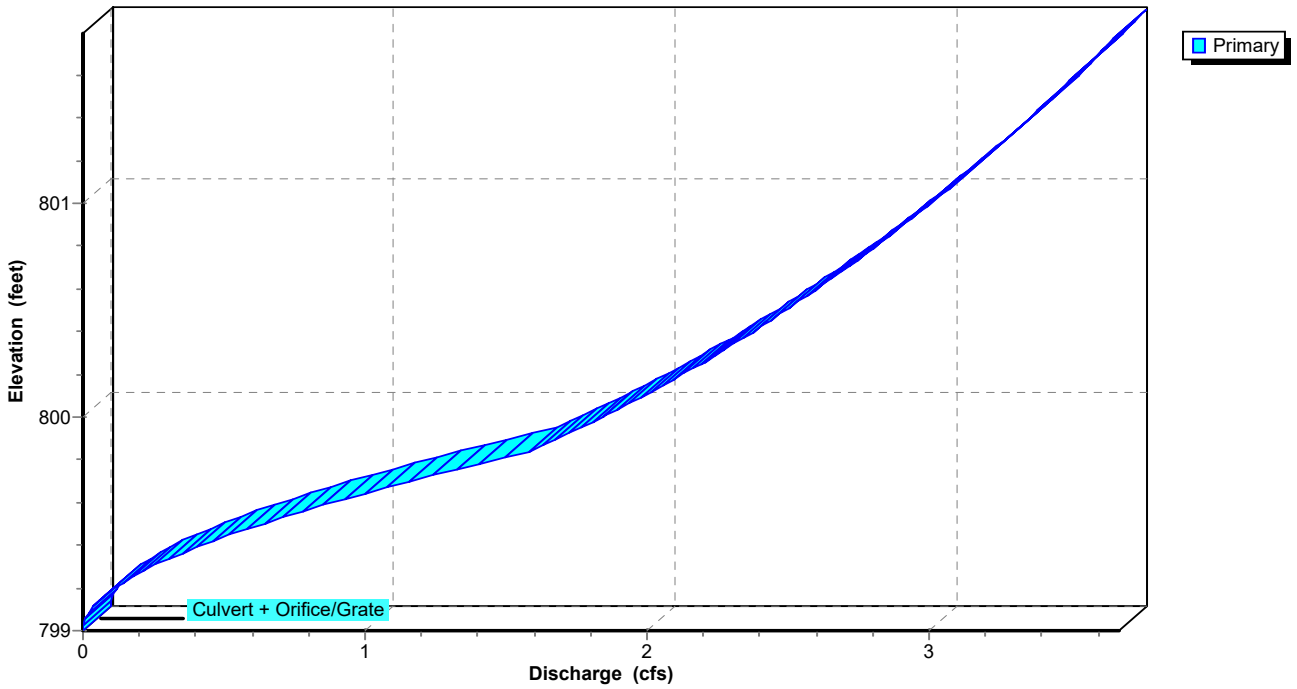
Pond 3P: Prop Pond

Hydrograph

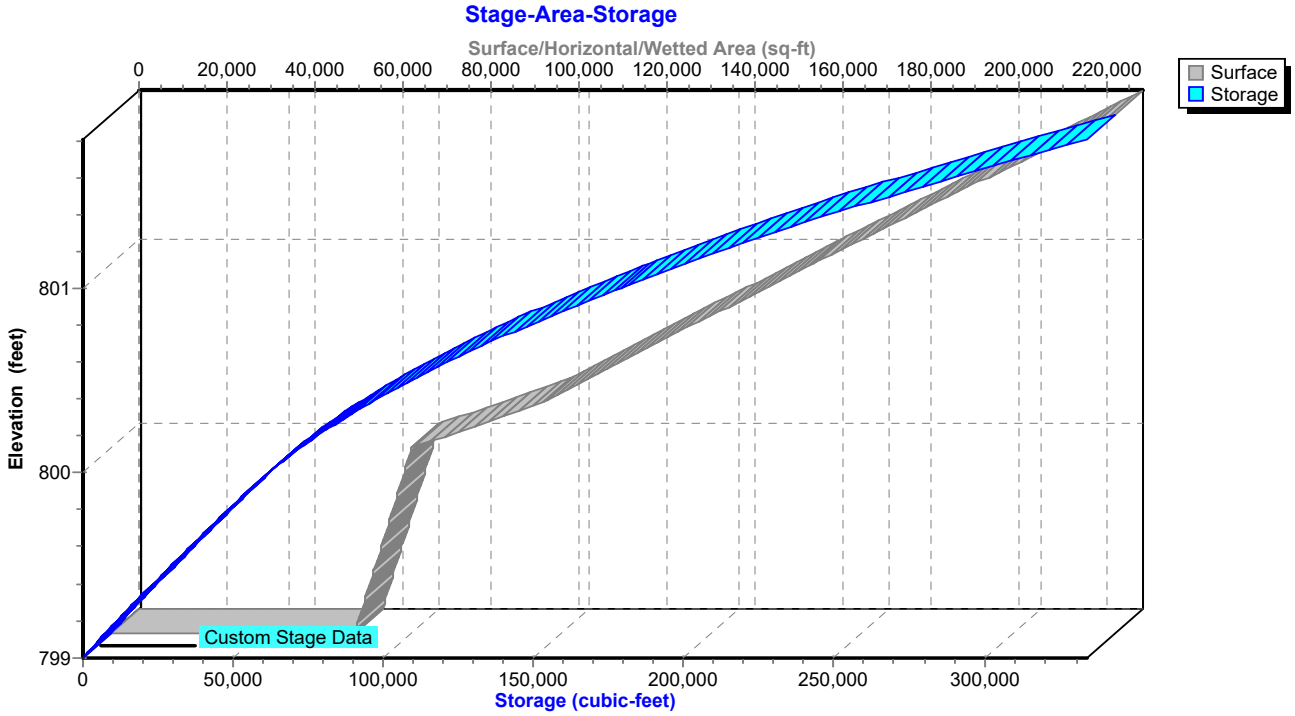


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.00	0	799.00	0.00
12.50	**8.55**	8,963	799.16	0.07
15.00	**1.98**	**52,303**	**799.86**	**1.61**
17.50	1.01	**50,171**	**799.83**	**1.54**
20.00	0.73	45,163	799.75	1.31
22.50	0.58	40,126	799.67	1.08
25.00	0.28	35,928	799.61	0.90
27.50	0.00	29,522	799.50	0.64
30.00	0.00	24,580	799.42	0.47
32.50	0.00	20,938	799.36	0.35
35.00	0.00	18,169	799.32	0.27
37.50	0.00	16,007	799.28	0.21
40.00	0.00	14,279	799.25	0.17
42.50	0.00	12,870	799.23	0.14
45.00	0.00	11,703	799.21	0.12
47.50	0.00	10,724	799.19	0.10
50.00	0.00	9,889	799.18	0.09
52.50	0.00	9,173	799.16	0.07
55.00	0.00	8,548	799.15	0.06
57.50	0.00	8,003	799.14	0.06
60.00	0.00	7,523	799.13	0.05
62.50	0.00	7,094	799.13	0.05
65.00	0.00	6,710	799.12	0.04
67.50	0.00	6,367	799.11	0.04
70.00	0.00	6,059	799.11	0.03

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 1.24" for 5-yr 24hr event
Inflow = 11.21 cfs @ 12.77 hrs, Volume= 2.030 af
Outflow = 2.31 cfs @ 14.53 hrs, Volume= 1.997 af, Atten= 79%, Lag= 105.5 min
Primary = 2.31 cfs @ 14.53 hrs, Volume= 1.997 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.08' @ 14.53 hrs Surf.Area= 58,114 sf Storage= 42,676 cf

Plug-Flow detention time= 358.2 min calculated for 1.997 af (98% of inflow)
Center-of-Mass det. time= 348.6 min (1,254.8 - 906.2)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

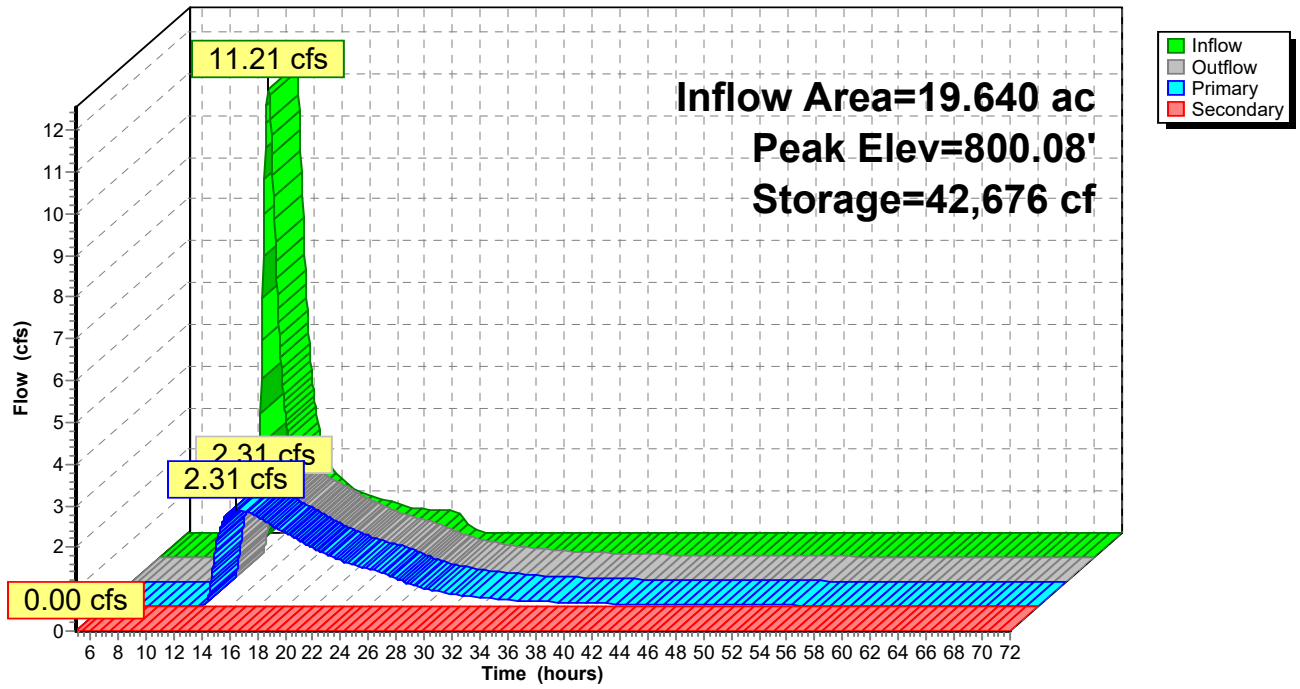
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=2.31 cfs @ 14.53 hrs HW=800.08' (Free Discharge)
1=Culvert (Barrel Controls 2.31 cfs @ 3.41 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=799.00' (Free Discharge)
2=Custom Weir/Orifice (Controls 0.00 cfs)

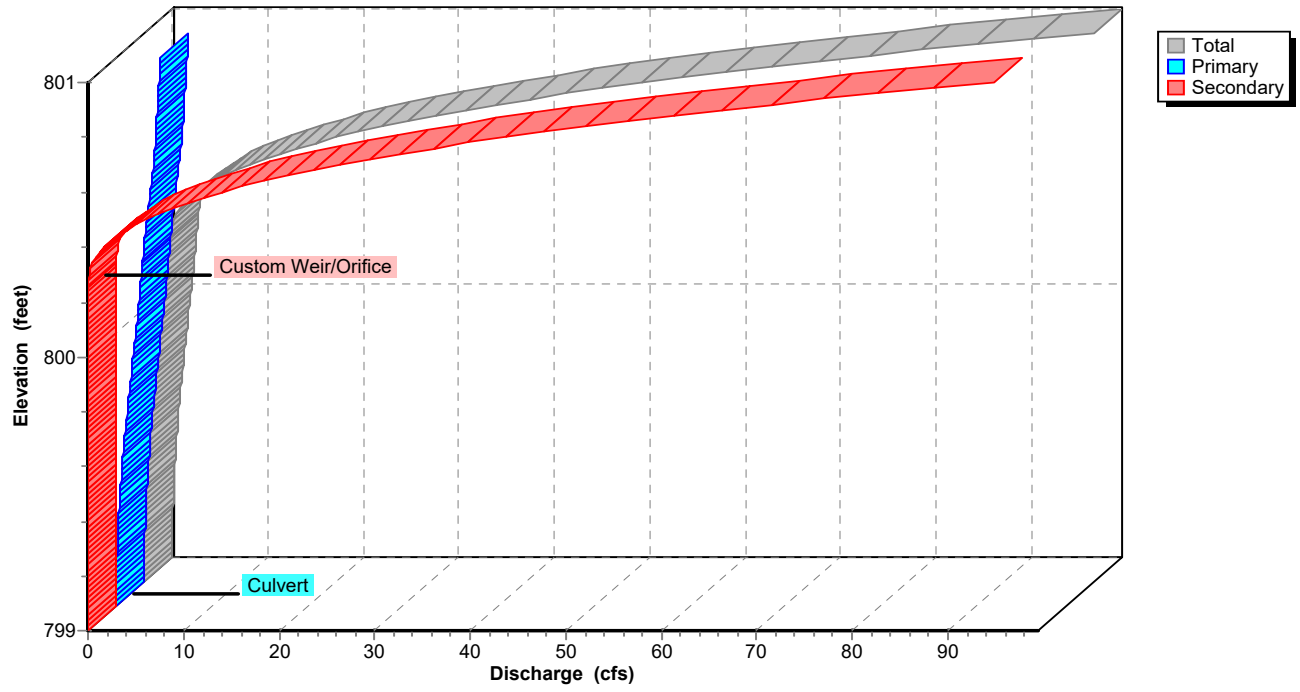
Pond 4P: Ex Pond

Hydrograph

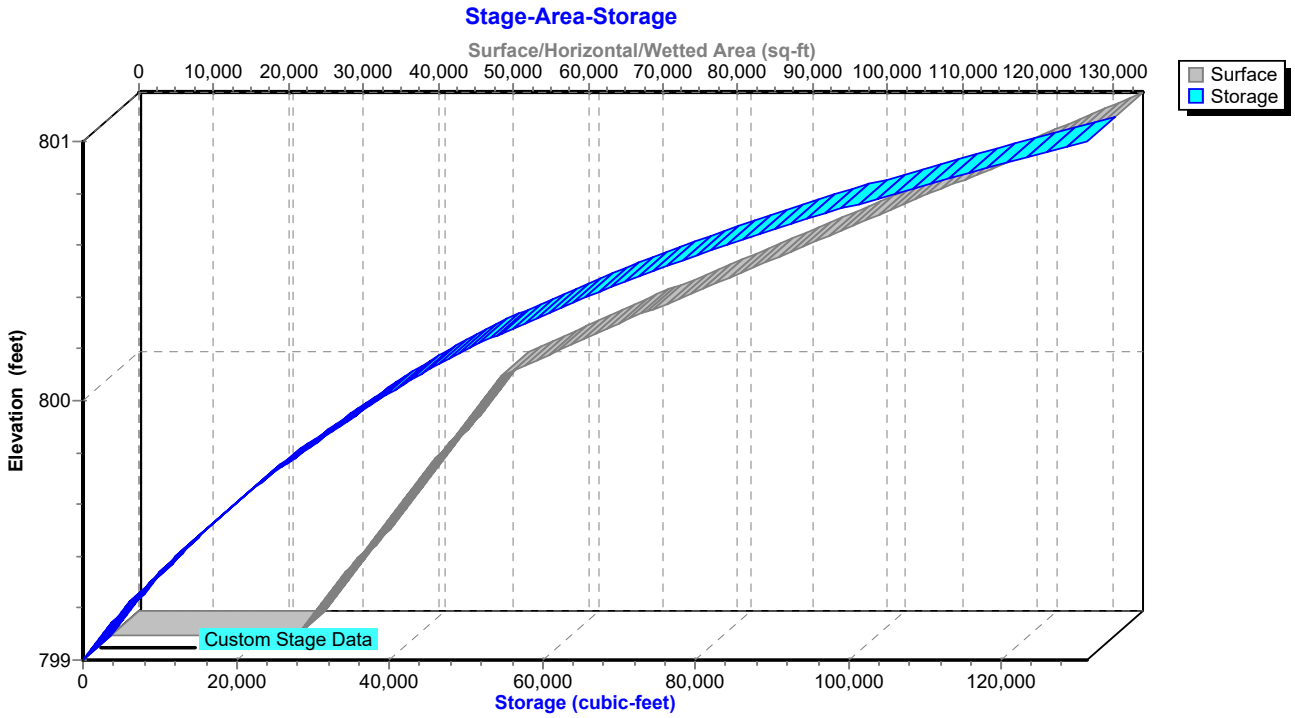


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

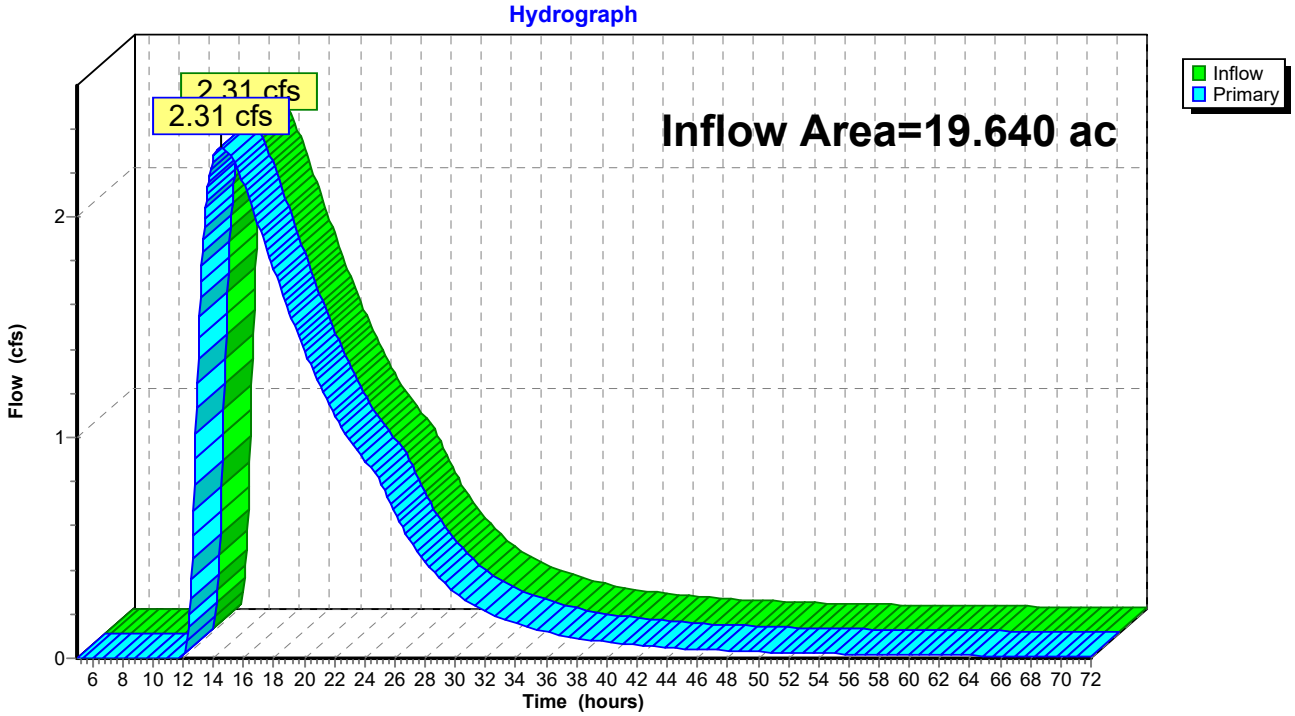
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	**0.00**
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.00	0	799.00	0.00	0.00	0.00
12.50	**9.09**	**9,225**	**799.32**	**0.27**	**0.27**	0.00
15.00	**1.80**	**42,214**	**800.07**	**2.29**	**2.29**	0.00
17.50	0.97	34,835	799.93	1.86	1.86	0.00
20.00	0.70	27,721	799.78	1.40	1.40	0.00
22.50	0.56	22,282	799.66	1.04	1.04	0.00
25.00	0.24	18,505	799.57	0.80	0.80	0.00
27.50	0.00	13,214	799.43	0.48	0.48	0.00
30.00	0.00	9,788	799.33	0.30	0.30	0.00
32.50	0.00	7,610	799.27	0.20	0.20	0.00
35.00	0.00	6,146	799.22	0.13	0.13	0.00
37.50	0.00	5,113	799.19	0.10	0.10	0.00
40.00	0.00	4,355	799.16	0.07	0.07	0.00
42.50	0.00	3,780	799.14	0.06	0.06	0.00
45.00	0.00	3,331	799.13	0.04	0.04	0.00
47.50	0.00	2,974	799.11	0.04	0.04	0.00
50.00	0.00	2,682	799.10	0.03	0.03	0.00
52.50	0.00	2,442	799.09	0.02	0.02	0.00
55.00	0.00	2,239	799.09	0.02	0.02	0.00
57.50	0.00	2,067	799.08	0.02	0.02	0.00
60.00	0.00	1,920	799.07	0.02	0.02	0.00
62.50	0.00	1,791	799.07	0.01	0.01	0.00
65.00	0.00	1,678	799.07	0.01	0.01	0.00
67.50	0.00	1,579	799.06	0.01	0.01	0.00
70.00	0.00	1,492	799.06	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 1.22" for 5-yr 24hr event
Inflow = 2.31 cfs @ 14.53 hrs, Volume= 1.997 af
Primary = 2.31 cfs @ 14.53 hrs, Volume= 1.997 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

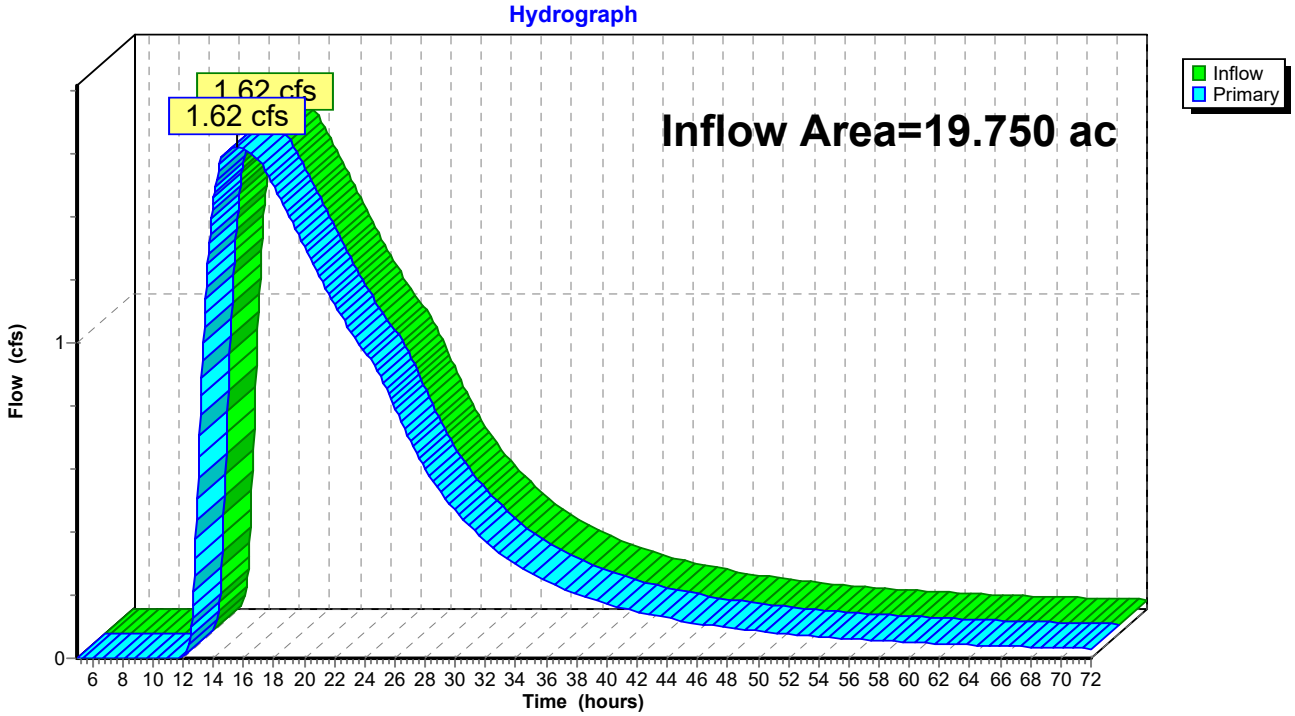
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00
13.00	1.35	0.00	1.35
14.00	**2.26**	0.00	**2.26**
15.00	**2.29**	0.00	**2.29**
16.00	2.15	0.00	2.15
17.00	1.96	0.00	1.96
18.00	1.76	0.00	1.76
19.00	1.57	0.00	1.57
20.00	1.40	0.00	1.40
21.00	1.24	0.00	1.24
22.00	1.10	0.00	1.10
23.00	0.99	0.00	0.99
24.00	0.90	0.00	0.90
25.00	0.80	0.00	0.80
26.00	0.66	0.00	0.66
27.00	0.53	0.00	0.53
28.00	0.44	0.00	0.44
29.00	0.36	0.00	0.36
30.00	0.30	0.00	0.30
31.00	0.25	0.00	0.25
32.00	0.21	0.00	0.21
33.00	0.18	0.00	0.18
34.00	0.16	0.00	0.16
35.00	0.13	0.00	0.13
36.00	0.12	0.00	0.12
37.00	0.10	0.00	0.10
38.00	0.09	0.00	0.09
39.00	0.08	0.00	0.08
40.00	0.07	0.00	0.07
41.00	0.07	0.00	0.07
42.00	0.06	0.00	0.06
43.00	0.05	0.00	0.05
44.00	0.05	0.00	0.05
45.00	0.04	0.00	0.04
46.00	0.04	0.00	0.04
47.00	0.04	0.00	0.04
48.00	0.03	0.00	0.03
49.00	0.03	0.00	0.03
50.00	0.03	0.00	0.03
51.00	0.03	0.00	0.03
52.00	0.03	0.00	0.03
53.00	0.02	0.00	0.02
54.00	0.02	0.00	0.02
55.00	0.02	0.00	0.02
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.02	0.00	0.02
59.00	0.02	0.00	0.02
60.00	0.02	0.00	0.02
61.00	0.01	0.00	0.01
62.00	0.01	0.00	0.01
63.00	0.01	0.00	0.01
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 1.22" for 5-yr 24hr event
Inflow = 1.62 cfs @ 15.52 hrs, Volume= 2.010 af
Primary = 1.62 cfs @ 15.52 hrs, Volume= 2.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall



Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00
13.00	0.57	0.00	0.57
14.00	1.44	0.00	1.44
15.00	**1.61**	0.00	**1.61**
16.00	**1.62**	0.00	**1.62**
17.00	1.58	0.00	1.58
18.00	1.49	0.00	1.49
19.00	1.40	0.00	1.40
20.00	1.31	0.00	1.31
21.00	1.21	0.00	1.21
22.00	1.12	0.00	1.12
23.00	1.04	0.00	1.04
24.00	0.97	0.00	0.97
25.00	0.90	0.00	0.90
26.00	0.79	0.00	0.79
27.00	0.69	0.00	0.69
28.00	0.60	0.00	0.60
29.00	0.53	0.00	0.53
30.00	0.47	0.00	0.47
31.00	0.41	0.00	0.41
32.00	0.37	0.00	0.37
33.00	0.33	0.00	0.33
34.00	0.30	0.00	0.30
35.00	0.27	0.00	0.27
36.00	0.25	0.00	0.25
37.00	0.22	0.00	0.22
38.00	0.20	0.00	0.20
39.00	0.19	0.00	0.19
40.00	0.17	0.00	0.17
41.00	0.16	0.00	0.16
42.00	0.15	0.00	0.15
43.00	0.14	0.00	0.14
44.00	0.13	0.00	0.13
45.00	0.12	0.00	0.12
46.00	0.11	0.00	0.11
47.00	0.10	0.00	0.10
48.00	0.10	0.00	0.10
49.00	0.09	0.00	0.09
50.00	0.09	0.00	0.09
51.00	0.08	0.00	0.08
52.00	0.08	0.00	0.08
53.00	0.07	0.00	0.07
54.00	0.07	0.00	0.07
55.00	0.06	0.00	0.06
56.00	0.06	0.00	0.06
57.00	0.06	0.00	0.06
58.00	0.06	0.00	0.06
59.00	0.05	0.00	0.05
60.00	0.05	0.00	0.05
61.00	0.05	0.00	0.05
62.00	0.05	0.00	0.05
63.00	0.04	0.00	0.04
64.00	0.04	0.00	0.04
65.00	0.04	0.00	0.04
66.00	0.04	0.00	0.04
67.00	0.04	0.00	0.04
68.00	0.04	0.00	0.04
69.00	0.03	0.00	0.03
70.00	0.03	0.00	0.03
71.00	0.03	0.00	0.03
72.00	0.03	0.00	0.03

Summary for Subcatchment 1S: Proposed

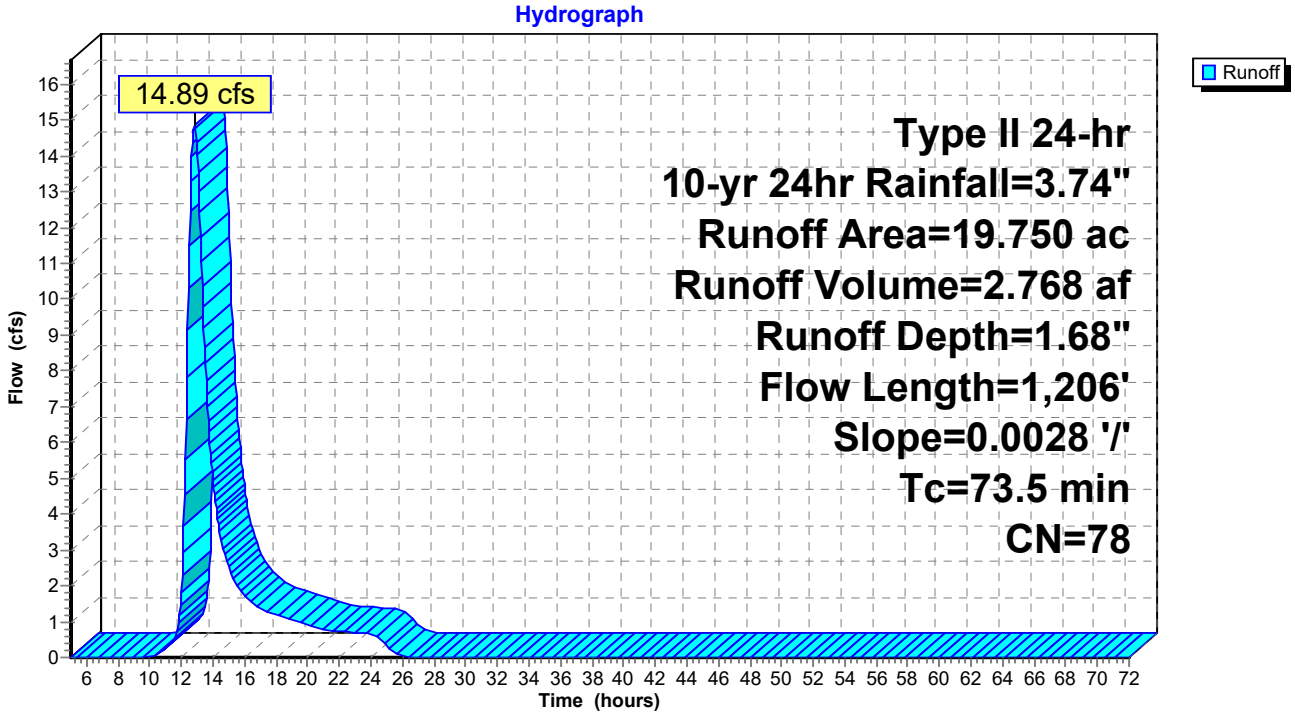
Runoff = 14.89 cfs @ 12.82 hrs, Volume= 2.768 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr 24hr Rainfall=3.74"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.24	0.00	0.00
6.00	0.30	0.00	0.00
7.00	0.37	0.00	0.00
8.00	0.45	0.00	0.00
9.00	0.55	0.00	0.00
10.00	0.68	0.00	0.02
11.00	0.88	0.03	0.23
12.00	2.48	0.77	**1.80**
13.00	2.89	1.05	**14.04**
14.00	3.07	1.18	4.95
15.00	3.19	1.27	2.47
16.00	3.29	1.34	1.72
17.00	3.37	1.40	1.35
18.00	3.44	1.46	1.17
19.00	3.51	1.50	1.03
20.00	3.56	1.54	0.90
21.00	3.61	1.58	0.77
22.00	3.65	1.62	0.72
23.00	3.70	1.65	0.69
24.00	**3.74**	**1.68**	0.67
25.00	3.74	1.68	0.35
26.00	3.74	1.68	0.05
27.00	3.74	1.68	0.01
28.00	3.74	1.68	0.00
29.00	3.74	1.68	0.00
30.00	3.74	1.68	0.00
31.00	3.74	1.68	0.00
32.00	3.74	1.68	0.00
33.00	3.74	1.68	0.00
34.00	3.74	1.68	0.00
35.00	3.74	1.68	0.00
36.00	3.74	1.68	0.00
37.00	3.74	1.68	0.00
38.00	3.74	1.68	0.00
39.00	3.74	1.68	0.00
40.00	3.74	1.68	0.00
41.00	3.74	1.68	0.00
42.00	3.74	1.68	0.00
43.00	3.74	1.68	0.00
44.00	3.74	1.68	0.00
45.00	3.74	1.68	0.00
46.00	3.74	1.68	0.00
47.00	3.74	1.68	0.00
48.00	3.74	1.68	0.00
49.00	3.74	1.68	0.00
50.00	3.74	1.68	0.00
51.00	3.74	1.68	0.00
52.00	3.74	1.68	0.00
53.00	3.74	1.68	0.00
54.00	3.74	1.68	0.00
55.00	3.74	1.68	0.00
56.00	3.74	1.68	0.00
57.00	3.74	1.68	0.00
58.00	3.74	1.68	0.00
59.00	3.74	1.68	0.00
60.00	3.74	1.68	0.00
61.00	3.74	1.68	0.00
62.00	3.74	1.68	0.00
63.00	3.74	1.68	0.00
64.00	3.74	1.68	0.00
65.00	3.74	1.68	0.00
66.00	3.74	1.68	0.00
67.00	3.74	1.68	0.00
68.00	3.74	1.68	0.00
69.00	3.74	1.68	0.00
70.00	3.74	1.68	0.00
71.00	3.74	1.68	0.00
72.00	3.74	1.68	0.00

Summary for Subcatchment 2S: Existing

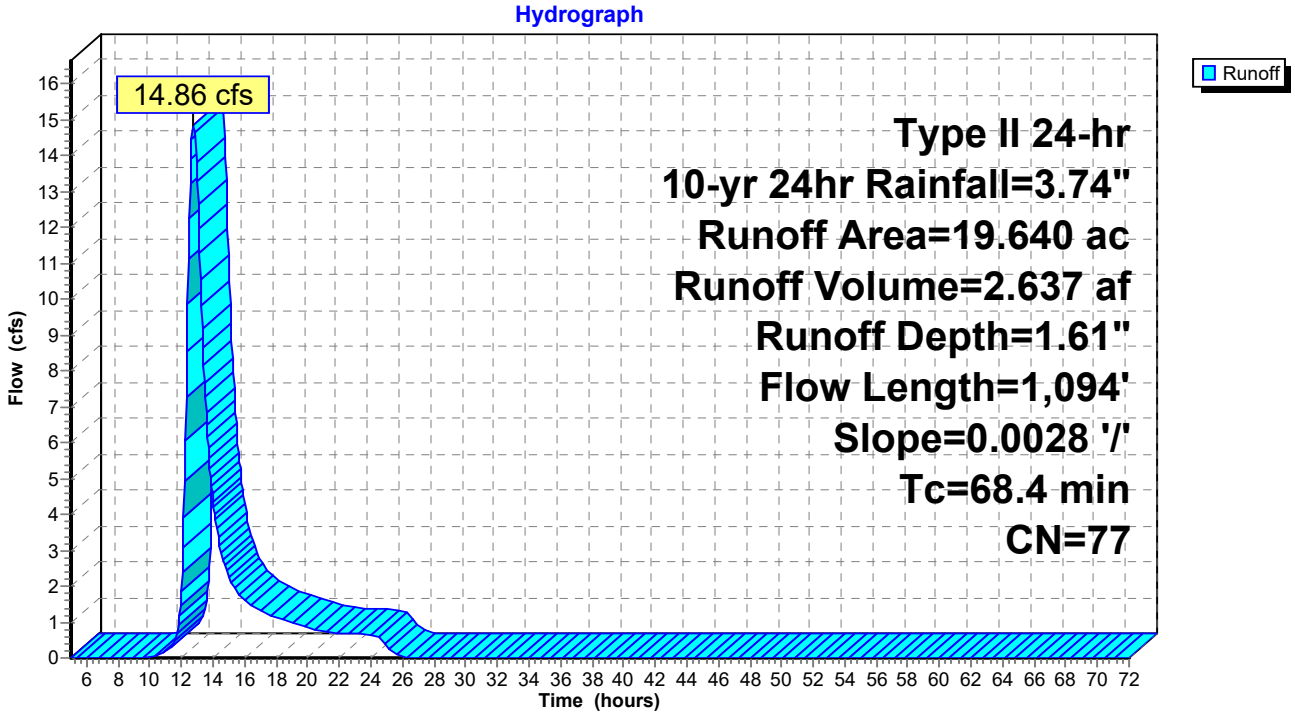
Runoff = 14.86 cfs @ 12.76 hrs, Volume= 2.637 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr 24hr Rainfall=3.74"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.24	0.00	0.00
6.00	0.30	0.00	0.00
7.00	0.37	0.00	0.00
8.00	0.45	0.00	0.00
9.00	0.55	0.00	0.00
10.00	0.68	0.00	0.00
11.00	0.88	0.02	0.19
12.00	2.48	0.73	**1.85**
13.00	2.89	0.99	**13.28**
14.00	3.07	1.12	4.37
15.00	3.19	1.21	2.25
16.00	3.29	1.28	1.62
17.00	3.37	1.34	1.29
18.00	3.44	1.39	1.12
19.00	3.51	1.44	0.99
20.00	3.56	1.48	0.86
21.00	3.61	1.51	0.75
22.00	3.65	1.55	0.70
23.00	3.70	1.58	0.67
24.00	**3.74**	**1.61**	0.65
25.00	3.74	1.61	0.30
26.00	3.74	1.61	0.03
27.00	3.74	1.61	0.00
28.00	3.74	1.61	0.00
29.00	3.74	1.61	0.00
30.00	3.74	1.61	0.00
31.00	3.74	1.61	0.00
32.00	3.74	1.61	0.00
33.00	3.74	1.61	0.00
34.00	3.74	1.61	0.00
35.00	3.74	1.61	0.00
36.00	3.74	1.61	0.00
37.00	3.74	1.61	0.00
38.00	3.74	1.61	0.00
39.00	3.74	1.61	0.00
40.00	3.74	1.61	0.00
41.00	3.74	1.61	0.00
42.00	3.74	1.61	0.00
43.00	3.74	1.61	0.00
44.00	3.74	1.61	0.00
45.00	3.74	1.61	0.00
46.00	3.74	1.61	0.00
47.00	3.74	1.61	0.00
48.00	3.74	1.61	0.00
49.00	3.74	1.61	0.00
50.00	3.74	1.61	0.00
51.00	3.74	1.61	0.00
52.00	3.74	1.61	0.00
53.00	3.74	1.61	0.00
54.00	3.74	1.61	0.00
55.00	3.74	1.61	0.00
56.00	3.74	1.61	0.00
57.00	3.74	1.61	0.00
58.00	3.74	1.61	0.00
59.00	3.74	1.61	0.00
60.00	3.74	1.61	0.00
61.00	3.74	1.61	0.00
62.00	3.74	1.61	0.00
63.00	3.74	1.61	0.00
64.00	3.74	1.61	0.00
65.00	3.74	1.61	0.00
66.00	3.74	1.61	0.00
67.00	3.74	1.61	0.00
68.00	3.74	1.61	0.00
69.00	3.74	1.61	0.00
70.00	3.74	1.61	0.00
71.00	3.74	1.61	0.00
72.00	3.74	1.61	0.00

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 1.68" for 10-yr 24hr event
Inflow = 14.89 cfs @ 12.82 hrs, Volume= 2.768 af
Outflow = 1.99 cfs @ 15.55 hrs, Volume= 2.629 af, Atten= 87%, Lag= 164.0 min
Primary = 1.99 cfs @ 15.55 hrs, Volume= 2.629 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.10' @ 15.55 hrs Surf.Area= 80,051 sf Storage= 69,141 cf

Plug-Flow detention time= 585.9 min calculated for 2.629 af (95% of inflow)
Center-of-Mass det. time= 557.6 min (1,457.8 - 900.2)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

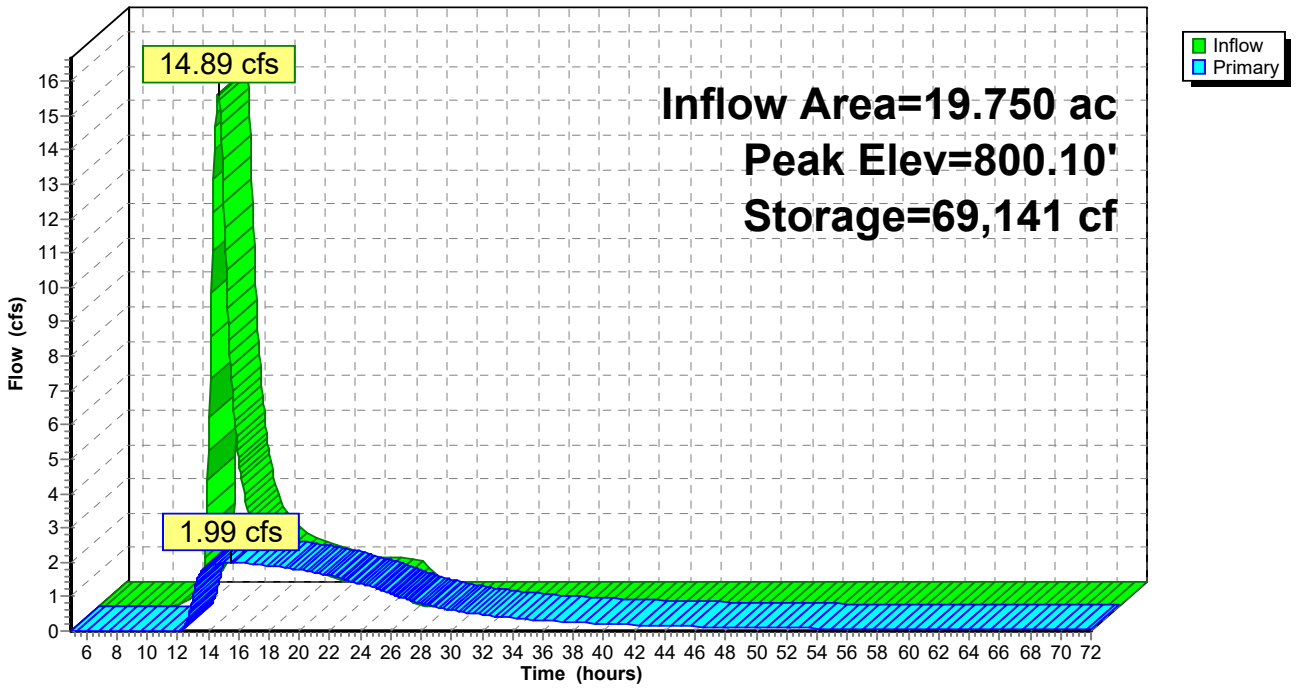
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.99 cfs @ 15.55 hrs HW=800.10' (Free Discharge)
↑—**1=Culvert** (Passes 1.99 cfs of 2.38 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 1.99 cfs @ 4.04 fps)

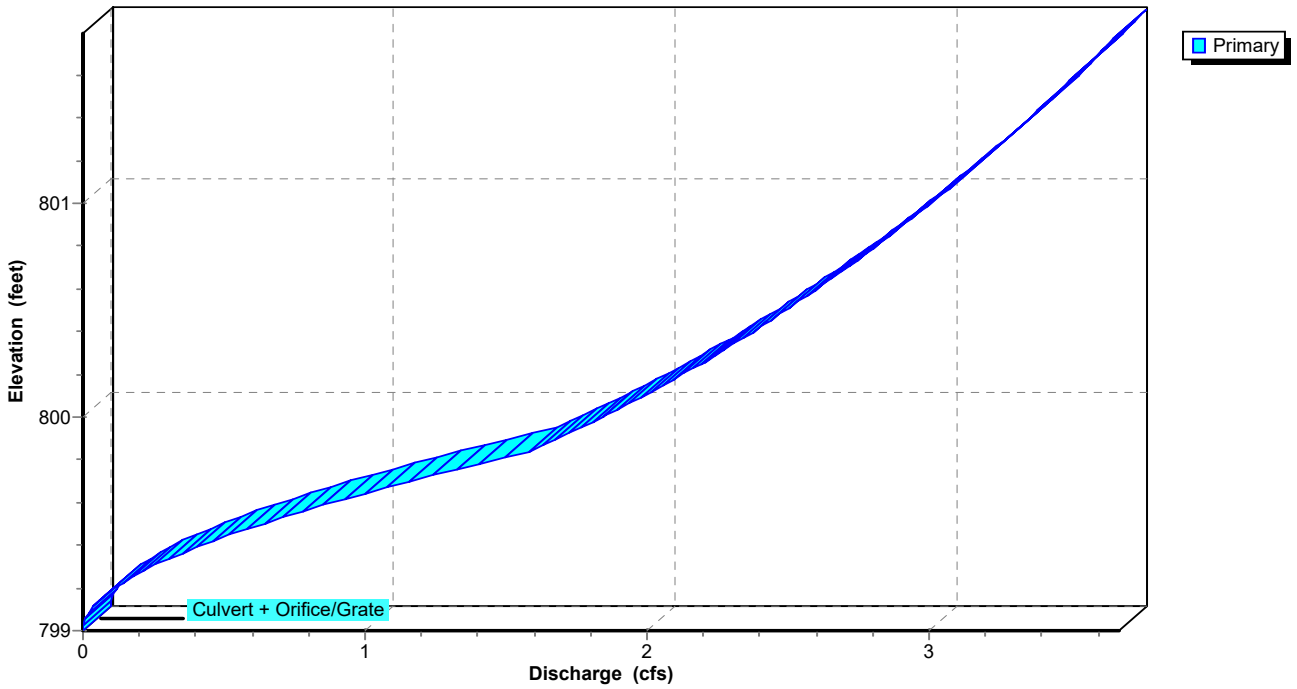
Pond 3P: Prop Pond

Hydrograph

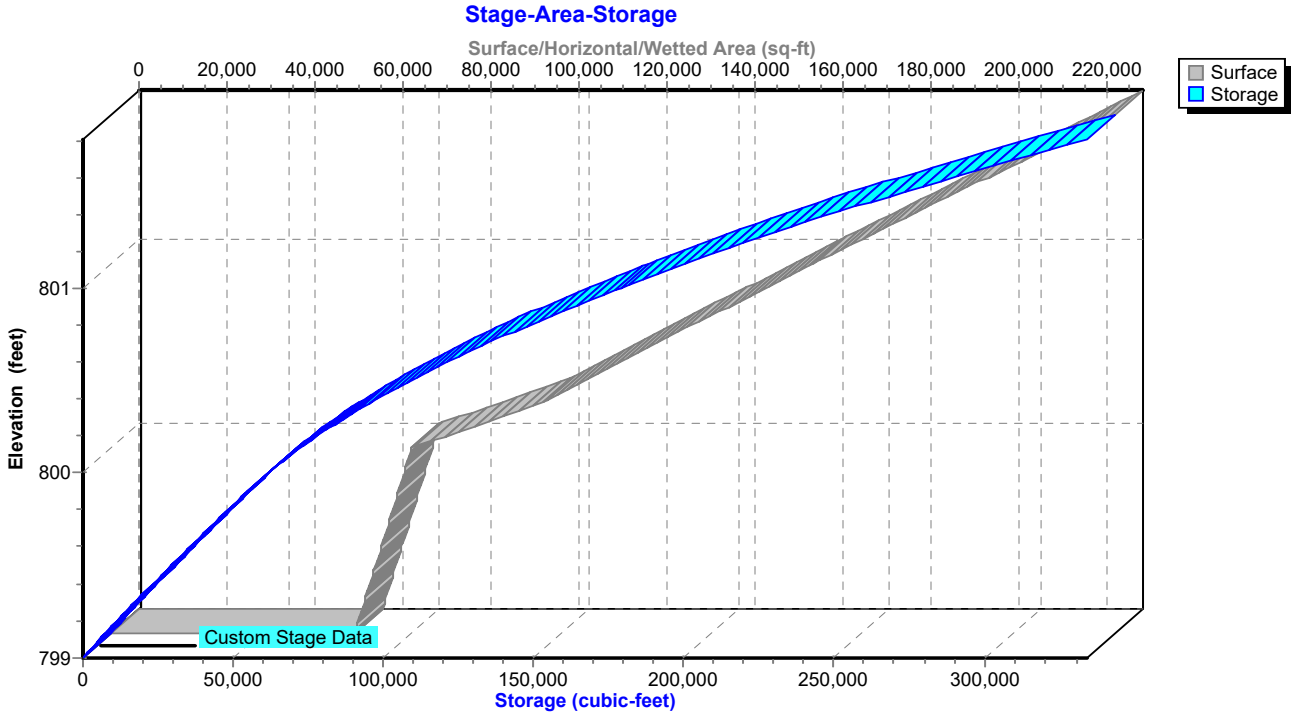


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.02	11	799.00	0.00
12.50	**11.47**	13,269	799.23	0.15
15.00	**2.47**	**68,719**	**800.09**	**1.98**
17.50	1.25	**66,149**	**800.06**	**1.93**
20.00	0.90	58,998	799.96	1.78
22.50	0.71	50,852	799.84	1.57
25.00	0.35	43,946	799.73	1.25
27.50	0.00	35,104	799.59	0.87
30.00	0.00	28,559	799.49	0.61
32.50	0.00	23,879	799.41	0.44
35.00	0.00	20,412	799.35	0.33
37.50	0.00	17,762	799.31	0.26
40.00	0.00	15,684	799.27	0.21
42.50	0.00	14,018	799.25	0.17
45.00	0.00	12,655	799.22	0.14
47.50	0.00	11,523	799.20	0.12
50.00	0.00	10,571	799.19	0.10
52.50	0.00	9,758	799.17	0.08
55.00	0.00	9,060	799.16	0.07
57.50	0.00	8,450	799.15	0.06
60.00	0.00	7,917	799.14	0.06
62.50	0.00	7,446	799.13	0.05
65.00	0.00	7,025	799.13	0.04
67.50	0.00	6,649	799.12	0.04
70.00	0.00	6,312	799.11	0.04

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 1.61" for 10-yr 24hr event
Inflow = 14.86 cfs @ 12.76 hrs, Volume= 2.637 af
Outflow = 2.94 cfs @ 14.51 hrs, Volume= 2.603 af, Atten= 80%, Lag= 105.5 min
Primary = 2.87 cfs @ 14.51 hrs, Volume= 2.598 af
Secondary = 0.07 cfs @ 14.51 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.29' @ 14.51 hrs Surf.Area= 74,998 sf Storage= 56,900 cf

Plug-Flow detention time= 346.6 min calculated for 2.603 af (99% of inflow)
Center-of-Mass det. time= 339.0 min (1,237.5 - 898.5)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

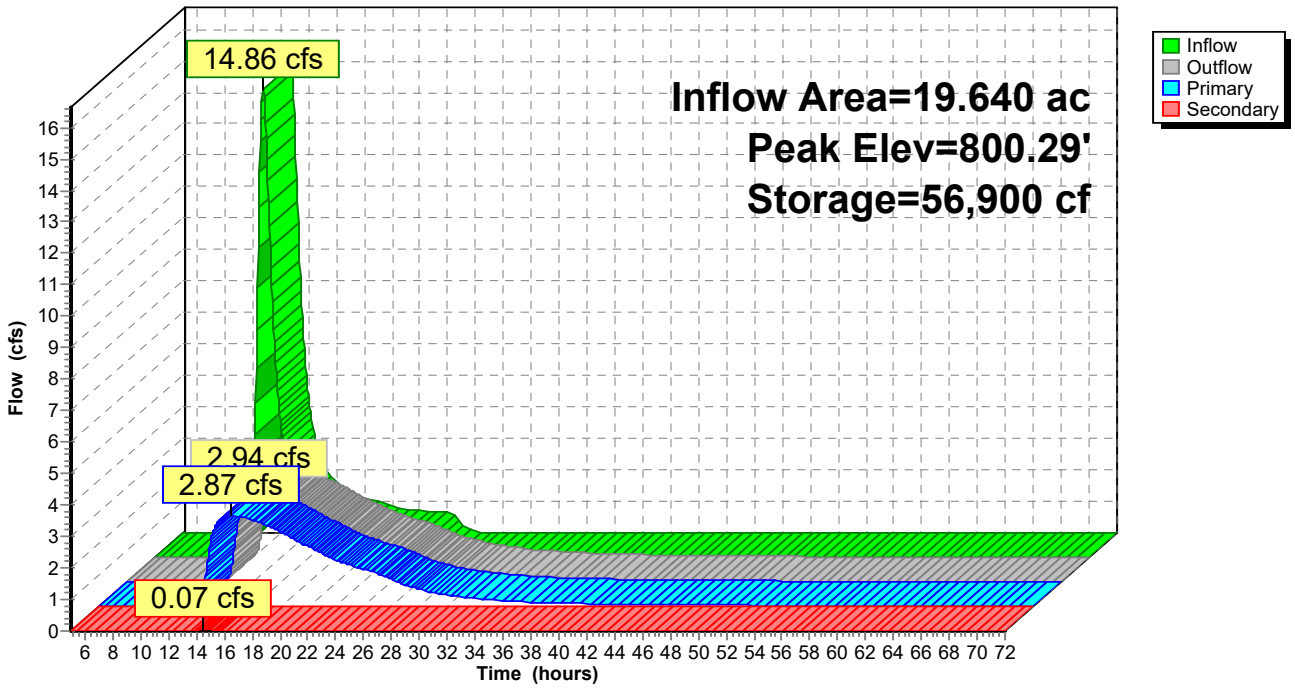
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=2.87 cfs @ 14.51 hrs HW=800.29' (Free Discharge)
1=Culvert (Barrel Controls 2.87 cfs @ 3.70 fps)

Secondary OutFlow Max=0.06 cfs @ 14.51 hrs HW=800.29' (Free Discharge)
2=Custom Weir/Orifice (Weir Controls 0.06 cfs @ 0.52 fps)

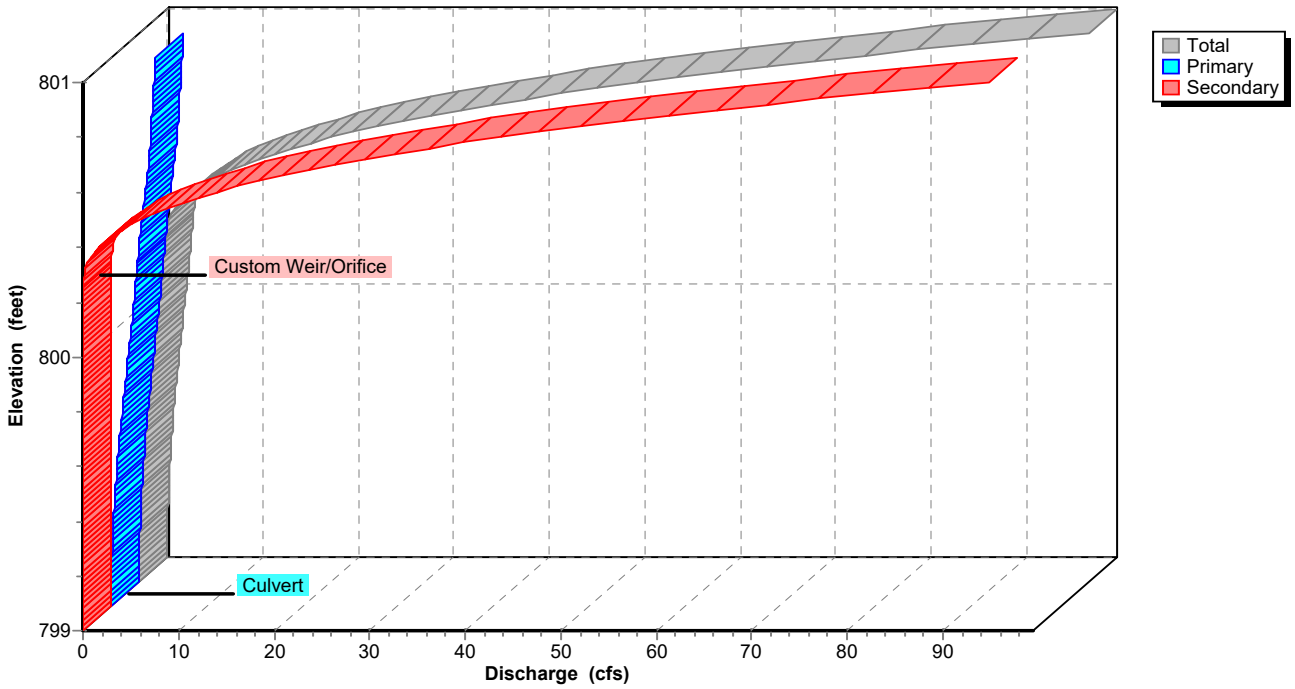
Pond 4P: Ex Pond

Hydrograph

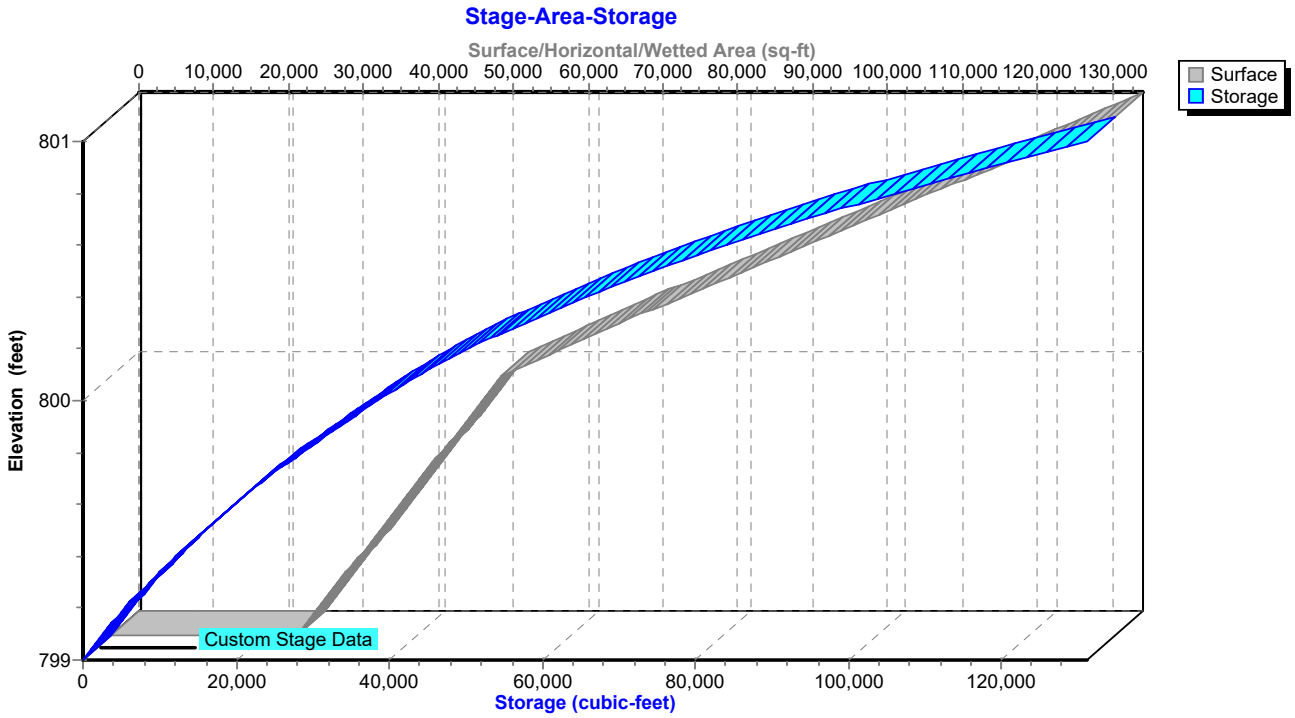


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

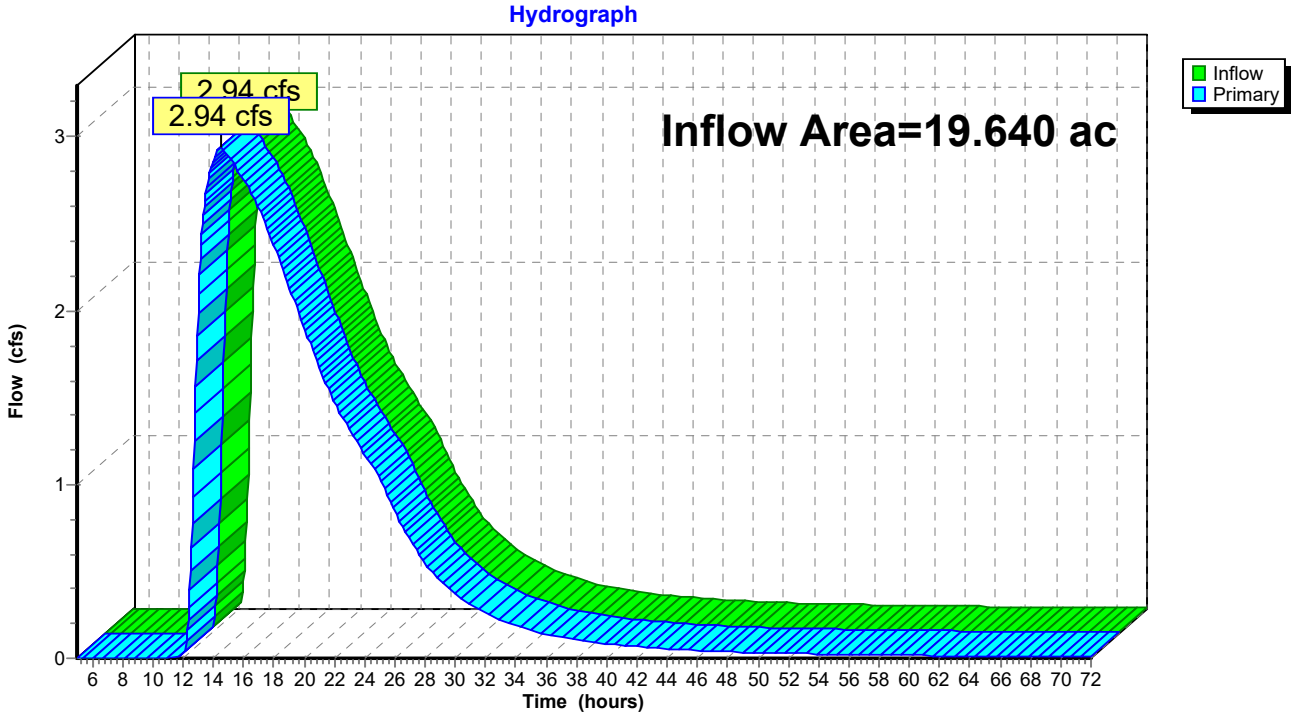
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	0.00
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.00	2	799.00	0.00	0.00	0.00
12.50	**12.27**	**13,610**	**799.44**	**0.50**	**0.50**	**0.00**
15.00	**2.25**	**56,265**	**800.28**	**2.89**	**2.86**	**0.04**
17.50	1.19	46,148	800.13	2.48	2.48	0.00
20.00	0.86	35,582	799.94	1.90	1.90	0.00
22.50	0.69	27,595	799.78	1.39	1.39	0.00
25.00	0.30	22,225	799.66	1.04	1.04	0.00
27.50	0.00	15,407	799.49	0.61	0.61	0.00
30.00	0.00	11,123	799.37	0.37	0.37	0.00
32.50	0.00	8,474	799.29	0.23	0.23	0.00
35.00	0.00	6,736	799.24	0.16	0.16	0.00
37.50	0.00	5,535	799.20	0.11	0.11	0.00
40.00	0.00	4,668	799.17	0.08	0.08	0.00
42.50	0.00	4,019	799.15	0.06	0.06	0.00
45.00	0.00	3,519	799.13	0.05	0.05	0.00
47.50	0.00	3,125	799.12	0.04	0.04	0.00
50.00	0.00	2,806	799.11	0.03	0.03	0.00
52.50	0.00	2,544	799.10	0.03	0.03	0.00
55.00	0.00	2,326	799.09	0.02	0.02	0.00
57.50	0.00	2,141	799.08	0.02	0.02	0.00
60.00	0.00	1,983	799.08	0.02	0.02	0.00
62.50	0.00	1,846	799.07	0.01	0.01	0.00
65.00	0.00	1,726	799.07	0.01	0.01	0.00
67.50	0.00	1,621	799.06	0.01	0.01	0.00
70.00	0.00	1,530	799.06	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 1.59" for 10-yr 24hr event
Inflow = 2.94 cfs @ 14.51 hrs, Volume= 2.603 af
Primary = 2.94 cfs @ 14.51 hrs, Volume= 2.603 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

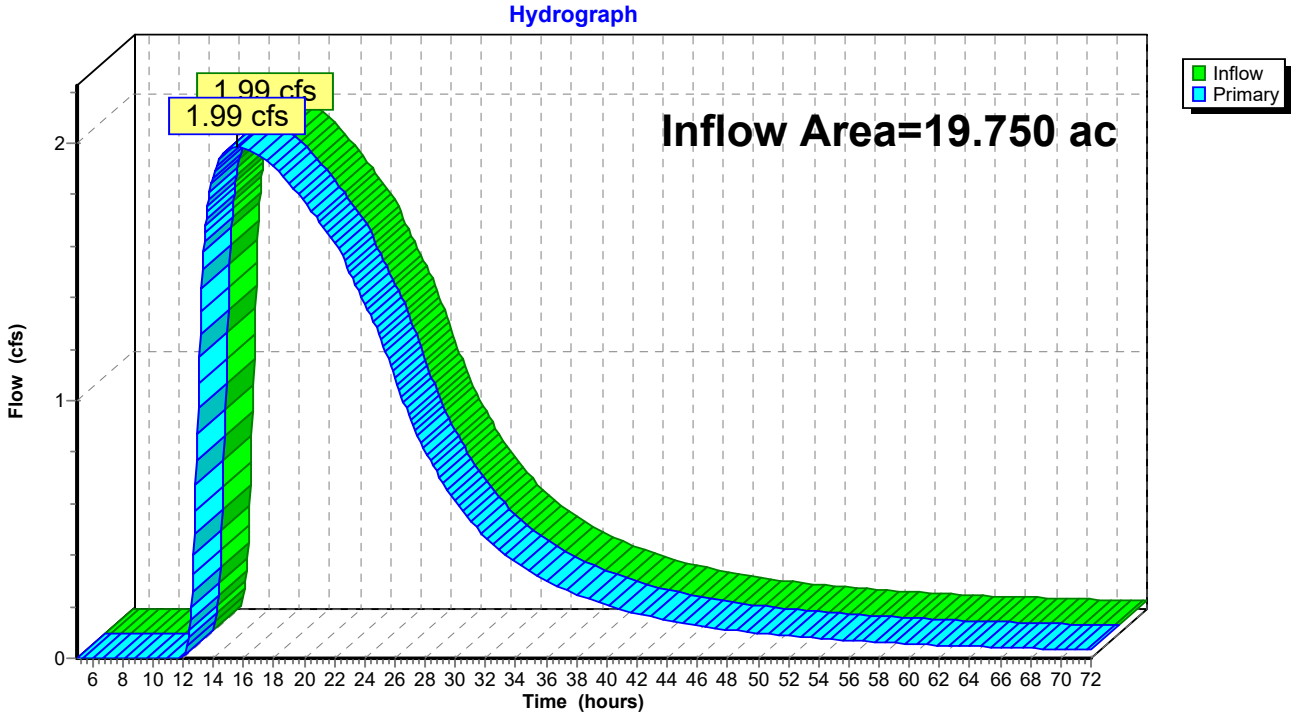
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.02	0.00	0.02
13.00	1.98	0.00	1.98
14.00	**2.86**	0.00	**2.86**
15.00	**2.89**	0.00	**2.89**
16.00	2.76	0.00	2.76
17.00	2.59	0.00	2.59
18.00	2.37	0.00	2.37
19.00	2.14	0.00	2.14
20.00	1.90	0.00	1.90
21.00	1.68	0.00	1.68
22.00	1.48	0.00	1.48
23.00	1.31	0.00	1.31
24.00	1.18	0.00	1.18
25.00	1.04	0.00	1.04
26.00	0.85	0.00	0.85
27.00	0.68	0.00	0.68
28.00	0.55	0.00	0.55
29.00	0.45	0.00	0.45
30.00	0.37	0.00	0.37
31.00	0.30	0.00	0.30
32.00	0.26	0.00	0.26
33.00	0.22	0.00	0.22
34.00	0.18	0.00	0.18
35.00	0.16	0.00	0.16
36.00	0.14	0.00	0.14
37.00	0.12	0.00	0.12
38.00	0.11	0.00	0.11
39.00	0.09	0.00	0.09
40.00	0.08	0.00	0.08
41.00	0.07	0.00	0.07
42.00	0.07	0.00	0.07
43.00	0.06	0.00	0.06
44.00	0.05	0.00	0.05
45.00	0.05	0.00	0.05
46.00	0.04	0.00	0.04
47.00	0.04	0.00	0.04
48.00	0.04	0.00	0.04
49.00	0.03	0.00	0.03
50.00	0.03	0.00	0.03
51.00	0.03	0.00	0.03
52.00	0.03	0.00	0.03
53.00	0.03	0.00	0.03
54.00	0.02	0.00	0.02
55.00	0.02	0.00	0.02
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.02	0.00	0.02
59.00	0.02	0.00	0.02
60.00	0.02	0.00	0.02
61.00	0.02	0.00	0.02
62.00	0.01	0.00	0.01
63.00	0.01	0.00	0.01
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 1.60" for 10-yr 24hr event
Inflow = 1.99 cfs @ 15.55 hrs, Volume= 2.629 af
Primary = 1.99 cfs @ 15.55 hrs, Volume= 2.629 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall



Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.01	0.00	0.01
13.00	0.97	0.00	0.97
14.00	1.87	0.00	1.87
15.00	**1.98**	0.00	**1.98**
16.00	**1.98**	0.00	**1.98**
17.00	1.95	0.00	1.95
18.00	1.91	0.00	1.91
19.00	1.85	0.00	1.85
20.00	1.78	0.00	1.78
21.00	1.70	0.00	1.70
22.00	1.62	0.00	1.62
23.00	1.50	0.00	1.50
24.00	1.37	0.00	1.37
25.00	1.25	0.00	1.25
26.00	1.09	0.00	1.09
27.00	0.93	0.00	0.93
28.00	0.80	0.00	0.80
29.00	0.70	0.00	0.70
30.00	0.61	0.00	0.61
31.00	0.53	0.00	0.53
32.00	0.47	0.00	0.47
33.00	0.42	0.00	0.42
34.00	0.37	0.00	0.37
35.00	0.33	0.00	0.33
36.00	0.30	0.00	0.30
37.00	0.27	0.00	0.27
38.00	0.25	0.00	0.25
39.00	0.23	0.00	0.23
40.00	0.21	0.00	0.21
41.00	0.19	0.00	0.19
42.00	0.17	0.00	0.17
43.00	0.16	0.00	0.16
44.00	0.15	0.00	0.15
45.00	0.14	0.00	0.14
46.00	0.13	0.00	0.13
47.00	0.12	0.00	0.12
48.00	0.11	0.00	0.11
49.00	0.10	0.00	0.10
50.00	0.10	0.00	0.10
51.00	0.09	0.00	0.09
52.00	0.09	0.00	0.09
53.00	0.08	0.00	0.08
54.00	0.08	0.00	0.08
55.00	0.07	0.00	0.07
56.00	0.07	0.00	0.07
57.00	0.07	0.00	0.07
58.00	0.06	0.00	0.06
59.00	0.06	0.00	0.06
60.00	0.06	0.00	0.06
61.00	0.05	0.00	0.05
62.00	0.05	0.00	0.05
63.00	0.05	0.00	0.05
64.00	0.05	0.00	0.05
65.00	0.04	0.00	0.04
66.00	0.04	0.00	0.04
67.00	0.04	0.00	0.04
68.00	0.04	0.00	0.04
69.00	0.04	0.00	0.04
70.00	0.04	0.00	0.04
71.00	0.03	0.00	0.03
72.00	0.03	0.00	0.03

Summary for Subcatchment 1S: Proposed

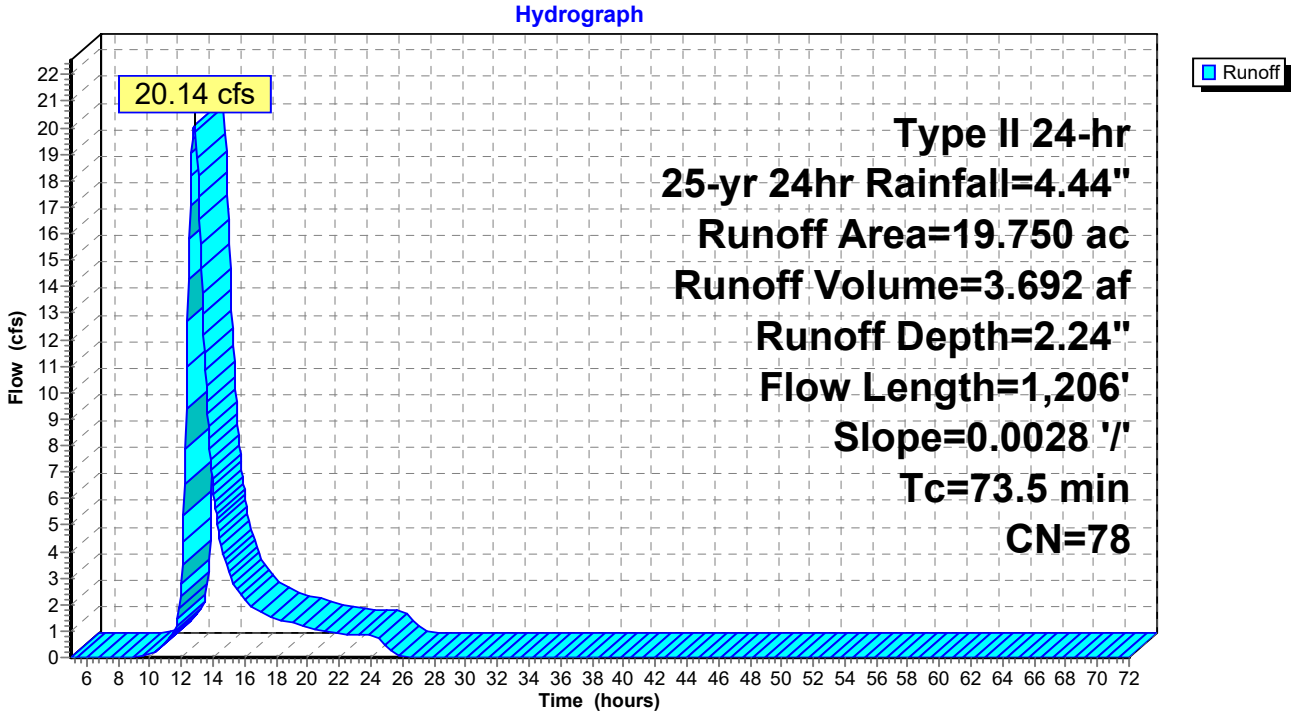
Runoff = 20.14 cfs @ 12.81 hrs, Volume= 3.692 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr 24hr Rainfall=4.44"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.28	0.00	0.00
6.00	0.36	0.00	0.00
7.00	0.44	0.00	0.00
8.00	0.53	0.00	0.00
9.00	0.65	0.00	0.01
10.00	0.80	0.02	0.15
11.00	1.04	0.07	0.53
12.00	2.94	1.09	**2.80**
13.00	3.43	1.44	**18.85**
14.00	3.64	1.61	6.46
15.00	3.79	1.72	3.16
16.00	3.91	1.81	2.19
17.00	4.00	1.89	1.71
18.00	4.09	1.96	1.48
19.00	4.16	2.02	1.30
20.00	4.23	2.07	1.13
21.00	4.28	2.12	0.98
22.00	4.34	2.16	0.91
23.00	4.39	2.20	0.87
24.00	**4.44**	**2.24**	0.84
25.00	4.44	2.24	0.44
26.00	4.44	2.24	0.06
27.00	4.44	2.24	0.01
28.00	4.44	2.24	0.00
29.00	4.44	2.24	0.00
30.00	4.44	2.24	0.00
31.00	4.44	2.24	0.00
32.00	4.44	2.24	0.00
33.00	4.44	2.24	0.00
34.00	4.44	2.24	0.00
35.00	4.44	2.24	0.00
36.00	4.44	2.24	0.00
37.00	4.44	2.24	0.00
38.00	4.44	2.24	0.00
39.00	4.44	2.24	0.00
40.00	4.44	2.24	0.00
41.00	4.44	2.24	0.00
42.00	4.44	2.24	0.00
43.00	4.44	2.24	0.00
44.00	4.44	2.24	0.00
45.00	4.44	2.24	0.00
46.00	4.44	2.24	0.00
47.00	4.44	2.24	0.00
48.00	4.44	2.24	0.00
49.00	4.44	2.24	0.00
50.00	4.44	2.24	0.00
51.00	4.44	2.24	0.00
52.00	4.44	2.24	0.00
53.00	4.44	2.24	0.00
54.00	4.44	2.24	0.00
55.00	4.44	2.24	0.00
56.00	4.44	2.24	0.00
57.00	4.44	2.24	0.00
58.00	4.44	2.24	0.00
59.00	4.44	2.24	0.00
60.00	4.44	2.24	0.00
61.00	4.44	2.24	0.00
62.00	4.44	2.24	0.00
63.00	4.44	2.24	0.00
64.00	4.44	2.24	0.00
65.00	4.44	2.24	0.00
66.00	4.44	2.24	0.00
67.00	4.44	2.24	0.00
68.00	4.44	2.24	0.00
69.00	4.44	2.24	0.00
70.00	4.44	2.24	0.00
71.00	4.44	2.24	0.00
72.00	4.44	2.24	0.00

Summary for Subcatchment 2S: Existing

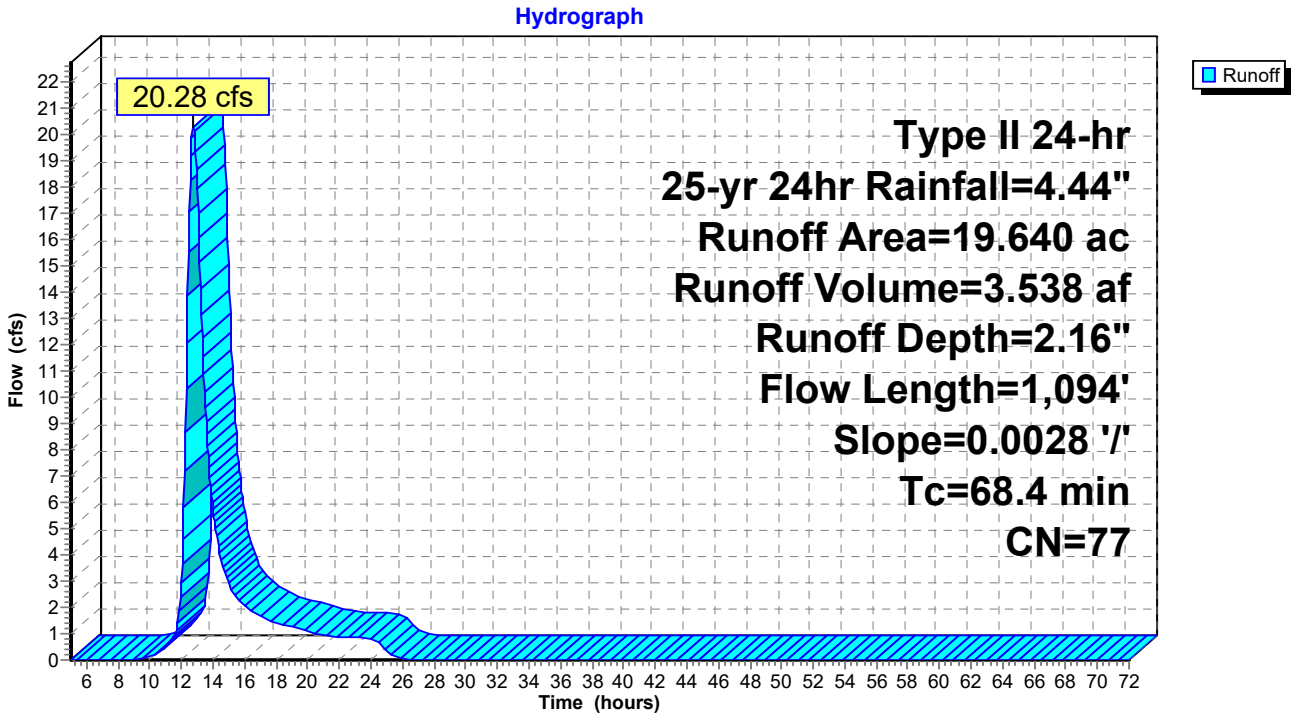
Runoff = 20.28 cfs @ 12.74 hrs, Volume= 3.538 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr 24hr Rainfall=4.44"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.28	0.00	0.00
6.00	0.36	0.00	0.00
7.00	0.44	0.00	0.00
8.00	0.53	0.00	0.00
9.00	0.65	0.00	0.00
10.00	0.80	0.01	0.11
11.00	1.04	0.06	0.48
12.00	2.94	1.03	**2.92**
13.00	3.43	1.38	**17.91**
14.00	3.64	1.54	5.71
15.00	3.79	1.65	2.90
16.00	3.91	1.74	2.07
17.00	4.00	1.81	1.64
18.00	4.09	1.88	1.43
19.00	4.16	1.94	1.25
20.00	4.23	1.99	1.09
21.00	4.28	2.04	0.94
22.00	4.34	2.08	0.88
23.00	4.39	2.12	0.85
24.00	**4.44**	**2.16**	0.82
25.00	4.44	2.16	0.37
26.00	4.44	2.16	0.04
27.00	4.44	2.16	0.00
28.00	4.44	2.16	0.00
29.00	4.44	2.16	0.00
30.00	4.44	2.16	0.00
31.00	4.44	2.16	0.00
32.00	4.44	2.16	0.00
33.00	4.44	2.16	0.00
34.00	4.44	2.16	0.00
35.00	4.44	2.16	0.00
36.00	4.44	2.16	0.00
37.00	4.44	2.16	0.00
38.00	4.44	2.16	0.00
39.00	4.44	2.16	0.00
40.00	4.44	2.16	0.00
41.00	4.44	2.16	0.00
42.00	4.44	2.16	0.00
43.00	4.44	2.16	0.00
44.00	4.44	2.16	0.00
45.00	4.44	2.16	0.00
46.00	4.44	2.16	0.00
47.00	4.44	2.16	0.00
48.00	4.44	2.16	0.00
49.00	4.44	2.16	0.00
50.00	4.44	2.16	0.00
51.00	4.44	2.16	0.00
52.00	4.44	2.16	0.00
53.00	4.44	2.16	0.00
54.00	4.44	2.16	0.00
55.00	4.44	2.16	0.00
56.00	4.44	2.16	0.00
57.00	4.44	2.16	0.00
58.00	4.44	2.16	0.00
59.00	4.44	2.16	0.00
60.00	4.44	2.16	0.00
61.00	4.44	2.16	0.00
62.00	4.44	2.16	0.00
63.00	4.44	2.16	0.00
64.00	4.44	2.16	0.00
65.00	4.44	2.16	0.00
66.00	4.44	2.16	0.00
67.00	4.44	2.16	0.00
68.00	4.44	2.16	0.00
69.00	4.44	2.16	0.00
70.00	4.44	2.16	0.00
71.00	4.44	2.16	0.00
72.00	4.44	2.16	0.00

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 2.24" for 25-yr 24hr event
Inflow = 20.14 cfs @ 12.81 hrs, Volume= 3.692 af
Outflow = 2.35 cfs @ 15.78 hrs, Volume= 3.543 af, Atten= 88%, Lag= 178.0 min
Primary = 2.35 cfs @ 15.78 hrs, Volume= 3.543 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.38' @ 15.78 hrs Surf.Area= 108,683 sf Storage= 96,004 cf

Plug-Flow detention time= 609.1 min calculated for 3.543 af (96% of inflow)
Center-of-Mass det. time= 585.8 min (1,477.7 - 891.9)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

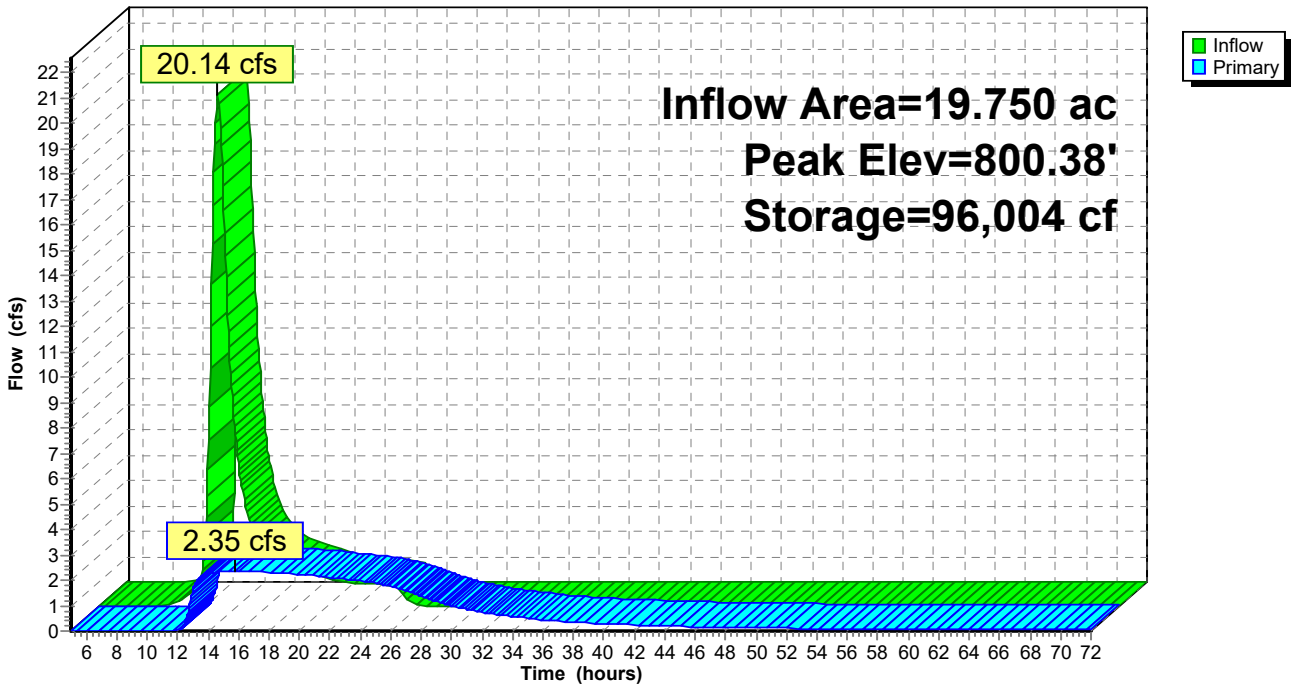
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.35 cfs @ 15.78 hrs HW=800.38' (Free Discharge)
↑—**1=Culvert** (Passes 2.35 cfs of 3.12 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 2.35 cfs @ 4.78 fps)

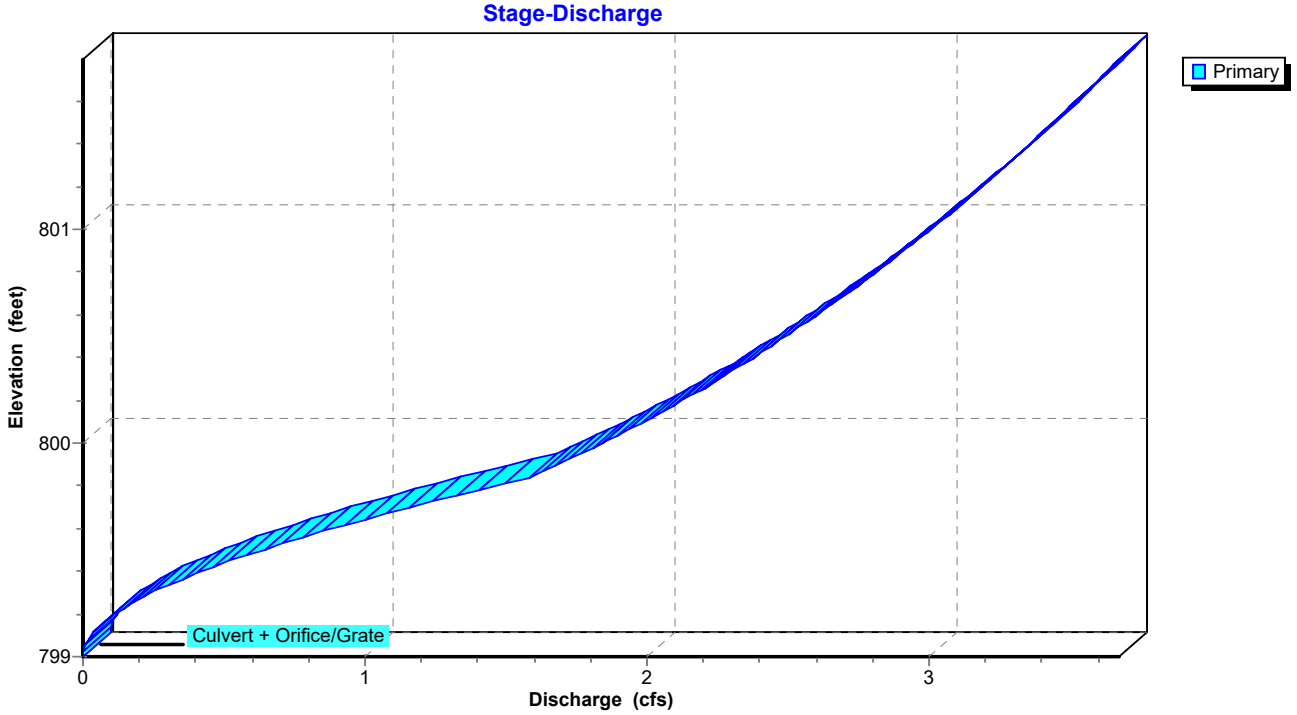
Pond 3P: Prop Pond

Hydrograph

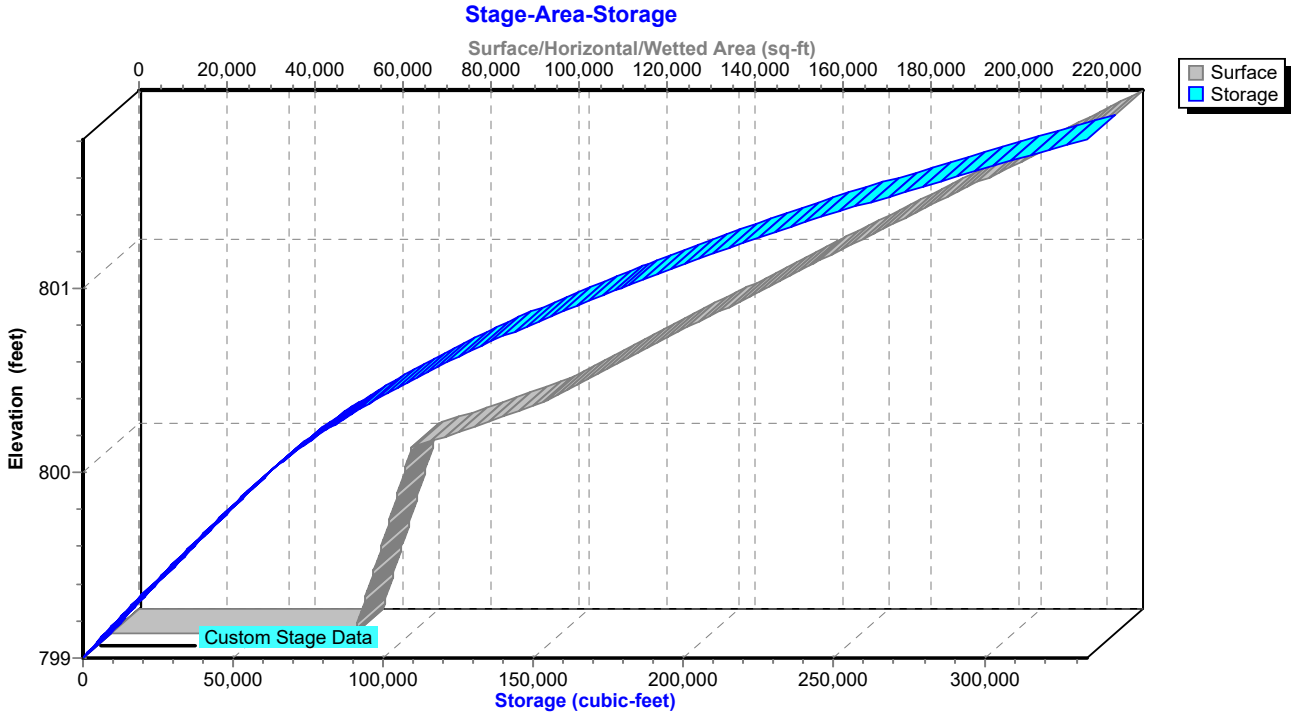


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.15	230	799.00	0.00
12.50	**15.81**	20,370	799.35	0.33
15.00	**3.16**	**95,008**	**800.37**	**2.34**
17.50	1.58	**93,219**	**800.35**	**2.32**
20.00	1.13	84,870	800.27	2.22
22.50	0.89	74,281	800.16	2.07
25.00	0.44	63,669	800.03	1.88
27.50	0.00	49,082	799.81	1.49
30.00	0.00	38,095	799.64	0.99
32.50	0.00	30,643	799.52	0.69
35.00	0.00	25,388	799.44	0.49
37.50	0.00	21,542	799.37	0.37
40.00	0.00	18,635	799.32	0.28
42.50	0.00	16,374	799.29	0.22
45.00	0.00	14,574	799.26	0.18
47.50	0.00	13,113	799.23	0.15
50.00	0.00	11,906	799.21	0.12
52.50	0.00	10,895	799.19	0.10
55.00	0.00	10,035	799.18	0.09
57.50	0.00	9,299	799.16	0.08
60.00	0.00	8,659	799.15	0.07
62.50	0.00	8,099	799.14	0.06
65.00	0.00	7,608	799.14	0.05
67.50	0.00	7,170	799.13	0.05
70.00	0.00	6,779	799.12	0.04

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 2.16" for 25-yr 24hr event
Inflow = 20.28 cfs @ 12.74 hrs, Volume= 3.538 af
Outflow = 6.99 cfs @ 13.79 hrs, Volume= 3.504 af, Atten= 66%, Lag= 63.2 min
Primary = 3.39 cfs @ 13.79 hrs, Volume= 3.059 af
Secondary = 3.60 cfs @ 13.79 hrs, Volume= 0.445 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.45' @ 13.79 hrs Surf.Area= 88,527 sf Storage= 70,177 cf

Plug-Flow detention time= 303.5 min calculated for 3.504 af (99% of inflow)
Center-of-Mass det. time= 297.5 min (1,187.6 - 890.0)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

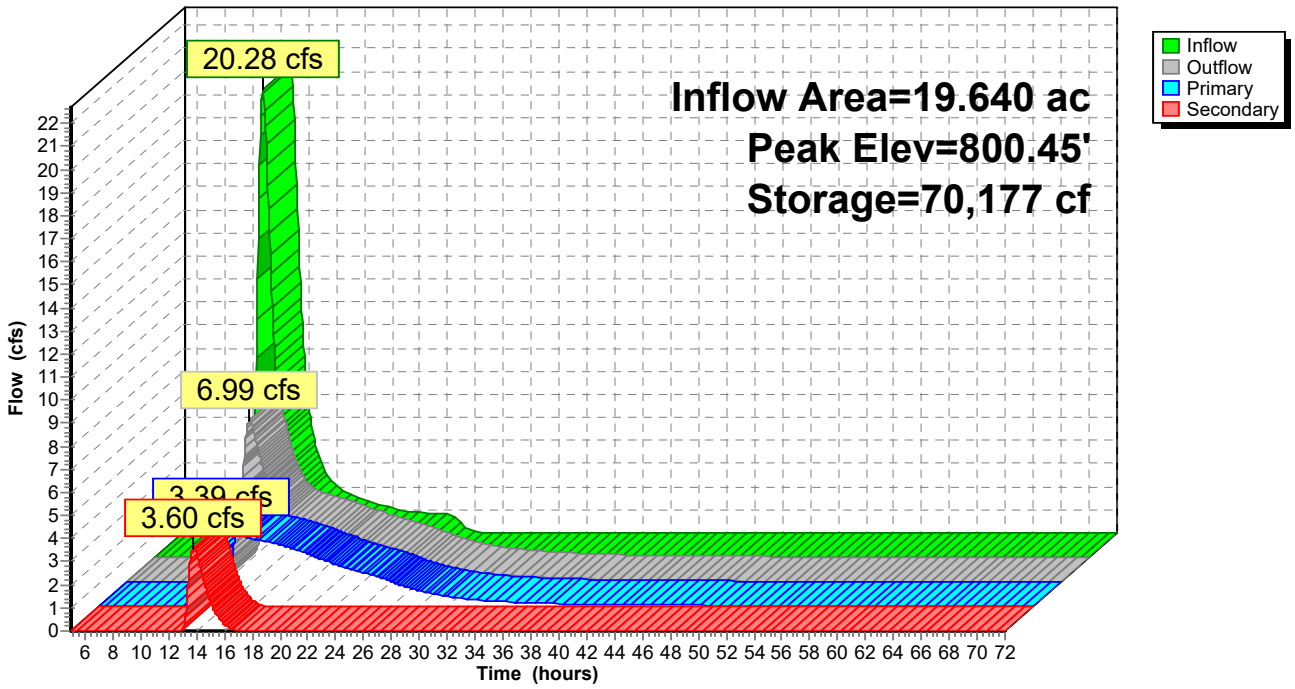
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=3.39 cfs @ 13.79 hrs HW=800.45' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 3.39 cfs @ 4.32 fps)

Secondary OutFlow Max=3.59 cfs @ 13.79 hrs HW=800.45' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Weir Controls 3.59 cfs @ 1.18 fps)

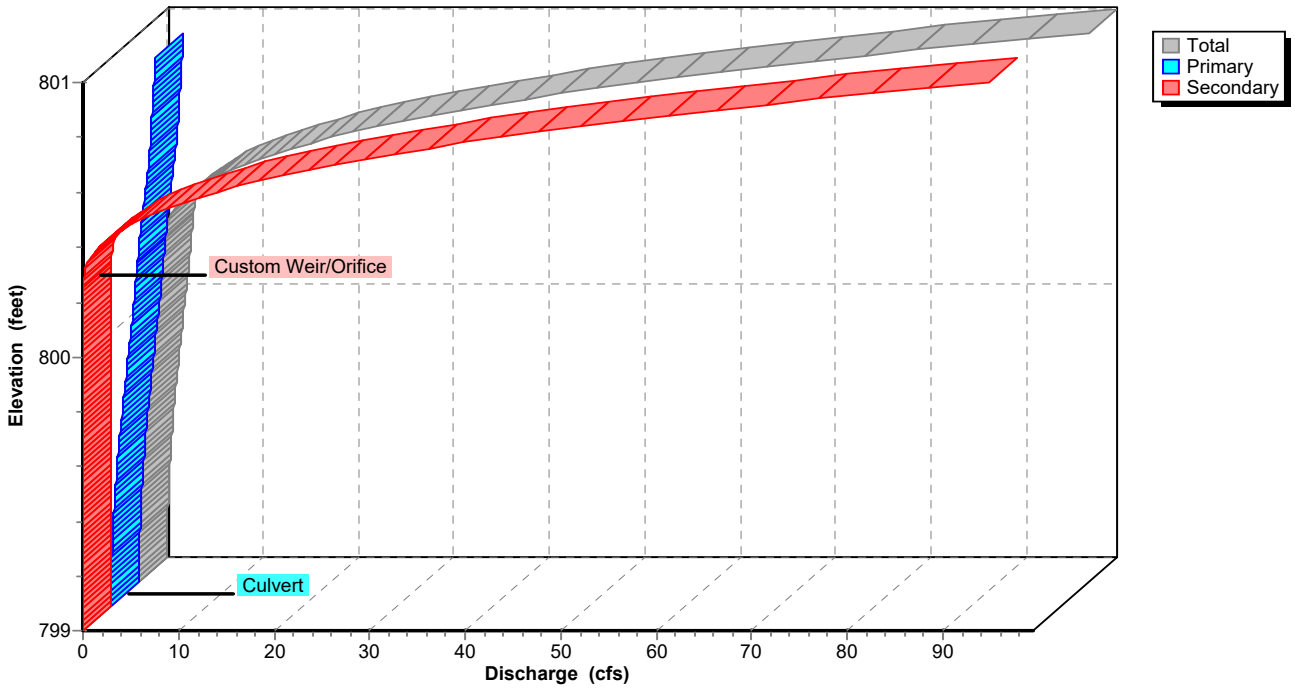
Pond 4P: Ex Pond

Hydrograph

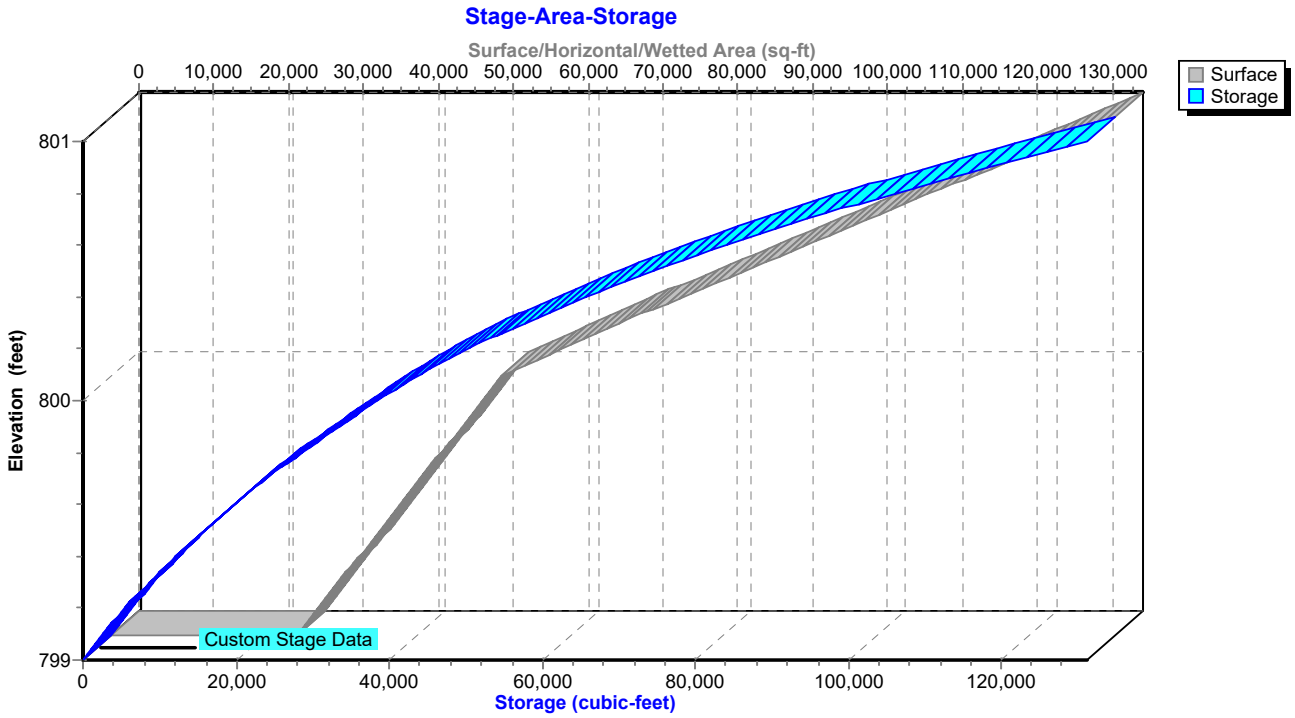


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

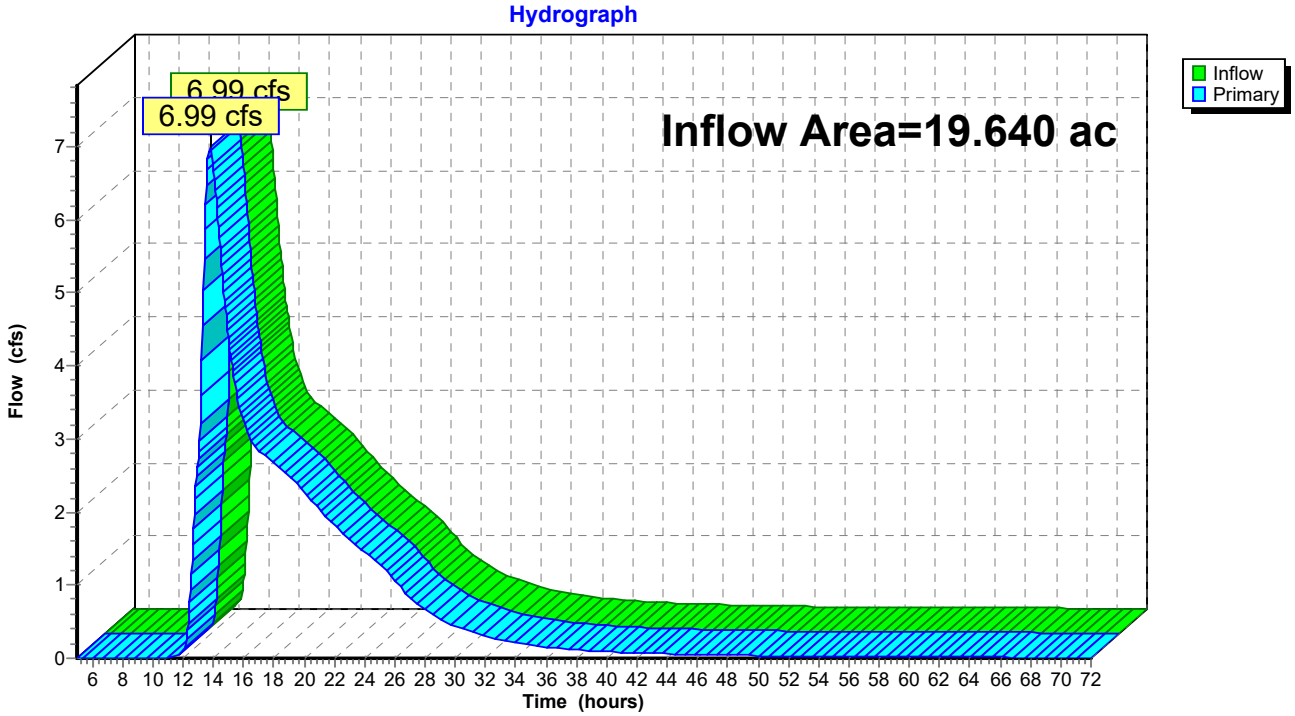
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	0.00
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.11	135	799.01	0.00	0.00	0.00
12.50	**17.02**	**20,751**	**799.62**	**0.94**	**0.94**	**0.00**
15.00	**2.90**	**64,232**	**800.38**	**4.39**	**3.13**	**1.26**
17.50	1.52	53,157	800.24	2.76	2.76	0.00
20.00	1.09	42,011	800.06	2.28	2.28	0.00
22.50	0.87	32,589	799.88	1.72	1.72	0.00
25.00	0.37	26,066	799.75	1.29	1.29	0.00
27.50	0.00	17,651	799.55	0.75	0.75	0.00
30.00	0.00	12,456	799.41	0.44	0.44	0.00
32.50	0.00	9,316	799.32	0.27	0.27	0.00
35.00	0.00	7,299	799.26	0.18	0.18	0.00
37.50	0.00	5,930	799.21	0.13	0.13	0.00
40.00	0.00	4,957	799.18	0.09	0.09	0.00
42.50	0.00	4,238	799.16	0.07	0.07	0.00
45.00	0.00	3,690	799.14	0.05	0.05	0.00
47.50	0.00	3,260	799.12	0.04	0.04	0.00
50.00	0.00	2,916	799.11	0.03	0.03	0.00
52.50	0.00	2,635	799.10	0.03	0.03	0.00
55.00	0.00	2,402	799.09	0.02	0.02	0.00
57.50	0.00	2,205	799.08	0.02	0.02	0.00
60.00	0.00	2,039	799.08	0.02	0.02	0.00
62.50	0.00	1,895	799.07	0.01	0.01	0.00
65.00	0.00	1,769	799.07	0.01	0.01	0.00
67.50	0.00	1,658	799.06	0.01	0.01	0.00
70.00	0.00	1,562	799.06	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 2.14" for 25-yr 24hr event
Inflow = 6.99 cfs @ 13.79 hrs, Volume= 3.504 af
Primary = 6.99 cfs @ 13.79 hrs, Volume= 3.504 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

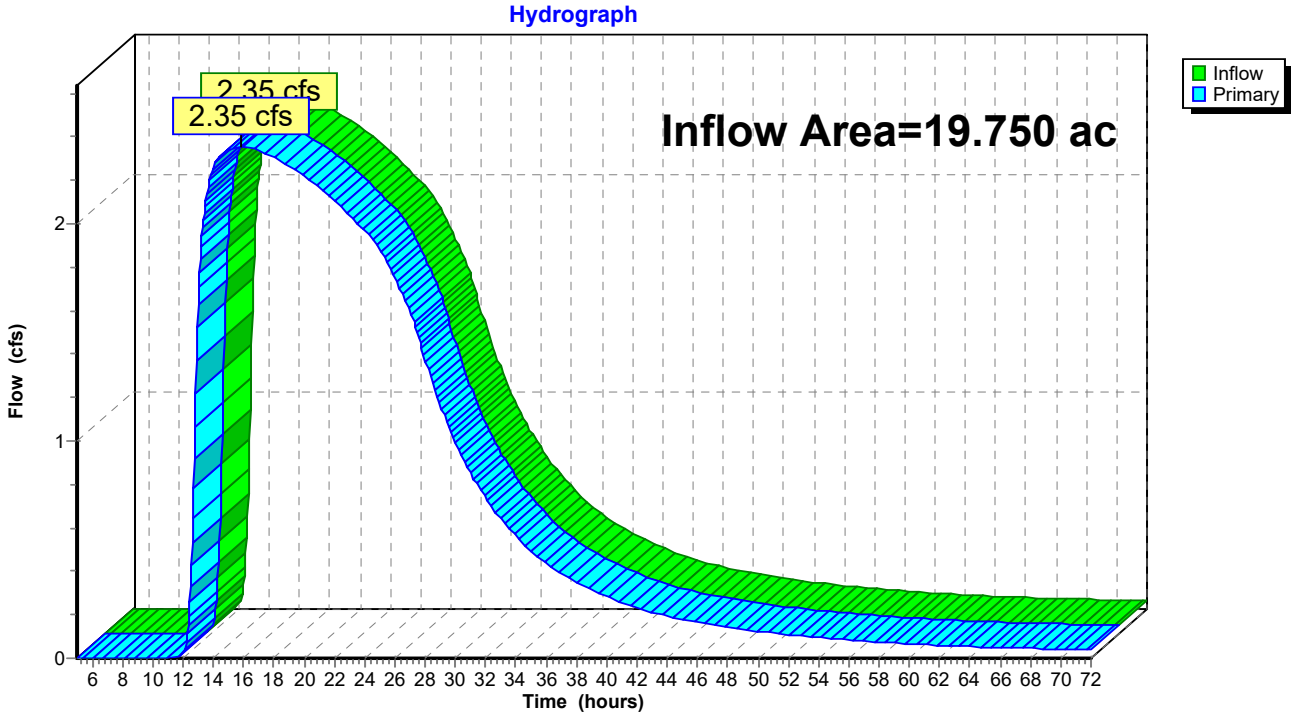
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.09	0.00	0.09
13.00	**2.73**	0.00	**2.73**
14.00	**6.76**	0.00	**6.76**
15.00	4.39	0.00	4.39
16.00	3.24	0.00	3.24
17.00	2.85	0.00	2.85
18.00	2.68	0.00	2.68
19.00	2.50	0.00	2.50
20.00	2.28	0.00	2.28
21.00	2.04	0.00	2.04
22.00	1.82	0.00	1.82
23.00	1.62	0.00	1.62
24.00	1.46	0.00	1.46
25.00	1.29	0.00	1.29
26.00	1.05	0.00	1.05
27.00	0.84	0.00	0.84
28.00	0.67	0.00	0.67
29.00	0.54	0.00	0.54
30.00	0.44	0.00	0.44
31.00	0.36	0.00	0.36
32.00	0.30	0.00	0.30
33.00	0.25	0.00	0.25
34.00	0.21	0.00	0.21
35.00	0.18	0.00	0.18
36.00	0.16	0.00	0.16
37.00	0.14	0.00	0.14
38.00	0.12	0.00	0.12
39.00	0.10	0.00	0.10
40.00	0.09	0.00	0.09
41.00	0.08	0.00	0.08
42.00	0.07	0.00	0.07
43.00	0.07	0.00	0.07
44.00	0.06	0.00	0.06
45.00	0.05	0.00	0.05
46.00	0.05	0.00	0.05
47.00	0.04	0.00	0.04
48.00	0.04	0.00	0.04
49.00	0.04	0.00	0.04
50.00	0.03	0.00	0.03
51.00	0.03	0.00	0.03
52.00	0.03	0.00	0.03
53.00	0.03	0.00	0.03
54.00	0.03	0.00	0.03
55.00	0.02	0.00	0.02
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.02	0.00	0.02
59.00	0.02	0.00	0.02
60.00	0.02	0.00	0.02
61.00	0.02	0.00	0.02
62.00	0.02	0.00	0.02
63.00	0.01	0.00	0.01
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 2.15" for 25-yr 24hr event
Inflow = 2.35 cfs @ 15.78 hrs, Volume= 3.543 af
Primary = 2.35 cfs @ 15.78 hrs, Volume= 3.543 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall



Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00
12.00	0.03	0.00	0.03
13.00	1.63	0.00	1.63
14.00	2.25	0.00	2.25
15.00	**2.34**	0.00	**2.34**
16.00	**2.35**	0.00	**2.35**
17.00	2.33	0.00	2.33
18.00	2.30	0.00	2.30
19.00	2.27	0.00	2.27
20.00	2.22	0.00	2.22
21.00	2.17	0.00	2.17
22.00	2.10	0.00	2.10
23.00	2.04	0.00	2.04
24.00	1.97	0.00	1.97
25.00	1.88	0.00	1.88
26.00	1.75	0.00	1.75
27.00	1.60	0.00	1.60
28.00	1.37	0.00	1.37
29.00	1.16	0.00	1.16
30.00	0.99	0.00	0.99
31.00	0.85	0.00	0.85
32.00	0.74	0.00	0.74
33.00	0.64	0.00	0.64
34.00	0.56	0.00	0.56
35.00	0.49	0.00	0.49
36.00	0.44	0.00	0.44
37.00	0.39	0.00	0.39
38.00	0.35	0.00	0.35
39.00	0.31	0.00	0.31
40.00	0.28	0.00	0.28
41.00	0.26	0.00	0.26
42.00	0.23	0.00	0.23
43.00	0.21	0.00	0.21
44.00	0.20	0.00	0.20
45.00	0.18	0.00	0.18
46.00	0.17	0.00	0.17
47.00	0.15	0.00	0.15
48.00	0.14	0.00	0.14
49.00	0.13	0.00	0.13
50.00	0.12	0.00	0.12
51.00	0.11	0.00	0.11
52.00	0.11	0.00	0.11
53.00	0.10	0.00	0.10
54.00	0.09	0.00	0.09
55.00	0.09	0.00	0.09
56.00	0.08	0.00	0.08
57.00	0.08	0.00	0.08
58.00	0.07	0.00	0.07
59.00	0.07	0.00	0.07
60.00	0.07	0.00	0.07
61.00	0.06	0.00	0.06
62.00	0.06	0.00	0.06
63.00	0.06	0.00	0.06
64.00	0.05	0.00	0.05
65.00	0.05	0.00	0.05
66.00	0.05	0.00	0.05
67.00	0.05	0.00	0.05
68.00	0.04	0.00	0.04
69.00	0.04	0.00	0.04
70.00	0.04	0.00	0.04
71.00	0.04	0.00	0.04
72.00	0.04	0.00	0.04

Summary for Subcatchment 1S: Proposed

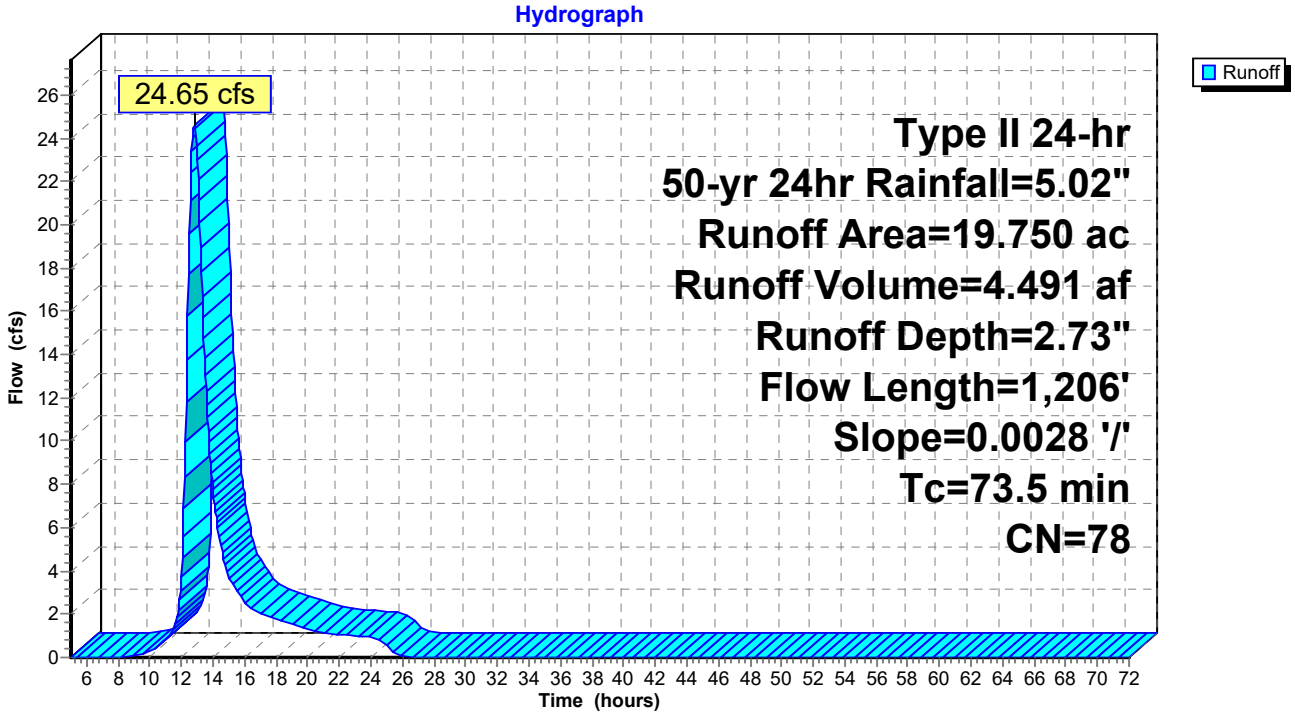
Runoff = 24.65 cfs @ 12.81 hrs, Volume= 4.491 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr 24hr Rainfall=5.02"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.32	0.00	0.00
6.00	0.40	0.00	0.00
7.00	0.50	0.00	0.00
8.00	0.60	0.00	0.00
9.00	0.74	0.01	0.07
10.00	0.91	0.04	0.32
11.00	1.18	0.11	0.83
12.00	3.33	1.37	**3.71**
13.00	3.88	1.79	**22.96**
14.00	4.12	1.98	7.74
15.00	4.28	2.12	3.75
16.00	4.42	2.22	2.57
17.00	4.53	2.31	2.01
18.00	4.62	2.40	1.73
19.00	4.71	2.47	1.53
20.00	4.78	2.53	1.32
21.00	4.84	2.58	1.14
22.00	4.90	2.63	1.06
23.00	4.96	2.68	1.02
24.00	**5.02**	**2.73**	0.98
25.00	5.02	2.73	0.51
26.00	5.02	2.73	0.07
27.00	5.02	2.73	0.01
28.00	5.02	2.73	0.00
29.00	5.02	2.73	0.00
30.00	5.02	2.73	0.00
31.00	5.02	2.73	0.00
32.00	5.02	2.73	0.00
33.00	5.02	2.73	0.00
34.00	5.02	2.73	0.00
35.00	5.02	2.73	0.00
36.00	5.02	2.73	0.00
37.00	5.02	2.73	0.00
38.00	5.02	2.73	0.00
39.00	5.02	2.73	0.00
40.00	5.02	2.73	0.00
41.00	5.02	2.73	0.00
42.00	5.02	2.73	0.00
43.00	5.02	2.73	0.00
44.00	5.02	2.73	0.00
45.00	5.02	2.73	0.00
46.00	5.02	2.73	0.00
47.00	5.02	2.73	0.00
48.00	5.02	2.73	0.00
49.00	5.02	2.73	0.00
50.00	5.02	2.73	0.00
51.00	5.02	2.73	0.00
52.00	5.02	2.73	0.00
53.00	5.02	2.73	0.00
54.00	5.02	2.73	0.00
55.00	5.02	2.73	0.00
56.00	5.02	2.73	0.00
57.00	5.02	2.73	0.00
58.00	5.02	2.73	0.00
59.00	5.02	2.73	0.00
60.00	5.02	2.73	0.00
61.00	5.02	2.73	0.00
62.00	5.02	2.73	0.00
63.00	5.02	2.73	0.00
64.00	5.02	2.73	0.00
65.00	5.02	2.73	0.00
66.00	5.02	2.73	0.00
67.00	5.02	2.73	0.00
68.00	5.02	2.73	0.00
69.00	5.02	2.73	0.00
70.00	5.02	2.73	0.00
71.00	5.02	2.73	0.00
72.00	5.02	2.73	0.00

Summary for Subcatchment 2S: Existing

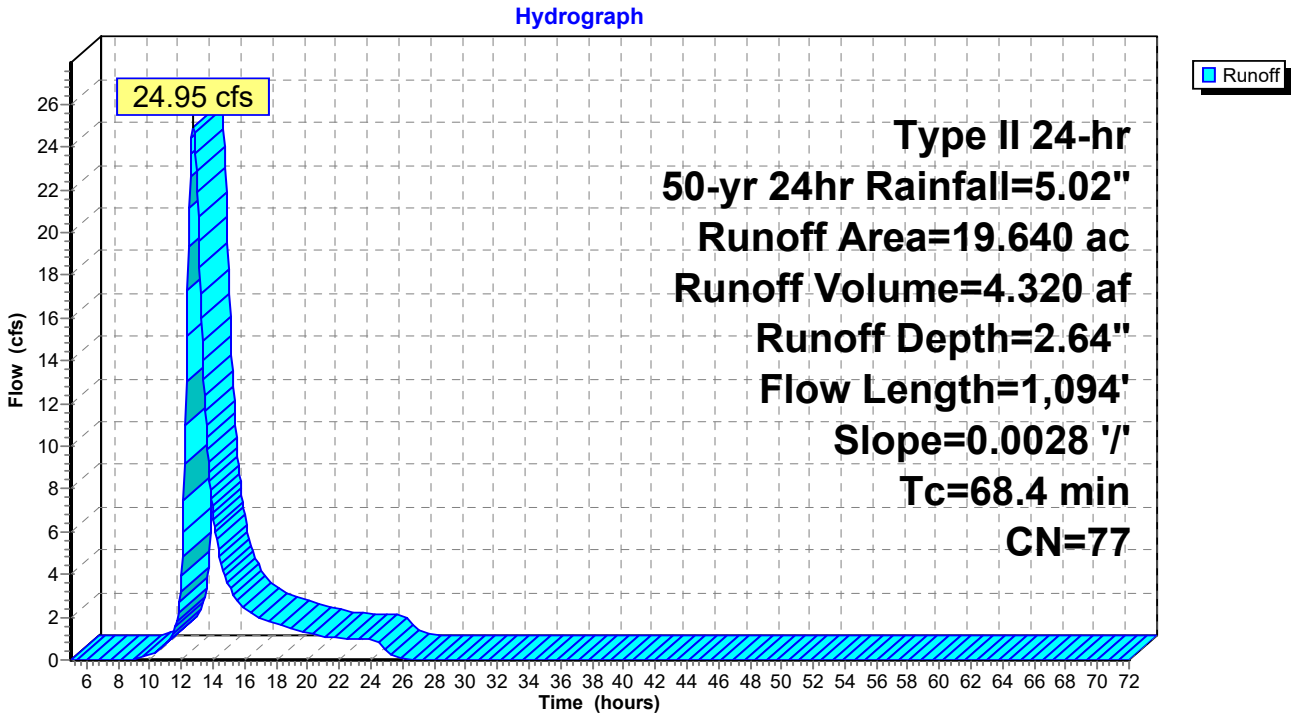
Runoff = 24.95 cfs @ 12.73 hrs, Volume= 4.320 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr 24hr Rainfall=5.02"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.32	0.00	0.00
6.00	0.40	0.00	0.00
7.00	0.50	0.00	0.00
8.00	0.60	0.00	0.00
9.00	0.74	0.01	0.04
10.00	0.91	0.03	0.27
11.00	1.18	0.09	0.77
12.00	3.33	1.30	**3.89**
13.00	3.88	1.72	**21.88**
14.00	4.12	1.90	6.85
15.00	4.28	2.04	3.44
16.00	4.42	2.14	2.44
17.00	4.53	2.23	1.93
18.00	4.62	2.31	1.68
19.00	4.71	2.38	1.48
20.00	4.78	2.44	1.28
21.00	4.84	2.49	1.11
22.00	4.90	2.54	1.04
23.00	4.96	2.59	1.00
24.00	**5.02**	**2.64**	0.96
25.00	5.02	2.64	0.44
26.00	5.02	2.64	0.05
27.00	5.02	2.64	0.00
28.00	5.02	2.64	0.00
29.00	5.02	2.64	0.00
30.00	5.02	2.64	0.00
31.00	5.02	2.64	0.00
32.00	5.02	2.64	0.00
33.00	5.02	2.64	0.00
34.00	5.02	2.64	0.00
35.00	5.02	2.64	0.00
36.00	5.02	2.64	0.00
37.00	5.02	2.64	0.00
38.00	5.02	2.64	0.00
39.00	5.02	2.64	0.00
40.00	5.02	2.64	0.00
41.00	5.02	2.64	0.00
42.00	5.02	2.64	0.00
43.00	5.02	2.64	0.00
44.00	5.02	2.64	0.00
45.00	5.02	2.64	0.00
46.00	5.02	2.64	0.00
47.00	5.02	2.64	0.00
48.00	5.02	2.64	0.00
49.00	5.02	2.64	0.00
50.00	5.02	2.64	0.00
51.00	5.02	2.64	0.00
52.00	5.02	2.64	0.00
53.00	5.02	2.64	0.00
54.00	5.02	2.64	0.00
55.00	5.02	2.64	0.00
56.00	5.02	2.64	0.00
57.00	5.02	2.64	0.00
58.00	5.02	2.64	0.00
59.00	5.02	2.64	0.00
60.00	5.02	2.64	0.00
61.00	5.02	2.64	0.00
62.00	5.02	2.64	0.00
63.00	5.02	2.64	0.00
64.00	5.02	2.64	0.00
65.00	5.02	2.64	0.00
66.00	5.02	2.64	0.00
67.00	5.02	2.64	0.00
68.00	5.02	2.64	0.00
69.00	5.02	2.64	0.00
70.00	5.02	2.64	0.00
71.00	5.02	2.64	0.00
72.00	5.02	2.64	0.00

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 2.73" for 50-yr 24hr event
Inflow = 24.65 cfs @ 12.81 hrs, Volume= 4.491 af
Outflow = 2.59 cfs @ 15.98 hrs, Volume= 4.332 af, Atten= 89%, Lag= 190.6 min
Primary = 2.59 cfs @ 15.98 hrs, Volume= 4.332 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.59' @ 15.98 hrs Surf.Area= 125,875 sf Storage= 120,553 cf

Plug-Flow detention time= 649.9 min calculated for 4.332 af (96% of inflow)
Center-of-Mass det. time= 629.1 min (1,515.5 - 886.3)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

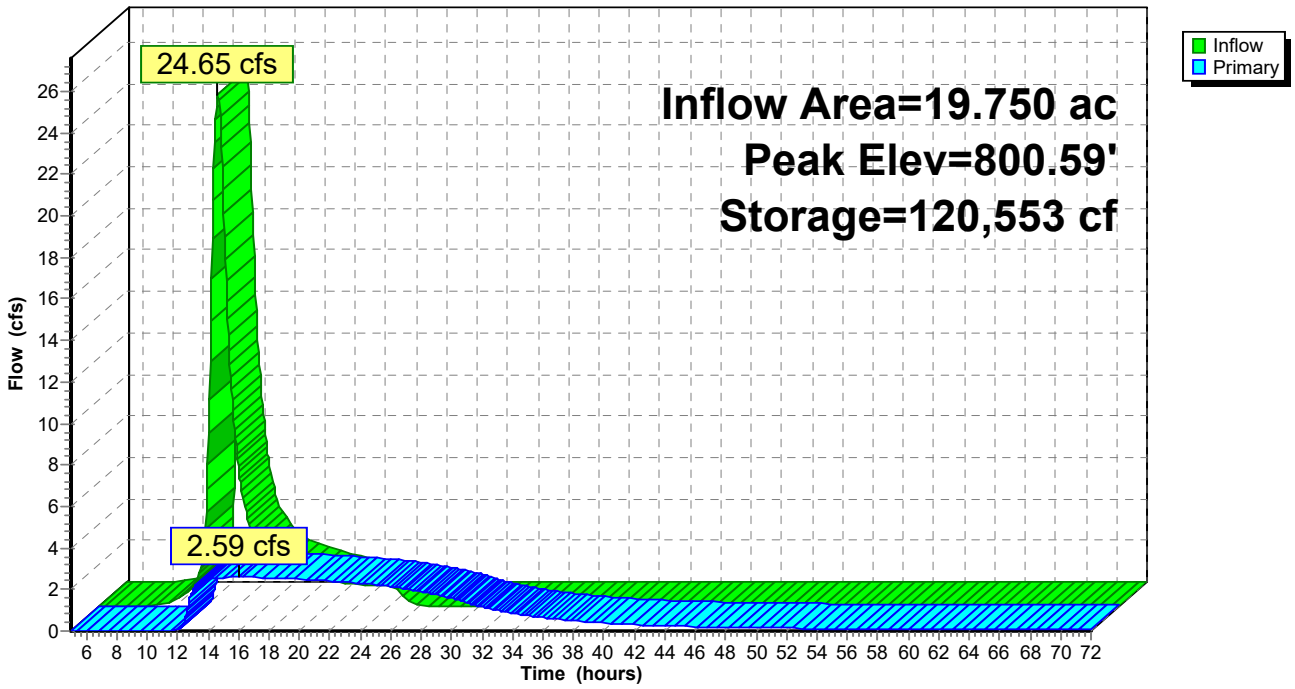
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.59 cfs @ 15.98 hrs HW=800.59' (Free Discharge)
↑—**1=Culvert** (Passes 2.59 cfs of 3.85 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 2.59 cfs @ 5.26 fps)

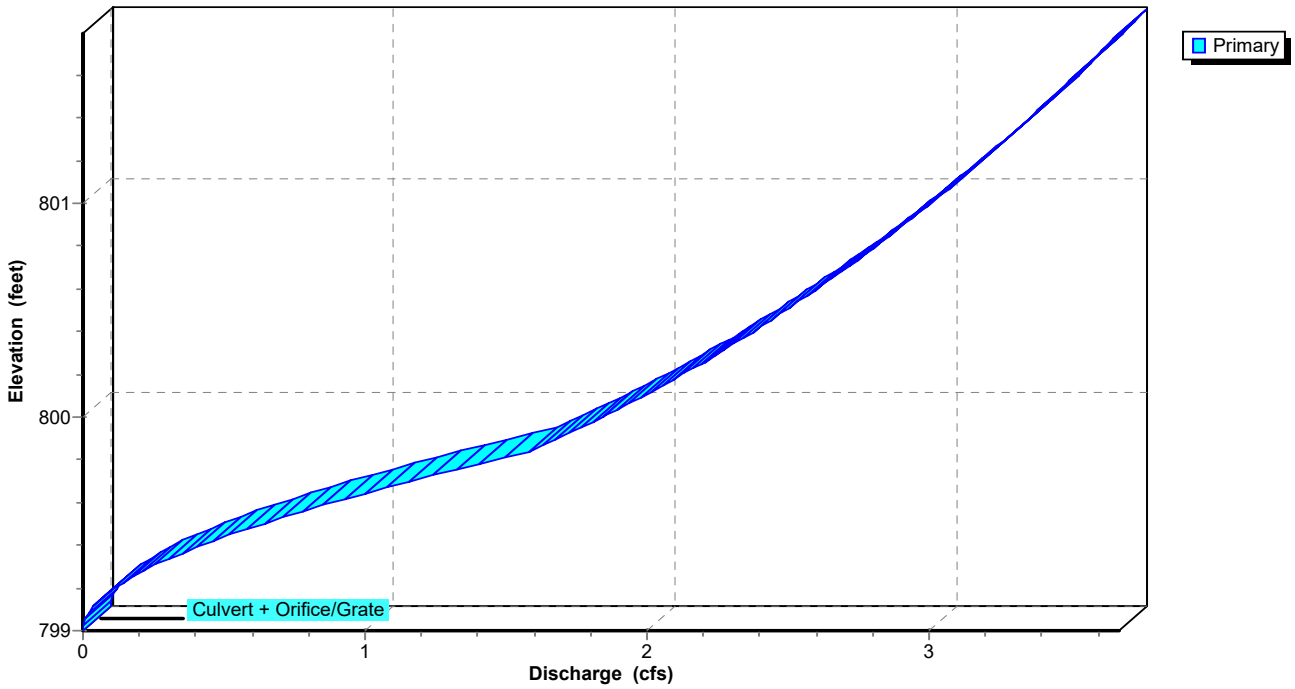
Pond 3P: Prop Pond

Hydrograph

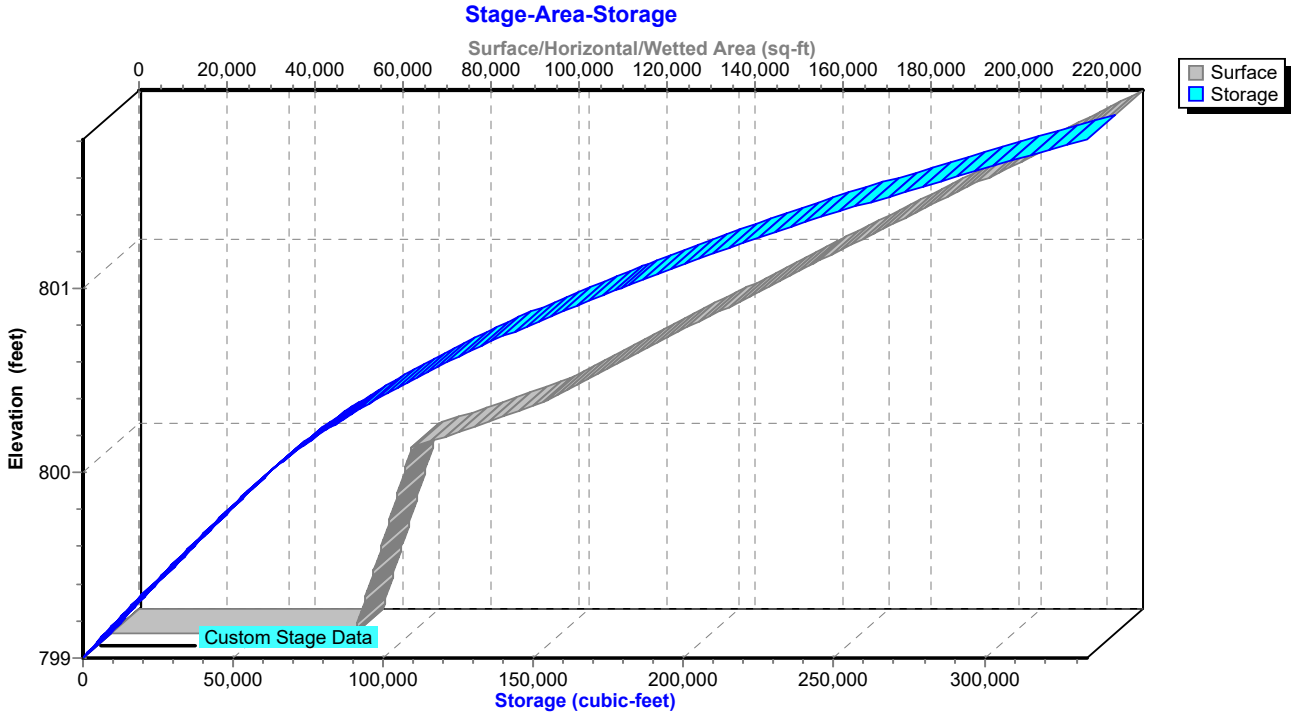


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.32	722	799.01	0.00
12.50	**19.57**	27,008	799.46	0.55
15.00	**3.75**	**118,777**	**800.58**	**2.57**
17.50	1.85	**118,257**	**800.57**	**2.57**
20.00	1.32	109,667	800.50	2.49
22.50	1.04	98,009	800.40	2.37
25.00	0.51	85,724	800.28	2.23
27.50	0.00	67,693	800.08	1.96
30.00	0.00	51,650	799.85	1.60
32.50	0.00	39,804	799.67	1.07
35.00	0.00	31,821	799.54	0.73
37.50	0.00	26,233	799.45	0.52
40.00	0.00	22,170	799.38	0.39
42.50	0.00	19,115	799.33	0.30
45.00	0.00	16,751	799.29	0.23
47.50	0.00	14,877	799.26	0.19
50.00	0.00	13,361	799.24	0.15
52.50	0.00	12,113	799.21	0.13
55.00	0.00	11,068	799.20	0.11
57.50	0.00	10,184	799.18	0.09
60.00	0.00	9,426	799.17	0.08
62.50	0.00	8,770	799.16	0.07
65.00	0.00	8,197	799.15	0.06
67.50	0.00	7,695	799.14	0.05
70.00	0.00	7,248	799.13	0.05

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 2.64" for 50-yr 24hr event
Inflow = 24.95 cfs @ 12.73 hrs, Volume= 4.320 af
Outflow = 11.90 cfs @ 13.48 hrs, Volume= 4.286 af, Atten= 52%, Lag= 45.2 min
Primary = 3.66 cfs @ 13.48 hrs, Volume= 3.312 af
Secondary = 8.24 cfs @ 13.48 hrs, Volume= 0.973 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.53' @ 13.48 hrs Surf.Area= 95,155 sf Storage= 77,485 cf

Plug-Flow detention time= 268.4 min calculated for 4.286 af (99% of inflow)
Center-of-Mass det. time= 263.4 min (1,147.7 - 884.3)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

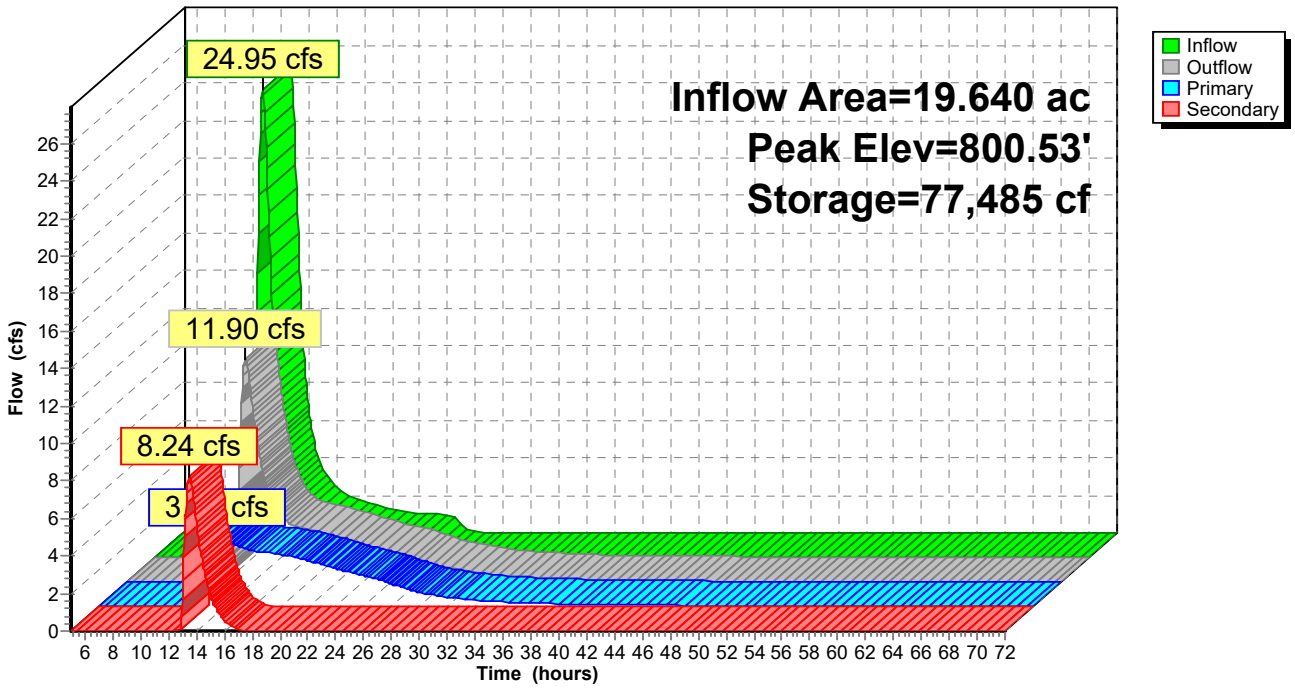
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=3.66 cfs @ 13.48 hrs HW=800.53' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 3.66 cfs @ 4.66 fps)

Secondary OutFlow Max=8.21 cfs @ 13.48 hrs HW=800.53' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Weir Controls 8.21 cfs @ 1.39 fps)

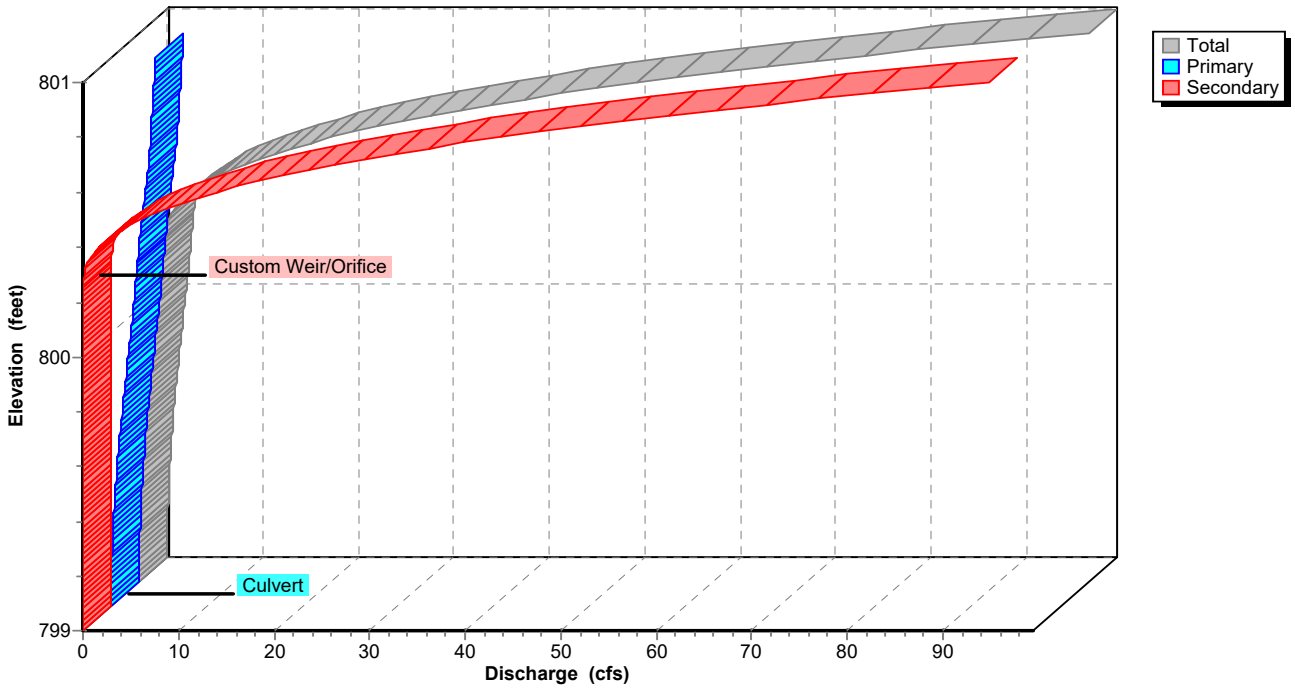
Pond 4P: Ex Pond

Hydrograph

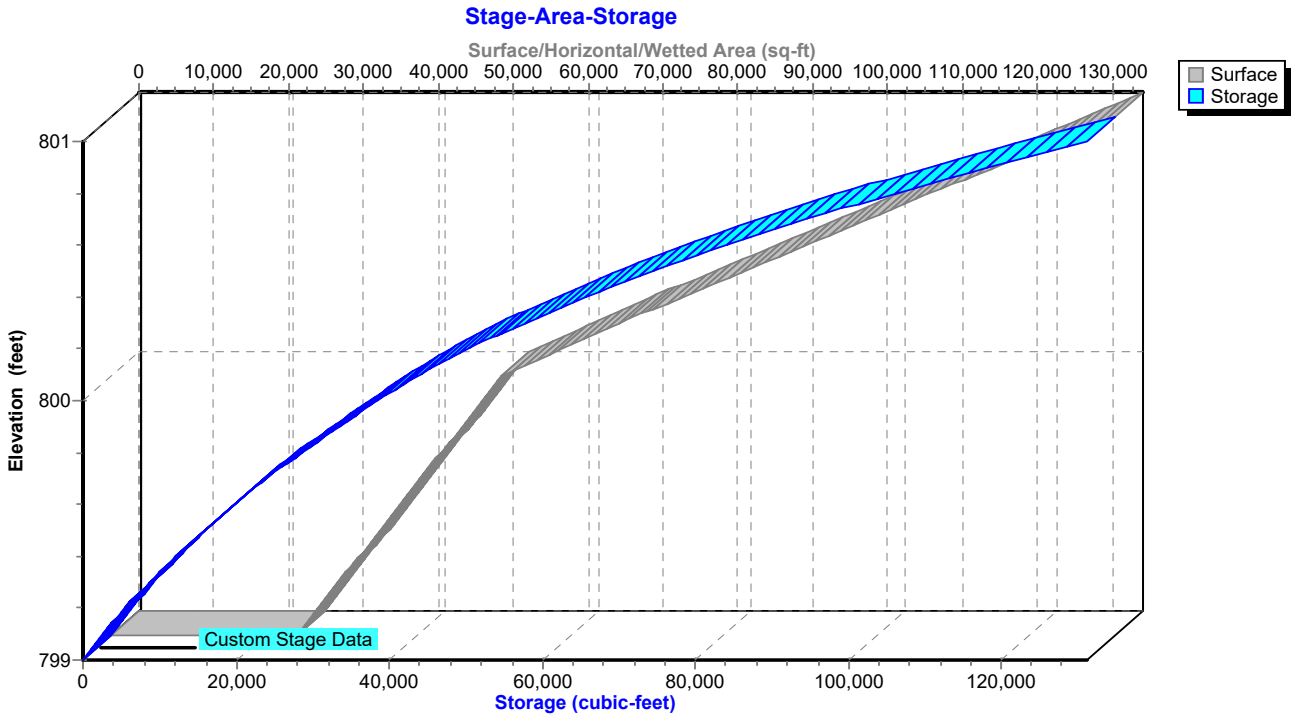


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

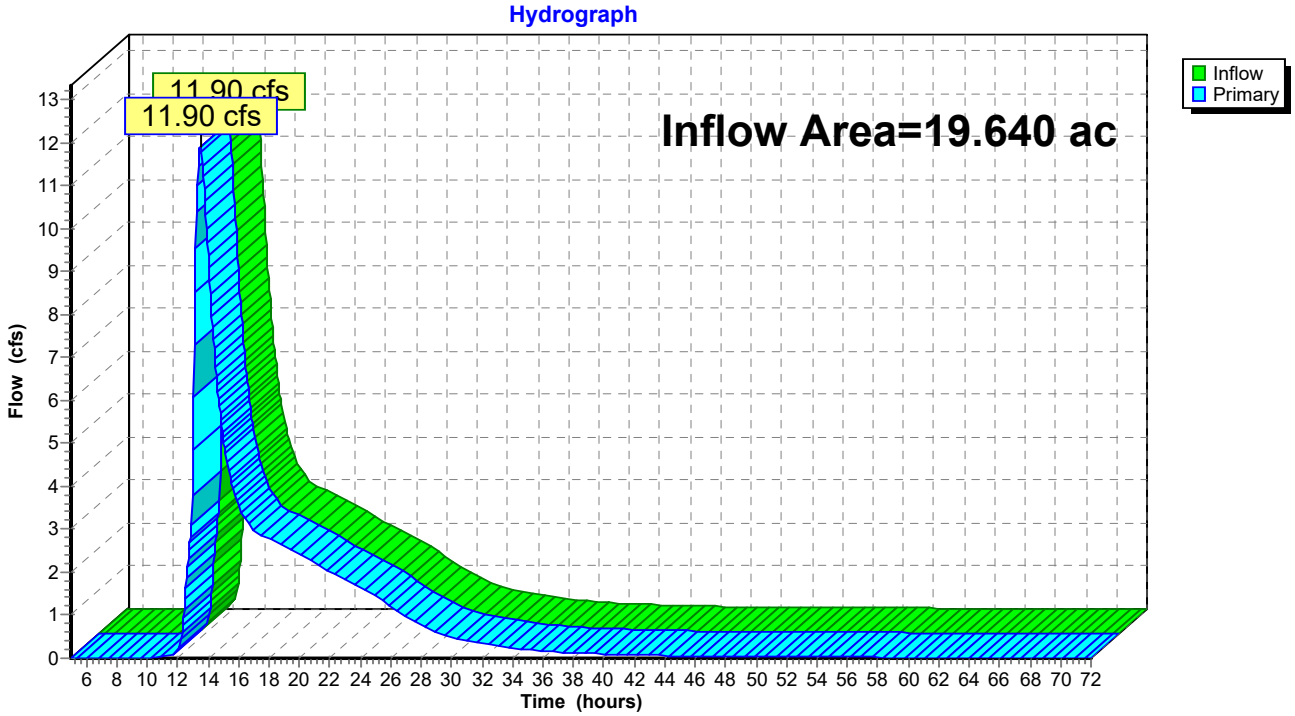
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	0.00
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.27	526	799.02	0.00	0.00	0.00
12.50	**21.13**	**27,344**	**799.77**	**1.38**	**1.38**	**0.00**
15.00	**3.44**	**66,270**	**800.41**	**5.15**	**3.22**	**1.92**
17.50	1.79	55,593	800.27	2.86	2.84	0.02
20.00	1.28	45,370	800.12	2.45	2.45	0.00
22.50	1.01	35,702	799.95	1.91	1.91	0.00
25.00	0.44	28,697	799.80	1.46	1.46	0.00
27.50	0.00	19,186	799.59	0.84	0.84	0.00
30.00	0.00	13,351	799.43	0.49	0.49	0.00
32.50	0.00	9,872	799.34	0.30	0.30	0.00
35.00	0.00	7,665	799.27	0.20	0.20	0.00
37.50	0.00	6,184	799.22	0.14	0.14	0.00
40.00	0.00	5,140	799.19	0.10	0.10	0.00
42.50	0.00	4,375	799.16	0.07	0.07	0.00
45.00	0.00	3,795	799.14	0.06	0.06	0.00
47.50	0.00	3,344	799.13	0.04	0.04	0.00
50.00	0.00	2,984	799.11	0.04	0.04	0.00
52.50	0.00	2,690	799.10	0.03	0.03	0.00
55.00	0.00	2,449	799.09	0.02	0.02	0.00
57.50	0.00	2,245	799.09	0.02	0.02	0.00
60.00	0.00	2,072	799.08	0.02	0.02	0.00
62.50	0.00	1,924	799.07	0.02	0.02	0.00
65.00	0.00	1,794	799.07	0.01	0.01	0.00
67.50	0.00	1,681	799.07	0.01	0.01	0.00
70.00	0.00	1,582	799.06	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 2.62" for 50-yr 24hr event
Inflow = 11.90 cfs @ 13.48 hrs, Volume= 4.286 af
Primary = 11.90 cfs @ 13.48 hrs, Volume= 4.286 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

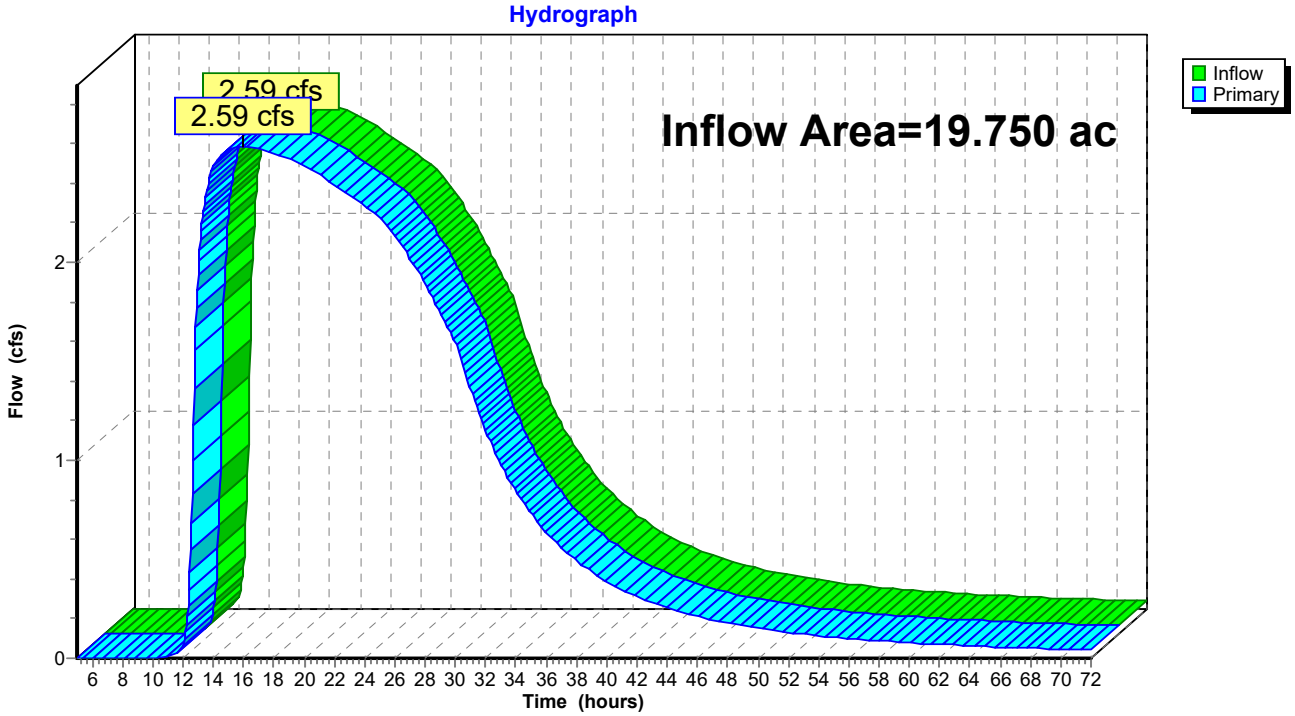
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02
12.00	0.19	0.00	0.19
13.00	**4.83**	0.00	**4.83**
14.00	**9.38**	0.00	**9.38**
15.00	5.15	0.00	5.15
16.00	3.58	0.00	3.58
17.00	2.99	0.00	2.99
18.00	2.78	0.00	2.78
19.00	2.63	0.00	2.63
20.00	2.45	0.00	2.45
21.00	2.24	0.00	2.24
22.00	2.01	0.00	2.01
23.00	1.81	0.00	1.81
24.00	1.64	0.00	1.64
25.00	1.46	0.00	1.46
26.00	1.19	0.00	1.19
27.00	0.95	0.00	0.95
28.00	0.75	0.00	0.75
29.00	0.61	0.00	0.61
30.00	0.49	0.00	0.49
31.00	0.40	0.00	0.40
32.00	0.33	0.00	0.33
33.00	0.28	0.00	0.28
34.00	0.23	0.00	0.23
35.00	0.20	0.00	0.20
36.00	0.17	0.00	0.17
37.00	0.15	0.00	0.15
38.00	0.13	0.00	0.13
39.00	0.11	0.00	0.11
40.00	0.10	0.00	0.10
41.00	0.09	0.00	0.09
42.00	0.08	0.00	0.08
43.00	0.07	0.00	0.07
44.00	0.06	0.00	0.06
45.00	0.06	0.00	0.06
46.00	0.05	0.00	0.05
47.00	0.05	0.00	0.05
48.00	0.04	0.00	0.04
49.00	0.04	0.00	0.04
50.00	0.04	0.00	0.04
51.00	0.03	0.00	0.03
52.00	0.03	0.00	0.03
53.00	0.03	0.00	0.03
54.00	0.03	0.00	0.03
55.00	0.02	0.00	0.02
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.02	0.00	0.02
59.00	0.02	0.00	0.02
60.00	0.02	0.00	0.02
61.00	0.02	0.00	0.02
62.00	0.02	0.00	0.02
63.00	0.01	0.00	0.01
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 2.63" for 50-yr 24hr event
Inflow = 2.59 cfs @ 15.98 hrs, Volume= 4.332 af
Primary = 2.59 cfs @ 15.98 hrs, Volume= 4.332 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall



Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.01	0.00	0.01
12.00	0.06	0.00	0.06
13.00	1.94	0.00	1.94
14.00	2.48	0.00	2.48
15.00	2.57	0.00	2.57
16.00	**2.59**	0.00	**2.59**
17.00	2.58	0.00	2.58
18.00	2.56	0.00	2.56
19.00	2.53	0.00	2.53
20.00	2.49	0.00	2.49
21.00	2.45	0.00	2.45
22.00	2.40	0.00	2.40
23.00	2.35	0.00	2.35
24.00	2.29	0.00	2.29
25.00	2.23	0.00	2.23
26.00	2.14	0.00	2.14
27.00	2.02	0.00	2.02
28.00	1.89	0.00	1.89
29.00	1.75	0.00	1.75
30.00	1.60	0.00	1.60
31.00	1.36	0.00	1.36
32.00	1.16	0.00	1.16
33.00	0.99	0.00	0.99
34.00	0.85	0.00	0.85
35.00	0.73	0.00	0.73
36.00	0.64	0.00	0.64
37.00	0.56	0.00	0.56
38.00	0.49	0.00	0.49
39.00	0.44	0.00	0.44
40.00	0.39	0.00	0.39
41.00	0.35	0.00	0.35
42.00	0.31	0.00	0.31
43.00	0.28	0.00	0.28
44.00	0.26	0.00	0.26
45.00	0.23	0.00	0.23
46.00	0.21	0.00	0.21
47.00	0.19	0.00	0.19
48.00	0.18	0.00	0.18
49.00	0.16	0.00	0.16
50.00	0.15	0.00	0.15
51.00	0.14	0.00	0.14
52.00	0.13	0.00	0.13
53.00	0.12	0.00	0.12
54.00	0.11	0.00	0.11
55.00	0.11	0.00	0.11
56.00	0.10	0.00	0.10
57.00	0.09	0.00	0.09
58.00	0.09	0.00	0.09
59.00	0.08	0.00	0.08
60.00	0.08	0.00	0.08
61.00	0.07	0.00	0.07
62.00	0.07	0.00	0.07
63.00	0.07	0.00	0.07
64.00	0.06	0.00	0.06
65.00	0.06	0.00	0.06
66.00	0.06	0.00	0.06
67.00	0.05	0.00	0.05
68.00	0.05	0.00	0.05
69.00	0.05	0.00	0.05
70.00	0.05	0.00	0.05
71.00	0.04	0.00	0.04
72.00	0.04	0.00	0.04

Summary for Subcatchment 1S: Proposed

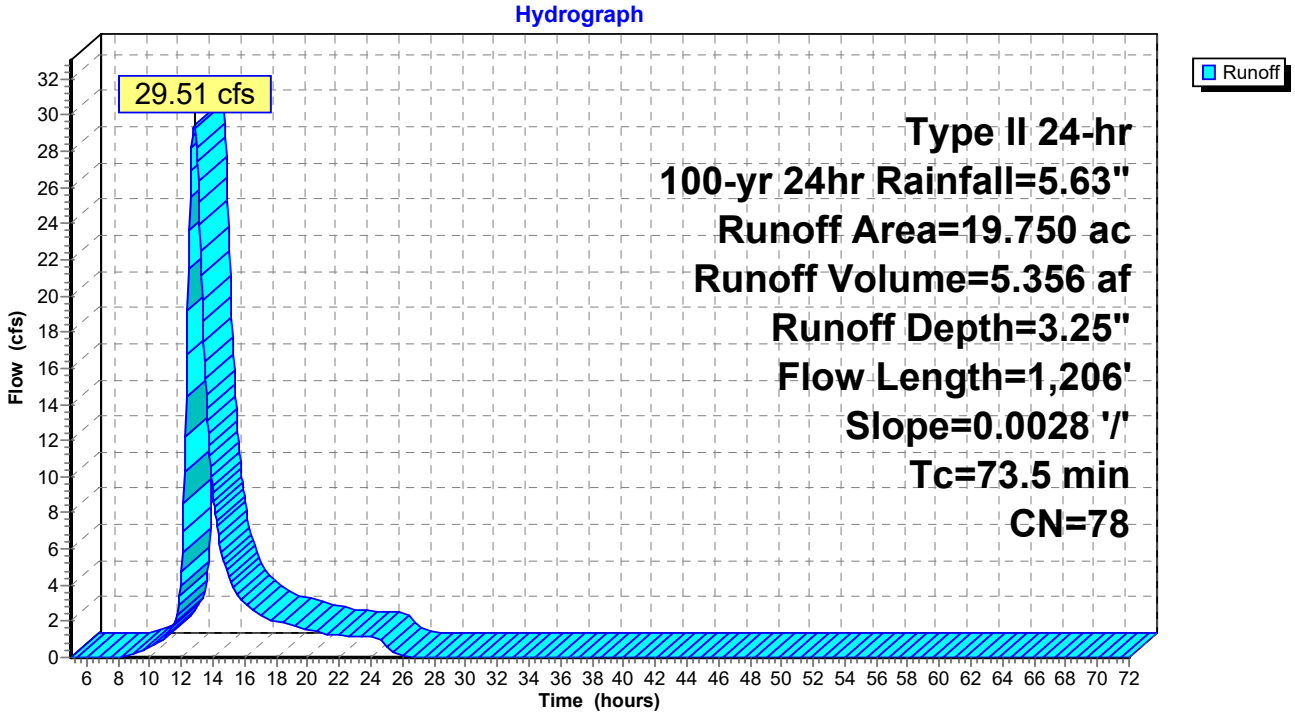
Runoff = 29.51 cfs @ 12.80 hrs, Volume= 5.356 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr 24hr Rainfall=5.63"

Area (ac)	CN	Description
16.820	74	>75% Grass cover, Good, HSG C
1.270	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
0.020	98	Roofs, HSG C
19.750	78	Weighted Average
16.820		85.16% Pervious Area
2.930		14.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
49.8	1,106	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
73.5	1,206	Total			

Subcatchment 1S: Proposed



Hydrograph for Subcatchment 1S: Proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.35	0.00	0.00	57.00	5.63	3.25	0.00
6.00	0.45	0.00	0.00	58.00	5.63	3.25	0.00
7.00	0.56	0.00	0.00	59.00	5.63	3.25	0.00
8.00	0.68	0.00	0.02	60.00	5.63	3.25	0.00
9.00	0.83	0.02	0.18	61.00	5.63	3.25	0.00
10.00	1.02	0.06	0.53	62.00	5.63	3.25	0.00
11.00	1.32	0.16	1.16	63.00	5.63	3.25	0.00
12.00	3.73	1.68	**4.72**	64.00	5.63	3.25	0.00
13.00	4.35	2.17	**27.38**	65.00	5.63	3.25	0.00
14.00	4.62	2.39	9.10	66.00	5.63	3.25	0.00
15.00	4.81	2.55	4.36	67.00	5.63	3.25	0.00
16.00	4.95	2.67	2.98	68.00	5.63	3.25	0.00
17.00	5.08	2.78	2.33	69.00	5.63	3.25	0.00
18.00	5.19	2.87	2.00	70.00	5.63	3.25	0.00
19.00	5.28	2.95	1.76	71.00	5.63	3.25	0.00
20.00	5.36	3.02	1.53	72.00	5.63	3.25	0.00
21.00	5.43	3.08	1.32				
22.00	5.50	3.14	1.23				
23.00	5.57	3.20	1.17				
24.00	**5.63**	**3.25**	1.13				
25.00	5.63	3.25	0.59				
26.00	5.63	3.25	0.08				
27.00	5.63	3.25	0.01				
28.00	5.63	3.25	0.00				
29.00	5.63	3.25	0.00				
30.00	5.63	3.25	0.00				
31.00	5.63	3.25	0.00				
32.00	5.63	3.25	0.00				
33.00	5.63	3.25	0.00				
34.00	5.63	3.25	0.00				
35.00	5.63	3.25	0.00				
36.00	5.63	3.25	0.00				
37.00	5.63	3.25	0.00				
38.00	5.63	3.25	0.00				
39.00	5.63	3.25	0.00				
40.00	5.63	3.25	0.00				
41.00	5.63	3.25	0.00				
42.00	5.63	3.25	0.00				
43.00	5.63	3.25	0.00				
44.00	5.63	3.25	0.00				
45.00	5.63	3.25	0.00				
46.00	5.63	3.25	0.00				
47.00	5.63	3.25	0.00				
48.00	5.63	3.25	0.00				
49.00	5.63	3.25	0.00				
50.00	5.63	3.25	0.00				
51.00	5.63	3.25	0.00				
52.00	5.63	3.25	0.00				
53.00	5.63	3.25	0.00				
54.00	5.63	3.25	0.00				
55.00	5.63	3.25	0.00				
56.00	5.63	3.25	0.00				

Summary for Subcatchment 2S: Existing

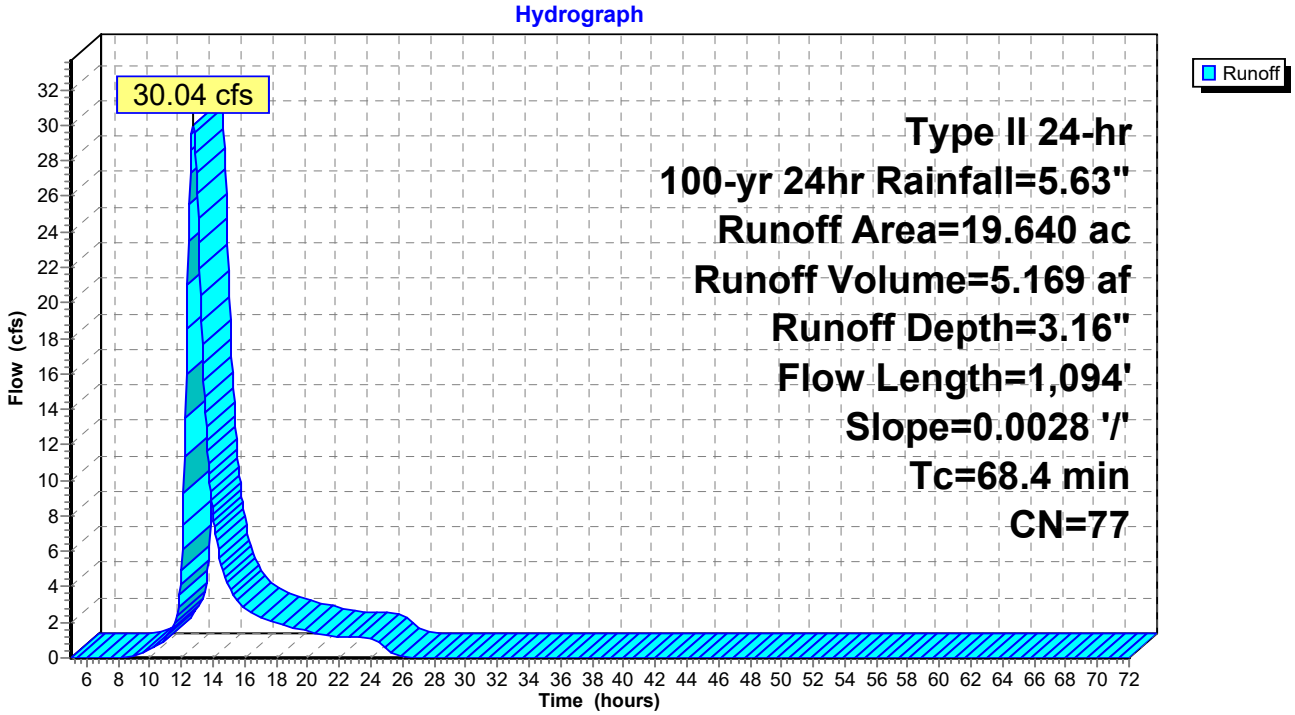
Runoff = 30.04 cfs @ 12.72 hrs, Volume= 5.169 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr 24hr Rainfall=5.63"

Area (ac)	CN	Description
17.430	74	>75% Grass cover, Good, HSG C
0.570	98	Water Surface, HSG C
1.640	98	Paved parking, HSG C
19.640	77	Weighted Average
17.430		88.75% Pervious Area
2.210		11.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	100	0.0028	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
44.7	994	0.0028	0.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
68.4	1,094	Total			

Subcatchment 2S: Existing



Hydrograph for Subcatchment 2S: Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.35	0.00	0.00	57.00	5.63	3.16	0.00
6.00	0.45	0.00	0.00	58.00	5.63	3.16	0.00
7.00	0.56	0.00	0.00	59.00	5.63	3.16	0.00
8.00	0.68	0.00	0.01	60.00	5.63	3.16	0.00
9.00	0.83	0.02	0.14	61.00	5.63	3.16	0.00
10.00	1.02	0.05	0.47	62.00	5.63	3.16	0.00
11.00	1.32	0.14	1.10	63.00	5.63	3.16	0.00
12.00	3.73	1.61	**4.98**	64.00	5.63	3.16	0.00
13.00	4.35	2.09	**26.15**	65.00	5.63	3.16	0.00
14.00	4.62	2.31	8.07	66.00	5.63	3.16	0.00
15.00	4.81	2.46	4.01	67.00	5.63	3.16	0.00
16.00	4.95	2.58	2.84	68.00	5.63	3.16	0.00
17.00	5.08	2.69	2.24	69.00	5.63	3.16	0.00
18.00	5.19	2.78	1.94	70.00	5.63	3.16	0.00
19.00	5.28	2.86	1.71	71.00	5.63	3.16	0.00
20.00	5.36	2.93	1.48	72.00	5.63	3.16	0.00
21.00	5.43	2.99	1.28				
22.00	5.50	3.05	1.20				
23.00	5.57	3.10	1.15				
24.00	**5.63**	**3.16**	1.10				
25.00	5.63	3.16	0.50				
26.00	5.63	3.16	0.06				
27.00	5.63	3.16	0.01				
28.00	5.63	3.16	0.00				
29.00	5.63	3.16	0.00				
30.00	5.63	3.16	0.00				
31.00	5.63	3.16	0.00				
32.00	5.63	3.16	0.00				
33.00	5.63	3.16	0.00				
34.00	5.63	3.16	0.00				
35.00	5.63	3.16	0.00				
36.00	5.63	3.16	0.00				
37.00	5.63	3.16	0.00				
38.00	5.63	3.16	0.00				
39.00	5.63	3.16	0.00				
40.00	5.63	3.16	0.00				
41.00	5.63	3.16	0.00				
42.00	5.63	3.16	0.00				
43.00	5.63	3.16	0.00				
44.00	5.63	3.16	0.00				
45.00	5.63	3.16	0.00				
46.00	5.63	3.16	0.00				
47.00	5.63	3.16	0.00				
48.00	5.63	3.16	0.00				
49.00	5.63	3.16	0.00				
50.00	5.63	3.16	0.00				
51.00	5.63	3.16	0.00				
52.00	5.63	3.16	0.00				
53.00	5.63	3.16	0.00				
54.00	5.63	3.16	0.00				
55.00	5.63	3.16	0.00				
56.00	5.63	3.16	0.00				

Summary for Pond 3P: Prop Pond

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth = 3.25" for 100-yr 24hr event
Inflow = 29.51 cfs @ 12.80 hrs, Volume= 5.356 af
Outflow = 2.80 cfs @ 16.23 hrs, Volume= 5.185 af, Atten= 91%, Lag= 205.5 min
Primary = 2.80 cfs @ 16.23 hrs, Volume= 5.185 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.79' @ 16.23 hrs Surf.Area= 142,677 sf Storage= 148,022 cf

Plug-Flow detention time= 699.7 min calculated for 5.181 af (97% of inflow)
Center-of-Mass det. time= 682.5 min (1,563.8 - 881.3)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	334,232 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

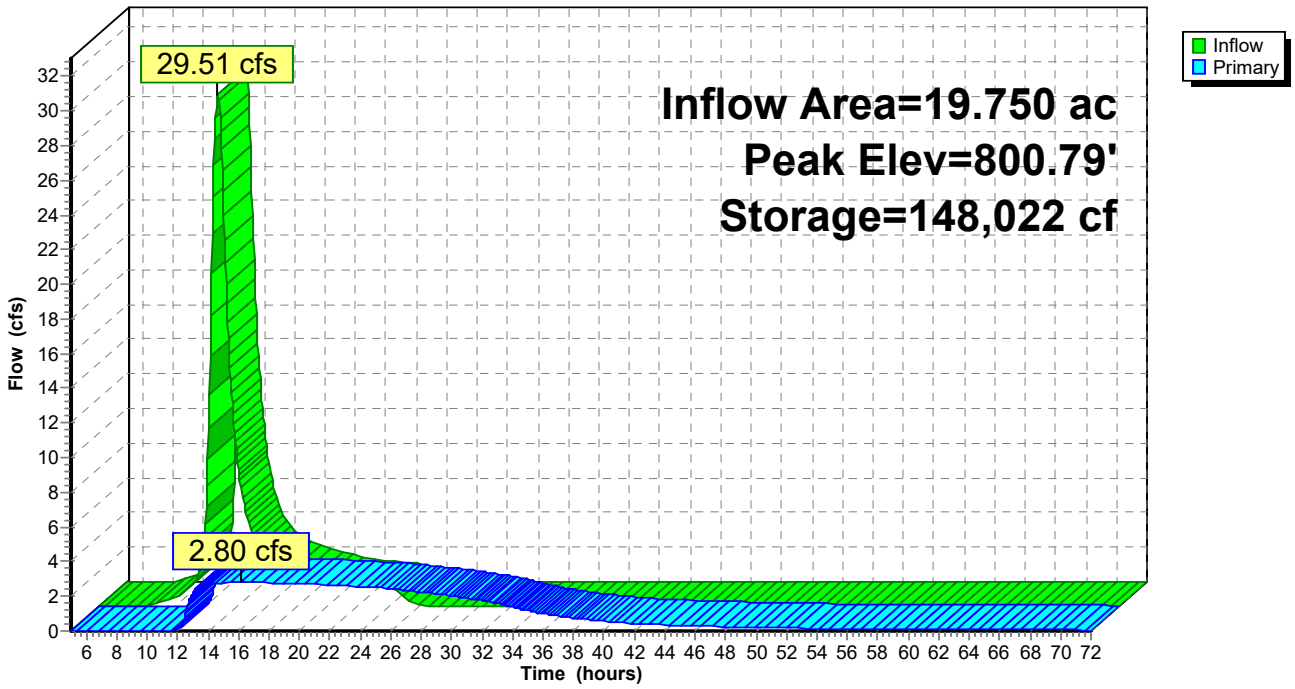
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	55,330	0	0
800.00	68,256	61,793	61,793
800.25	98,012	20,784	82,577
801.00	159,611	96,609	179,185
801.80	228,007	155,047	334,232

Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	799.00'	**9.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.80 cfs @ 16.23 hrs HW=800.79' (Free Discharge)
↑—**1=Culvert** (Passes 2.80 cfs of 4.30 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 2.80 cfs @ 5.69 fps)

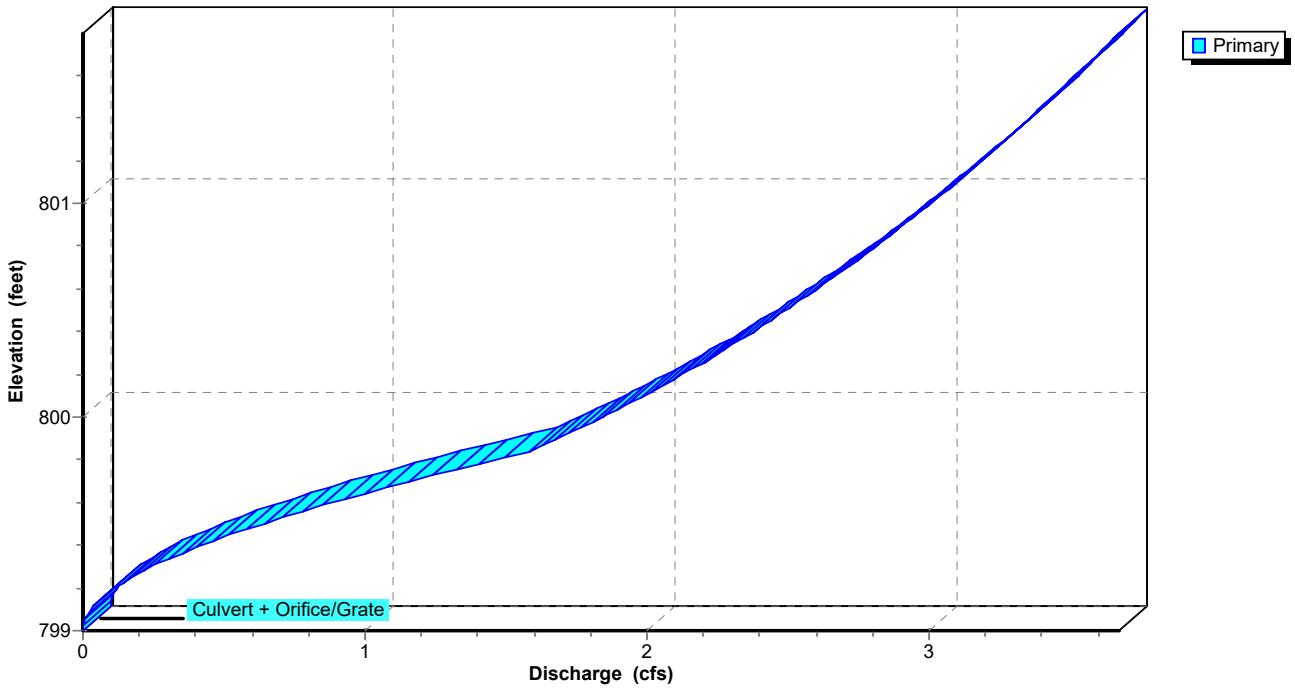
Pond 3P: Prop Pond

Hydrograph

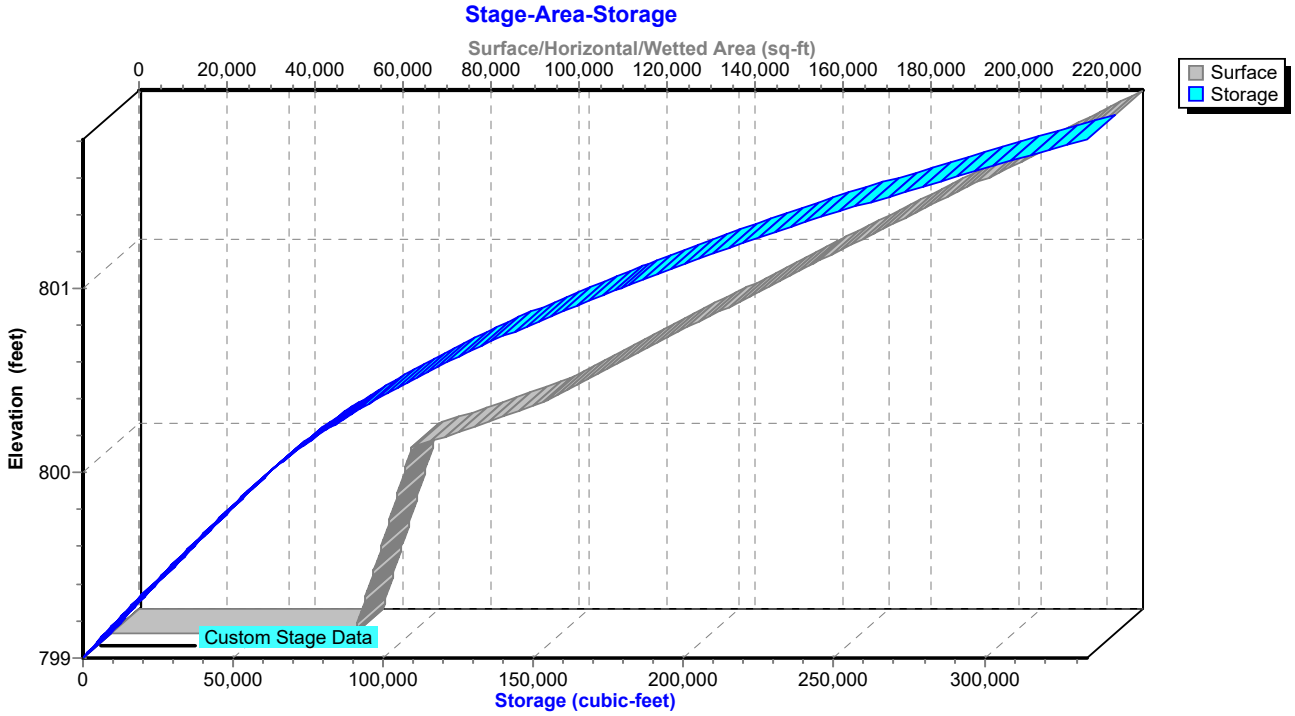


Pond 3P: Prop Pond

Stage-Discharge



Pond 3P: Prop Pond



Hydrograph for Pond 3P: Prop Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	799.00	0.00
7.50	0.00	0	799.00	0.00
10.00	0.53	1,552	799.03	0.00
12.50	**23.64**	34,567	799.58	0.84
15.00	**4.36**	**145,141**	**800.77**	**2.78**
17.50	2.14	**146,312**	**800.78**	**2.79**
20.00	1.53	137,861	800.72	2.73
22.50	1.20	125,542	800.63	2.63
25.00	0.59	112,110	800.52	2.51
27.50	0.00	91,460	800.34	2.30
30.00	0.00	71,913	800.13	2.03
32.50	0.00	55,112	799.90	1.68
35.00	0.00	42,165	799.70	1.17
37.50	0.00	33,436	799.57	0.80
40.00	0.00	27,382	799.47	0.57
42.50	0.00	23,017	799.40	0.42
45.00	0.00	19,760	799.34	0.32
47.50	0.00	17,256	799.30	0.25
50.00	0.00	15,281	799.27	0.20
52.50	0.00	13,690	799.24	0.16
55.00	0.00	12,385	799.22	0.13
57.50	0.00	11,297	799.20	0.11
60.00	0.00	10,379	799.18	0.09
62.50	0.00	9,594	799.17	0.08
65.00	0.00	8,916	799.16	0.07
67.50	0.00	8,325	799.15	0.06
70.00	0.00	7,807	799.14	0.05

Summary for Pond 4P: Ex Pond

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth = 3.16" for 100-yr 24hr event
Inflow = 30.04 cfs @ 12.72 hrs, Volume= 5.169 af
Outflow = 17.87 cfs @ 13.30 hrs, Volume= 5.134 af, Atten= 40%, Lag= 34.4 min
Primary = 3.88 cfs @ 13.30 hrs, Volume= 3.546 af
Secondary = 13.99 cfs @ 13.30 hrs, Volume= 1.588 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 800.60' @ 13.30 hrs Surf.Area= 100,724 sf Storage= 84,032 cf

Plug-Flow detention time= 240.0 min calculated for 5.134 af (99% of inflow)
Center-of-Mass det. time= 235.8 min (1,114.9 - 879.2)

Volume	Invert	Avail.Storage	Storage Description
#1	799.00'	131,137 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
799.00	24,773	0	0
800.00	52,188	38,481	38,481
800.25	71,660	15,481	53,962
801.00	134,140	77,175	131,137

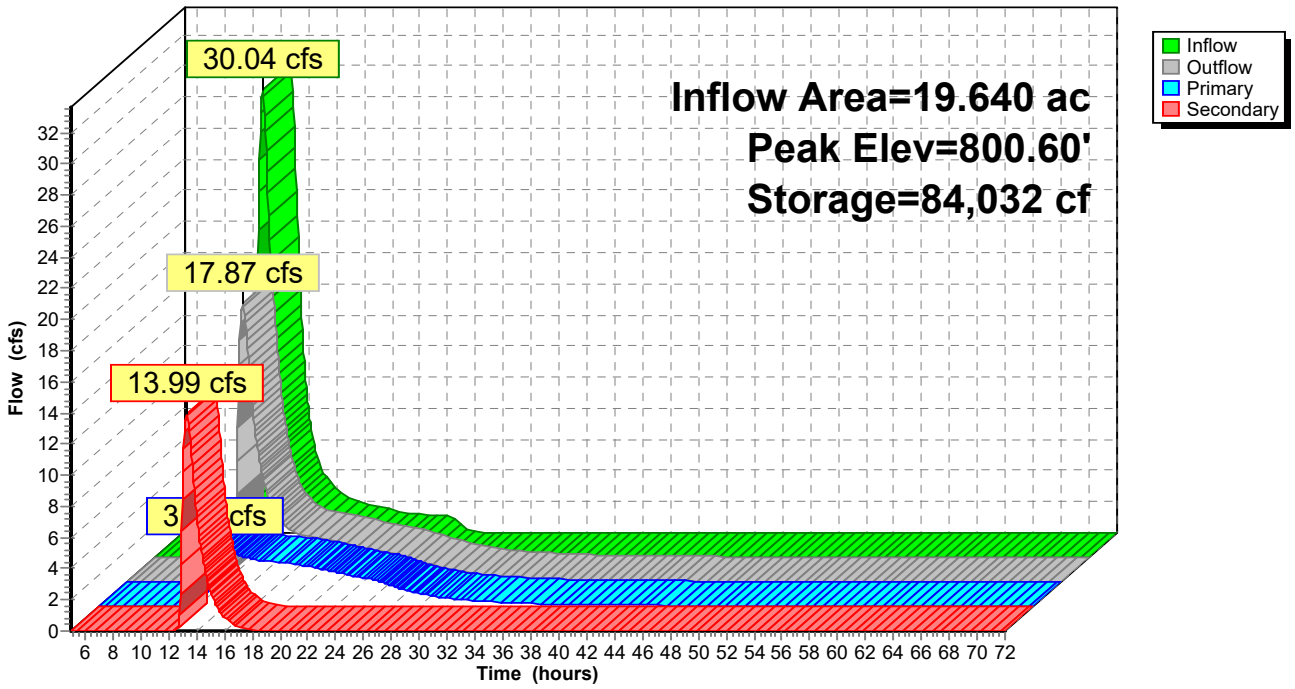
Device	Routing	Invert	Outlet Devices
#1	Primary	799.00'	**12.0" Round Culvert** L= 5.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 799.00' / 798.98' S= 0.0040 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	800.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.75 Width (feet) 0.00 111.40

Primary OutFlow Max=3.88 cfs @ 13.30 hrs HW=800.60' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 3.88 cfs @ 4.94 fps)

Secondary OutFlow Max=13.98 cfs @ 13.30 hrs HW=800.60' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Weir Controls 13.98 cfs @ 1.55 fps)

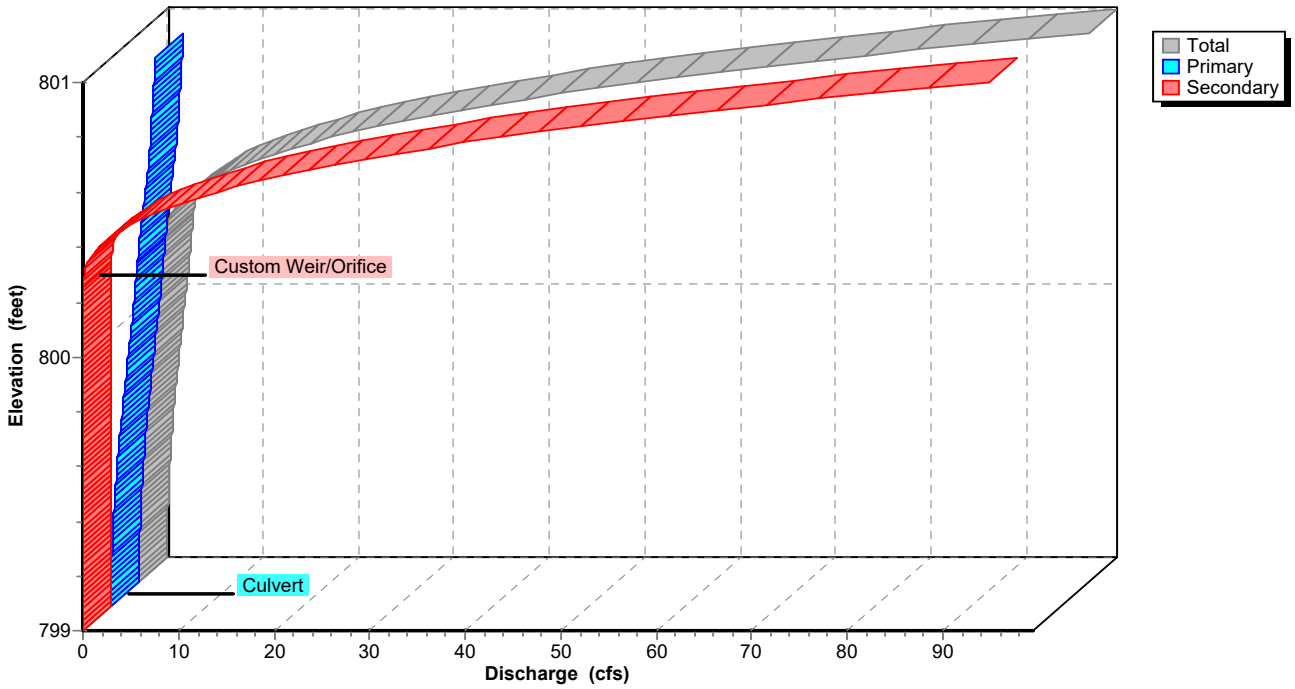
Pond 4P: Ex Pond

Hydrograph

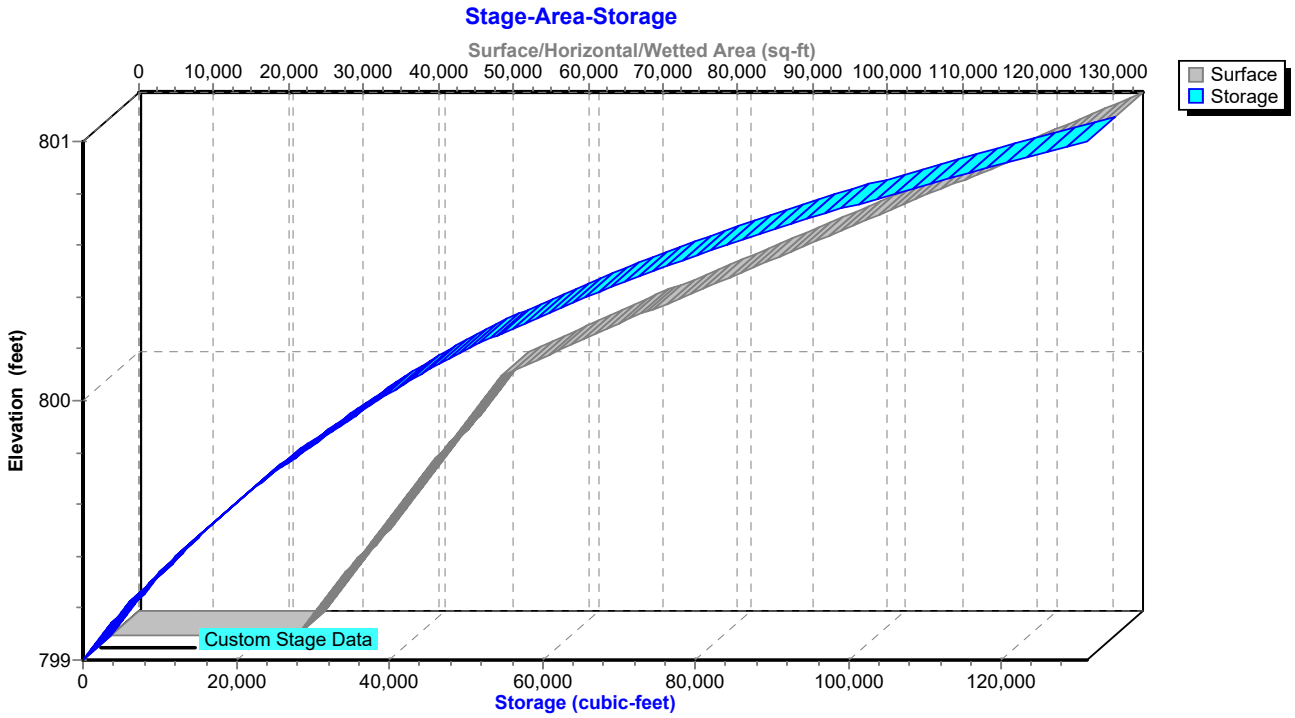


Pond 4P: Ex Pond

Stage-Discharge



Pond 4P: Ex Pond



Hydrograph for Pond 4P: Ex Pond

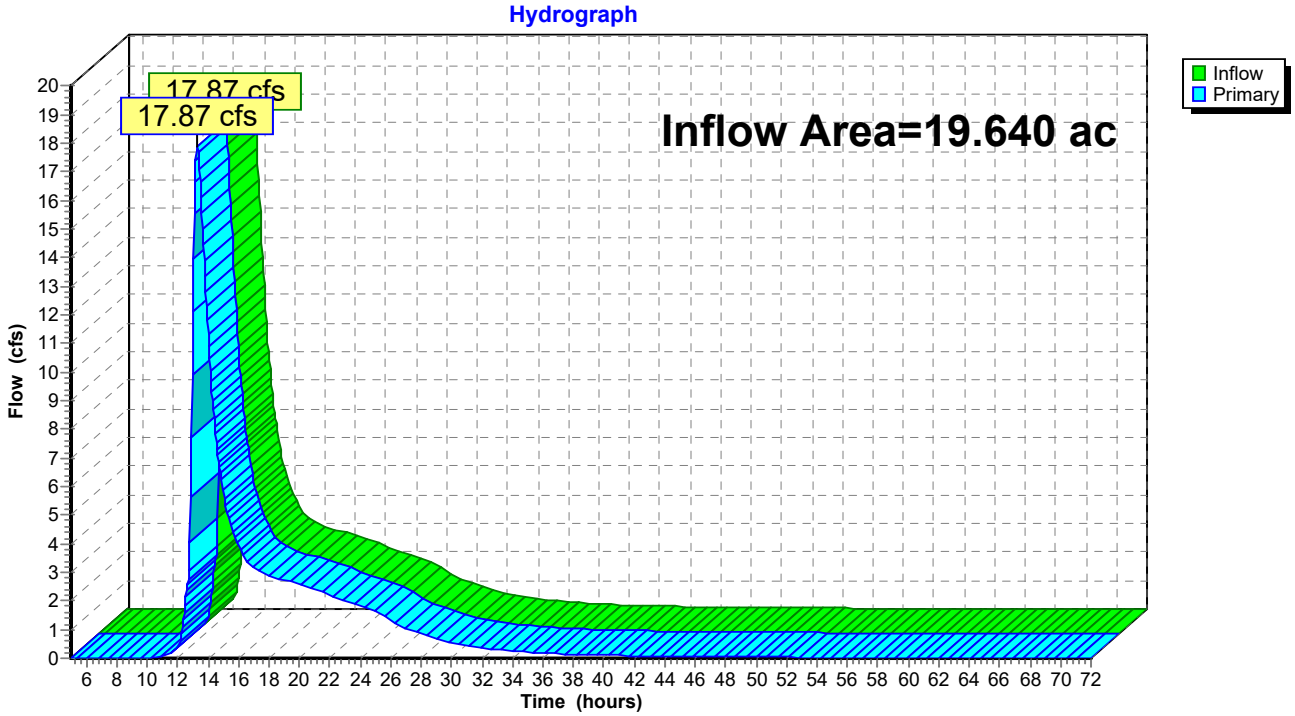
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
5.00	0.00	0	799.00	0.00	0.00	0.00
7.50	0.00	0	799.00	0.00	0.00	0.00
10.00	0.47	1,243	799.05	0.01	0.01	0.00
12.50	**25.60**	**34,776**	**799.93**	**1.85**	**1.85**	**0.00**
15.00	**4.01**	**67,828**	**800.43**	**5.82**	**3.29**	**2.52**
17.50	2.07	57,535	800.30	2.99	2.89	0.10
20.00	1.48	48,502	800.17	2.59	2.59	0.00
22.50	1.17	38,843	800.01	2.10	2.10	0.00
25.00	0.50	31,415	799.86	1.64	1.64	0.00
27.50	0.00	20,768	799.62	0.95	0.95	0.00
30.00	0.00	14,264	799.46	0.54	0.54	0.00
32.50	0.00	10,431	799.35	0.33	0.33	0.00
35.00	0.00	8,029	799.28	0.21	0.21	0.00
37.50	0.00	6,434	799.23	0.15	0.15	0.00
40.00	0.00	5,320	799.19	0.10	0.10	0.00
42.50	0.00	4,509	799.17	0.08	0.08	0.00
45.00	0.00	3,898	799.15	0.06	0.06	0.00
47.50	0.00	3,424	799.13	0.05	0.05	0.00
50.00	0.00	3,049	799.12	0.04	0.04	0.00
52.50	0.00	2,744	799.10	0.03	0.03	0.00
55.00	0.00	2,493	799.10	0.03	0.03	0.00
57.50	0.00	2,282	799.09	0.02	0.02	0.00
60.00	0.00	2,104	799.08	0.02	0.02	0.00
62.50	0.00	1,952	799.08	0.02	0.02	0.00
65.00	0.00	1,819	799.07	0.01	0.01	0.00
67.50	0.00	1,702	799.07	0.01	0.01	0.00
70.00	0.00	1,600	799.06	0.01	0.01	0.00

Summary for Link 6L: Existing Outfall

Inflow Area = 19.640 ac, 11.25% Impervious, Inflow Depth > 3.14" for 100-yr 24hr event
Inflow = 17.87 cfs @ 13.30 hrs, Volume= 5.134 af
Primary = 17.87 cfs @ 13.30 hrs, Volume= 5.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Existing Outfall



Hydrograph for Link 6L: Existing Outfall

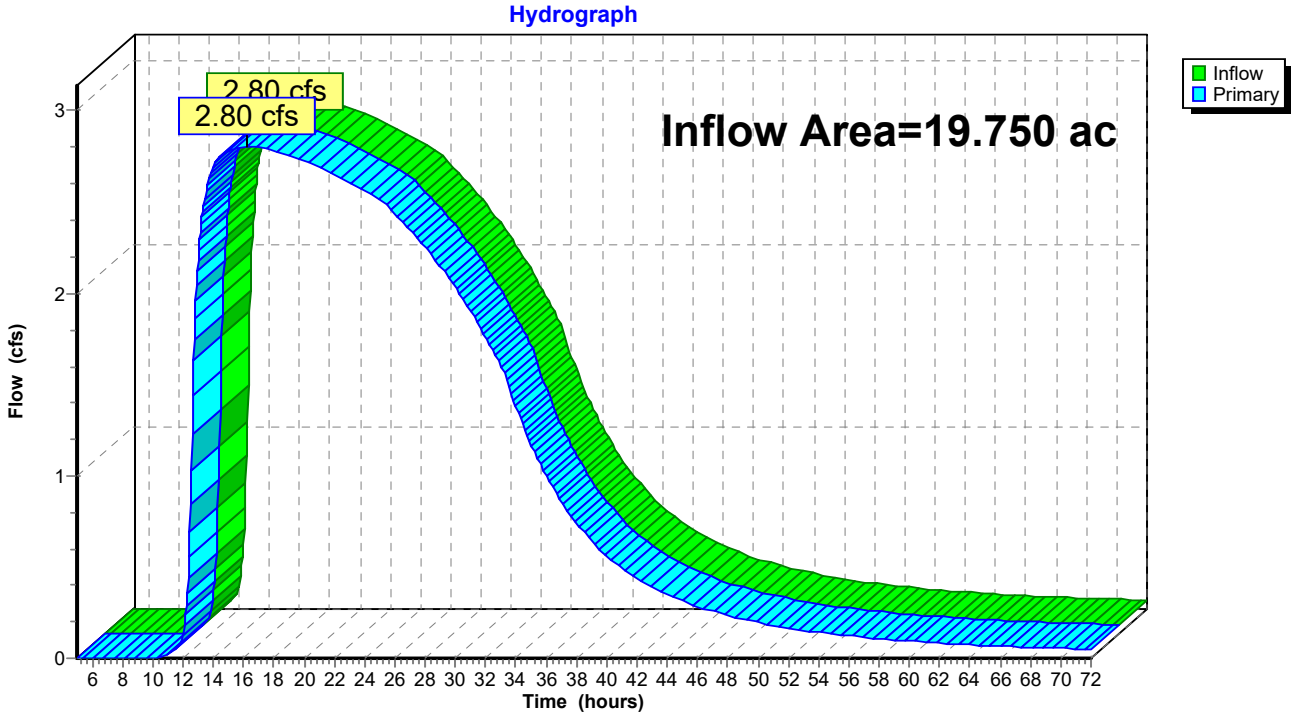
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01
11.00	0.06	0.00	0.06
12.00	0.35	0.00	0.35
13.00	**12.09**	0.00	**12.09**
14.00	**11.33**	0.00	**11.33**
15.00	5.82	0.00	5.82
16.00	3.95	0.00	3.95
17.00	3.18	0.00	3.18
18.00	2.87	0.00	2.87
19.00	2.74	0.00	2.74
20.00	2.59	0.00	2.59
21.00	2.40	0.00	2.40
22.00	2.20	0.00	2.20
23.00	2.01	0.00	2.01
24.00	1.83	0.00	1.83
25.00	1.64	0.00	1.64
26.00	1.34	0.00	1.34
27.00	1.06	0.00	1.06
28.00	0.84	0.00	0.84
29.00	0.67	0.00	0.67
30.00	0.54	0.00	0.54
31.00	0.44	0.00	0.44
32.00	0.36	0.00	0.36
33.00	0.30	0.00	0.30
34.00	0.25	0.00	0.25
35.00	0.21	0.00	0.21
36.00	0.18	0.00	0.18
37.00	0.16	0.00	0.16
38.00	0.14	0.00	0.14
39.00	0.12	0.00	0.12
40.00	0.10	0.00	0.10
41.00	0.09	0.00	0.09
42.00	0.08	0.00	0.08
43.00	0.07	0.00	0.07
44.00	0.07	0.00	0.07
45.00	0.06	0.00	0.06
46.00	0.05	0.00	0.05
47.00	0.05	0.00	0.05
48.00	0.04	0.00	0.04
49.00	0.04	0.00	0.04
50.00	0.04	0.00	0.04
51.00	0.03	0.00	0.03
52.00	0.03	0.00	0.03
53.00	0.03	0.00	0.03
54.00	0.03	0.00	0.03
55.00	0.03	0.00	0.03
56.00	0.02	0.00	0.02
57.00	0.02	0.00	0.02
58.00	0.02	0.00	0.02
59.00	0.02	0.00	0.02
60.00	0.02	0.00	0.02
61.00	0.02	0.00	0.02
62.00	0.02	0.00	0.02
63.00	0.02	0.00	0.02
64.00	0.01	0.00	0.01
65.00	0.01	0.00	0.01
66.00	0.01	0.00	0.01
67.00	0.01	0.00	0.01
68.00	0.01	0.00	0.01
69.00	0.01	0.00	0.01
70.00	0.01	0.00	0.01
71.00	0.01	0.00	0.01
72.00	0.01	0.00	0.01

Summary for Link 7L: Proposed Outfall

Inflow Area = 19.750 ac, 14.84% Impervious, Inflow Depth > 3.15" for 100-yr 24hr event
Inflow = 2.80 cfs @ 16.23 hrs, Volume= 5.185 af
Primary = 2.80 cfs @ 16.23 hrs, Volume= 5.185 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Proposed Outfall

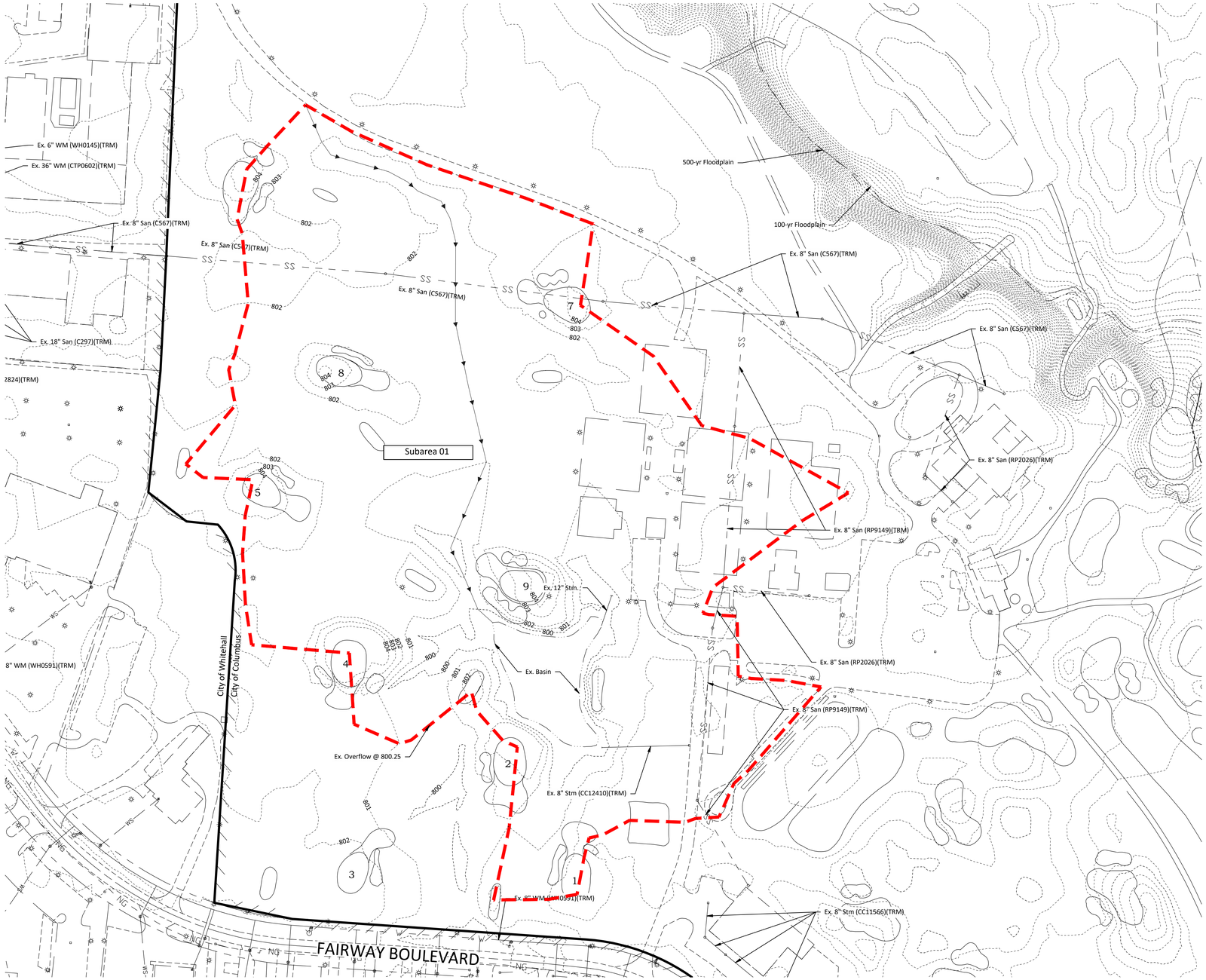


Hydrograph for Link 7L: Proposed Outfall

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02
12.00	0.12	0.00	0.12
13.00	2.18	0.00	2.18
14.00	2.69	0.00	2.69
15.00	2.78	0.00	2.78
16.00	**2.80**	0.00	**2.80**
17.00	**2.80**	0.00	**2.80**
18.00	2.78	0.00	2.78
19.00	2.76	0.00	2.76
20.00	2.73	0.00	2.73
21.00	2.69	0.00	2.69
22.00	2.65	0.00	2.65
23.00	2.61	0.00	2.61
24.00	2.57	0.00	2.57
25.00	2.51	0.00	2.51
26.00	2.44	0.00	2.44
27.00	2.35	0.00	2.35
28.00	2.25	0.00	2.25
29.00	2.15	0.00	2.15
30.00	2.03	0.00	2.03
31.00	1.91	0.00	1.91
32.00	1.76	0.00	1.76
33.00	1.61	0.00	1.61
34.00	1.38	0.00	1.38
35.00	1.17	0.00	1.17
36.00	1.00	0.00	1.00
37.00	0.86	0.00	0.86
38.00	0.74	0.00	0.74
39.00	0.65	0.00	0.65
40.00	0.57	0.00	0.57
41.00	0.50	0.00	0.50
42.00	0.44	0.00	0.44
43.00	0.39	0.00	0.39
44.00	0.35	0.00	0.35
45.00	0.32	0.00	0.32
46.00	0.28	0.00	0.28
47.00	0.26	0.00	0.26
48.00	0.23	0.00	0.23
49.00	0.21	0.00	0.21
50.00	0.20	0.00	0.20
51.00	0.18	0.00	0.18
52.00	0.17	0.00	0.17
53.00	0.15	0.00	0.15
54.00	0.14	0.00	0.14
55.00	0.13	0.00	0.13
56.00	0.12	0.00	0.12
57.00	0.11	0.00	0.11
58.00	0.11	0.00	0.11
59.00	0.10	0.00	0.10
60.00	0.09	0.00	0.09
61.00	0.09	0.00	0.09
62.00	0.08	0.00	0.08
63.00	0.08	0.00	0.08
64.00	0.07	0.00	0.07
65.00	0.07	0.00	0.07
66.00	0.07	0.00	0.07
67.00	0.06	0.00	0.06
68.00	0.06	0.00	0.06
69.00	0.06	0.00	0.06
70.00	0.05	0.00	0.05
71.00	0.05	0.00	0.05
72.00	0.05	0.00	0.05

APPENDIX D:

Exhibits



PLAN VIEW
Scale: 1'=100'

LEGEND

	Tributary Area
	Time of Concentration Path
	Ex. Right of Way
Ex. Valve	Ex. Water Main
Ex. Manhole	Ex. Storm Sewer
Ex. Manhole	Ex. Sanitary Sewer
Ex. Valve	Ex. Gas Line
	Ex. Street Light
	Ex. Water Valve
	Ex. Fire Hydrant
	Ex. Storm Inlet
Ex.	Existing
P/L	Property Line
R/W	Right-Of-Way
San.	Sanitary Sewer
Serv.	Service
Stm.	Storm Sewer
TRM	To Remain
TBRL	To Be Relocated
Typ.	Typical
WM	Water Main
WS	Water Service

NOTE
The existing conditions shown on the plan drawings were taken from aerial mapping (Franklin); aerial survey (Franklin County) and/or available records and do not reflect field verified conditions. The existing elevations and/or physical features (utilities, obstacles, structures, etc.) are shown for graphical purposes only and shall not be construed as being accurate or complete

Existing Condition
Subarea 01
Tributary Area= 19.64 Acres
RCN= 77
TC= 68.4 minutes

Land Usage
Grass, Parking, Buildings, Pond
(11.25% Impervious Cover)

Soil Classication
Bennington-Urban land complex, 0 to 2 percent slopes

Bennington-Urban land complex, 0 to 6 percent slopes

GRAPHIC SCALE
0 100 200 400
1 inch = 200 feet

PM - 247, 248

EASEMENT REFERENCE			
CITY NO.	COUNTY RECORDER VOL.	COUNTY RECORDER PAGE	GRANTOR

REVISIONS		
NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMH&T
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
emht.com

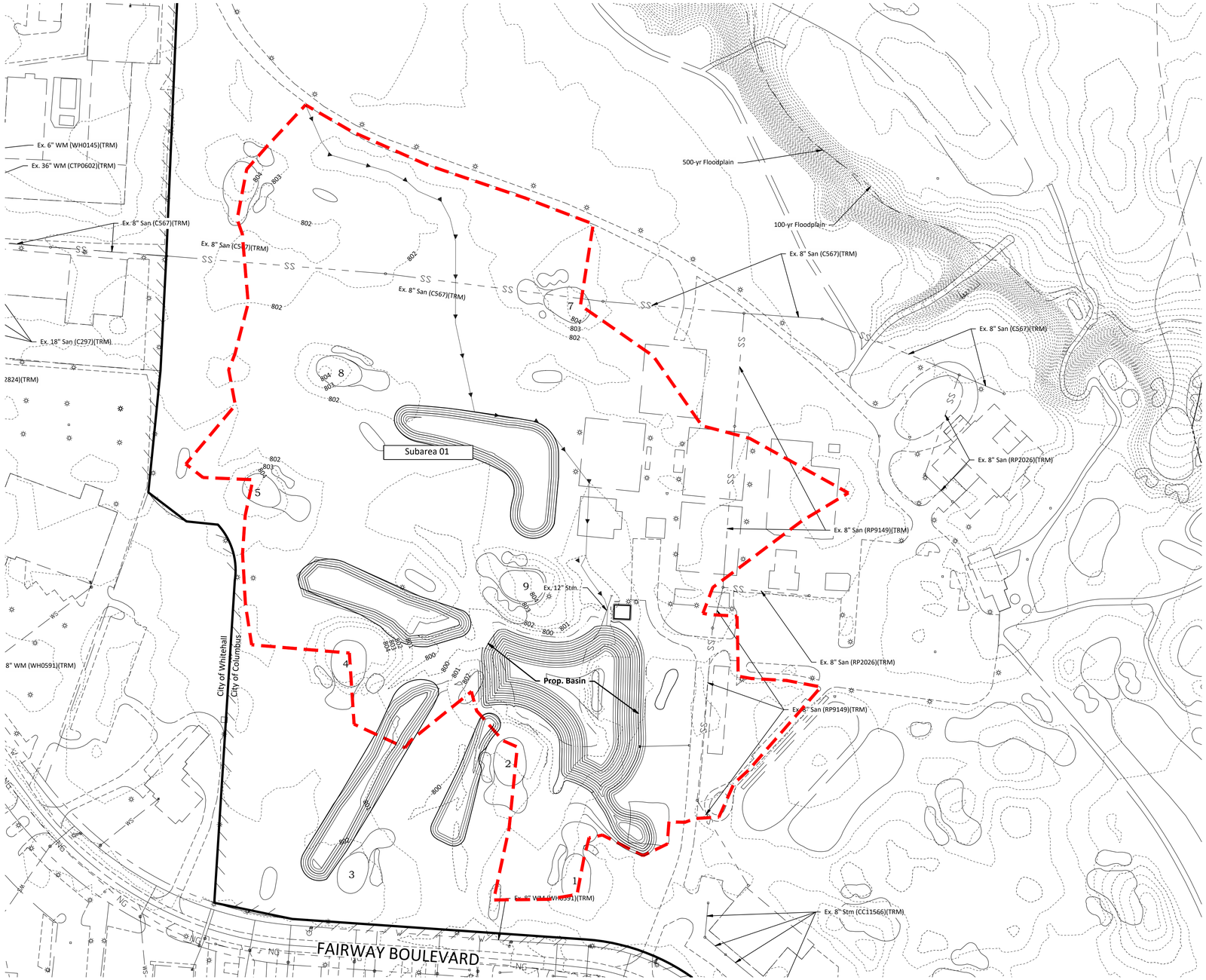
PROJECT TITLE:
CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
PRE-DEVELOPED TRIBUTARY MAP

DIVISION USE ONLY	OWNER
	CONTRACTOR
	INSPECTOR
	AGREEMENT / COMPLETED
RPD / CKD / CID / CON.DR.	
INDEX DETAIL	RECORD FILE

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE
DIVISION USE ONLY

SCALE:	SHEET
As Noted	1/2
CONTRACT DRAWING NO. CC-18786	RECORD PLAN NO.

J:\2018\018705\Reports\Stormwater\2018 CC Storm\Existing Conditions.dwg, Last Saved By: mstjohn, 1/8/2020 10:42 AM Last Printed By: mjones, Mon, 1/6/2020 11:19 AM (No Xrefs)



PLAN VIEW
Scale: 1'=100'

LEGEND

	Tributary Area
	Time of Concentration Path
	Ex. Right of Way
Ex. Valve	Ex. Water Main (W)
Ex. Manhole	Ex. Storm Sewer (SD)
Ex. Manhole	Ex. Sanitary Sewer (SS)
Ex. Valve	Ex. Gas Line (NG)
	Ex. Street Light
	Ex. Water Valve
	Ex. Fire Hydrant
	Ex. Storm Inlet
Ex.	Existing
P/L	Property Line
R/W	Right-Of-Way
San.	Sanitary Sewer
Serv.	Service
Stm.	Storm Sewer
TRM	To Remain
TBRL	To Be Relocated
Typ.	Typical
WM	Water Main
WS	Water Service

NOTE

The existing conditions shown on the plan drawings were taken from aerial mapping (Franklin); aerial survey (Franklin County) and/or available records and do not reflect field verified conditions. The existing elevations and/or physical features (utilities, obstacles, structures, etc.) are shown for graphical purposes only and shall not be construed as being accurate or complete

Proposed Condition
Subarea 01
Tributary Area= 19.75 Acres
RCN= 78
TC= 63.5 minutes

Land Usage
Grass, Parking, Buildings, Pond
(14.84% Impervious Cover)

Soil Classication
Bennington-Urban land complex, 0 to 2 percent slopes

Bennington-Urban land complex, 0 to 6 percent slopes

GRAPHIC SCALE
0 100 200 400
1 inch = 200 feet

PM - 247, 248

EASEMENT REFERENCE			
CITY NO.	COUNTY RECORDER VOL.	COUNTY RECORDER PAGE	GRANTOR

REVISIONS		
NO.	DESCRIPTION	APPROVAL/DATE

PLAN PREPARED BY:

EMH&T
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
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CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO
PRIVATE STORMWATER IMPROVEMENT
FOR
COLUMBUS COUNTRY CLUB
4831 EAST BROAD STREET, COLUMBUS, OHIO 43213
POST-DEVELOPED TRIBUTARY MAP

DIVISION USE ONLY	OWNER
	CONTRACTOR
	INSPECTOR
	AGREEMENT / COMPLETED
RPD / CKD / CID / CON.DR.	
INDEX DETAIL	RECORD FILE

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE AND DRAINAGE
DIVISION USE ONLY

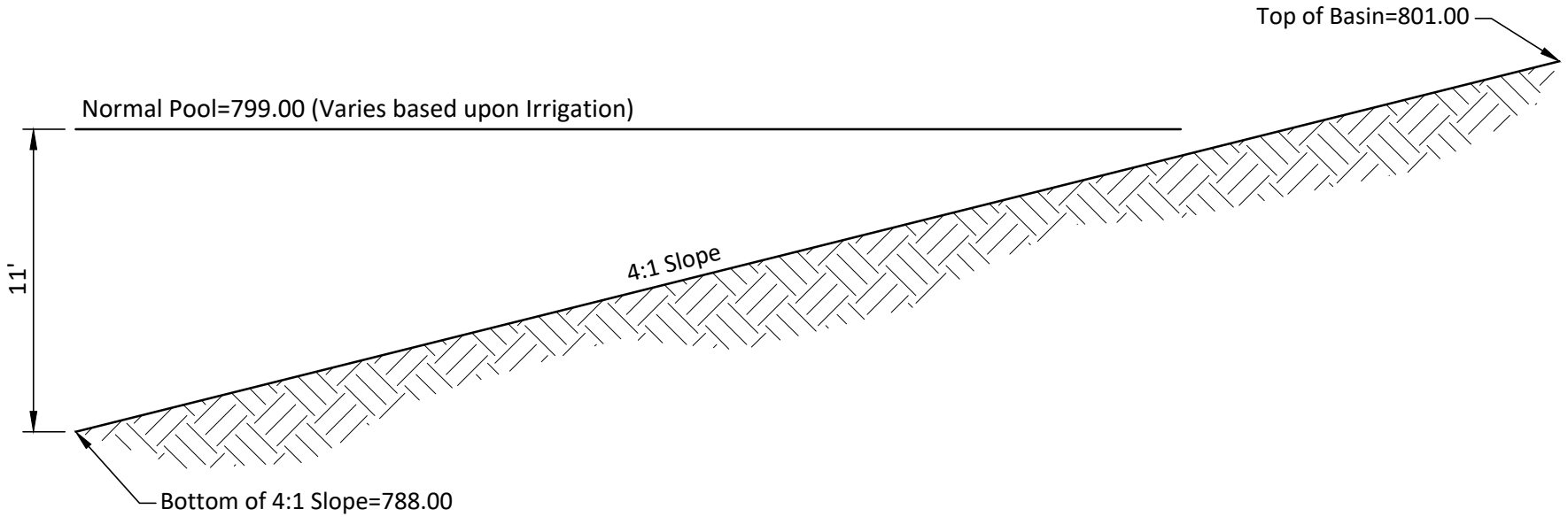
SCALE:	SHEET
As Noted	2/2
CONTRACT DRAWING NO. CC-18786	RECORD PLAN NO.

EMH&T

A legacy of **experience**. A reputation for **excellence**.

APPENDIX C:

Preferred Alternate Plan


Top of Basin=801.00
Normal Pool=799.00 (Varies based upon Irrigation)
11'
4:1 Slope
Bottom of 4:1 Slope=788.00

EMH&T

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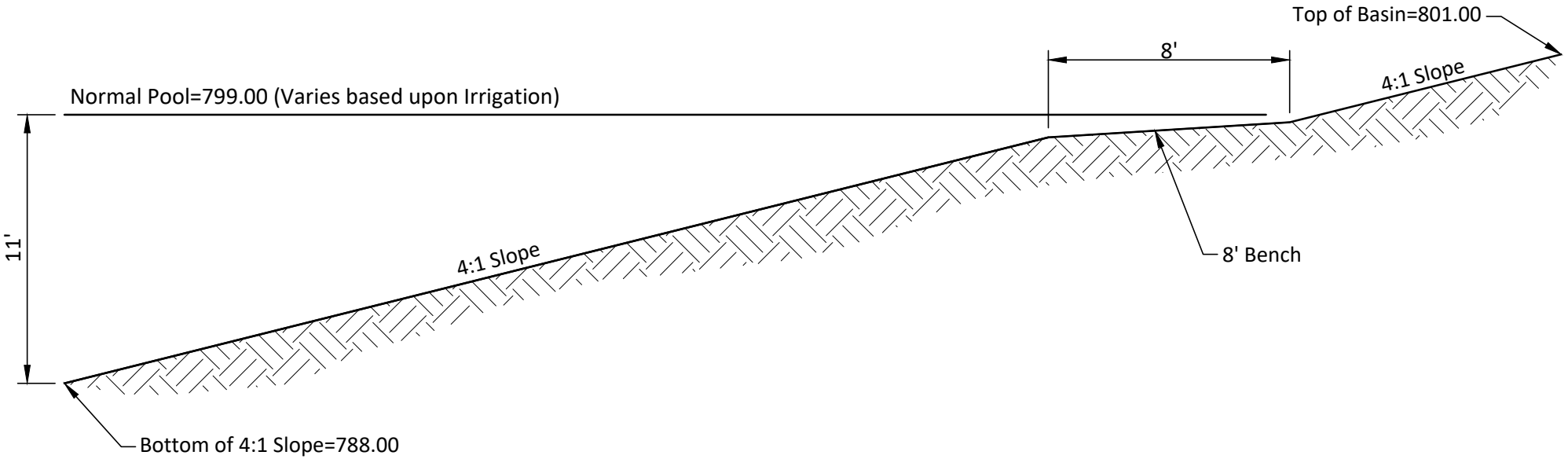
APPENDIX D:

Fully Compliant Plan


Top of Basin=801.00
8'
4:1 Slope
Normal Pool=799.00 (Varies based upon Irrigation)
11'
4:1 Slope
8' Bench
Bottom of 4:1 Slope=788.00