May 2, 2024

Mr. Eugene Melnyk, P.E.
Remediation Engineer
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
700 Delaware Ave
Buffalo, NY 14209

Re: 267 Marilla Street, NYSDEC Site No. C915290
Revised Stormwater Design Report

Dear Mr. Melnyk:

On behalf of our client, American Iron & Metal (AIM) Recycling Erie, we are herein transmitting a copy of the revised Stomwater Design Report for the subject Site. We note that the Design Report has been approved by the Buffalo Sewer Authority as certified on the cover page.

Please be aware that the City of Buffalo, which assumed Lead Agency status under SEQRA, has issued a negative declaration for the proposed redevelopment as a recycling facility following review of the full Environmental Assessment Form (EAF) and supplemental information.

We thank you for your continued assistance on this project.

Sincerely,

ROUX ENVIRONMENTAL ENGINEERING AND GEOLOGY, D.P.C.

Thomas H. Forbes, P.E.
Vice President, Principal Engineer

c:) E. Warren (Roux)

FINAL

STORMWATER DESIGN REPORT

PREPARED FOR CONSTRUCTION ACTIVITIES AT:

American Iron & Metal Recycling Facility Site

267 Marilla Street, Buffalo, NY 14220

REPORT PREPARED FOR:

American Iron & Metal (AIM)

75 Steel City Court, Hamilton, Ontario L8H 3Y2

REPORT PREPARED BY:

Nussbaumer & Clarke, Inc.

3556 Lake Shore Road, Suite 500, Buffalo, NY 14219

(716) 827-8000 ext. 269

BUFFALO SEWER AUTHORITY

APPROVED AS TO STORMWATER MANAGEMENT DESIGN

APPROVED BY:

Rosaleen B. Nogle, P.E., Principal Sanitary Engineer

Reviewed by: rnogle 12/08/2023

1038 City Hall, 65 Niagara Square, Buffalo, NY 14202

22J5-0026

July 2023
Revised October 2023

Full-Service Capabilities Coupled with Local Expertise
3556 Lake Shore Road, Suite 500 | Buffalo, NY 14219
t: 716.827.8000 | f: 716.826.7958 **nussclarke.com**

TABLE OF CONTENTS

1.0 INTRODUCTION

This Stormwater Design Report has been prepared to document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to manage stormwater discharges from the site.

This report will always be kept current so that it accurately documents the erosion and sediment control (E&SC) practices that are being used or will be used during construction. At a minimum, it will be amended whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site; whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and to address issues or deficiencies identified during an inspection by a qualified inspector, NYSDEC or other regulatory agencies.

The Stormwater Management objective is to protect the natural drainage features and the receiving sewer system from any negative impacts by uncontrolled stormwater runoff, both during and after construction. This will be achieved through on-site storage and various temporary and permanent erosion and sediment controls such as sediment filter sock, stabilized construction access, and sediment trapping measures.

The proposed stormwater collection system is designed to reduce and treat the stormwater runoff at the site. The discharge of stormwater will be at a single point to the Buffalo Sewer Authority's (BSA) combined sewer system. Design plans are included in **Appendix A.**

A previous stormwater design was submitted to the BSA and approved on November 16, 2020. However, stormwater infrastructure was only partially installed, and the property was sold to American Iron & Metal (AIM/Owner). Due to integrity issues with the portions of piping that were previously installed coupled with the new Owner's proposed operational layout, a new stormwater collection system was designed. The revised system is presented in this report.

The new stormwater design still utilizes a dry stormwater detention pond to attenuate peak runoff flows that are collected on the parcel. The alignment of stormwater collection trunks have been shifted away from future building foundations and a future railroad spur. As previously approved and undertaken by the former owner, the physical connection to the BSA sewer has been made, but remains valved off from BSA's sewer system. No unmonitored discharge to the BSA will be allowed until all remedial activities are complete, all stormwater infrastructure is in place, and authorization from the BSA has been obtained.

2.0 SITE EVALUATION, ASSESSMENT, AND PLANNING

Project Name:	American Iron & Metal Recycling Facility Site
Project Description:	Metal recycling facility
Project Disturbance:	8.03± acres
Project Location:	**267 Marilla Street** **Buffalo, NY 14220**
County:	Erie County
Project Owner/Operator:	American Iron & Metal (AIM)

2.1 Project Site Information

The site is one parcel measuring approximately 350,000 square feet (8.03+/- acres). The street address is 267 Marilla Street, Buffalo, New York with Tax ID# 133.17-1-4. Coordinates of the property are 42° 50’ 11.19’’N, 78° 49’ 50.52’’W (WGS84). The surrounding area is developed with residences to the north, undeveloped/residences to the east, a railway to the south, and Hopkins Street to the west.

The Site is generally flat with limited topographic features. The United States Geological Survey (USGS) elevation of the site is 593 feet above sea level. The surface of the Site is primarily unpaved with limited buildings and pavement in the northeast portion of the Site. Precipitation currently infiltrates through unpaved areas of the site and enters the groundwater.

2.1.1 Soils

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) online web soils survey, the soils are described as Urban Land (Ud). This characterization indicates that the site is at least 40% covered by asphalt/concrete or other impervious surface. A complete soils report can be found in **Appendix E**.

2.1.2 Receiving Waters

Discharge from the site into BSA’s sewer system would ultimately be conveyed to the Bird Island Treatment Facility where it would be treated and then discharged to the Niagara River.

2.2 Future Site Description

The current Remedial Action Plan (RWP) calls for the installation of a cap system across the entire parcel. This cap will generally consist of a one-foot-thick crushed stone layer on top of a demarcation geofabric. The Owner has indicated that they plan to construct the main recycling facility structure on the northeast corner of the site. The dry detention pond will be located on the southwest corner of the site. A private rail spur is also planned for construction along the south property line.

3.0 APPROACH TO STORMWATER MANAGEMENT

3.1 Dry Stormwater Detention Pond

A dry detention pond is proposed to be constructed at the southwest corner on the site and has been sized to store a maximum volume of 68,655 cf. The pond will be clay-lined to prevent seepage with permeability requirements as specified on the design drawings.

Clay to be utilized for the detention pond will be sourced from a virgin facility permitted by the New York State Department of Environmental Conservation (NYSDEC) or tested in accordance with DER-10 standards to import fill. A request to import the clay material as fill for the detention pond will be submitted to the DEC prior to import.

3.2 Stormwater Piping and Structures

There are 13 catchbasins, 2 stormwater manholes, 1 outlet control structure, and approximately 1,800 linear feet of 6 to 30-inch HDPE stormsewer piping utilized for collection of precipitation and runoff across the site.

3.3 Site Cap

The parcel-wide cap is designed as a 1-foot thick layer of crushed stone in all areas except where existing foundations are designated to remain in place as a part of the cap system. The crushed stone layer will be on top of a geofabric demarcation layer.

3.4 Outlet Control Structure

An Outlet Control Structure has been designed to control the discharge from the Detention Pond for various storm events. As required by the BSA, the pond/outlet structure were designed such that the peak flow for the 25-yr post construction is less than the 2-yr pre construction peak flow. See **Appendix C** for the HydroCAD model outputs.

3.5 Water Quality Unit

Downstream of the Outlet Control Structure, and prior to the discharge into BSA's sewer system, a water quality unit will function as:

- an oil/water separator
- cartridge filter
- sediment collection

3.6 ES&C

Erosion and sediment control measures will be incorporated on the site throughout construction. The measures include sediment filter sock, stabilized construction access, and sediment traps at the pond inlets and outlets.

E&SC drawings, details, and specifications are found in **Appendix A** of this report.

4.0 GREEN INFRASTRUCTURE PRACTICES

Due to the environmental conditions of the site subsoils, infiltration practices are not practicable and therefore are not being utilized. Migration of groundwater is a concern as evidenced by the installation of Vertical Hydraulic Barriers that are part of the RWP. The proposed course of action is to intercept precipitation at the surface, convey it through a watertight stormwater collection system, and control the peak flow from the site utilizing a clay-lined detention pond and outlet structure.

5.0 POLLUTION PREVENTION MEASURES

5.1 Waste Disposal

5.1.1 Waste Materials

Waste materials will be collected and stored in a securely lidded metal dumpster(s) procured from a licensed solid waste disposal management company. All trash and construction debris from the site will be stored in the dumpster. The dumpster will be emptied regularly, and the waste will be hauled to a solid waste management facility. No construction waste materials, including building materials, stormwater pollutants, sediment, toxic chemicals, bacteria, nutrients, oxygen demand, oils/ grease/ hydrocarbons, litter, and metals, will be discharged to any water of the United States.

5.1.2 Hazardous Waste

Hazardous waste will be disposed of in the manner specified by local or state regulations. The NYSDEC has been present on site for all previous remediation work and will continue that role through the construction of this project in accordance with the RWP.

5.1.3 Sanitary Waste

Sanitary waste will be collected from portable units, as needed, by a licensed sanitary waste management contractor as required by local, county, and state regulations.

5.1.4 Off-Site Vehicle Tracking

Sediment and the generation of dust will be minimized via dust control measures, and the use of a stabilized construction entrance. Additionally, dump trucks hauling any material to or from the construction site shall have the load covered with a tarpaulin.

5.2 General Material Management Practices

These practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

5.2.1 Best Management

- Efforts will be made to store on-site only enough product to do the job.

- When not in use, all materials on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Chemicals shall be apportioned within the designated storage area as much as practical.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, the entirety of a product will be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The site superintendent/contractor will inspect the site daily to ensure proper use and disposal of materials.

5.2.2 Hazardous Products

- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data sheets (MSDS) will be retained.
- If surplus product must be disposed of, it will be disposed of in the manner specified by local or state regulations or, in their absence, in the manner specified by the manufacturer.
- Keep dumpsters, construction related chemicals, and construction related washwaters away from environmentally sensitive areas and buffers, waterbodies, watercourses, areas of concentrated flow, flooded areas, and storm drain inlets.

5.3 Product Specific Practices

The following product specific practices will be followed on-site:

5.3.1 Petroleum Products

All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled.

5.3.2 Concrete Trucks

Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water directly into active portions of the construction site. Surplus concrete or drum wash water must be discharged into impervious wash out areas (wash basins) and be removed and disposed of at least once per day.

5.4 Spill Control Practices

- Manufacturer's recommended methods for spill cleanup, as well as materials and equipment necessary for spill cleanup will be clearly posted, and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- All spills will be cleaned up immediately after discovery.
- Any spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

- Spills of toxic or hazardous materials will be reported immediately to the appropriate State and/or local government agency, and/or the local fire department regardless of the size of the spill.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one.
- The site superintendent responsible for day-to-day operations will be the spill prevention and cleanup coordinator. They will designate other personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for phase(s) of prevention cleanup.

6.0 EROSION AND SEDIMENT CONTROLS

The New York State Standards and Specifications for Erosion and Sediment Control (Latest Edition) is to be utilized where additional information is required with respect to any of the measures described below. In addition, the following measures are to be implemented in compliance with the standards and requirements of the NYSDEC.

Erosion and sediment controls and pollution prevention measures will be selected, designed, installed, implemented and maintained in order to minimize the discharge of pollutants and prevent a violation of the water quality standards.

The erosion and sediment component of this report will conform to, and be implemented in a manner consistent with, the "*New York State Standards and Specifications for Erosion and Sediment Control*" (latest edition). The erosion and sediment control measures and design specifications summarized below will be implemented at the construction site. The Erosion and Sediment Control Plans for this project are included in **Appendix A**.

6.1 Stabilization

Specific to this remediation site, stabilization is understood to mean that all below grade structures and piping have been installed and the 1-foot-thick approved capping system has been completed.

6.2 Inspection and Maintenance Practices

The following inspection and maintenance practices will be used to maintain erosion and sediment controls.

- The Contractor will inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are always being maintained in effective working conditions. Correction of any deficiencies will be initiated within one business day of discovery and will be completed in a reasonable time frame.
- The Contractor can stop conducting maintenance inspections for the site after receiving approval from the NYSDEC and final site stabilization measures have been applied.

6.3 Sequence of Major Activities

1. Construct stabilized construction entrance and determine material holding area.
2. Install temporary erosion and sediment control measures. A Qualified Inspector will inspect all erosion and sediment control practices weekly. Needed repairs or modifications shall be made as soon as reasonably practical.
3. Installation of the Vertical Hydraulic Barriers (VHB).
4. Begin construction and excavation operations including clearing, rough grading, and stockpiling.
5. Complete installation of stormwater collection piping, structures, and detention pond.
6. Complete installation of the cap.
7. Temporary erosion and sediment controls may be removed when permanent stabilization measures have been achieved.

6.4 Erosion and Sediment Control Activities

Type	Activities	Control Measures	Start Date	End Date	Maintenance Actions
Runoff Control	Perimeter Sediment Controls	Sediment filter sock, stabilized construction entrance	Fall 2023	Spring 2024	See E&SC Plans
Sediment Management	Inlet Protection	Inlet protection at all catchbasins, sediment traps at pond inlets and outlets	Fall 2023	Spring 2024	See E&SC Plans

6.5 Site Inspection Requirements

Following the commencement of construction, site inspections will be conducted by a ***Qualified Inspector*** and inspections will include:

1. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period.
2. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization.
3. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period.
4. Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume (for example, 10 percent, 20 percent, and 50 percent).
5. Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (geotextile filter bag or compost filter sock).
6. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Document all deficiencies that are identified.
7. Maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on site and be made available to the permitting authority upon request. It is the responsibility of the individual contractor/operator to provide the inspection logbook.

APPENDIX A

DESIGN DRAWINGS

AMERICAN IRON AND METAL (AIM)

267 MARILLA STREET (207 MARILLA STREET)

CITY OF BUFFALO, ERIE COUNTY
STATE OF NEW YORK
SEPTEMBER 2023

LOCATION MAP
NOT TO SCALE

LIST OF DRAWINGS	
DWG	TITLE
G-100	COVER SHEET
G-101	GENERAL NOTES
C-101	EXISTING CONDITIONS PLAN
C-102	PROPOSED SITE PLAN
C-103	PROPOSED GRADING AND DRAINAGE PLAN
C-104	PROPOSED DETENTION BASIN AND OUTLET PROFILE
C-105	EROSION AND SEDIMENT CONTROL PLAN
C-501	STORM DETAILS
C-502	EROSION AND SEDIMENT CONTROL DETAILS

STATE OF NEW YORK
MICHAEL T. MAZA
No. 078995
LICENSED PROFESSIONAL ENGINEER

NUSSBAUMER & CLARKE, INC.
ENGINEERS AND SURVEYORS
EST. 1933
3556 Lake Shore Road, Suite 500 | Buffalo, NY 14219
(716) 827-8000 | (716) 826-7958 fax
www.nussclarke.com

22J5-0026

H:\Land Development\22\0026 - Benchmark - AIM Recycling\05 Working Drawings\02 Discipline (DWG)\G-General\G-100 COVER SHEET.dwg, 9/15/2023 CROHRICH

GENERAL NOTES:

1. TOPOGRAPHIC SURVEY COMPLETED BY GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP ON 12/18/2015. JOB NO. 15098.0. COORDINATES ARE NYS STATE PLANE NAD83 WEST ZONE. ELEVATIONS ARE REFERENCED TO NAVD88.
2. UPDATED SURFACE ELEVATION SURVEY AND IMAGERY COMPLETED BY NUSSBAUMER & CLARKE, INC. ON 05/08/2023. COORDINATES ARE NYS STATE PLANE NAD83 WEST ZONE. ELEVATIONS ARE REFERENCED TO NAVD88.
3. LOCATIONS OF ANY UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF SUCH UTILITIES, PROTECTING ALL EXISTING UTILITIES AND REPAIRING ANY DAMAGE DONE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE COORDINATION WITH UTILITY COMPANIES AND PUBLIC AGENCIES AND FOR OBTAINING ALL REQUIRED PERMITS AND PAYING ALL REQUIRED FEES.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ALL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE EXTENT OF EXCAVATION AND DEMOLITION REQUIRED TO RECEIVE SITE IMPROVEMENTS.
6. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE GENERAL CONTRACTOR ON "AS-BUILT" DRAWINGS.
7. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS OUTSIDE THE PROJECT LIMITS, SHALL BE RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.
8. ALL KNOWN EXISTING STATE, COUNTY AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND ARE INDICATED ON THE PLANS.
9. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT HIS EMPLOYEES, AS WELL AS PUBLIC USERS FROM INJURY DURING THE ENTIRE CONSTRUCTION PERIOD USING ALL NECESSARY SAFEGUARDS, INCLUDING BUT NOT LIMITED TO, THE ERECTION OF TEMPORARY WALKS, STRUCTURES, PROTECTIVE BARRIERS, COVERING, OR FENCES AS NEEDED.
10. THE CONTRACTOR SHALL CALL UDIG NY AT LEAST 72 HOURS, SATURDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION.
11. CONTRACTOR'S STAGING AREA MUST BE WITHIN THE CONTRACT LIMIT LINE AND IN AREAS APPROVED BY OWNER. ANY OTHER AREAS THAT THE CONTRACTOR MAY WISH TO USE FOR STAGING MUST BE COORDINATED WITH THE OWNER.
12. THE CONTRACTOR SHALL KEEP ALL STREETS, PARKING LOTS AND WALKS THAT ARE NOT RESTRICTED FROM PUBLIC USE DURING CONSTRUCTION BROOM CLEAN AT ALL TIMES. THE CONTRACTOR SHALL USE ACCEPTABLE METHODS AND MATERIALS TO MAINTAIN ADEQUATE DUST CONTROL THROUGHOUT CONSTRUCTION.
13. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER AND ENGINEER.
14. CONTRACTOR SHALL DEWATER AS NECESSARY TO PERFORM THE PROPOSED WORK. ANY DEWATERING ON-SITE SHALL BE SUBJECT TO THE CONDITIONS OF THE BSA TEMPORARY DISCHARGE PERMIT.
15. CATCH BASINS AND WATER QUALITY TREATMENT UNIT SHALL BE CLEANED FOLLOWING CONSTRUCTION AND SHALL FOLLOW THE OPERATION AND MAINTENANCE PLAN THEREAFTER.
16. HAULING OF EARTH MATERIALS TO AND FROM THE SITE SHALL BE COORDINATED THROUGH ROUX ENVIRONMENTAL.

GRADING, DRAINAGE AND UTILITY NOTES:

1. ALL WORK RELATING TO INSTALLATION, RENOVATION OR MODIFICATION OF STORM SEWER INFRASTRUCTURE SHALL BE PERFORMED IN ACCORDANCE WITH THE PLANS.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.
3. ALL UTILITY GRATES, COVERS OR OTHER SURFACE ELEMENTS INTENDED TO BE EXPOSED AT GRADE SHALL BE FLUSH WITH THE ADJACENT FINISHED GRADE AND ADJUSTED TO PROVIDE A SMOOTH TRANSITION AT ALL EDGES.
4. THE CONTRACTOR SHALL SET SUBGRADE ELEVATIONS TO ALLOW FOR POSITIVE DRAINAGE AND PROVIDE EROSION CONTROL DEVICES, STRUCTURES, MATERIALS AND CONSTRUCTION METHODS TO DIRECT SILT MIGRATION AWAY FROM DRAINAGE AND OTHER UTILITY SYSTEMS, PUBLIC/PRIVATE STREETS AND WORK AREAS. CLEAN BASINS REGULARLY AND AT THE END OF THE PROJECT.
5. EXCAVATION REQUIRED WITHIN PROXIMITY OF KNOWN EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.

EROSION AND SEDIMENT CONTROL SEQUENCE OF OPERATIONS

1. INSTALL EROSION AND SEDIMENT CONTROLS PER THE DRAWINGS.
2. EROSION AND SEDIMENT CONTROLS ARE TO BE REMOVED AS THEIR USEFULNESS DIMINISH. AT ALL INSTANCES, NOTIFY THE ENGINEER BEFORE REMOVAL OF ANY EROSION AND SEDIMENT CONTROL DEVICE OR MECHANISM.

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO THE INITIATION OF GRADING, AND/OR EXCAVATION.
2. DURING CONSTRUCTION, ALL SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED AFTER EACH RAINFALL AND REPAIRED IF NECESSARY. SEDIMENT TO BE REMOVED TO A SUITABLE DISPOSAL AREA.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEDIMENT AND CONTROL MEASURES UNTIL DISTURBED AREAS ARE STABILIZED.

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AMERICAN IRON AND METAL (AIM)
267 MARILLA STREET, BUFFALO NY
GENERAL NOTES

REVISIONS

No.	DESCRIPTION	DATE
1	CITY OF BUFFALO SUBMISSION	09/08/23

NUSSBAUMER & CLARKE, INC.
A CORPORATION REGISTERED TO PRACTICE PROFESSIONAL ENGINEERING & LAND SURVEYING IN THE STATE OF NEW YORK
CERTIFICATE NO. 027

STATE OF NEW YORK · MICHAEL T. MARINO · No. 078995 · LICENSED PROFESSIONAL ENGINEER

PROJECT NUMBER	22J5-0026
DATE	2023-08-30
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	DMB
APPROVED BY	MTM
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	2 OF 9

G-101

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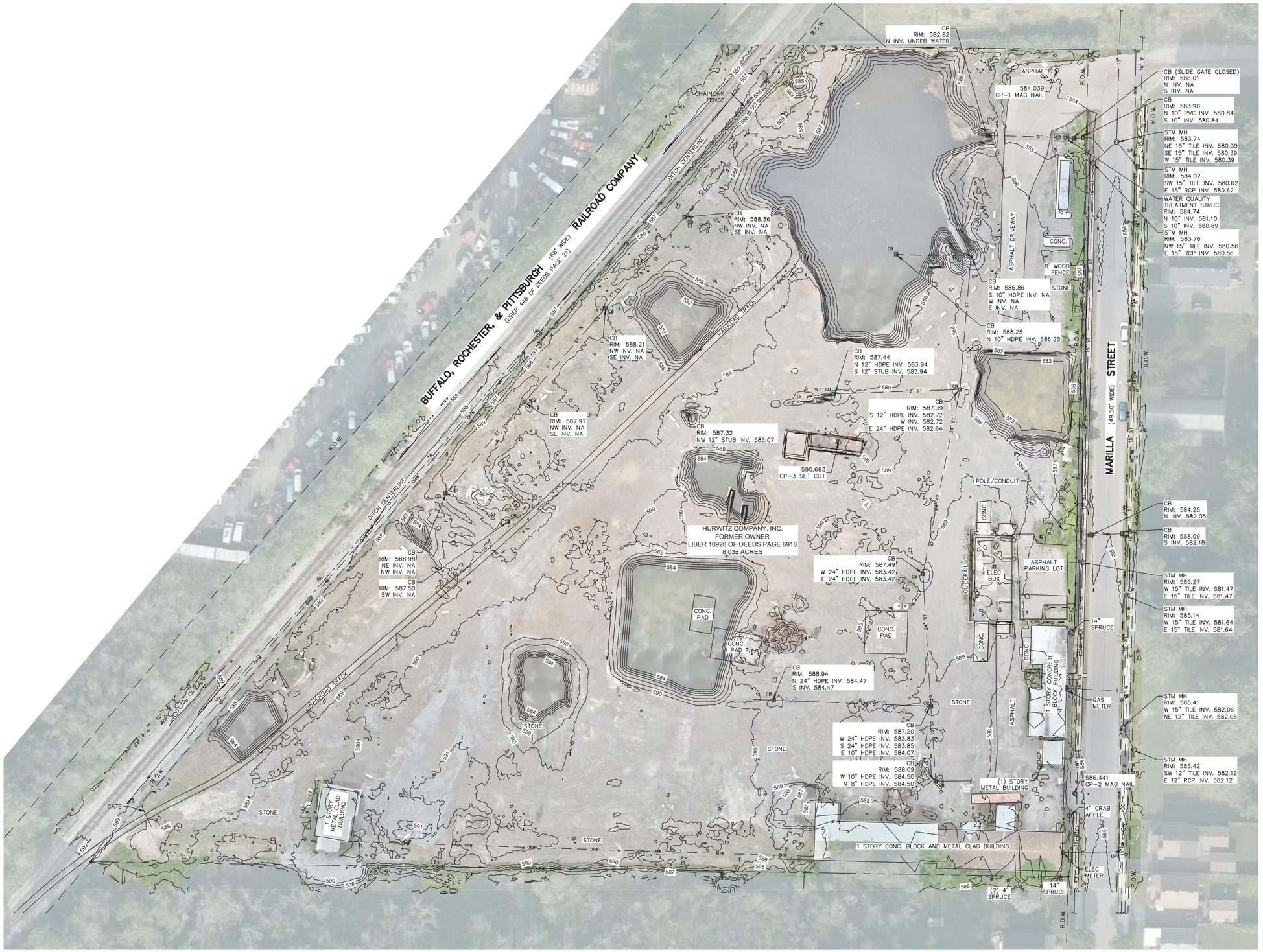

A1 **EXISTING CONDITIONS PLAN**
SCALE: 1" = 40'-0"

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AMERICAN IRON AND METAL (AIM)

267 MARILLA STREET, BUFFALO NY

EXISTING CONDITIONS PLAN

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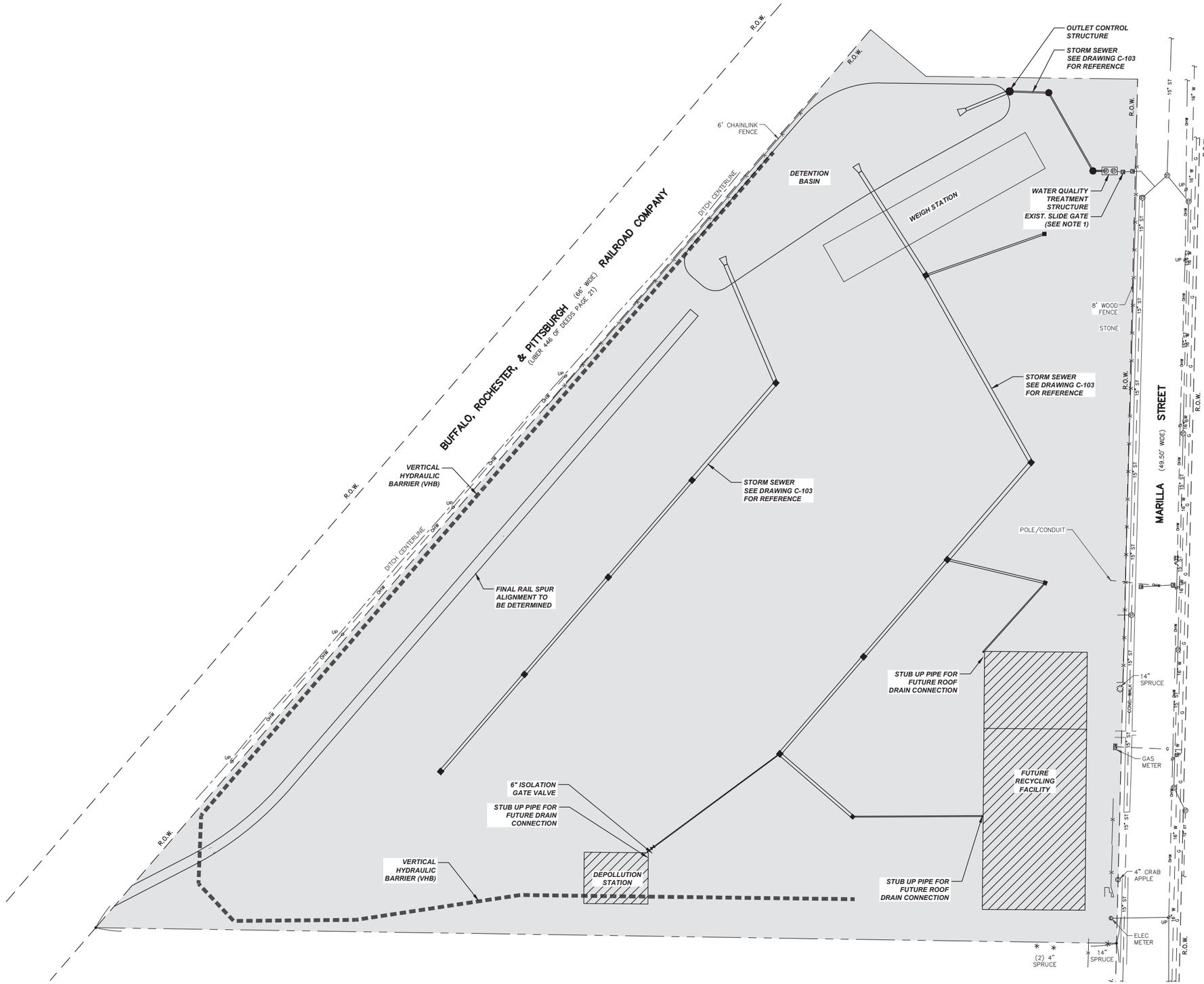
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	3 OF 9

C-101

H:\Land Development\22\0026 - Benchmark - AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\C-101 EXISTING CONDITIONS PLAN.dwg 9/8/2023 CRROHRICH



A1 **PROPOSED SITE PLAN**
SCALE: 1" = 40'-0"

0 20 40 80 ft
SCALE: 1" = 40'

LEGEND:

- LIMITS OF CAP
- MANHOLE
- CATCH BASIN

NOTES:

1. SLIDE GATE CLOSED THRU SUBSTANTIAL COMPLETION OF CONSTRUCTION. VALVE SHALL NOT BE OPENED WITHOUT AUTHORIZATION FROM THE BUFFALO SEWER AUTHORITY.

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AMERICAN IRON AND METAL (AIM)
267 MARILLA STREET, BUFFALO NY
PROPOSED SITE PLAN

REVISIONS

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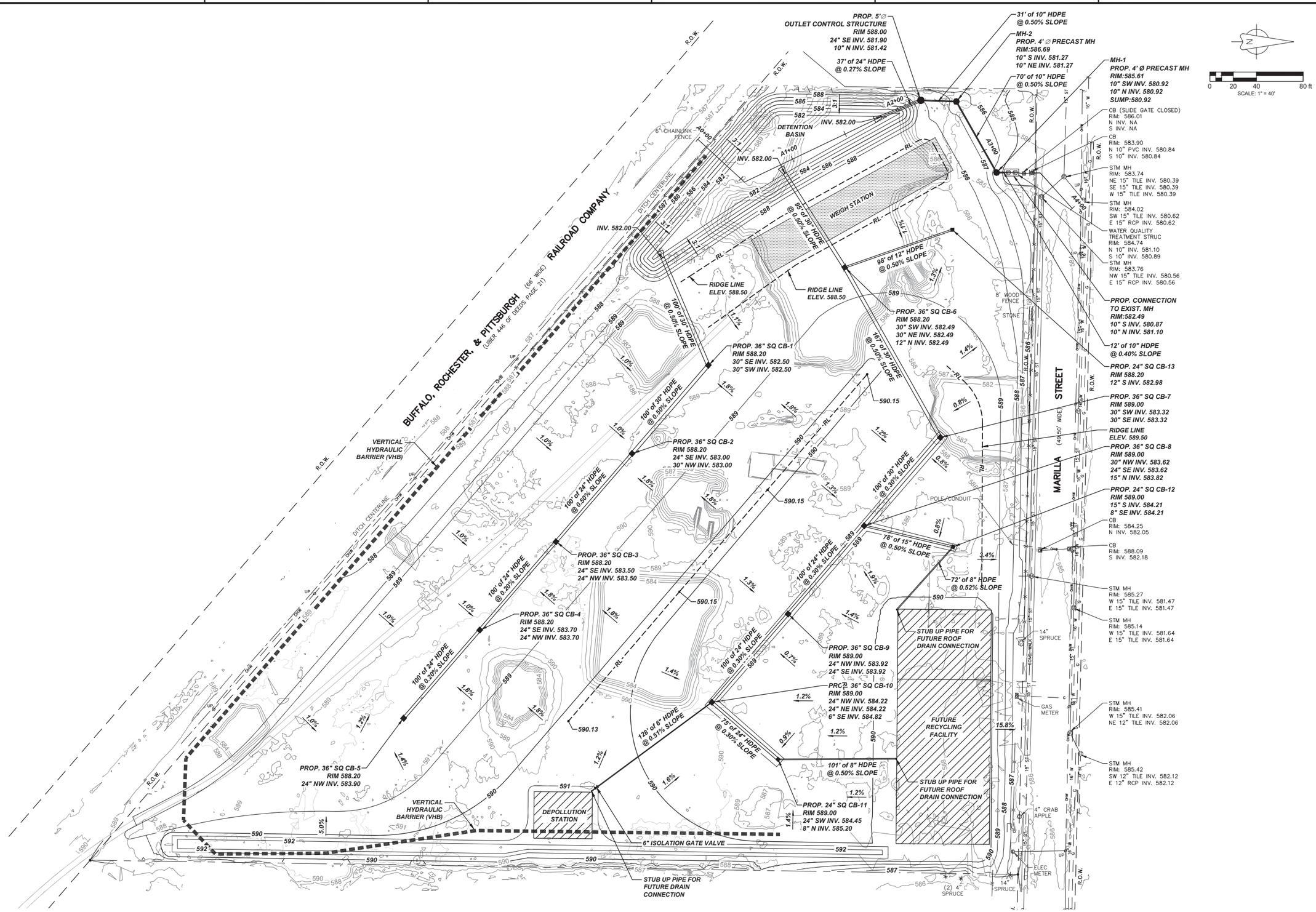
C-102

H:\Land Development\22\0026 - Benchmark - AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\C-102 PROPOSED SITE PLAN.dwg 9/8/2023 CRORICH



A1 PROPOSED GRADING AND DRAINAGE PLAN
SCALE: 1" = 40'-0"

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AMERICAN IRON AND METAL (AIM)

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PROPOSED GRADING AND DRAINAGE PLAN

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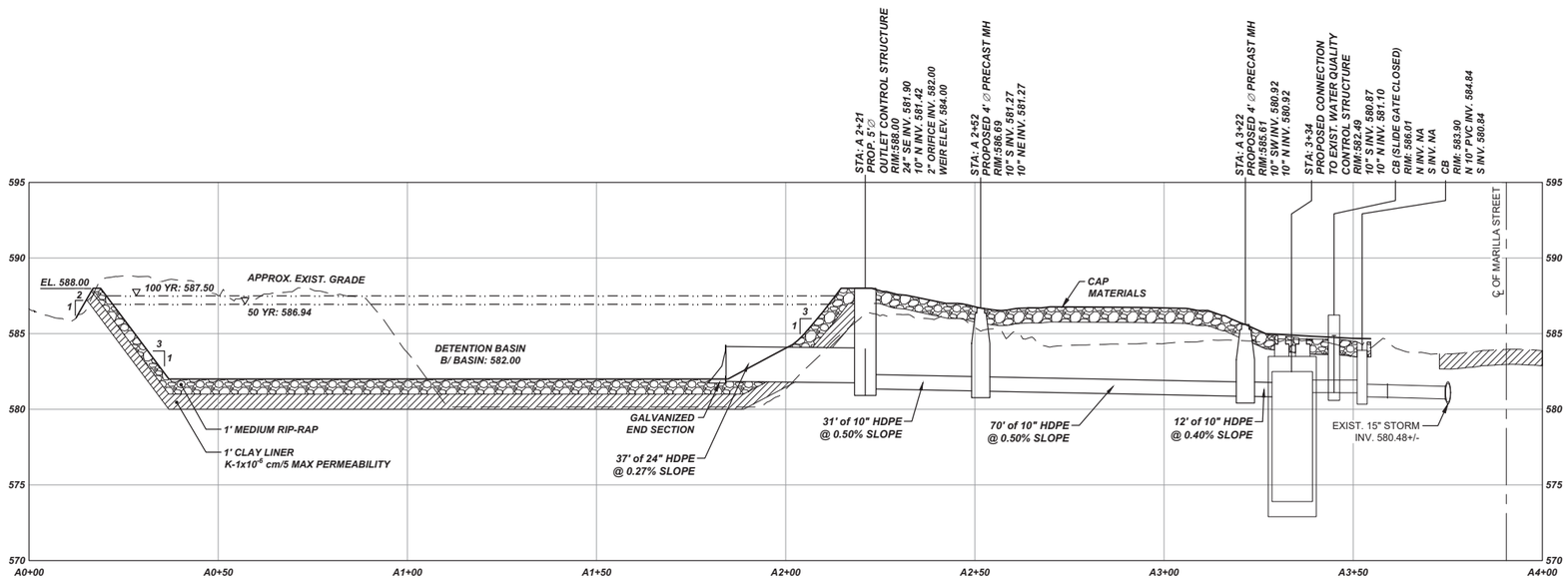
SHEET No.	5 OF 9

C-103

H:\Land Development\22J\0026 – Benchmark – AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\C-103 PROPOSED GRADING AND DRAINAGE_PLAN.dwg 9/8/2023 CROHRICH



C1 SECTION A-A

SCALE: H:1" = 20' V:1" = 5'

NUSSBAUMER & CLARKE, INC.
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AMERICAN IRON AND METAL (AIM)

267 MARILLA STREET, BUFFALO NY

PROPOSED DETENTION BASIN AND OUTLET PROFILE

REVISIONS

No.	DESCRIPTION	DATE
1	CITY OF BUFFALO SUBMISSION	09/08/23

PROJECT NUMBER	22J5-0026
DATE	2023-08-30
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	DMB
APPROVED BY	MTM
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	6 OF 9

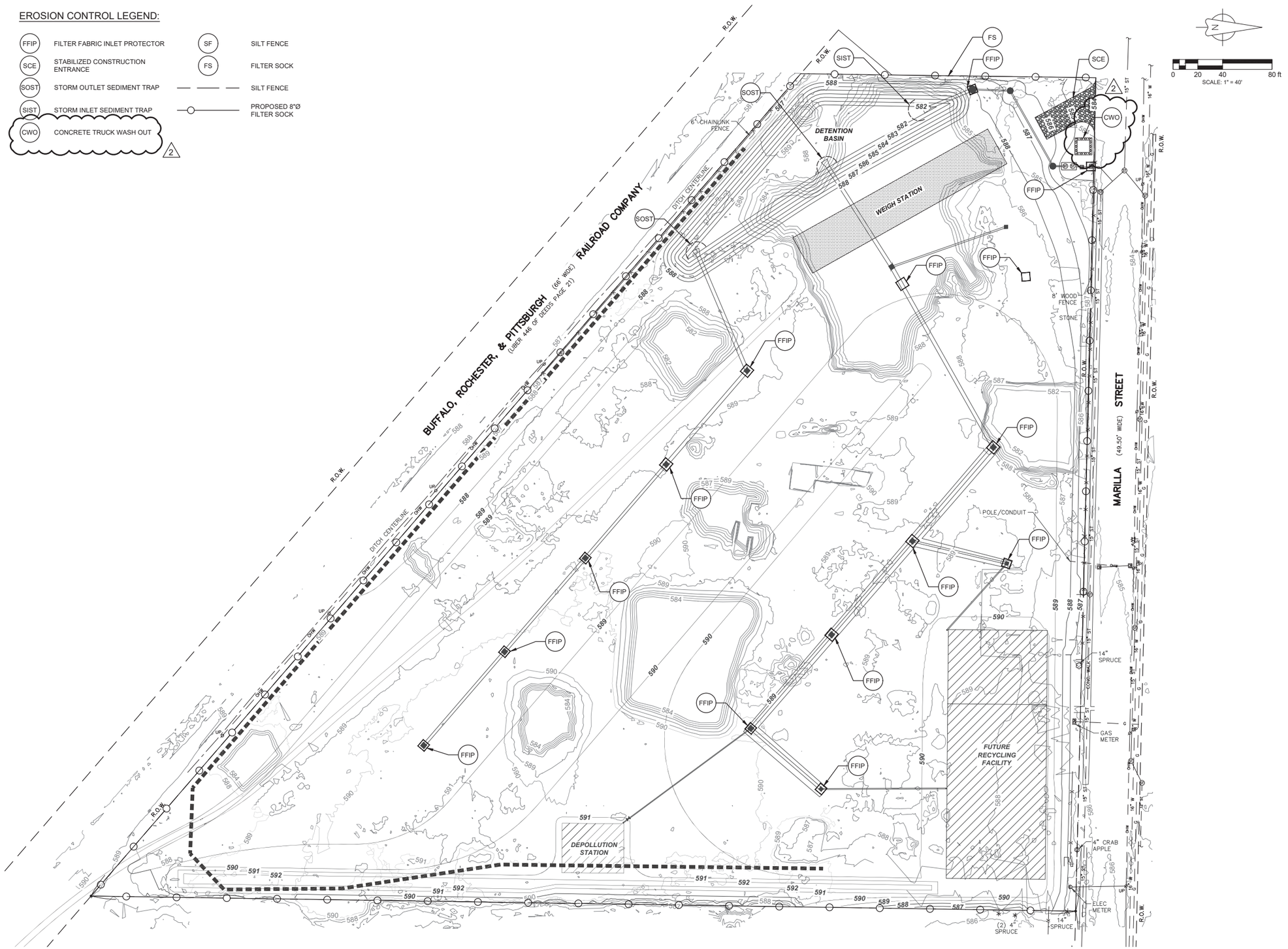
C-104

H:\Land Development\22\0026 - Benchmark - AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\C-104 PROPOSED DETENTION BASIN AND OUTLET PROFILE.dwg 9/8/2023 CROHRICH

EROSION CONTROL LEGEND:

FFIP	FILTER FABRIC INLET PROTECTOR	SF	SILT FENCE
SCE	STABILIZED CONSTRUCTION ENTRANCE	FS	FILTER SOCK
SOST	STORM OUTLET SEDIMENT TRAP		SILT FENCE
SIST	STORM INLET SEDIMENT TRAP		PROPOSED 8"Ø FILTER SOCK
CWO	CONCRETE TRUCK WASH OUT		

△2



A1 EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 40'-0"

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AMERICAN IRON AND METAL (AIM)

267 MARILLA STREET, BUFFALO NY

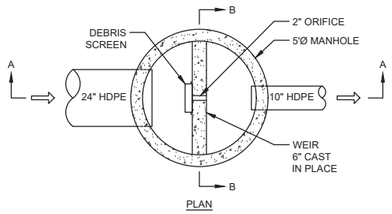
EROSION AND SEDIMENT CONTROL PLAN

REVISIONS		
No.	DESCRIPTION	DATE
1	CITY OF BUFFALO SUBMISSION	09/08/23
△2	ADDED CONC. TRUCK WASH OUT	10/13/23

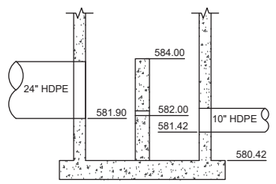
PROJECT NUMBER	22J5-0026
DATE	2023-08-30
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	DMB
APPROVED BY	MTM
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	7 OF 9

C-105

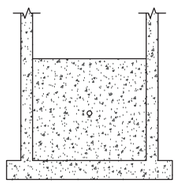
H:\Land Development\22\0026 – Benchmark – AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C–Civil\C–105 EROSION AND SEDIMENT CONTROL PLAN.dwg 10/12/2023 GROHRICH



PLAN



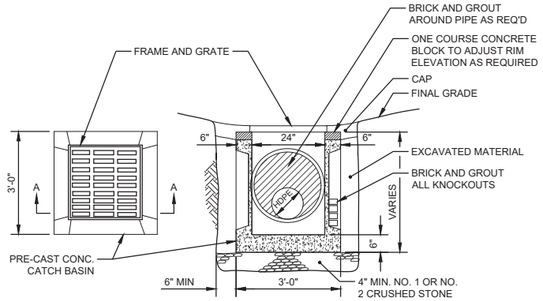
SECTION A-A



SECTION B-B

C4 OUTLET CONTROL STRUCTURE

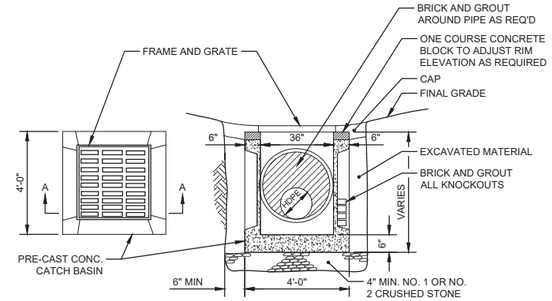
SCALE: NOT TO SCALE



TOP VIEW SECTION A-A

C3 24" SQ CATCH BASIN

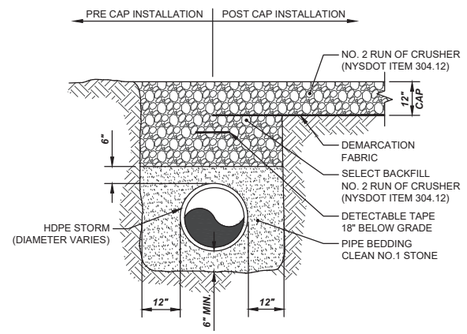
SCALE: NOT TO SCALE



TOP VIEW SECTION A-A

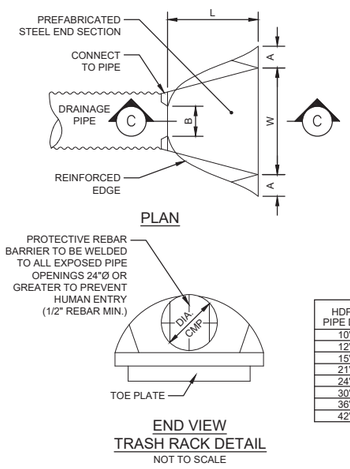
C5 36" SQ CATCH BASIN

SCALE: NOT TO SCALE



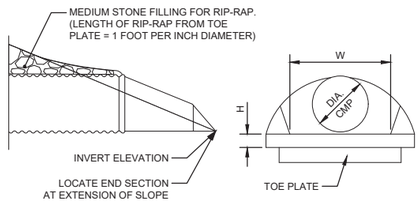
A1 TYPICAL STORM TRENCH

SCALE: NOT TO SCALE



PLAN

END VIEW
TRASH RACK DETAIL
NOT TO SCALE



SECTION C

END VIEW

HDPE PIPE DIA.	CMP PIPE DIA.	GAGE	DIMENSIONS, INCHES					APPROX. SLOPE	BODY
			A	B	H	L	W		
10"	12"	16	6-1/2	6-1/2	6	21	24	2-1/2	1-PC.
12"	15"	16	7-1/2	8	6	26	30	2-1/2	1-PC.
15"	18"	16	8	8	6	31	36	2-1/2	1-PC.
21"	24"	16	10	13	6	41	48	2-1/2	1-PC.
24"	30"	14	12-1/4	12-1/2	8	51	57	2-1/2	2-PC.
30"	36"	14	14-1/2	12	9	60	72	2-1/2	2-PC.
36"	42"	12	17	11	10-1/2	69	84	2-1/2	2-PC.
42"	48"	12	18-1/2	29	12	79	90	2-1/4	2-PC.

A2 END SECTION DETAIL

SCALE: NOT TO SCALE

STONE FILLING ITEM	SEE NOTES	STONE SIZE	PERCENT OF TOTAL BY WEIGHT	NYSDOT ITEM NO.
MEDIUM	1, 2	HEAVIER THAN 100 POUNDS	50-100	620.04
		SMALLER THAN 6-INCH	0-10	

NOTES:

1. MATERIALS SHALL CONTAIN LESS TAHN 20 PERCENT OF STONES WITH A RATIO OF MAXIMUM TO MINIMUM DIMENSIONS GREATER THAN THREE.
2. MATERIALS SHALL CONTAIN A SUFFICIENT AMOUNT OF STONES SMALLER THAN THE AVERAGE STONE SIZE TO FILL IN THE SPACES BETWEEN THE LARGER STONES.

A5 MEDIUM STONE RIP-RAP

SCALE: NOT TO SCALE

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AMERICAN IRON AND METAL (AIM)

267 MARILLA STREET, BUFFALO NY

STORM DETAILS

REVISIONS

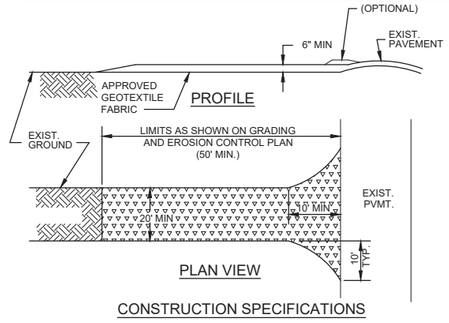
No.	DESCRIPTION	DATE
1	CITY OF BUFFALO SUBMISSION	09/08/23

NUSSBAUMER & CLARKE, INC.
A CORPORATION REGISTERED TO PRACTICE PROFESSIONAL ENGINEERING & LAND SURVEYING IN THE STATE OF NEW YORK
CERTIFICATE NO. 027

PROJECT NUMBER	22J5-0026
DATE	2023-08-30
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	DMB
APPROVED BY	MTM
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	8 OF 9

C-501

H:\Land Development\22\0026 – Benchmark – AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\C-501 STORM DETAILS.dwg 9/8/2023 CROHRICH

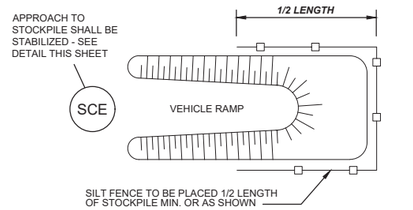


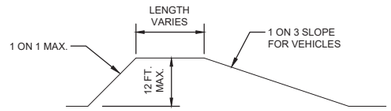
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQ'D, BUT NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESI-DENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TEN (10) 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. FILTER WILL NOT BE REQ'D ON A SINGLE FAMILY RESIDENCE LOT.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 1:5 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. 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 PUBIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQ'D, 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 EVENT.

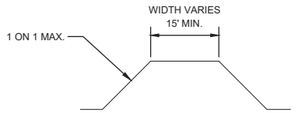
C1 STABILIZED CONSTRUCTION ENTRANCE DETAILS — SCE

SCALE: NOT TO SCALE



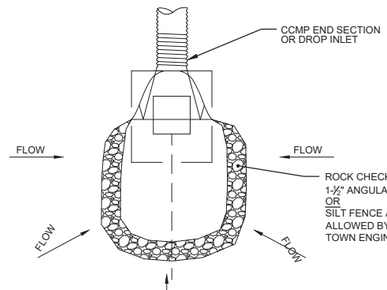


LONGITUDINAL VIEW



C2 TOPSOIL STOCKPILE — TS

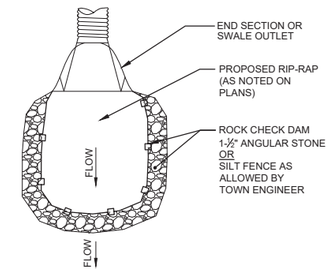
SCALE: NOT TO SCALE



1. SEDIMENT SHALL BE REMOVED WHEN IT HAS ACCUMULATED TO A DEPTH OF WHERE THE RIP-RAP IS NOT VISIBLE AND/OR NO LONGER FUNCTIONS AS A FLOW DISSIPATER. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN EVENT, AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE CONSTRUCTED DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

D4 STORM INLET SEDIMENT TRAP — SIST

SCALE: NOT TO SCALE



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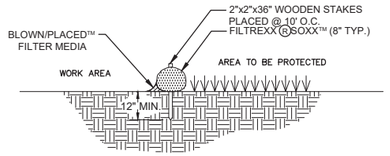
D5 STORM OUTLET SEDIMENT TRAP — SOST

SCALE: NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQ'D, BUT NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESI-DENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
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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 1:5 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. 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 PUBIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
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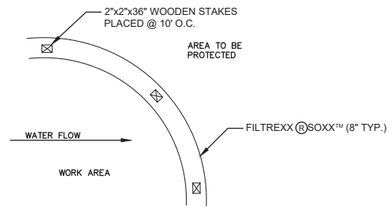
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.

C1 STABILIZED CONSTRUCTION ENTRANCE DETAILS — SCE

SCALE: NOT TO SCALE

SECTION



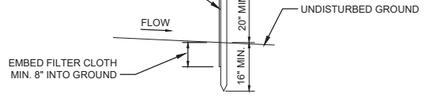
PLAN

NOTES:

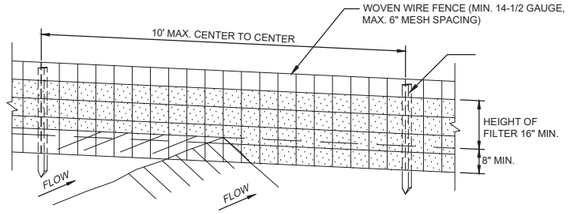
1. ALL MATERIALS TO MEET FILTREXX SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIALS TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

A1 FILTREXX® SEDIMENT CONTROL — FS

SCALE: NOT TO SCALE



SECTION



PERSPECTIVE VIEW

CONSTRUCTION SPECIFICATIONS

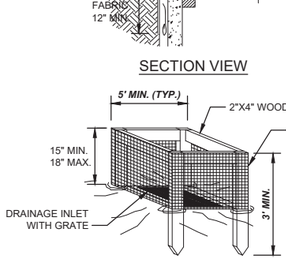
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO (2) SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX (6) INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS:
STEEL EITHER T OR U TYPE OR 2"X2" HARDWOOD.
FENCE:
WOVEN WIRE, 14-1/2 GA. 6" MAX. MESH OPENING.
FILTER CLOTH:
FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL.
PREFABRICATED UNIT:
GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

CONTRACTOR HAS THE OPTION TO USE FILTREXX SEDIMENT CONTROL "SOXX" IN PLACE OF OR COMBINED WITH SILT FENCE AT HIS/HER DISCRETION. SEE DETAIL THIS SHEET.

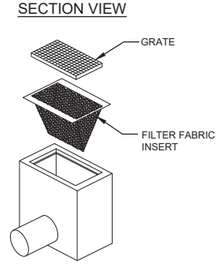
A2 SILT FENCE DETAILS — SF

SCALE: NOT TO SCALE



PERSPECTIVE VIEW

SILT FENCE INLET PROTECTION (FOR UNPAVED AREAS)



PERSPECTIVE VIEW

FILTER FABRIC INLET PROTECTION (FOR PAVED AREAS)

SILT FENCE INLET PROTECTION NOTES:

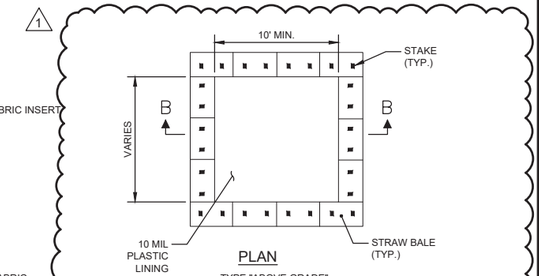
1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"X4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2"X4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

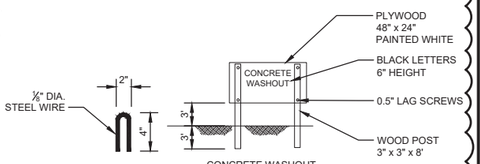
FILTER FABRIC INLET PROTECTION NOTES:

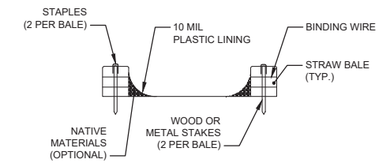
1. INSPECT ON A WEEKLY BASIS AND REMOVE SILT AS NECESSARY.

A4 FILTER FABRIC INLET PROTECTION DETAIL — FFIP

SCALE: NOT TO SCALE







SECTION B-B

NOTES:

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

A5 CONCRETE TRUCK WASH OUT — CWO

SCALE: NOT TO SCALE

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EST. 1933
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AMERICAN IRON AND METAL (AIM)

267 MARILLA STREET, BUFFALO NY

EROSION AND SEDIMENT CONTROL DETAILS

REVISIONS

No.	DESCRIPTION	DATE
1	CITY OF BUFFALO SUBMISSION	09/08/23
1	ADDED CONC. WASHOUT DETAIL	10/13/23

NUSSBAUMER & CLARKE, INC.
A CORPORATION REGISTERED TO PRACTICE PROFESSIONAL ENGINEERING & LAND SURVEYING IN THE STATE OF NEW YORK
CERTIFICATE NO. 027

STATE OF NEW YORK · MICHAEL T. MARINO · No. 078995 · LICENSED PROFESSIONAL ENGINEER

UNAUTHORIZED ALTERATION OR ADDITION TO THIS ENGINEERING DRAWING IS A VIOLATION OF SECTION 7209. PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

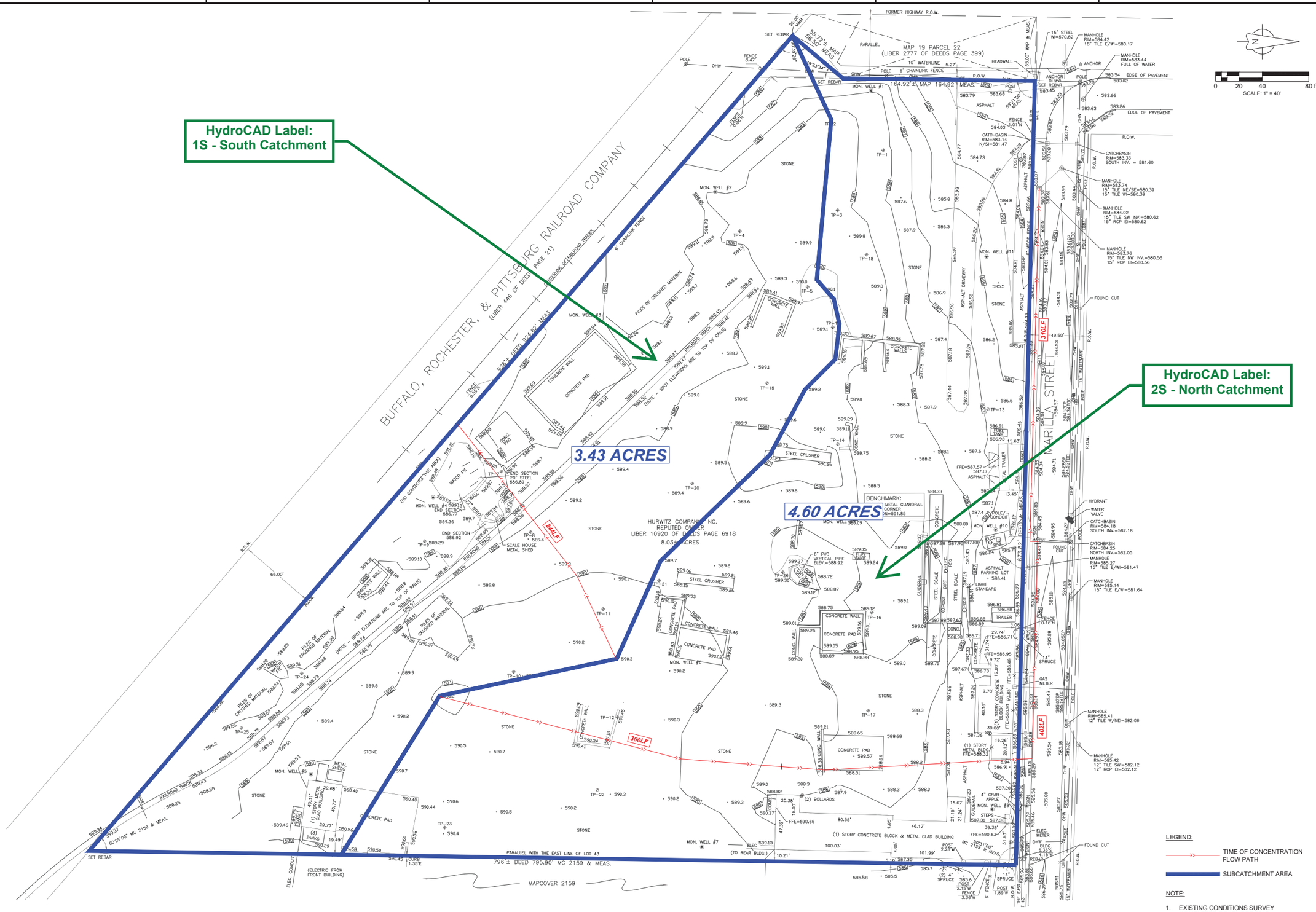
PROJECT NUMBER	22J5-0026
DATE	2023-08-30
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	DMB
APPROVED BY	MTM
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	9 OF 9

C-502

H:\Land Development\22\0026 – Benchmark – AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\C-502 EROSION AND SEDIMENT CONTROL DETAILS.dwg 10/12/2023 CROHRICH

APPENDIX B

DRAINAGE AREA EXHIBITS



A1 EXISTING CONDITIONS DRAINAGE AREAS
SCALE: 1" = 40'-0"

LEGEND:
- TIME OF CONCENTRATION FLOW PATH
- SUBCATCHMENT AREA

NOTE:
1. EXISTING CONDITIONS SURVEY COMPLETED DECEMBER 2015.

NUSSBAUMER & CLARKE, INC.
ENGINEERS AND SURVEYORS
EST. 1933
3556 Lake Shore Road, Suite 500 | Buffalo, NY 14219
(716) 827-8000 | (716) 826-7958 fax
www.nussclarke.com

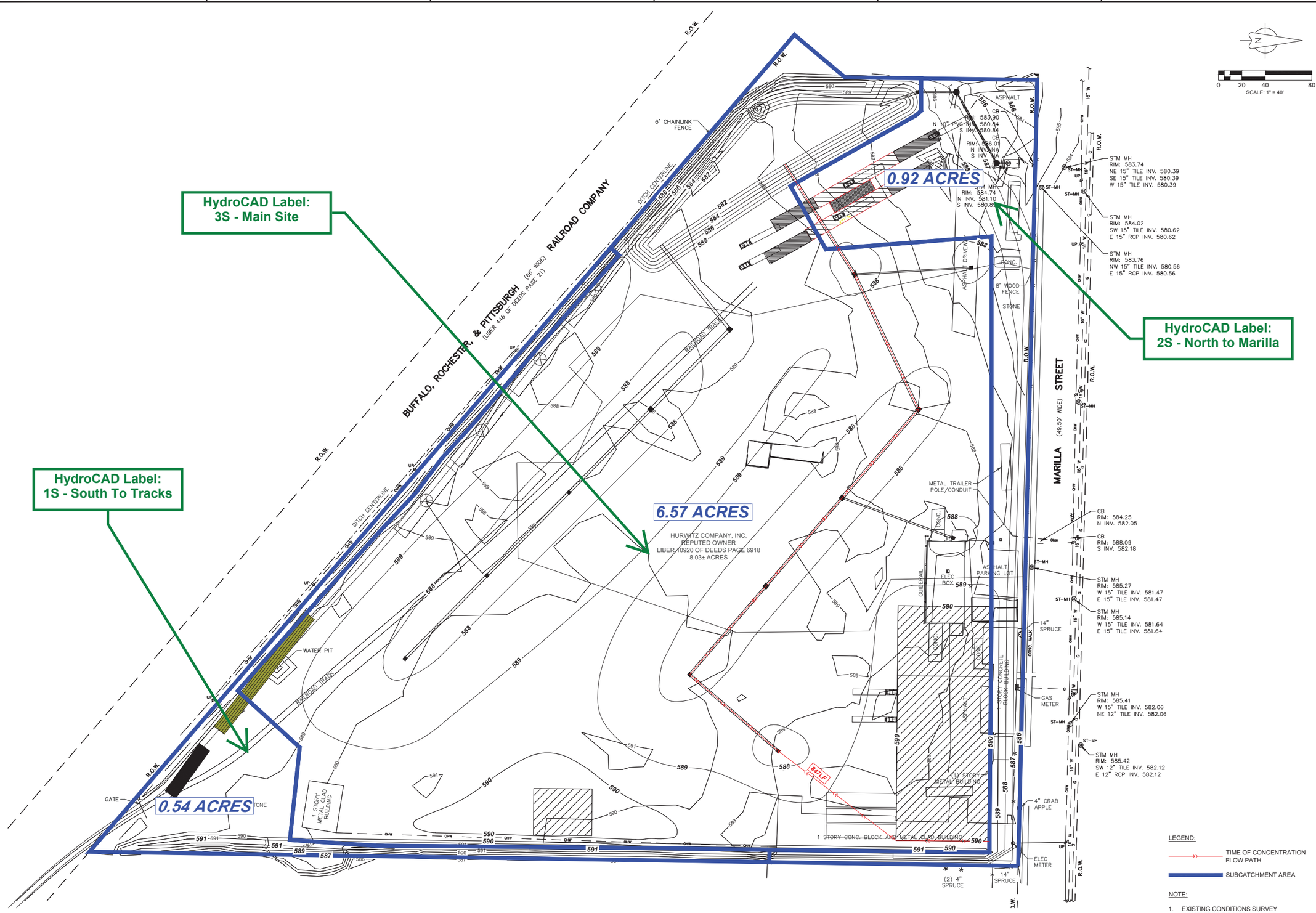
AMERICAN IRON & METAL (AIM)
267 MARILLA STREET, BUFFALO NY
EXISTING CONDITIONS DRAINAGE AREAS

REVISIONS		
No.	DESCRIPTION	DATE

PROJECT NUMBER	22J5-0026
DATE	APRIL 2023
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	--
APPROVED BY	--
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	1 OF 2

EXHIBIT 001

H:\Land Development\22\0026 – Benchmark – AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\Exhibit\Catchment Areas\22J50026–EXHIBIT–001.dwg 6/7/2023 CROHRICH



A1 **PROPOSED CONDITIONS DRAINAGE AREAS**
SCALE: 1" = 40'-0"

NUSSBAUMER & CLARKE, INC.
ENGINEERS AND SURVEYORS
EST. 1933
3556 Lake Shore Road, Suite 500 | Buffalo, NY 14219
(716) 827-8000 | (716) 826-7958 fax
www.nussclarke.com

AMERICAN IRON & METAL (AIM)
267 MARILLA STREET, BUFFALO NY
PROPOSED CONDITIONS DRAINAGE AREAS

REVISIONS

No.	DESCRIPTION	DATE

PROJECT NUMBER	22J5-0026
DATE	APRIL 2023
DRAWN BY	CRR
DESIGNED BY	JTW
CHECKED BY	--
APPROVED BY	--
SCALE:	AS NOTED
	= 1 INCH
SHEET No.	2 OF 2

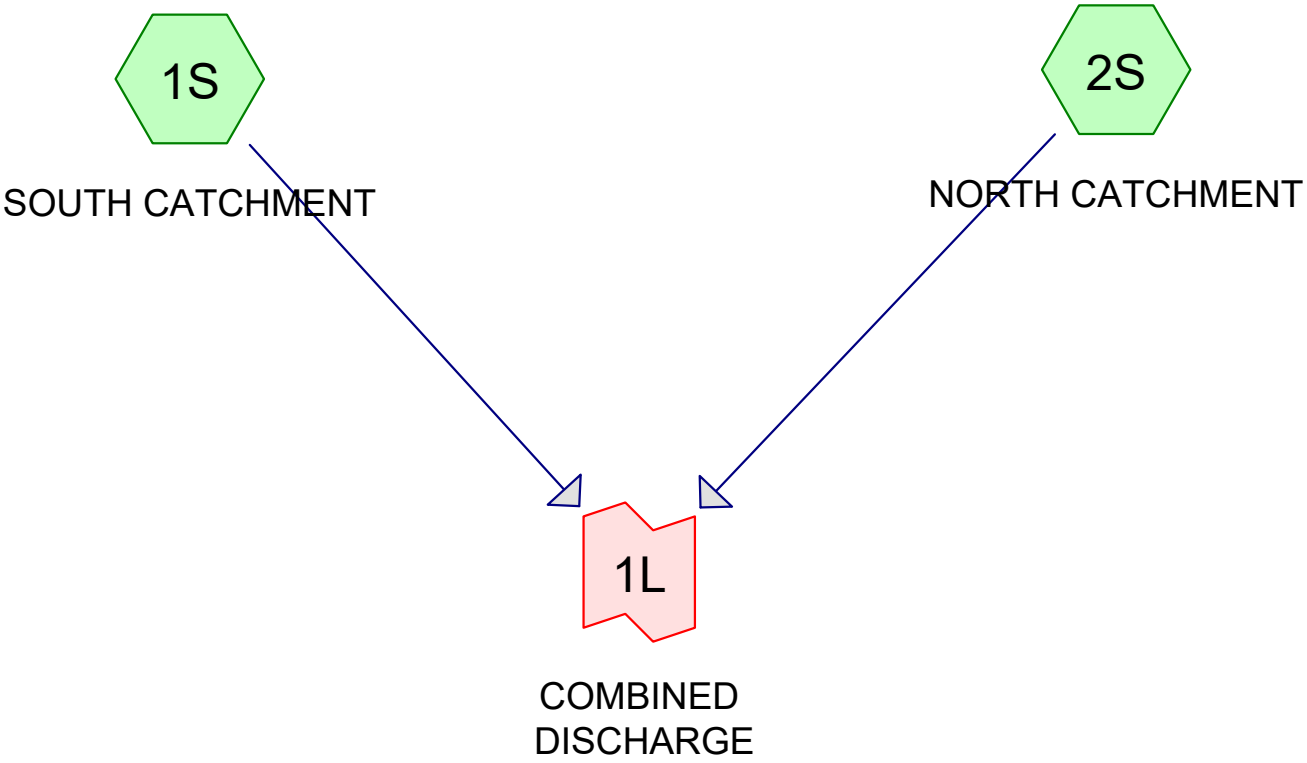
EXHIBIT 002

H:\Land Development\22J0026 - Benchmark - AIM Recycling\05 Working Drawings\02 Discipline (DWG)\C-Civil\Exhibit\Catchment Areas\22J5026-EXHIBIT-002.dwg 6/7/2023 CROHRICH

APPENDIX C

HYDROCAD REPORTS

TABLE OF CONTENTS



Subcat Reach Pond Link

Routing Diagram for Final Existing Conditions Model
Prepared by Nussbaumer & Clarke, Inc, Printed 10/12/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 Year	Type II 24-hr		Default	24.00	1	1.82	2
2	2 Year	Type II 24-hr		Default	24.00	1	2.20	2
3	5 Year	Type II 24-hr		Default	24.00	1	2.82	2
4	10 Year	Type II 24-hr		Default	24.00	1	3.34	2
5	25 Year	Type II 24-hr		Default	24.00	1	4.05	2
6	50 Year	Type II 24-hr		Default	24.00	1	4.57	2
7	100 Year	Type II 24-hr		Default	24.00	1	5.14	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.030	96	Gravel surface, HSG D (1S, 2S)
8.030	**96**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
8.030	HSG D	1S, 2S
0.000	Other	
8.030		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	8.030	0.000	8.030	Gravel surface	1S, 2S
0.000	**0.000**	**0.000**	**8.030**	**0.000**	**8.030**	**TOTAL AREA**	

Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=8.23 cfs 0.400 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=9.29 cfs 0.537 af

Link 1L: COMBINED DISCHARGE Inflow=16.61 cfs 0.937 af
Primary=16.61 cfs 0.937 af

Total Runoff Area = 8.030 ac Runoff Volume = 0.937 af Average Runoff Depth = 1.40"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

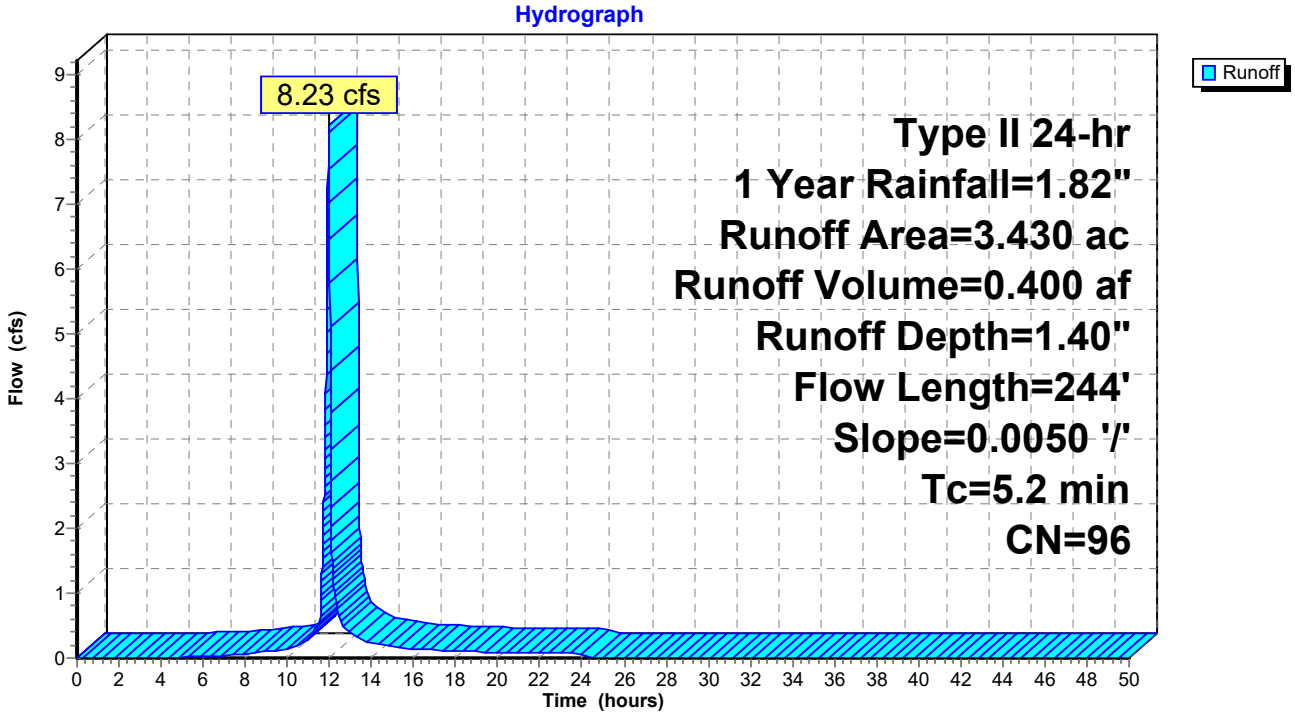
Runoff = 8.23 cfs @ 11.96 hrs, Volume= 0.400 af, Depth= 1.40"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=1.82"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

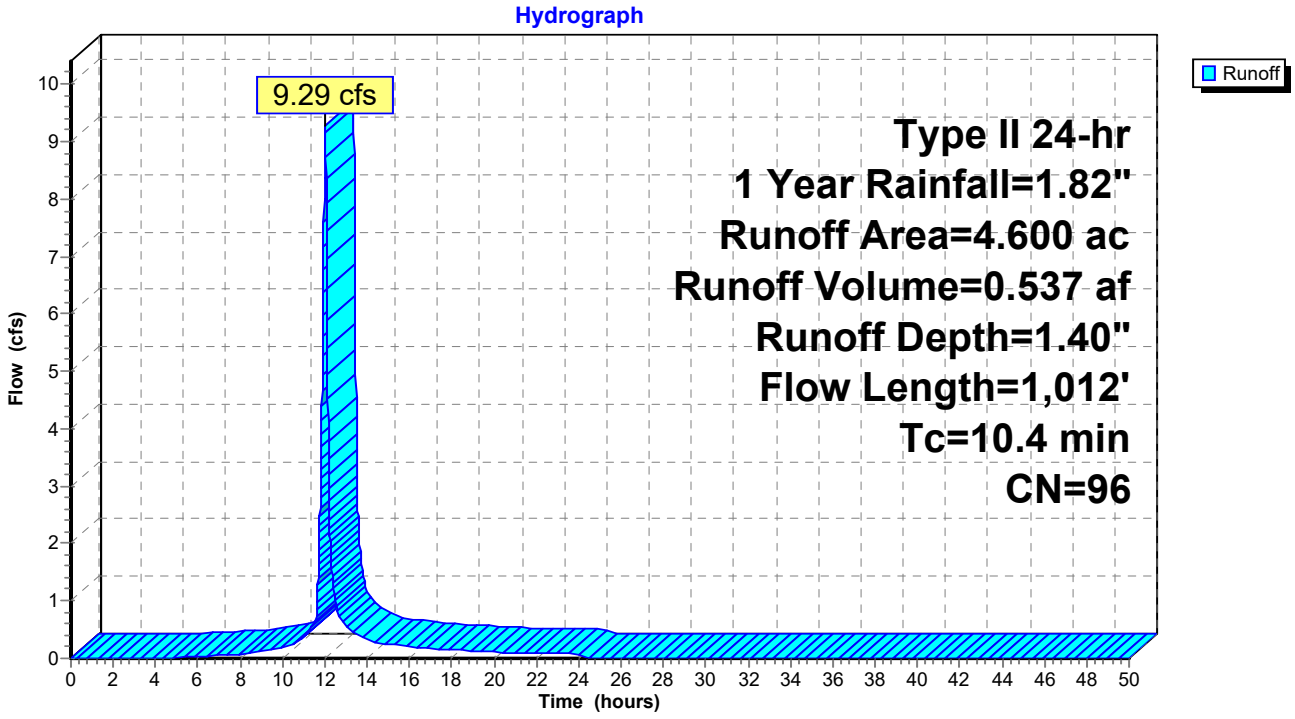
Runoff = 9.29 cfs @ 12.02 hrs, Volume= 0.537 af, Depth= 1.40"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=1.82"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

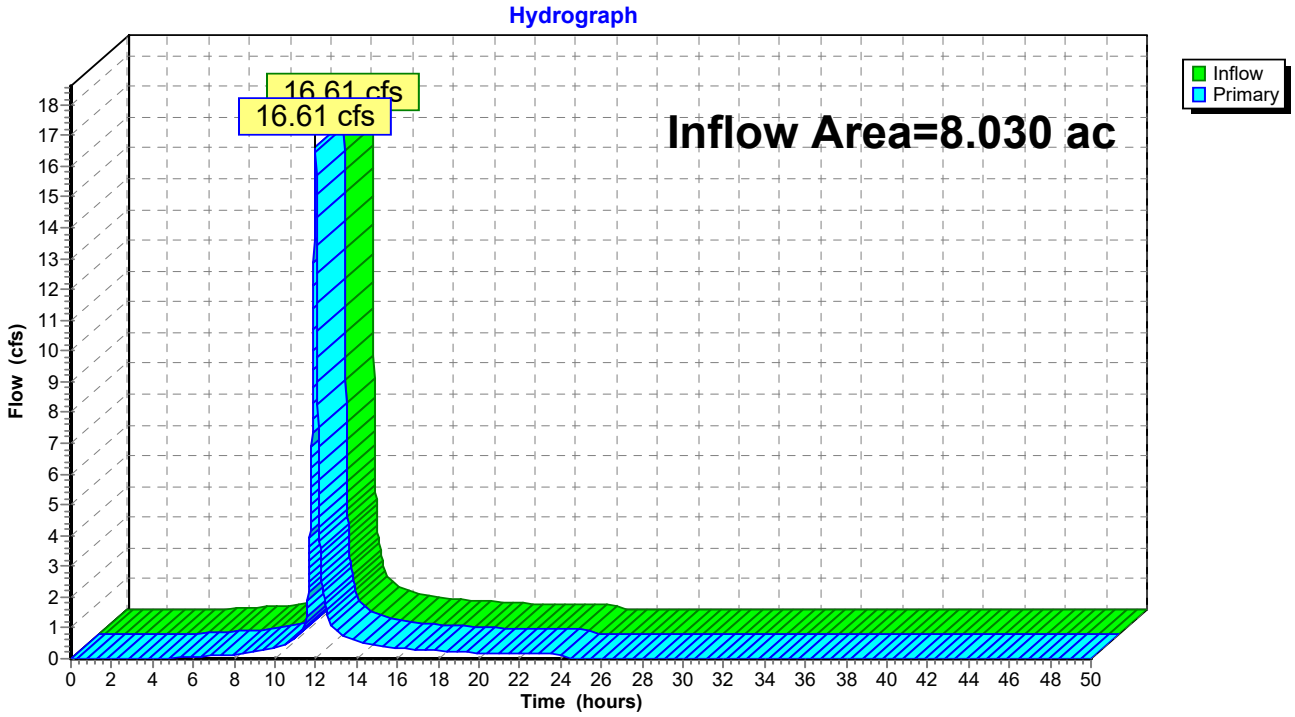


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 1.40" for 1 Year event
Inflow = 16.61 cfs @ 11.98 hrs, Volume= 0.937 af
Primary = 16.61 cfs @ 11.98 hrs, Volume= 0.937 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=1.77"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=10.23 cfs 0.506 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=1.77"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=11.57 cfs 0.678 af

Link 1L: COMBINED DISCHARGE Inflow=20.69 cfs 1.183 af
Primary=20.69 cfs 1.183 af

Total Runoff Area = 8.030 ac Runoff Volume = 1.183 af Average Runoff Depth = 1.77"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

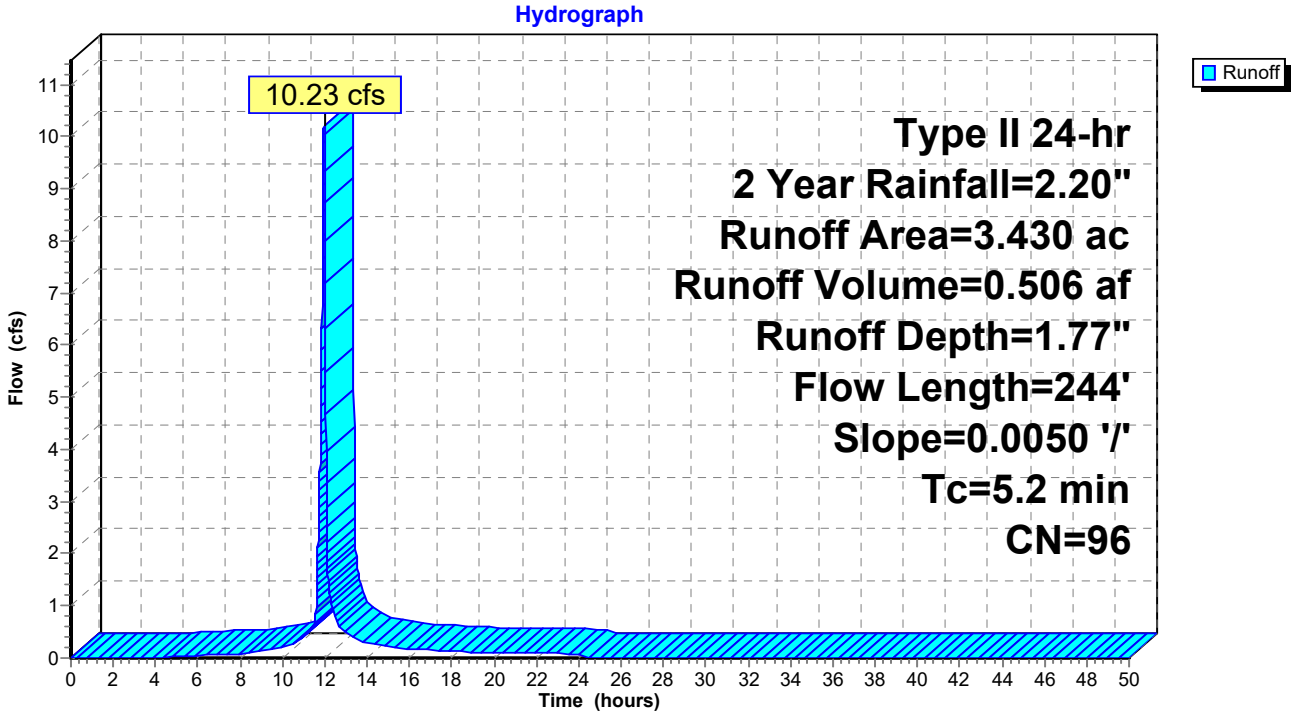
Runoff = 10.23 cfs @ 11.96 hrs, Volume= 0.506 af, Depth= 1.77"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 Year Rainfall=2.20"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

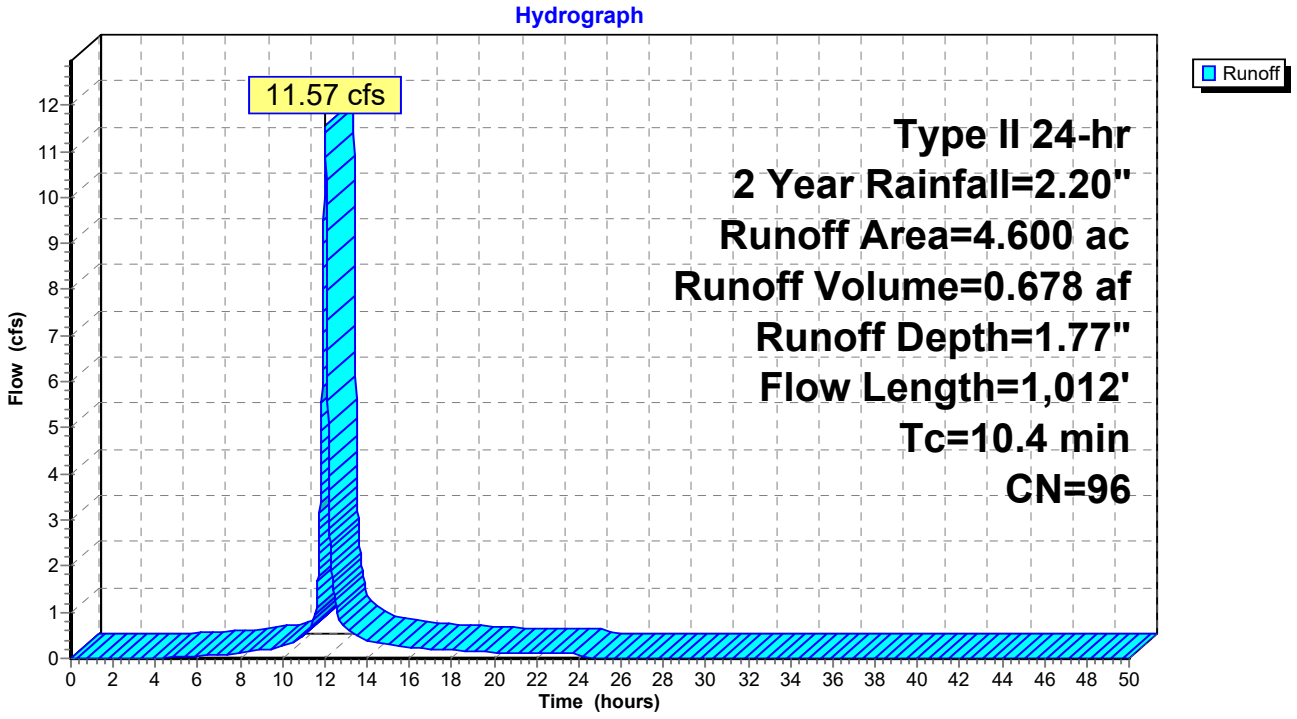
Runoff = 11.57 cfs @ 12.01 hrs, Volume= 0.678 af, Depth= 1.77"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 Year Rainfall=2.20"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

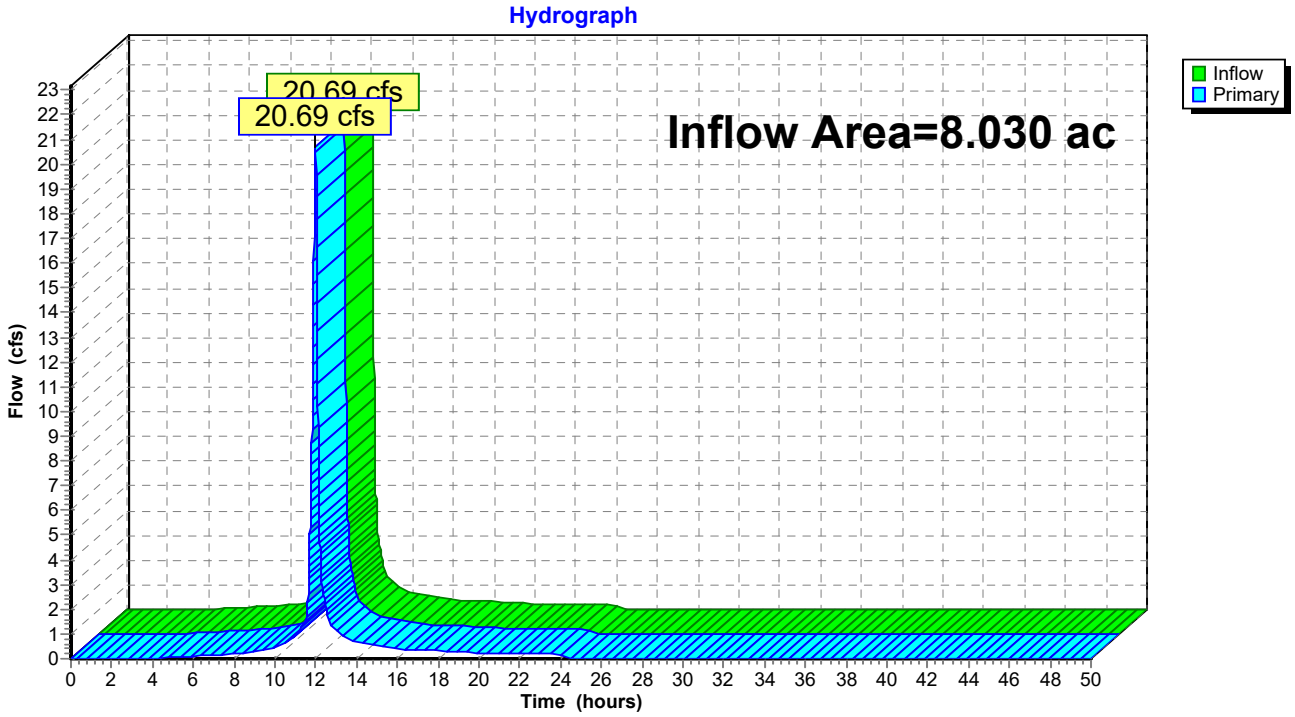


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 1.77" for 2 Year event
Inflow = 20.69 cfs @ 11.98 hrs, Volume= 1.183 af
Primary = 20.69 cfs @ 11.98 hrs, Volume= 1.183 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=2.38"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=13.46 cfs 0.679 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=2.38"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=15.26 cfs 0.910 af

Link 1L: COMBINED DISCHARGE Inflow=27.28 cfs 1.589 af
Primary=27.28 cfs 1.589 af

Total Runoff Area = 8.030 ac Runoff Volume = 1.589 af Average Runoff Depth = 2.38"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

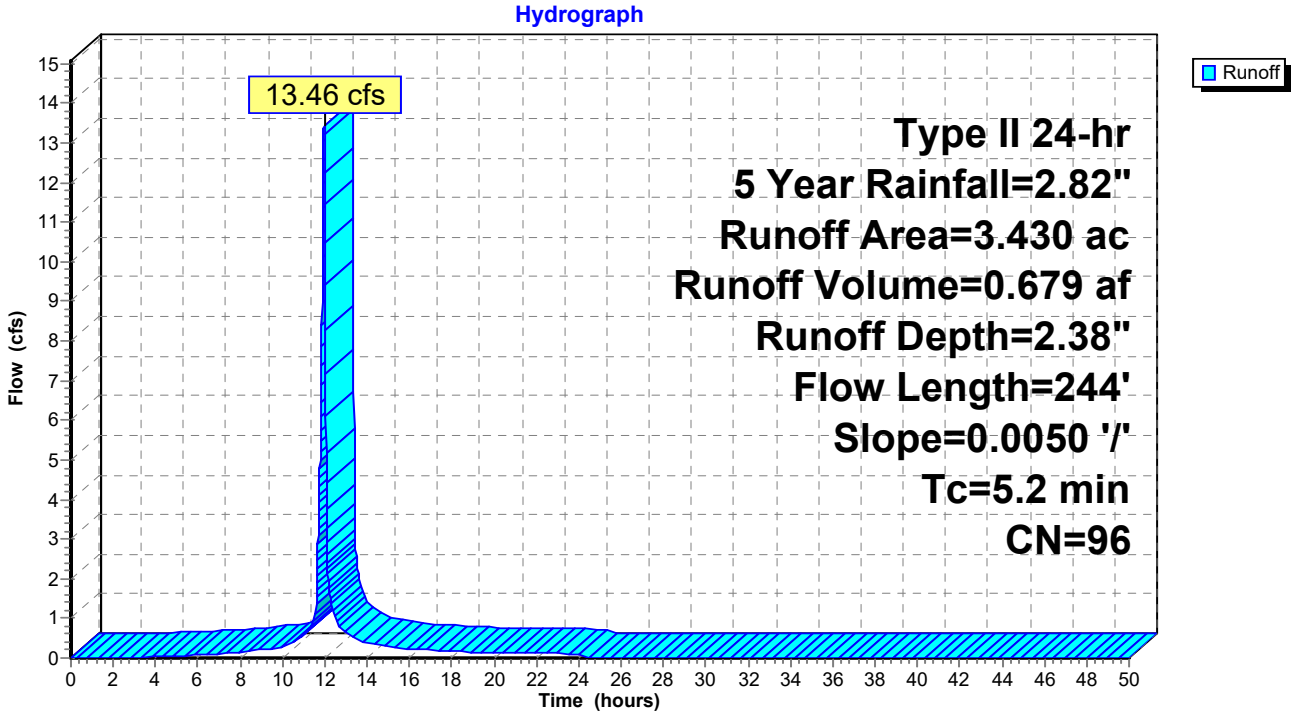
Runoff = 13.46 cfs @ 11.96 hrs, Volume= 0.679 af, Depth= 2.38"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 Year Rainfall=2.82"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

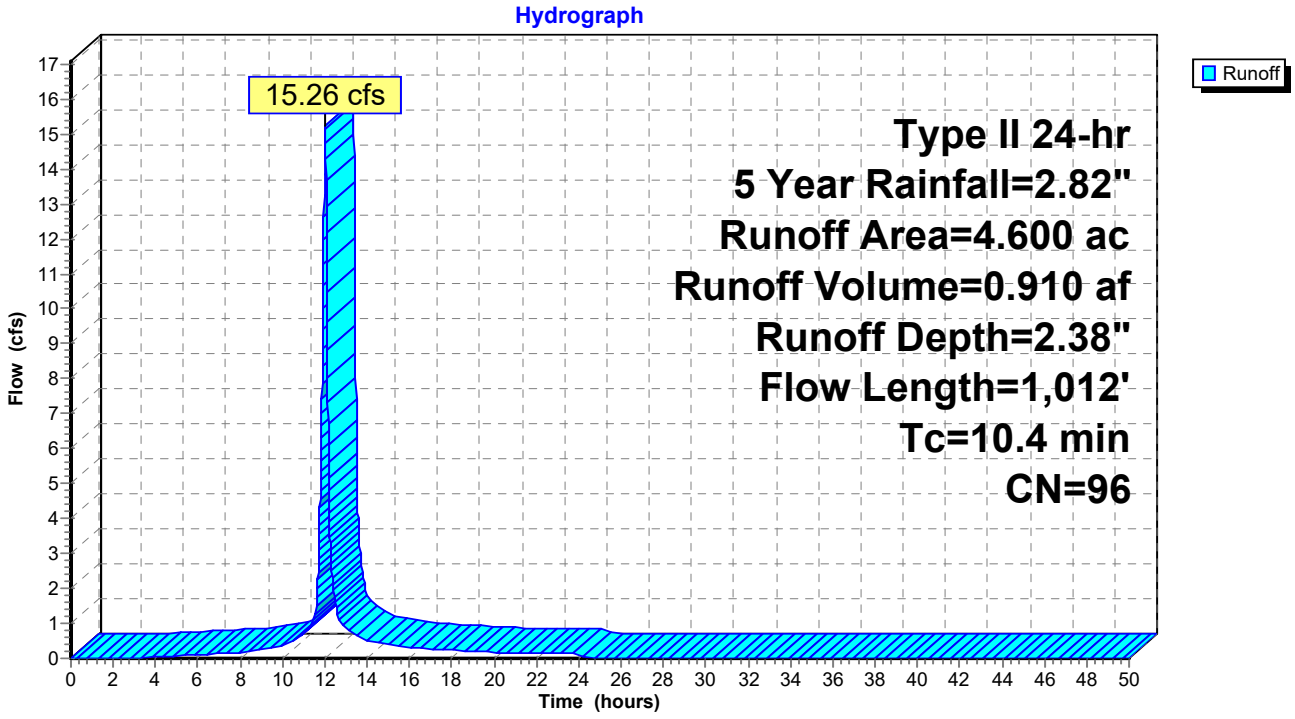
Runoff = 15.26 cfs @ 12.01 hrs, Volume= 0.910 af, Depth= 2.38"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 Year Rainfall=2.82"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

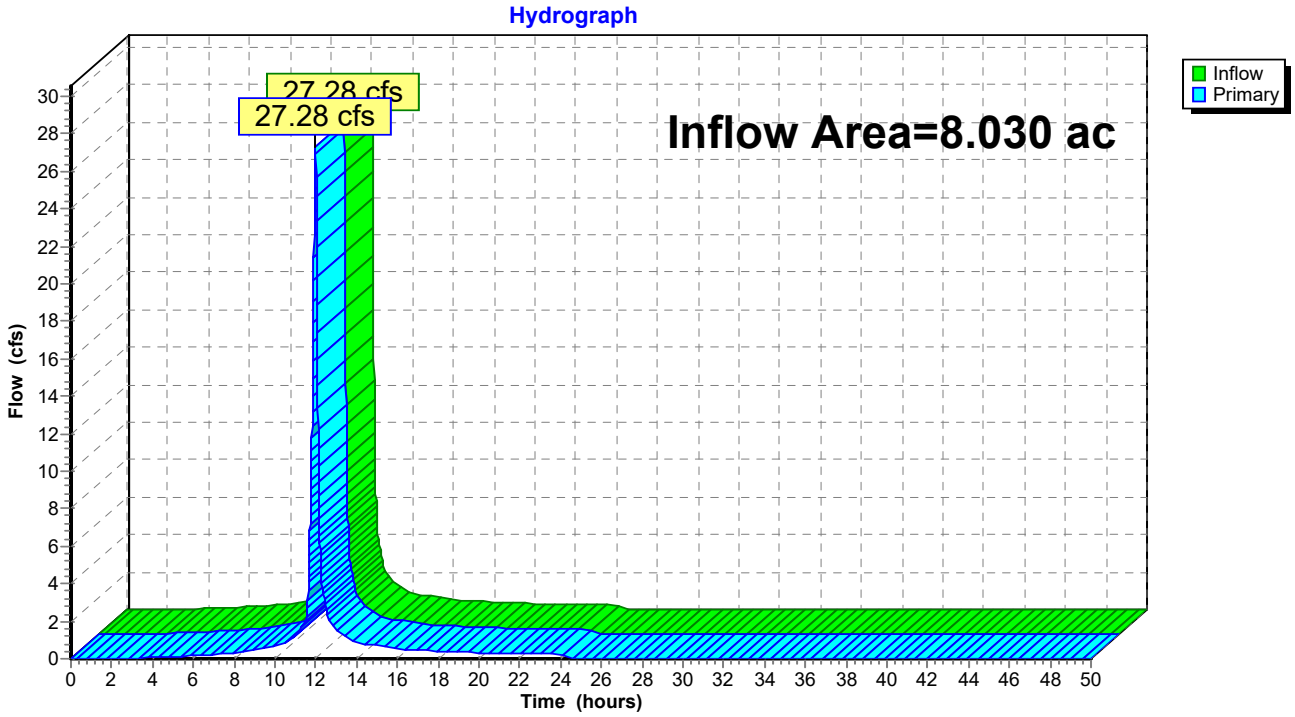


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 2.38" for 5 Year event
Inflow = 27.28 cfs @ 11.98 hrs, Volume= 1.589 af
Primary = 27.28 cfs @ 11.98 hrs, Volume= 1.589 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=16.16 cfs 0.825 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=18.33 cfs 1.107 af

Link 1L: COMBINED DISCHARGE Inflow=32.76 cfs 1.932 af
Primary=32.76 cfs 1.932 af

Total Runoff Area = 8.030 ac Runoff Volume = 1.932 af Average Runoff Depth = 2.89"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

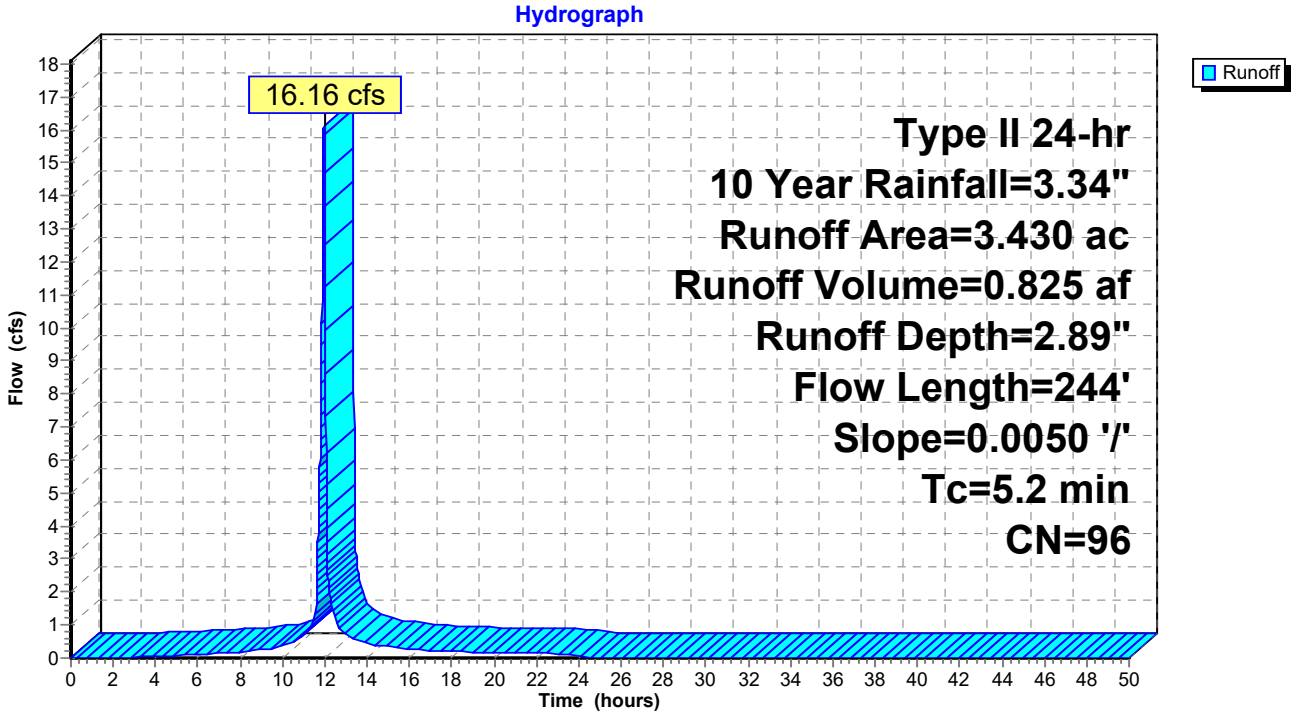
Runoff = 16.16 cfs @ 11.96 hrs, Volume= 0.825 af, Depth= 2.89"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=3.34"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

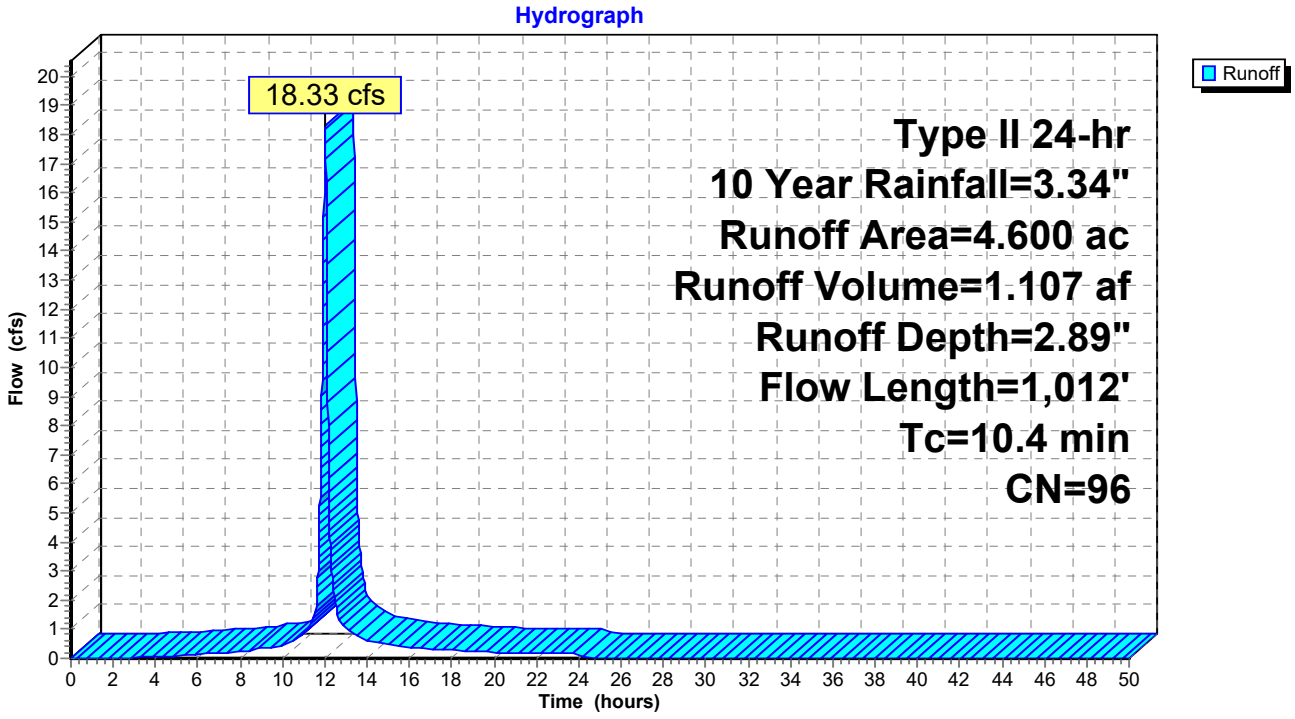
Runoff = 18.33 cfs @ 12.01 hrs, Volume= 1.107 af, Depth= 2.89"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=3.34"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

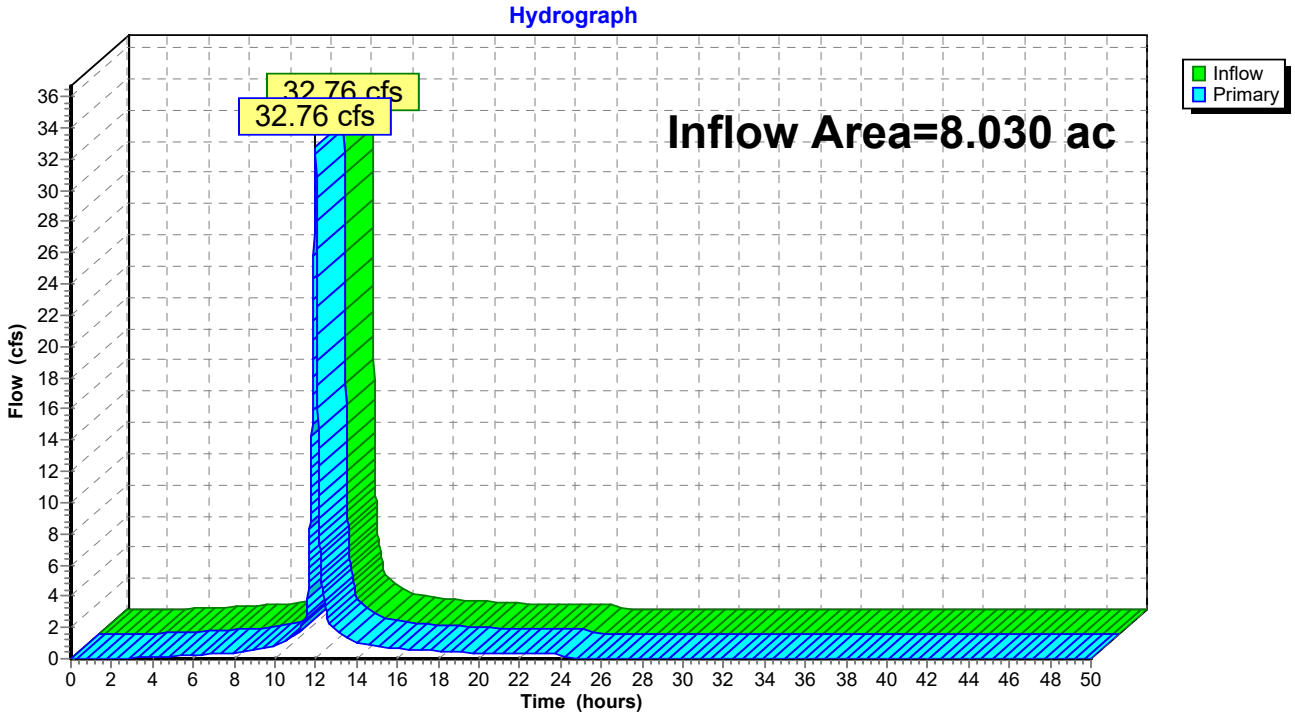


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 2.89" for 10 Year event
Inflow = 32.76 cfs @ 11.98 hrs, Volume= 1.932 af
Primary = 32.76 cfs @ 11.98 hrs, Volume= 1.932 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=3.59"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=19.81 cfs 1.026 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=3.59"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=22.50 cfs 1.376 af

Link 1L: COMBINED DISCHARGE Inflow=40.21 cfs 2.402 af
Primary=40.21 cfs 2.402 af

Total Runoff Area = 8.030 ac Runoff Volume = 2.402 af Average Runoff Depth = 3.59"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

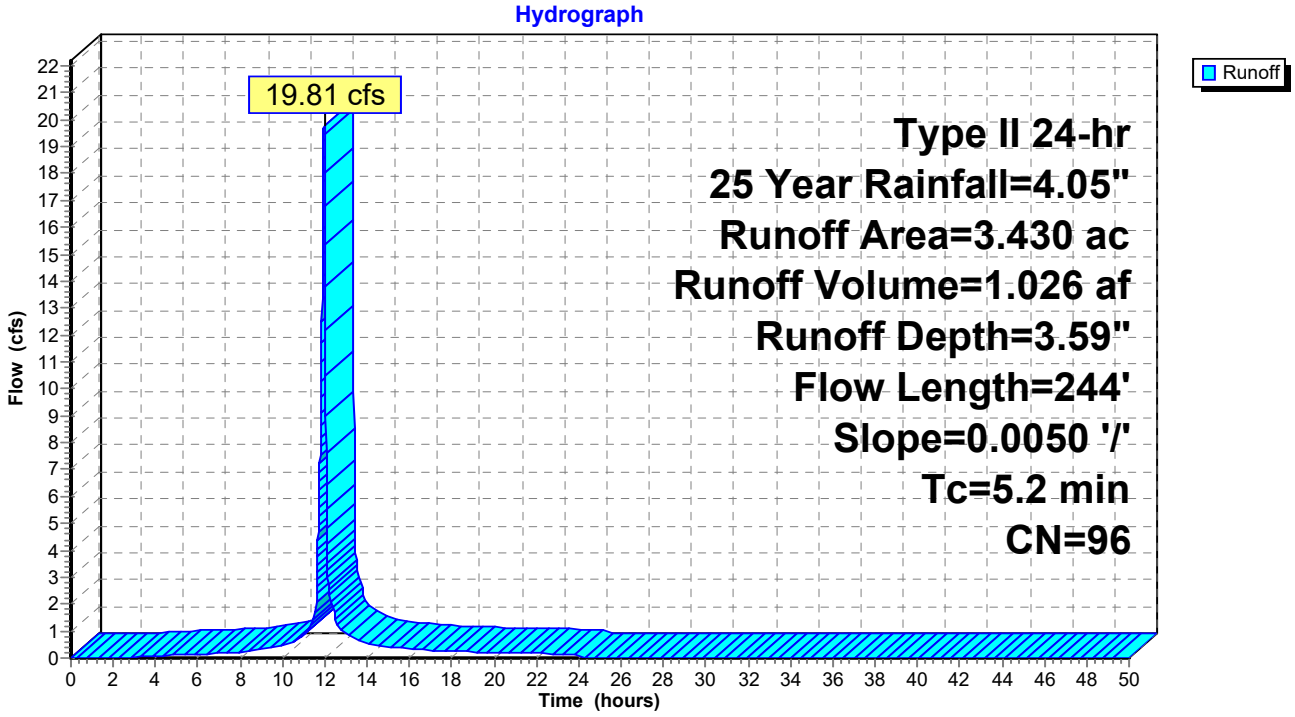
Runoff = 19.81 cfs @ 11.96 hrs, Volume= 1.026 af, Depth= 3.59"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=4.05"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

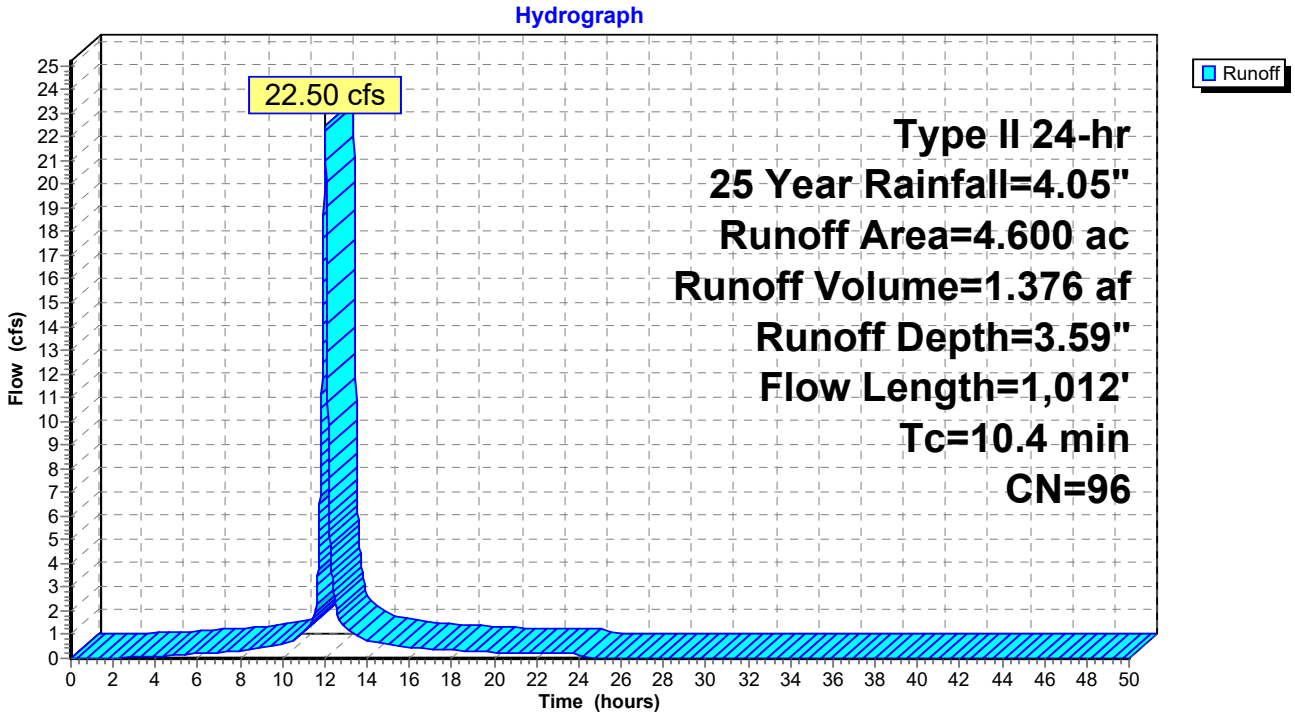
Runoff = 22.50 cfs @ 12.01 hrs, Volume= 1.376 af, Depth= 3.59"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=4.05"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

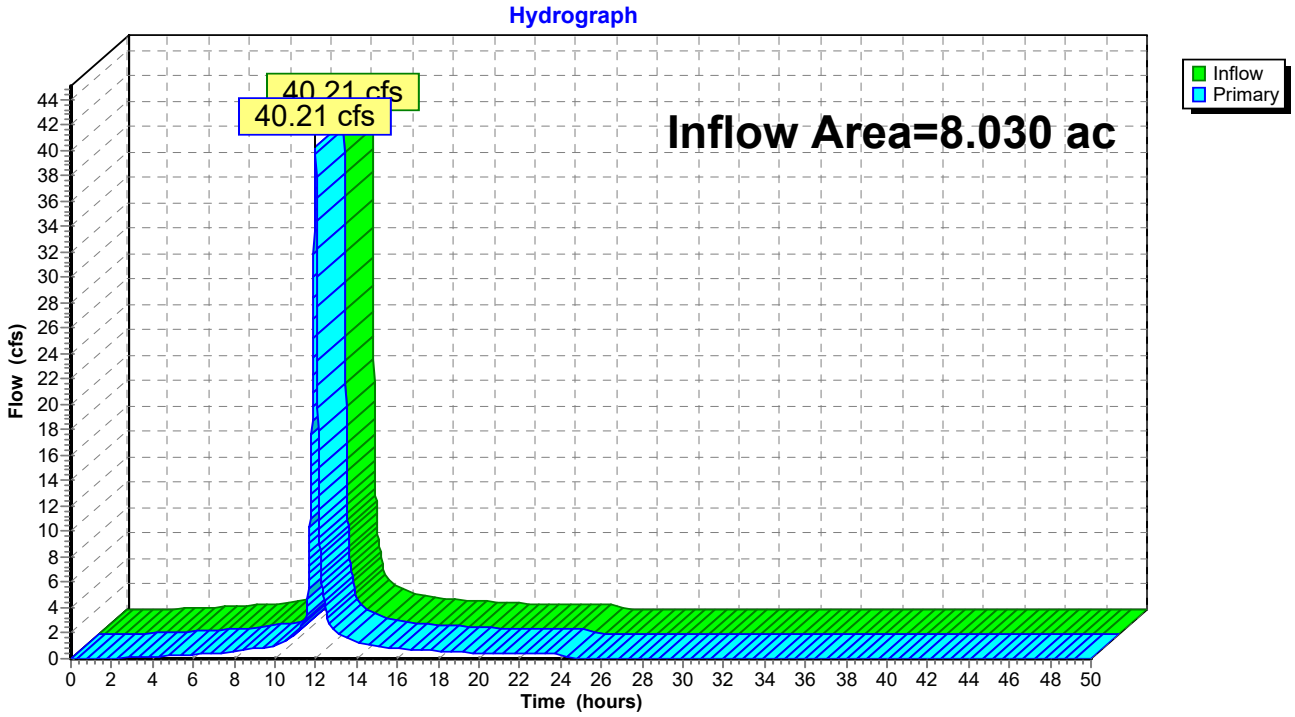


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 3.59" for 25 Year event
Inflow = 40.21 cfs @ 11.98 hrs, Volume= 2.402 af
Primary = 40.21 cfs @ 11.98 hrs, Volume= 2.402 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=4.11"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=22.48 cfs 1.173 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=4.11"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=25.54 cfs 1.574 af

Link 1L: COMBINED DISCHARGE Inflow=45.64 cfs 2.747 af
Primary=45.64 cfs 2.747 af

Total Runoff Area = 8.030 ac Runoff Volume = 2.747 af Average Runoff Depth = 4.11"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

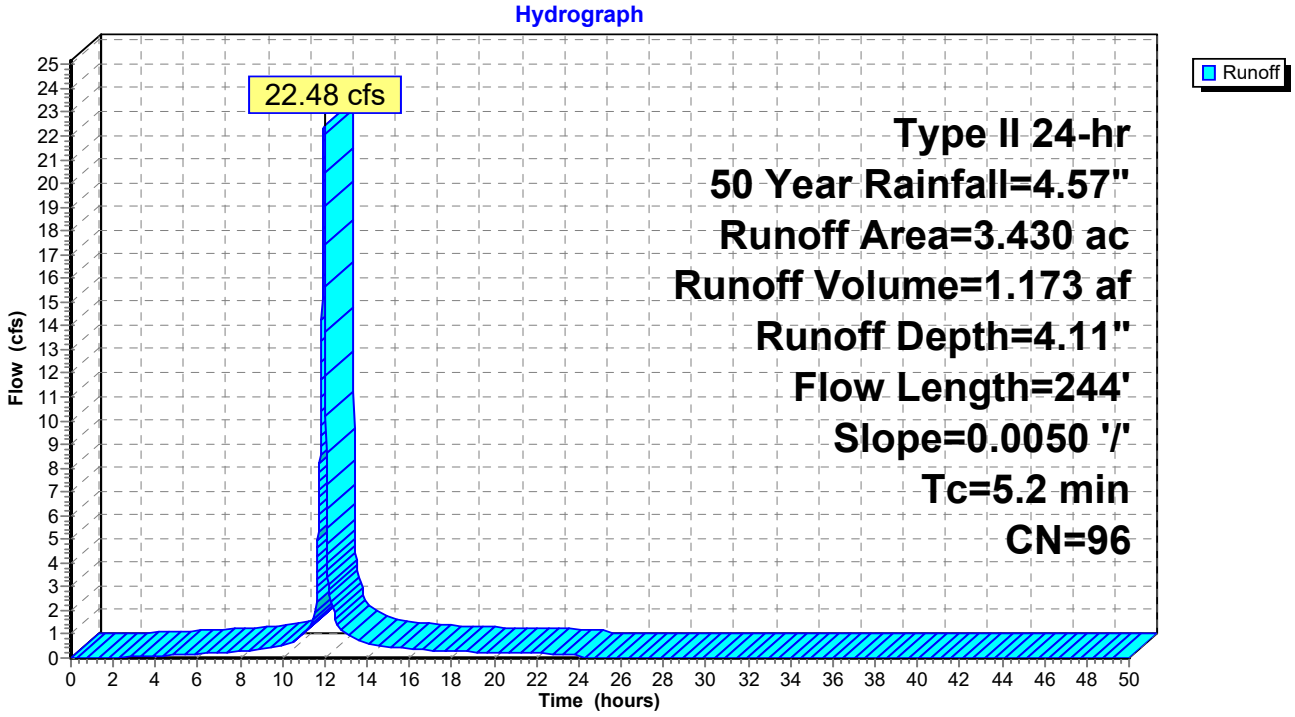
Runoff = 22.48 cfs @ 11.96 hrs, Volume= 1.173 af, Depth= 4.11"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 Year Rainfall=4.57"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

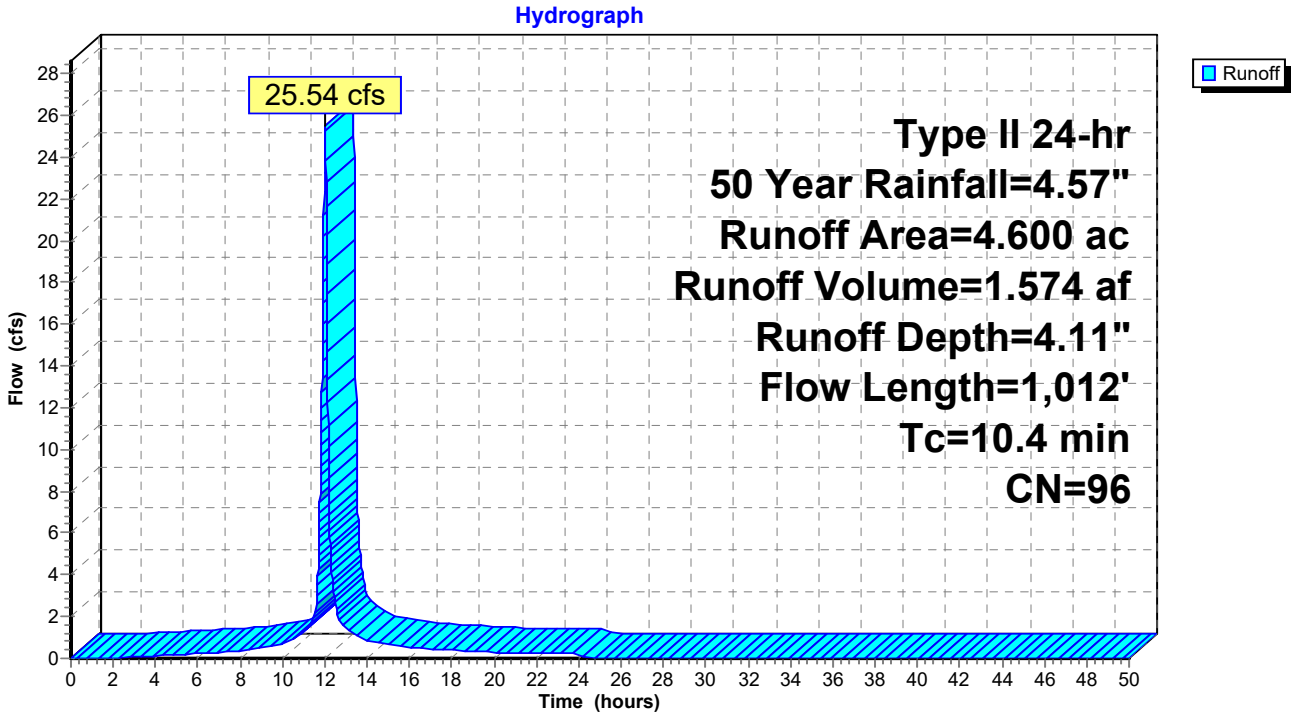
Runoff = 25.54 cfs @ 12.01 hrs, Volume= 1.574 af, Depth= 4.11"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 Year Rainfall=4.57"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

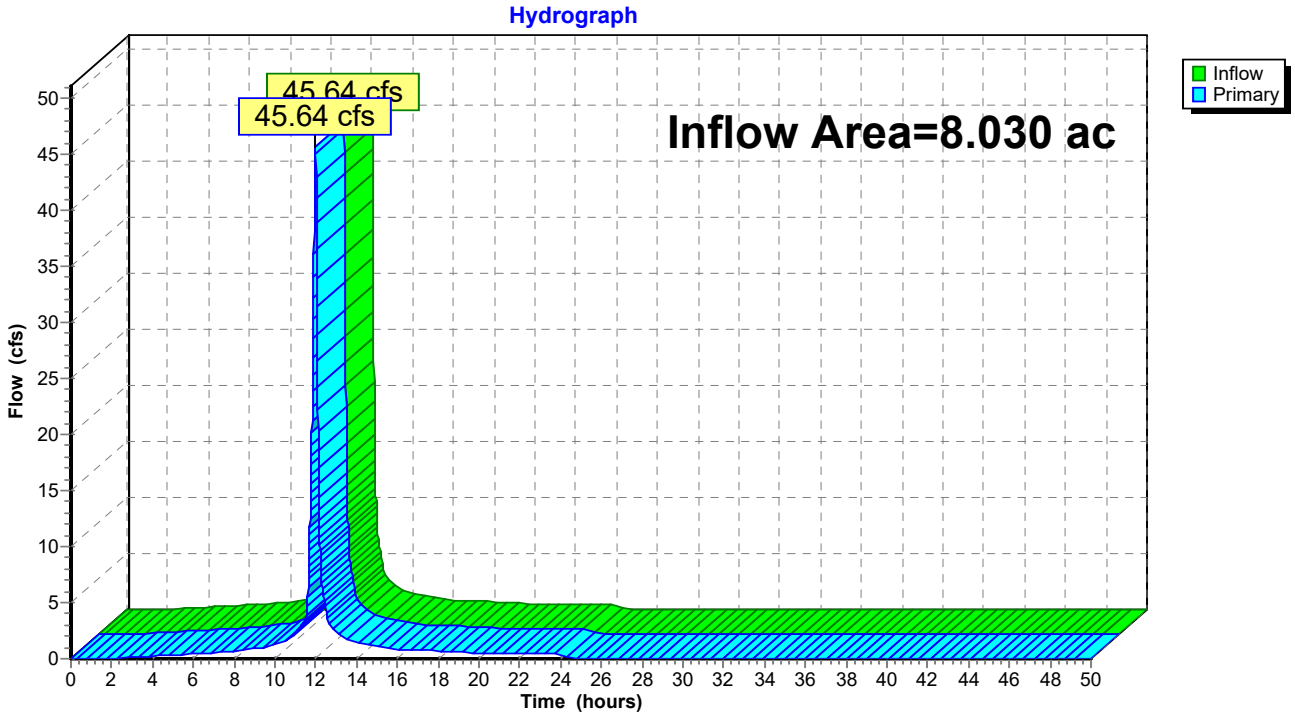


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 4.11" for 50 Year event
Inflow = 45.64 cfs @ 11.98 hrs, Volume= 2.747 af
Primary = 45.64 cfs @ 11.98 hrs, Volume= 2.747 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH CATCHMENT Runoff Area=3.430 ac 0.00% Impervious Runoff Depth=4.67"
Flow Length=244' Slope=0.0050 '/' Tc=5.2 min CN=96 Runoff=25.39 cfs 1.335 af

Subcatchment 2S: NORTH CATCHMENT Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=4.67"
Flow Length=1,012' Tc=10.4 min CN=96 Runoff=28.86 cfs 1.791 af

Link 1L: COMBINED DISCHARGE Inflow=51.57 cfs 3.126 af
Primary=51.57 cfs 3.126 af

Total Runoff Area = 8.030 ac Runoff Volume = 3.126 af Average Runoff Depth = 4.67"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH CATCHMENT

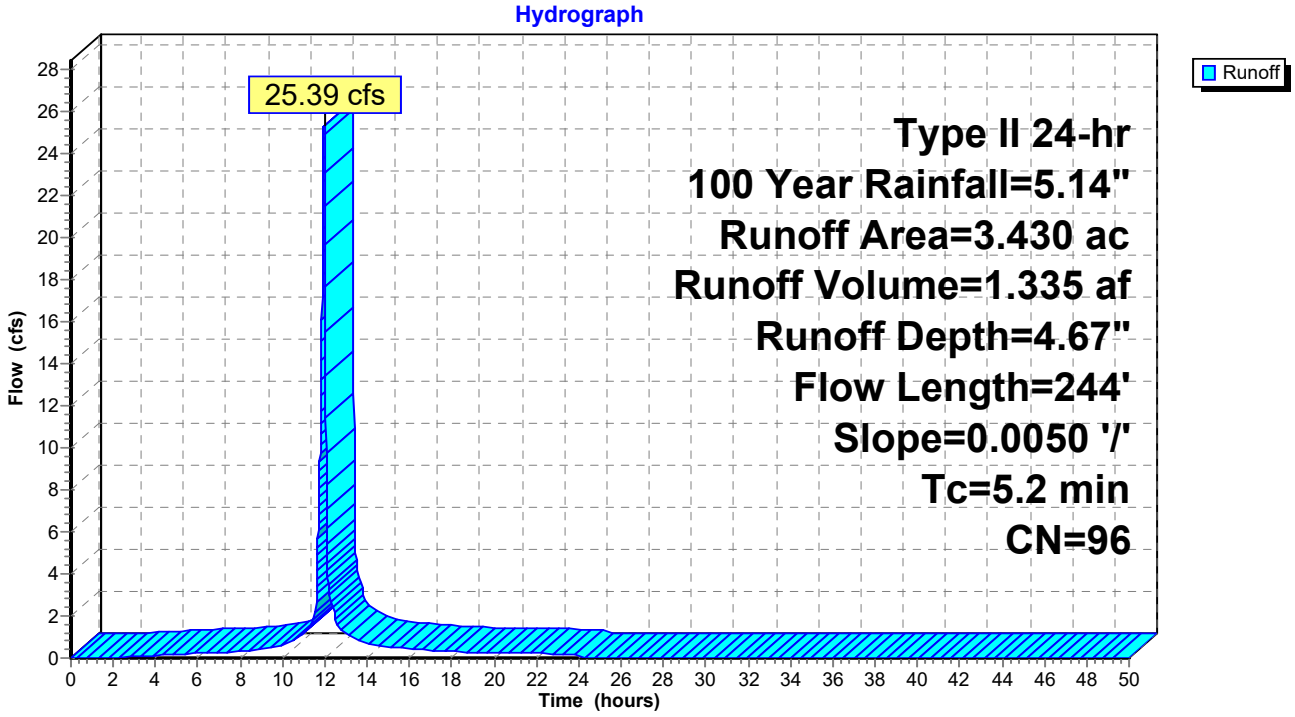
Runoff = 25.39 cfs @ 11.96 hrs, Volume= 1.335 af, Depth= 4.67"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=5.14"

Area (ac)	CN	Description
3.430	96	Gravel surface, HSG D
3.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	244	0.0050	0.79		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"

Subcatchment 1S: SOUTH CATCHMENT



Summary for Subcatchment 2S: NORTH CATCHMENT

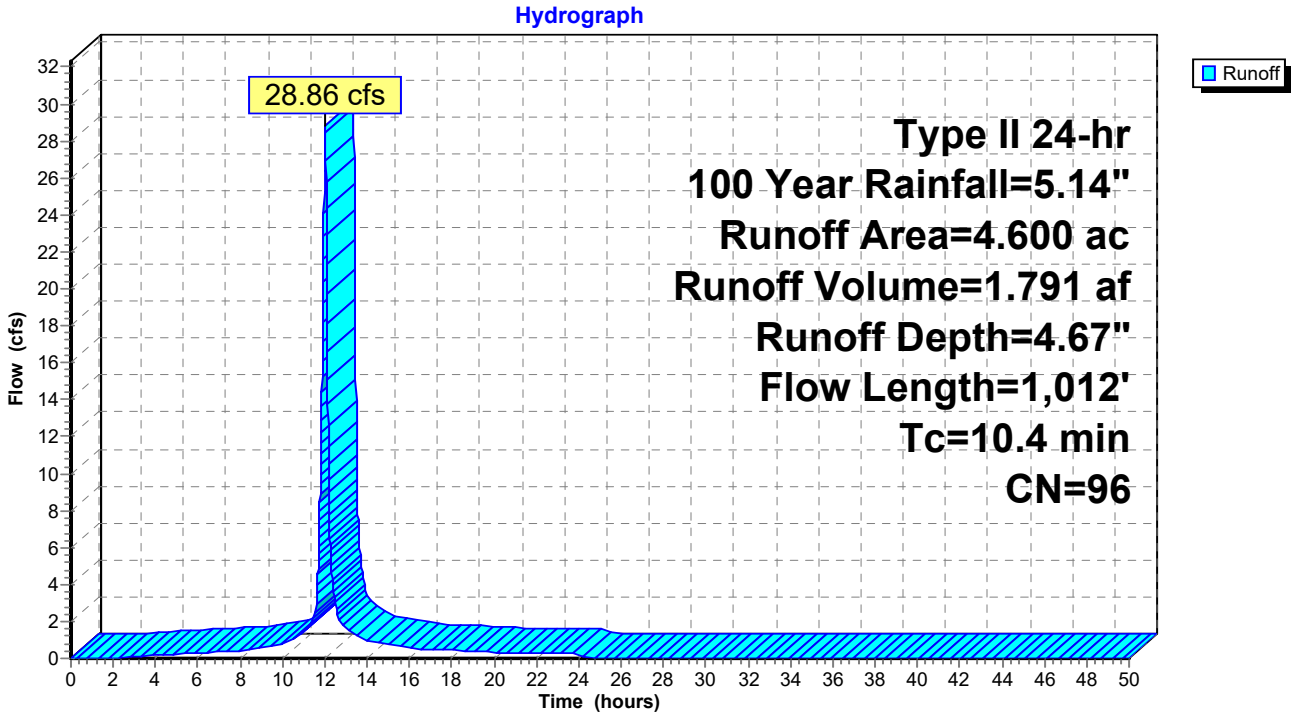
Runoff = 28.86 cfs @ 12.01 hrs, Volume= 1.791 af, Depth= 4.67"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=5.14"

Area (ac)	CN	Description
4.600	96	Gravel surface, HSG D
4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	300	0.0060	0.88		**Sheet Flow, Sheetflow Stone** Smooth surfaces n= 0.011 P2= 2.22"
2.7	402	0.0150	2.49		**Shallow Concentrated Flow, Shallow Concentrated Stone** Paved Kv= 20.3 fps
2.0	310		2.60		**Direct Entry, Sewer Flow**
10.4	1,012	Total			

Subcatchment 2S: NORTH CATCHMENT

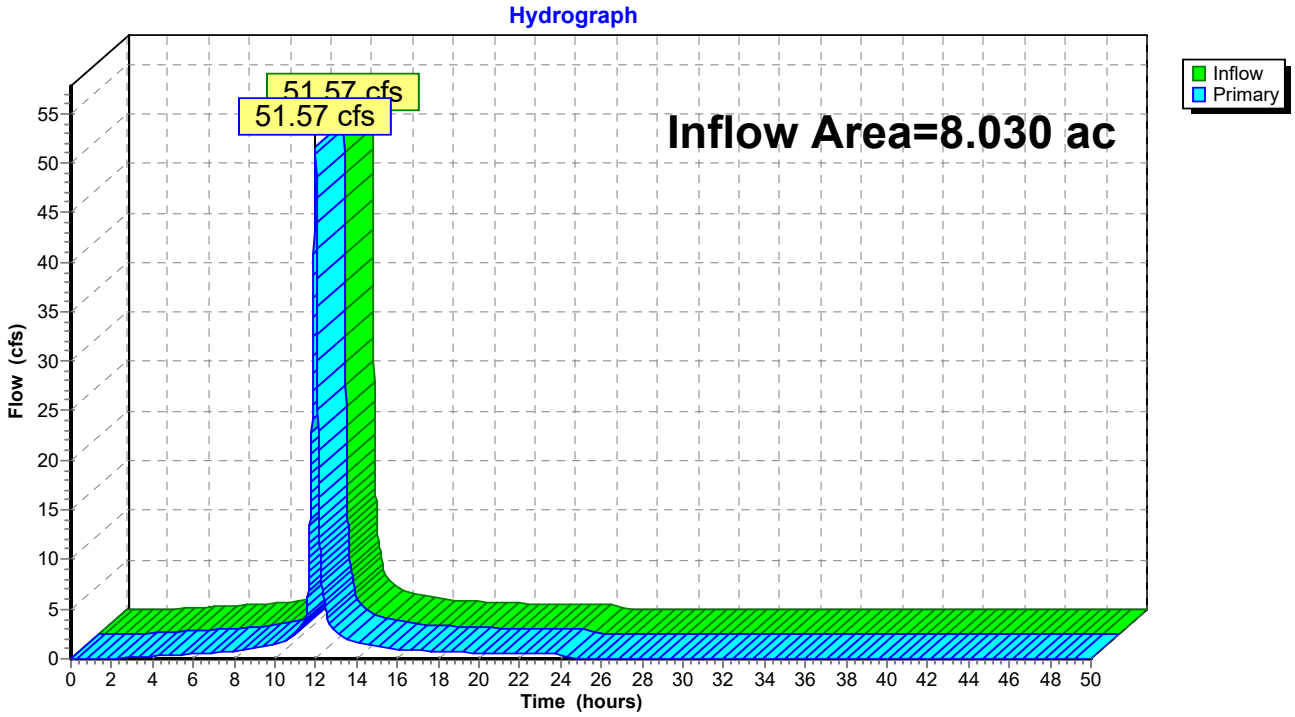


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth = 4.67" for 100 Year event
Inflow = 51.57 cfs @ 11.98 hrs, Volume= 3.126 af
Primary = 51.57 cfs @ 11.98 hrs, Volume= 3.126 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



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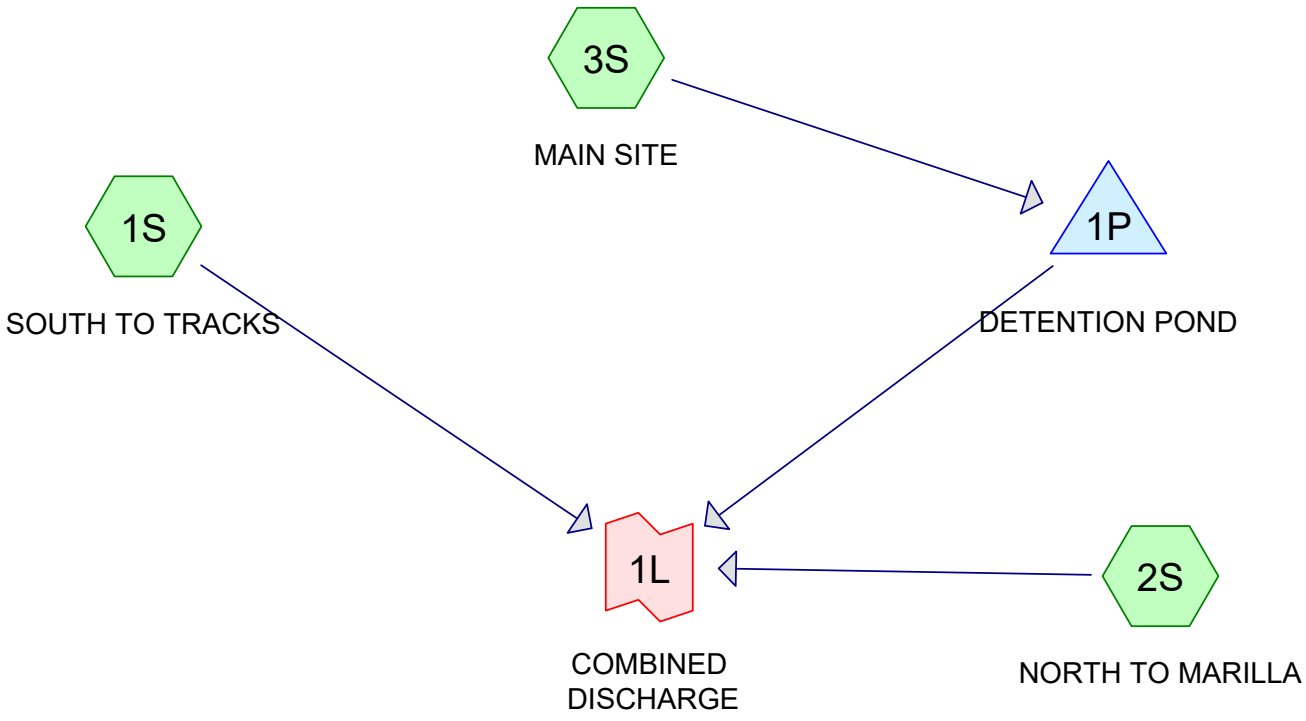

Subcat Reach Pond Link

Routing Diagram for Final Proposed Conditions Model
Prepared by Nussbaumer & Clarke, Inc, Printed 10/12/2023

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7041 NY Erie
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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 Year	Type II 24-hr		Default	24.00	1	1.82	2
2	2 Year	Type II 24-hr		Default	24.00	1	2.20	2
3	5 Year	Type II 24-hr		Default	24.00	1	2.82	2
4	10 Year	Type II 24-hr		Default	24.00	1	3.34	2
5	25 Year	Type II 24-hr		Default	24.00	1	4.05	2
6	50 Year	Type II 24-hr		Default	24.00	1	4.57	2
7	100 Year	Type II 24-hr		Default	24.00	1	5.14	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.030	96	Gravel surface, HSG D (1S, 2S, 3S)
8.030	**96**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
8.030	HSG D	1S, 2S, 3S
0.000	Other	
8.030		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	8.030	0.000	8.030	Gravel surface	1S, 2S, 3S
0.000	**0.000**	**0.000**	**8.030**	**0.000**	**8.030**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	581.42	580.86	113.0	0.0050	0.013	0.0	10.0	0.0	
2	1P	582.00	581.25	28.0	0.0268	0.013	0.0	24.0	0.0	

Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=1.30 cfs 0.063 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=2.22 cfs 0.107 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=15.00 cfs 0.767 af

Pond 1P: DETENTION POND Peak Elev=584.27' Storage=18,660 cf Inflow=15.00 cfs 0.767 af
Outflow=1.93 cfs 0.649 af

Link 1L: COMBINED DISCHARGE Inflow=3.66 cfs 0.819 af
Primary=3.66 cfs 0.819 af

Total Runoff Area = 8.030 ac Runoff Volume = 0.937 af Average Runoff Depth = 1.40"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

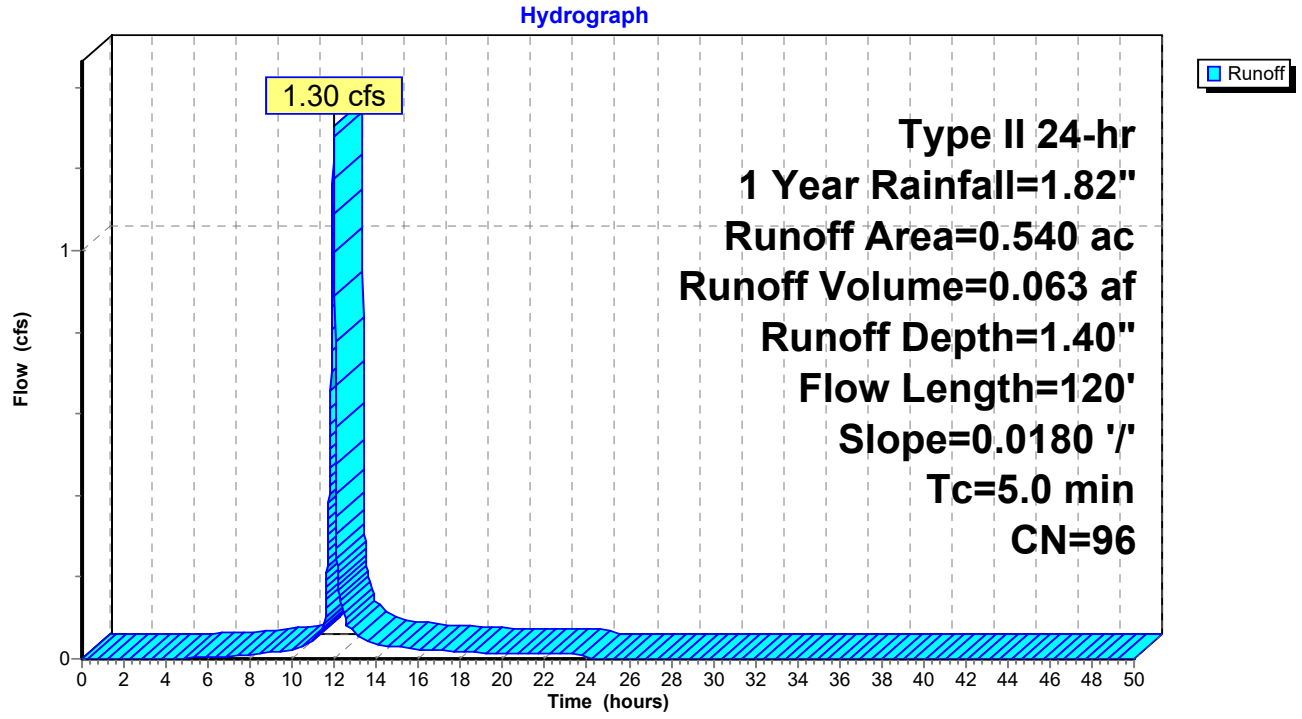
Runoff = 1.30 cfs @ 11.96 hrs, Volume= 0.063 af, Depth= 1.40"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=1.82"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

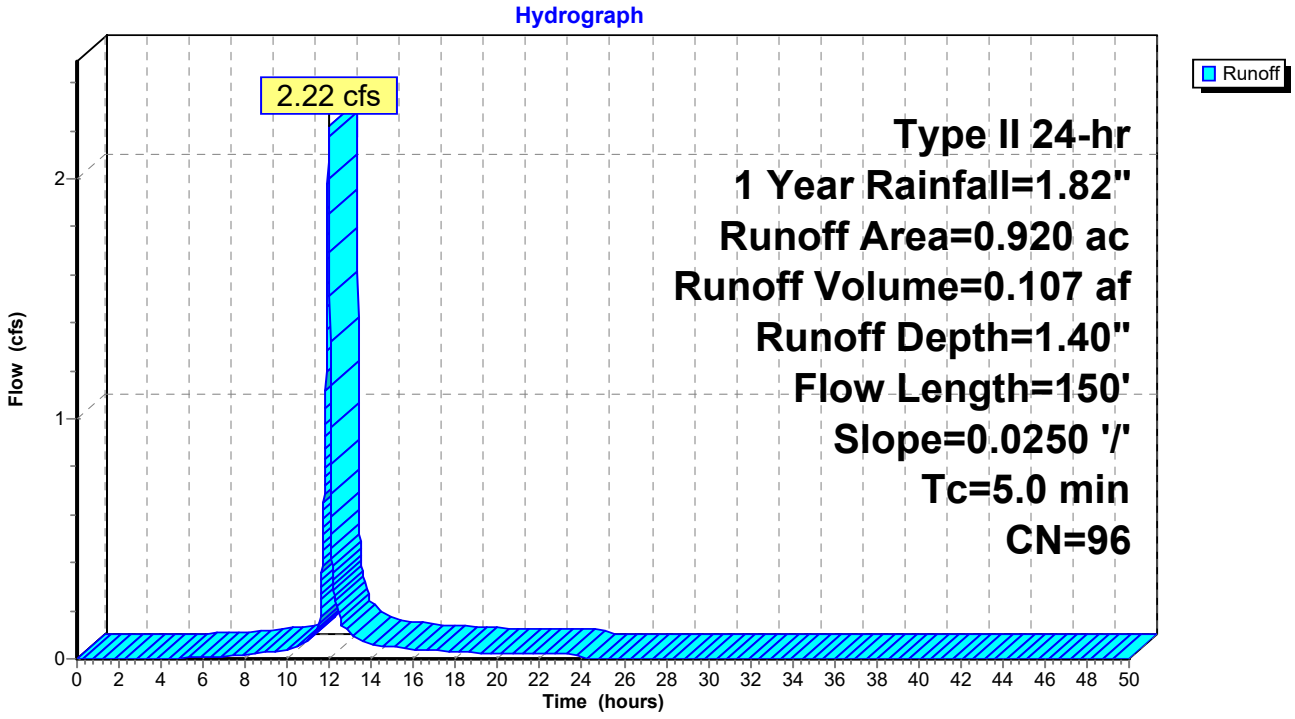
Runoff = 2.22 cfs @ 11.96 hrs, Volume= 0.107 af, Depth= 1.40"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=1.82"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

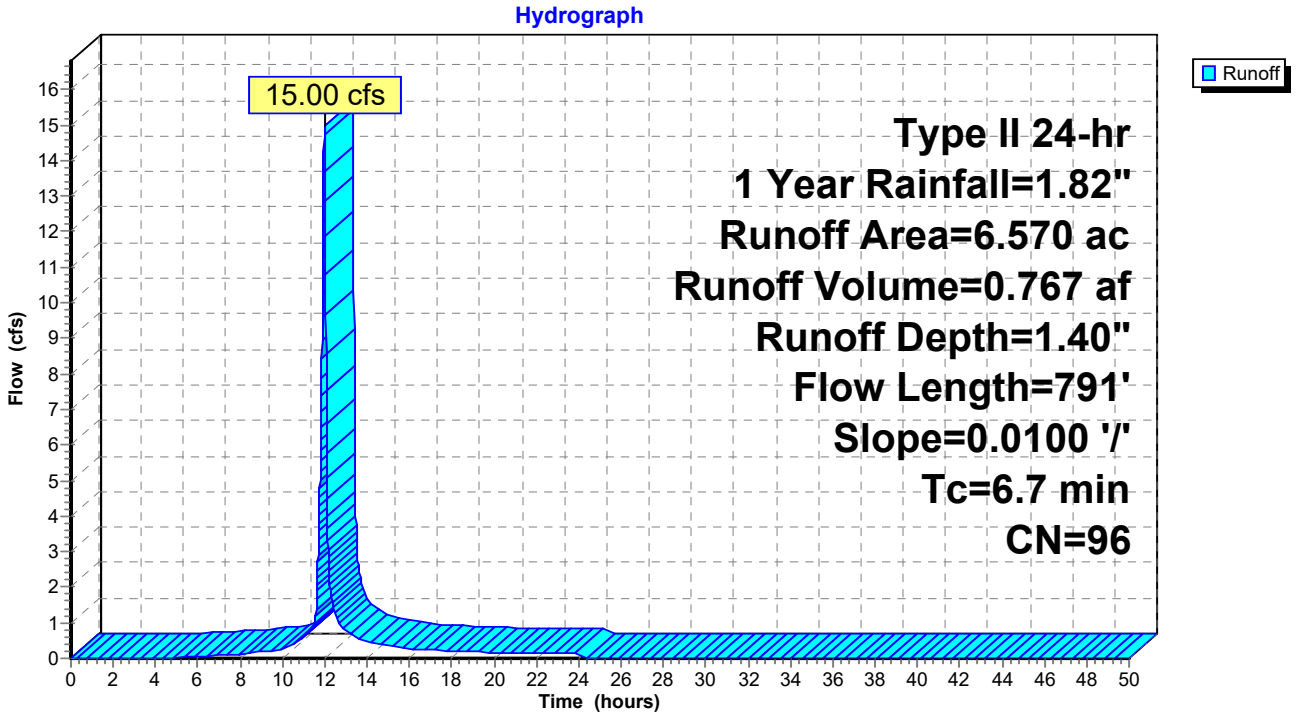
Runoff = 15.00 cfs @ 11.98 hrs, Volume= 0.767 af, Depth= 1.40"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=1.82"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 1.40" for 1 Year event
Inflow = 15.00 cfs @ 11.98 hrs, Volume= 0.767 af
Outflow = 1.93 cfs @ 12.26 hrs, Volume= 0.649 af, Atten= 87%, Lag= 17.0 min
Primary = 1.93 cfs @ 12.26 hrs, Volume= 0.649 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 584.27' @ 12.26 hrs Surf.Area= 10,099 sf Storage= 18,660 cf

Plug-Flow detention time= 670.3 min calculated for 0.649 af (85% of inflow)
Center-of-Mass det. time= 601.5 min (1,390.7 - 789.2)

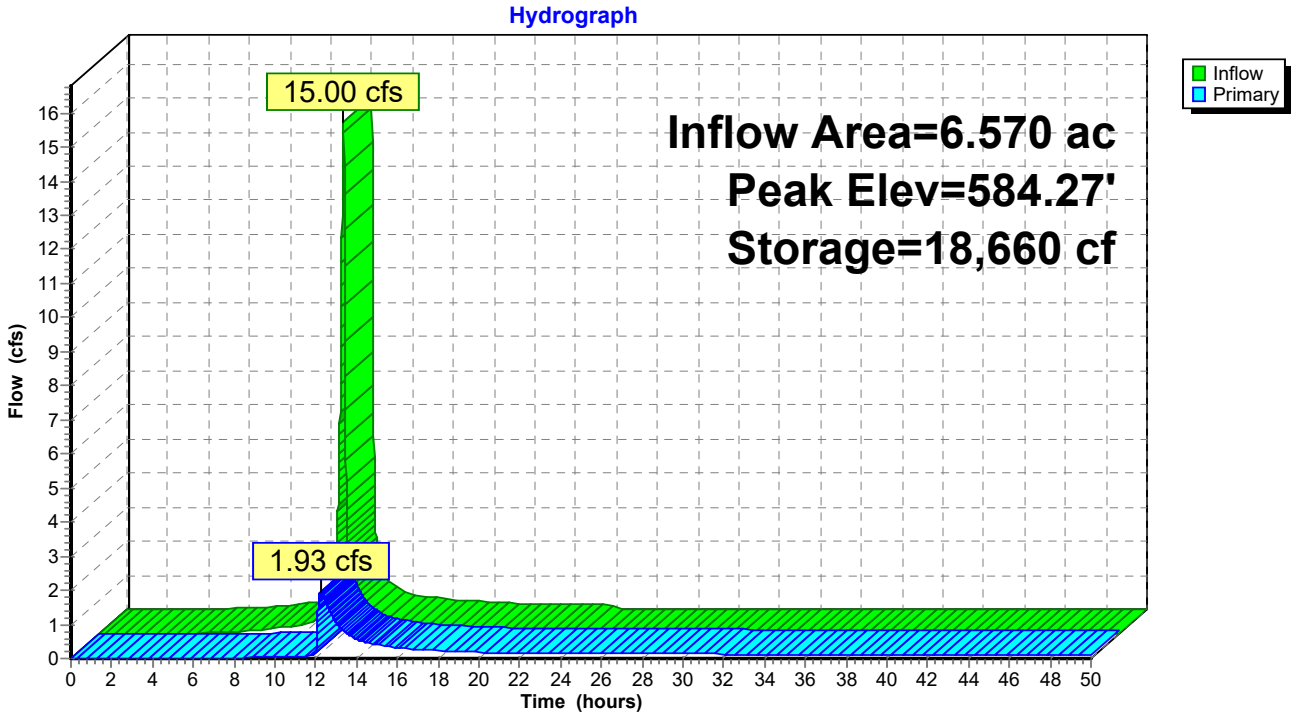
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.93 cfs @ 12.26 hrs HW=584.27' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.93 cfs of 2.86 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.11 fps)
    - **4=Culvert** (Passes 0.16 cfs of 17.02 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Weir Controls 1.77 cfs @ 1.69 fps)

Pond 1P: DETENTION POND

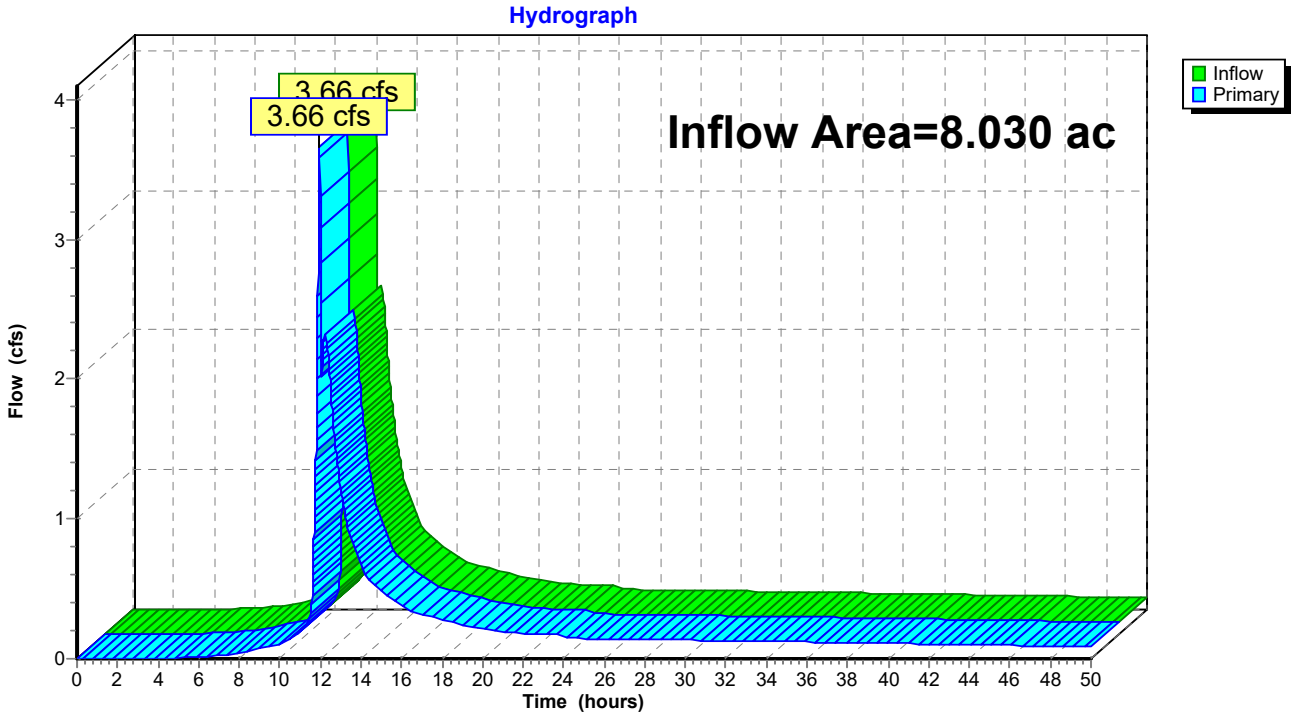


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 1.22" for 1 Year event
Inflow = 3.66 cfs @ 11.96 hrs, Volume= 0.819 af
Primary = 3.66 cfs @ 11.96 hrs, Volume= 0.819 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=1.77"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=1.62 cfs 0.080 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=1.77"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=2.76 cfs 0.136 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=1.77"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=18.66 cfs 0.968 af

Pond 1P: DETENTION POND Peak Elev=584.65' Storage=22,654 cf Inflow=18.66 cfs 0.968 af
Outflow=3.07 cfs 0.848 af

Link 1L: COMBINED DISCHARGE Inflow=6.20 cfs 1.063 af
Primary=6.20 cfs 1.063 af

Total Runoff Area = 8.030 ac Runoff Volume = 1.183 af Average Runoff Depth = 1.77"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

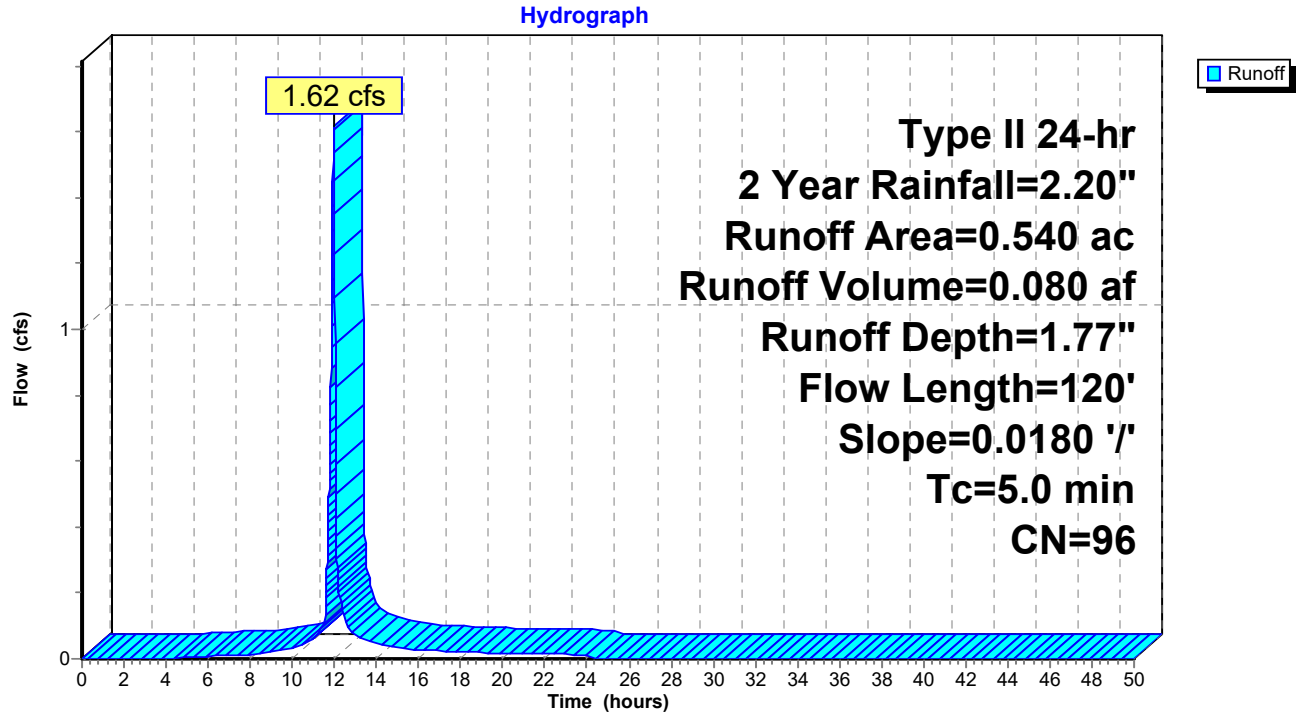
Runoff = 1.62 cfs @ 11.96 hrs, Volume= 0.080 af, Depth= 1.77"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 Year Rainfall=2.20"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

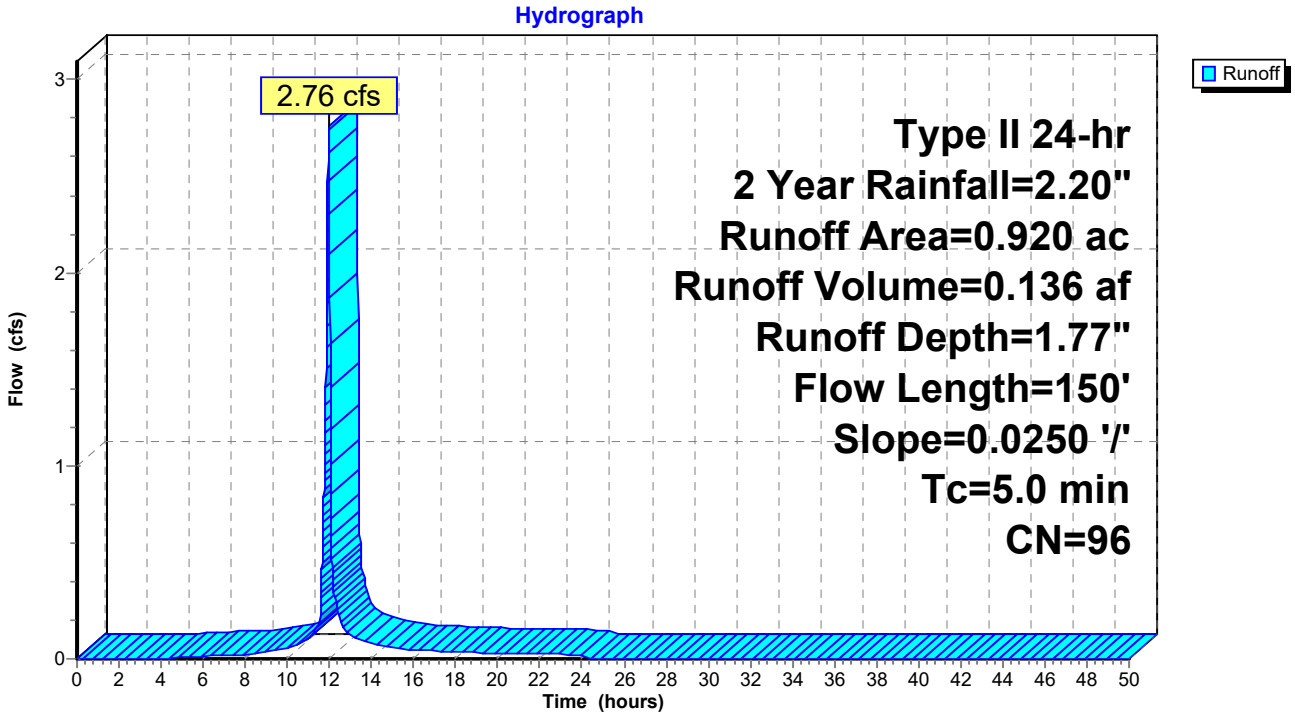
Runoff = 2.76 cfs @ 11.96 hrs, Volume= 0.136 af, Depth= 1.77"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 Year Rainfall=2.20"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

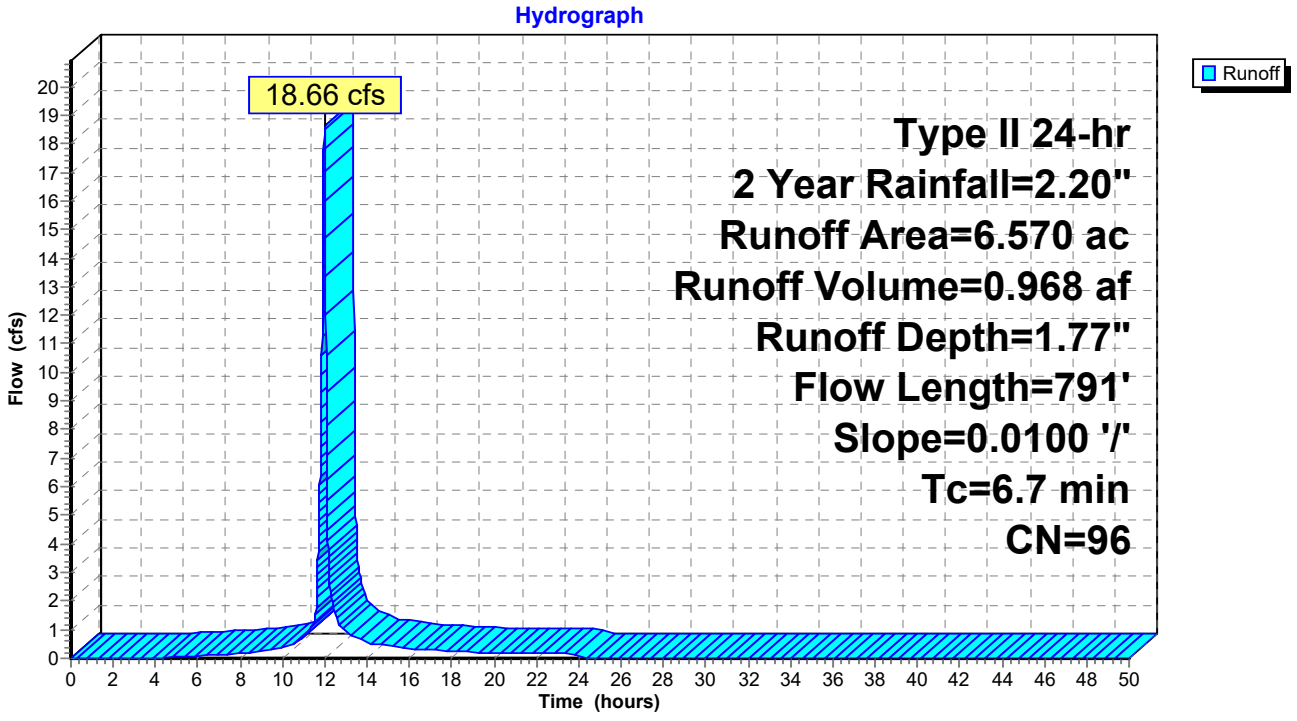
Runoff = 18.66 cfs @ 11.98 hrs, Volume= 0.968 af, Depth= 1.77"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 Year Rainfall=2.20"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 1.77" for 2 Year event
Inflow = 18.66 cfs @ 11.98 hrs, Volume= 0.968 af
Outflow = 3.07 cfs @ 12.18 hrs, Volume= 0.848 af, Atten= 84%, Lag= 12.5 min
Primary = 3.07 cfs @ 12.18 hrs, Volume= 0.848 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 584.65' @ 12.18 hrs Surf.Area= 10,753 sf Storage= 22,654 cf

Plug-Flow detention time= 534.4 min calculated for 0.848 af (88% of inflow)
Center-of-Mass det. time= 474.8 min (1,257.5 - 782.8)

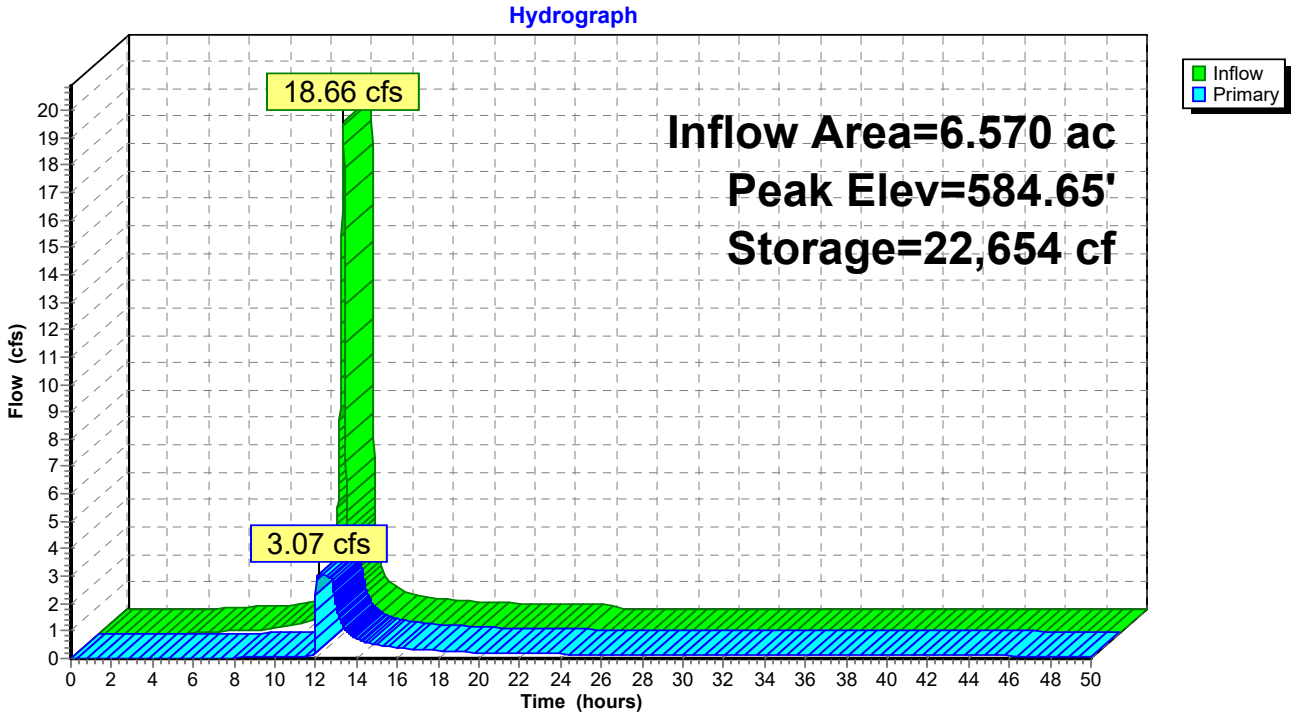
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.07 cfs @ 12.18 hrs HW=584.65' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Barrel Controls 3.07 cfs @ 5.62 fps)
  - **2=Orifice/Grate** (Passes < 0.17 cfs potential flow)
    - **4=Culvert** (Passes < 19.43 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Passes < 6.62 cfs potential flow)

Pond 1P: DETENTION POND

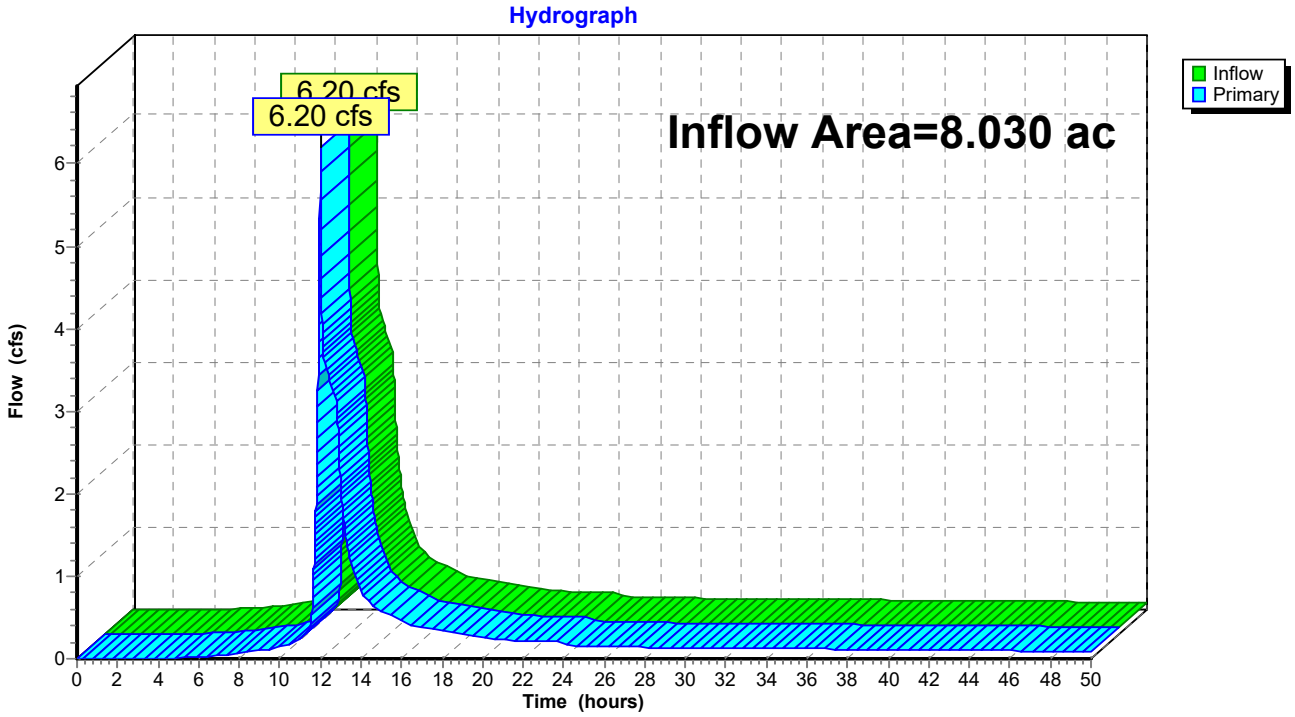


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 1.59" for 2 Year event
Inflow = 6.20 cfs @ 12.01 hrs, Volume= 1.063 af
Primary = 6.20 cfs @ 12.01 hrs, Volume= 1.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=2.38"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=2.13 cfs 0.107 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=2.38"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=3.64 cfs 0.182 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=2.38"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=24.57 cfs 1.300 af

Pond 1P: DETENTION POND Peak Elev=585.36' Storage=30,681 cf Inflow=24.57 cfs 1.300 af
Outflow=3.41 cfs 1.178 af

Link 1L: COMBINED DISCHARGE Inflow=8.82 cfs 1.467 af
Primary=8.82 cfs 1.467 af

Total Runoff Area = 8.030 ac Runoff Volume = 1.589 af Average Runoff Depth = 2.38"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

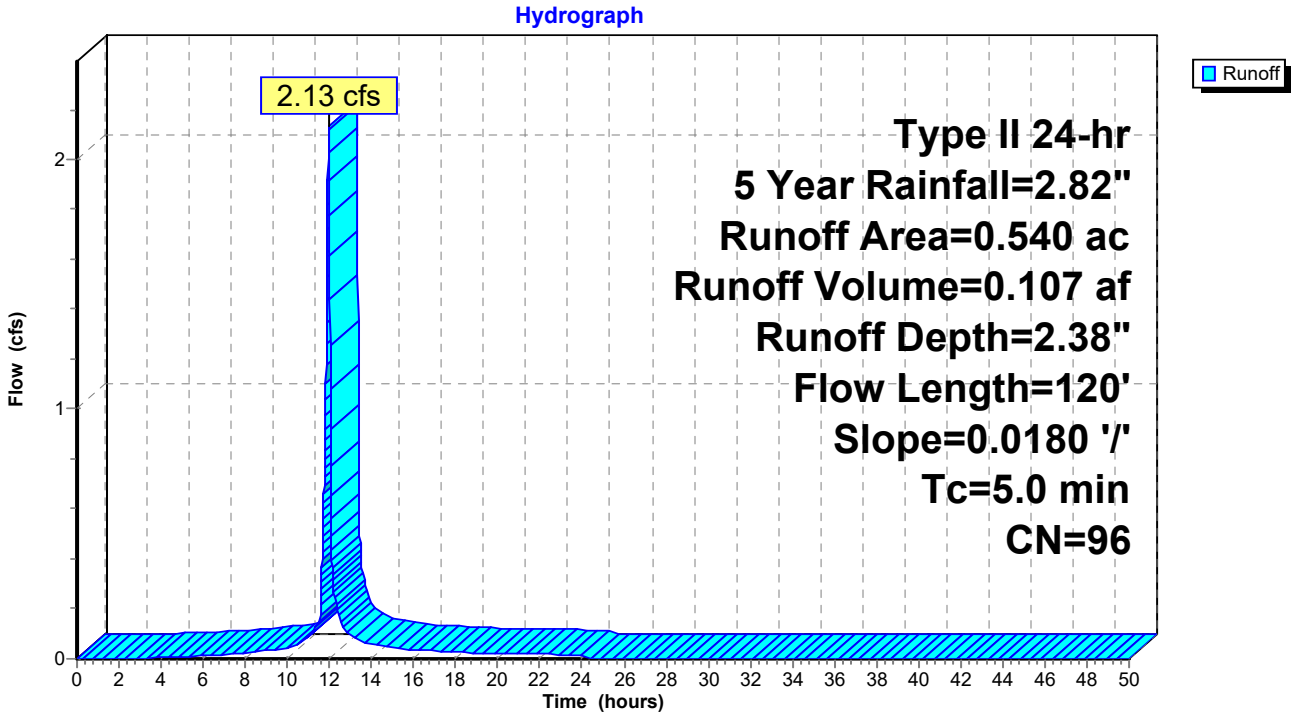
Runoff = 2.13 cfs @ 11.96 hrs, Volume= 0.107 af, Depth= 2.38"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 Year Rainfall=2.82"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

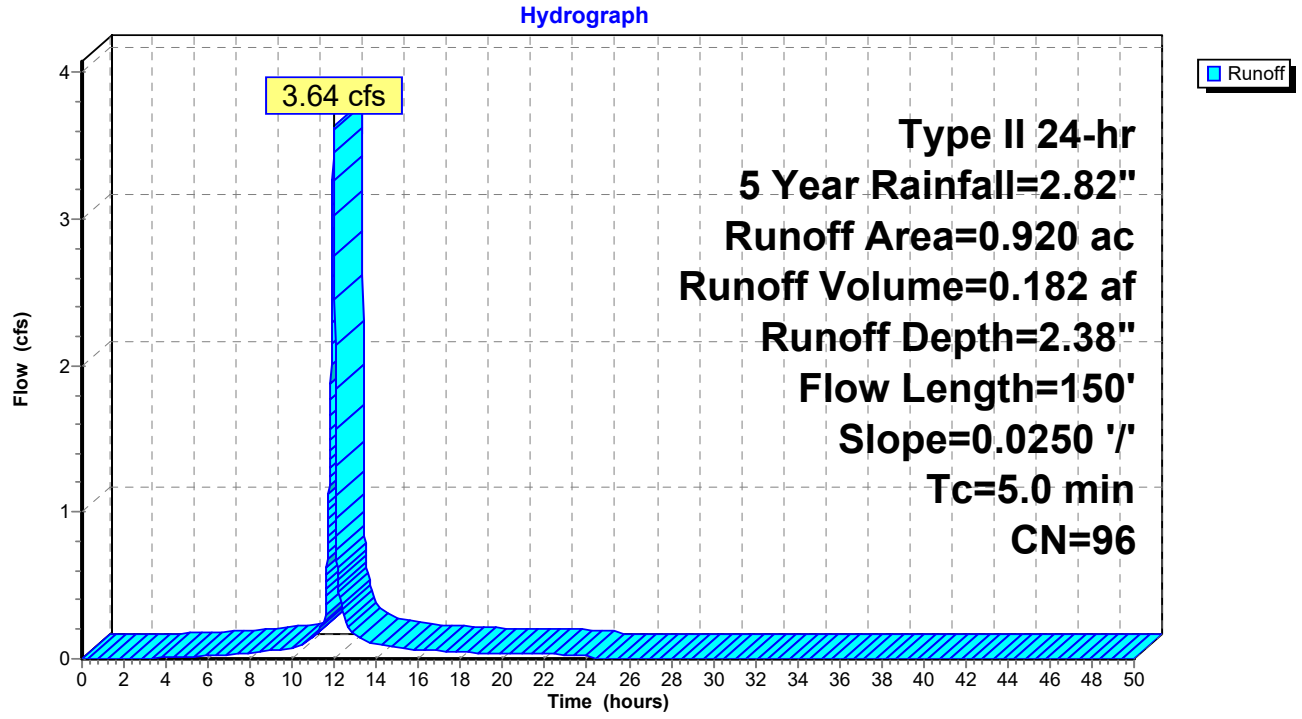
Runoff = 3.64 cfs @ 11.96 hrs, Volume= 0.182 af, Depth= 2.38"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 Year Rainfall=2.82"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

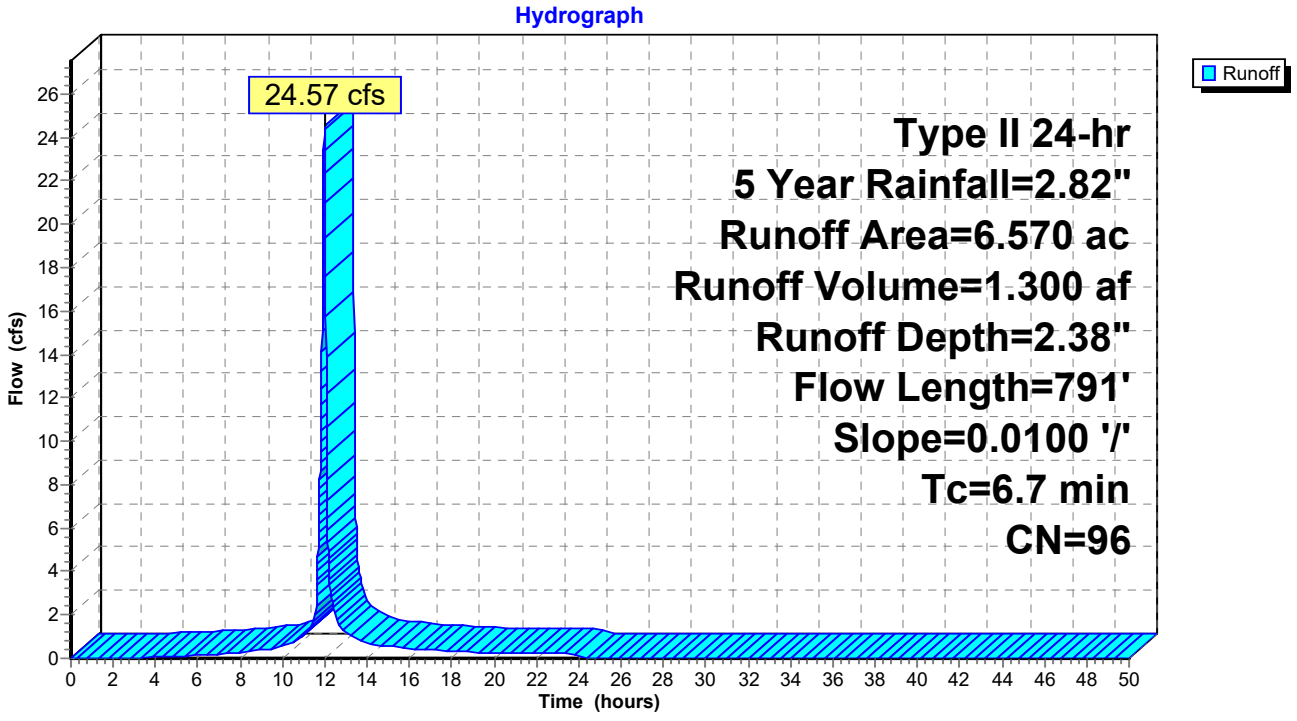
Runoff = 24.57 cfs @ 11.98 hrs, Volume= 1.300 af, Depth= 2.38"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 Year Rainfall=2.82"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 2.38" for 5 Year event
Inflow = 24.57 cfs @ 11.98 hrs, Volume= 1.300 af
Outflow = 3.41 cfs @ 12.22 hrs, Volume= 1.178 af, Atten= 86%, Lag= 14.9 min
Primary = 3.41 cfs @ 12.22 hrs, Volume= 1.178 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 585.36' @ 12.22 hrs Surf.Area= 11,978 sf Storage= 30,681 cf

Plug-Flow detention time= 418.6 min calculated for 1.178 af (91% of inflow)
Center-of-Mass det. time= 369.5 min (1,144.4 - 774.9)

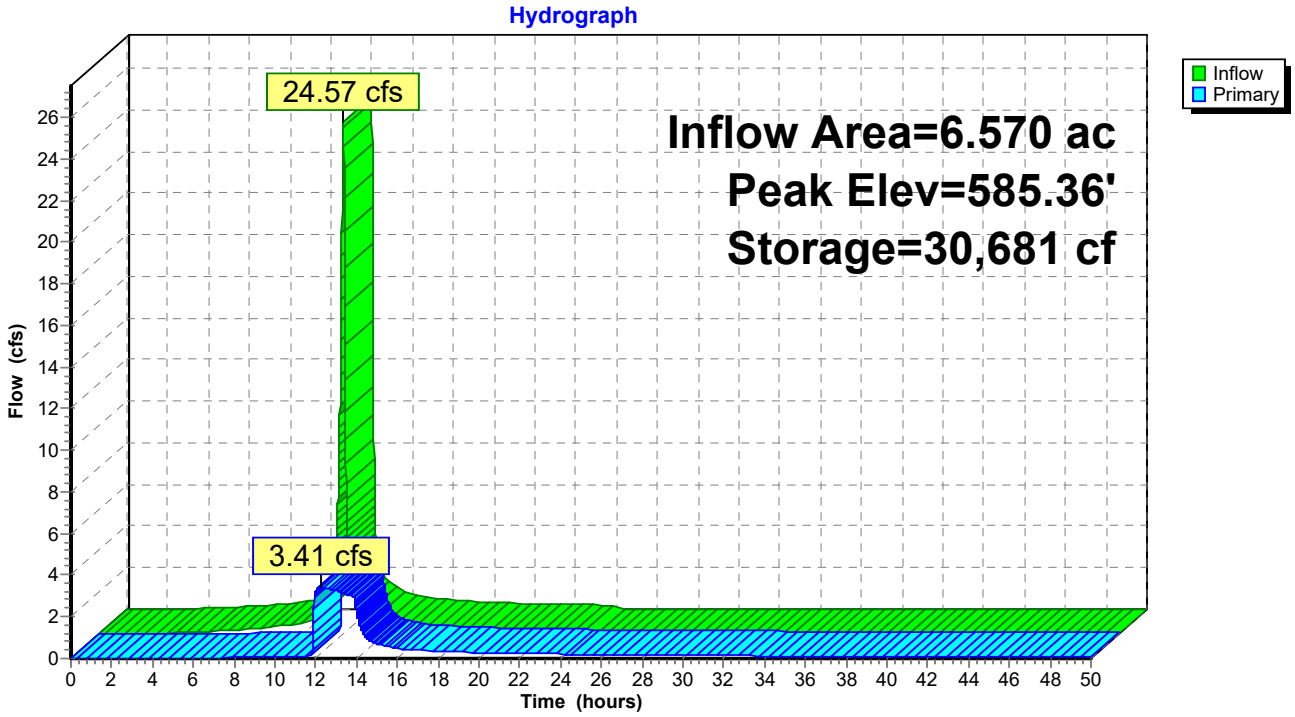
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.41 cfs @ 12.22 hrs HW=585.36' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Barrel Controls 3.41 cfs @ 6.26 fps)
  - **2=Orifice/Grate** (Passes < 0.19 cfs potential flow)
    - **4=Culvert** (Passes < 23.22 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Passes < 19.25 cfs potential flow)

Pond 1P: DETENTION POND

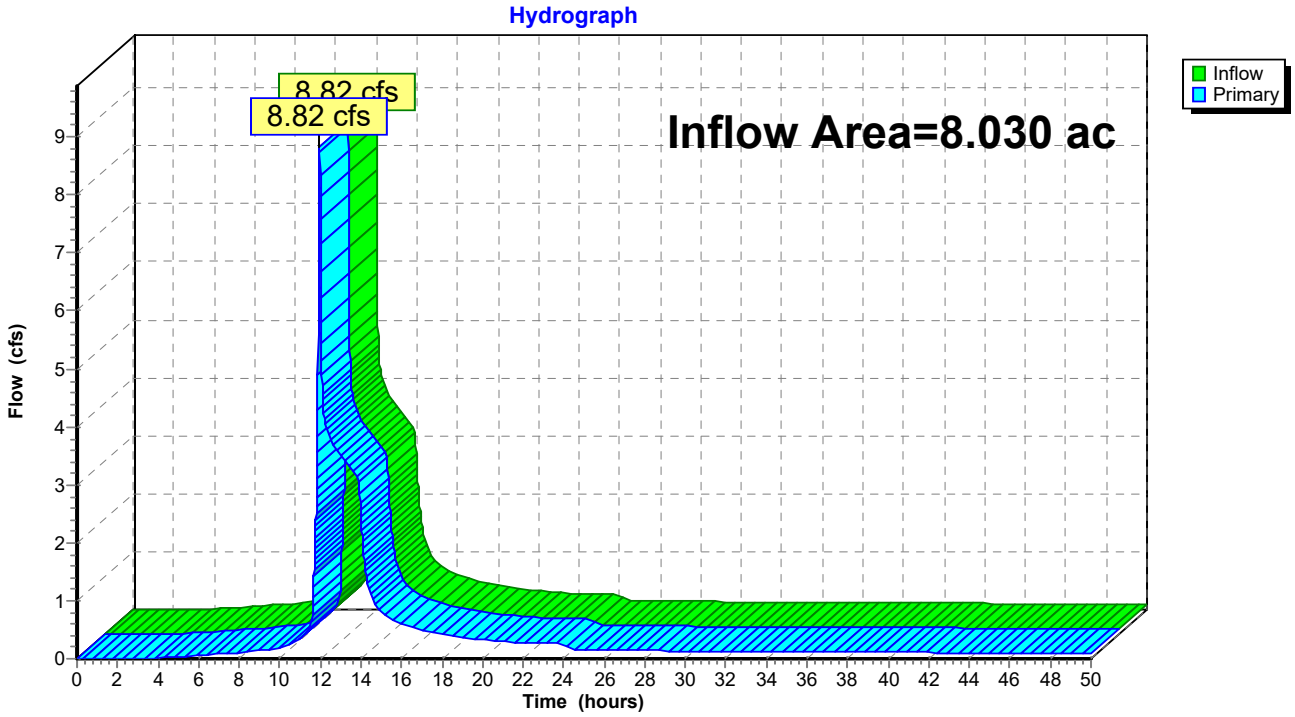


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 2.19" for 5 Year event
Inflow = 8.82 cfs @ 11.96 hrs, Volume= 1.467 af
Primary = 8.82 cfs @ 11.96 hrs, Volume= 1.467 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=2.56 cfs 0.130 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=4.36 cfs 0.221 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=29.49 cfs 1.581 af

Pond 1P: DETENTION POND Peak Elev=585.91' Storage=37,579 cf Inflow=29.49 cfs 1.581 af
Outflow=3.66 cfs 1.458 af

Link 1L: COMBINED DISCHARGE Inflow=10.19 cfs 1.809 af
Primary=10.19 cfs 1.809 af

Total Runoff Area = 8.030 ac Runoff Volume = 1.932 af Average Runoff Depth = 2.89"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

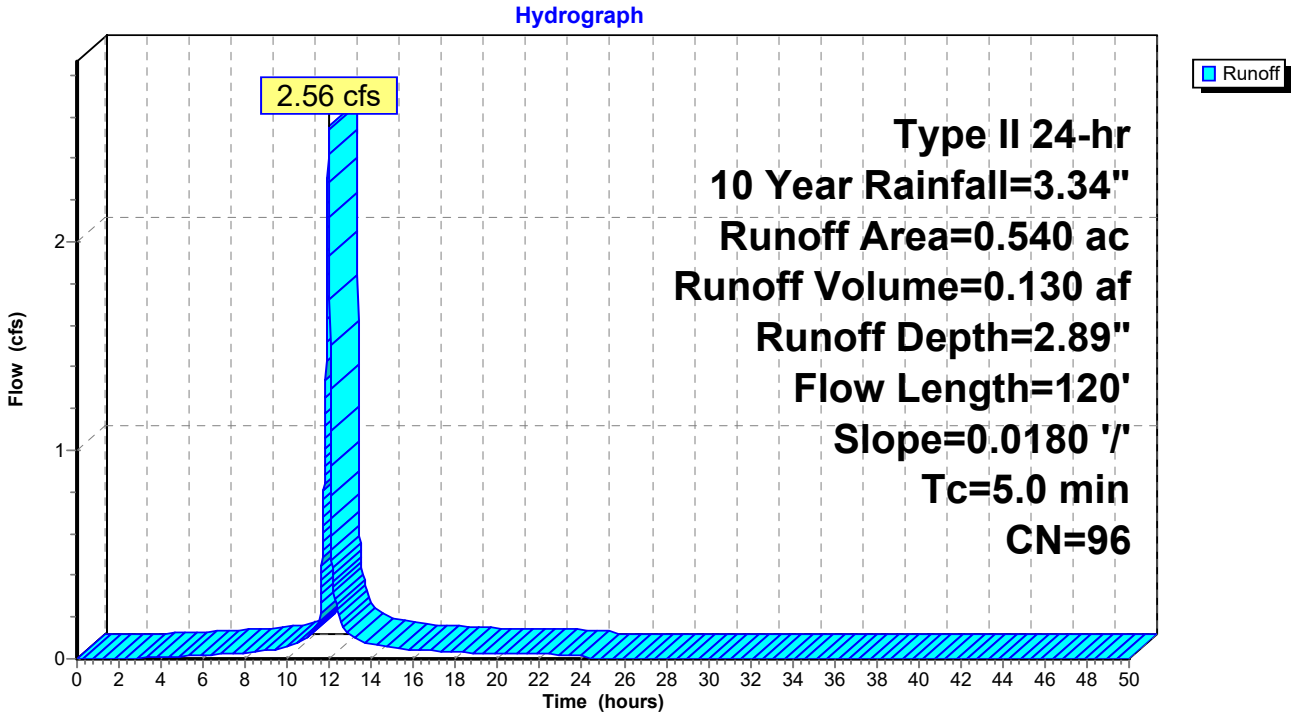
Runoff = 2.56 cfs @ 11.96 hrs, Volume= 0.130 af, Depth= 2.89"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=3.34"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

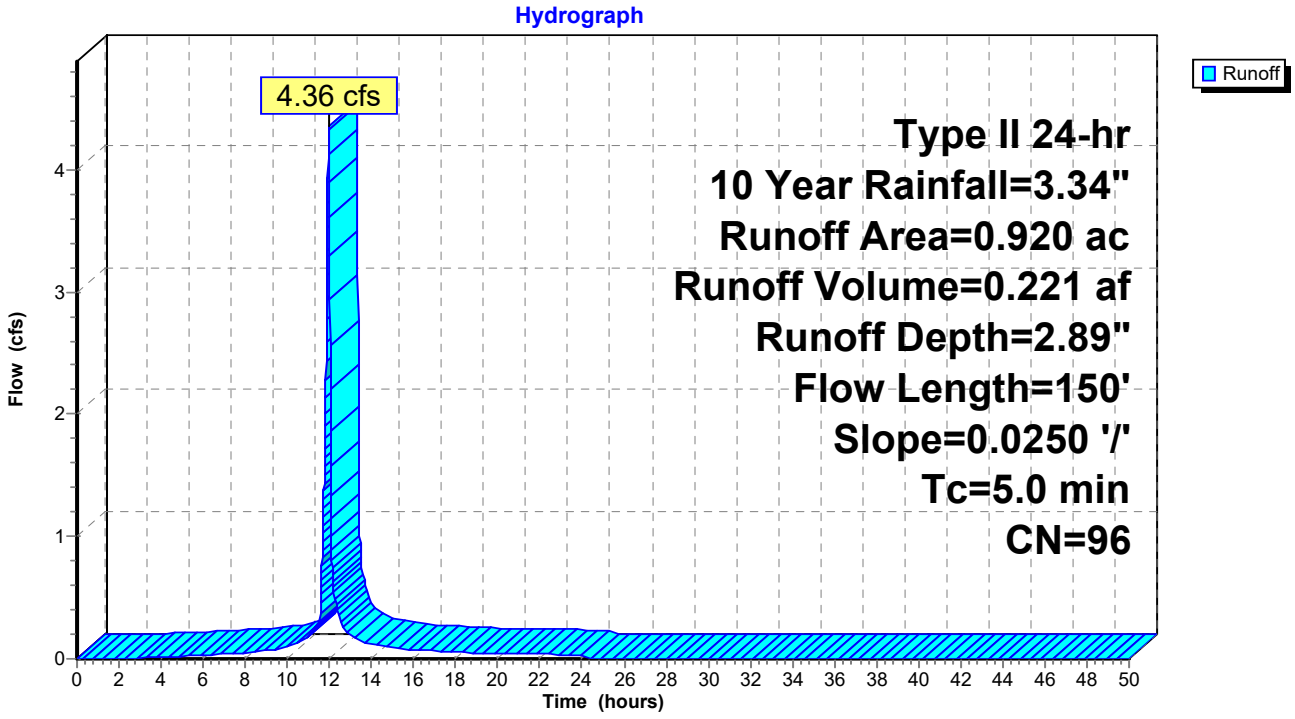
Runoff = 4.36 cfs @ 11.96 hrs, Volume= 0.221 af, Depth= 2.89"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=3.34"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

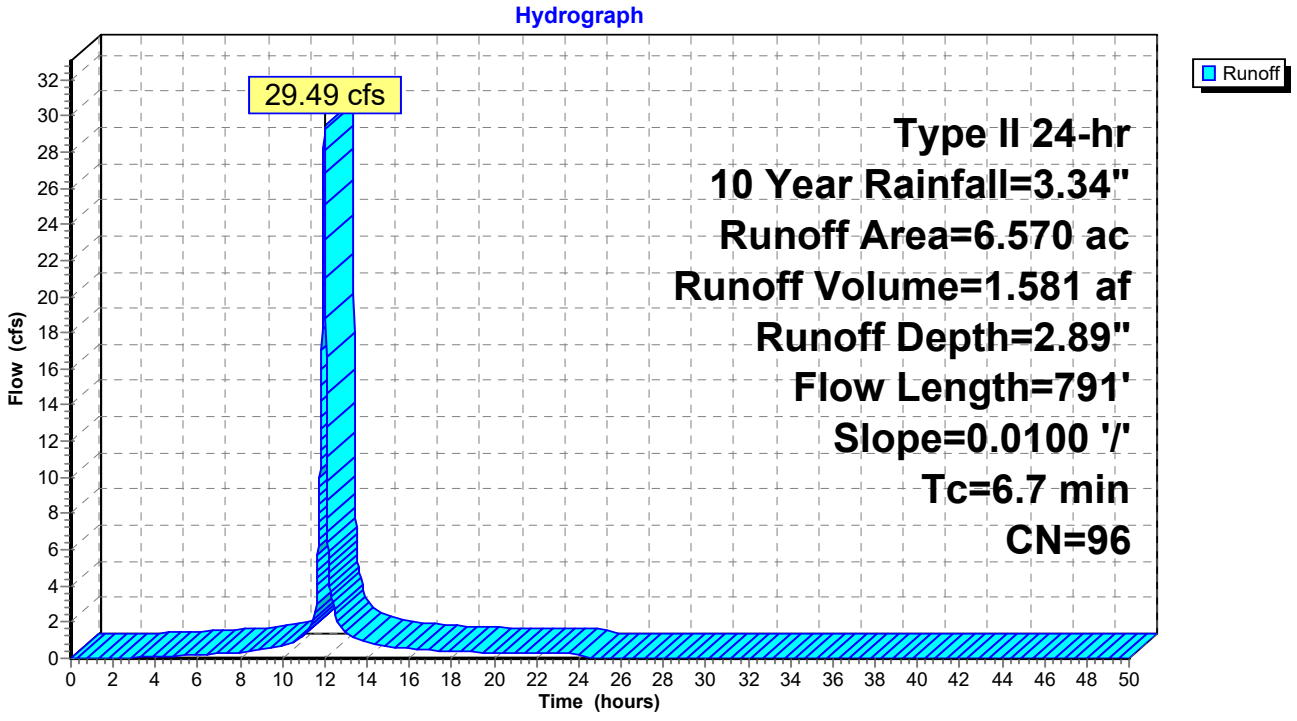
Runoff = 29.49 cfs @ 11.98 hrs, Volume= 1.581 af, Depth= 2.89"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=3.34"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 2.89" for 10 Year event
Inflow = 29.49 cfs @ 11.98 hrs, Volume= 1.581 af
Outflow = 3.66 cfs @ 12.26 hrs, Volume= 1.458 af, Atten= 88%, Lag= 17.4 min
Primary = 3.66 cfs @ 12.26 hrs, Volume= 1.458 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 585.91' @ 12.26 hrs Surf.Area= 12,953 sf Storage= 37,579 cf

Plug-Flow detention time= 366.9 min calculated for 1.458 af (92% of inflow)
Center-of-Mass det. time= 324.3 min (1,094.3 - 770.0)

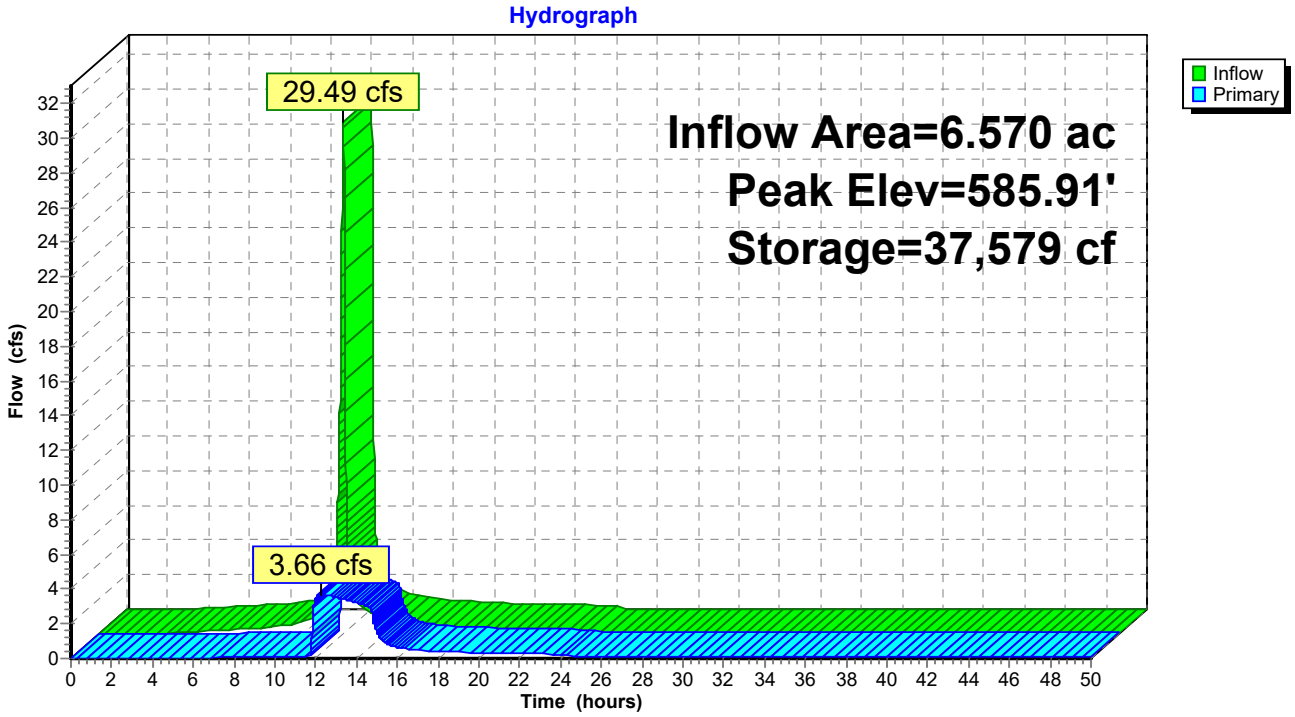
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.26 hrs HW=585.91' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Barrel Controls 3.66 cfs @ 6.71 fps)
  - **2=Orifice/Grate** (Passes < 0.21 cfs potential flow)
    - **4=Culvert** (Passes < 25.80 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Passes < 31.21 cfs potential flow)

Pond 1P: DETENTION POND

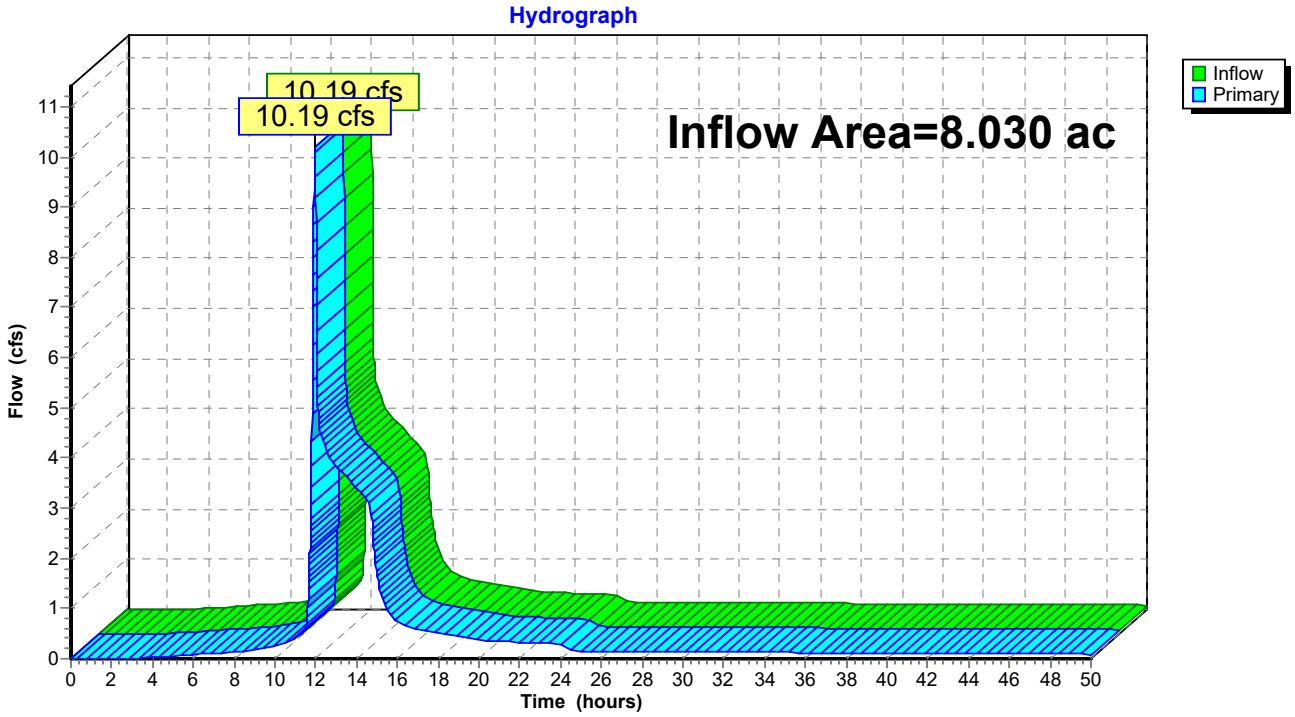


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 2.70" for 10 Year event
Inflow = 10.19 cfs @ 11.96 hrs, Volume= 1.809 af
Primary = 10.19 cfs @ 11.96 hrs, Volume= 1.809 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=3.59"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=3.14 cfs 0.162 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=3.59"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=5.35 cfs 0.275 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=3.59"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=36.17 cfs 1.965 af

Pond 1P: DETENTION POND Peak Elev=586.60' Storage=47,023 cf Inflow=36.17 cfs 1.965 af
Outflow=3.95 cfs 1.842 af

Link 1L: COMBINED DISCHARGE Inflow=12.01 cfs 2.278 af
Primary=12.01 cfs 2.278 af

Total Runoff Area = 8.030 ac Runoff Volume = 2.402 af Average Runoff Depth = 3.59"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

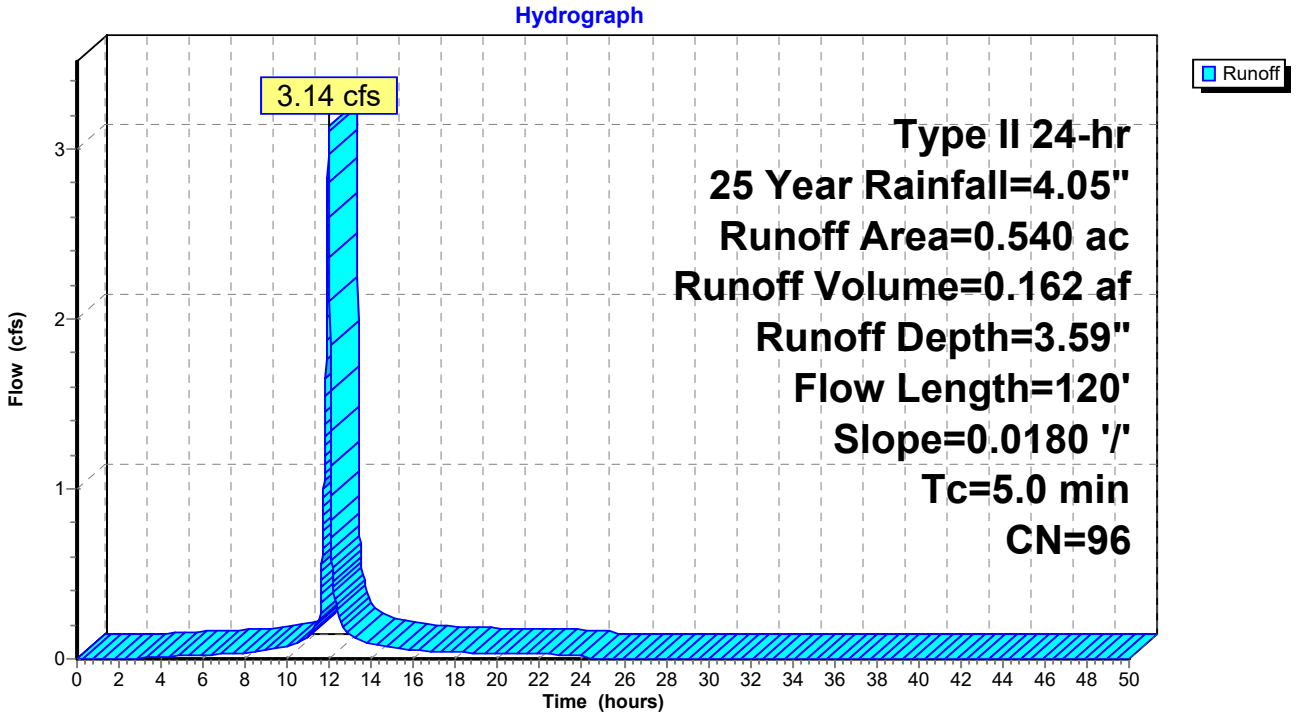
Runoff = 3.14 cfs @ 11.96 hrs, Volume= 0.162 af, Depth= 3.59"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=4.05"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

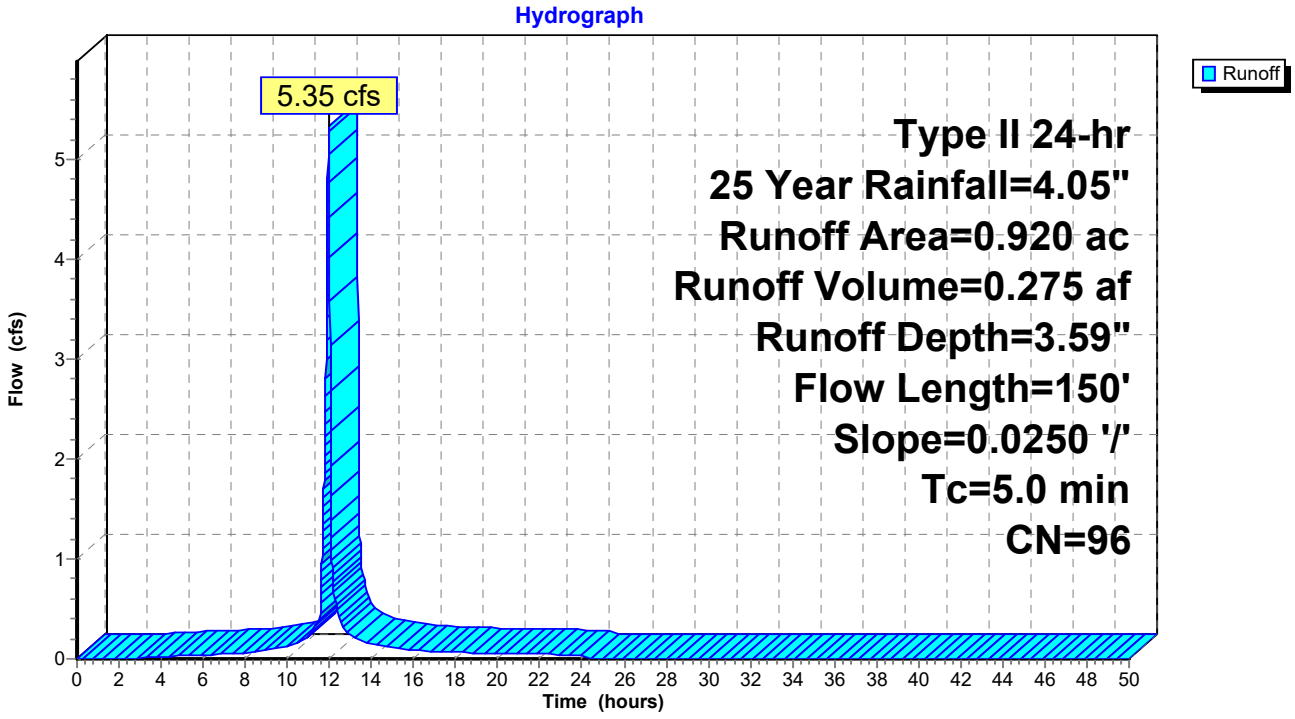
Runoff = 5.35 cfs @ 11.96 hrs, Volume= 0.275 af, Depth= 3.59"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=4.05"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

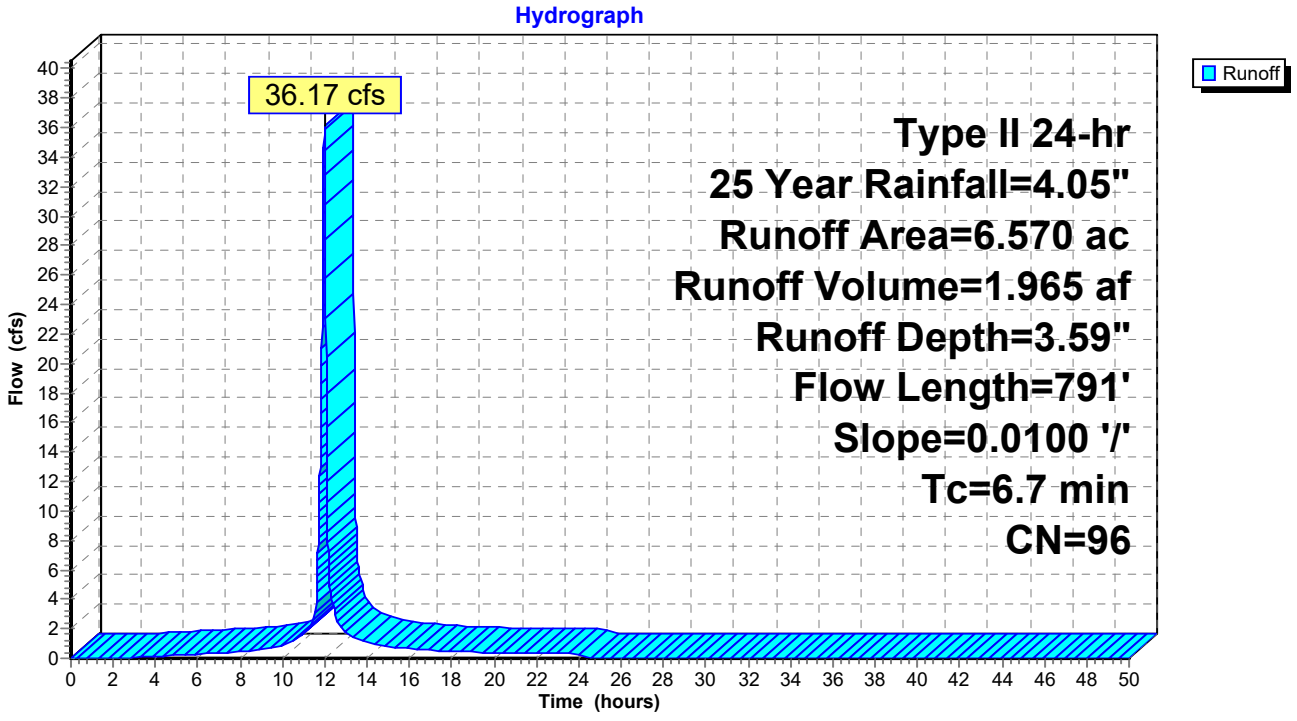
Runoff = 36.17 cfs @ 11.98 hrs, Volume= 1.965 af, Depth= 3.59"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=4.05"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 3.59" for 25 Year event
Inflow = 36.17 cfs @ 11.98 hrs, Volume= 1.965 af
Outflow = 3.95 cfs @ 12.33 hrs, Volume= 1.842 af, Atten= 89%, Lag= 21.3 min
Primary = 3.95 cfs @ 12.33 hrs, Volume= 1.842 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 586.60' @ 12.33 hrs Surf.Area= 14,213 sf Storage= 47,023 cf

Plug-Flow detention time= 327.4 min calculated for 1.842 af (94% of inflow)
Center-of-Mass det. time= 291.3 min (1,055.9 - 764.6)

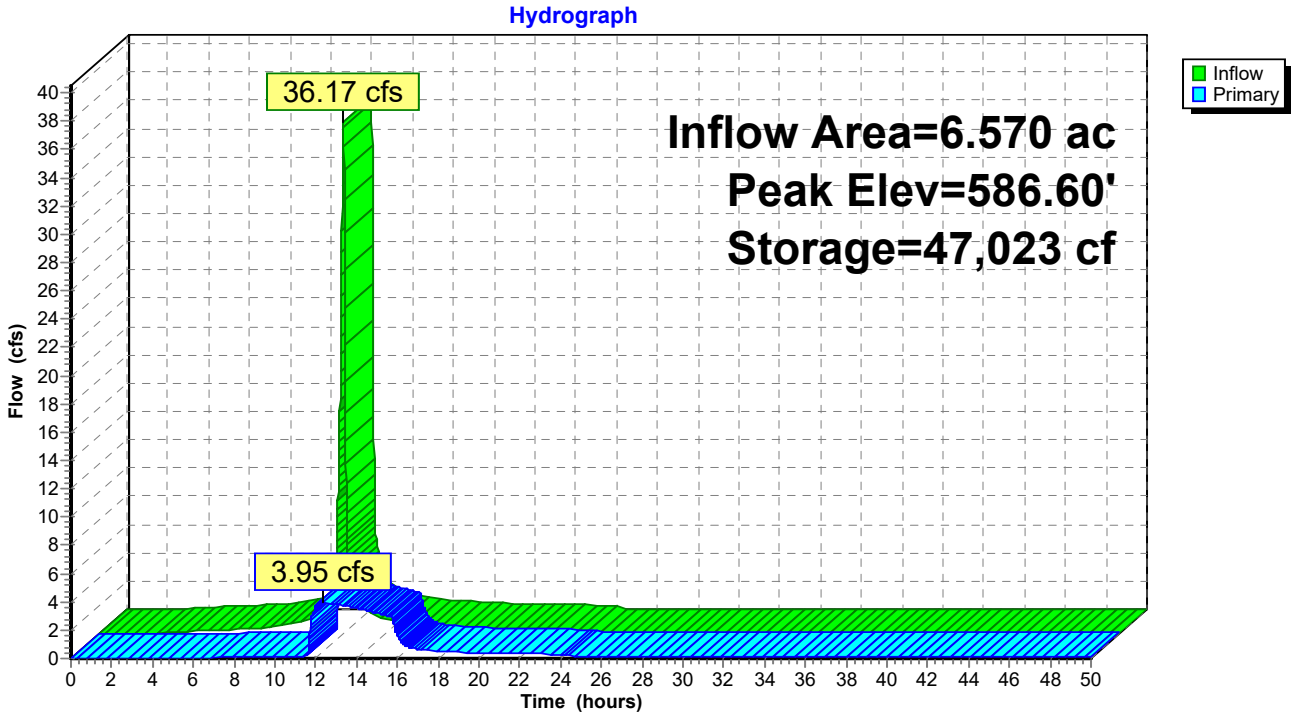
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.95 cfs @ 12.33 hrs HW=586.60' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Barrel Controls 3.95 cfs @ 7.25 fps)
  - **2=Orifice/Grate** (Passes < 0.22 cfs potential flow)
    - **4=Culvert** (Passes < 28.72 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Passes < 47.82 cfs potential flow)

Pond 1P: DETENTION POND

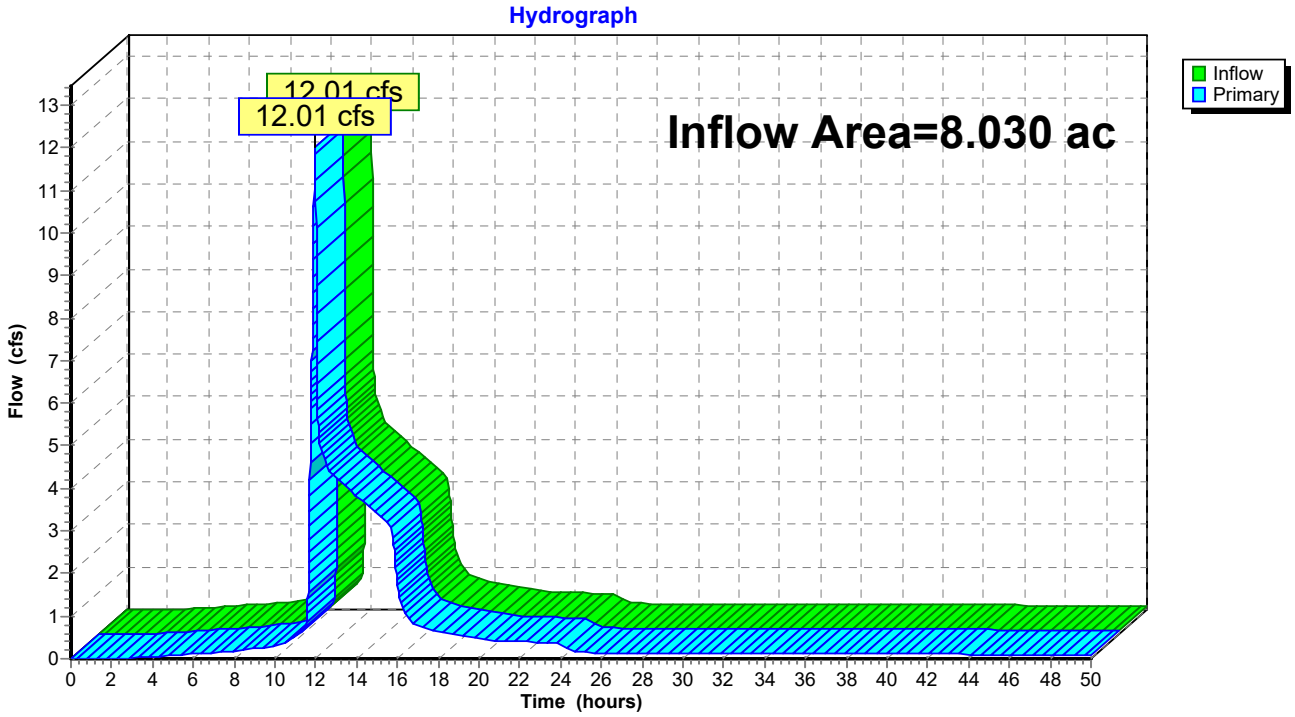


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 3.40" for 25 Year event
Inflow = 12.01 cfs @ 11.96 hrs, Volume= 2.278 af
Primary = 12.01 cfs @ 11.96 hrs, Volume= 2.278 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=4.11"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=3.56 cfs 0.185 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=4.11"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=6.07 cfs 0.315 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=4.11"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=41.05 cfs 2.248 af

Pond 1P: DETENTION POND Peak Elev=587.05' Storage=53,522 cf Inflow=41.05 cfs 2.248 af
Outflow=4.13 cfs 2.123 af

Link 1L: COMBINED DISCHARGE Inflow=13.30 cfs 2.623 af
Primary=13.30 cfs 2.623 af

Total Runoff Area = 8.030 ac Runoff Volume = 2.747 af Average Runoff Depth = 4.11"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

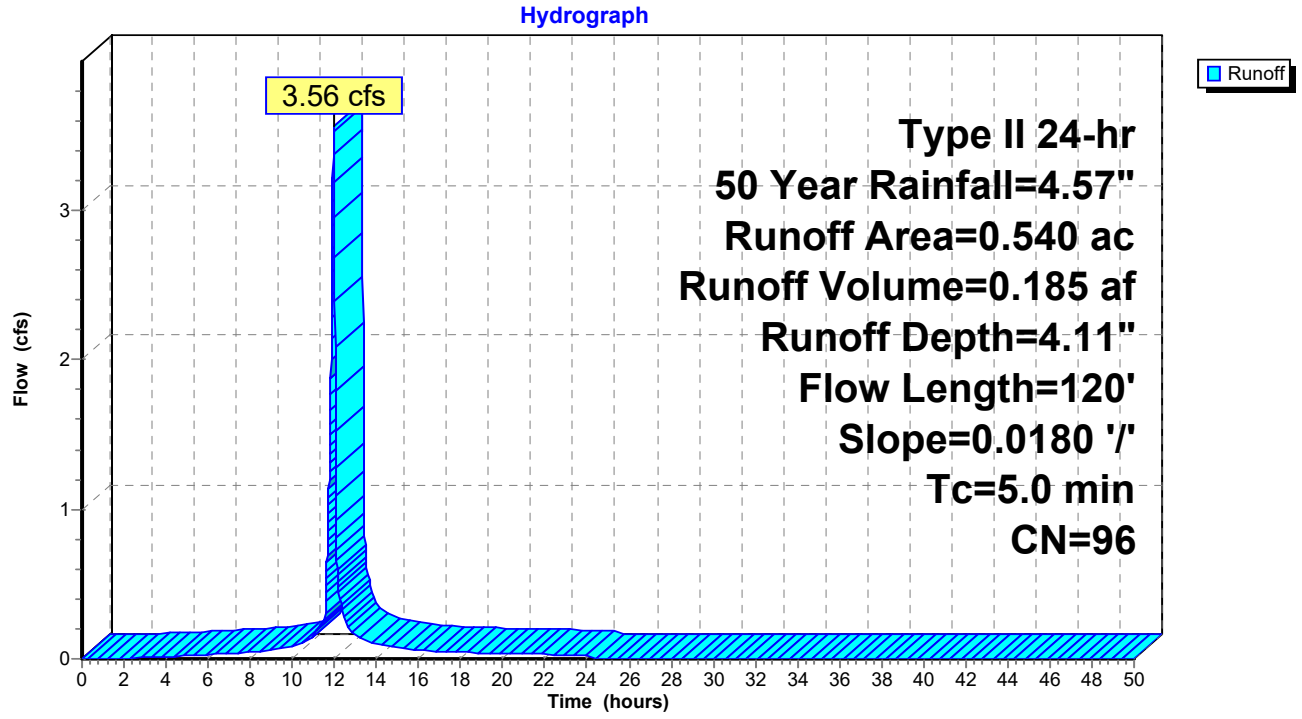
Runoff = 3.56 cfs @ 11.96 hrs, Volume= 0.185 af, Depth= 4.11"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 Year Rainfall=4.57"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

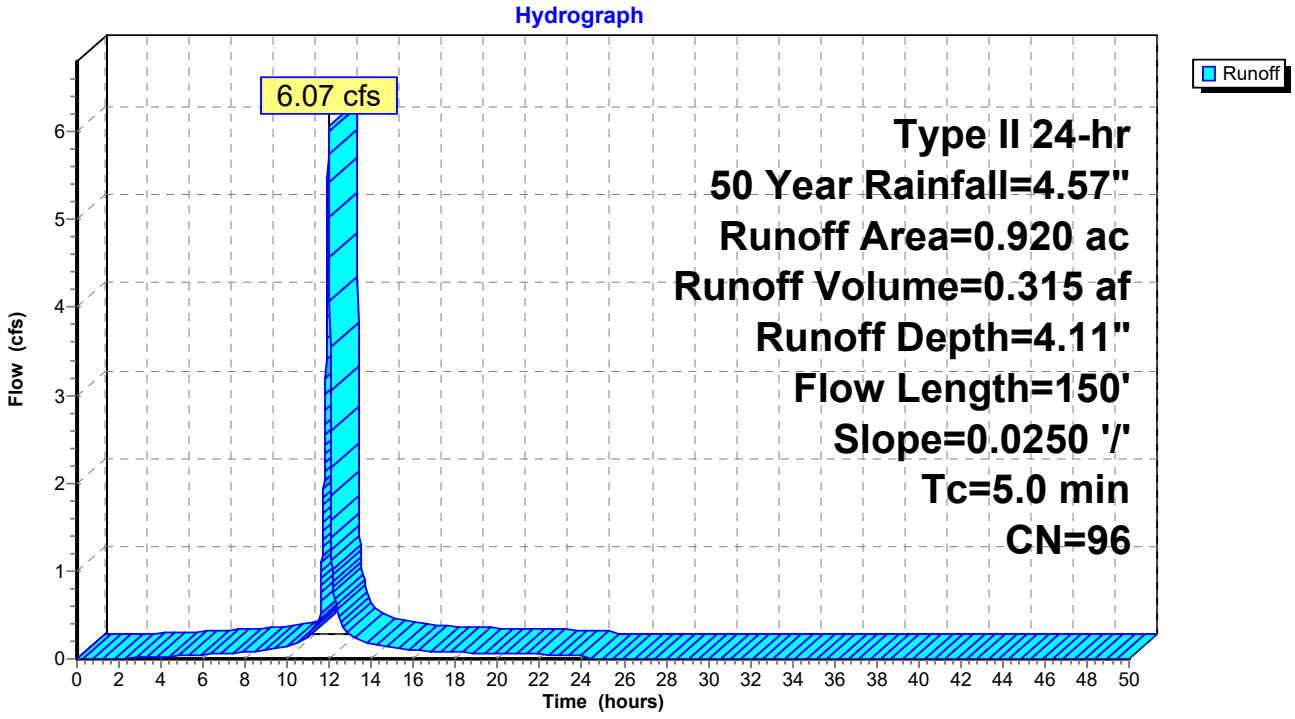
Runoff = 6.07 cfs @ 11.96 hrs, Volume= 0.315 af, Depth= 4.11"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 Year Rainfall=4.57"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

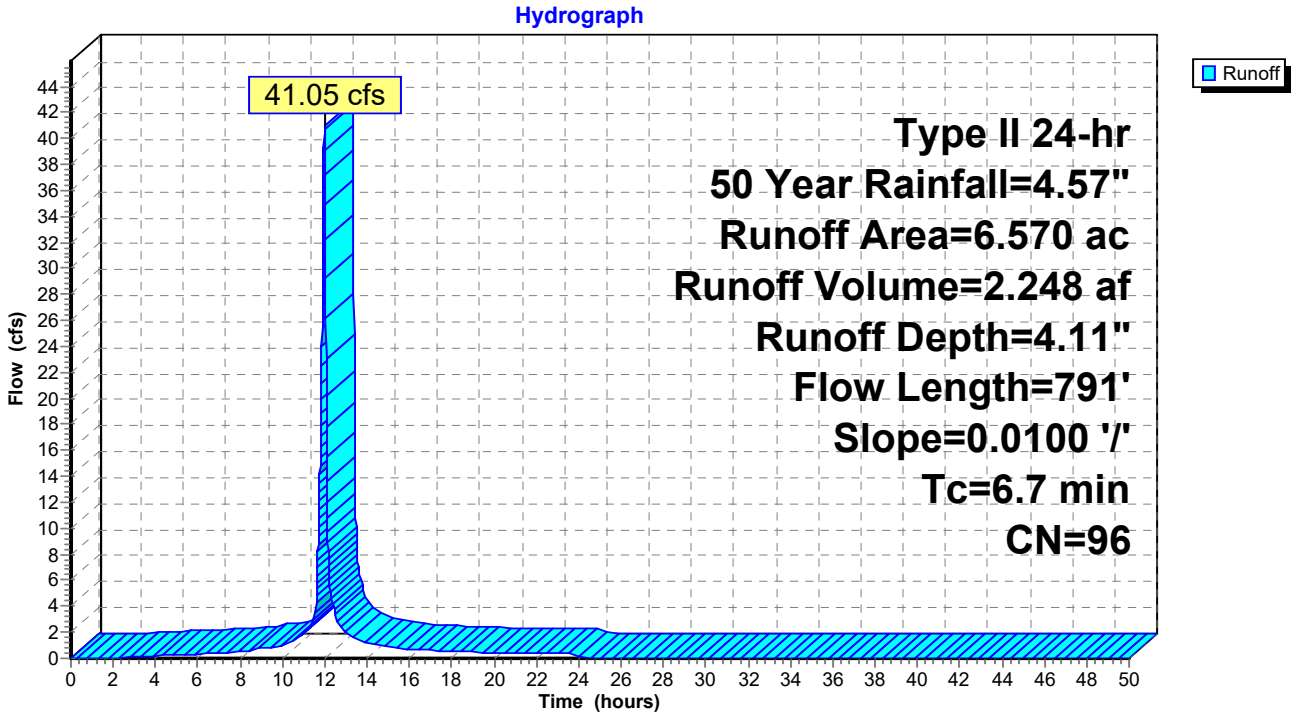
Runoff = 41.05 cfs @ 11.98 hrs, Volume= 2.248 af, Depth= 4.11"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 Year Rainfall=4.57"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 4.11" for 50 Year event
Inflow = 41.05 cfs @ 11.98 hrs, Volume= 2.248 af
Outflow = 4.13 cfs @ 12.38 hrs, Volume= 2.123 af, Atten= 90%, Lag= 24.2 min
Primary = 4.13 cfs @ 12.38 hrs, Volume= 2.123 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 587.05' @ 12.38 hrs Surf.Area= 15,025 sf Storage= 53,522 cf

Plug-Flow detention time= 309.5 min calculated for 2.123 af (94% of inflow)
Center-of-Mass det. time= 277.2 min (1,038.7 - 761.5)

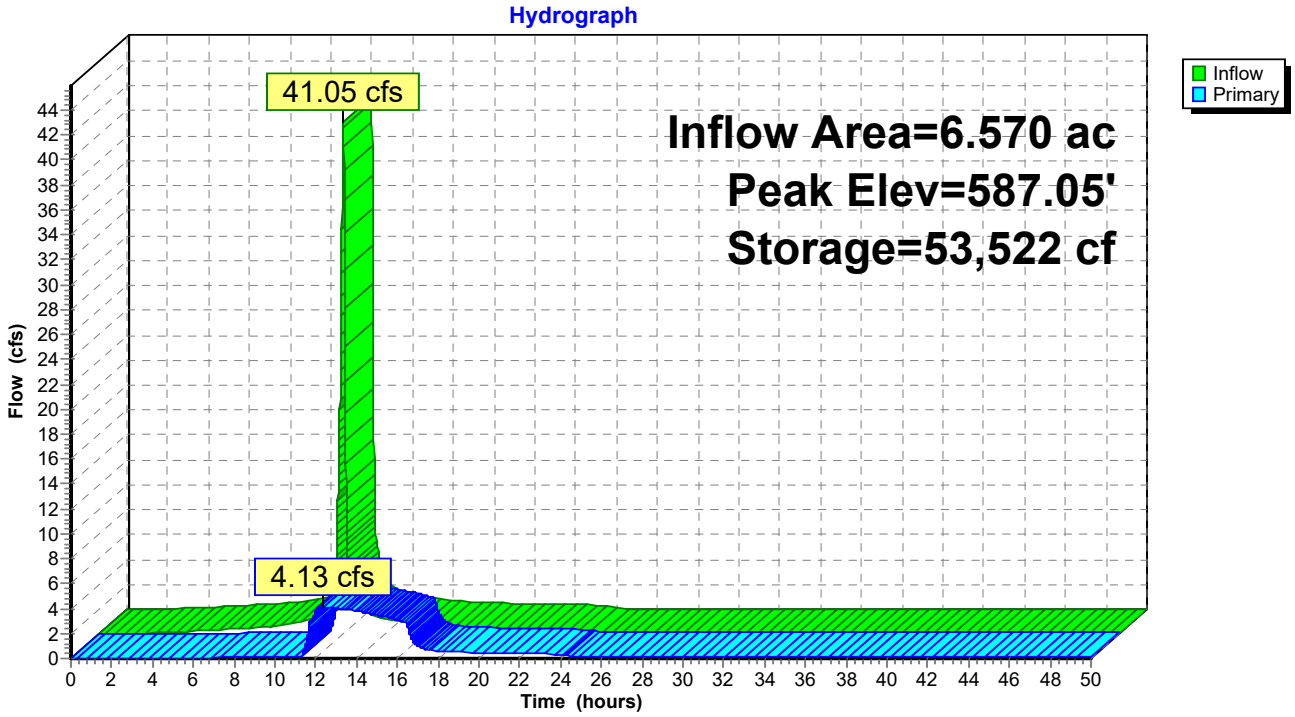
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.13 cfs @ 12.38 hrs HW=587.05' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Barrel Controls 4.13 cfs @ 7.57 fps)
  - **2=Orifice/Grate** (Passes < 0.23 cfs potential flow)
    - **4=Culvert** (Passes < 30.44 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Passes < 59.03 cfs potential flow)

Pond 1P: DETENTION POND

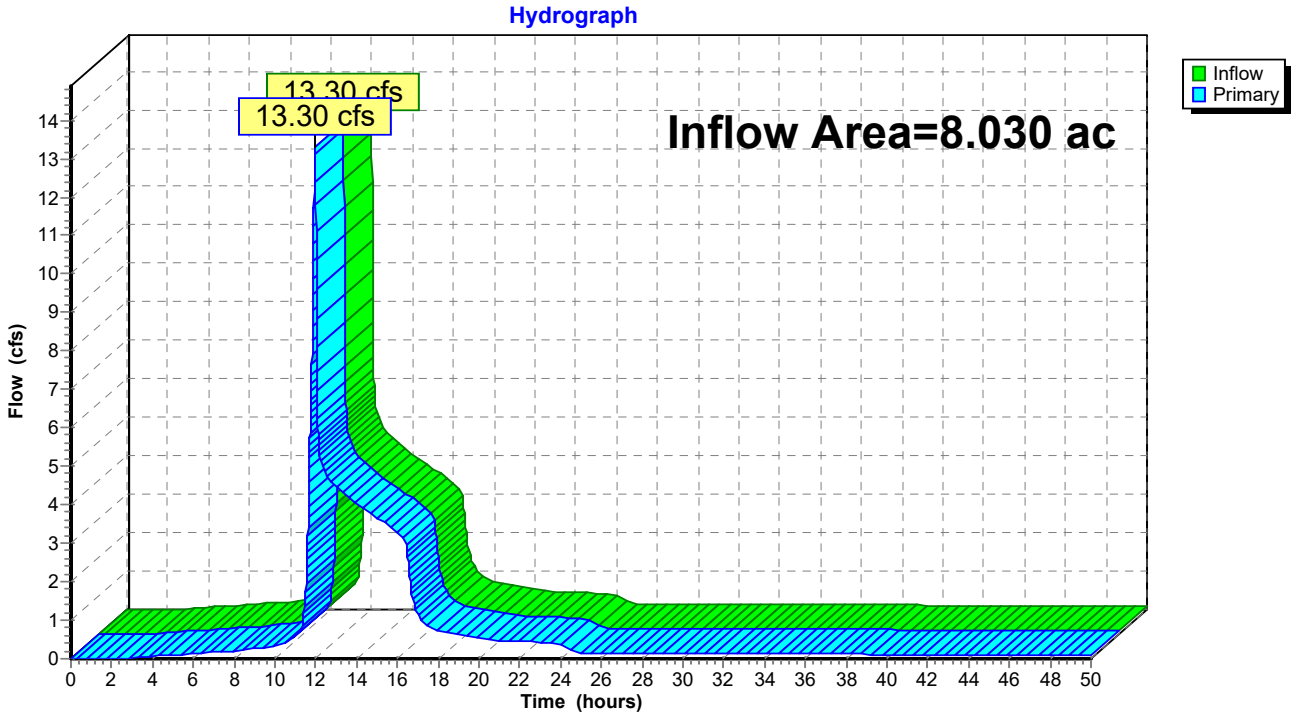


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 3.92" for 50 Year event
Inflow = 13.30 cfs @ 11.96 hrs, Volume= 2.623 af
Primary = 13.30 cfs @ 11.96 hrs, Volume= 2.623 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTH TO TRACKS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth=4.67"
Flow Length=120' Slope=0.0180 '/' Tc=5.0 min CN=96 Runoff=4.02 cfs 0.210 af

Subcatchment 2S: NORTH TO MARILLA Runoff Area=0.920 ac 0.00% Impervious Runoff Depth=4.67"
Flow Length=150' Slope=0.0250 '/' Tc=5.0 min CN=96 Runoff=6.86 cfs 0.358 af

Subcatchment 3S: MAIN SITE Runoff Area=6.570 ac 0.00% Impervious Runoff Depth=4.67"
Flow Length=791' Slope=0.0100 '/' Tc=6.7 min CN=96 Runoff=46.37 cfs 2.558 af

Pond 1P: DETENTION POND Peak Elev=587.47' Storage=60,061 cf Inflow=46.37 cfs 2.558 af
Outflow=4.29 cfs 2.433 af

Link 1L: COMBINED DISCHARGE Inflow=14.67 cfs 3.001 af
Primary=14.67 cfs 3.001 af

Total Runoff Area = 8.030 ac Runoff Volume = 3.126 af Average Runoff Depth = 4.67"
100.00% Pervious = 8.030 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SOUTH TO TRACKS

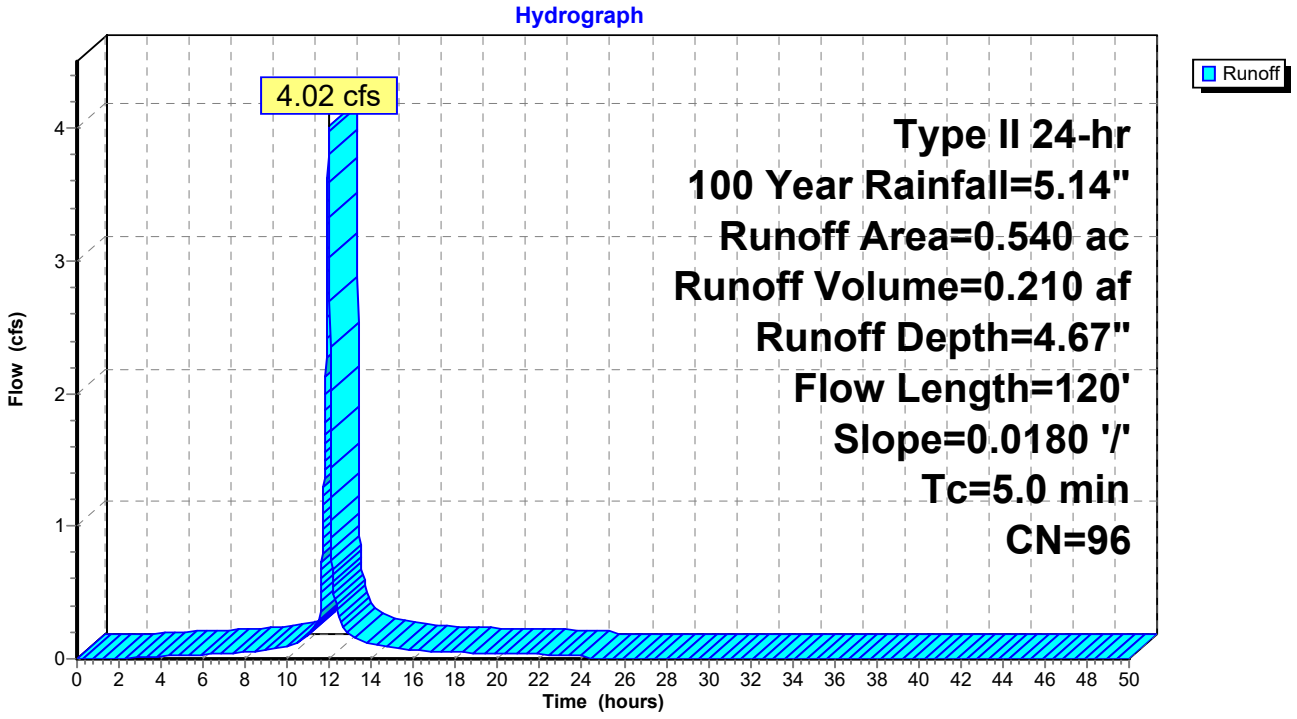
Runoff = 4.02 cfs @ 11.96 hrs, Volume= 0.210 af, Depth= 4.67"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=5.14"

Area (ac)	CN	Description
0.540	96	Gravel surface, HSG D
0.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	120	0.0180	1.14		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 1S: SOUTH TO TRACKS



Summary for Subcatchment 2S: NORTH TO MARILLA

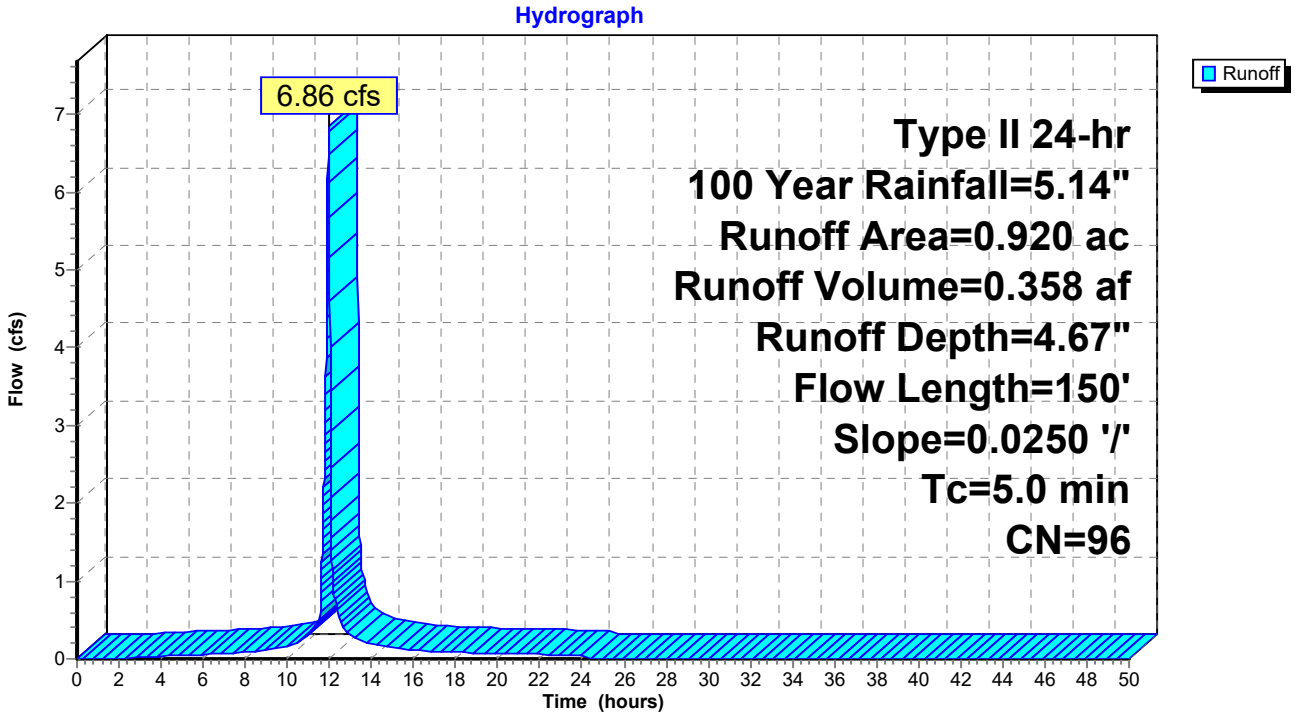
Runoff = 6.86 cfs @ 11.96 hrs, Volume= 0.358 af, Depth= 4.67"
Routed to Link 1L : COMBINED DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=5.14"

Area (ac)	CN	Description
0.920	96	Gravel surface, HSG D
0.920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	150	0.0250	1.36		**Sheet Flow, Overland Stone** Smooth surfaces n= 0.011 P2= 2.22"
1.8	150	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: NORTH TO MARILLA



Summary for Subcatchment 3S: MAIN SITE

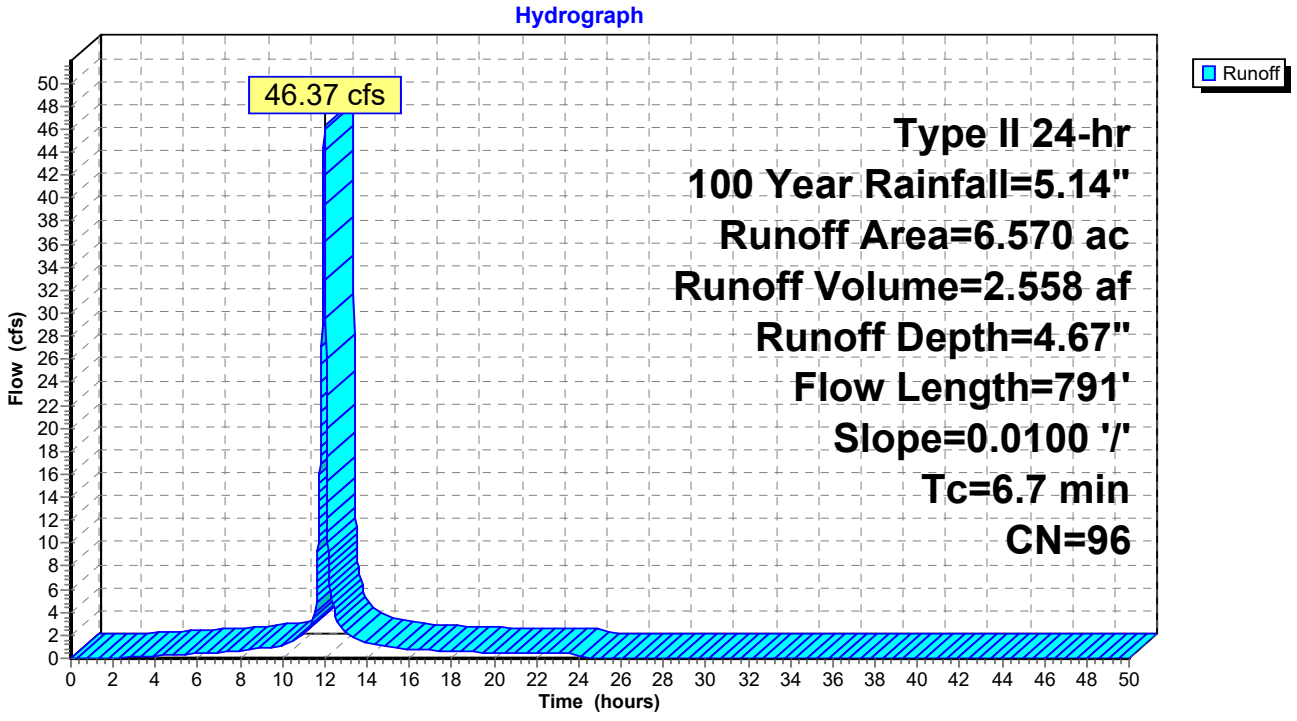
Runoff = 46.37 cfs @ 11.98 hrs, Volume= 2.558 af, Depth= 4.67"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=5.14"

Area (ac)	CN	Description
6.570	96	Gravel surface, HSG D
6.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	150	0.0100	0.94		**Sheet Flow, Overland Concrete** Smooth surfaces n= 0.011 P2= 2.22"
4.0	641		2.70		**Direct Entry, Pipe Flow**
6.7	791	Total			

Subcatchment 3S: MAIN SITE



Summary for Pond 1P: DETENTION POND

Inflow Area = 6.570 ac, 0.00% Impervious, Inflow Depth = 4.67" for 100 Year event
Inflow = 46.37 cfs @ 11.98 hrs, Volume= 2.558 af
Outflow = 4.29 cfs @ 12.43 hrs, Volume= 2.433 af, Atten= 91%, Lag= 27.1 min
Primary = 4.29 cfs @ 12.43 hrs, Volume= 2.433 af
Routed to Link 1L : COMBINED DISCHARGE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 587.47' @ 12.43 hrs Surf.Area= 15,820 sf Storage= 60,061 cf

Plug-Flow detention time= 295.5 min calculated for 2.433 af (95% of inflow)
Center-of-Mass det. time= 266.4 min (1,025.0 - 758.6)

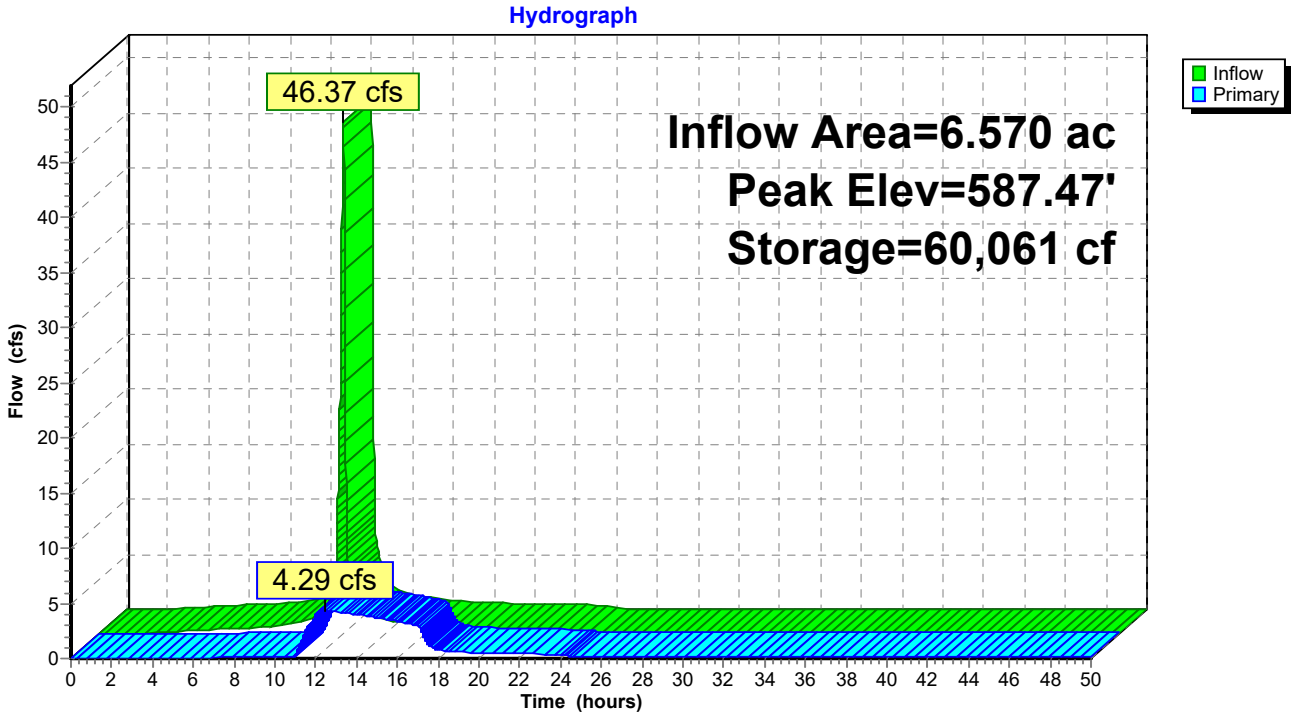
Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	68,655 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.00	6,427	0	0
583.00	7,995	7,211	7,211
584.00	9,645	8,820	16,031
585.00	11,351	10,498	26,529
586.00	13,113	12,232	38,761
587.00	14,933	14,023	52,784
588.00	16,808	15,871	68,655

Device	Routing	Invert	Outlet Devices
#1	Primary	581.42'	**10.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.42' / 580.86' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	582.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	582.00'	**24.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.00' / 581.25' S= 0.0268 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.29 cfs @ 12.43 hrs HW=587.47' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Barrel Controls 4.29 cfs @ 7.86 fps)
  - **2=Orifice/Grate** (Passes < 0.24 cfs potential flow)
    - **4=Culvert** (Passes < 31.99 cfs potential flow)
  - **3=Sharp-Crested Rectangular Weir** (Passes < 69.96 cfs potential flow)

Pond 1P: DETENTION POND

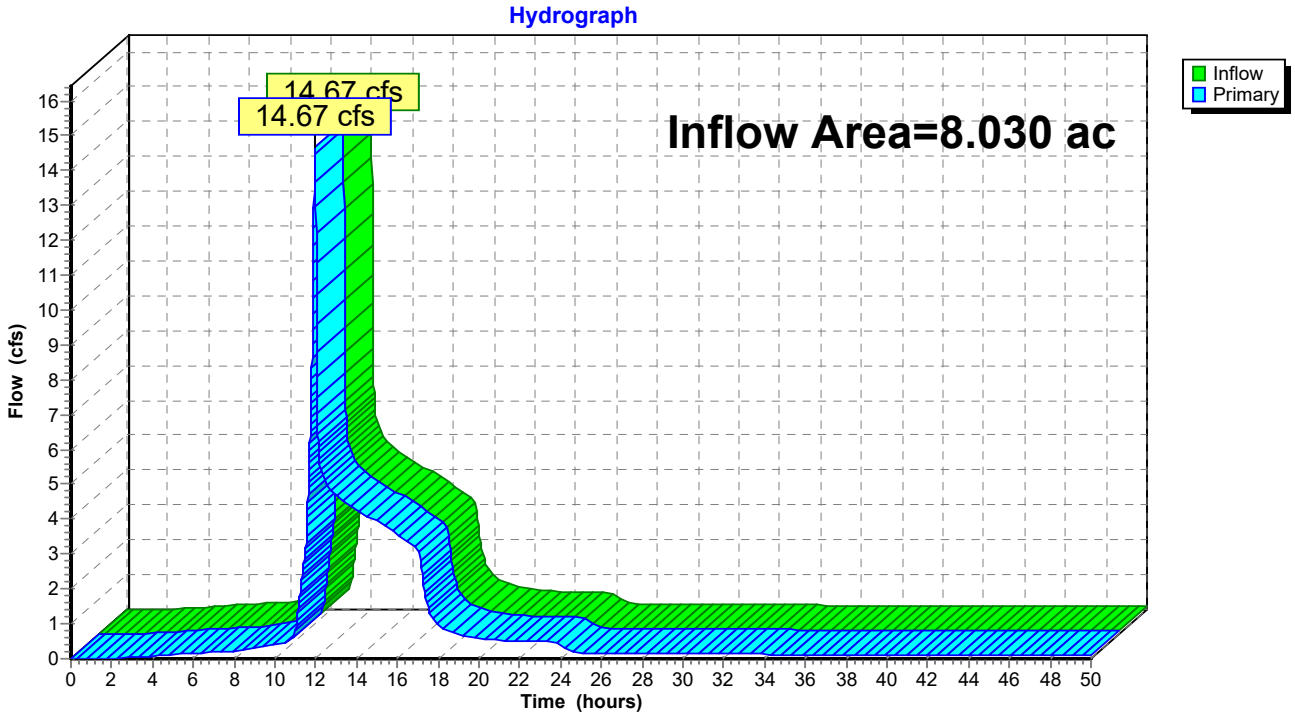


Summary for Link 1L: COMBINED DISCHARGE

Inflow Area = 8.030 ac, 0.00% Impervious, Inflow Depth > 4.49" for 100 Year event
Inflow = 14.67 cfs @ 11.96 hrs, Volume= 3.001 af
Primary = 14.67 cfs @ 11.96 hrs, Volume= 3.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Link 1L: COMBINED DISCHARGE



APPENDIX D

NOAA Atlas-14 PRECIPITATION TABLE

NOAA Atlas 14, Volume 10, Version 3 BUFFALO
Station ID: 30-1010
Location name: City of Buffalo, New York, USA*
Latitude: 42.8833°, Longitude: -78.8833°
Elevation:
Elevation (station metadata): 594 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.273** (0.224-0.333)	**0.328** (0.269-0.400)	**0.418** (0.341-0.512)	**0.493** (0.399-0.608)	**0.596** (0.463-0.771)	**0.673** (0.510-0.892)	**0.754** (0.550-1.04)	**0.845** (0.578-1.20)	**0.976** (0.636-1.44)	**1.08** (0.685-1.63)
10-min	**0.387** (0.317-0.472)	**0.465** (0.381-0.567)	**0.593** (0.484-0.725)	**0.698** (0.566-0.861)	**0.844** (0.656-1.09)	**0.954** (0.722-1.26)	**1.07** (0.779-1.47)	**1.20** (0.819-1.70)	**1.38** (0.902-2.04)	**1.53** (0.971-2.31)
15-min	**0.455** (0.374-0.555)	**0.547** (0.448-0.667)	**0.697** (0.569-0.854)	**0.822** (0.666-1.01)	**0.993** (0.772-1.28)	**1.12** (0.850-1.49)	**1.26** (0.917-1.73)	**1.41** (0.963-2.00)	**1.63** (1.06-2.39)	**1.80** (1.14-2.72)
30-min	**0.641** (0.526-0.781)	**0.770** (0.631-0.939)	**0.981** (0.800-1.20)	**1.16** (0.936-1.42)	**1.40** (1.08-1.81)	**1.58** (1.19-2.09)	**1.77** (1.29-2.44)	**1.98** (1.35-2.80)	**2.28** (1.49-3.36)	**2.53** (1.60-3.81)
60-min	**0.827** (0.678-1.01)	**0.993** (0.813-1.21)	**1.26** (1.03-1.55)	**1.49** (1.21-1.84)	**1.80** (1.40-2.33)	**2.03** (1.54-2.69)	**2.28** (1.66-3.14)	**2.55** (1.74-3.61)	**2.94** (1.92-4.33)	**3.26** (2.06-4.91)
2-hr	**1.04** (0.854-1.25)	**1.24** (1.03-1.51)	**1.59** (1.30-1.93)	**1.87** (1.53-2.30)	**2.27** (1.77-2.92)	**2.56** (1.95-3.37)	**2.87** (2.11-3.94)	**3.22** (2.21-4.53)	**3.73** (2.44-5.45)	**4.14** (2.63-6.19)
3-hr	**1.16** (0.959-1.40)	**1.40** (1.16-1.68)	**1.79** (1.47-2.17)	**2.11** (1.73-2.57)	**2.56** (2.01-3.28)	**2.89** (2.21-3.80)	**3.24** (2.39-4.44)	**3.65** (2.51-5.11)	**4.23** (2.77-6.16)	**4.72** (3.00-7.02)
6-hr	**1.36** (1.13-1.63)	**1.65** (1.38-1.98)	**2.13** (1.77-2.56)	**2.53** (2.08-3.06)	**3.07** (2.43-3.92)	**3.48** (2.68-4.55)	**3.92** (2.90-5.34)	**4.42** (3.05-6.16)	**5.18** (3.40-7.49)	**5.81** (3.70-8.59)
12-hr	**1.56** (1.31-1.85)	**1.91** (1.60-2.27)	**2.48** (2.07-2.96)	**2.95** (2.44-3.55)	**3.60** (2.86-4.57)	**4.08** (3.16-5.31)	**4.60** (3.44-6.27)	**5.23** (3.62-7.23)	**6.18** (4.07-8.88)	**6.99** (4.47-10.3)
24-hr	**1.82** (1.54-2.15)	**2.20** (1.86-2.61)	**2.82** (2.37-3.35)	**3.34** (2.78-3.99)	**4.05** (3.24-5.11)	**4.57** (3.57-5.93)	**5.14** (3.88-7.00)	**5.86** (4.07-8.05)	**6.97** (4.61-9.96)	**7.94** (5.10-11.6)
2-day	**2.22** (1.88-2.60)	**2.59** (2.20-3.05)	**3.21** (2.71-3.78)	**3.72** (3.12-4.41)	**4.42** (3.57-5.55)	**4.94** (3.89-6.36)	**5.51** (4.19-7.46)	**6.24** (4.35-8.52)	**7.42** (4.92-10.5)	**8.45** (5.44-12.2)
3-day	**2.50** (2.13-2.92)	**2.88** (2.45-3.37)	**3.50** (2.97-4.11)	**4.02** (3.38-4.75)	**4.72** (3.82-5.89)	**5.24** (4.14-6.72)	**5.82** (4.43-7.82)	**6.55** (4.58-8.90)	**7.71** (5.13-10.9)	**8.73** (5.63-12.6)
4-day	**2.73** (2.34-3.18)	**3.12** (2.67-3.64)	**3.76** (3.20-4.40)	**4.28** (3.62-5.05)	**5.01** (4.06-6.22)	**5.55** (4.38-7.06)	**6.13** (4.66-8.18)	**6.86** (4.81-9.29)	**8.00** (5.33-11.3)	**8.99** (5.81-12.9)
7-day	**3.31** (2.85-3.84)	**3.74** (3.21-4.34)	**4.43** (3.79-5.16)	**5.01** (4.25-5.87)	**5.80** (4.71-7.12)	**6.40** (5.05-8.04)	**7.03** (5.31-9.19)	**7.74** (5.46-10.4)	**8.76** (5.86-12.2)	**9.60** (6.21-13.7)
10-day	**3.83** (3.31-4.43)	**4.30** (3.71-4.97)	**5.06** (4.34-5.87)	**5.68** (4.84-6.64)	**6.55** (5.32-7.98)	**7.21** (5.69-8.98)	**7.88** (5.94-10.2)	**8.60** (6.08-11.5)	**9.58** (6.43-13.3)	**10.4** (6.72-14.8)
20-day	**5.38** (4.68-6.17)	**5.95** (5.17-6.83)	**6.89** (5.95-7.94)	**7.66** (6.57-8.88)	**8.73** (7.14-10.5)	**9.55** (7.57-11.8)	**10.4** (7.82-13.2)	**11.2** (7.96-14.9)	**12.3** (8.27-16.9)	**13.1** (8.50-18.5)
30-day	**6.70** (5.85-7.65)	**7.36** (6.41-8.41)	**8.43** (7.31-9.67)	**9.32** (8.02-10.8)	**10.5** (8.65-12.6)	**11.5** (9.13-14.1)	**12.4** (9.39-15.8)	**13.4** (9.52-17.6)	**14.5** (9.83-20.0)	**15.4** (10.0-21.7)
45-day	**8.40** (7.36-9.55)	**9.15** (8.01-10.4)	**10.4** (9.04-11.9)	**11.4** (9.85-13.1)	**12.8** (10.6-15.3)	**13.9** (11.1-17.0)	**15.0** (11.3-18.9)	**16.0** (11.5-21.1)	**17.3** (11.8-23.7)	**18.3** (11.9-25.6)
60-day	**9.85** (8.66-11.2)	**10.7** (9.38-12.1)	**12.0** (10.5-13.7)	**13.2** (11.4-15.1)	**14.7** (12.2-17.5)	**16.0** (12.7-19.4)	**17.1** (13.0-21.5)	**18.2** (13.1-23.9)	**19.6** (13.3-26.8)	**20.6** (13.5-28.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

APPENDIX E

NRCS SOIL REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Erie County, New York

267 Marilla Street, Buffalo NY

June 7, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,620 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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: Erie County, New York
Survey Area Data: Version 22, Sep 10, 2022

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

Date(s) aerial images were photographed: Jul 14, 2019—Jul 27, 2019

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

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Hydrologic Soil Group and Surface Runoff (267 Marilla Street, Buffalo NY)

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff (267 Marilla Street, Buffalo NY)

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff–Erie County, New York			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
NfA—Niagara silt loam, 0 to 3 percent slopes			
Niagara	75	—	C/D
Ud—Urban land			
Urban land	80	—	—
Us—Urban land-Niagara complex			
Urban land	60	—	—
Niagara	30	—	C/D

APPENDIX F

NYSDEC CONSTRUCTION AND MAINTENANCE CHECKLISTS

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for "honeycomb" prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken: