TOWN OF VERNON
Inland Wetlands Commission (IWC)
Meeting Notice & Agenda
Tuesday April 20, 2021, 7:00 PM
VIA Teleconference

Join Zoom Meeting by link:
https://us02web.zoom.us/j/81676941684?pwd=WGRtTml5ejhNWG5idXMrNWtDZm8wUT09

Meeting ID: 816 7694 1684
Passcode: G5APTK
or
Dial by your location
(646) 876 9923
Meeting ID: 816 7694 1684
Passcode: 424103

AGENDA

1. Call to Order & Roll Call

2. Administrative Actions

   2.1 Amendment/Adoption of Agenda - Additional business to be considered under agenda item #8 "Other Business" requires Commission vote

   2.2 Approval of the Minutes from the March 23, 2021 regular meeting

   2.3 Communications received NOT related to Agenda items, if any

   2.4 Call for filing(s) of Intervener petition(s) and determination of status

3. New Applications for Receipt and Determination of Significance

4. Public Hearing and Action on New Application(s)

   4.1 Application **IWC-2021-03**, of The Town of Vernon, Town Engineer for a wetlands permit by Commission, for the repair of an erosion problem (Mary Lane Drainage Project) at 152 West St. (Assessor's ID: Map 21, Block 021F, Parcel 0002A). **[Action Only]**

   4.1 Application **IWC-2021-04**, of Rashid Hamid, for a wetlands re-designation and a wetlands permit by Commission, for the development of a +-70 unit townhouse residential project, at 291 and 293 Talcottville Rd. (Assessor ID: Map 3 Block 4 Parcels 9A & 9E) and at 27, 32, 37, 38, and 46 Naek Rd. (Assessor ID: Map 3 Block 4 Parcels 008-8, 7,4, 6, 5).

5. Status of Cease & Correct Orders, if any

6. Wetlands Enforcement Officer Report, if any

7. Inland Wetlands Agent Approvals, if any

8. Other Business

8.1 Draft Future Land Use Summary & Maps-Link Below

https://www.vernon-ct.gov/departments-services/departments/planning-and-development/pocd

9. Adjournment

Rachel Stansel, Chairperson Inland Wetlands Commission

Draft Minutes

Town of Vernon
Inland Wetlands Commission (IWC)
Tuesday, March 23, 2021, 7:00 p.m.
Teleconference Meeting

DRAFT MINUTES

1. Call to Order and Roll Call

Chairperson Rachel Stansel called the meeting to order at 7:00 p.m. Also in attendance were Commission Members Don Schubert, and Kathy Minor. Staff members present were David Smith, Town Engineer, and George McGregor, Town Planner.

2. Administrative Actions

2.1 Amendment/Adoption of Agenda – Additional business to be considered under agenda item #8 "Other Business" requires Commission vote
None

2.2 Approval of Minutes from the February 23, 2021, regular meeting
Don Schubert made a motion seconded by Kathy Minor to approve the minutes of February 23, 2021. Motion carried unanimously.

2.3 Communications received NOT related to Agenda items, if any
None

2.4 Call for filing(s) of Intervener petition(s) and determination of status.
None

3. New Applications for Receipt and Determination of Significance

3.1 Application **IWC-2021-03**, of the Town of Vernon, Town Engineer for a wetlands permit by Commission, for the repair of an erosion problem (Mary Lane Drainage Project) at 152 West Street (Assessor's ID: Map 21, Block 021F, Parcel 0002A).

David Smith explained the application's purpose. Discussion took place.

*Don Schubert made a motion seconded by Chairperson Stansel that the Inland Wetlands Commission finds that **IWC-2021-03**, an Application of Town of Vernon, does NOT represent a significant activity, and places it on the regular IWC for April 20, 2021, for ACTION. Motion carried unanimously.*

3.2 Application **IWC-2021-04**, of Rashid Hamid, for a wetlands re-designation and a wetlands permit by Commission, for the development of a +-70 unit

townhouse residential project, at 291 and 293 Talcottville Rd. (Assessor ID: Map 3, Block 4, Parcels 9A and 9E) and at 27, 32, 37, 38, and 46 Naek Rd. (Assessor ID: Map 3, Block 4, Parcels 008-8,7,4,6,5).

Town Engineer explained the Application and project. Discussion took place.

*Kathy Minor made a motion seconded by Chairperson Stansel that the Inland Wetlands Commission finds that **IWC-2021-04**, an Application of Rashid Hamid, represents a significant activity, and places it on the regular IWC for April 20, 2021, for Public Hearing ACTION. Motion carried unanimously.*

4. Public Hearing and Action on New Application(s)

4.1 Application **IWC-2021-01**, of Richard and Julie Clay for a wetlands permit by Commission, for the construction of a +-2,500 s.f. single-family home at 58 Wildwood Dr. (Assessor's ID: Map 52, Block 139, Parcel 50)

Town Engineer explained the Application and plans. Discussion took place.

*Chairperson Stansel made a motion second by Don Schubert that the Vernon Inland Wetlands and Watercourses Commission does hereby APPROVE the Application **(IWC-2021-01)** for a Wetlands permit by Commission, subject to the plan dated February 9, 2021, revised March 5, 2021, prepared by Bongiovanni Group, Inc. and based upon the following findings:*

1. *The project will have no adverse impacts on wetlands or watercourses;*
2. *The mitigation measures are acceptable.*

Motion carried unanimously.

4.2 Application IWC-2021-02, of Pam Gieras for a wetlands permit by Commission, for the construction of a +2,200 s.f. single-family home at 7 Beechwood Rd. (Assessor's ID: Map 52, Block 140F, Parcels 2,3,4,5)

Town Engineer discussed the Application. Discussion took place.

*Chairperson Stansel made a motion seconded by Kathy Minor that the Vernon Inland Wetlands and Watercourses Commission does hereby APPROVE, the application **(IWC-2021-02)** for a Wetlands permit by Commission, subject to the plan dated February 15, 2021, revised March 5, 2021, prepared by Bushnell Associates, LLC, and based upon the following findings:*

1. *The project will have no adverse impacts on wetlands or watercourses;*
2. *The mitigation measures are acceptable.*

Motion carried unanimously.

5. Status of Cease & Correct Orders, if any
None

6. Wetlands Enforcement Officer Report, if any
None

7. Inland Wetlands Agent Approvals, if any

7.1 **WA-2021-03** 205 Lake Street, for the work associated with the proposed access drive as shown on the proposed site plans provide to the Wetlands Agent
Certified Letter dated March 5, 2021, included in Commission packet.

8. Other Business

8.1 Connecticut Association of Wetland Scientists 2021 Meeting.
Information included in Commission packet.

9. Adjournment

Meeting adjourned at 7:25p.m.

Respectfully Submitted

Susan Hewett
Recording Secretary

APPLICATION 1

IWC-2021-03

TOWN OF VERNON

INLAND WETLANDS COMMISSION (IWC)

APPLICATION

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

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

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

I. APPLICANT (S)

Name: ~~Town of Vernon~~ David Smith

Title: Town Engineer

Company: Town of Vernon

Address: 55 West Main St.

Telephone: 860-870-3664 Fax: 860-870-3683

E-mail: dasmith@vernon-ct.gov

II. PROPERTY OWNERS

Name: Richard A Bruley

Title: N/A

Company: N/A

Address: 152 West St.

Telephone: _____ Fax: _____

E-mail: _____

III. PROPERTY

Address: 152 West St.

Assessor ID Code: Map # 21 Block # 071F Lot/Parcel # 0002A

Land Record Reference to Deed Description: Volume: 2333 Page 18

USGA Location: Rockville

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

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

Zoning District: R-22

IV. PROJECT

Project Name: Mary Lane Drainage Improvements

Project Contact Person:

Name: David Smith, P.E., L.S.

Title: Town Engineer

Company: Town of Vernon

Address: 55 West Main St.

Telephone: 860-870-3664 Fax: 860-870-3683

E-mail: dasmith@vernon-ct.gov

V. PROJECT SUMMARY

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

Purpose: Repair an erosion problem

General Activities: re-shape eroded embankment, deposit various sized rock for stabilization, create plunge pool area.

Regulated Activities:

Watercourse disturbance (linear feet): 0

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

Upland Review Area (URA)disturbance: .22 Acres

Nonregulated activities & activities outside URA: .13 Acres

VI. APPLICATION

____ Redesignation of Wetlands

____ Amendment of Inland Wetlands and Watercourses Regulations

____ Modification of a Wetlands Redesignation

✓ Wetlands Permit

- ✓ Non-significant activity
- ____ Significant activity with less than ½ acre site disturbance
- ____ Significant activity with site disturbance from ½ acre to and including 2 acres
- ____ Significant activity with site disturbance greater than 2 acres
- ____ Commission modification of a wetland permit in effect
- ____ Modification of a wetland permit by ;the Wetlands Agent

____ Approval of a license by the Wetlands Agent for activities in an upland

____ Appeal of a decision by the Wetlands Agent

____ Subdivision review per CGS Section 8-26

____ Jurisdictional ruling regarding permitted and nonregulated uses

✓ Waiver, reduction, or delayed payment of fees (attach statement of justification)

- ✓ Waiver
- ____ Reduction to $_____
- ____ Delay of payment to _____

VII. CERTIFICATION AND SIGNATURE

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

Property Owner, Applicant, or Applicant's Agent:

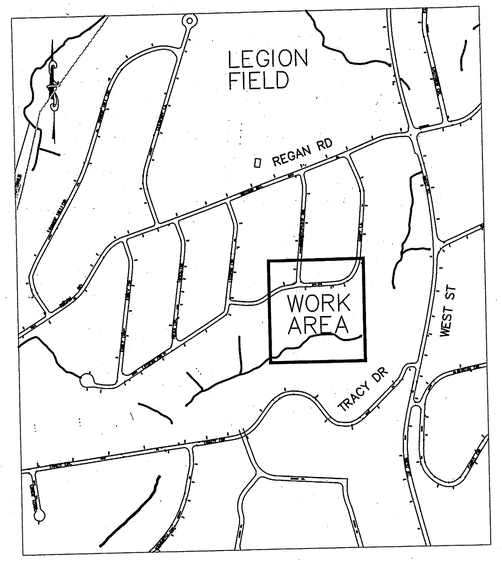
_____ Applicant or Agent Signature	DAVID A. SMITH Printed Name	3/9/21 Date
_____ Owner's Signature, if different	RICK BRULEY Printed Name	03/11/21 Date

TO BE FILLED IN BY THE PLANNING DEPARTMENT

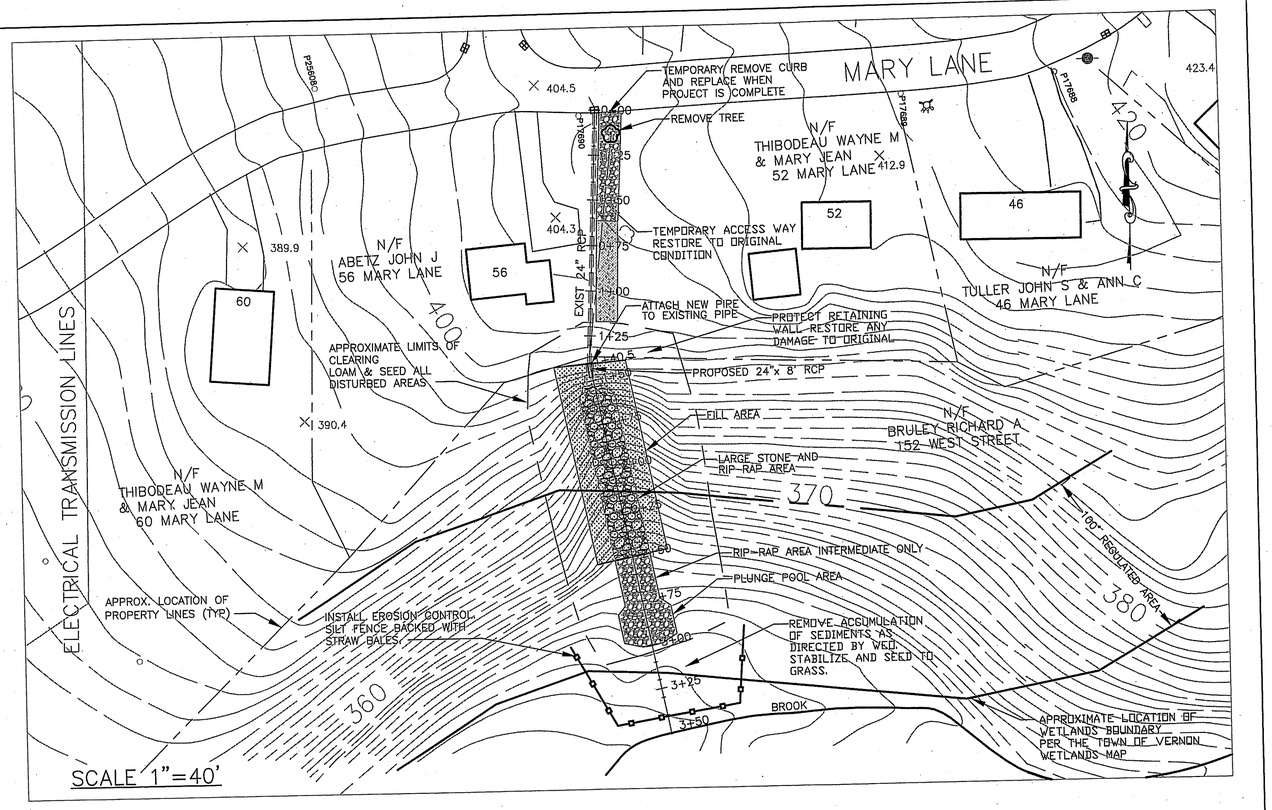
DATE APPLICATION SUBMITTED_____

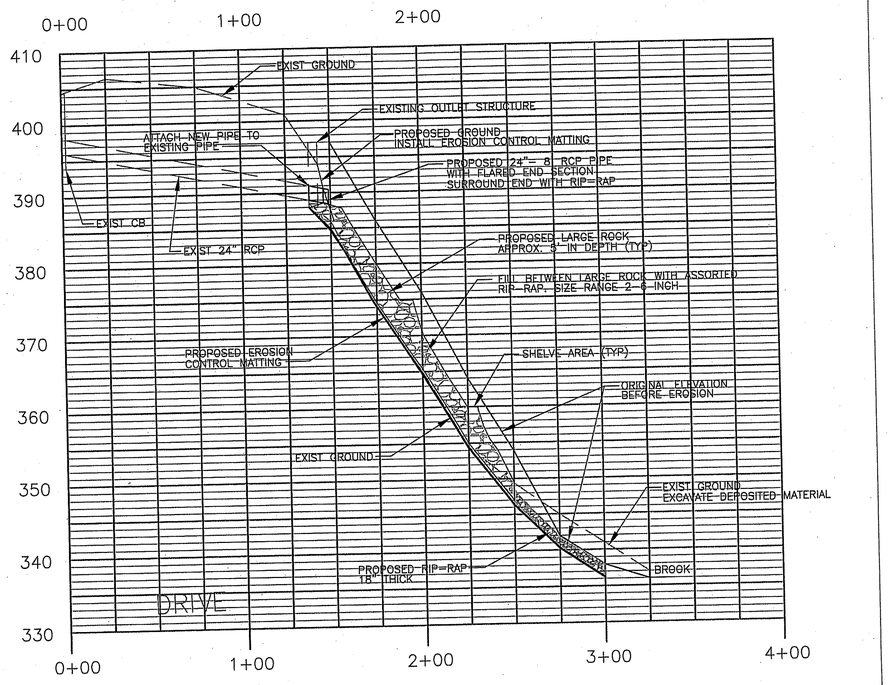
DATE APPLICATION RECEIVED BY COMMISSION_____

IWC FILE: _____

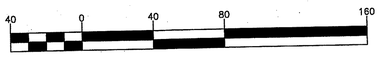


KEY MAP
SCALE 1"=500'





SCALE: HORIZ. 1"=40'
VERT. 1"=10'



GRAPHIC SCALE

#1 - This map was prepared from Record Research, other maps, limited field measurments and other sources. It is not to be construed as a Property/Boundary or Limited Property/Boundary Survey and is subject to such facts as said surveys may disclose.

#2 - This Plan has been prepared in accordance with the Regulations of Connecticut State Agencies, Sections 20-300b-20. It is a Compilation Plan and is considered Class D and T-D Accuracy Standard.

To my knowledge and belief, this map is substantially correct as noted hereon.

David A. Smith Connecticut PELS #14173

This certification not valid unless this plan bears a live signature and my embossed seal

TOWN OF VERNON CONNECTICUT SEAL 1808

SITE PLAN
MARY LANE DRAINAGE IMPROVEMENTS

TOWN OF VERNON
ENGINEERING DEPARTMENT
14 PARK PLACE, VERNON, CT 06066

SCALE: AS NOTED	DATE: MARCH 9, 2021	SHEET: 1 OF 2
FILE: Q:/ENGINEERING PROJECTS/BY STREET/Mary Lane Erosion/Rip Rap Swale		

GENERAL NOTES –

1. ALL WORK MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS, AND CONDITIONS OF APPROVAL, AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS, AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT.
2. THE TOWN OF VERNON (TOV) PUBLIC WORKS DEPARTMENT (PWD) MUST FIELD VERIFY EXISTING CONDITIONS AND NOTIFY THE TOV ENGINEERING DEPARTMENT, IN WRITING, IMMEDIATELY IF ACTUAL CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
3. ALL DIMENSIONS SHOWN ON THE PLANS MUST BE FIELD VERIFIED BY THE PWD PRIOR TO THE START OF CONSTRUCTION. PWD MUST NOTIFY THE TOV ENGINEERING DEPARTMENT, IN WRITING, IF ANY CONFLICTS OR DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION.
4. THE PWD IS RESPONSIBLE FOR REPAIRING ANY DAMAGE DONE TO ANY PROPERTY DURING THE COURSE OF CONSTRUCTION.
5. ALL CONSTRUCTION AND MATERIALS MUST COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, LAWS, ORDINANCES, RULES AND CODES, AND ALL APPLICABLE OSHA REQUIREMENTS.

GENERAL EROSION AND SEDIMENT CONTROL NOTES –

1. ALL EROSION AND SEDIMENT CONTROLS MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION.
2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN. EROSION CONTROLS MUST BE INSPECTED AFTER EACH RAINFALL.
3. SILT SHALL BE REMOVED FROM BARRIERS IF GREATER THAN 6–INCHES DEEP OR AS NEEDED.
4. DAMAGED OR DETERIORATED ITEMS WILL BE REPAIRED IMMEDIATELY AFTER IDENTIFICATION.
5. TOPSOIL REQUIRED TO ESTABLISH VEGETATION SHALL BE STOCKPILED IN THE AMOUNT NECESSARY TO COMPLETE THE FINISHED GRADING OF ALL THE DISTURBED AREAS.
6. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL, PRIOR TO FILLING.
7. ALL FILL AREAS ARE TO BE COMPACTED AS REQUIRED TO MINIMIZE EROSION, SLIPPAGE AND SETTLEMENT. FILL INTENDED TO SUPPORT STRUCTURES, DRAINAGE, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH THE APPROPRIATE STATE AND LOCAL SPECIFICATIONS.
8. FILL MATERIALS SHALL BE FREE OF BRUSH, RUBBISH, LARGE ROCKS, LOGS, STUMPS, BUILDING MATERIALS, COMPRESSIBLE MATERIALS AND ALL OTHER MATERIALS WHICH MAY INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
9. FROZEN MATERIAL, SOFT MUCK, HIGHLY COMPRESSIBLE MATERIALS AND OTHER OBJECTIONABLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
10. SEEPS AND SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH ACCEPTED INDUSTRY STANDARDS.
11. ALL GRADING AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING ESTABLISHMENT OF THE FINAL GRADE. IF FINISHED GRADING IS TO BE DELAYED FOR MORE THAN 30 DAYS AFTER DISTURBANCE, TEMPORARY SOIL STABILIZATION MEASURES, INCLUDING TEMPORARY SEEDING, SHALL BE APPLIED.
12. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4". IMPORT TOPSOIL AS NEEDED TO SUPPLEMENT RESERVED TOPSOIL.
13. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER OR HYDROSEEDER. NORMAL SEEDING DEPTH IS FROM ¼" TO ½". HYDROSEEDING WHICH IS MULCHED MAY BE LEFT ON THE SURFACE.
14. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPACKER SEEDER OR HYDROSEEDING IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING WITH A ROLLER OR LIGHT DRAG.
15. INSPECT THE SEEDBED PRIOR TO SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE–TILLED BEFORE SEEDING.

SUGGESTED CONSTRUCTION SEQUENCE –

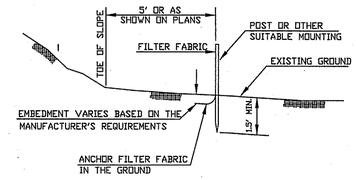
1. DEFINE LIMITS OF CLEARING.
2. ESTABLISH ANTI–TRACKING ENTRANCE.
3. REMOVE TREES AND WOODY VEGETATION WITHIN CLEARING LIMITS.
4. INSTALL SILTATION BARRIER.
5. RESHAPE SWALE AREA. USE DEPOSITED MATERIAL FROM LOWER AREA AND ANY ADDITIONAL SUITABLE MATERIAL AS NEEDED. COMPACT SOIL.
6. INSTALL EROSION CONTROL MATTING.
7. PLACE LARGE ROCK AND ASSORTED RIP–RAP WITHIN THE FILL AREA. SHAPE FILL AREA TO DESIRED CONTOUR.
8. CREATE SHELF AREAS WITHIN THE FILL AREA.
9. CREATE PLUNGE POOL AREA.
10. INSTALL NEW RCP PIPE AND FLARED END OVER SUITABLE COMPACTED MATERIAL.
11. RESHAPE SURROUNDING ROCK AND RIP–RAP AS NEEDED.
12. RESHAPE ANY DISTURBED AREAS.
13. LOAM AND SEED ALL DISTURBED AREAS.
14. REMOVE SAND BAGS FROM CATCH BASIN, IF NECESSARY.
15. REMOVE ANTI–TRACKING PAD.
16. RESTORE TEMPORARY ACCESS DRIVE.
17. REMOVE EROSION CONTROLS WHEN THE SITE IS FULLY STABILIZED.

NOTES –

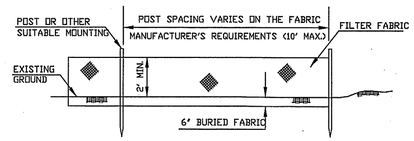
1. PROPOSED GRADES ARE GUIDELINES AND WILL BE ADJUSTED FOR FIELD CONDITIONS RELATED TO CUTS AND FILLS.
2. PERIMETER AEAS THAT ARE DISTURBED, BUT ULTIMATELY NOT PROTECTED WITH RIP–RAP SHALL BE STABILIZED, SEEDED TO GRASS AND MULCHED.
3. SHOULDERS OF PIPING AND DISTURBED AREAS ABOVE THE DISCHARGE TO ALSO BE PROTECTED BY RIP–RAP.
4. THE TOV ENGINEERING DEPARTMENT IS SUGGESTING THAT A SAND BAG PLUG BE INSTALLED IN THE EXISTING CATCH BASIN LOCATED ON MARY LANE PRIOR TO CONSTRUCTION OF THE FILL AREA. THIS MAY PREVENT A MAJOR WASH–OUT BEFORE THE SWALE IS FULLY CONSTRUCTED.

GENERAL NOTES

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN THE EROSION CONTROL SYSTEM AS SHOWN ON THE PLANS PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITY WHICH DISTURBS EXISTING VEGETATIVE GROUND COVER.
2. SEDIMENTATION AND EROSION CONTROL MEASURES SHOWN ARE THE MINIMUM REQUIRED. CONTRACTOR SHALL INSTALL AND MAINTAIN ADDITIONAL MEASURES, AS REQUIRED, TO CONTROL EROSION AS THE CONSTRUCTION PROJECT PROGRESSES.
3. THE CONTRACTOR SHALL DAILY, OR AS DIRECTED, SWEEP THE PAVED ROADWAYS ADJACENT TO THE WORK AREA AND CONDUCT HIS ACTIVITIES TO MINIMIZE THE TRACKING OF SOIL ONTO THE ROADWAYS.



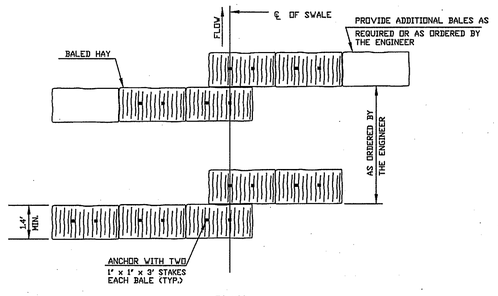
SECTION



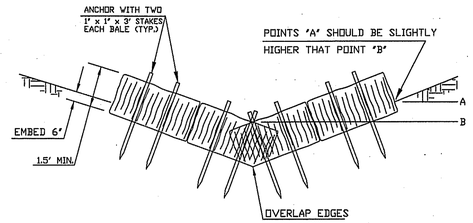
ELEVATION

SEDIMENTATION CONTROL SYSTEM – GEOTEXTILE FENCE

NOT TO SCALE



PLAN



ELEVATION

CHECK DAM (STRAW BALES)

NOT TO SCALE

CT DOT FORM 816

M.12.02 RIP RAP:

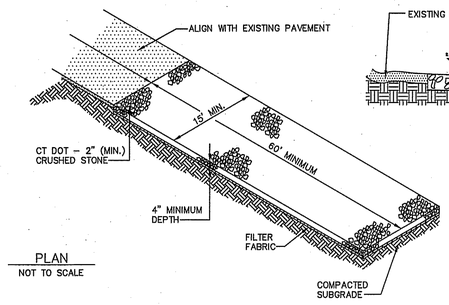
M.12.02.1 STANDARD: THE MATERIAL SHLL CONFORM TO THE FOLLOWING REQUIREMENTS: NOT MORE THAN 15% LESS THAN 6", NO STONE LARGER THAN 30", 75% AT LEAST 15".

M.12.02.2 INTERMEDIATE: THE MATERIAL SHLL CONFORM TO THE FOLLOWING REQUIREMENTS:

STONE SIZE	% OF THE WEIGHT
18 in	0
10 in to 18 in	30–50
6 in to 10 in	30–50
4 in to 6 in	20–30
2 in to 4 in	10–20
less than 2 in	0–10

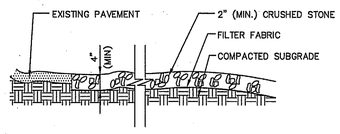
M.12.02.2 INTERMEDIATE: THE MATERIAL SHLL CONFORM TO THE FOLLOWING REQUIREMENTS:

STONE SIZE	% OF THE WEIGHT
10 in	0
6 in to 10 in	20–50
4 in to 6 in	30–60
2 in to 4 in	30–40
1 in to 2 in	10–20
less than 1 in	0–10



PLAN

NOT TO SCALE

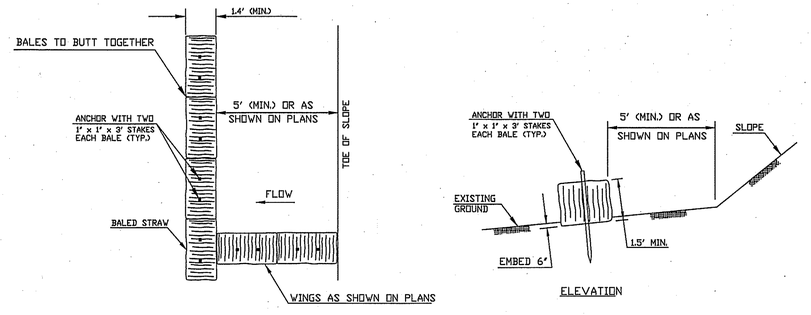


SECTION

NOT TO SCALE

ANTI–TRACKING PAD

AS SHOWN



PLAN

ELEVATION

SEDIMENTATION CONTROL SYSTEM – STRAW BALES

NOT TO SCALE

TOWN OF VERNON CONNECTICUT SEAL 1808

DETAILS

MARY LANE DRAINAGE IMPROVEMENTS

TOWN OF VERNON
ENGINEERING DEPARTMENT
14 PARK PLACE, VERNON, CT 06066

SCALE: NTS	DATE: MARCH 9, 2021	SHEET: 2 OF 2

FILE: Q:/ENGINEERING PROJECTS/BY STREET/Mary Lane – Erosion/Rip Rap Swale

STAFF COMMENTS

TOWN OF VERNON

OFFICE OF THE
TOWN PLANNER

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

MEMORANDUM

TO: Inland Wetlands Commission

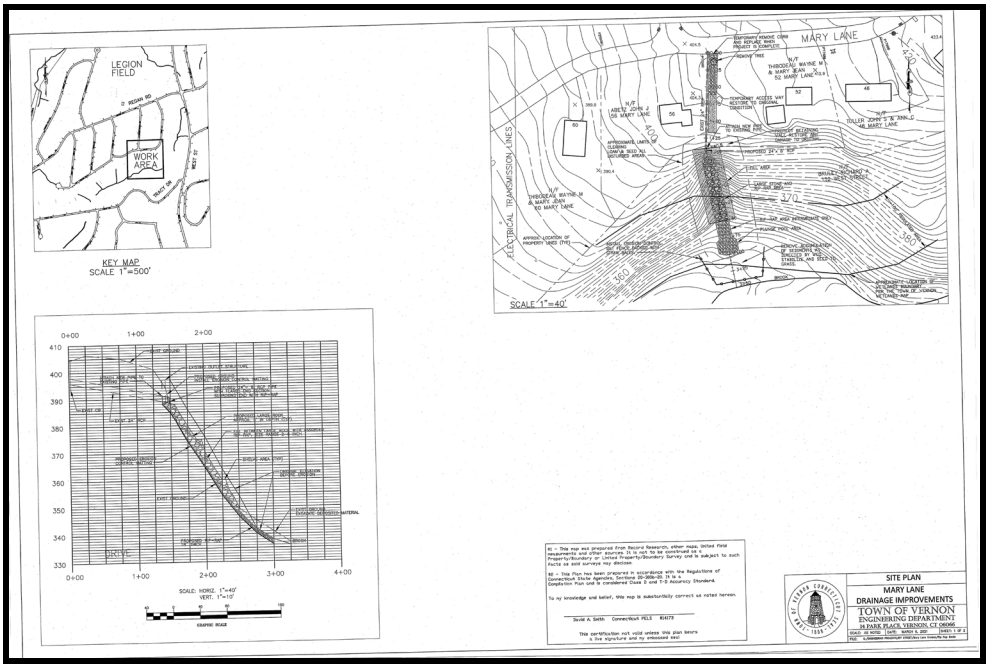
FROM: George K. McGregor, AICP, Town Planner

SUBJECT: IWC 2021-03, Mary Lane Drainage

DATE: March 23, 2021

Request

Application **IWC-2021-03**, of The Town of Vernon, Town Engineer for a wetlands permit by Commission, for the repair of an erosion problem (Mary Lane Drainage Project) at 152 West St. (Assessor's ID: Map 21, Block 021F, Parcel 0002A). The proposal plans to reshape an eroded embankment, deposit rock for stabilization, and create a plunge hole area.



Staff Comments

There are no outstanding issues.

Draft Motions

MOVED, that the Vernon Inland Wetlands and Watercourses Commission does hereby APPROVE, the application **(IWC-2021-03)** for a Wetlands permit by Commission, subject to the site plan entitled *Mary Lane Drainage Improvements* dated March 9, 2021, prepared by the Town of Vernon, and based upon the following findings:

1. The project will have no adverse impacts on wetlands or watercourses;

OR

MOVED, an Alternate Motion

GKM

APPLICATION 2

TOWN OF VERNON

INLAND WETLANDS COMMISSION (IWC)

APPLICATION

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

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

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

I. APPLICANT (S)

Name: Rashid Hamid

Title: President

Company: Naek Construction Co., Inc.

Address: 27 Naek Road, Vernon, CT 06066

Telephone: 860-875-1895 Fax: 860-872-3251

E-mail: rashidnaek@aol.com

II. PROPERTY OWNERS

Name: The Rashid Hamid Family, LLP

Title: N/A

Company: c/o Naek Construction Company, Inc.

Address: 27 Naek Road

Vernon, CT 06066

Telephone: 860-875-1895 Fax: 860-872-3251

E-mail: rashidnaek@aol.com

III. PROPERTY

Address: 291 and 293 Talcottville Road and 26, 32, 37, 38, and 46 Naek Road

Assessor ID Code: Map # 03 Block # 0004 Lot/Parcel # See attachment

Land Record Reference to Deed Description: Volume: _____ Page See attachment

USGA Location:

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

Circle the Sub regional Drainage Basin #: 3108 X4500 4502 4503

Zoning District: PDZ-Gerber Farm Area

IV. PROJECT

Project Name: Village at Naek Road

Project Contact Person:

Name: Rashid Hamid

Title: President

Company: Naek Construction Co., Inc.

Address: 27 Naek Road

Vernon, CT 06066

Telephone: 860-875-1895 Fax: 860-872-3251

E-mail: rashidnaek@aol.com

V. PROJECT SUMMARY

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

Purpose: Development of the Village at Naek Road, a residential townhouse community

General Activities: Site preparation, grading, and installation of utilities for construction of 70 townhouse dwelling units in 17 buildings, with driveways, sidewalks, lighting, storm drainage, amenities, and other related improvements.

Regulated Activities:

Watercourse disturbance (linear feet): None.

Wetlands disturbance (acres or sq. ft.): None.

Upland Review Area (URA)disturbance: 4.0 acres for construction of stormwater basin, storm drainage, buildings, driveways, utilities, and parking areas.

Nonregulated activities & activities outside URA: 8.2 acres for construction of stormwater basin, storm drainage, buildings, driveways, utilities, sidewalks, and parking areas.

VI. APPLICATION

X Redesignation of Wetlands

____ Amendment of Inland Wetlands and Watercourses Regulations

____ Modification of a Wetlands Redesignation

X Wetlands Permit

- ____ Non-significant activity
- ____ Significant activity with less than ½ acre site disturbance
- ____ Significant activity with site disturbance from ½ acre to and including 2 acres
- X Significant activity with site disturbance greater than 2 acres
- ____ Commission modification of a wetland permit in effect
- ____ Modification of a wetland permit by ;the Wetlands Agent

____ Approval of a license by the Wetlands Agent for activities in an upland

____ Appeal of a decision by the Wetlands Agent

____ Subdivision review per CGS Section 8-26

____ Jurisdictional ruling regarding permitted and nonregulated uses

____ Waiver, reduction, or delayed payment of fees (attach statement of justification)

- ____ Waiver
- ____ Reduction to $_____
- ____ Delay of payment to _____

VII. CERTIFICATION AND SIGNATURE

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

Property Owner, Applicant, or Applicant's Agent:

_____	Rashid Hamid	_____
Applicant or Agent Signature	Printed Name	Date
_____	Rashid Hamid	_____
Owner's Signature, if different	Printed Name	Date

TO BE FILLED IN BY THE PLANNING DEPARTMENT

DATE APPLICATION SUBMITTED_____

DATE APPLICATION RECEIVED BY COMMISSION_____

IWC FILE: _____

TOWN OF VERNON INLAND WETLANDS COMMISSION (IWC)
SUPPLEMENT TO APPLICATION

PURPOSE AND DESCRIPTION OF PROPOSED ACTIVITY, PROPOSED EROSION AND SEDIMENTATION CONTROLS AND OTHER MANAGEMENT PRACTICES

The Vernon Inland Wetlands and Watercourses Regulations require a statement of the purpose and a description of the proposed activity and proposed erosion and sedimentation controls and other management practices and mitigation measures which may be considered as a condition of issuing a permit for the proposed regulated activity including, but not limited to, measures to (1) prevent or minimize pollution or other environmental damage, (2) maintain or enhance existing environmental quality, (3) in the following order of priority: restore, enhance, and create productive wetland or watercourse resources; and (4) mitigate the impact of the proposed activity.

The report from George Logan, Professional Wetland Scientist, Associate Wildlife Biologist, Soil Scientist, and Ecologist, at REMA Ecological Services, LLC provides this information.

ALTERNATIVE THAT WOULD CAUSE LESS OR NO ENVIRONMENTAL IMPACT TO WETLANDS OR WATERCOURSES

The Regulations require the Applicant to state an alternative which would cause less or no environmental impact to wetlands or watercourses and why the alternative as set forth in the application was chosen, with all such alternatives diagramed on a site plan or drawing. Because the proposed activities will not have any environmental impact to wetlands or watercourses, no statement of alternatives is necessary.

ECOLOGICAL COMMUNITIES AND FUNCTIONS OF WETLANDS OR WATERCOURSES

The Regulations require descriptions of the following: (1) the ecological communities and functions of the wetlands or watercourses involved with the Application and the effects of the proposed activity on these communities and wetland functions; and (2) how the Applicant will change, diminish, or enhance the ecological communities and functions of the wetlands or watercourses involved in the application and each alternative which would cause less or no environmental impact to wetlands or watercourses, and a description of why each alternative considered was deemed neither feasible nor prudent.

The report from George Logan, Professional Wetland Scientist, Associate Wildlife Biologist, Soil Scientist, and Ecologist, at REMA Ecological Services, LLC provides this information.

STATEMENTS AND CERTIFICATIONS BY APPLICANT

1. The Applicant is familiar with all the information provided in the Application.

2. The Applicant certifies the accuracy of the Application and all supporting information.

3. The Applicant is aware of the penalties for obtaining a permit through deception or through inaccurate or misleading information.

4. The Applicant authorizes the members and agents of the Commission to inspect the subject land, at reasonable times, during the pendency of an application and for the life of the permit.

5. The Applicant certifies the following:

a. No portion of the property on which the regulated activity is proposed is located within 500 feet of the boundary of an adjoining municipality;

b. No traffic attributable to the completed project on the site will use streets within an adjoining municipality to enter or exit the site;

c. No sewer or water drainage from the project site will flow through and impact the sewage or drainage system within an adjoining municipality; and

d. No water run-off from the improved site will impact streets or other municipal or private property within an adjoining municipality.

TOWN OF VERNON INLAND WETLANDS COMMISSION (IWC)

SUPPLEMENT TO APPLICATION

PARCEL IDENTIFICATION INFORMATION

Address: 291 Talcottville Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #0009A

Land Record Reference to Deed Description: Volume 2592 Page 218

Address: 293 Talcottville Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #0009E

Land Record Reference to Deed Description: Volume 2592 Page 218

Address: 26 Naek Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #008-8

Land Record Reference to Deed Description: Volume 2097 Page 54

Address: 32 Naek Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #008-7

Land Record Reference to Deed Description: Volume 2097 Page 54

Address: 37 Naek Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #008-4

Land Record Reference to Deed Description: Volume 2097 Page 54

Address: 38 Naek Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #008-6

Land Record Reference to Deed Description: Volume 2097 Page 54

Address: 46 Naek Road

Assessor's ID Code: Map #03 Block #0004 Lot/Parcel #008-5

Land Record Reference to Deed Description: Volume 2097 Page 54

PURPOSE AND DESCRIPTION OF PROPOSED ACTIVITY, PROPOSED EROSION AND SEDIMENTATION CONTROLS AND OTHER MANAGEMENT PRACTICES

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LEGEND

WATERSHED

TRAVEL TIME PATH

EXISTING TO RIVER
A=26.40 acres
CN=64
T=16 min

GRAPHIC SCALE 1"= 60'

EXISTING DRAINAGE AREA MAP
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

REVISIONS

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=60'	10-08-2020	A1	5768B

5768B Dwg\5768B.dwg

LEGEND

WATERSHED

TRAVEL TIME PATH

BYPASSING BOTH BASINS
A=13.17 acres
CN=69
T=16 min

PROPOSED TO CB 3
A=0.41 ac

PROPOSED TO S'LY BASIN
A=1.25 acres
CN=74
T=6 min

PROPOSED TO CB 2
A=0.37 ac

PROPOSED TO RAIN GARDEN
A=0.23 ac

PROPOSED TO CB 1
A=0.55 ac

TO CUL-DE-SAC DRAINAGE
A=5.75 acres
CN=72
T=14 min

PROPOSED TO CB 5
A=0.35 ac

PROPOSED TO CB 4
A=0.22 ac

PROPOSED TO CB 23
A=0.39 ac

PROPOSED TO RAIN GARDEN
A=0.13 ac

PROPOSED TO S'LY BASIN
A=9.85 acres
CN=79
T=16 min

60 30 0 60 120 180

GRAPHIC SCALE 1"= 60'

PROPOSED DRAINAGE AREA MAP
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

REVISIONS

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=60'	10-08-2020	A2	5768B

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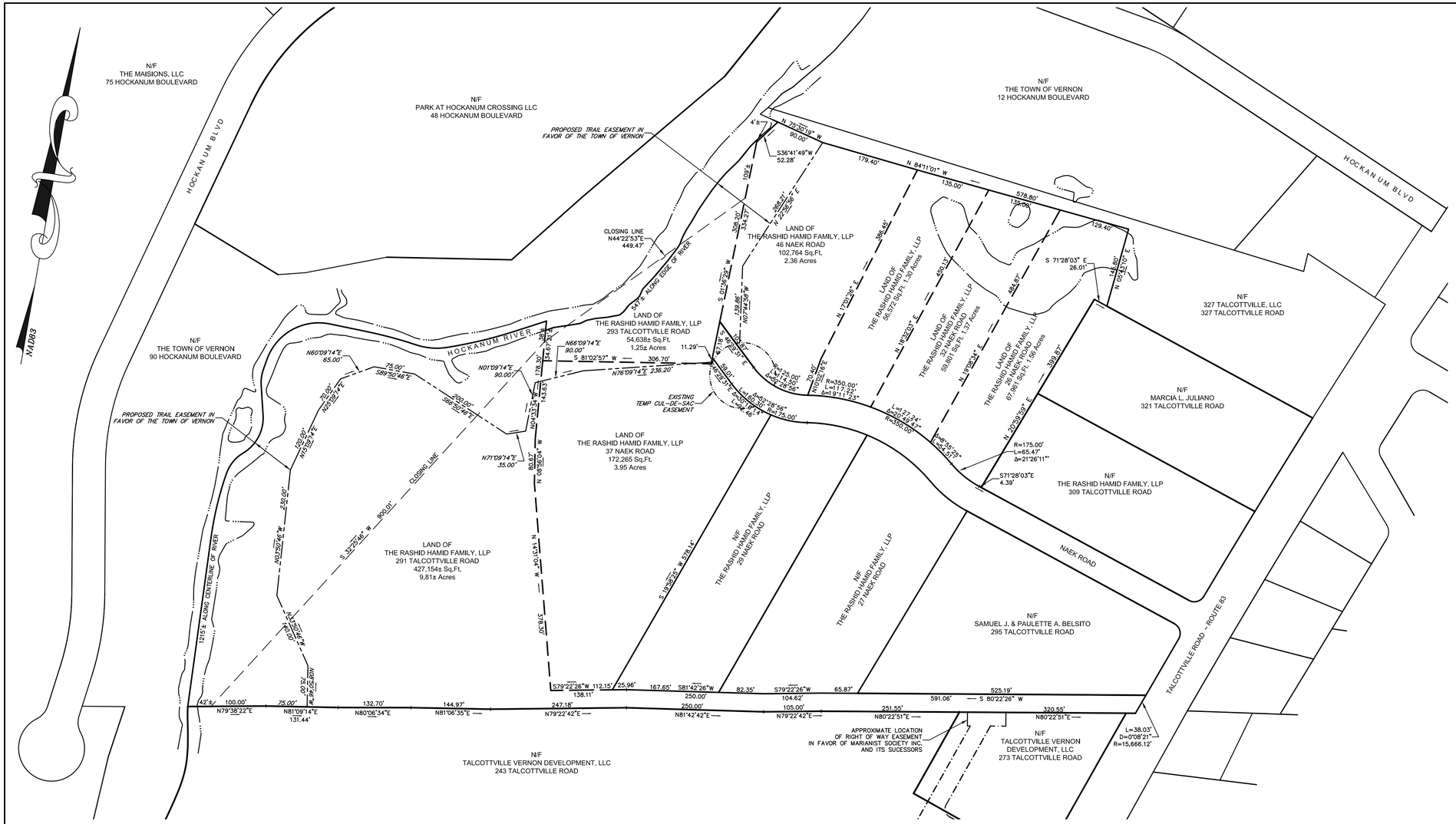

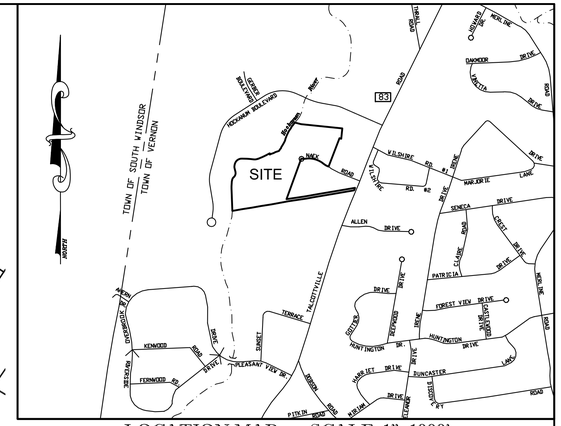

LOCATION MAP SCALE: 1"=1000'

NOTES:

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2. BEARINGS DEPICTED ON THIS PLAN ARE BASED THE CONNECTICUT STATE PLANE COORDINATE SYSTEM NAD 83 PER THE MAP REFERENCED IN NOTE 3.B. ELEVATIONS DEPICTED ON THIS PLAN REFER TO THE NAVD 88 DATUM PER THE MAP REFERENCED IN NOTE 3.C.
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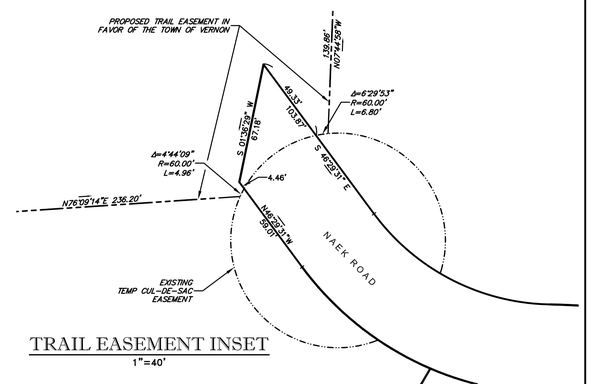
   D. "RESUBDIVISION OF LOT 3 TO BE KNOWN AS SONA INDUSTRIAL PARK VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 12-27-85, REVISED 1-27-86.
   E. "RESUBDIVISION - LOT #3 SONA INDUSTRIAL PARK LAND OF NAEK CONSTRUCTION CO. INC. VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 9-21-90, REVISED 5/9/91.
   F. "AS-BUILT PLAN & SEWAGE PUMPING STATION NAEK ROAD SONA INDUSTRIAL PARK VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 9-28-87, REVISED 12-6-88.
4. THESE PARCELS ARE LOCATED IN THE PLANNED DEVELOPMENT ZONE (PDZ): GERBER FARM AREA.
5. 291 TALCOTTVILLE ROAD IS IN FAVOR OF AN EASEMENT OVER A PORTION OF 243 & 253 TALCOTTVILLE ROAD FOR THE RIGHT TO PASS AND REPASS BY FOOT OR BY VEHICLE AS DESCRIBED IN VOL. 2540, PAGE 129 IN THE VERNON LAND RECORDS.
6. TOPOGRAPHY DEPICTED ON THESE PLANS WAS PROVIDED BY GOLDEN AERIAL SURVEYS.
7. WETLANDS DEPICTED ON THESE PARCELS WERE DELINEATED BY REMA ECOLOGICAL SERVICES, LLC.
8. THESE PARCELS ARE NOT LOCATED WITHIN THE LEVEL A AQUIFER PROTECTION AREA AS DEPICTED ON THE ZONING MAP VERNON, CT DATED 7/31/2020.
9. 291 & 293 TALCOTTVILLE ROAD, AND 27, 32, 37, 38 & 46 NAEK ROAD SHALL BE COMBINED INTO ONE PARCEL PRIOR TO ISSUANCE OF ANY CERTIFICATES OF OCCUPANCY. THE TOTAL AREA OF THE COMBINED PARCELS IS 941,200± sq. ft. 21.6± acres.
10. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING, OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO GARDNER & PETERSON ASSOCIATES, LLC. THE EXISTENCE, SIZE AND LOCATION OF ALL SUCH FEATURES MUST BE DETERMINED AND VERIFIED IN THE FIELD BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-4455.



TRAIL EASEMENT INSET
1"=40'

GRAPHIC SCALE 1"=100'
100 50 0 100 200 300

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED LAND SURVEYOR

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED PROFESSIONAL ENGINEER

REVISIONS

IMPROVEMENT LOCATION SURVEY

SITE PLAN OF DEVELOPMENT
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=100'	03-17-2021	1 OF 10	5768B

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5768B.dwg\5768B

NOTES:

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   C. "TOPOGRAPHIC SURVEY TAX ID 03–0004–0009 TAX ID 03–0004–0009B 243 & 253 TALCOTTVILLE ROAD VERNON, CONNECTICUT" PREPARED BY VHB. DATE: OCTOBER 26, 2017, REVISED 1/8/2018.

   D. "RESUBDIVISION OF LOT 3 TO BE KNOWN AS SONA INDUSTRIAL PARK VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 12–27–85, REVISED 1–27–86.

   E. "RESUBDIVISION – LOT #3 SONA INDUSTRIAL PARK LAND OF NAEK CONSTRUCTION CO. INC. VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 9–21–90, REVISED 5/9/91.

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ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72–155 AS AMENDED BY P.A. 73–571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

STATE OF CONNECTICUT · ERIC R. PETERSON · No. 23430 · LICENSED LAND SURVEYOR

EXISTING	LEGEND	PROPOSED
	PROPERTY BOUNDARY	
	ZONING SETBACK	
	EASEMENT	
	IRON PIN/PIPE FOUND	
	MONUMENT FOUND	
600	ELEVATION CONTOUR	600
×603.5	SPOT ELEVATION	×603.5
	TREE LINE	
S	SANITARY SEWER	S
	CATCH BASIN/CULVERT	
	STORM MANHOLE	
	FOOTING DRAIN	
W	WATER MAIN	W
	HYDRANT	
G	GAS MAIN	G
	LIGHT	
	UTILITY POLE	
	OVERHEAD WIRES	
TP	SIGN	
	TEST PIT	
73C 73E	SOIL CLASSIFICATION	
	SILT FENCE	
	COIR LOG	

40 20 0 40 80 120
GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY
EROSION & SEDIMENT CONTROL PLAN
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

STATE OF CONNECTICUT · ERIC R. PETERSON · No. 23430 · LICENSED PROFESSIONAL ENGINEER

REVISIONS

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	03–17–2021	2 OF 10	5768B

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ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

STATE OF CONNECTICUT — ERIC R. PETERSON — No. 23430 — LICENSED LAND SURVEYOR

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

LEGEND

EXISTING		PROPOSED
	PROPERTY BOUNDARY	
	ZONING SETBACK	
	EASEMENT	
o	IRON PIN/PIPE FOUND	
⊡	MONUMENT FOUND	
600	ELEVATION CONTOUR	600
x603.5	SPOT ELEVATION	x603.5
	TREE LINE	
S	SANITARY SEWER	S
CB	CATCH BASIN/CULVERT	
D	STORM MANHOLE	D
F	FOOTING DRAIN	F
W	WATER MAIN	W
	HYDRANT	
G	GAS MAIN	G
	LIGHT	
	UTILITY POLE	
OHW	OVERHEAD WIRES	
TP	SIGN	
	TEST PIT	
TJC / TJE	SOIL CLASSIFICATION	
	SILT FENCE	
	COIR LOG	

GRAPHIC SCALE 1"= 40'

REVISIONS

IMPROVEMENT LOCATION SURVEY
EROSION & SEDIMENT CONTROL PLAN
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	03-17-2021	3 OF 10	5768B

5768B \dwg\5768B.dwg

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GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

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	PROPERTY BOUNDARY	
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	EASEMENT	
	IRON PIN/PIPE FOUND	
	MONUMENT FOUND	
600	ELEVATION CONTOUR	600
x603.5	SPOT ELEVATION	x603.5
	TREE LINE	
S S	SANITARY SEWER	S S
	CATCH BASIN/CULVERT	
	STORM MANHOLE	D
	FOOTING DRAIN	F
W W	WATER MAIN	W
	HYDRANT	
G G	GAS MAIN	G
	LIGHT	
	UTILITY POLE	
OHW	OVERHEAD WIRES	
	SIGN	
TP	TEST PIT	
73C 72E	SOIL CLASSIFICATION	

40 20 0 40 80 120
GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY
SITE GRADING PLAN
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

STATE OF CONNECTICUT · ERIC R. PETERSON · No. 23430 · LICENSED PROFESSIONAL ENGINEER

REVISIONS

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	03–17–2021	4 OF 10	5768B

5768B\dwg\5768B.dwg

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GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

STATE OF CONNECTICUT · ERIC R. PETERSON · No. 23430 · LICENSED LAND SURVEYOR

LEGEND

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	ZONING SETBACK	
	EASEMENT	
o	IRON PIN/PIPE FOUND	
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	CATCH BASIN/CULVERT	
	STORM MANHOLE	
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W	WATER MAIN	W
	HYDRANT	
G	GAS MAIN	G
	LIGHT	
	UTILITY POLE	
OHW	OVERHEAD WIRES	
TP	SIGN	
	TEST PIT	
75C / 72E	SOIL CLASSIFICATION	

GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY

SITE GRADING PLAN

THE VILLAGE AT NAEK ROAD

291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

REVISIONS

STATE OF CONNECTICUT · ERIC R. PETERSON · No. 23430 · LICENSED PROFESSIONAL ENGINEER

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	03-17-2021	5 OF 10	5768B

5768B\dwg\5768B.dwg

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GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

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	PROPERTY BOUNDARY	
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	HYDRANT	
	GAS MAIN	
	LIGHT	
	UTILITY POLE	
	OVERHEAD WIRES	
	SIGN	

40 20 0 40 80 120
GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY

UTILITY PLAN

THE VILLAGE AT NAEK ROAD

291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

STATE OF CONNECTICUT · ERIC R. PETERSON · No. 23430 · LICENSED PROFESSIONAL ENGINEER

REVISIONS

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178 HARTFORD TURNPIKE
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BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	03–17–2021	6 OF 10	5768B

5768B\dwg\5768B.dwg

N/F
THE TOWN OF VERNON
90 HOCKANUM BOULEVARD

N/F
THE TOWN OF VERNON
90 HOCKANUM BOULEVARD

HOCKANUM RIVER

NADIA WAY

ABDUL WAY

UPLAND REVIEW AREA

LIMIT OF FLOOD ZONE DETERMINED BY ELEVATION

PROVIDE CONCRETE PIPE CRADLE AS NEEDED

RAIN GARDEN BOT:11'x24'

CB18 TF=212.90 INV=209.20
CB19 TF=212.90 INV=209.00
15"HDPE S=1.11% L=18'
15"HDPE S=3.33% L=75'
STMH20 TF=208.70 INV=205.00
SMH9 TF=214.18 INV=206.88
15"HDPE S=3.00% L=107'
SMH9 TF=215.74 INV=206.04
CB21 TF=211.70 INV=203.80
8"PVC S=0.50% L=206'
SMH9 TF=212.97 INV=207.07
2-ROW 16L.F. CONC. GALLEYS BOT=208.00
CB23 TF=213.00 INV=209.00
CB24 TF=214.50 INV=210.80
CB25 (TYPE I) TF=212.75 INV=209.05
CB26 TF=212.50 INV=208.80
SMH7 TF=214.61 INV=204.36
CB30 TF=212.70 INV=206.70(SW) INV=203.45(N,E)
SMH8 TF=212.81 INV=204.91
CB27(TYPE I) TF=212.57 INV=208.60
SMH6 TF=212.70 INV=203.20
CB28 TF=214.65 INV=207.00
FE22 INV=203.00
FE17 INV=203.0
FE31 INV=203.00
CB16 TF=211.30 INV=207.40
FE29 INV=204.15
12" CMP
SMH6 INV=202.05
FE14 INV=200.00
CB12 TF=209.85 INV=205.15
CB9 TF=211.00 INV=205.00
16L.F. CONC. GALLEY BOT=208.00
CB10 TF=212.00 INV=208.00
24LF. CONC. GALLEYS BOT=204.00
SMH TF=208.58 INV=198.18
CB TF=208.46 INV=201.46
STMH TF=210.43 (W)=202.13(E) INV=201.93(N,S)
CB TF=208.55 INV=202.80(E) INV=201.95(S) INV=201.65(N)
8"PVC L=69' S=0.51%
CB11 TF=209.05 INV=205.35
STMH13 TF=208.35 INV=204.65
SMH5 TF=209.54 INV=200.54
15" HDPE S=0.55% L=35'
15"HDPE S=0.57% L=89'
15"HDPE S=4.76% L=97'
SMH TF=209.29 INV=200.19
SMH TF=209.82 INV=200.82
SMH TF=210.11
CB TF=209.22 INV=204.92(S) INV=204.82(N)
CB TF=209.37 INV=205.57
CB15(TYPE I CL) TF=211.30 INV=207.60
15"HDPE S=1.20% L=17'
24"HDPE S=0.50% L=90'
24"HDPE S=0.50% L=150'
24"HDPE S=0.50% L=140'
N/F
THE RASHID HAMID FAMILY, LLP
29 NAEK ROAD
N/F
THE RASHID HAMID FAMILY, LLP
27 NAEK ROAD
N/F
SAMUEL J. & PAULETTE A. BELSITO
295 TALCOTTVILLE ROAD
TALCOTTVILLE ROAD
ROUTE 83
N/F
TALCOTTVILLE VERNON DEVELOPMENT, LLC
LOT 'B'
243 TALCOTTVILLE ROAD
N/F
TALCOTTVILLE VERNON DEVELOPMENT, LLC
LOT 'A'
273 TALCOTTVILLE ROAD
MATCHMARK 'A'
MATCHMARK 'A'

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   D. "RESUBDIVISION OF LOT 3 TO BE KNOWN AS SONA INDUSTRIAL PARK VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 12–27–85, REVISED 1–27–86.
   E. "RESUBDIVISION – LOT #3 SONA INDUSTRIAL PARK LAND OF NAEK CONSTRUCTION CO. INC. VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 9–21–90, REVISED 5/9/91.
   F. "AS–BUILT PLAN & SEWAGE PUMPING STATION NAEK ROAD SONA INDUSTRIAL PARK VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES. DATE: 9–28–87, REVISED 12–6–88.
4. THESE PARCELS ARE LOCATED IN THE PLANNED DEVELOPMENT ZONE (PDZ): GERBER FARM AREA.
5. 291 TALCOTTVILLE ROAD IS IN FAVOR OF AN EASEMENT OVER A PORTION OF 243 & 253 TALCOTTVILLE ROAD FOR THE RIGHT TO PASS AND REPASS BY FOOT OR BY VEHICLE AS DESCRIBED IN VOL. 2540, PAGE 129 IN THE VERNON LAND RECORDS.
6. TOPOGRAPHY DEPICTED ON THESE PLANS WAS PROVIDED BY GOLDEN AERIAL SURVEYS.
7. WETLANDS DEPICTED ON THESE PARCELS WERE DELINEATED BY REMA ECOLOGICAL SERVICES, LLC.
8. THESE PARCELS ARE NOT LOCATED WITHIN THE LEVEL A AQUIFER PROTECTION AREA AS DEPICTED ON THE ZONING MAP VERNON, CT DATED 7/31/2020.
9. 291 & 293 TALCOTTVILLE ROAD, AND 27, 32, 37, 38 & 46 NAEK ROAD SHALL BE COMBINED INTO ONE PARCEL PRIOR TO ISSUANCE OF ANY CERTIFICATES OF OCCUPANCY. THE TOTAL AREA OF THE COMBINED PARCELS IS 941,200± sq. ft. 21.6± acres.
10. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING, OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO GARDNER & PETERSON ASSOCIATES, LLC. THE EXISTENCE, SIZE AND LOCATION OF ALL SUCH FEATURES MUST BE DETERMINED AND VERIFIED IN THE FIELD BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1–800–922–4455.

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED LAND SURVEYOR

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72–155 AS AMENDED BY P.A. 73–571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

LEGEND

EXISTING		PROPOSED
	PROPERTY BOUNDARY	
	ZONING SETBACK	
	EASEMENT	
	IRON PIN/PIPE FOUND	
	MONUMENT FOUND	
	SANITARY SEWER	
	CATCH BASIN/CULVERT	
	STORM MANHOLE	
	FOOTING DRAIN	
	WATER MAIN	
	HYDRANT	
	GAS MAIN	
	LIGHT	
	UTILITY POLE	
	OVERHEAD WIRES	
	SIGN	

GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY
SITE GRADING PLAN
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

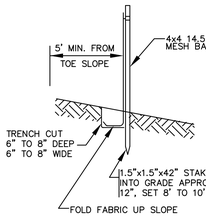
STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED PROFESSIONAL ENGINEER

REVISIONS

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	03–17–2021	7 OF 10	5768B

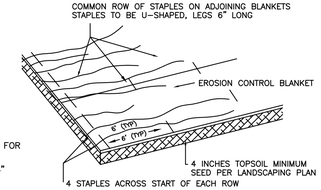
5768B\dwg\5768B.dwg



NOTES:
1. SEDIMENT CONTROL FABRIC TO BE A GEOTEXTILE MATERIAL TREATED TO RESIST DEGRADATION FROM EXPOSURE TO SUNLIGHT.
2. USE ONLY GEOTEXTILES WHICH ARE ALREADY ON THE CONNECTICUT DEPARTMENT OF TRANSPORTATION'S GEOTEXTILE APPROVED LIST OF GEOTEXTILES.
3. AFTER FOLDING FABRIC EDGE, BACKFILL TRENCH WITH TAMPED ORIGINAL SOIL OR AGGREGATE.
4. INSTALL PER 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
5. FABRIC SHALL BE PREFABRICATED WITH 4"x4" 14.5 AWG WIRE MESH BACKING.

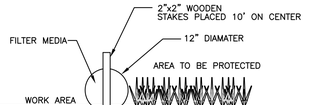
SILT FENCE INSTALLATION

NOT TO SCALE

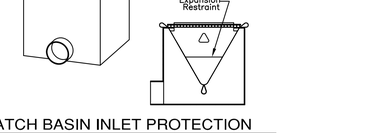


NOTES:
1. APPLY ON SLOPES STEEPER THAN 3:1.
2. EROSION CONTROL BLANKET TO BE NORTH AMERICAN GREEN S 150 DOUBLE NET STRAW BLANKET OR EQUAL.
3. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

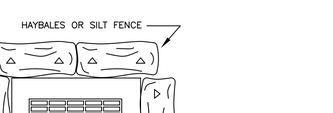
EROSION CONTROL BLANKET



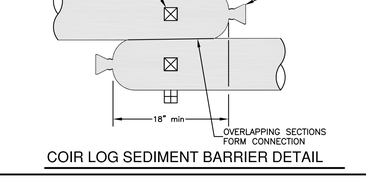
CONSTRUCTION ENTRANCE



NOTES:
1. KEY STONE INTO THE DITCH BANKS AND EXTEND INTO THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW FROM FLANKING THE CHECK DAM.



STONE CHECK DAM DETAIL

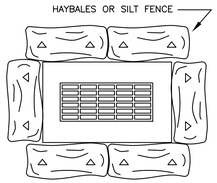


STOCKPILE EROSION PROTECTION DETAIL

INSTALLATION INSTRUCTIONS:
1. CLEAR THE INSTALLATION AREA OF ANY DEBRIS, TREES, ROCKS OR LARGE OBSTRUCTIONS. SOCKS ARE DESIGNED TO COME IN CONTACT WITH THE SOIL, SO ANY STUMPS OR POTENTIAL OBSTRUCTIONS SHOULD BE REMOVED.
2. DIG A SHALLOW TRENCH IN THE LOCATION WHERE THE LOGS NEED TO BE PLACED.
3. PLACE THE LOGS IN THE TRENCH AND BACKFILL WITH SOIL SO THAT THE LOGS ARE TIGHTLY PACKED AGAINST THE SLOPE. ADJACENT LOGS SHOULD BE EITHER POSITIONED SO THAT THE ENDS FIT TIGHTLY AGAINST EACH OTHER AND ENDS SHOULD BE JOINED/SECURED TOGETHER WITH COIR TWINE OR OTHER SUITABLE TIES OR OVERLAPPED AS DESCRIBED BELOW.
4. FILTER MEDIA TO BE A COARSE COMPOSTED MATERIAL SPECIFICALLY DESIGNED FOR REMOVAL OF SOLIDS AND SOLUBLE POLLUTANTS FROM STORMWATER RUNOFF.
5. 10 L.F. ON EACH END SHALL BE PLACE AT A 30° ANGLE UP-SLOPE TO PREVENT END-AROUND FLOW.

COIR LOG SEDIMENT BARRIER DETAIL

CATCH BASIN INLET PROTECTION



CATCH BASIN AT LOW POINT

Maintenance Schedule

Maintenance Item	Frequency	Maintenance
Underground Stormwater Chambers	Visual Inspection Semi- Annually	• Remove inspection port caps to verify that runoff has infiltrated & leaves/debris are not collecting in system. • Check sediment depth and vacuum when 6" of sediment has accumulated.
Catch Basins	Monthly Annually	• Inspect grates for litter and debris and remove as needed • Remove sediment in sumps immediately after spring snowmelt
Grass Swale	Monthly Semi-Annually Semi-Annually	• Maintain grass at a height of 4 to 6 inches during the growing season • Remove debris/sediment in swale • Check for evidence of water overflowing swale.

TEST PIT DATA:
WITNESSED BY E. PETERSON, P.E.
GARDNER & PETERSON ASSOCIATES, LLC

06/02/2020
TP 303:
0-9" TOPSOIL
9-14" COARSE LOAMY SAND
14-108" COARSE SAND W/ COBBLES

TP 305:
0-13" TOPSOIL
13-22" Y.BR. FINE SANDY LOAM
22-72" R.BR. TILL, COMPACT
MOTTLING @ 16"
SEEPAGE @ 68"

TP 307:
0-18" TOPSOIL/FILL
18-30" Y.BR. FINE SANDY LOAM
30-72" R.BR. TILL
MOTTLING @ 18"
SEEPAGE @ 40"

TP 308:
0-38" SAND & GRAVEL FILL
38-44" BURIED TOPSOIL
44-138" SAND & GRAVEL
SHGW @ 108"
PERM @ 58" RATE: 190 FT/DAY

TP 310:
0-11" TOPSOIL
11-28" BR. FINE SANDY LOAM
28-84" FIRM R.BR. SILT
84-144" MED. SAND W/ COBBLES, SOME SILT
GW @ 126"
PERM #1 @ 115' RATE: 70 FT/DAY
STANDPIPE SET: DRY ON 06/16/2020

TP 311:
0-11" TOPSOIL
11-102" BR. SAND & GRAVEL
192-144" COMPACT FINE SAND W/ SILT
PERM #2 @ 50" RATE: 61 FT/DAY

TP 312:
0-16" TOPSOIL
16-32" FINE SANDY LOAM
32-144" SAND & GRAVEL
PERM #3 @ 36" RATE: 41 FT/DAY

TP 313:
0-7" TOPSOIL
7-15" Y.BR. FINE SANDY LOAM
15-43" R.BR LOAMY SAND W/ COBBLES, SOMEWHAT FIRM
LEDGE @ 43"

TP 314:
LEDGE @ 24"

TP 314A:
0-36" FRACTURED ROCK

TP 315:
LEDGE @ 36" (WEST)
LEDGE @ 30" (EAST)

TP 316:
0-4" TOPSOIL
4-33" BR. FINE SANDY LOAM W/ COBBLES
33-54" BR. COMPACT TILL W/ FLAT BOULDERS
54-78" SAND & GRAVEL W/ BOULDERS
LEDGE @ 78"
PERM #12 @ 23" RATE: 0.4 FT/DAY

TP 317:
0-10" TOPSOIL
10-58" BONEY BR. FINE SANDY LOAM
LEDGE @ 58"

TP 317A:
0-8" TOPSOIL
8-30" BR. FINE SANDY LOAM W/ COBBLES
30-78" R.BR. COMPACT TILL W/ FLAT BOULDERS
LEDGE @ 78"

TP 318:
0-8" TOPSOIL
8-36" Y.BR. FINE SANDY LOAM W/ COBBLES, FIRM
36-60" R.BR. TILL W/ COBBLES
60-80" DECOMPOSED LEDGE

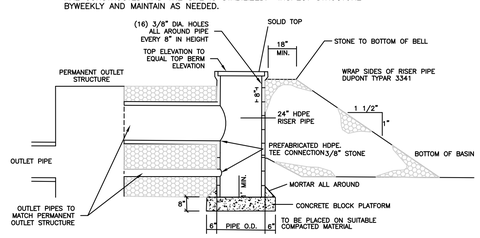
TP 319:
0-9" TOPSOIL
9-24" Y.BR. LOAMY SAND W/ COBBLES
24-60" SAND & GRAVEL
60-132" COARSE SAND
PERM #70 @ 36" RATE: 370 FT/DAY

TP 320:
LEDGE @ 32"

TP 321:
0-12" TOPSOIL
12-20" Y.BR. FINE SANDY LOAM
20-116" SAND & GRAVEL
SEEPAGE @ 116"

08/16/2020
TP H1:
0-6" TOPSOIL
6-28" Y.BR. FINE SANDY LOAM
28-36" MED. SAND W/ COBBLES
PERM #1 @ 32" RATE: 12 FT/DAY

TEMPORARY STAND PIPE OUTLET SHALL NOT BE REMOVED UNTIL ALL SITE IMPROVEMENTS WITHIN THE DRAINAGE AREA TO THE CORRESPONDING BASIN ARE CONSTRUCTED AND THE SITE IS STABILIZED. INSPECT STRUCTURE BYWEEKLY AND MAINTAIN AS NEEDED.



TEMPORARY STANDPIPE OUTLET STRUCTURE FOR SEDIMENT BASIN

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION.
2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN.
3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN THE AMOUNT NECESSARY TO COMPLETE THE FINISHED GRADING OF ALL EXPOSED AREAS.
4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
5. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO MINIMIZE EROSION, SLIPPAGE, AND SETTLEMENT. FILL INTENDED TO SUPPORT STRUCTURES, DRAINAGE, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH THE APPROPRIATE STATE AND/OR LOCAL SPECIFICATIONS.
6. FILL MATERIAL SHALL BE FREE OF BRUSH, RUBBISH, LARGE ROCKS, LOGS, STUMPS, BUILDING MATERIAL, COMPRESSIBLE MATERIAL, AND OTHER MATERIALS WHICH MAY INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
7. FROZEN MATERIAL OR SOFT MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
8. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION.
9. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.
10. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH SOUND CONSTRUCTION PRACTICE.
11. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISH GRADING. IF FINISH GRADING IS TO BE DELAYED FOR MORE THAN 30 DAYS AFTER DISTURBANCE IS COMPLETE, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED. AREAS LEFT OVER 30 DAYS SHALL BE CONSIDERED "LONG TERM" AND SHALL RECEIVE TEMPORARY SEEDING WITHIN THE FIRST 15 DAYS.
12. SITE IS TO BE GRADED TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCHING, AND MAINTENANCE UNLESS OTHERWISE SPECIFIED IN THE PLANS.
13. CUT AND FILL SLOPES SHALL NOT BE STEEPER THAN 2:1. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4". ADDITIONAL TOPSOIL MAY BE REQUIRED TO MEET MINIMUM DEPTHS. NO TOPSOIL SHALL BE REMOVED FROM THIS SITE.
14. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4" TO 1/2" INCH. HYDROSEEDING WHICH IS MULCHED MAY BE LEFT ON THE SOIL SURFACE.
15. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING WITH A ROLLER OR LIGHT DRAG.
16. FERTILIZER AND LIME ARE TO BE WORKED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISC OPERATION SHOULD BE ALONG THE CONTOUR.
17. REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER. REMOVE ALL OTHER DEBRIS SUCH AS WIRE, TREE ROOTS, PIECES OF CONCRETE, OR OTHER UNSUITABLE MATERIALS.
18. INSPECT SEEDBED BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED BEFORE SEEDING, THEN FIRMED AS DESCRIBED ABOVE.
19. WHERE GRASSES PREDOMINATE, FERTILIZE ACCORDING TO SOIL ANALYSIS, OR SPREAD 300 POUNDS OF 10-10-10 OR EQUIVALENT PER ACRE (7.5 POUNDS PER 1000 S.F.).
20. CALCIUM CHLORIDE WILL BE AVAILABLE FOR DUST CONTROL ON GRAVEL TRAVEL SURFACES.

TEMPORARY SEEDING SCHEDULE:

SPECIES	LBS/ACRE	LBS/1000SF	SEEDING DATES
ANNUAL RYEGRASS	40	1.0	3/1-6/15, 8/1-10/15
WINTER RYE	120	3.0	4/15-7/1, 8/15-10/15
SUDANGRASS	30	0.7	5/15-8/1

TEMPORARY SEEDING IS NOT LIMITED TO THE SPECIES SHOWN. OTHER SPECIES RECOMMENDED BY THE SCS OR AS LIMITED BY SITE CONDITIONS MAY BE USED.

STRAW MULCH IS TO BE APPLIED TO SEEDED AREA AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE, 70 TO 90 LBS. PER 1000 SQ. FT.

FINAL SEEDING SCHEDULE:

PROVIDE 4 INCHES OF TOPSOIL MINIMUM, FREE OF ROOTS, LARGE STONES, AND OTHER OBJECTS.

SPECIES	LBS/ACRE	LBS/1000SF	SEEDING DATES
KENTUCKY BLUEGRASS	20	0.45	4/1-6/15, 8/15-10/1
CREEPING RED FESCUE	20	0.45	4/1-6/15, 8/15-10/1
PERENNIAL RYEGRASS	5	0.10	4/1-6/15, 8/15-10/1
TOTAL	45	1.00	

TURF MANAGEMENT PLAN

1. Soil Testing
A composite soil sample from the subject property will be collected and delivered to a University of Connecticut Cooperative Extension office for testing of soil nutrient levels (i.e., pH, nitrogen, phosphorus, calcium, magnesium, potassium) prior to a fertilizer application. The Extension office will recommend a fertilizer application rate based upon these test results. The actual fertilizer application rate will follow this recommendation. This will ensure against an excessive fertilizer application, which could lead to chemical leaching or export.

2. Slow-Release Fertilizers
Slow-release fertilizers will be applied to lawns, planted trees and shrubs. These can include, but are not limited to, organic-based fertilizers. A variety of commercial slow-release nitrogen fertilizer products are available (e.g., Milorganite, isobutylidene diurea, coated ureas, etc.). Advantages of slow-release fertilizers include the supply of a steady nitrogen source, and reduced nitrogen leaching. By combining small amounts of soluble nitrogen sources with slow release nitrogen products, nitrogen availability can be extended without a threat of leaching.

3. Fertilizer Application Schedule
Fertilizer will be applied three times annually to the subject property: early to late May (after the threat of cool, wet weather has passed), late August to early September, and mid-September to mid-October. If the soil test indicates a need for lime, it will be applied at the last fertilization date.

4. Integrated Pest Management (IPM)
IPM is an integrated, preventative approach to maintaining healthy turf and landscape plants. IPM recognizes that, although chemicals are an important component of a turf management plan, other strategies are available to maintain a healthy lawn. A central premise of IPM is to treat pest problems as they arise on an as-needed basis only, using a variety of biological (e.g., natural predators), chemical and cultural (e.g., disease-resistant seed) practices.

To be successful, IPM requires periodic monitoring by an experienced practitioner to detect pest problems at an early stage and develop an effective, environmentally responsible action plan. It is recommended that the contractor that is hired to maintain the grounds have training and experience in the practice of IPM.

CONSTRUCTION SCHEDULE & EROSION & SEDIMENT CONTROL CHECKLIST

PROJECT NAME: THE VILLAGE A NAEK ROAD

LOCATION: NAEK ROAD – VERNON, CT

PROJECT DESCRIPTION: MULTI-FAMILY HOUSING DEVELOPMENT

PARCEL AREA: 21.6 AC.

RESPONSIBLE PERSONNEL: R.HAMID, NAEK CONSTRUCTION, 27 NAEK ROAD, VERNON, CT 860-875-1895

WORK DESCRIPTION	EROSION & SEDIMENT CONTROL MEASURES	DATE INSTALLED	INITIALS
CLEAR TREES AND BRUSH	INSTALL ANTI-TRACKING PAD		
REMOVE STUMPS	INSTALL SILT FENCE BARRIERS DOWNGRADE OF CONSTRUCTION ACTIVITY AS SHOWN		
	INSTALL INLET PROTECTION IN EXISTING CATCH BASINS		
EXCAVATE SEDIMENT BASINS AND ROUGH GRADE SITE	PROTECT INFILTRATION GALLEY AREAS FROM DISTURBANCE AND COMPACTION		
	PROTECT STOCKPILE AREAS WITH SILT FENCE		
	INSTALL EROSION BLANKET ON SLOPES STEEPER THAN 3:1		
I	INSPECT AND MAINTAIN SEDIMENT BARRIERS WEEKLY AND AFTER RAIN EVENTS OVER 0.5-INCH.		
EXCAVATE FOR BUILDING FOUNDATIONS			
INSTALL SEWER, DRAINAGE AND UTILITIES	INSTALL HAYBALES AROUND NEW CATCH BASIN INLETS ONCE INSTALLED		
INSTALL PAVEMENT BINDER COAT IN AREAS WHERE FOUNDATIONS AND UTILITIES ARE COMPLETE	TOPSOIL, SEED AND MULCH AREA ADJACENT TO EACH BUILDING AS IT IS COMPLETED		
FINAL GRADE AND FINAL PAVE	TOPSOIL, SEED AND MULCH REMAINDER OF SITE		
	REMOVE SEDIMENT FROM DRAINAGE STRUCTURES AND INSTALL INFILTRATION TRENCHES WITHIN BASIN.		
	REMOVE EROSION CONTROLS WHEN SITE IS STABILIZED		

PROJECT DATES:
DATE OF CONSTRUCTION START JULY 1, 2021
DATE OF CONSTRUCTION COMPLETION NOVEMBER 30, 2022

EROSION AND SEDIMENT CONTROL PROCEDURES SHALL ESSENTIALLY BE IN ACCORDANCE WITH THESE PLANS, AS REQUIRED BY TOWN REGULATIONS, AND THE MANUAL, "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" FOR CONNECTUT, BY THE COUNCIL ON SOIL AND WATER CONSERVATION, 1985, REVISED TO 2002.

PROJECT NARRATIVE

The purpose of this project is to construct nineteen new apartment buildings and the driveways, parking and utilities to service them. The proposed buildings are to be serviced by public sanitary sewer and water, and the new buildings will be accessed by two new curb cuts off Mount Vernon Drive.

Initial construction will commence at the northerly portion of the site and conclude at the southerly portion of the site. The schedule of construction activities from the northerly, to the middle, to the southerly portion of the site shall generally follow the same sequence. Construction activities shall commence with the installation of the construction entrance and sedimentation barriers, followed by tree cutting and stumping. The rain garden area and infiltration galley areas shall be protected from construction activities and compaction prior to rough grading. Rough grading shall commence with the excavation of the sediment trap and/or sediment basin as depicted. Installation of the drainage structures, and piping shall proceed as the construction schedule allows. Leave grade 6" below catch basin tops to prevent silt laden runoff from entering the drainage system.

During rough grading, haybales or silt fence shall be installed as shown at the toe of cut and fill slopes. Installation of drainage structures and piping may proceed as the construction schedule allows.

Completion of storm drainage and utility installation is to be followed by placing processed gravel, and final grading of the paved areas. All erosion control measures shall be maintained and upgraded as needed until stable vegetative growth has been established. At all times erosion of exposed and stockpiled materials shall be prevented using measures specified in these plans. Once the site is stabilized, sediment within the basin will be removed and the sediment will be seeded as depicted on these plans.

Proposed soil erosion and sediment control measures were designed using criteria set forth by the "Connecticut Guidelines for Soil Erosion and Sediment Control", revised to 2002.

PROJECT NARRATIVE

The purpose of this project is to construct 18 new multi-family buildings and the driveway, parking and utilities to service the buildings. The proposed buildings are to be serviced by public water and sanitary sewer. A house currently exists on the property which will be removed and the existing curb cut along Talcottville Road will be closed. Access to the site will be from new curb cuts off of Naek Road.

Construction activities shall commence with the installation of the construction entrances followed by tree cutting. Sedimentation barriers shall be installed prior to stumping. The infiltration galley areas shall be protected from construction activities and compaction prior to rough grading. Inspect condition of sedimentation barriers prior to rough grading.

Rough grading shall commence with the excavation of the sediment basins as depicted. Installation of the drainage structures, and piping shall proceed as the construction schedule allows. Leave grade 6" below catch basin tops to prevent silt laden runoff from entering the drainage system. The middle of each building shall be rough graded to shed runoff back towards the center of the site drives.

Completion of storm drainage and utility installation is to be followed by placing processed gravel, and final grading of the paved areas. The first coat of all paved site drives shall be installed once all foundations have been poured. The installatoin of the infiltration trenches within the stormwater basins shall be completed once the site is paved and a vegetative growth on disturbed areas has been established. All erosion control measures shall be maintained and upgraded as needed until stable vegetative growth has been established. At all times erosion of exposed and stockpiled materials shall be prevented using measures specified in these plans. Once the site is stabilized, sediment within the basin will be removed and the sediment will be seeded as depicted on these plans.

Proposed soil erosion and sediment control measures were designed using criteria set forth by the "Connecticut Guidelines for Soil Erosion and Sediment Control", revised to 2002.

EROSION & SEDIMENT CONTROL DETAILS

STATE OF CONNECTICUT
ERNEST R. PETERSON
No. 23430
LICENSED PROFESSIONAL ENGINEER

REVISIONS

SITE PLAN OF DEVELOPMENT
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	03-17-2021	8 OF 10	5768B

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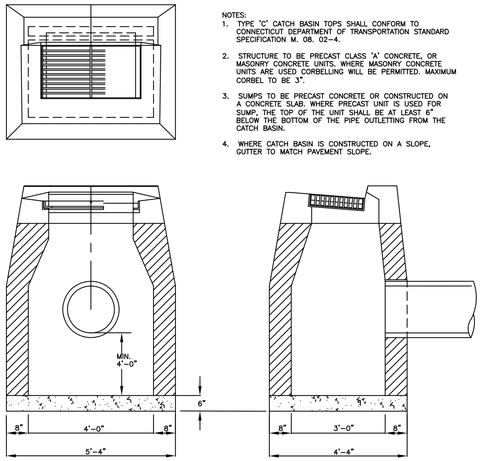
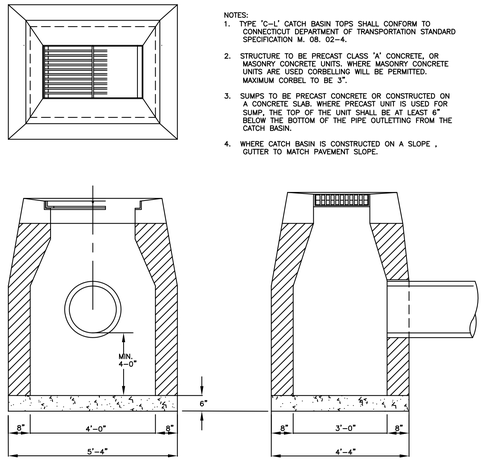


NOTES:
1. TYPE "C" CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
2. STRUCTURE TO BE PRECAST CLASS 'A' CONCRETE, OR MASONRY CONCRETE UNITS. WHERE MASONRY CONCRETE UNITS ARE USED CORBELLING WILL BE PERMITTED. MAXIMUM CORBEL TO BE 3".
3. SUMPS TO BE PRECAST CONCRETE OR CONSTRUCTED ON A CONCRETE SLAB. WHERE PRECAST UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE, GUTTER TO MATCH PAVEMENT SLOPE.

TYPE "C" CATCH BASIN



NOTES:
1. TYPE "C-L" CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
2. STRUCTURE TO BE PRECAST CLASS 'A' CONCRETE, OR MASONRY CONCRETE UNITS. WHERE MASONRY CONCRETE UNITS ARE USED CORBELLING WILL BE PERMITTED. MAXIMUM CORBEL TO BE 3".
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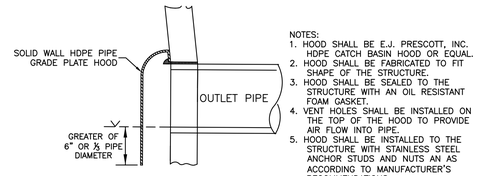
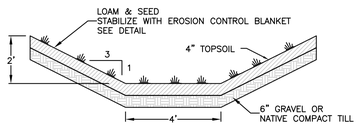
TYPE "C-L" CATCH BASIN



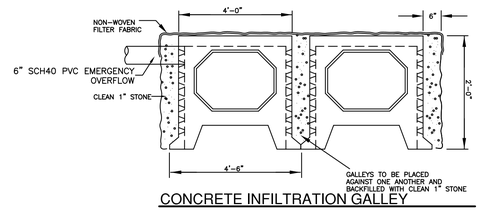
NOTES:
1. HOOD SHALL BE E.J. PRESCOTT, INC. HDPE CATCH BASIN HOOD OR EQUAL.
2. HOOD SHALL BE FABRICATED TO FIT SHAPE OF THE STRUCTURE.
3. HOOD SHALL BE SEALED TO THE STRUCTURE WITH AN OIL RESISTANT FOAM GASKET.
4. VENT HOLES SHALL BE INSTALLED ON THE TOP OF THE HOOD TO PROVIDE AIR FLOW INTO PIPE.
5. HOOD SHALL BE INSTALLED TO THE STRUCTURE WITH STAINLESS STEEL ANCHOR STUDS AND NUTS AN AS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

CATCH BASIN HOOD DETAIL (CB 5, 16, 21 & 30)

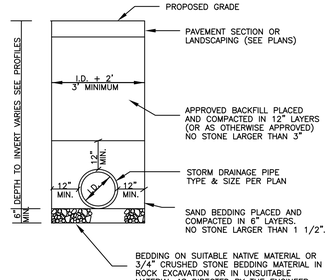


GRASS-LINED SWALE

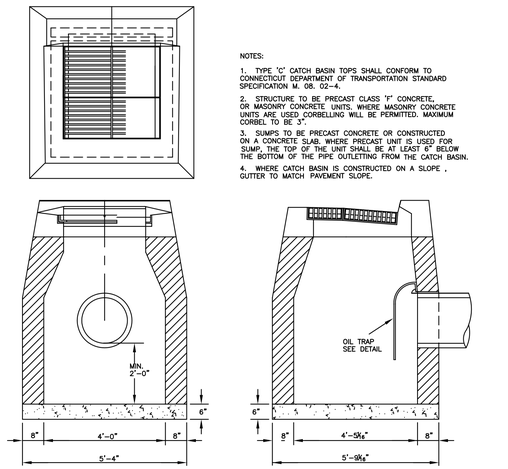
NOTES:
1. DURING CONSTRUCTION, CARE MUST BE TAKEN NOT TO COMPACT THE UNDERLYING NATURAL SOILS. HEAVY VEHICLES SHALL NOT ENTER THE EXCAVATION OF THE INFILTRATION GALLEYS. THIS AREA SHALL BE FENCED OFF TO PREVENT COMPACTION AT THE INITIATION OF SITE CONSTRUCTION.
2. ENGINEER SHALL WITNESS THE EXCAVATION AND INSTALLATION OF THE GALLEYS TO ENSURE PROPER SOIL CONDITIONS BELOW SYSTEM.
3. PLACE NON-WOVEN FILTER OVER INFILTRATION GALLEY AND CLEAN 1" STONE.
4. INFILTRATION GALLEY TO BE CONSTRUCTED TO WITHSTAND H-20 LOADS.



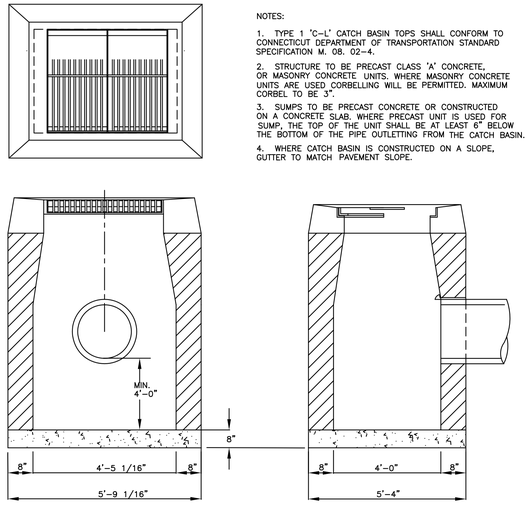
CONCRETE INFILTRATION GALLEY



STORM DRAIN TRENCH DETAIL

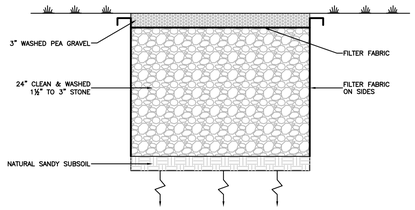


DOUBLE CATCH BASIN "C" TYPE I (CB 5, 25 & 27)

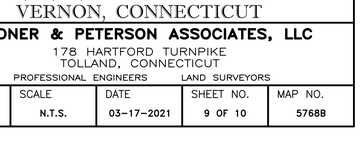


NOTES:
1. TYPE 1 'C-L' CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
2. STRUCTURE TO BE PRECAST CLASS 'A' CONCRETE, OR MASONRY CONCRETE UNITS. WHERE MASONRY CONCRETE UNITS ARE USED CORBELLING WILL BE PERMITTED. MAXIMUM CORBEL TO BE 3".
3. SUMPS TO BE PRECAST CONCRETE OR CONSTRUCTED ON A CONCRETE SLAB. WHERE PRECAST UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE, GUTTER TO MATCH PAVEMENT SLOPE.

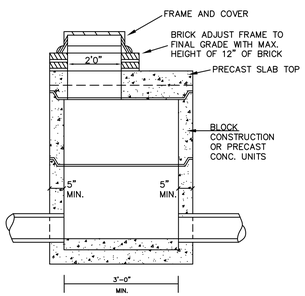
DOUBLE CATCH BASIN C-L TYPE 1 (CB 15)



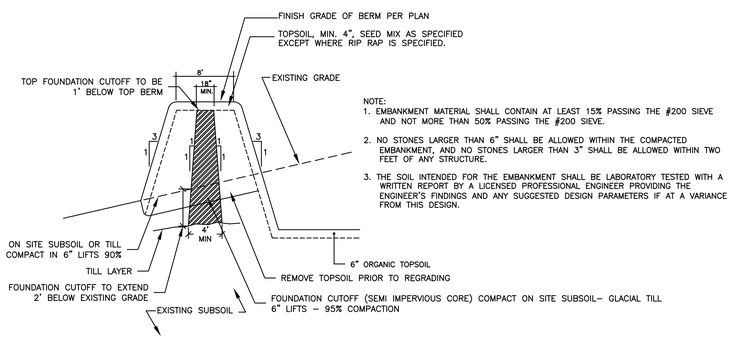
INFILTRATION TRENCH LOCATED WITHIN STORMWATER BASINS



FOUNDATION DRAIN DETAIL

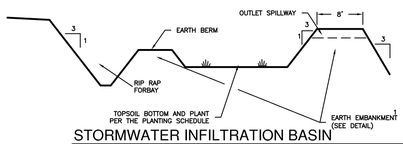


STORM MANHOLE

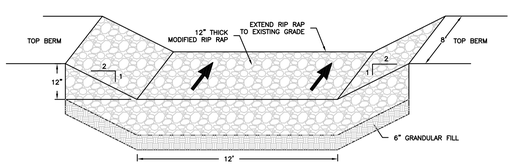


NOTE:
1. EMBANKMENT MATERIAL SHALL CONTAIN AT LEAST 15% PASSING THE #200 SIEVE AND NOT MORE THAN 50% PASSING THE #200 SIEVE.
2. NO STONES LARGER THAN 6" SHALL BE ALLOWED WITHIN THE COMPACTED EMBANKMENT, AND NO STONES LARGER THAN 3" SHALL BE ALLOWED WITHIN TWO FEET OF ANY STRUCTURE.
3. THE SOIL INTENDED FOR THE EMBANKMENT SHALL BE LABORATORY TESTED WITH A WRITTEN REPORT BY A LICENSED PROFESSIONAL ENGINEER PROVIDING THE ENGINEER'S FINDINGS AND ANY SUGGESTED DESIGN PARAMETERS IF AT A VARIANCE FROM THIS DESIGN.

STORMWATER BASIN EMBANKMENT DETAIL



STORMWATER INFILTRATION BASIN



BASIN SPILLWAY

STATE OF CONNECTICUT
ERIC R. PETERSON
No. 23430
LICENSED PROFESSIONAL ENGINEER

REVISIONS

CONSTRUCTION DETAILS
SITE PLAN OF DEVELOPMENT
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
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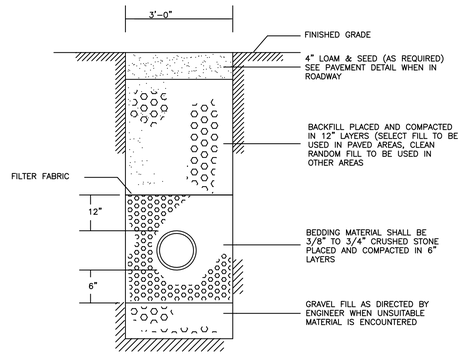
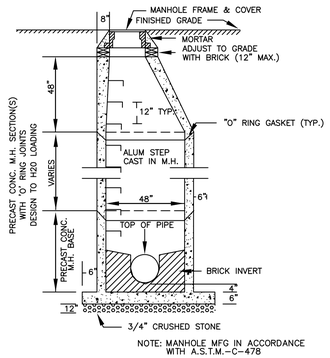
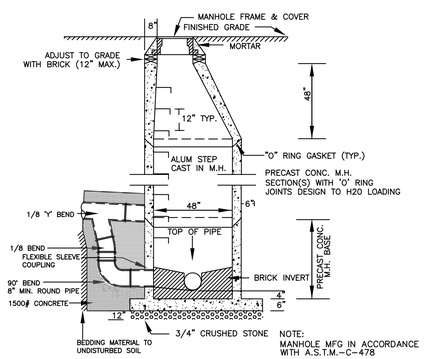


SANITARY SEWER TRENCH DETAIL



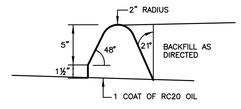
NOTE: MANHOLE MFG IN ACCORDANCE WITH A.S.T.M.-C-478

TYPICAL PRECAST MANHOLE DETAIL

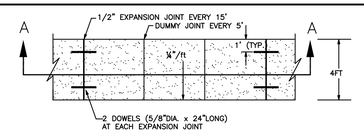


NOTE: MANHOLE MFG IN ACCORDANCE WITH A.S.T.M.-C-478

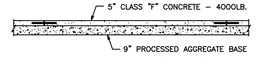
TYPICAL PRECAST DROP MANHOLE DETAIL



BIT. CONC. CURB



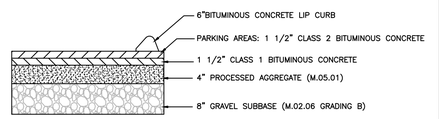
PLAN VIEW



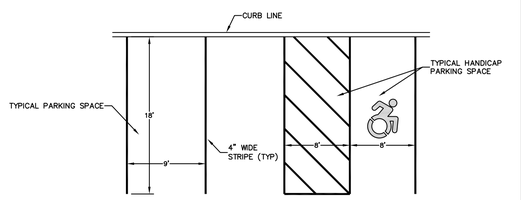
SECTION "A-A"

NOTE:
PROVIDE TACTILE WARNGING STRIP CONFORMING WITH SECTION 705 OF THE ADA STANDARDS FOR ACCESSIBLE DESIGN AT ALL RAMPS, CHANGES IN SURFACE MATERIAL AND AS REQUIRED BY SAID STANDARDS.

4' CONCRETE SIDEWALK

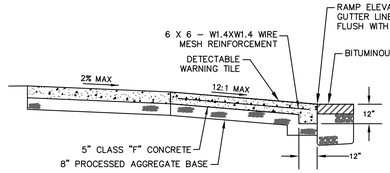


BITUMINOUS PAVEMENT CROSS SECTION

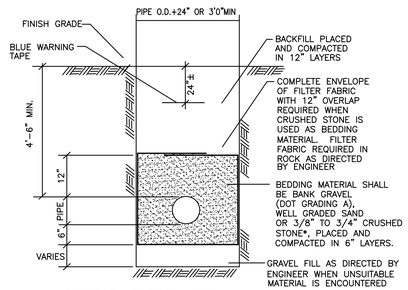


PAVEMENT MARKING NOTES:
1. All work to conform to Form 816, Section 12.09 and the manufacturer's instructions and recommendations for application.
2. Lines shall be four (4) inches wide, except as noted, and 15 mils thick, colored white, except as noted.
3. Paint shall be either white or tinted ready-mixed paint conforming to AASHTO M70, Type 1.
4. Epoxy Resins shall conform to Form 816 and project requirements for layout of crosswalks. Install glass beads by free fall method.
5. Prior to painting, sweep pavement with power broom supplemented with hand brooms to eliminate loose material and dust.
6. After applying paint, erect suitable barriers to prevent tracking of paint before drying. Retouch and paint all markings which become smeared, discolored, worn, or otherwise marred before final acceptance of the project. Remove any evidence of smearing of paint.

PAINTED PARKING STALL DETAIL



SIDEWALK RAMP DETAIL



CONNECTICUT WATER COMPANY NOTES:
1. FIELD-LOK GASKETS ARE REQUIRED ON THE (2) PIPE JOINTS BEFORE AND AFTER ALL FITTINGS.
2. MEGALUG RESTRAINTS ARE REQUIRED AT ALL FITTINGS.
3. ALL BENDS, TEES, OFFSETS, HYDRANTS, AND DEAD ENDS REQUIRE THRUST BLOCKS.

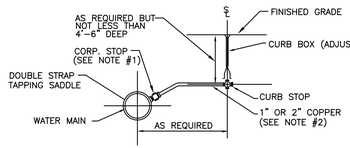
*CRUSHED STONE SHALL ONLY BE USED IN HIGH GROUNDWATER CONDITIONS AS DIRECTED BY THE ENGINEER

WATER TRENCH DETAIL

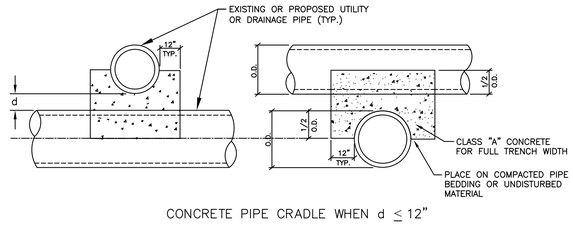
NOTES:

1. THE TOP OF THE CORPORATION AND THE FIRST THREE (3) FEET OF COPPER TUBING SHALL BE INSTALLED NO HIGHER THAN THE TOP OF THE WATER MAIN.

2. NO INTERMEDIATE SIZES (i.e. 3/4", 1-1/2", 1-3/4") ARE ALLOWED FOR COPPER SERVICES. ANY SERVICE REQUIREMENT GREATER THAN 2"COPPER SHALL BE CLDIP (4"MIN.) WITH THE SHUT-OFF LOCATED AT THE MAIN. COPPER TUBING SHALL BE CONTINUOUS BETWEEN THE CORPORATION STOP AND THE CURB STOP.



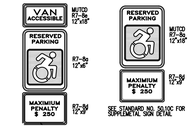
WATER SERVICE CONNECTION



CONCRETE PIPE CRADLE WHEN d < 12"

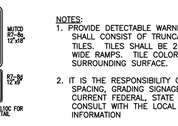
NOTES:
1. d = DISTANCE BETWEEN UTILITY AND DRAINAGE PIPES.
2. SUPPORTS SHALL BE INSTALLED WHERE SPECIFIED ON THE PLANS AND WHERE DIRECTED BY THE ENGINEER.
3. CRUSHED STONE SUPPORTS SHALL BE INCLUDED IN THE COST OF THE PROPOSED UTILITY OR DRAINAGE PIPE AND CONCRETE PIPE CRADLES SHALL BE PAID FOR AS "MISCELLANEOUS CONCRETE".

TYPICAL UTILITY SUPPORTS



SEE STANDARD NO. 50.10B & 50.10C FOR SUPPLEMENTAL SIGN DETAIL

HANDICAP SIGN

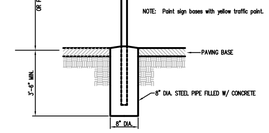


SEE STANDARD NO. 50.10C FOR SUPPLEMENTAL SIGN DETAIL

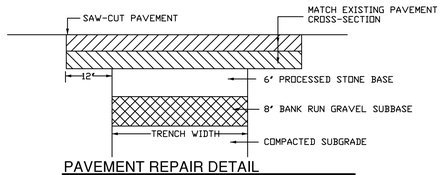
NOTES:
1. PROVIDE DETECTABLE WARNING FOR CURB RAMPS. DETECTABLE WARNING SHALL CONSIST OF TRUNCATED DOME SURFACE ON RIGID TACTILE PAVING TILES. TILES SHALL BE 2'x3' FOR 4' WIDE RAMPS AND 2'x4' FOR 5' WIDE RAMPS. TILE COLOR SHALL CONTRAST WITH THAT OF THE SURROUNDING SURFACE.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSTRUCT HANDICAP SPACING, GRADING SIGNAGE AND APPURTENANCE IN ACCORDANCE WITH CURRENT FEDERAL, STATE OR LOCAL CODES. THE CONTRACTOR SHALL CONSULT WITH THE LOCAL BUILDING OFFICIAL TO OBTAIN CURRENT INFORMATION

NOTE: ALL STRIPES TO BE 4" PAINTED WHITE

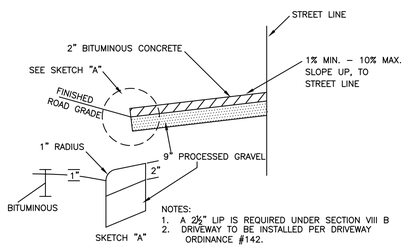
PAINTED HANDICAP SYMBOL



ACCESSIBLE PARKING AND SIGNAGE STANDARDS

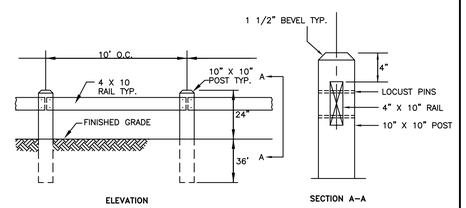


PAVEMENT REPAIR DETAIL



NOTES:
1. A 2½" LIP IS REQUIRED UNDER SECTION VIII B
2. DRIVEWAY TO BE INSTALLED PER DRIVEWAY ORDINANCE #142.

TYPICAL DRIVEWAY DETAIL



WESTERN RED CEDAR GUIDE RAIL

CONSTRUCTION DETAILS

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED PROFESSIONAL ENGINEER

REVISIONS

SITE PLAN OF DEVELOPMENT
THE VILLAGE AT NAEK ROAD
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	03-17-2021	10 OF 10	5768B

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NOTES:

1. THIS MAP AND SURVEY HAVE BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THROUGH 20-300b-20. THIS IS A DATA ACCUMULATION PLAN BASED ON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2 AND TOPOGRAPHIC ACCURACY CLASS T-3.
2. BEARINGS DEPICTED ON THIS PLAN ARE BASED THE CONNECTICUT STATE PLANE COORDINATE SYSTEM NAD 83 PER THE MAP REFERENCED IN NOTE 3.A. ELEVATIONS DEPICTED ON THIS PLAN REFER TO THE NAVD 88 DATUM.
3. MAP REFERENCES:
   A. "PROPERTY & TOPOGRAPHIC SURVEY PREPARED FOR THE RASHID HAMID FAMILY, LLP 291 TALCOTTVILLE ROAD VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES, LLC. DATE: 03-01-2019.
4. THESE PARCELS ARE LOCATED IN THE PLANNED DEVELOPMENT ZONE (PDZ): GERBER FARM AREA.
5. 291 TALCOTTVILLE ROAD IS IN FAVOR OF AN EASEMENT OVER A PORTION OF 243 & 253 TALCOTTVILLE ROAD FOR THE RIGHT TO PASS AND REPASS BY FOOT OR BY VEHICLE AS DESCRIBED IN VOL. 2540, PAGE 129 IN THE VERNON LAND RECORDS.
6. TOPOGRAPHY DEPICTED ON THESE PLANS WAS PROVIDED BY GOLDEN AERIAL SURVEYS.
7. WETLANDS DEPICTED ON THESE PARCELS WERE DELINEATED BY REMA ECOLOGICAL SERVICES, LLC.
8. THESE PARCELS ARE NOT LOCATED WITHIN THE LEVEL A AQUIFER PROTECTION AREA AS DEPICTED ON THE ZONING MAP VERNON, CT DATED 7/31/2020.

LAND OF
THE RASHID HAMID FAMILY, LLP
PARCEL 'B'
291 TALCOTTVILLE ROAD
54,638± Sq.Ft.
1.25± Acres

LAND OF
THE RASHID HAMID FAMILY, LLP
37 NAEK ROAD
172,265 Sq.Ft.
3.95 Acres

LAND OF
THE RASHID HAMID FAMILY, LLP
PARCEL 'A'
291 TALCOTTVILLE ROAD
427,154± Sq.Ft.
9.81± Acres

N/F
THE TOWN OF VERNON
90 HOCKANUM BOULEVARD

N/F
THE TOWN OF VERNON
12 HOCKANUM BOULEVARD

N/F
THE RASHID HAMID FAMILY, LLP
46 NAEK ROAD

N/F
THE RASHID HAMID FAMILY, LLP
38 NAEK ROAD

N/F
THE RASHID HAMID FAMILY, LLP
32 NAEK ROAD

N/F
THE RASHID HAMID FAMILY, LLP
26 NAEK ROAD

N/F
327 TALCOTTVILLE, LLC
327 TALCOTTVILLE ROAD

N/F
MARCIA L. JULIANO
321 TALCOTTVILLE ROAD

N/F
THE RASHID HAMID FAMILY, LLP
309 TALCOTTVILLE ROAD

N/F
THE RASHID HAMID FAMILY, LLP
29 NAEK ROAD

N/F
THE RASHID HAMID FAMILY, LLP
21 NAEK ROAD

N/F
SAMUEL J. & PAULETTE A. BELSITO
295 TALCOTTVILLE ROAD

N/F
TALCOTTVILLE VERNON DEVELOPMENT, LLC
LOT 'B'
243 TALCOTTVILLE ROAD

N/F
TALCOTTVILLE VERNON DEVELOPMENT, LLC
LOT 'A'
273 TALCOTTVILLE ROAD

APPROXIMATE LOCATION
OF RIGHT OF WAY EASEMENT
IN FAVOR OF MARIANIST SOCIETY INC.
AND ITS SUCESSORS

HOCKANUM RIVER

1215± ALONG CENTERLINE OF RIVER

547'± ALONG EDGE OF RIVER

CLOSING LINE
N44°22'53"E
449.47'

CLOSING LINE
S 32°25'48" W 900.01'

REGULATED AREA
100'

WETLAND
REGULATED AREA

INLAND WETLAND
REGULATED AREA

STONE WALL

TALCOTTVILLE ROAD - ROUTE 83
L=38.03'
D=0°08'21"
R=15,666.12'

NAEK ROAD

LEGEND

- PROPERTY LINE
- IRON PIPE/PIN FOUND
- MONUMENT FOUND
- EASEMENT
- UTILITY POLE
- SANITARY SEWER
- EXISTING CONTOUR
- EXISTING ELEVATION
- TOWN MAP WETLANDS
- DELINEATED WETLANDS

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

GRAPHIC SCALE 1"= 60'
60 30 0 60 120 180

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

STATE OF CONNECTICUT
ERIC R. PETERSON
No. 23430
LICENSED LAND SURVEYOR

REVISIONS

DATA ACCUMULATION PLAN
WETLANDS REDESIGNATION PLAN
RASHID HAMID FAMILY, LLP
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=60'	03-17-2021	1 OF 1	5768-W

G:\1Plan\5768W\Wetlandsredesignation\03-17-2021\5768-W.pdf
5768W.dwg\5768W.dwg

REPORT DATE: December 11, 2018

REMA ECOLOGICAL SERVICES, LLC
164 East Center Street, Suite 8
Manchester, CT 06040
860.649.REMA (7362)

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT

PROJECT NAME & SITE LOCATION:
(+/- 21.05 acres) (6 parcels)
291 Talcotville Road & Naek Road
Vernon, CT

REMA Job No.: 18-2112-VER47
Field Investigation Date(s): 9/17, 11/27 & 11/28/18
Field Investigation Method(s):
- ☒ Spade and Auger
- ☐ Backhoe Test Pits
- ☐ Other:

REPORT PREPARED FOR:
Naek Construction Company, Inc.
27 Naek Road
Vernon, CT 06066
Attn.: Sebastian Testa, SPM

Field Conditions:
Weather: Partly sunny, lower 80s to 40s
Soil Moisture: moderate to high
Snow Depth: N/A
Frost Depth: N/A

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

Base Map Source: CT Soil Survey web; USDA-NRCS) (attached); Figures A & A1 (attached)

Wetland Boundary Marker Series: RES-A-1 to RES-A-8 tied to RES-1A-1 to RES-1A-8 (closed loop), and RES B-1 to RES B-40 tied to RES-1B-1 to RES-1B-38 (open line), RES- C-1 to RES-C-16 tied to RES-1C-1 to RES-1C-6, tied to RES-2C-1 to RES-2C-10

General Site Description/Comments: The "study area", or "site", is +/-21.05 acres of land (6 contiguous parcels) located west of Talcottville Road and southwest and north of Naek Road, in Vernon, CT. Much of the western study area boundary is defined by the Hockanum River, which flows southwesterly and then southerly past the study area. The majority of the site is forested and with a single-family residence in its southwestern section , and some equipment storage in its eastern section. The site's soils are primarily derived from glaciofluvial deposits (i.e. stratified sand and gravel), and from alluvial deposits (i.e. stratified sand and silt). The "C-series" wetland has organics derived soils (i.e. peat/muck). The upland-type soils are the excessively drained Manchester (37) soil series, and the Ninigret and Tisbury (21) soil series complex. The wetland-type soils are the very poorly drained Timakwa and Natchaug mucks (17), the poorly drained Raypol (12) soil series, and the poorly drained Fluvaquents (109) soil mapping unit. The regulated wetland resources include the riparian forest associated with the Hockanum River, a small seasonally flooded forested swamp that overflows northerly to the Hockanum River corridor, and a semi-permanently flooded scrub shrub swamp, which is likely a vernal pool habitat. Dominant vegetation observed within the regulated wetlands included red maple, American elm, green ash, ironwood, spicebush, highbush blueberry, winterberry, multiflora rose, silky dogwood, firebush, buttonbush, Japanese barberry, sensitive, royal, cinnamon, and Massachusetts ferns, woodferns, jewelweed, jack in the pulpit, false nettle, Virginia jumpseed, clearweed, swamp dewberry, stout woodreed grass, white avens, tussock sedge, duckweed, and many others.

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

PROJECT NAME & SITE LOCATION: (+/- 21.05 acres) (6 parcels)
291 Talcotville and Naek Roads, Vernon, CT

SOIL MAP UNITS

Upland Soils

Manchester gravely sandy loam (37). This series consists of very deep, excessively drained soils formed in a shallow, loamy sand mantle underlain by gravelly sand, water deposited glacial outwash materials. They are level to very steep soils on outwash plains, terraces, deltas, kames and eskers. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from Triassic sandstone, shale, conglomerate and basalt. Typically these soils have a reddish brown gravelly sandy loam surface layer 6 inches thick. The subsoil layer from 6 to 16 inches is yellowish red gravelly sandy loam. The substratum from 16 to 60 inches is yellowish brown stratified sand and gravel.

Ninigret fine sandy loam (21). This series consists of very deep moderately well drained soils formed in a coarse-loamy mantle underlain by sandy water deposited glacial outwash materials. They are nearly level to gently sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainage ways. The soils formed in loamy over stratified sandy and gravelly outwash derived from a variety of acid rocks. Typically, these soils have a very dark grayish brown fine sandy loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown fine sandy loam with mottles below 16 inches. The substratum from 26 to 60 inches is mottled, pale brown, loose, stratified loamy sand.

Tisbury silt loam (21). This series consists of deep, moderately well drained soils formed in a coarse-silty mantle underlain by sandy water deposited glacial outwash materials. They are level to gently sloping soils in broad drainage swales and low lying positions on outwash plains and terraces. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived mainly from a acid crystalline rocks (granite, gneiss and schist). Typically these soils have a very dark grayish brown silt loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown and brownish yellow silt loam, with mottles common below 16 inches. The substratum from 26 to 60 inches is grayish brown, mottled stratified sand and gravel.

Wetland Soils

Fluvaquents (109). This soil map unit consists of relatively recently formed, moderately well drained and well drained, floodplain soils. Fluvaquents are typically found in disturbed landscapes on floodplains where two or more feet of the original soil surface has been filled over or excavated. Most areas of Fluvaquents flood each year for short periods, mainly in the spring. The Fluvaquents soil mapping unit is a miscellaneous unit which includes a large variety of soil materials. Common locations of Fluvaquents include disturbed areas for community development and sand and gravel operations situated in the floodplains of rivers and major streams.

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

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

PROJECT NAME & SITE LOCATION: (+/- 21.05 acres) (6 parcels)
291 Talcotville and Naek Roads, Vernon, CT

SOIL MAP UNITS

Wetland Soils

Timakwa and Natchaug mucks (17). The Timakwa series consists of very deep, very poorly drained soils formed in formed in woody and herbaceous organic materials 16-50 inches thick overlying sand deposits over sandy deposits in depressions on lake plains, outwash plains, till plains, moraines, pond basins, and flood plains. Adrian soils are in extinct lake and pond basins, primarily within outwash plains. Basins range from nearly an acre to several hundred acres in size. Saturated hydraulic conductivity is moderately low to high in the organic layers and high or very high in the sandy material. Slope ranges from 0 to 2 percent. Mean annual temperature is about 48 degrees F and the mean annual precipitation is about 47 inches. Adjacent upland soils are generally sandy. Typically these soils have a black muck layer that is 33 inches thick. The substratum to a depth of 60 inches is gray, loose sand.

The Natchaug series consists of very deep, very poorly drained soils formed in well-decomposed organic materials 16-50 inches thick overlying loamy mineral deposits, deposits in depressions on lake plains, outwash plains, till plains, moraines, and flood plains. These soils have moderate to very rapid permeability in the organic material and moderately slow to moderately rapid permeability in the loamy material. Slope ranges from 0 to 2 percent. Mean annual temperature is about 48 degrees F. and mean annual precipitation is about 47 inches. Typically these soils have a black muck layer that is 33 inches thick. The substratum to a depth of 60 inches is dark gray, friable, gravelly silt loam.

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

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

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

CT Environmental Conditions Online

FIGURE A: Wetland Delineations Sketch Map, 291 Talcottville Road, Vernon, CT

Legend

- Parcels for Protected Open Sp
- Geographic Names7
- Geographic Place 3
- Airport
  - Airport
  - Heliport
- Railroad
- Streets
  - Interstate Highway
  - US Highway
  - State Highway
  - Primary limited-access
  - Ramp
  - Street
  - Ferry crossing
- County Line
  - State Boundary
  - County Boundary
  - Coastline
- County Name
- Town Line
  - State Boundary
  - Town Boundary
  - Coastline
- CT Town Name
- Waterbody Line 7

Notes

0.1 0 0.07 0.1 Miles

THIS MAP IS NOT TO BE USED FOR NAVIGATION

This map is intended for general planning, management, education, and research purposes only. Data shown on this map may not be complete or current. The data shown may have been compiled at different times and at different map scales, which may not match the scale at which the data is shown on this map.

CRCOG CAPITOL REGION COUNCIL OF GOVERNMENTS
Working together for a better region.

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

CRCOG makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

FIGURE A1: Wetland Delineations Sketch Map; Naek Road Parcels (+/- 21.05 acres), Vernon, CT

Note: see also Figure A for additional delineations

Soil Map—State of Connecticut
(Naek Road Parcel, Vernon, CT)

Map Scale: 1:4,510 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N 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 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 16, Sep 15, 2017

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6	Wilbraham and Menlo soils, 0 to 8 percent slopes, extremely stony	2.5	2.6%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	2.6	2.7%
20A	Ellington silt loam, 0 to 5 percent slopes	1.7	1.8%
30A	Branford silt loam, 0 to 3 percent slopes	0.6	0.6%
30B	Branford silt loam, 3 to 8 percent slopes	3.6	3.8%
32A	Haven and Enfield soils, 0 to 3 percent slopes	2.8	2.9%
32B	Haven and Enfield soils, 3 to 8 percent slopes	9.1	9.4%
33B	Hartford sandy loam, 3 to 8 percent slopes	1.3	1.3%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	17.6	18.3%
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	13.5	14.0%
63C	Cheshire fine sandy loam, 8 to 15 percent slopes	0.1	0.1%
64B	Cheshire fine sandy loam, 3 to 8 percent slopes, very stony	0.7	0.7%
66B	Narragansett silt loam, 2 to 8 percent slopes	0.5	0.6%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	6.7	6.9%
109	Fluvaquents-Udifluvents complex, frequently flooded	9.5	9.8%
306	Udorthents-Urban land complex	23.5	24.5%
Totals for Area of Interest		**96.2**	**100.0%**

The Village at Naek Road
Naek Road
Vernon, Connecticut

STORMWATER MANAGEMENT REPORT

October 8, 2020

PREPARED FOR: The Rashid Hamid Family, LLP
27 Naek Road
Vernon, Connecticut

PREPARED BY: Gardner & Peterson Associates, LLC
178 Hartford Turnpike
Tolland, CT 06084

TABLE OF CONTENTS

The Village at Naek Road

Summary:

This application proposes to construct eighteen new multi-family buildings on 21.6 acres, located on the northerly and southerly side of Naek Road. Access to the proposed development will be along the frontage on Naek Road with an emergency access through an existing easement to the Trail Run apartments located immediately south of this project. The new buildings will be serviced by public sanitary sewer and water services.

Existing Conditions:

Currently this project consists of 7 parcels that will be combined as a result of this project. The entire site is wooded except for a house located at 291 Talcottville Road, which will be removed to develop this project. Wetland areas have been delineated near the northeast corner of this site and along the Hockanum River which abuts the site to the west. Furthermore, a small wetland was also delineated toward the middle of the site which follows the floodplain of the Hockanum River. Stormwater runoff from this site drains westerly to the Hockanum River or northerly to the northeasterly wetland. A drainage system currently located in Naek Road will also collect water from a portion of this site. Runoff from Naek Road is conveyed northerly through a drainage easement where it discharges approximately 65 feet from the Hockanum River. The following pre and post development runoff analyses, compare the pre and post development rates of runoff at three locations; the Naek Road drainage system, the northeasterly wetland, and the Hockanum River to ensure that this development will not create an increase in runoff.

This site is mostly located within Zone ‘X’ (area determined to be outside 500-year floodplain), and partially withing Zone ‘AE’ (special flood hazard area inundated by the 100-year flood, base flood elevations determined) and partially within Zone ‘X’ (areas of 500-year flood; area of 100-year flood with average depths of less than 1 food or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood) per “FIRM Flood Insurance Rate Map Town of Vernon, Connecticut, Tolland County, Community-Panel Number 090131 0005 C, Map Revised August 9, 1999”. This site is not located within the Level A Aquifer Protection Area as depicted on the Zoning Map, Vernon, CT dated 7/31/2020.

According to the NRCS Web Soil Survey the portion of this site located to the north of Naek Road is classified as Manchester gravelly sandy loam (Hydrologic Soil Group ‘A’), the area to the south of Naek Road is classified as Charlton-Chatfield complex (Hydrologic Soil Group ‘B’), and the portions of the site adjacent to the Hockanum River is classified as Fluvaquents-Udifluvents complex and Timakwa and Natchaug soils (Hydrologic Soil Group ‘D’). Manchester gravelly sandy loam is typically an excessively drained soil with a low moisture-holding capacity, while Charlton-Chatfield soils are typically well drained soils covered with cobbles, stones or boulders. Eighteen test pits were excavated on this property and permeability samples were tested to determine where suitable soils are located for the infiltration of

stormwater into the ground. The soil profiles located on page 9 indicate that the Manchester gravelly sandy loam is located on the north side of Naek Road and on 37 Naek Road more or less. The soil profiles in these areas generally indicate that the groundwater is deep, and the soils are suitable for stormwater infiltration.

Stormwater Management:

The proposed stormwater management system has been designed to comply with the "*Connecticut Department of Transportation Drainage Manual, 2000*", the "*2004 Connecticut Stormwater Quality Manual*" and the "*Low Impact Development Stormwater Quality Manual Town of Vernon, February 2013*". These manuals require that a stormwater management system for new projects control stormwater peak rates of runoff and provide stormwater quality treatment. The stormwater management system for this project utilizes conventional and LID systems to collect, convey, retain, infiltrate and treat stormwater runoff prior to reaching the drainage system in Naek Road or any wetland areas.

Runoff from the newly paved areas and the front portion of the building rooftops will be collected in a drainage system that conveys the runoff to one of two new stormwater basins on site. Before entering the basin, pretreatment is provided by deep sump catch basins, oil/water separators, and grass swales to remove grit and floatables from the runoff. The runoff is discharged into a sediment forebay that has been designed to contain 10% of the Water Quality Volume (WQv) as recommended in the *2004 Connecticut Stormwater Quality Manual* before entering the wet pond portion of the stormwater basins that is used for primary treatment and runoff attenuation. Runoff from smaller storms will be completely infiltrated back into the ground once treated by the previously mentioned treatment-train. The bottom of both basins will be excavated down to the native sandy soils to allow this to occur. Furthermore, to ensure lasting infiltration, an infiltration trench has been incorporated into the basin and located furthest from the basin inlets to increase travel time in the basin.

Runoff from larger storms that is not infiltrated, will exit the northerly basin and be piped to the drainage system in Naek Road. This flow from the southerly basin will exit the basin over a designed spillway and travel overland to a wetland system. Runoff exiting both basins will eventually make its way to the Hockanum River. Considering the proximity of the Hockanum River, the stormwater basins have been designed to detain flow the 2-year and 10-year storms and allow flow from the 100-year storm to exit through the high-level outlet with minimal detention. The purpose of this design is to allow the water from the basin to reach the Hockanum River prior to the river's peak. Therefore, not increasing flow to the peak of the river. The existing drainage system in Naek Road has also been analyzed and it was determined that the system has adequate capacity to convey the post-development flow from storms up to and including the 100-year storm. The results of the pre-development and post-development analysis are tabulated below:

Hydrograph \ Storm Frequency	2-Yr	10-Yr
#12: Proposed to River (cfs)	7.84	22.39
#11: Existing to River (cfs)	9.77	31.15

Multiple stormwater infiltration systems have been designed where the Manchester gravelly sandy loam was found. Water from the rear of the new building rooftops, which is considered clean water, will be collected and infiltrated it back into the ground in underground leaching chambers. The chambers have been designed to store runoff from the 100-year storm off the rooftops and grassland collected in the watershed to the chambers.

To maintain pre-development annual groundwater recharge volumes, this site has been evaluated for pre- and post-development Groundwater Runoff Volume (GRv) as described in the *2004 Connecticut Stormwater Quality Manual.* This will ensure that water table levels, stream baseflow and wetland moisture levels will be maintained post-development. To determine the required GRv, the Hydrologic Soil Group Approach was utilized. The GRv analyses indicate that with the use of the designed rain gardens, infiltration chambers, and infiltration stormwater basins, this project will maintain the pre-development GRv once constructed. Even though the infiltration chambers and infiltration basins are sized for larger storms, for this calculation, the water quality volume was used to determine the provided contribution to the groundwater.

Erosion & Sediment Control:

The erosion & sediment control plan for this site consists of the use of soil stockpile areas, check dams, silt fencing, and coir logs down gradient of all disturbed areas. An anti-tracking pad will be installed at the entrance to the site. A more detailed E&S narrative in included in the plan set.

All sediment and erosion control procedures and construction of all stormwater drainage structures shall essentially be in accordance with the "2002 Connecticut Guidelines For Soil Erosion and Sediment Control" by the Connecticut Council on Soil and Water Conservation.

Eric R. Peterson, P.E. 23430

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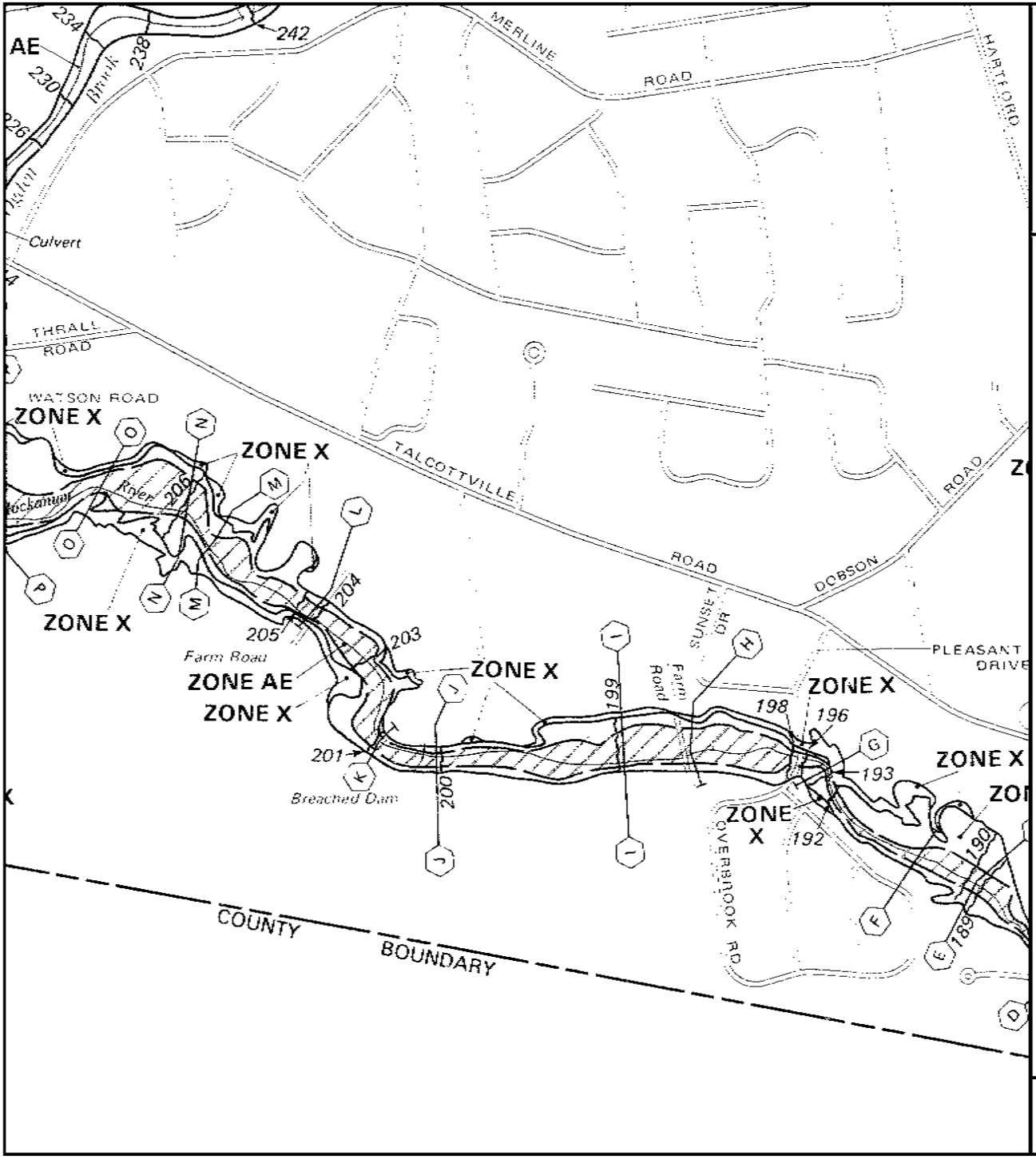
HOCKANUM BLVD
250
200
SITE
IRENE DR
83
250
HUNTINGTON
Southwest Cem
DUNC
DIS
200



N

APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF

VERNON, CONNECTICUT

TOLLAND COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
090131 0005 C

MAP REVISED:
AUGUST 9, 1999

Federal Emergency Management Agency

Hydrologic Soil Group—State of Connecticut

Map Scale: 1:3,810 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6	Wilbraham and Menlo soils, 0 to 8 percent slopes, extremely stony	C/D	0.0	0.0%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	B/D	2.5	5.8%
30B	Branford silt loam, 3 to 8 percent slopes	B	0.0	0.0%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	A	10.5	24.9%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	6.4	15.1%
109	Fluvaquents-Udifluvents complex, frequently flooded	B/D	5.6	13.4%
306	Udorthents-Urban land complex	B	17.1	40.6%
704A	Enfield silt loam, 0 to 3 percent slopes	B	0.0	0.1%
704B	Enfield silt loam, 3 to 8 percent slopes	B	0.0	0.0%
Totals for Area of Interest			**42.2**	**100.0%**

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CT 06084
TEL: 860-871-0808
www.GardnerPeterson.com

TEST PIT DATA:
WITNESSED BY E. PETERSON, P.E.
GARDNER & PETERSON ASSOCIATES, LLC

06/02/2020
TP 303:
0-9" TOPSOIL
9-14" COARSE LOAMY SAND
14-108" COARSE SAND W/ COBBLES

TP 305:
0-13" TOPSOIL
13-22" Y.BR. FINE SANDY LOAM
22-72" R.BR. TILL, COMPACT
MOTTLING @ 16"
SEEPAGE @ 68"

TP 307:
0-18" TOPSOIL/FILL
18-30" Y.BR. FINE SANDY LOAM
30-72" R.BR. TILL
MOTTLING @ 18"
SEEPAGE @ 40"

TP 308:
0-38" SAND & GRAVEL FILL
38-44" BURIED TOPSOIL
44-138" SAND & GRAVEL
SHGW @ 108"
PERM @ 58" RATE: 190 FT/DAY

TP 310:
0-11" TOPSOIL
11-28" BR. FINE SANDY LOAM
28-84" FIRM R.BR. SILT
84-144" MED. SAND W/ COBBLES, SOME SILT
GW @ 126"
PERM #1 @ 115' RATE: 70 FT/DAY
STANDPIPE SET: DRY ON 06/16/2020

TP 311:
0-11" TOPSOIL
11-102" BR. SAND & GRAVEL
192-144" COMPACT FINE SAND W/ SILT
PERM #2 @ 50" RATE: 61 FT/DAY

TP 312:
0-16" TOPSOIL
16-32" FINE SANDY LOAM
32-144" SAND & GRAVEL
PERM #3 @ 36" RATE: 41 FT/DAY

TP 313:
0-7" TOPSOIL
7-15" Y.BR. FINE SANDY LOAM
15-43" R.BR LOAMY SAND W/ COBBLES, SOMEWHAT FIRM
LEDGE @ 43"

TP 314:
LEDGE @ 24"

TP 314A:
0-36" FRACTURED ROCK

TP 315:
LEDGE @ 36" (WEST)
LEDGE @ 30" (EAST)

TP 316:
0-4" TOPSOIL
4-33" BR. FINE SANDY LOAM W/ COBBLES
33-54" BR. COMPACT TILL W/ FLAT BOULDERS
54-78" SAND & GRAVEL W/ BOULDERS
LEDGE @ 78"
PERM #12 @ 23" RATE: 0.4 FT/DAY

TP 317:
0-10" TOPSOIL
10-58" BONEY BR. FINE SANDY LOAM
LEDGE @ 58"

TP 317A:
0-8" TOPSOIL
8-30" BR. FINE SANDY LOAM W/ COBBLES
30-78" R.BR. COMPACT TILL W/ FLAT BOULDERS
LEDGE @ 78"

TP 318:
0-8" TOPSOIL
8-36" Y.BR. FINE SANDY LOAM W/ COBBLES, FIRM
36-60" R.BR. TILL W/ COBBLES
60-80" DECOMPOSED LEDGE

TP 319:
0-9" TOPSOIL
9-24" Y.BR. LOAMY SAND W/ COBBLES
24-60" SAND & GRAVEL
60-132" COARSE SAND
PERM #70 @ 36" RATE: 370 FT/DAY

TP 320:
LEDGE @ 32"

TP 321:
0-12" TOPSOIL
12-20" Y.BR. FINE SANDY LOAM
20-116" SAND & GRAVEL
SEEPAGE @ 116"

08/16/2020
TP H1:
0-6" TOPSOIL
6-28" Y.BR. FINE SANDY LOAM
28-36" MED. SAND W/ COBBLES
PERM #1 @ 32" RATE: 12 FT/DAY

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CALCULATED BY ***ERP*** DATE ***10/8/2020***
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GUTTER FLOW ANALYSIS

AI Entering Catch Basin	0.17	0.24		0.16	0.13		0.49	0.23		0.21	0.19	0.34		0.07	0.25	0.33	0.26	0.09	2.61	0.09		
AI Bypassing Inlet	0	0		0	0		0	0		0	0	0		0	0	0	0	0	0	0		
Q Bypassing Inlet (cfs)	0	0		0	0		0	0		0	0	0		0	0	0	0	0	0	0		
Width of Flow (ft)	4.5	5.2		4.4	4.3		7	5.0		5	4.7	6		3	5.2	6	5.8	3.8	LOW PT	2.8		
Depth of Flow at Gutter (ft)	0.14	0.17		0.13	0.12		0.21	0.15		0.15	0.14	0.19		0.09	0.17	0.19	0.18	0.11		0.09		
Cross Slope fo Shoulder	0.03	0.03		0.03	0.03		0.03	0.03		0.03	0.03	0.03		0.03	0.03	0.03	0.03	0.03	0.1	0.03		
Grade of Gutter (ft/ft)	0.02	0.02		0.02	0.02		0.02	0.02		0.02	0.02	0.02		0.02	0.02	0.02	0.02	0.02	0.02	0.08		
Q To Inlet (cfs)	0.9	1.3		0.8	0.7		2.5	1.2		1.2	1.0	1.8		0.3	1.3	1.8	1.4	0.5	10.4	0.5		
10yr Rainfall Intensity (in/hr)	5.3	5.3		5.1	5.5		5.1	5.3		5.5	5.3	5.3		3.9	5.3	5.3	5.3	5.5	4.0	5.3		
Total AI	0.17	0.24		0.16	0.13		0.49	0.23		0.21	0.19	0.34		0.07	0.25	0.33	0.26	0.09	2.61	0.09		
Sum AI	0	0		0	0		0	0		0	0	0		0	0	0	0	0	0	0		
AI	0.17	0.24		0.16	0.13		0.49	0.23		0.21	0.19	0.34		0.07	0.25	0.33	0.26	0.09	2.61	0.09		
Runoff Coeficient	0.73	0.73		0.71	0.74		0.77	0.77		0.76	0.75	0.72		0.52	0.77	0.73	0.73	0.76	0.52	0.76		
Area (Acres)	0.23	0.33		0.23	0.17		0.64	0.3		0.27	0.25	0.47		0.13	0.33	0.45	0.35	0.12	5.01	0.12		
Time To Inlet (Min)	8	8		9	7		9	8		7	8	8		16	8	8	8	7	15	8		
Inlet Number	CB 4	CB 5		CB 11	CB 12		CB 15	CB 16		CB 18	CB 19	CB 21		CB 24	CB 25	CB 26	CB 27	CB 28	FE 29	CB 30		

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STORM SEWER DESIGN

N'	0.012	0.012	0.012		0.012	0.012	0.012		0.012	0.012		0.012	0.012	0.012	0.012	0.012	0.012		0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Headwater (ft)	0.5	0.8	0.7		0.5	0.7	0.7		0.9	1.1		0.6	0.8	0.8	1.1		0.4	0.7	0.9	1.0	1.1	1.7	2.0				
Full Capacity (cfs)	10.5	8.5	15.6		5.2	5.3	15.3		7.4	16.9		7.4	12.8	5.3	5.2		11.3	6.6	6.8	5.3	6.5	17.4	17.4				
Average Velocity (fps)	8.6	6.9	12.7		4.2	4.3	12.5		6.1	13.8		6	10.4	4.4	4.2		9.2	5.4	5.5	4.4	5.3	5.5	5.5				
Slope (%)	2.26	1.47	4.92		0.55	0.57	4.78		1.12	5.83		1.11	3.33	0.58	0.54		2.59	0.88	0.94	0.58	0.86	0.50	0.50				
Length of Pipe (ft)	40	47	35		35	89	97		17	32		18	75	207	150		77	28	21	278	35	140	90				
Pipe Size (in)	15	15	15		15	15	15		15	15		15	15	15	15		15	15	15	15	15	24	24				
Q In System (cfs)	0.9	2.2	1.5		0.8	1.5	1.5		2.5	3.7		1.2	2.1	2.1	3.9		0.3	1.3	2.5	3.6	3.8	10.4	14.1				
10yr Rainfall Intensity (in	5.3	5.3	Out of N'ly Basin =		5.1	5.1	5.1		5.1	5.1		5.5	5.3	5.3	5.3		3.9	5.3	3.9	3.9	3.8	4	3.8				
Sum AI In System	0.17	0.41			0.16	0.29	0.29		0.49	0.72		0.21	0.40	0.40	0.74		0.07	0.25	0.65	0.91	1.00	2.61	3.70				
AI Entering Catch Basin	0.17	0.24			0.16	0.13	0		0.49	0.23		0.21	0.19	0	0.34		0.07	0.25	0.33	0.26	0.09	2.61	0.09				
Accumulated Time (min)	8	8	--		9	9	9		9	9		7	8	8	8		16	8	16	16	17	15	17				
Time In Pipe (sec)	5	7	3		8	21	8		3	2		3	7	47	36		8	5	4	63	7	25	16				
Time To Inlet (Min)	8	8	--		9	7	0		9	8		7	8	0	8		16	8	8	8	7	15	8				
Line Segment	4-5	5-6	8-EX		11-12	12-13	13-14		15-16	16-17		18-19	19-20	20-21	21-22		24-26	25-26	26-27	27-28	28-30	29-30	30-31				

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DETERMINE THE WATER QUALITY VOLUME:

$WQV = \frac{1" \times R \times A}{12}$ $\quad R = 0.05 + (0.009 \times I)$

Northerly Stormwater Basin:

West Inlet: A = 0.80 Acres I = 56% R = 0.55
WQV = 1,600 cu.ft.
Size Forebay for 10% WQV:
Volume (required) = 10% x 1,600 = 160 cu.ft.
Volume (provided) = 168 cu.ft.

East Inlet: A = 0.45 Acres I = 64% R = 0.63
WQV = 1,030 cu.ft.
Size Forebay for 10% WQV:
Volume (required) = 10% x 1,030 = 103 cu.ft.
Volume (provided) = 183 cu.ft.

Southerly Stormwater Basin:

North Inlet: A = 0.40 Acres I = 87.5% R = 0.84
WQV = 1,220 cu.ft.
Size Forebay for 10% WQV:
Volume (required) = 10% x 1,220 = 122 cu.ft.
Volume (provided) = 140 cu.ft.

South Inlet: A = 9.45 Acres I = 44.4% R = 0.45
WQV = 16,090 cu.ft.
Size Forebay for 10% WQV:
Volume (required) = 10% x 16,090 = 1609 cu.ft.
Volume (provided) = 1,628 cu.ft.

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DETERMINE THE GROUNDWATER RECHARGE VOLUME (GRV):
Per the 2004 Connecticut Stormwater Quality Manual

$GRV = \frac{(D)(A)(I)}{12}$

GRV = Groundwater Recharge Volume
D = Depth of runoff to be recharged (A soils=0.40 in, B soils=0.25 in)
A = Site area
I = Net increase in site imperviousness

To Northeasterly Wetland:

A = 2.98 acres
A_I = 0.42 acres
I = 0.141
D = 0.40

$GRV = \frac{(0.40) \times (2.98) \times (0.141)}{12} \times 43560 = 610$ cu.ft. required

WQV Provided:

CB 2:	591 cu.ft.
Rain Garden:	719 cu.ft.
Total:	1310 cu.ft. > 610 cu.ft. √

Remainder of Site:

A = 18.63 acres
A_I = 4.78 acres
I = 0.257
D = 0.25

$GRV = \frac{(0.25) \times (18.63) \times (0.257)}{12} \times 43560 = 4{,}345$ cu.ft. required

WQV Provided:

CB 1:	360 cu.ft.
CB 3:	429 cu.ft.
CB 9:	309 cu.ft.
CB 10:	598 cu.ft.
CB 23:	722 cu.ft.
Rain Garden:	189 cu.ft.
N'ly Basin:	2644 cu.ft.
S'ly Basin:	16448 cu.ft.
Total:	21,699 cu.ft. > 4,345 cu.ft. √

Channel Report

Grass Lined Swale into Southerly Basin

Trapezoidal

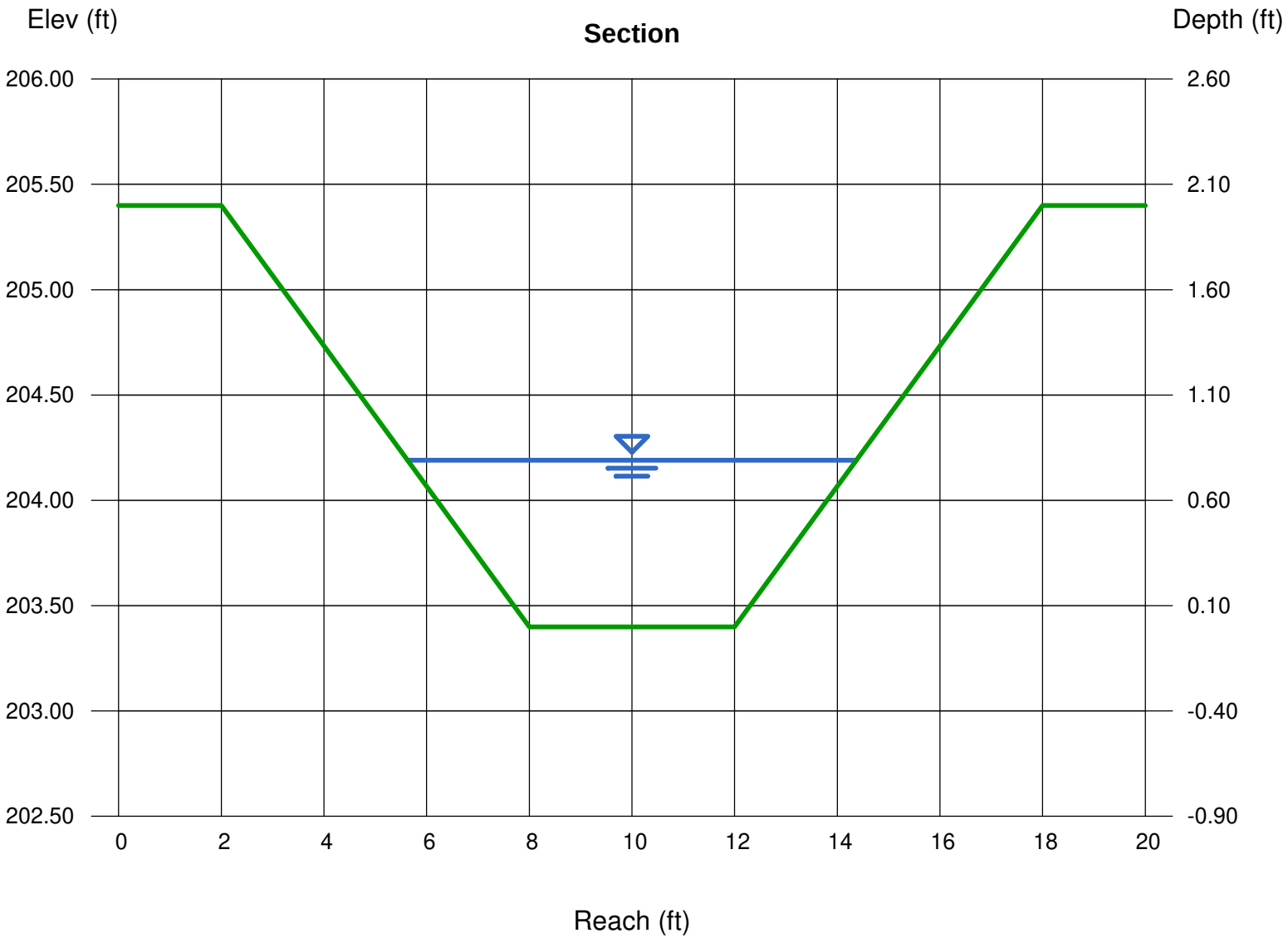
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 203.40
Slope (%)	= 1.50
N-Value	= 0.028

Calculations

Compute by:	Known Q
Known Q (cfs)	= 21.70

Highlighted

Depth (ft)	= 0.79
Q (cfs)	= 21.70
Area (sqft)	= 5.03
Velocity (ft/s)	= 4.31
Wetted Perim (ft)	= 9.00
Crit Depth, Yc (ft)	= 0.80
Top Width (ft)	= 8.74
EGL (ft)	= 1.08



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PERMISSIBLE SHEAR STRESS IN VEGETATIVE CHANNEL:

Table 7-4 CT DOT Drainage Manual:
Type 'A' Vegetative Channel: Permissible Unit Shear Stress = 3.70 lb/ft^2

Maximum Shear Stress: $\tau_d = \delta dS$ Eqn. 7.12 (CT DOT Drainage Manual)
δ = 62.4 lb/ft3
d = maximum depth flow = 0.79 ft (Page 14)
S = Average bed slope = 1.5% or 0.015 ft/ft

$\tau_d = (62.4)(0.79)(0.015)$
$\tau_d = 0.74$ lb/ft^2 < 3.70 lb/ft^2 √

DETERMINE CAPACITY IN EXISTING DRAINAGE SYSTEM OFF THE END OF NAEK ROAD:

24" RCP: S = 1.24% L = 150'
24" RCP: S = 0.85% L = 252'

Proposed Peak Flow to System = 20.23 cfs (100 year)

Capacity of Flattest Culvert (Manning's Formula):

$$Q = \frac{1.49 \times A \times R^{2/3} \times S^{1/2}}{n}$$

n = 0.013 A = 3.1416 WP = 6.2832 R = A/WP = 0.5

$$Q = \frac{1.49 \times 3.1416 \times 0.5^{2/3} \times 0.0085^{1/2}}{0.013}$$

Q = 20.9 cfs > 20.23 cfs √

HW/D = 1.4 → HW = 1.4 x 2.0 = 2.8 ft

Available Head = 8 ft in STMH at inlet end of pipe √

Therefore, system has capacity to convey post-development 100-year flow

Determine Width of Outlet Spillway to Southerly Stormwater Basin

Spillway shall act as an emergency spillway and shall convey 100-year Peak Flow Entering the Basin
Q_{100IN} = 38.32 cfs

Capacity of Spillway (Q) = $3.33 \times [W-0.2H] \times H^{1.5}$
For H = 1.0'
W = 12'
$Q = 3.33 \times [12-(0.2 \times 1.0)] \times 1^{1.5}$
Q = 39.3 cfs > 38.3 cfs √

A 12 ft wide spillway has capacity to convey the 100-year peak flow entering the basin

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SIZE RAIN GARDENS / BIORETENTION:

SA = WQv / h_f where:

SA = Surface Area of Filter Bed (sf)
WQv = Water Quality Volume (cf)
h_f = Depth of ponding above soil surface per soil class (ft)
For Soil Class 'A' → h_f = 12" or 1.0'
For Soil Class 'B' → h_f = 9" or 0.75'

Near Building #2:

A = 0.33 Acres R = 0.05 + 0.009 I
A_I = 0.20 acres R = 0.60
I = 60.6% $WQv = \frac{1" \times R \times A}{12} = \frac{(1)(0.60)(0.33)}{12}$ = 0.0165 ac-ft or 720 cf

SA = 720 / 1.00 = 720 sq.ft.

Surface Area Provided = 15' x 48' = 720 sq.ft.

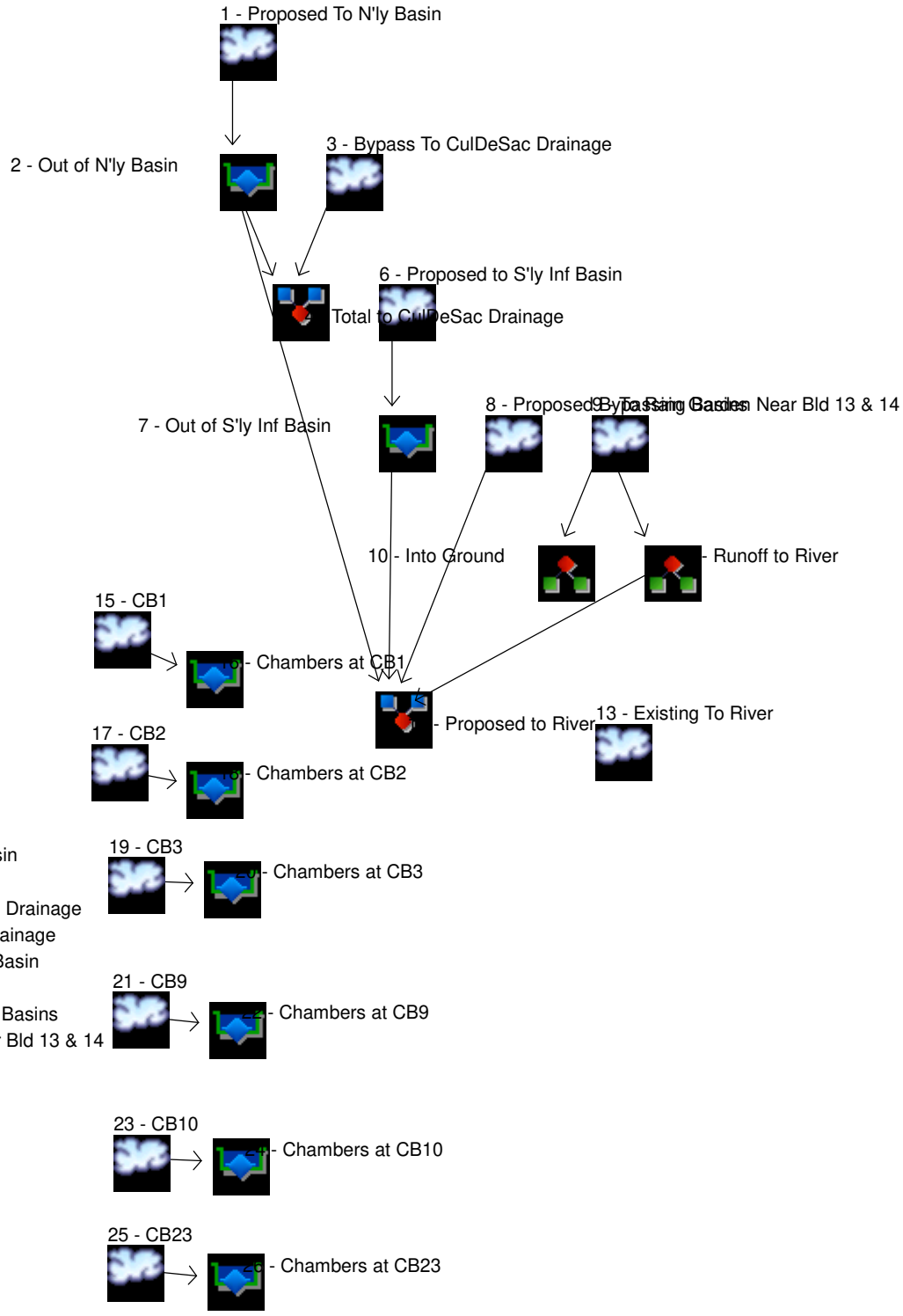
Near Building #13 & #14:

A = 0.13 Acres R = 0.05 + 0.009 I
A_I = 0.05 acres R = 0.40
I = 38.5% $WQv = \frac{1" \times R \times A}{12} = \frac{(1)(0.40)(0.13)}{12}$ = 0.0043 ac-ft or 190 cf

SA = 190 / 0.75 = 254 sq.ft.

Surface Area Provided = 11' x 24' = 264 sq.ft.

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Proposed To N'ly Basin
2	Reservoir	Out of N'ly Basin
3	SCS Runoff	Bypass To CulDeSac Drainage
4	Combine	Total to CulDeSac Drainage
6	SCS Runoff	Proposed to S'ly Inf Basin
7	Reservoir	Out of S'ly Inf Basin
8	SCS Runoff	Proposed Bypassing Basins
9	SCS Runoff	To Rain Garden Near Bld 13 & 14
10	Diversion1	Into Ground
11	Diversion2	Runoff to River
12	Combine	Proposed to River
13	SCS Runoff	Existing To River
15	SCS Runoff	CB1
16	Reservoir	Chambers at CB1
17	SCS Runoff	CB2
18	Reservoir	Chambers at CB2
19	SCS Runoff	CB3
20	Reservoir	Chambers at CB3
21	SCS Runoff	CB9
22	Reservoir	Chambers at CB9
23	SCS Runoff	CB10
24	Reservoir	Chambers at CB10
25	SCS Runoff	CB23
26	Reservoir	Chambers at CB23

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	------	-------	1.402	-------	-------	3.123	-------	-------	5.626	Proposed To N'ly Basin
2	Reservoir	1	-------	0.000	-------	-------	0.135	-------	-------	1.525	Out of N'ly Basin
3	SCS Runoff	------	-------	4.302	-------	-------	10.07	-------	-------	18.70	Bypass To CulDeSac Drainage
4	Combine	2, 3	-------	4.302	-------	-------	10.18	-------	-------	20.23	Total to CulDeSac Drainage
6	SCS Runoff	------	-------	11.25	-------	-------	22.52	-------	-------	38.32	Proposed to S'ly Inf Basin
7	Reservoir	6	-------	0.000	-------	-------	9.729	-------	-------	32.45	Out of S'ly Inf Basin
8	SCS Runoff	------	-------	7.839	-------	-------	20.18	-------	-------	39.11	Proposed Bypassing Basins
9	SCS Runoff	------	-------	0.155	-------	-------	0.338	-------	-------	0.600	To Rain Garden Near Bld 13 & 14
10	Diversion1	9	-------	0.155	-------	-------	0.238	-------	-------	0.067	Into Ground
11	Diversion2	9	-------	0.059	-------	-------	0.338	-------	-------	0.600	Runoff to River
12	Combine	2, 7, 8, 11	-------	7.839	-------	-------	22.39	-------	-------	71.20	Proposed to River
13	SCS Runoff	------	-------	9.773	-------	-------	31.15	-------	-------	66.10	Existing To River
15	SCS Runoff	------	-------	0.011	-------	-------	0.179	-------	-------	0.632	CB1
16	Reservoir	15	-------	0.000	-------	-------	0.000	-------	-------	0.000	Chambers at CB1
17	SCS Runoff	------	-------	0.153	-------	-------	0.462	-------	-------	0.961	CB2
18	Reservoir	17	-------	0.000	-------	-------	0.000	-------	-------	0.000	Chambers at CB2
19	SCS Runoff	------	-------	0.159	-------	-------	0.363	-------	-------	0.664	CB3
20	Reservoir	19	-------	0.000	-------	-------	0.000	-------	-------	0.000	Chambers at CB3
21	SCS Runoff	------	-------	0.040	-------	-------	0.185	-------	-------	0.459	CB9
22	Reservoir	21	-------	0.000	-------	-------	0.000	-------	-------	0.000	Chambers at CB9
23	SCS Runoff	------	-------	0.104	-------	-------	0.387	-------	-------	0.884	CB10
24	Reservoir	23	-------	0.000	-------	-------	0.000	-------	-------	0.000	Chambers at CB10
25	SCS Runoff	------	-------	0.335	-------	-------	0.730	-------	-------	1.300	CB23
26	Reservoir	25	-------	0.000	-------	-------	0.000	-------	-------	0.000	Chambers at CB23

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.402	2	724	4,414	------	------	------	Proposed To N'ly Basin
2	Reservoir	0.000	2	726	0	1	207.39	968	Out of N'ly Basin
3	SCS Runoff	4.302	2	732	18,919	------	------	------	Bypass To CulDeSac Drainage
4	Combine	4.302	2	732	18,919	2, 3	------	------	Total to CulDeSac Drainage
6	SCS Runoff	11.25	2	732	46,600	------	------	------	Proposed to S'ly Inf Basin
7	Reservoir	0.000	2	1410	0	6	203.15	21,324	Out of S'ly Inf Basin
8	SCS Runoff	7.839	2	732	36,338	------	------	------	Proposed Bypassing Basins
9	SCS Runoff	0.155	2	724	484	------	------	------	To Rain Garden Near Bld 13 & 14
10	Diversion1	0.155	2	724	191	9	------	------	Into Ground
11	Diversion2	0.059	2	742	293	9	------	------	Runoff to River
12	Combine	7.839	2	732	36,631	2, 7, 8, 11	------	------	Proposed to River
13	SCS Runoff	9.773	2	734	52,246	------	------	------	Existing To River
15	SCS Runoff	0.011	2	762	257	------	------	------	CB1
16	Reservoir	0.000	2	762	0	15	207.85	0.725	Chambers at CB1
17	SCS Runoff	0.153	2	734	786	------	------	------	CB2
18	Reservoir	0.000	2	808	0	17	206.03	5.69	Chambers at CB2
19	SCS Runoff	0.159	2	734	749	------	------	------	CB3
20	Reservoir	0.000	2	784	0	19	201.25	7.55	Chambers at CB3
21	SCS Runoff	0.040	2	746	309	------	------	------	CB9
22	Reservoir	0.000	2	732	0	21	206.01	0.621	Chambers at CB9
23	SCS Runoff	0.104	2	742	677	------	------	------	CB10
24	Reservoir	0.000	2	788	0	23	205.01	1.61	Chambers at CB10
25	SCS Runoff	0.335	2	734	1,549	------	------	------	CB23
26	Reservoir	0.000	2	762	0	25	208.03	4.38	Chambers at CB23

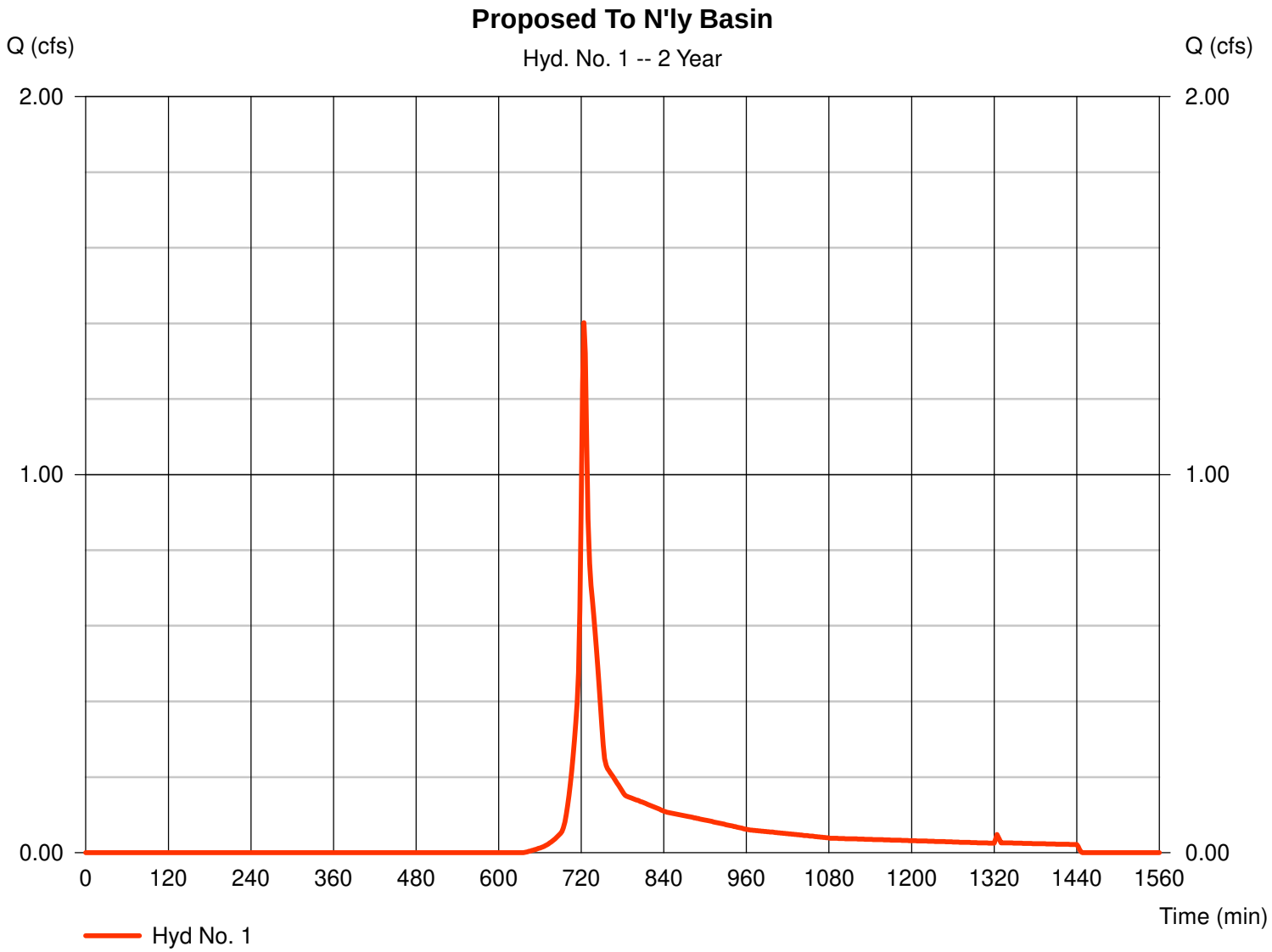
Hydrograph Report

Hyd. No. 1

Proposed To N'ly Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.402 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	4,414 cuft
Drainage area	=	1.250 ac	Curve number	=	74*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.740 x 98) + (0.510 x 39)] / 1.250



TR55 Tc Worksheet

Hyd. No. 1

Proposed To N'ly Basin

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 30.0	70.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	3.20	0.00	
Land slope (%)	= 4.00	2.00	0.00	
Travel Time (min)	**= 4.13**	**+ 0.91**	**+ 0.00**	**= 5.04**
Shallow Concentrated Flow				
Flow length (ft)	= 80.00	20.00	0.00	
Watercourse slope (%)	= 2.00	15.00	0.00	
Surface description	= Paved	Unpaved	Paved	
Average velocity (ft/s)	= 2.87	6.25	0.00	
Travel Time (min)	**= 0.46**	**+ 0.05**	**+ 0.00**	**= 0.52**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**

Total Travel Time, Tc ..... 5.60 min

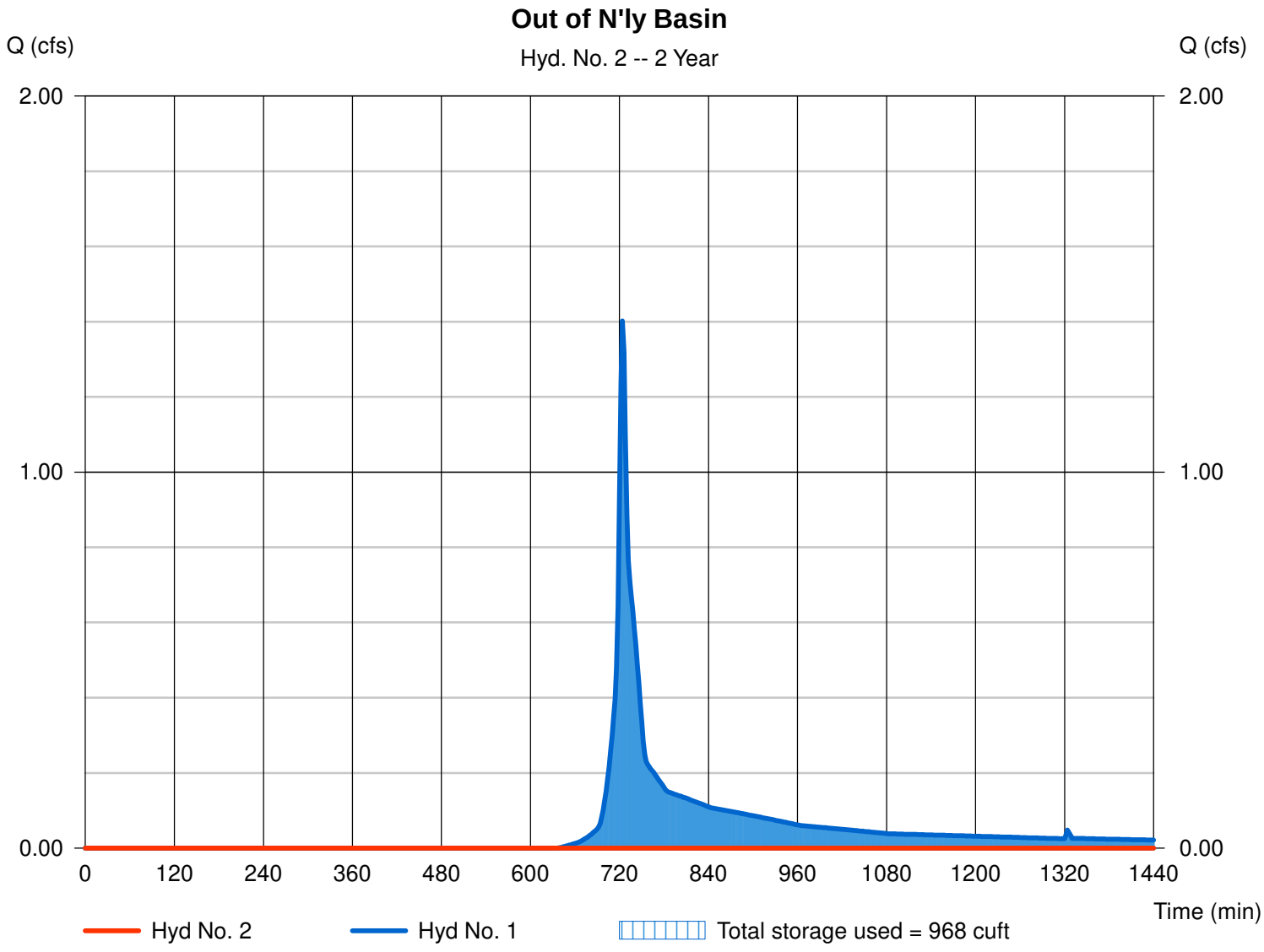
Hydrograph Report

Hyd. No. 2

Out of N'ly Basin

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Proposed To N'ly Basin	Max. Elevation	=	207.39 ft
Reservoir name	=	N'ly Infiltration Basin	Max. Storage	=	968 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 4 - N'ly Infiltration Basin

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 207.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	207.00	1,981	0	0
1.00	208.00	2,976	2,479	2,479
3.00	210.00	3,968	6,944	9,423

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 207.70	0.00	0.00	0.00
Length (ft)	= 36.00	0.00	0.00	0.00
Slope (%)	= 8.00	0.00	0.00	n/a
N-Value	= .012	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 20.500 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	207.00	0.00	---	---	---	---	---	---	---	0.000	---	0.000
1.00	2,479	208.00	0.42 ic	---	---	---	---	---	---	---	1.412	---	1.835
3.00	9,423	210.00	7.65 ic	---	---	---	---	---	---	---	1.883	---	9.529

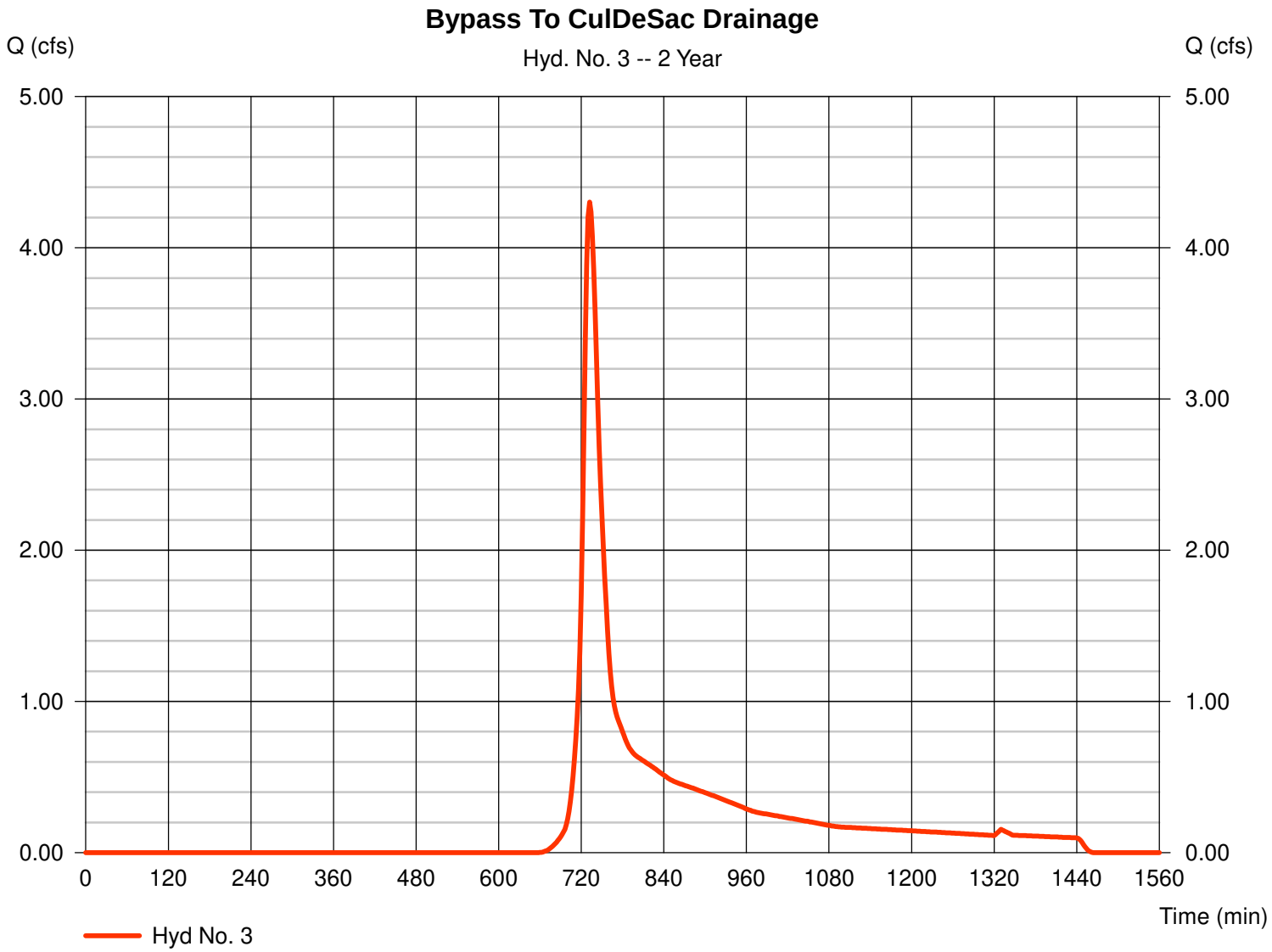
Hydrograph Report

Hyd. No. 3

Bypass To CulDeSac Drainage

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.302 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	18,919 cuft
Drainage area	=	5.750 ac	Curve number	=	72*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.10 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.430 x 98) + (0.480 x 30) + (0.920 x 55) + (0.320 x 39) + (1.600 x 61)] / 5.750



TR55 Tc Worksheet

Hyd. No. 3

Bypass To CulDeSac Drainage

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	5.00		0.00		0.00		
Travel Time (min)	**=**	**9.89**	**+**	**0.00**	**+**	**0.00**	**=**	**9.89**
Shallow Concentrated Flow								
Flow length (ft)	=	559.00		68.00		0.00		
Watercourse slope (%)	=	3.80		2.30		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	3.15		3.08		0.00		
Travel Time (min)	**=**	**2.96**	**+**	**0.37**	**+**	**0.00**	**=**	**3.33**
Channel Flow								
X sectional flow area (sqft)	=	1.23		1.77		3.14		
Wetted perimeter (ft)	=	3.93		4.71		6.28		
Channel slope (%)	=	0.50		1.10		2.00		
Manning's n-value	=	0.013		0.013		0.013		
Velocity (ft/s)	=	3.72		6.23		10.19		
Flow length (ft)	=	22.0		222.0		105.0		
Travel Time (min)	**=**	**0.10**	**+**	**0.59**	**+**	**0.17**	**=**	**0.86**

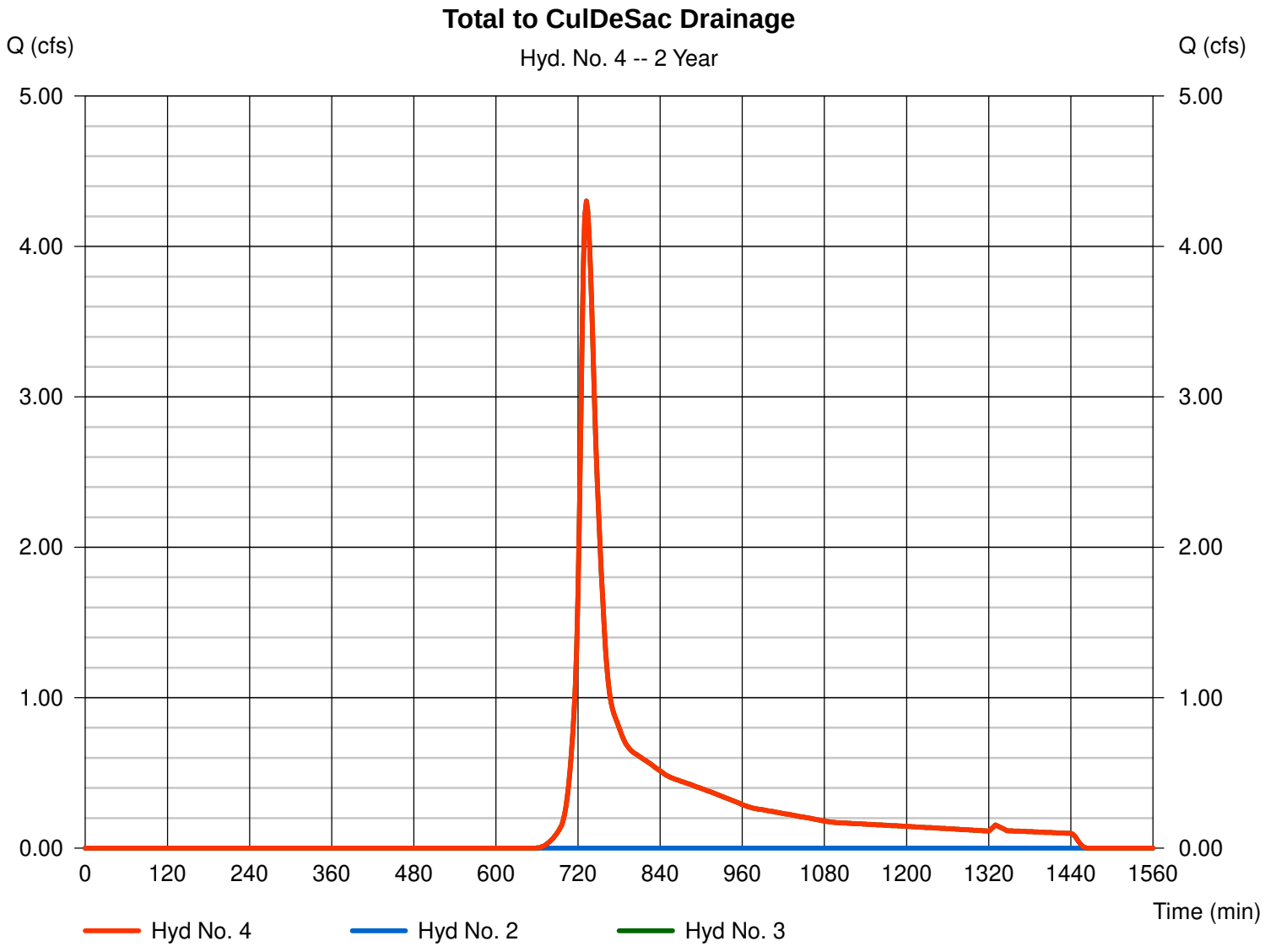
Total Travel Time, Tc ..... 14.10 min

Hydrograph Report

Hyd. No. 4

Total to CulDeSac Drainage

Hydrograph type	= Combine	Peak discharge	= 4.302 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 18,919 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.750 ac



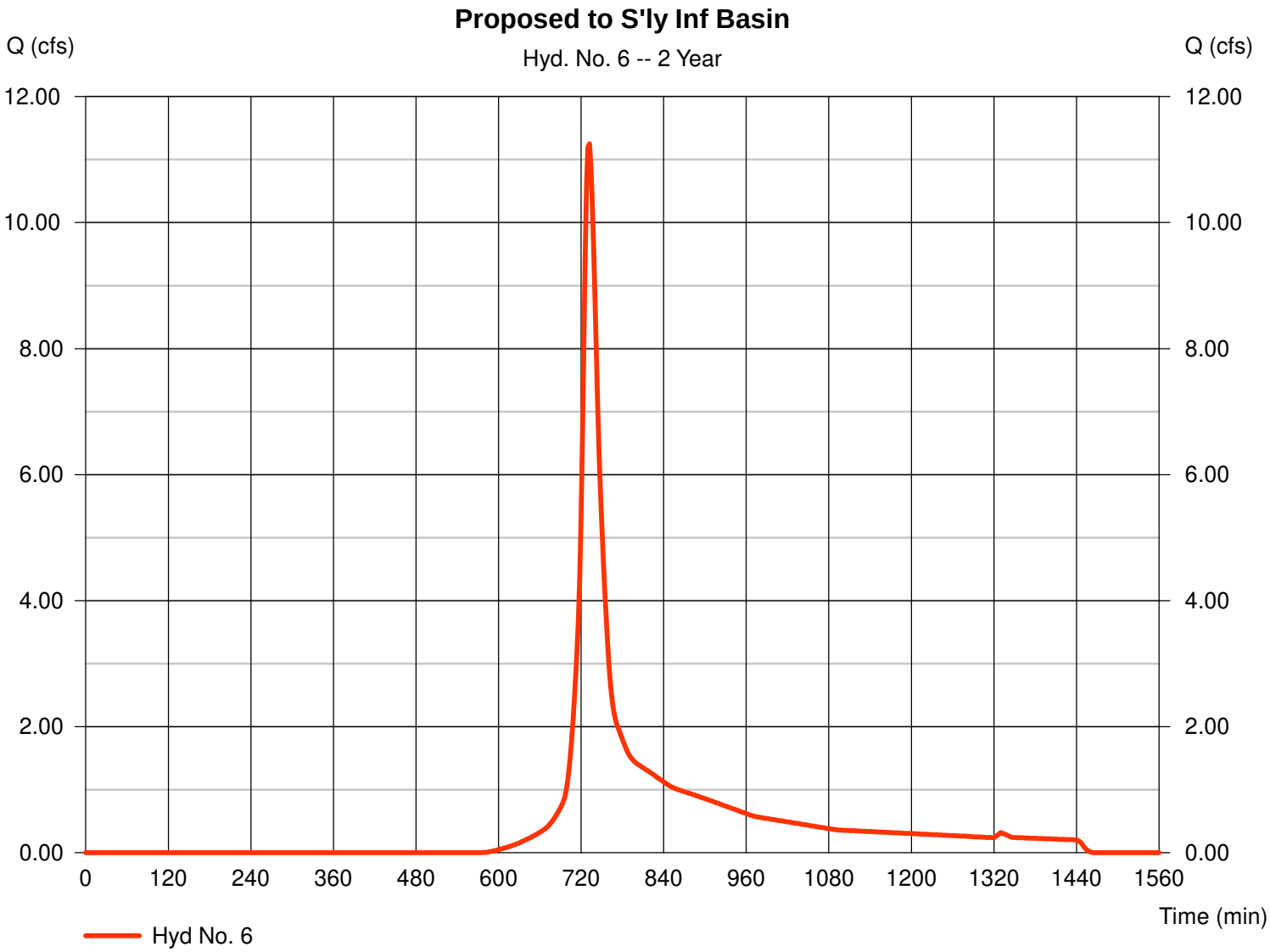
Hydrograph Report

Hyd. No. 6

Proposed to S'ly Inf Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.25 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	46,600 cuft
Drainage area	=	9.850 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.10 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.550 x 98) + (0.020 x 30) + (1.540 x 55) + (1.080 x 80) + (2.660 x 61)] / 9.850



TR55 Tc Worksheet

Hyd. No. 6

Proposed to S'ly Inf Basin

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	3.20	0.00	
Land slope (%)	= 5.00	0.00	0.00	
Travel Time (min)	**= 9.89 +**	**0.00 +**	**0.00 =**	**9.89**
Shallow Concentrated Flow				
Flow length (ft)	= 193.00	293.00	419.00	
Watercourse slope (%)	= 2.20	3.50	1.90	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	= 2.39	3.02	2.80	
Travel Time (min)	**= 1.34 +**	**1.62 +**	**2.49 =**	**5.45**
Channel Flow				
X sectional flow area (sqft)	= 3.14	0.00	0.00	
Wetted perimeter (ft)	= 6.28	0.00	0.00	
Channel slope (%)	= 0.50	0.00	0.00	
Manning's n-value	= 0.013	0.015	0.015	
Velocity (ft/s)	= 5.09	0.00	0.00	
Flow length (ft)	= 230.0	0.0	0.0	
Travel Time (min)	**= 0.75 +**	**0.00 +**	**0.00 =**	**0.75**

Total Travel Time, Tc ..... 16.10 min

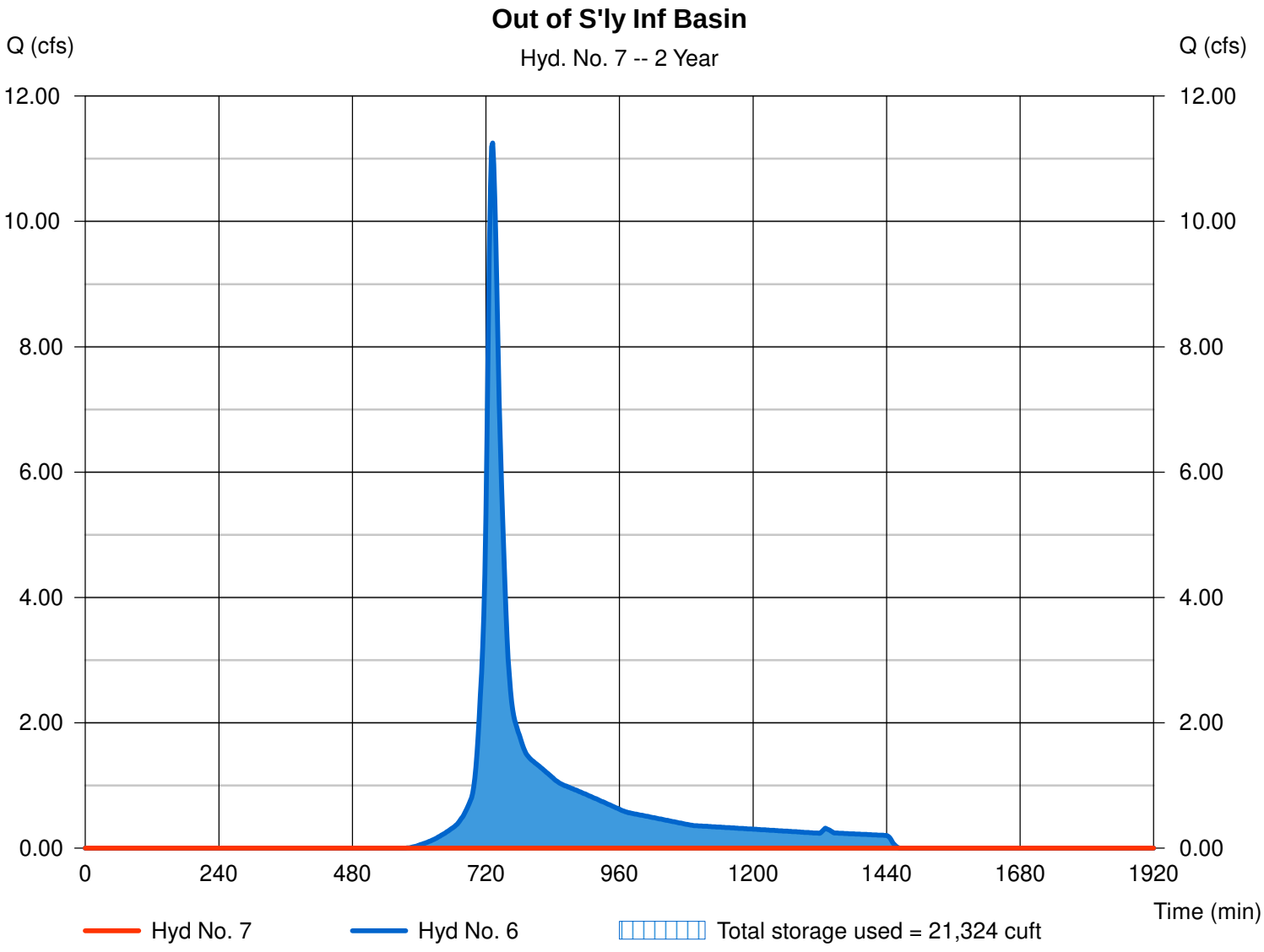
Hydrograph Report

Hyd. No. 7

Out of S'ly Inf Basin

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	1410 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	6 - Proposed to S'ly Inf Basin	Max. Elevation	=	203.15 ft
Reservoir name	=	S'ly Basin-Inf	Max. Storage	=	21,324 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 5 - S'ly Basin-Inf

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 200.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	200.00	4,779	0	0
1.00	201.00	5,786	5,283	5,283
2.00	202.00	7,236	6,511	11,794
3.00	203.00	8,863	8,050	19,843
4.00	204.00	10,781	9,822	29,665
5.00	205.00	12,843	11,812	41,477

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	0.00	0.00
Crest El. (ft)	= 204.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 6.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	200.00	---	---	---	---	0.00	---	---	---	0.000	---	0.000
1.00	5,283	201.00	---	---	---	---	0.00	---	---	---	0.804	---	0.804
2.00	11,794	202.00	---	---	---	---	0.00	---	---	---	1.005	---	1.005
3.00	19,843	203.00	---	---	---	---	0.00	---	---	---	1.231	---	1.231
4.00	29,665	204.00	---	---	---	---	0.00	---	---	---	1.497	---	1.497
5.00	41,477	205.00	---	---	---	---	39.96	---	---	---	1.784	---	41.74

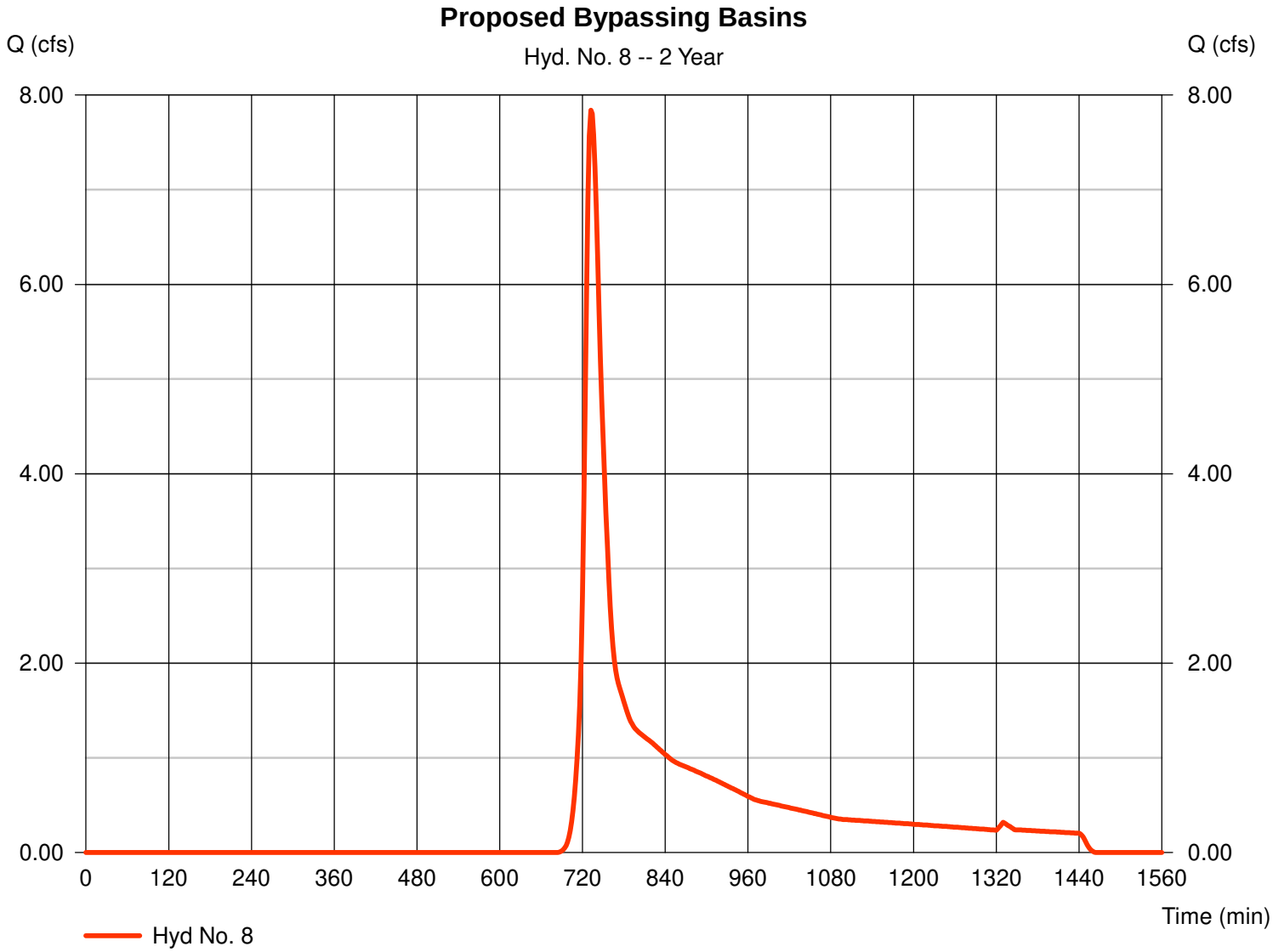
Hydrograph Report

Hyd. No. 8

Proposed Bypassing Basins

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.839 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	36,338 cuft
Drainage area	=	13.170 ac	Curve number	=	69*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.90 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.790 x 98) + (1.090 x 30) + (2.600 x 55) + (0.520 x 39) + (2.560 x 61) + (3.610 x 77)] / 13.170



TR55 Tc Worksheet

Hyd. No. 8

Proposed Bypassing Basins

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	5.00		0.00		0.00		
Travel Time (min)	**=**	**9.89**	**+**	**0.00**	**+**	**0.00**	**=**	**9.89**
Shallow Concentrated Flow								
Flow length (ft)	=	559.00		68.00		66.00		
Watercourse slope (%)	=	3.80		2.30		1.00		
Surface description	=	Unpaved		Paved		Unpaved		
Average velocity (ft/s)	=	3.15		3.08		1.61		
Travel Time (min)	**=**	**2.96**	**+**	**0.37**	**+**	**0.68**	**=**	**4.01**
Channel Flow								
X sectional flow area (sqft)	=	1.77		3.14		3.14		
Wetted perimeter (ft)	=	4.71		6.28		6.28		
Channel slope (%)	=	1.10		2.00		0.60		
Manning's n-value	=	0.013		0.013		0.013		
Velocity (ft/s)	=	6.23		10.19		5.58		
Flow length (ft)	=	222.0		105.0		419.0		
Travel Time (min)	**=**	**0.59**	**+**	**0.17**	**+**	**1.25**	**=**	**2.02**

Total Travel Time, Tc ..... 15.90 min

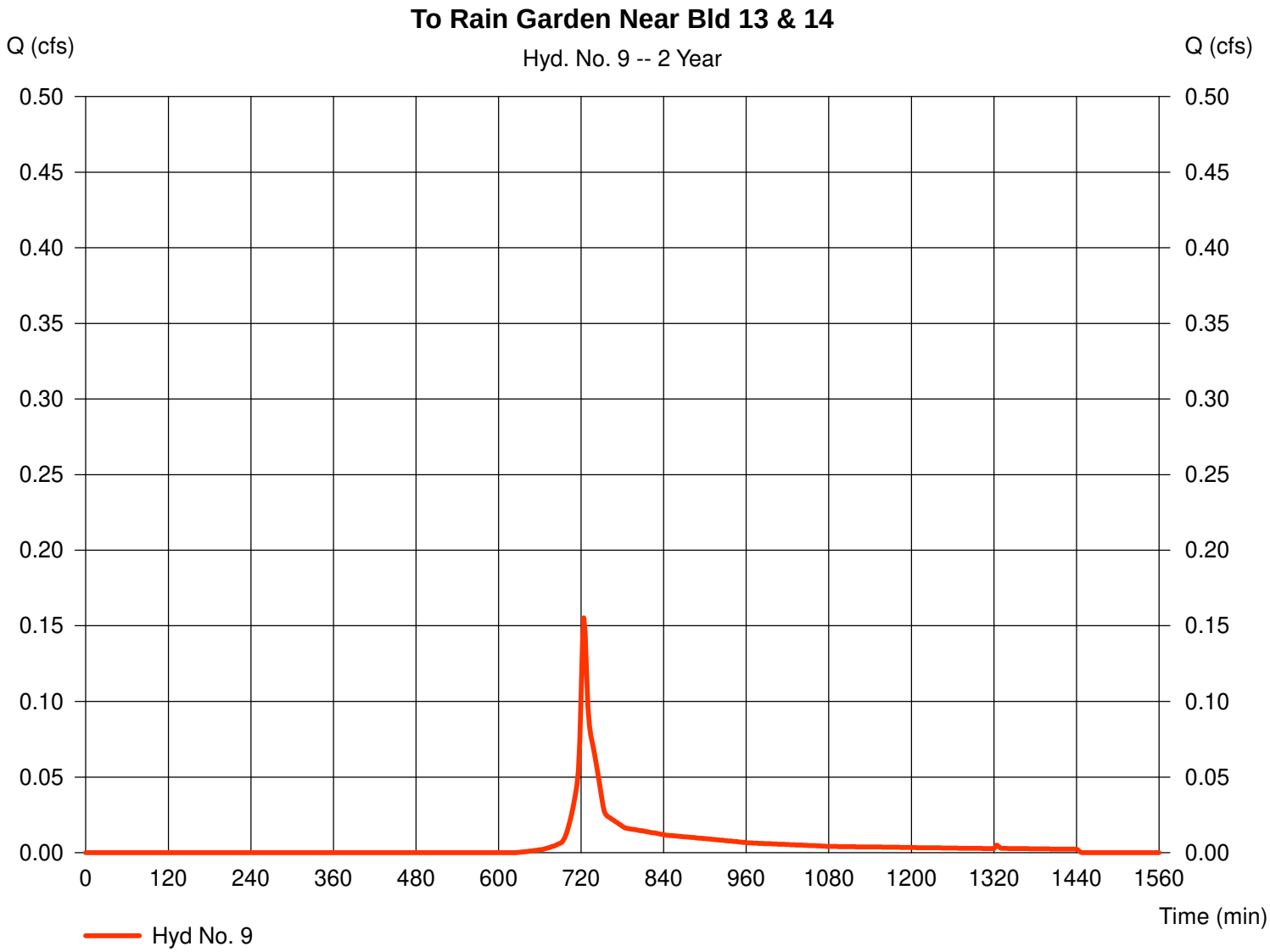
Hydrograph Report

Hyd. No. 9

To Rain Garden Near Bld 13 & 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.155 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	484 cuft
Drainage area	=	0.130 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 98) + (0.080 x 61)] / 0.130

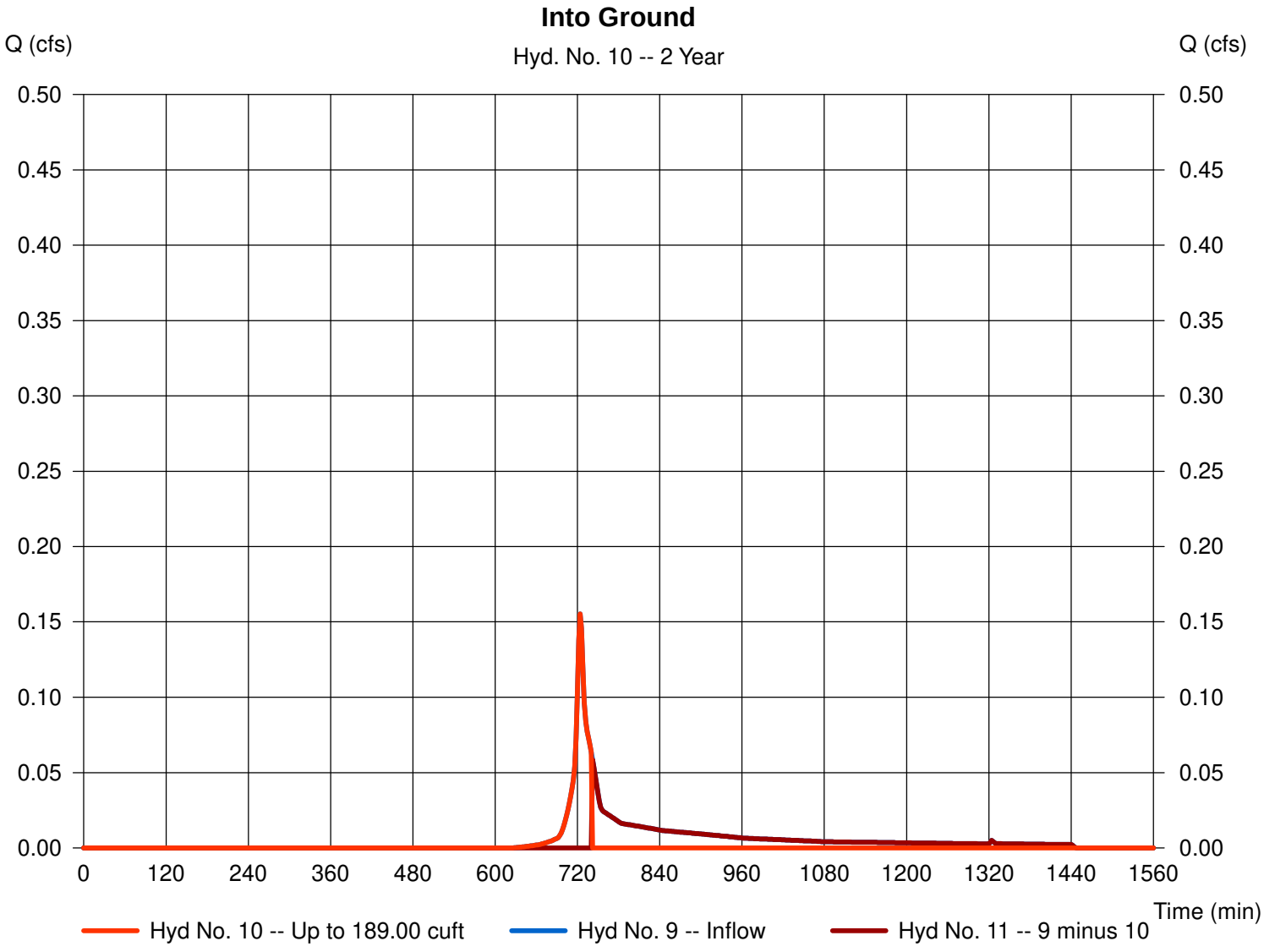


Hydrograph Report

Hyd. No. 10

Into Ground

Hydrograph type	=	Diversion1	Peak discharge	=	0.155 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	191 cuft
Inflow hydrograph	=	9 - To Rain Garden Near Bld 13 & 14	2nd diverted hyd.	=	11
Diversion method	=	First Flush Volume	Volume Up To	=	189.00 cuft

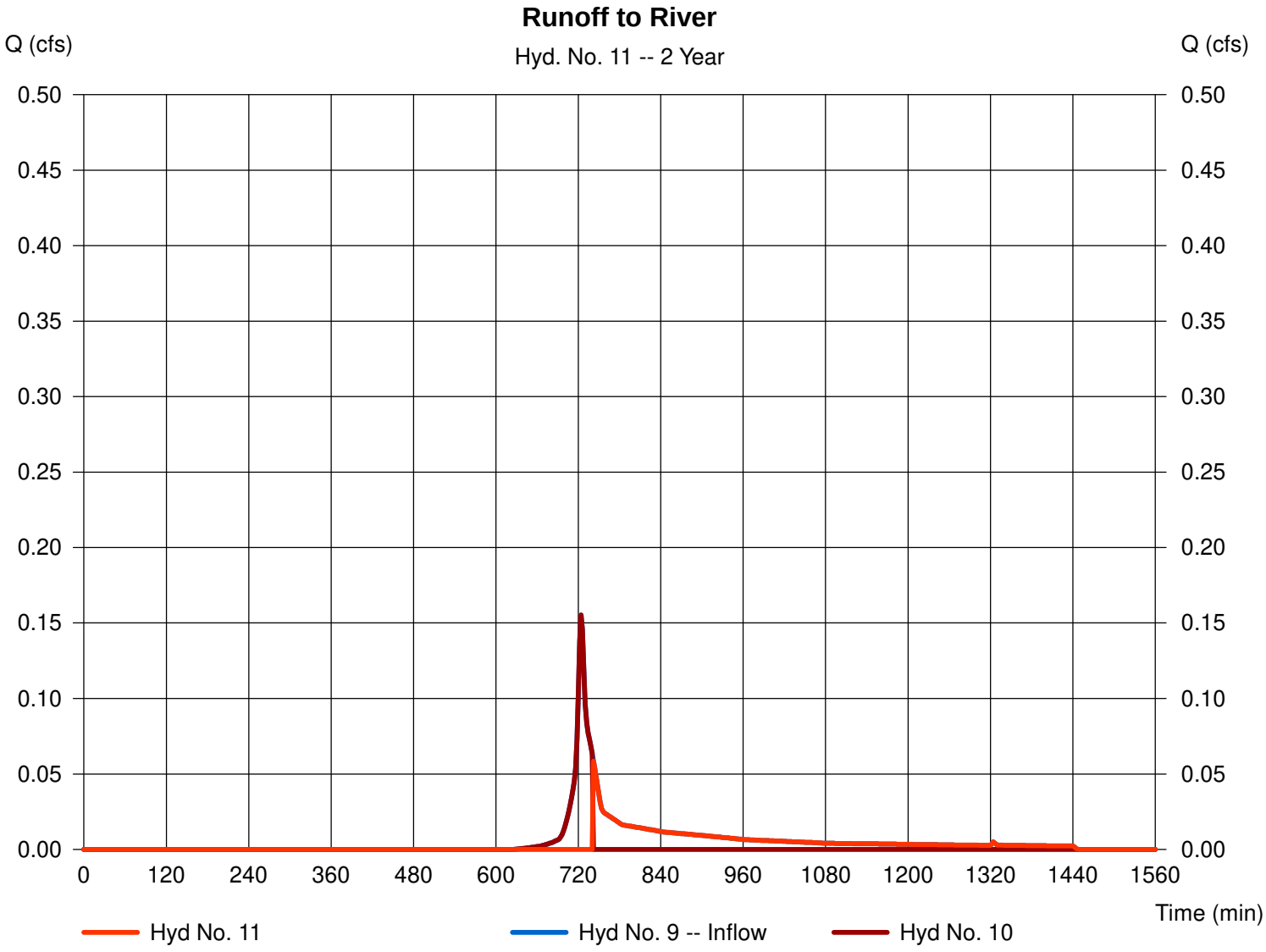


Hydrograph Report

Hyd. No. 11

Runoff to River

Hydrograph type	=	Diversion2	Peak discharge	=	0.059 cfs
Storm frequency	=	2 yrs	Time to peak	=	742 min
Time interval	=	2 min	Hyd. volume	=	293 cuft
Inflow hydrograph	=	9 - To Rain Garden Near Bld 13 & 14	2nd diverted hyd.	=	10
Diversion method	=	First Flush Volume	Volume Up To	=	189.00 cuft

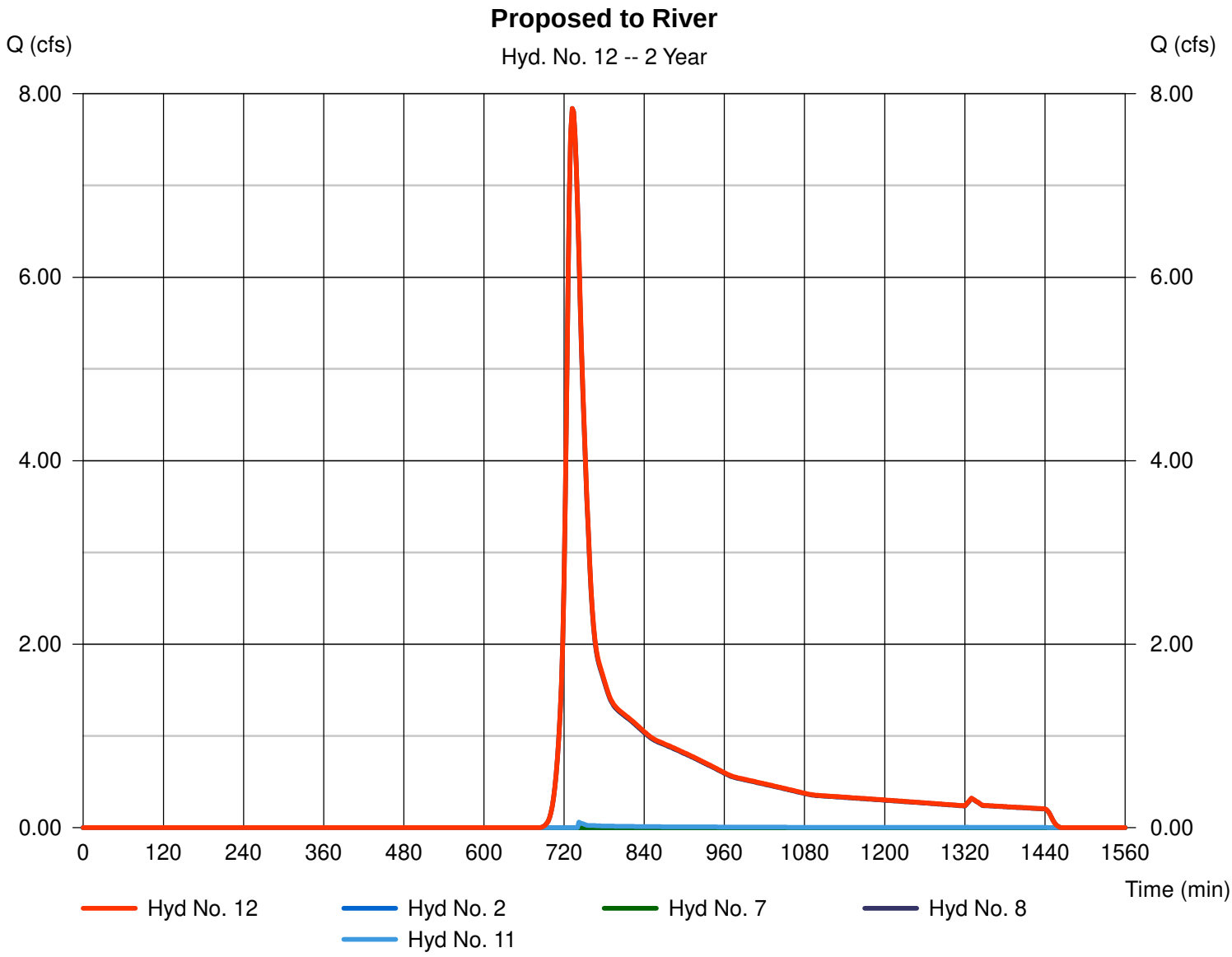


Hydrograph Report

Hyd. No. 12

Proposed to River

Hydrograph type	=	Combine	Peak discharge	=	7.839 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	36,631 cuft
Inflow hyds.	=	2, 7, 8, 11	Contrib. drain. area	=	13.170 ac



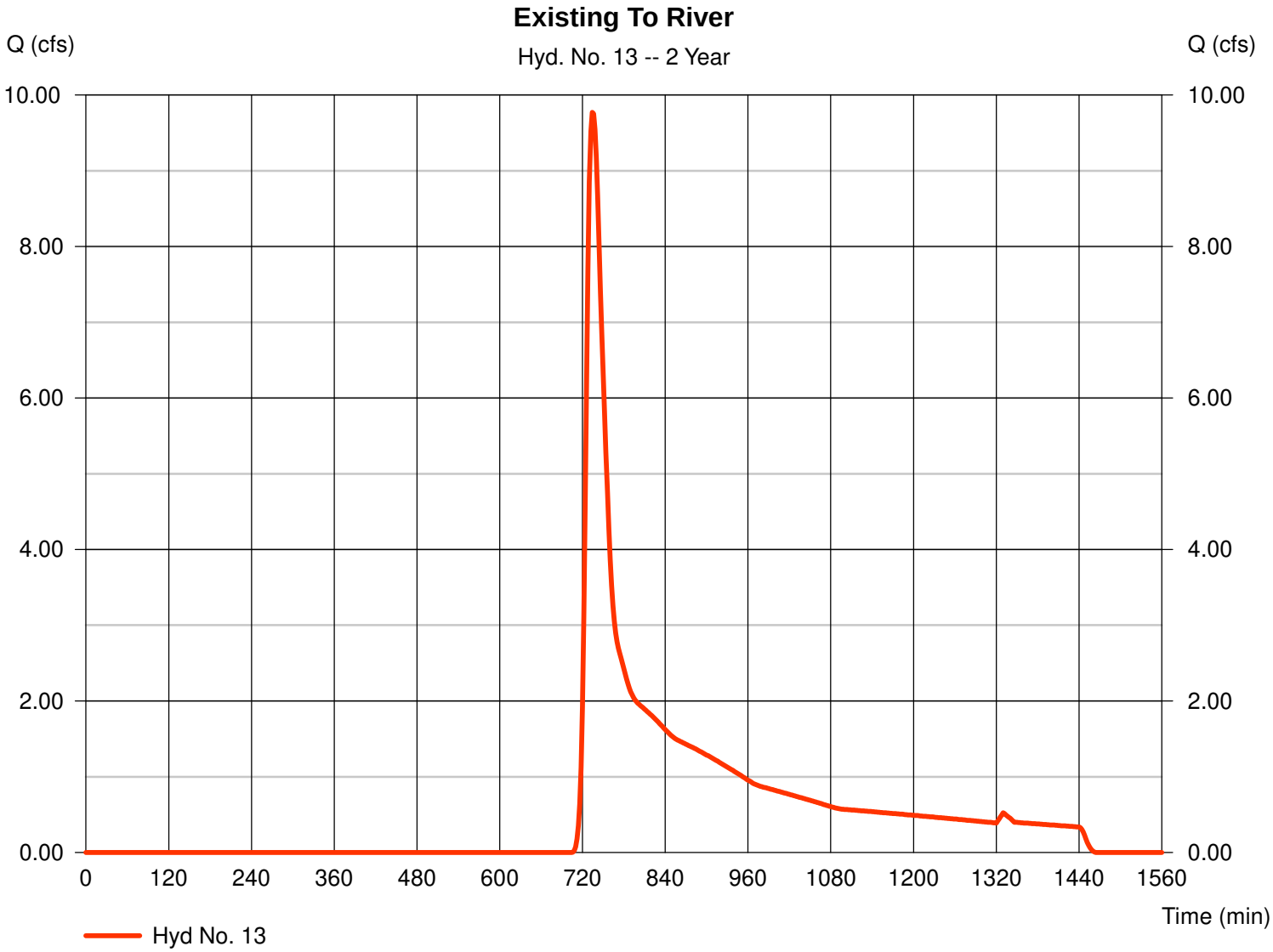
Hydrograph Report

Hyd. No. 13

Existing To River

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.773 cfs
Storm frequency	=	2 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	52,246 cuft
Drainage area	=	26.400 ac	Curve number	=	64*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.90 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.310 x 98) + (3.500 x 30) + (8.910 x 55) + (5.370 x 77) + (0.780 x 39) + (3.530 x 61)] / 26.400



TR55 Tc Worksheet

Hyd. No. 13

Existing To River

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	5.00		0.00		0.00		
Travel Time (min)	**=**	**9.89**	**+**	**0.00**	**+**	**0.00**	**=**	**9.89**
Shallow Concentrated Flow								
Flow length (ft)	=	559.00		68.00		66.00		
Watercourse slope (%)	=	3.80		2.30		1.00		
Surface description	=	Unpaved		Paved		Unpaved		
Average velocity (ft/s)	=	3.15		3.08		1.61		
Travel Time (min)	**=**	**2.96**	**+**	**0.37**	**+**	**0.68**	**=**	**4.01**
Channel Flow								
X sectional flow area (sqft)	=	1.77		3.14		3.14		
Wetted perimeter (ft)	=	4.71		6.28		6.28		
Channel slope (%)	=	1.10		2.00		0.60		
Manning's n-value	=	0.013		0.013		0.013		
Velocity (ft/s)	=	6.23		10.19		5.58		
Flow length (ft)	=	222.0		105.0		419.0		
Travel Time (min)	**=**	**0.59**	**+**	**0.17**	**+**	**1.25**	**=**	**2.02**

Total Travel Time, Tc ..... 15.90 min

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	3.123	2	724	9,383	------	------	------	Proposed To N'ly Basin
2	Reservoir	0.135	2	736	141	1	207.86	2,129	Out of N'ly Basin
3	SCS Runoff	10.07	2	732	41,617	------	------	------	Bypass To CulDeSac Drainage
4	Combine	10.18	2	732	41,758	2, 3	------	------	Total to CulDeSac Drainage
6	SCS Runoff	22.52	2	730	91,696	------	------	------	Proposed to S'ly Inf Basin
7	Reservoir	9.729	2	746	20,708	6	204.39	34,263	Out of S'ly Inf Basin
8	SCS Runoff	20.18	2	732	84,522	------	------	------	Proposed Bypassing Basins
9	SCS Runoff	0.338	2	724	1,012	------	------	------	To Rain Garden Near Bld 13 & 14
10	Diversion1	0.238	2	720	213	9	------	------	Into Ground
11	Diversion2	0.338	2	724	799	9	------	------	Runoff to River
12	Combine	22.39	2	744	106,170	2, 7, 8, 11	------	------	Proposed to River
13	SCS Runoff	31.15	2	732	135,690	------	------	------	Existing To River
15	SCS Runoff	0.179	2	742	1,223	------	------	------	CB1
16	Reservoir	0.000	2	780	0	15	208.19	62.6	Chambers at CB1
17	SCS Runoff	0.462	2	732	1,993	------	------	------	CB2
18	Reservoir	0.000	2	712	0	17	206.97	197	Chambers at CB2
19	SCS Runoff	0.363	2	734	1,620	------	------	------	CB3
20	Reservoir	0.000	2	892	0	19	202.41	200	Chambers at CB3
21	SCS Runoff	0.185	2	736	962	------	------	------	CB9
22	Reservoir	0.000	2	756	0	21	206.04	2.85	Chambers at CB9
23	SCS Runoff	0.387	2	736	1,907	------	------	------	CB10
24	Reservoir	0.000	2	726	0	23	205.51	56.2	Chambers at CB10
25	SCS Runoff	0.730	2	734	3,239	------	------	------	CB23
26	Reservoir	0.000	2	712	0	25	209.03	151	Chambers at CB23

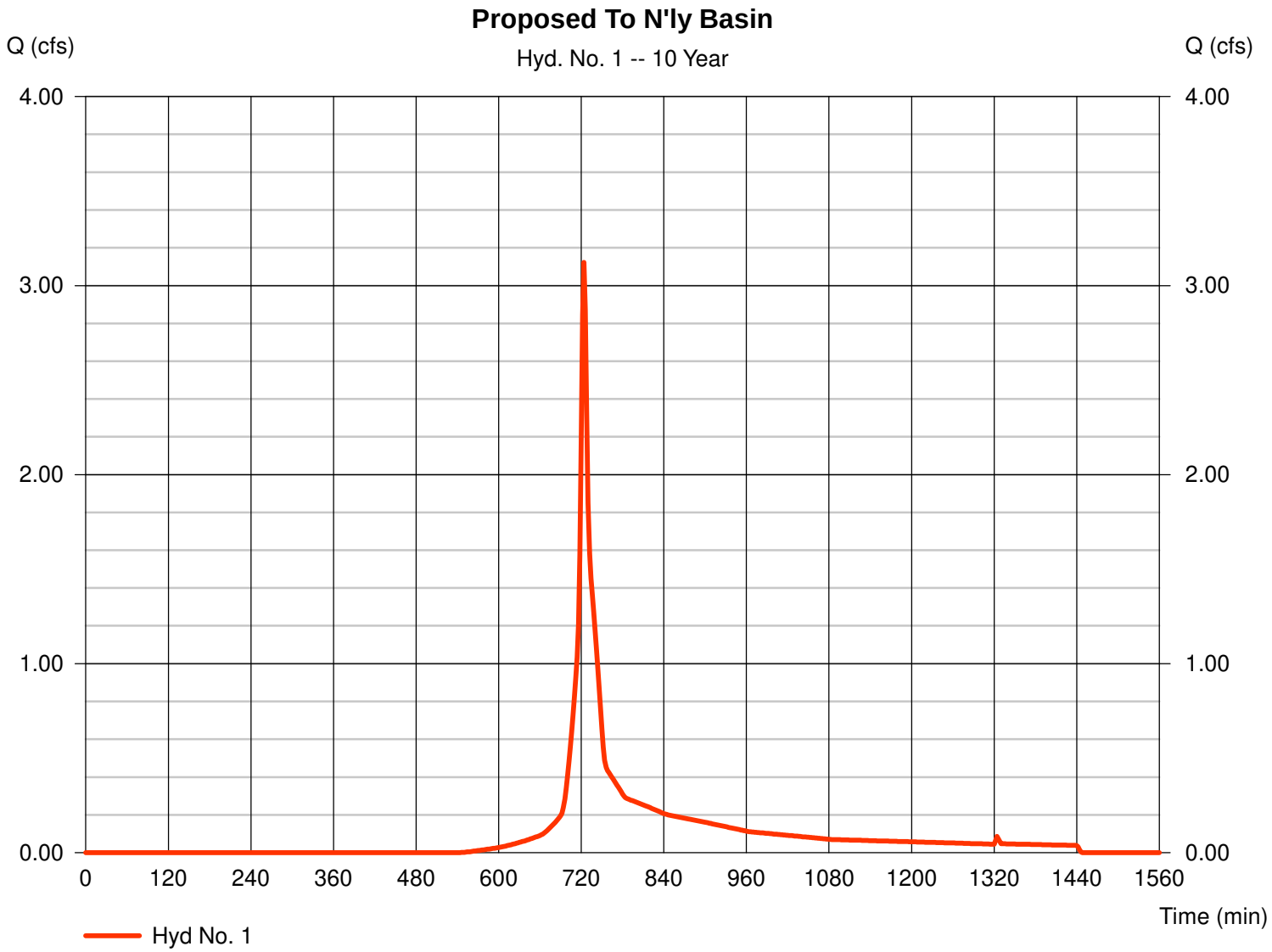
Hydrograph Report

Hyd. No. 1

Proposed To N'ly Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.123 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	9,383 cuft
Drainage area	=	1.250 ac	Curve number	=	74*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	4.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.740 x 98) + (0.510 x 39)] / 1.250



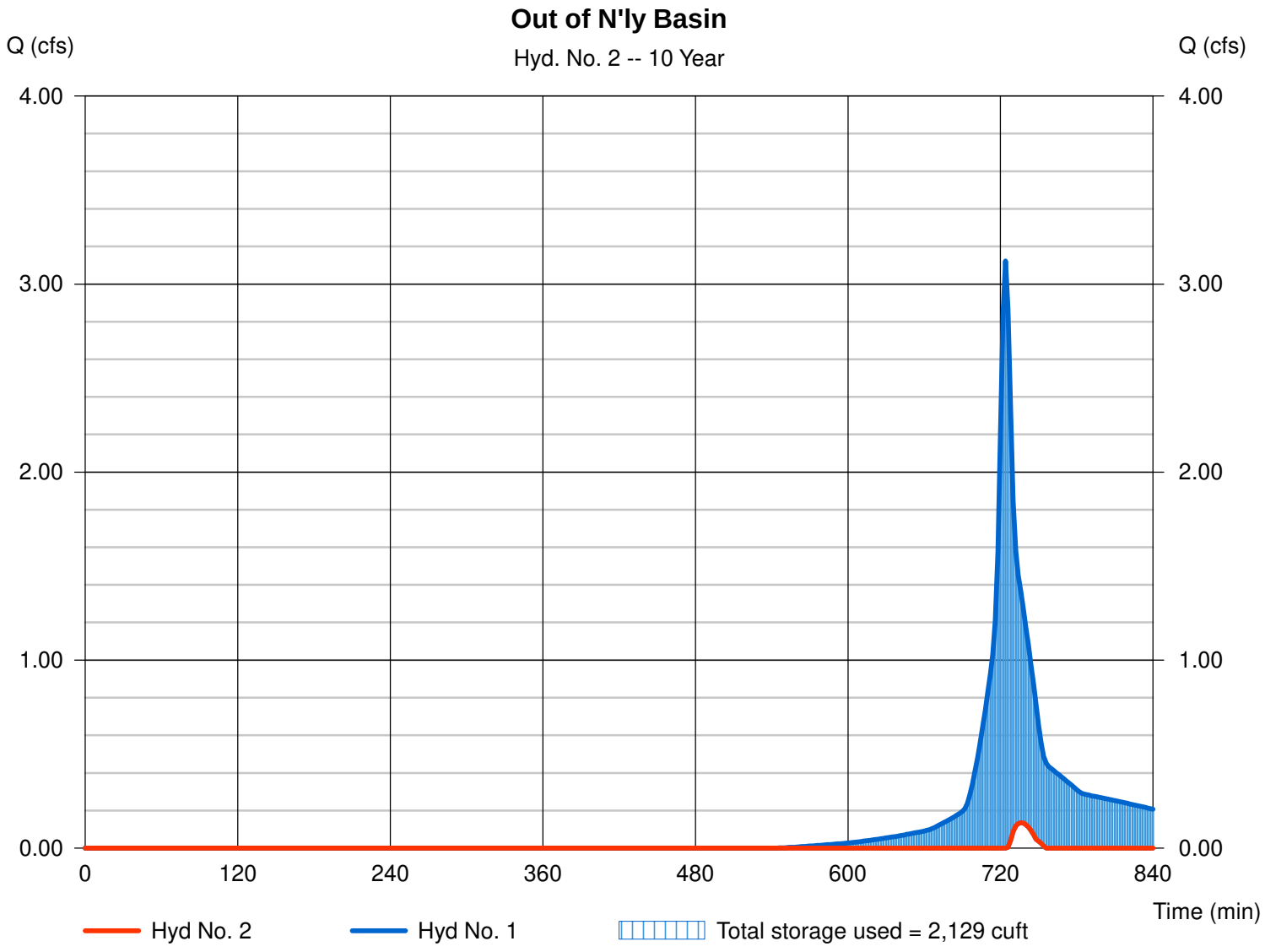
Hydrograph Report

Hyd. No. 2

Out of N'ly Basin

Hydrograph type	=	Reservoir	Peak discharge	=	0.135 cfs
Storm frequency	=	10 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	141 cuft
Inflow hyd. No.	=	1 - Proposed To N'ly Basin	Max. Elevation	=	207.86 ft
Reservoir name	=	N'ly Infiltration Basin	Max. Storage	=	2,129 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



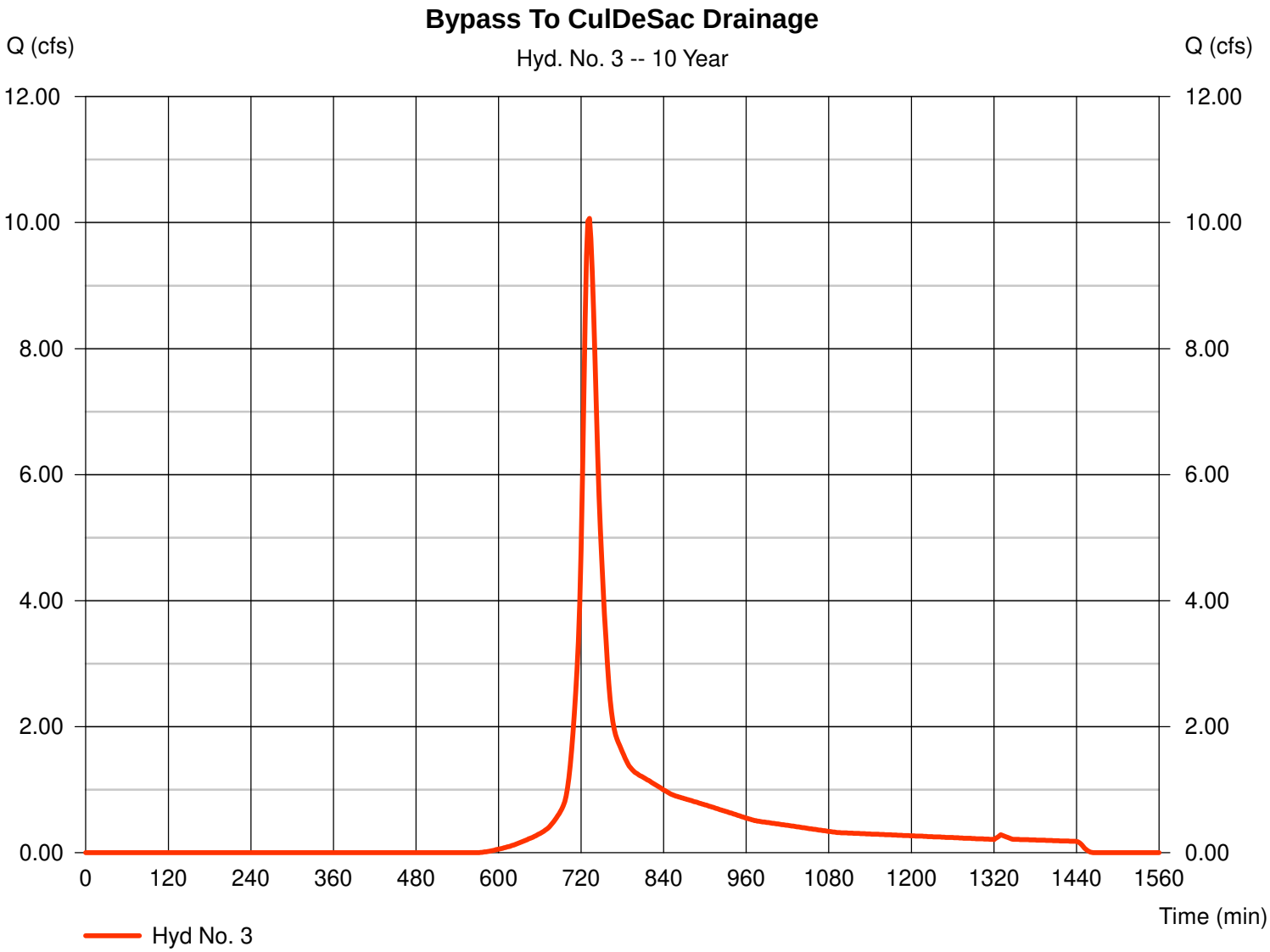
Hydrograph Report

Hyd. No. 3

Bypass To CulDeSac Drainage

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.07 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	41,617 cuft
Drainage area	=	5.750 ac	Curve number	=	72*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.10 min
Total precip.	=	4.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.430 x 98) + (0.480 x 30) + (0.920 x 55) + (0.320 x 39) + (1.600 x 61)] / 5.750

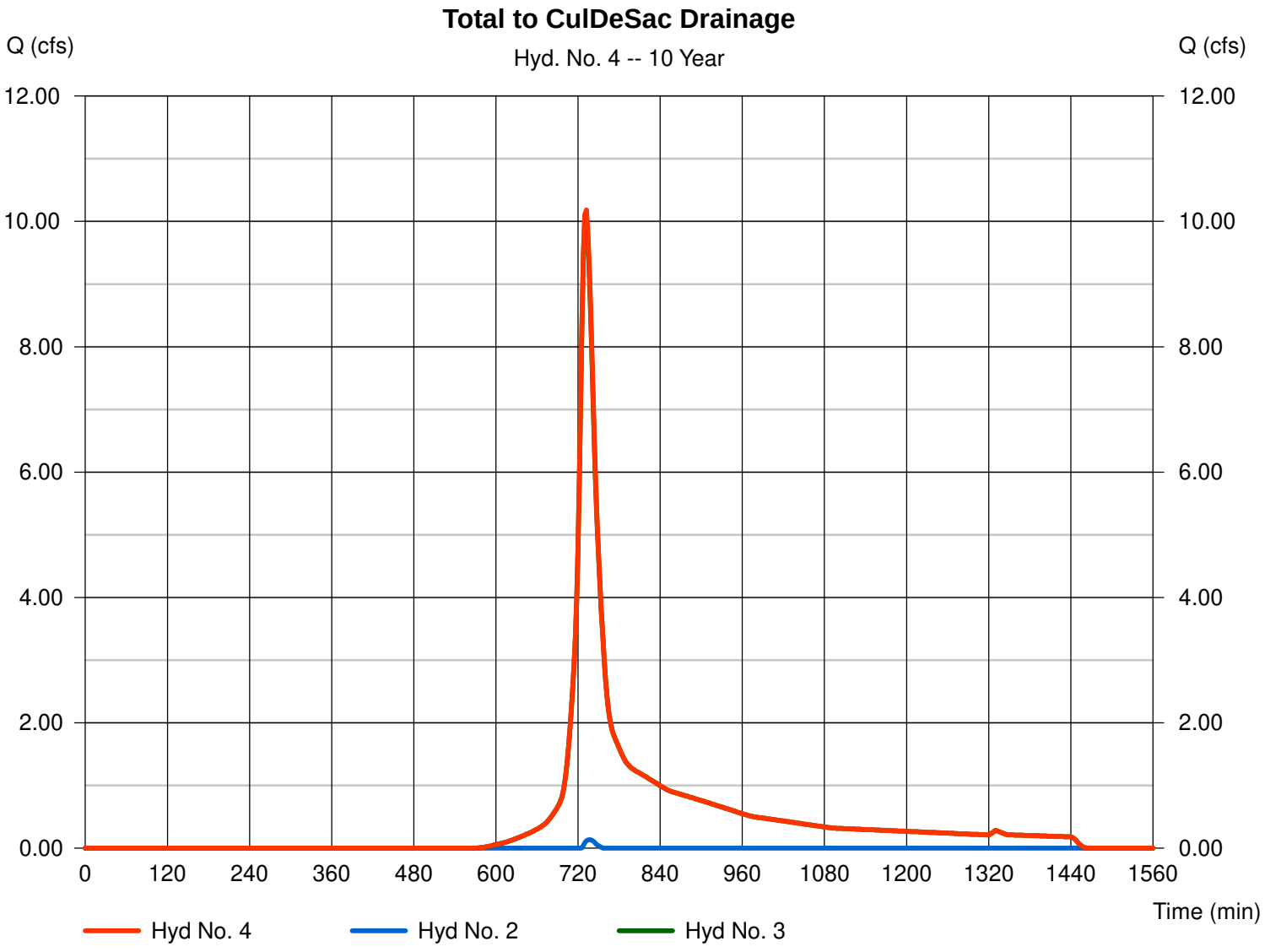


Hydrograph Report

Hyd. No. 4

Total to CulDeSac Drainage

Hydrograph type	= Combine	Peak discharge	= 10.18 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 41,758 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.750 ac



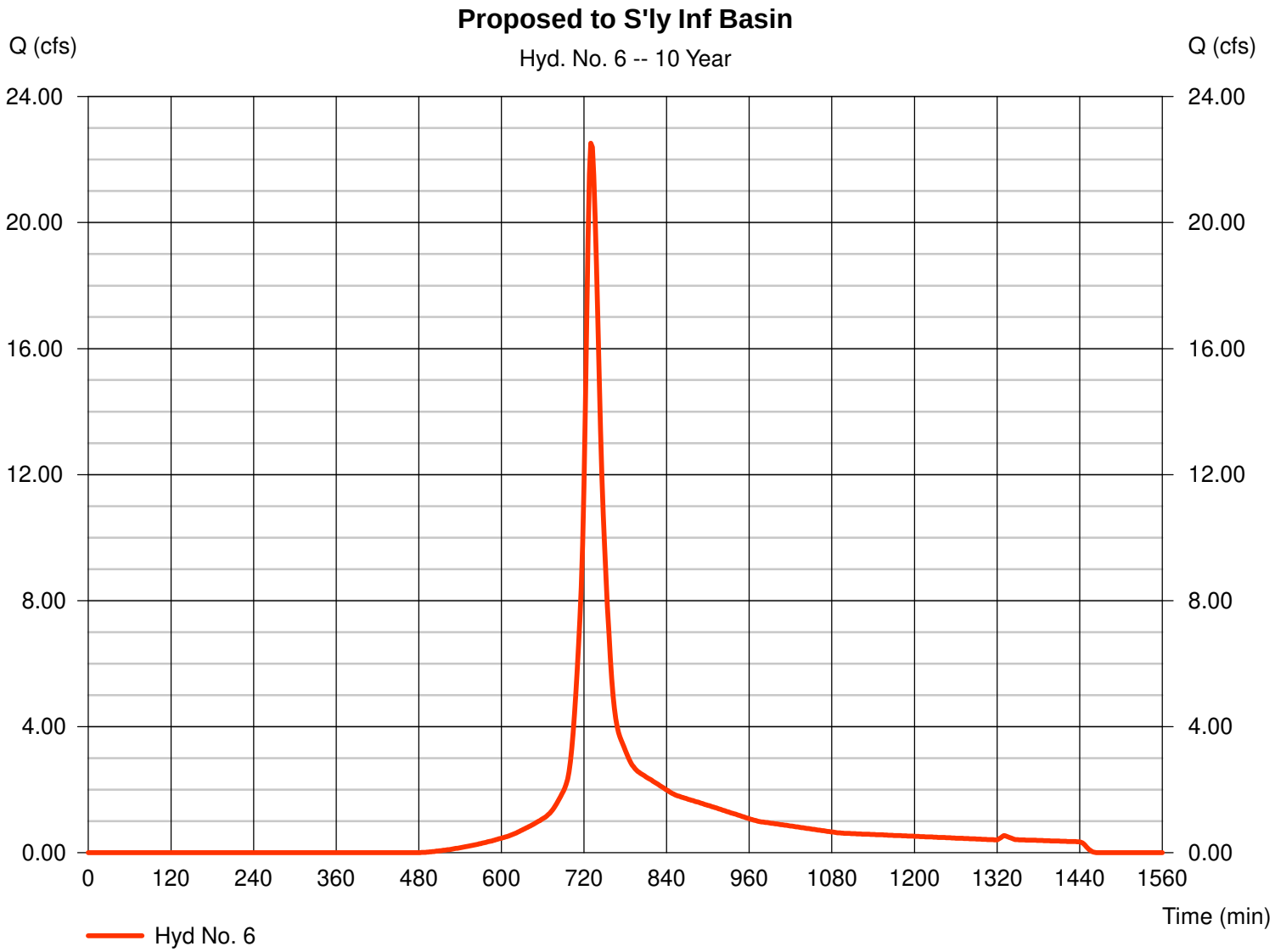
Hydrograph Report

Hyd. No. 6

Proposed to S'ly Inf Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	22.52 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	91,696 cuft
Drainage area	=	9.850 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.10 min
Total precip.	=	4.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.550 x 98) + (0.020 x 30) + (1.540 x 55) + (1.080 x 80) + (2.660 x 61)] / 9.850



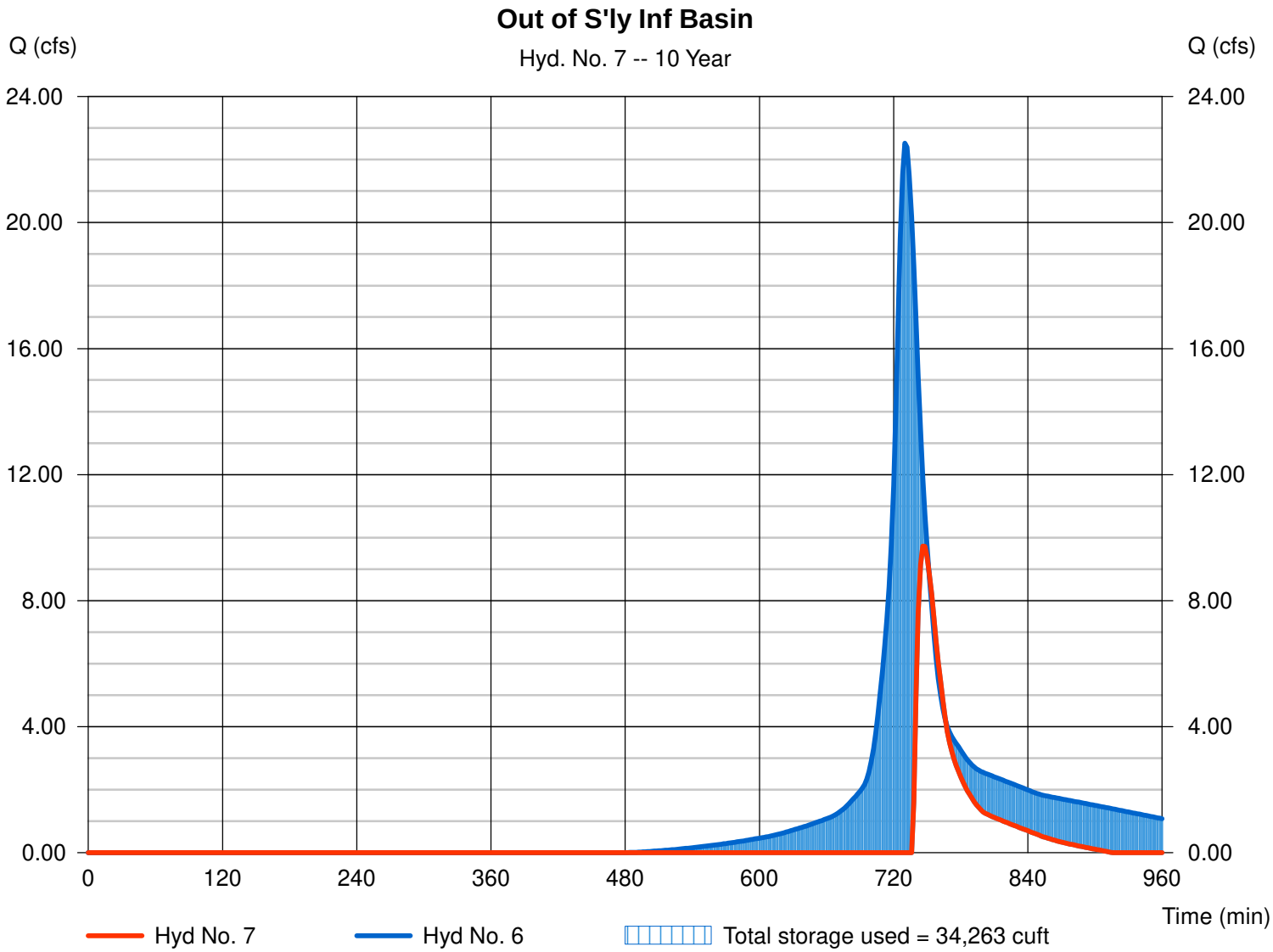
Hydrograph Report

Hyd. No. 7

Out of S'ly Inf Basin

Hydrograph type	=	Reservoir	Peak discharge	=	9.729 cfs
Storm frequency	=	10 yrs	Time to peak	=	746 min
Time interval	=	2 min	Hyd. volume	=	20,708 cuft
Inflow hyd. No.	=	6 - Proposed to S'ly Inf Basin	Max. Elevation	=	204.39 ft
Reservoir name	=	S'ly Basin-Inf	Max. Storage	=	34,263 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



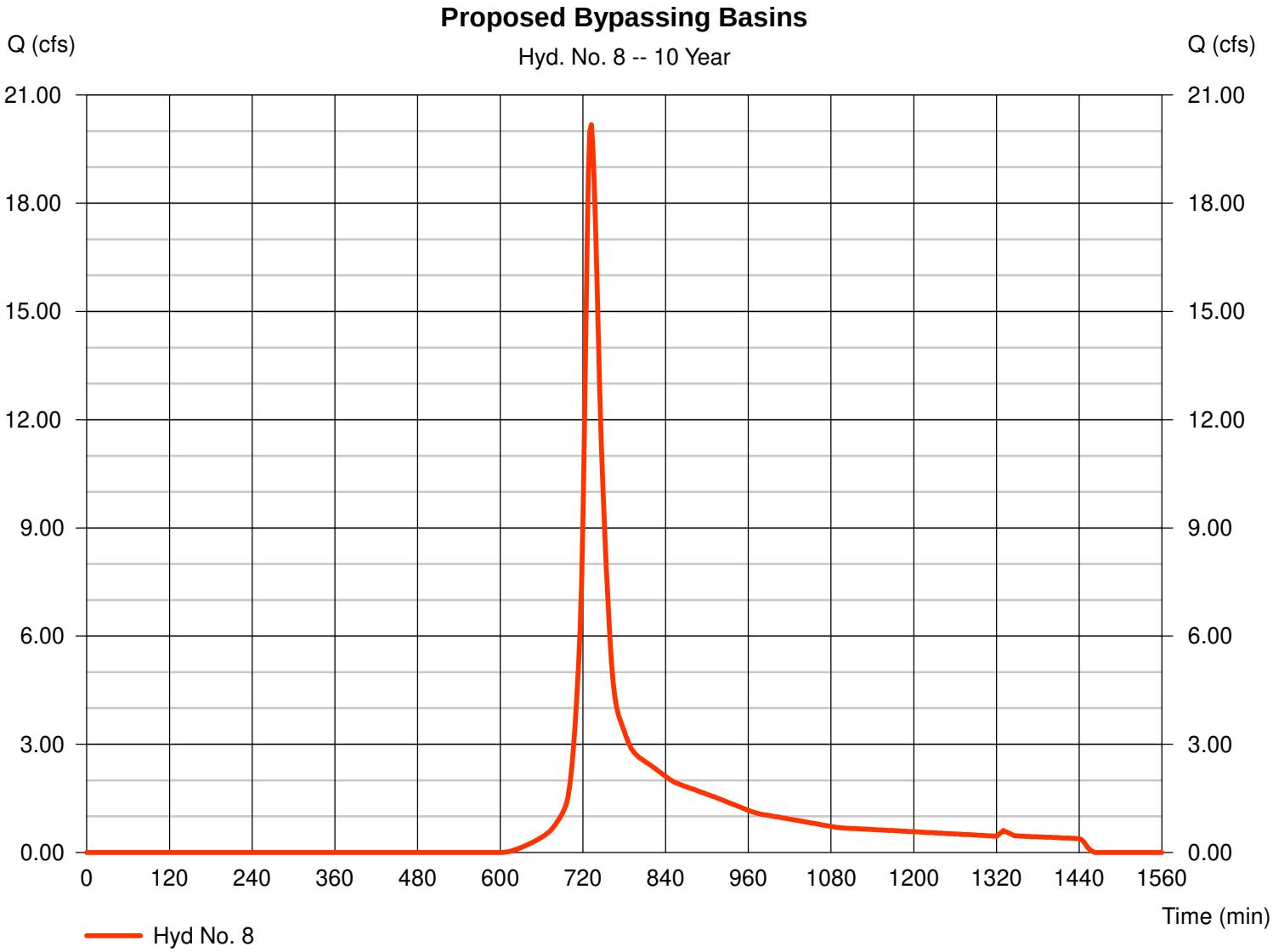
Hydrograph Report

Hyd. No. 8

Proposed Bypassing Basins

Hydrograph type	=	SCS Runoff	Peak discharge	=	20.18 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	84,522 cuft
Drainage area	=	13.170 ac	Curve number	=	69*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.90 min
Total precip.	=	4.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.790 x 98) + (1.090 x 30) + (2.600 x 55) + (0.520 x 39) + (2.560 x 61) + (3.610 x 77)] / 13.170



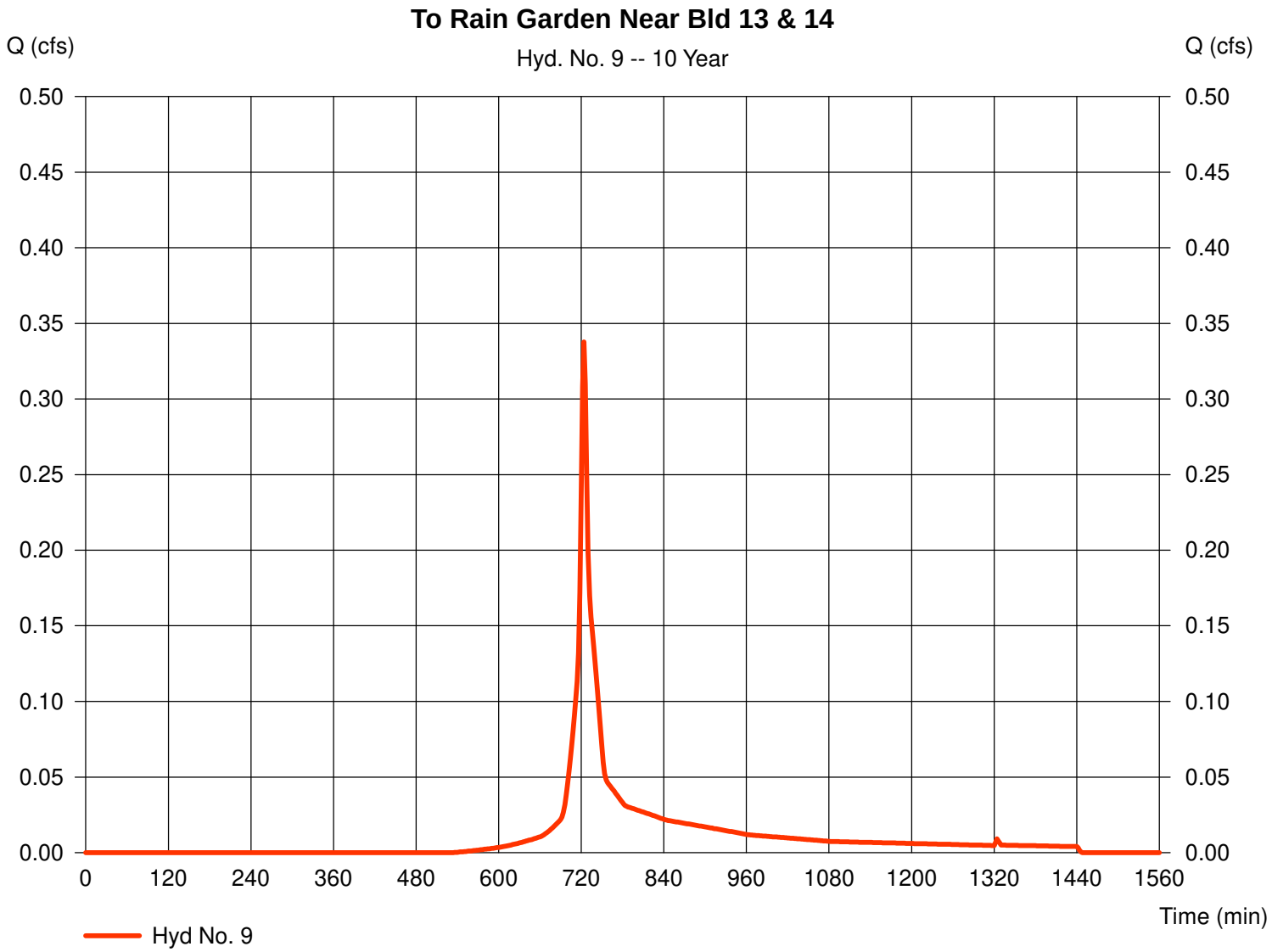
Hydrograph Report

Hyd. No. 9

To Rain Garden Near Bld 13 & 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.338 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	1,012 cuft
Drainage area	=	0.130 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.050 x 98) + (0.080 x 61)] / 0.130

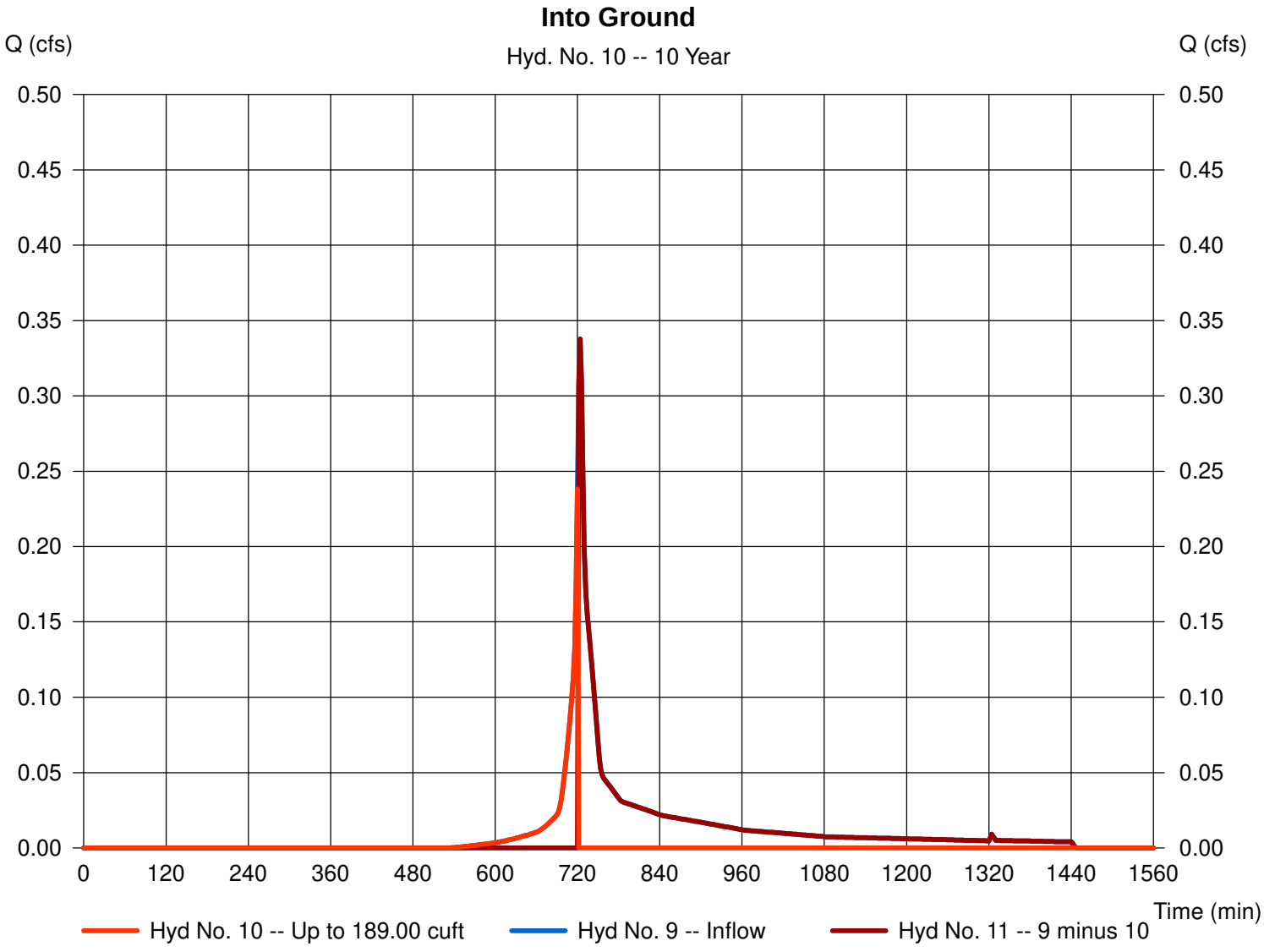


Hydrograph Report

Hyd. No. 10

Into Ground

Hydrograph type	=	Diversion1	Peak discharge	=	0.238 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	213 cuft
Inflow hydrograph	=	9 - To Rain Garden Near Bld 13 & 14	2nd diverted hyd.	=	11
Diversion method	=	First Flush Volume	Volume Up To	=	189.00 cuft

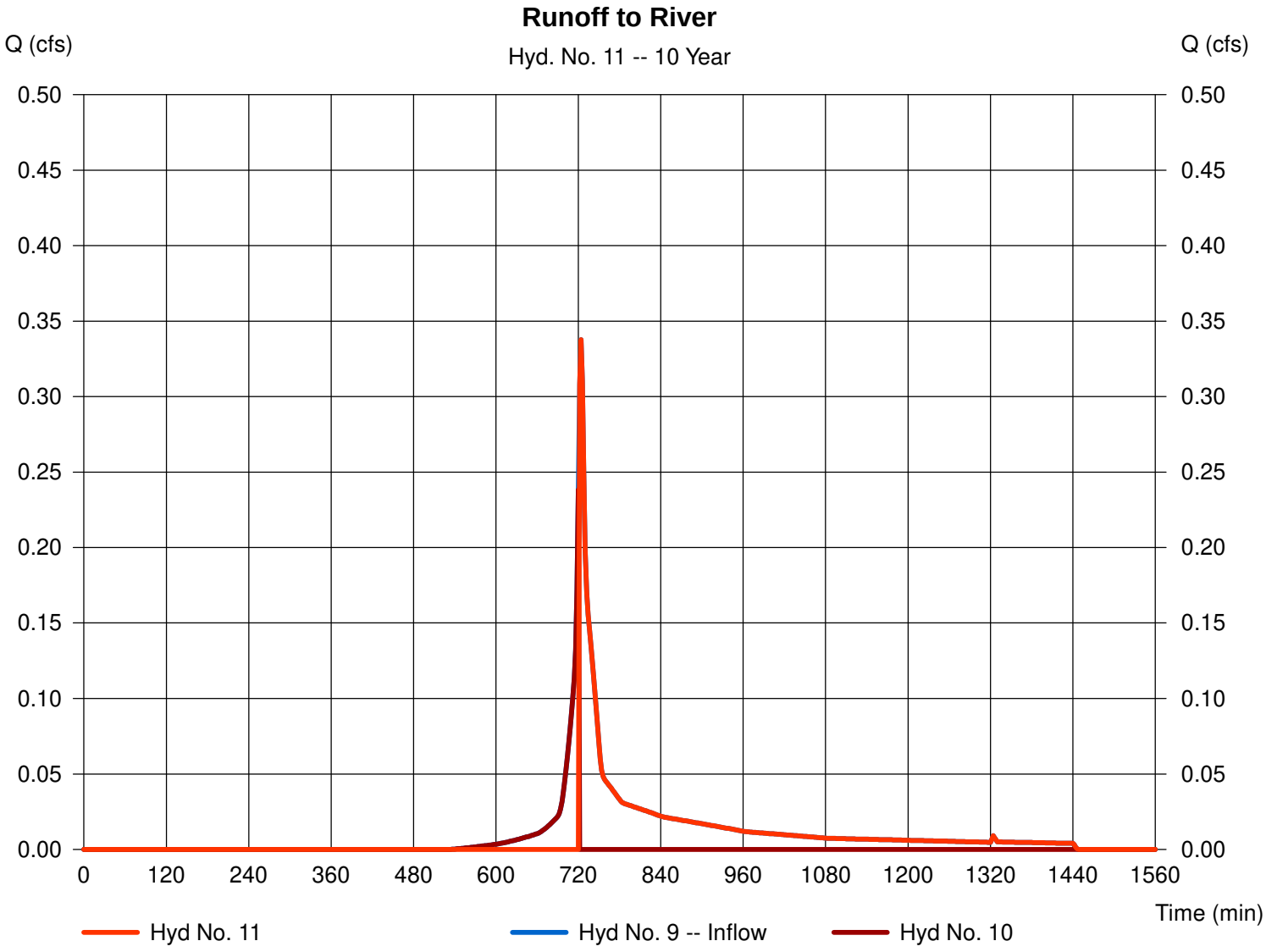


Hydrograph Report

Hyd. No. 11

Runoff to River

Hydrograph type	=	Diversion2	Peak discharge	=	0.338 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	799 cuft
Inflow hydrograph	=	9 - To Rain Garden Near Bld 13 & 14	2nd diverted hyd.	=	10
Diversion method	=	First Flush Volume	Volume Up To	=	189.00 cuft

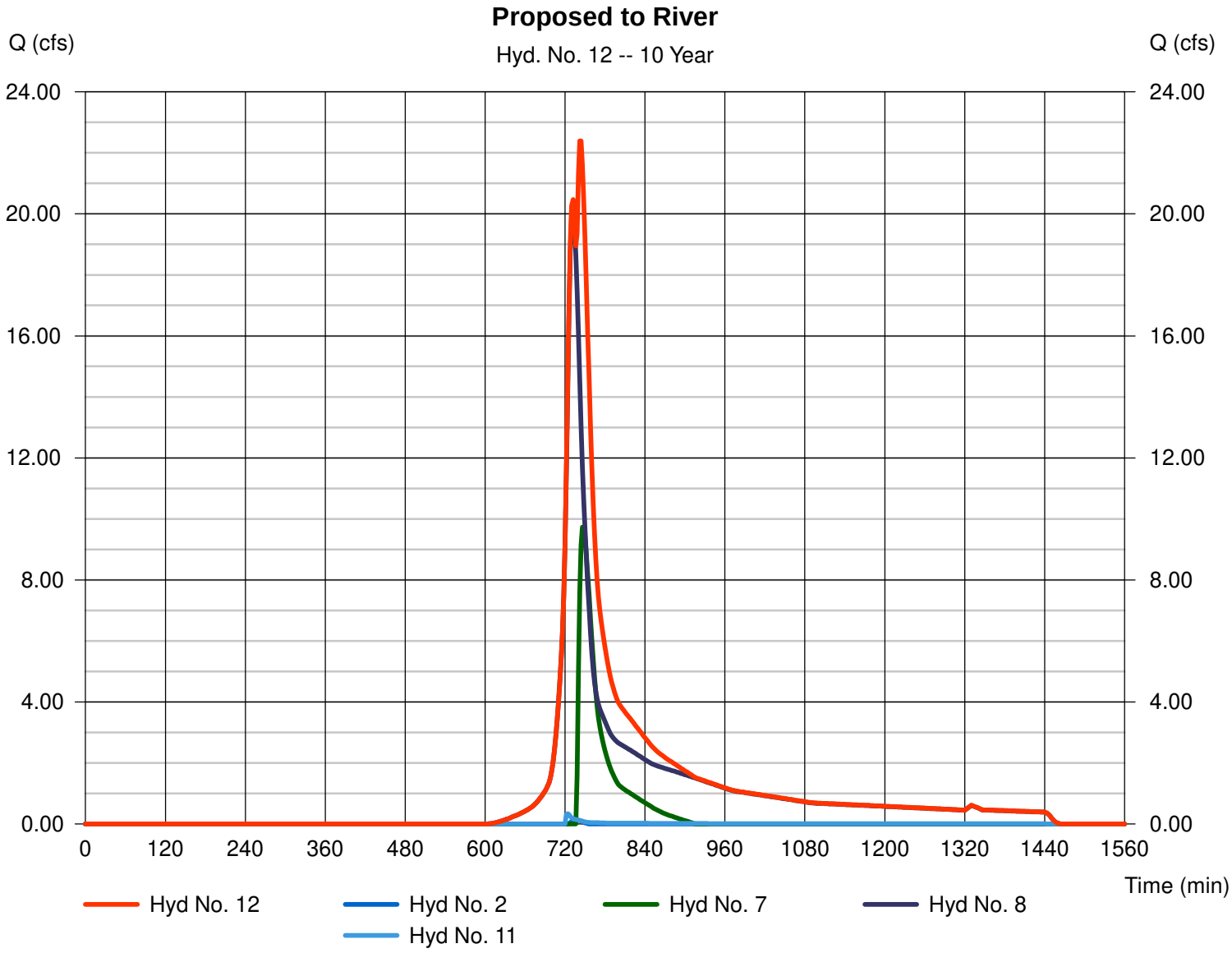


Hydrograph Report

Hyd. No. 12

Proposed to River

Hydrograph type	= Combine	Peak discharge	= 22.39 cfs
Storm frequency	= 10 yrs	Time to peak	= 744 min
Time interval	= 2 min	Hyd. volume	= 106,170 cuft
Inflow hyds.	= 2, 7, 8, 11	Contrib. drain. area	= 13.170 ac



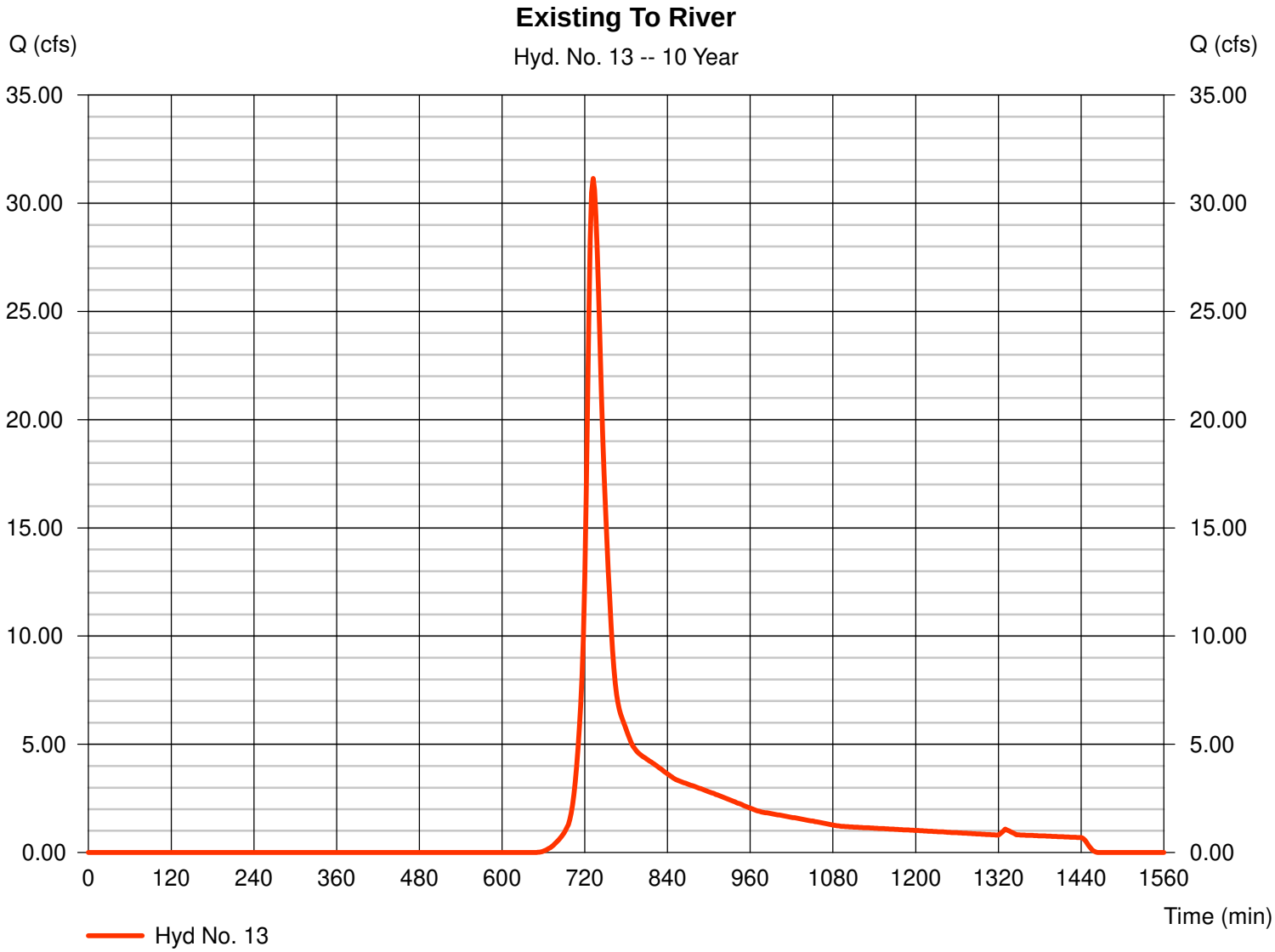
Hydrograph Report

Hyd. No. 13

Existing To River

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.15 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	135,690 cuft
Drainage area	=	26.400 ac	Curve number	=	64*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.90 min
Total precip.	=	4.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.310 x 98) + (3.500 x 30) + (8.910 x 55) + (5.370 x 77) + (0.780 x 39) + (3.530 x 61)] / 26.400



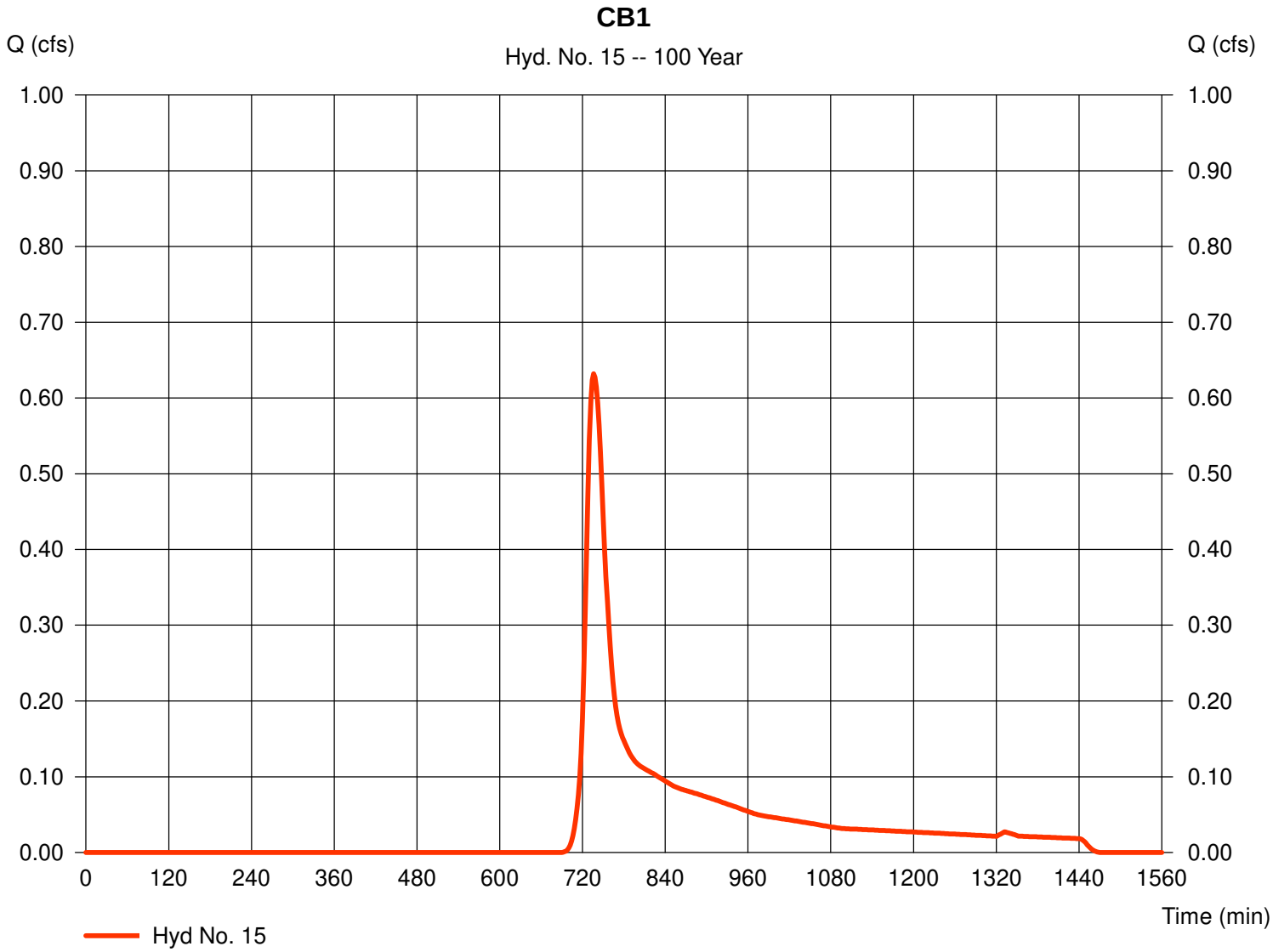
Hydrograph Report

Hyd. No. 15

CB1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.632 cfs
Storm frequency	=	100 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	3,217 cuft
Drainage area	=	0.550 ac	Curve number	=	50*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	17.20 min
Total precip.	=	6.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.080 x 98) + (0.030 x 55) + (0.400 x 39) + (0.040 x 61)] / 0.550



TR55 Tc Worksheet

Hyd. No. 15

CB1

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.240	0.011	
Flow length (ft)	= 62.0	38.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	3.20	0.00	
Land slope (%)	= 4.00	4.00	0.00	
Travel Time (min)	**= 11.10 +**	**4.99 +**	**0.00 =**	**16.09**
Shallow Concentrated Flow				
Flow length (ft)	= 190.00	23.00	35.00	
Watercourse slope (%)	= 7.00	33.00	1.00	
Surface description	= Unpaved	Unpaved	Unpaved	
Average velocity (ft/s)	= 4.27	9.27	1.61	
Travel Time (min)	**= 0.74 +**	**0.04 +**	**0.36 =**	**1.14**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00 +**	**0.00 +**	**0.00 =**	**0.00**

Total Travel Time, Tc ..... 17.20 min

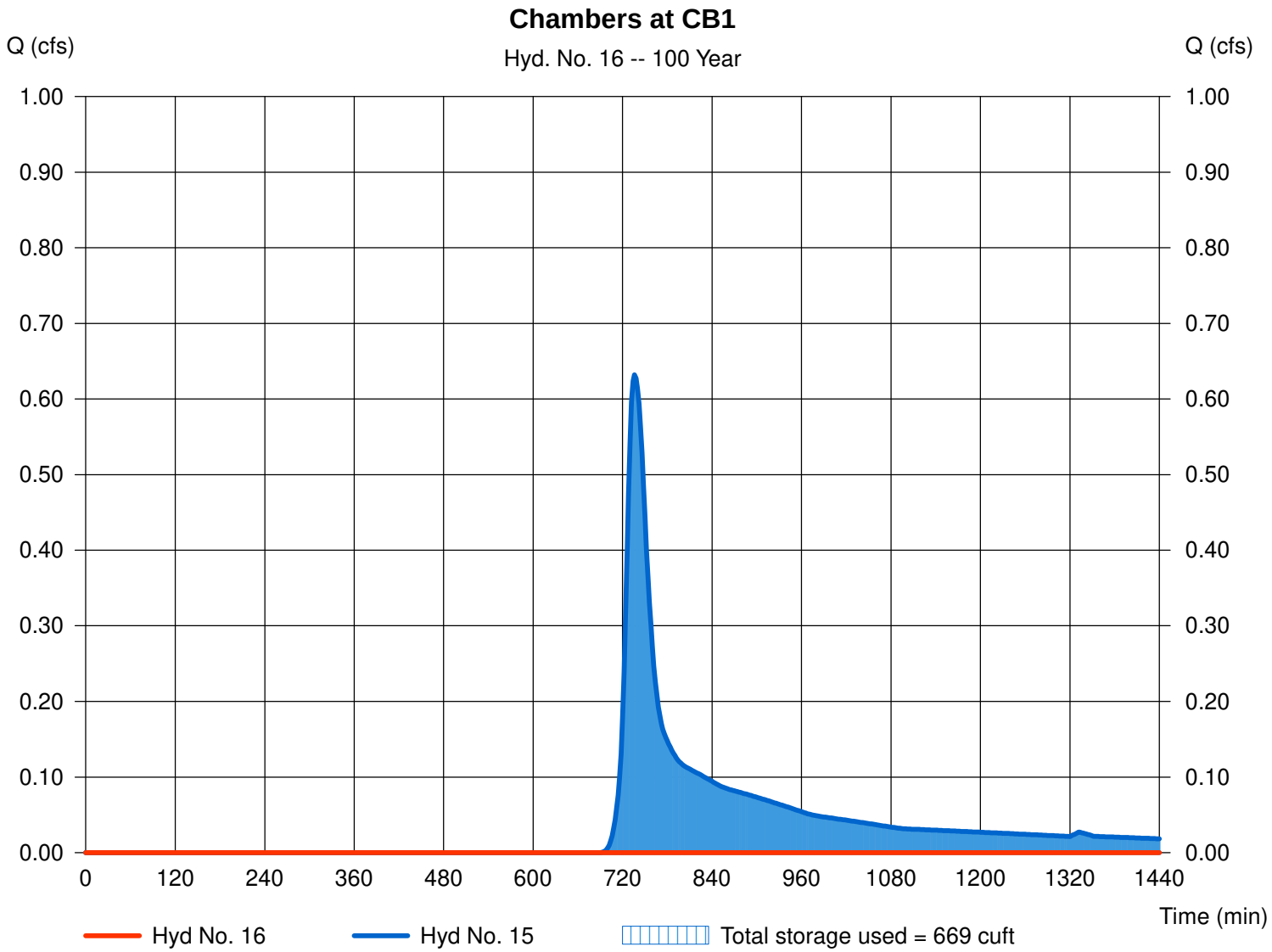
Hydrograph Report

Hyd. No. 16

Chambers at CB1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	15 - CB1	Max. Elevation	=	211.49 ft
Reservoir name	=	CB 1	Max. Storage	=	669 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 6 - CB 1

Pond Data

UG Chambers - Invert elev. = 207.85 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 40.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 207.85 ft, Width = 6.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	207.85	n/a	0	0
0.40	208.25	n/a	74	74
0.80	208.65	n/a	74	147
1.20	209.05	n/a	74	221
1.60	209.45	n/a	74	294
2.00	209.85	n/a	74	368
2.40	210.25	n/a	74	442
2.80	210.65	n/a	74	515
3.20	211.05	n/a	74	589
3.60	211.45	n/a	74	663
4.00	211.85	n/a	74	736

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 20.500 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	207.85	---	---	---	---	---	---	---	---	0.000	---	0.000
0.40	74	208.25	---	---	---	---	---	---	---	---	0.129	---	0.129
0.80	147	208.65	---	---	---	---	---	---	---	---	0.144	---	0.144
1.20	221	209.05	---	---	---	---	---	---	---	---	0.159	---	0.159
1.60	294	209.45	---	---	---	---	---	---	---	---	0.175	---	0.175
2.00	368	209.85	---	---	---	---	---	---	---	---	0.190	---	0.190
2.40	442	210.25	---	---	---	---	---	---	---	---	0.205	---	0.205
2.80	515	210.65	---	---	---	---	---	---	---	---	0.220	---	0.220
3.20	589	211.05	---	---	---	---	---	---	---	---	0.235	---	0.235
3.60	663	211.45	---	---	---	---	---	---	---	---	0.251	---	0.251
4.00	736	211.85	---	---	---	---	---	---	---	---	0.266	---	0.266

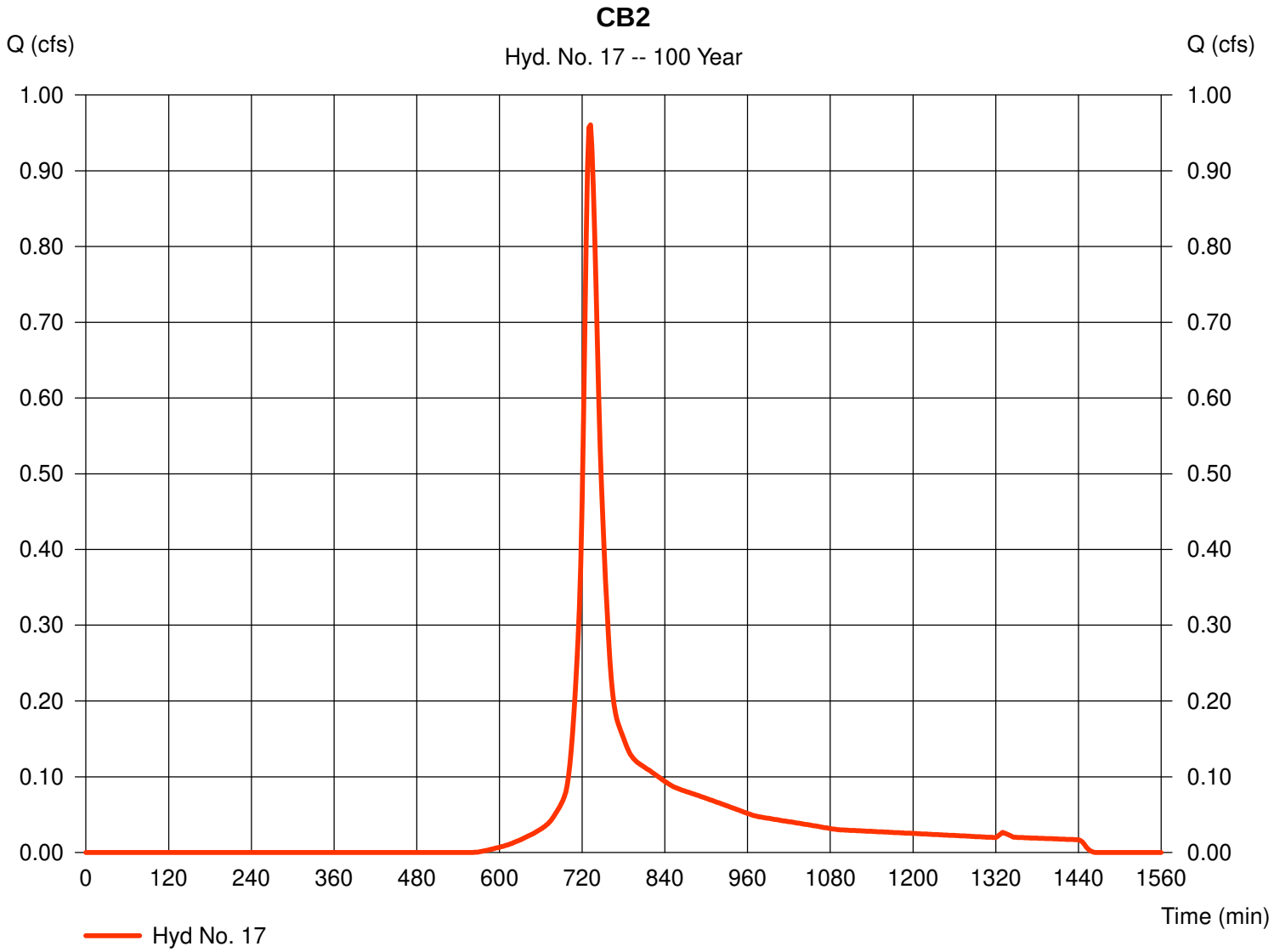
Hydrograph Report

Hyd. No. 17

CB2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.961 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	3,962 cuft
Drainage area	=	0.370 ac	Curve number	=	65*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.40 min
Total precip.	=	6.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.210 x 39)] / 0.370



TR55 Tc Worksheet

Hyd. No. 17

CB2

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.240	0.011	
Flow length (ft)	= 80.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	0.00	0.00	
Land slope (%)	= 1.25	0.00	0.00	
Travel Time (min)	**= 14.41**	**+ 0.00**	**+ 0.00**	**= 14.41**
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 0.00	0.00	0.00	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**

Total Travel Time, Tc ..... 14.40 min

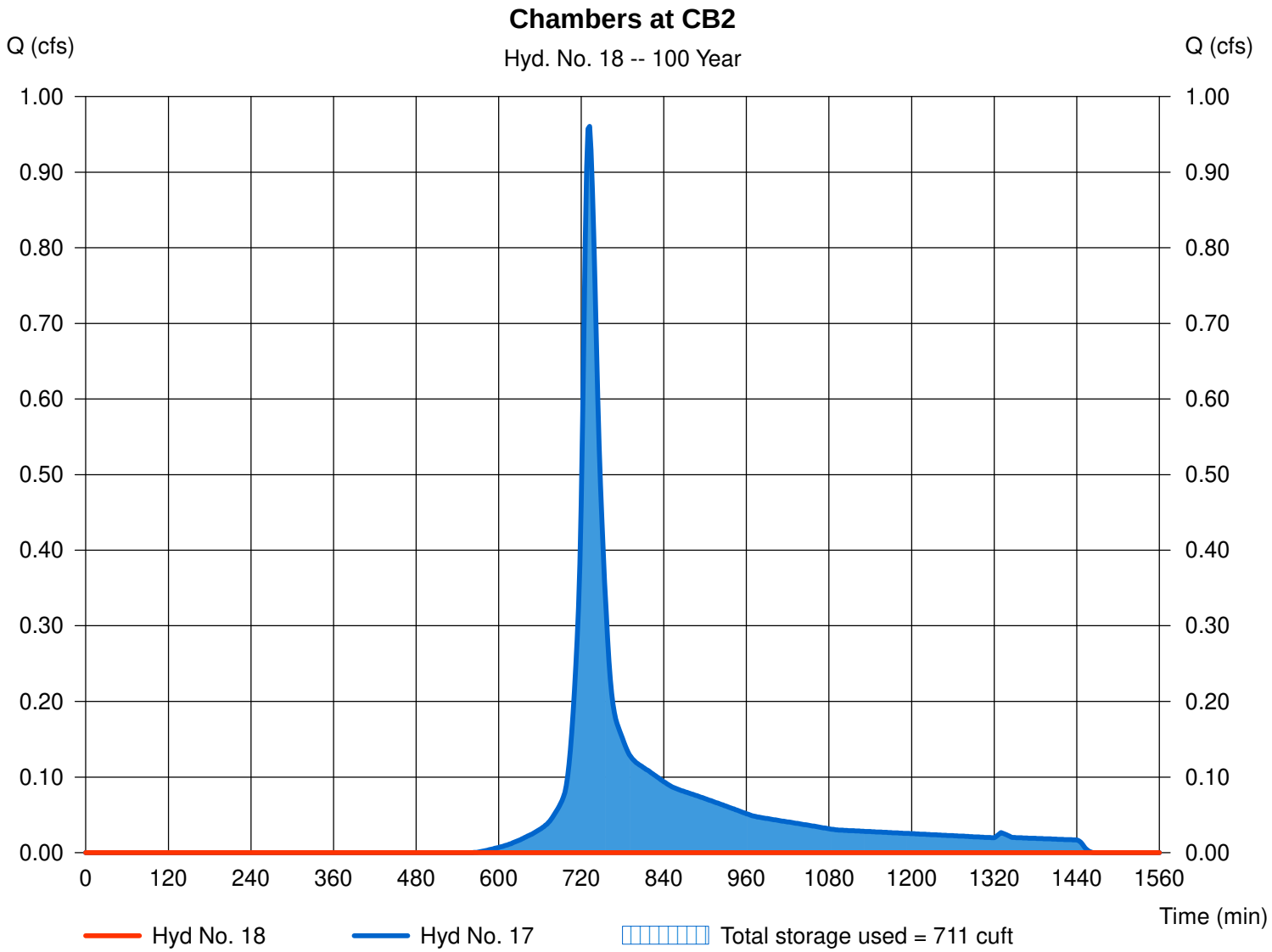
Hydrograph Report

Hyd. No. 18

Chambers at CB2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	824 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	17 - CB2	Max. Elevation	=	209.52 ft
Reservoir name	=	CB 2	Max. Storage	=	711 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 7 - CB 2

Pond Data

UG Chambers - Invert elev. = 206.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 44.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 206.00 ft, Width = 6.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	206.00	n/a	0	0
0.40	206.40	n/a	81	81
0.80	206.80	n/a	81	162
1.20	207.20	n/a	81	243
1.60	207.60	n/a	81	324
2.00	208.00	n/a	81	405
2.40	208.40	n/a	81	486
2.80	208.80	n/a	81	567
3.20	209.20	n/a	81	648
3.60	209.60	n/a	81	729
4.00	210.00	n/a	81	810

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 35.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	206.00	---	---	---	---	---	---	---	---	0.000	---	0.000
0.40	81	206.40	---	---	---	---	---	---	---	---	0.242	---	0.242
0.80	162	206.80	---	---	---	---	---	---	---	---	0.271	---	0.271
1.20	243	207.20	---	---	---	---	---	---	---	---	0.299	---	0.299
1.60	324	207.60	---	---	---	---	---	---	---	---	0.328	---	0.328
2.00	405	208.00	---	---	---	---	---	---	---	---	0.356	---	0.356
2.40	486	208.40	---	---	---	---	---	---	---	---	0.385	---	0.385
2.80	567	208.80	---	---	---	---	---	---	---	---	0.414	---	0.414
3.20	648	209.20	---	---	---	---	---	---	---	---	0.442	---	0.442
3.60	729	209.60	---	---	---	---	---	---	---	---	0.471	---	0.471
4.00	810	210.00	---	---	---	---	---	---	---	---	0.499	---	0.499

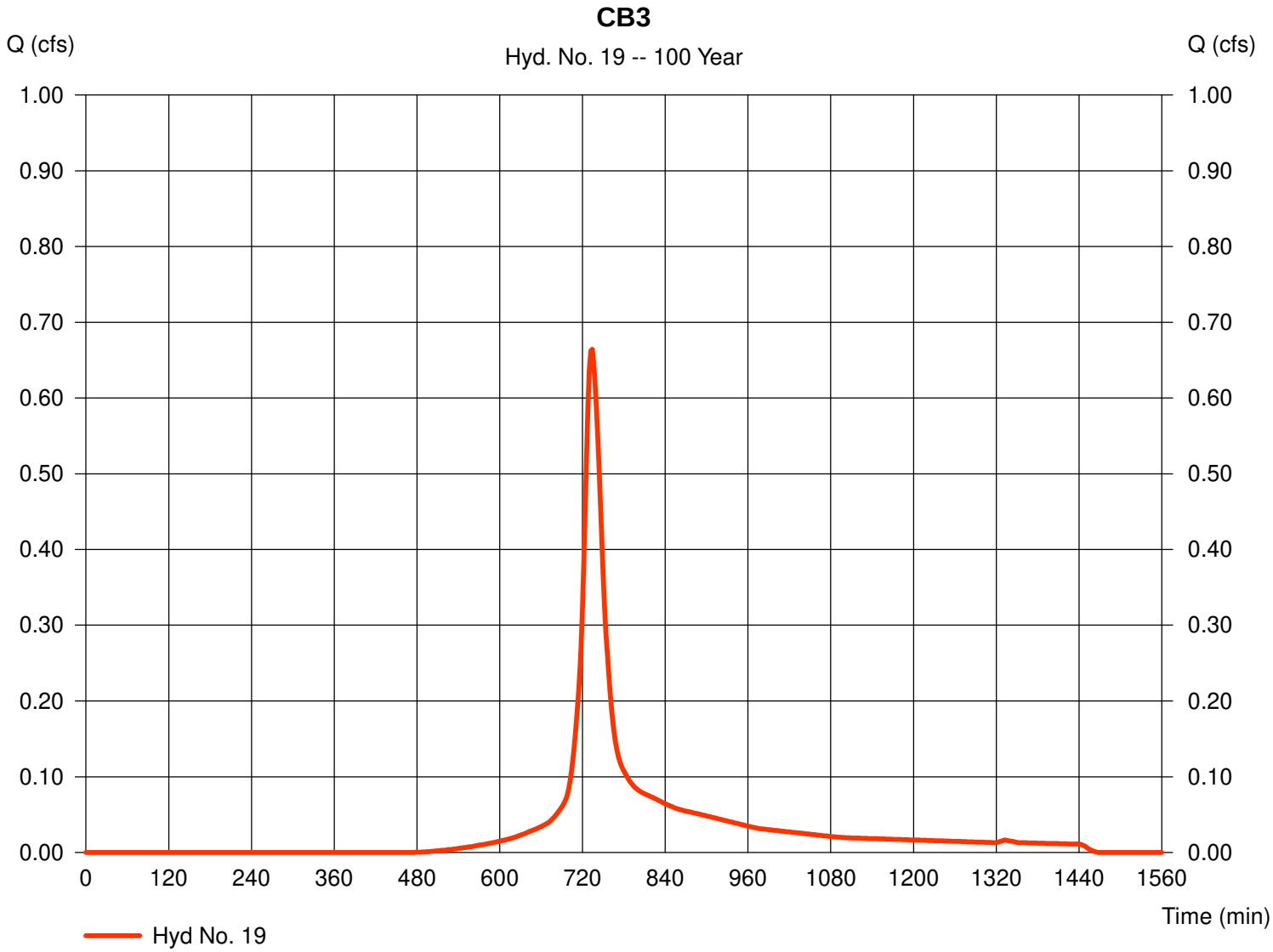
Hydrograph Report

Hyd. No. 19

CB3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.664 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	2,934 cuft
Drainage area	=	0.210 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	6.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 98) + (0.090 x 39)] / 0.210



TR55 Tc Worksheet

Hyd. No. 19

CB3

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.240		0.011		
Flow length (ft)	=	35.0		65.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		3.20		0.00		
Land slope (%)	=	5.00		1.00		0.00		
Travel Time (min)	**=**	**4.27**	**+**	**13.34**	**+**	**0.00**	**=**	**17.61**
Shallow Concentrated Flow								
Flow length (ft)	=	85.00		0.00		0.00		
Watercourse slope (%)	=	1.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.61		0.00		0.00		
Travel Time (min)	**=**	**0.88**	**+**	**0.00**	**+**	**0.00**	**=**	**0.88**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 18.50 min

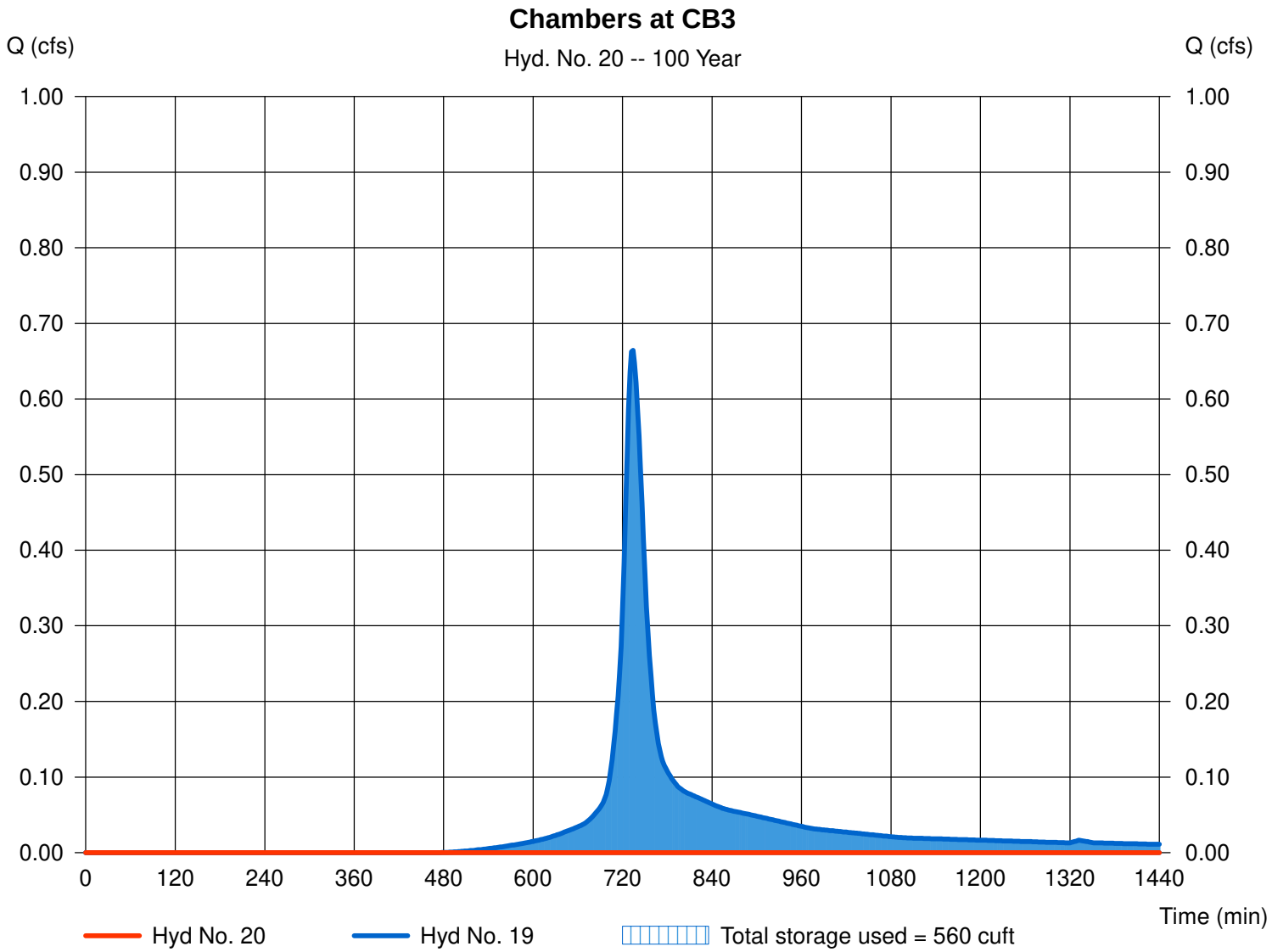
Hydrograph Report

Hyd. No. 20

Chambers at CB3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	652 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	19 - CB3	Max. Elevation	=	204.58 ft
Reservoir name	=	CB 3	Max. Storage	=	560 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 8 - CB 3

Pond Data

UG Chambers - Invert elev. = 201.20 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 36.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 201.20 ft, Width = 6.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	201.20	n/a	0	0
0.40	201.60	n/a	66	66
0.80	202.00	n/a	66	133
1.20	202.40	n/a	66	199
1.60	202.80	n/a	66	265
2.00	203.20	n/a	66	331
2.40	203.60	n/a	66	398
2.80	204.00	n/a	66	464
3.20	204.40	n/a	66	530
3.60	204.80	n/a	66	596
4.00	205.20	n/a	66	663

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 30.500 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	201.20	---	---	---	---	---	---	---	---	0.000	---	0.000
0.40	66	201.60	---	---	---	---	---	---	---	---	0.173	---	0.173
0.80	133	202.00	---	---	---	---	---	---	---	---	0.193	---	0.193
1.20	199	202.40	---	---	---	---	---	---	---	---	0.213	---	0.213
1.60	265	202.80	---	---	---	---	---	---	---	---	0.234	---	0.234
2.00	331	203.20	---	---	---	---	---	---	---	---	0.254	---	0.254
2.40	398	203.60	---	---	---	---	---	---	---	---	0.274	---	0.274
2.80	464	204.00	---	---	---	---	---	---	---	---	0.295	---	0.295
3.20	530	204.40	---	---	---	---	---	---	---	---	0.315	---	0.315
3.60	596	204.80	---	---	---	---	---	---	---	---	0.335	---	0.335
4.00	663	205.20	---	---	---	---	---	---	---	---	0.356	---	0.356

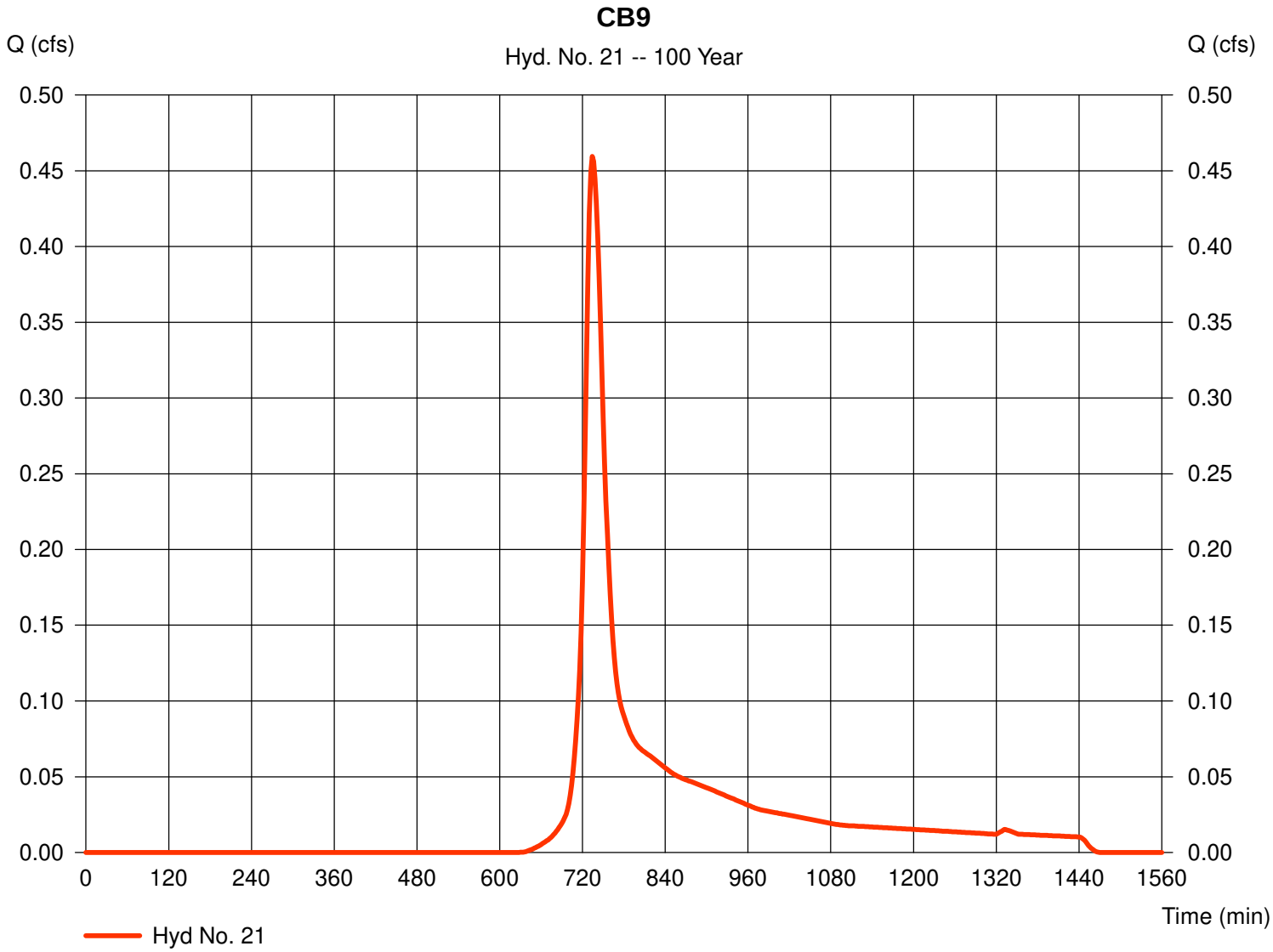
Hydrograph Report

Hyd. No. 21

CB9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.459 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	2,125 cuft
Drainage area	=	0.250 ac	Curve number	=	58*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	19.70 min
Total precip.	=	6.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.080 x 98) + (0.170 x 39)] / 0.250



TR55 Tc Worksheet

Hyd. No. 21

CB9

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	1.00		0.00		0.00		
Travel Time (min)	**=**	**18.83**	**+**	**0.00**	**+**	**0.00**	**=**	**18.83**
Shallow Concentrated Flow								
Flow length (ft)	=	83.00		0.00		0.00		
Watercourse slope (%)	=	1.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.61		0.00		0.00		
Travel Time (min)	**=**	**0.86**	**+**	**0.00**	**+**	**0.00**	**=**	**0.86**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 19.70 min

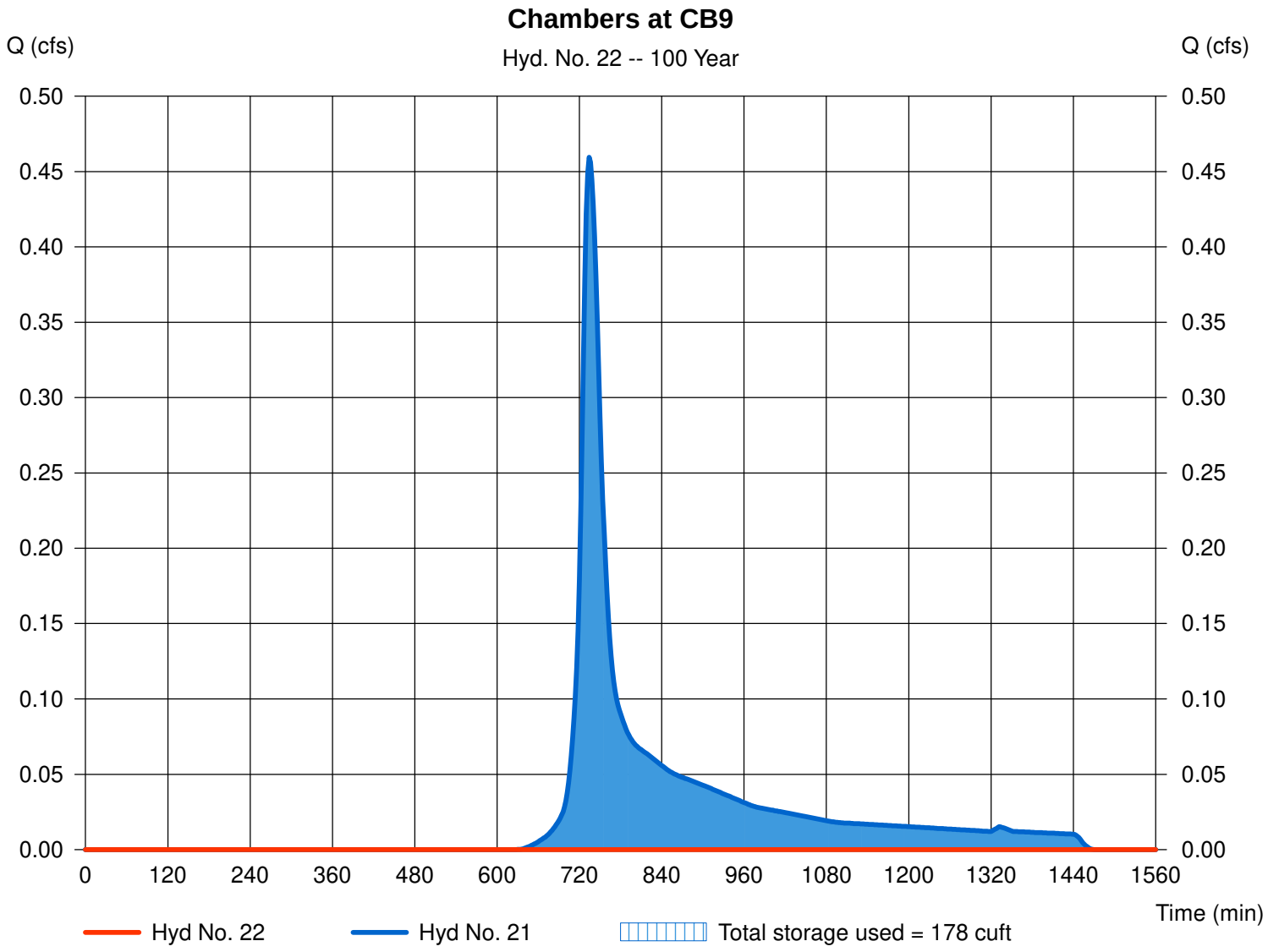
Hydrograph Report

Hyd. No. 22

Chambers at CB9

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	712 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	21 - CB9	Max. Elevation	=	208.43 ft
Reservoir name	=	CB 9	Max. Storage	=	178 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 9 - CB 9

Pond Data

UG Chambers - Invert elev. = 206.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 16.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 206.00 ft, Width = 6.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	206.00	n/a	0	0
0.40	206.40	n/a	29	29
0.80	206.80	n/a	29	59
1.20	207.20	n/a	29	88
1.60	207.60	n/a	29	118
2.00	208.00	n/a	29	147
2.40	208.40	n/a	29	177
2.80	208.80	n/a	29	206
3.20	209.20	n/a	29	236
3.60	209.60	n/a	29	265
4.00	210.00	n/a	29	294

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 85.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	206.00	---	---	---	---	---	---	---	---	0.000	---	0.000
0.40	29	206.40	---	---	---	---	---	---	---	---	0.214	---	0.214
0.80	59	206.80	---	---	---	---	---	---	---	---	0.239	---	0.239
1.20	88	207.20	---	---	---	---	---	---	---	---	0.264	---	0.264
1.60	118	207.60	---	---	---	---	---	---	---	---	0.290	---	0.290
2.00	147	208.00	---	---	---	---	---	---	---	---	0.315	---	0.315
2.40	177	208.40	---	---	---	---	---	---	---	---	0.340	---	0.340
2.80	206	208.80	---	---	---	---	---	---	---	---	0.365	---	0.365
3.20	236	209.20	---	---	---	---	---	---	---	---	0.390	---	0.390
3.60	265	209.60	---	---	---	---	---	---	---	---	0.416	---	0.416
4.00	294	210.00	---	---	---	---	---	---	---	---	0.441	---	0.441

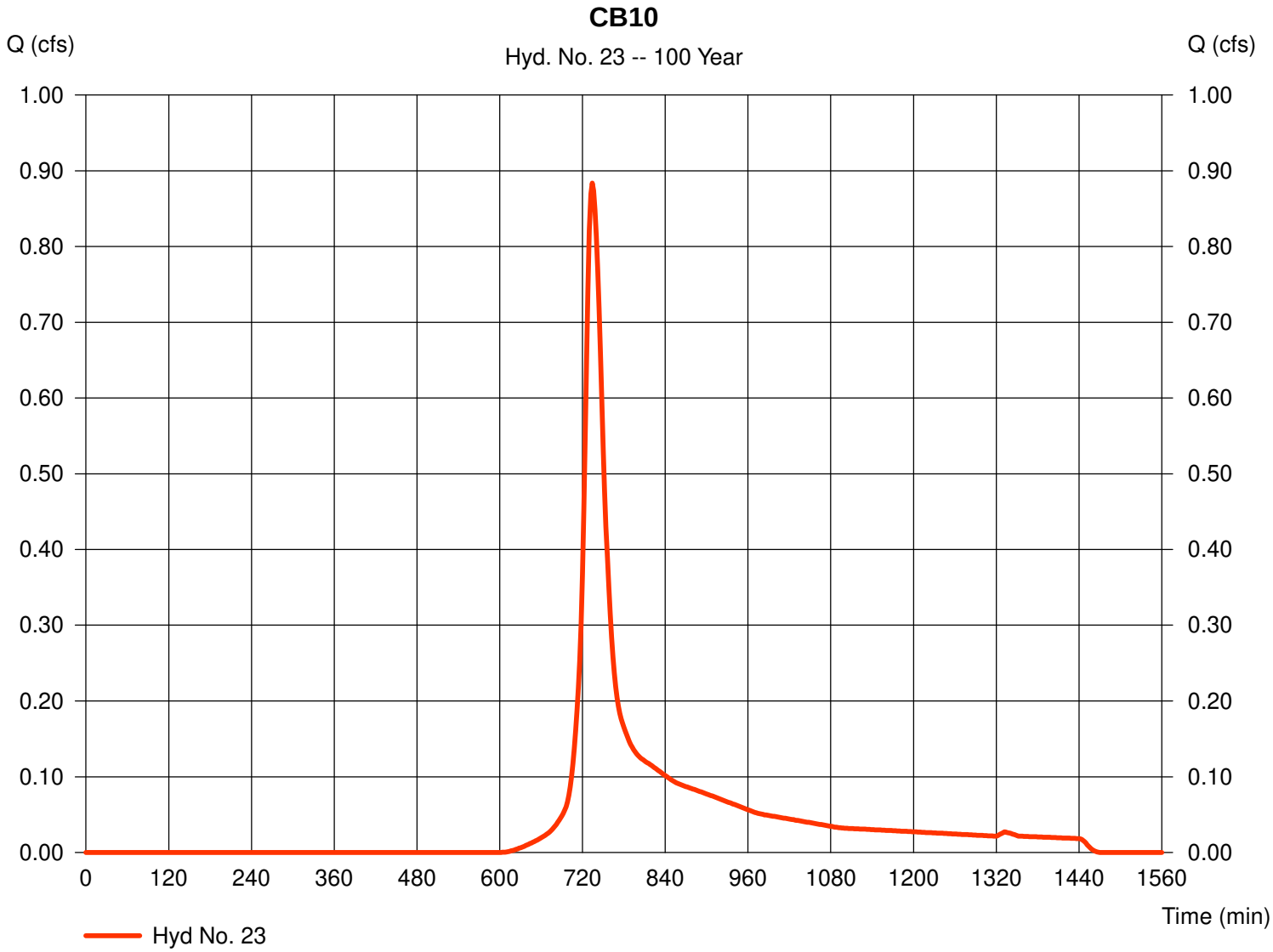
Hydrograph Report

Hyd. No. 23

CB10

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.884 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	4,010 cuft
Drainage area	=	0.420 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	19.60 min
Total precip.	=	6.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.260 x 39)] / 0.420



TR55 Tc Worksheet

Hyd. No. 23

CB10

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.20	0.00	0.00	
Land slope (%)	= 1.00	0.00	0.00	
Travel Time (min)	**= 18.83**	**+ 0.00**	**+ 0.00**	**= 18.83**
Shallow Concentrated Flow				
Flow length (ft)	= 91.00	0.00	0.00	
Watercourse slope (%)	= 1.70	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 2.10	0.00	0.00	
Travel Time (min)	**= 0.72**	**+ 0.00**	**+ 0.00**	**= 0.72**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**

Total Travel Time, Tc ..... 19.60 min

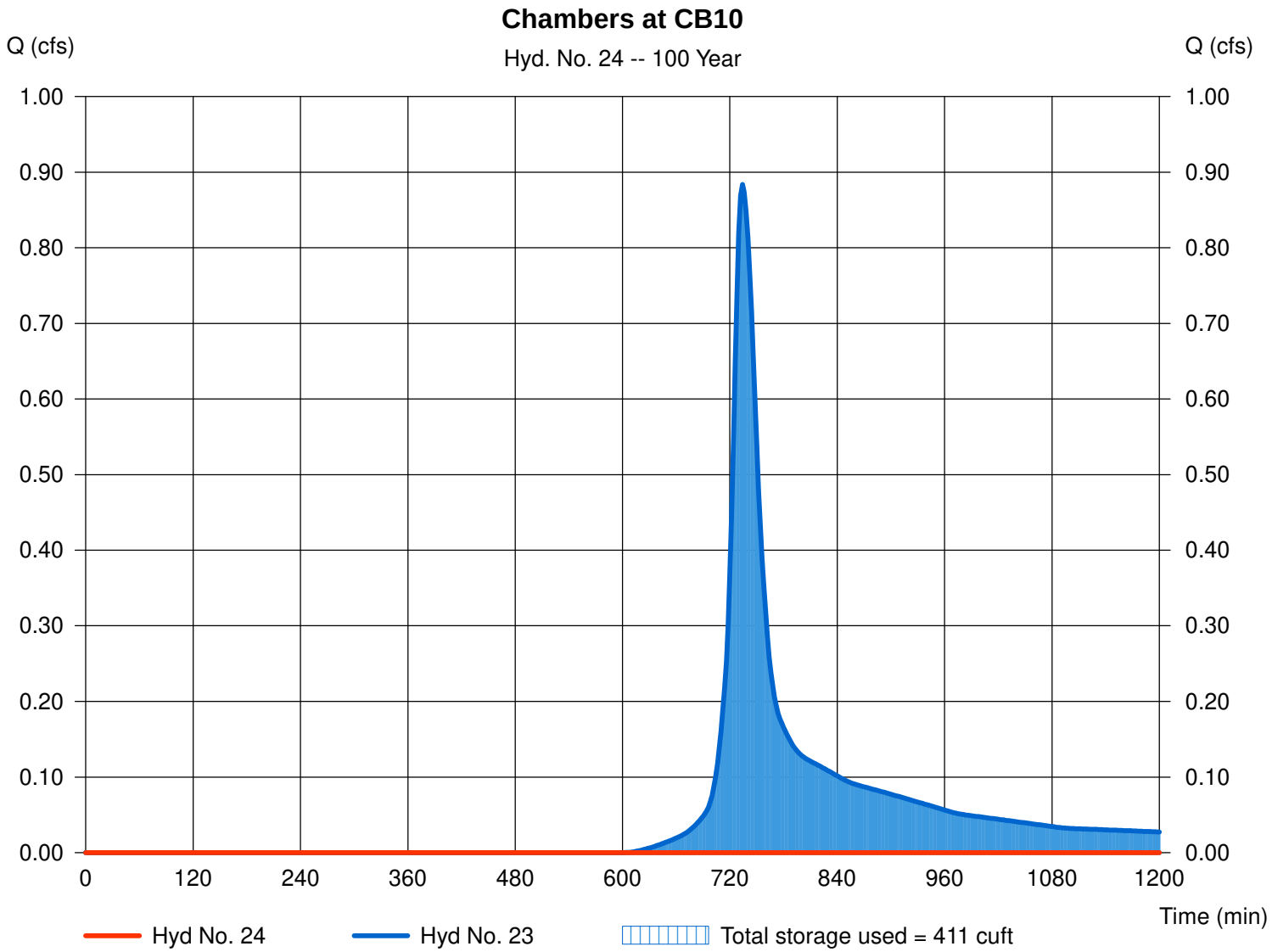
Hydrograph Report

Hyd. No. 24

Chambers at CB10

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	810 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	23 - CB10	Max. Elevation	=	208.73 ft
Reservoir name	=	CB 10	Max. Storage	=	411 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 10 - CB 10

Pond Data

UG Chambers - Invert elev. = 205.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 24.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 205.00 ft, Width = 6.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	205.00	n/a	0	0
0.40	205.40	n/a	44	44
0.80	205.80	n/a	44	88
1.20	206.20	n/a	44	133
1.60	206.60	n/a	44	177
2.00	207.00	n/a	44	221
2.40	207.40	n/a	44	265
2.80	207.80	n/a	44	309
3.20	208.20	n/a	44	353
3.60	208.60	n/a	44	398
4.00	209.00	n/a	44	442

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 85.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	205.00	---	---	---	---	---	---	---	---	0.000	---	0.000
0.40	44	205.40	---	---	---	---	---	---	---	---	0.321	---	0.321
0.80	88	205.80	---	---	---	---	---	---	---	---	0.359	---	0.359
1.20	133	206.20	---	---	---	---	---	---	---	---	0.397	---	0.397
1.60	177	206.60	---	---	---	---	---	---	---	---	0.434	---	0.434
2.00	221	207.00	---	---	---	---	---	---	---	---	0.472	---	0.472
2.40	265	207.40	---	---	---	---	---	---	---	---	0.510	---	0.510
2.80	309	207.80	---	---	---	---	---	---	---	---	0.548	---	0.548
3.20	353	208.20	---	---	---	---	---	---	---	---	0.586	---	0.586
3.60	398	208.60	---	---	---	---	---	---	---	---	0.623	---	0.623
4.00	442	209.00	---	---	---	---	---	---	---	---	0.661	---	0.661

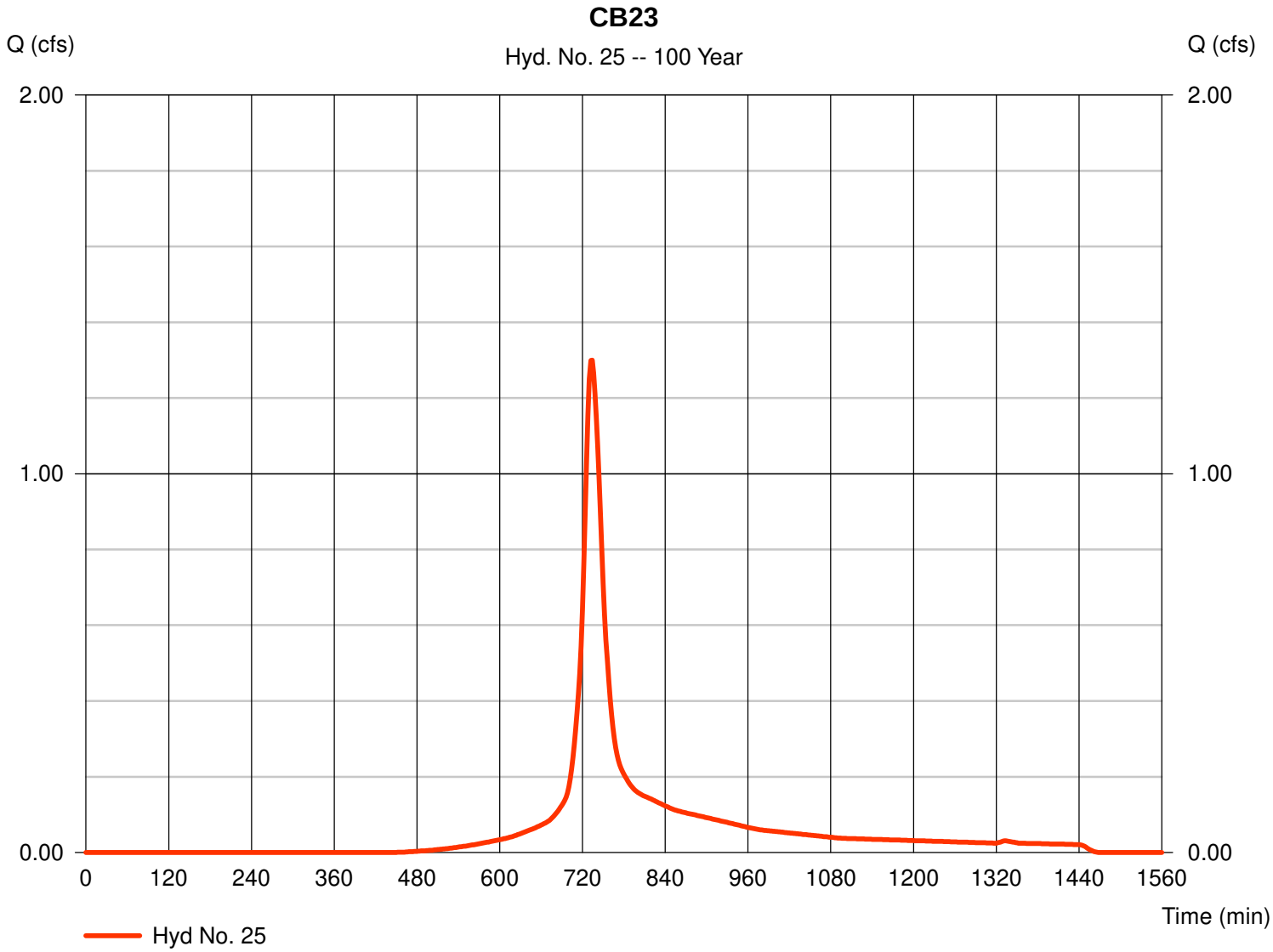
Hydrograph Report

Hyd. No. 25

CB23

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.300 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	5,750 cuft
Drainage area	=	0.390 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	17.40 min
Total precip.	=	6.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.200 x 98) + (0.110 x 61) + (0.080 x 39)] / 0.390



TR55 Tc Worksheet

Hyd. No. 25

CB23

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	1.40		0.00		0.00		
Travel Time (min)	**=**	**16.46**	**+**	**0.00**	**+**	**0.00**	**=**	**16.46**
Shallow Concentrated Flow								
Flow length (ft)	=	112.00		0.00		0.00		
Watercourse slope (%)	=	1.40		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.91		0.00		0.00		
Travel Time (min)	**=**	**0.98**	**+**	**0.00**	**+**	**0.00**	**=**	**0.98**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 17.40 min

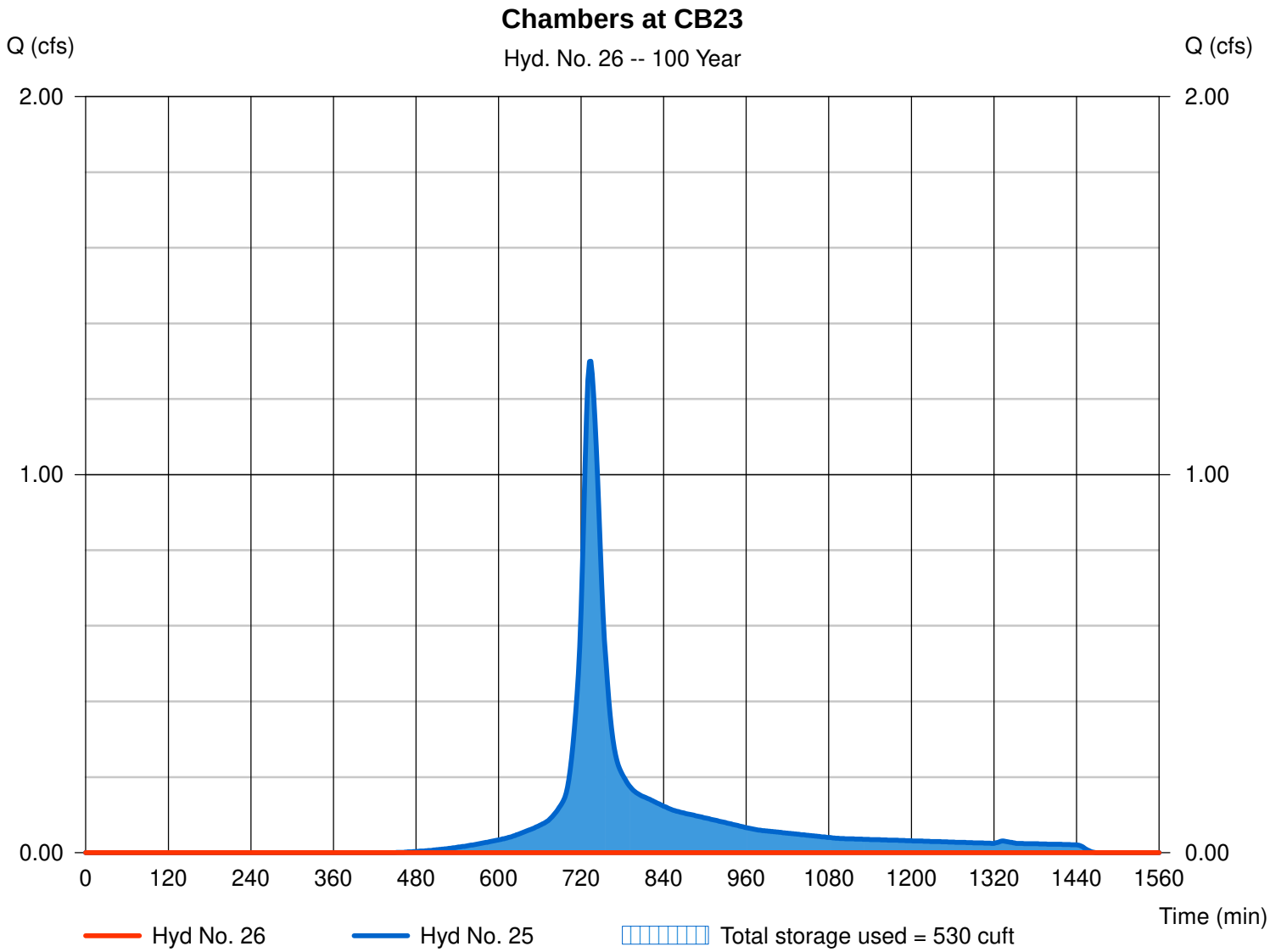
Hydrograph Report

Hyd. No. 26

Chambers at CB23

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	786 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	25 - CB23	Max. Elevation	=	211.60 ft
Reservoir name	=	CB 23	Max. Storage	=	530 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 11 - CB 23

Pond Data

UG Chambers - Invert elev. = 208.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 16.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 208.00 ft, Width = 6.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	208.00	n/a	0	0
0.40	208.40	n/a	59	59
0.80	208.80	n/a	59	118
1.20	209.20	n/a	59	177
1.60	209.60	n/a	59	236
2.00	210.00	n/a	59	294
2.40	210.40	n/a	59	353
2.80	210.80	n/a	59	412
3.20	211.20	n/a	59	471
3.60	211.60	n/a	59	530
4.00	212.00	n/a	59	589

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 100.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	208.00	---	---	---	---	---	---	---	---	0.000	---	0.000
0.40	59	208.40	---	---	---	---	---	---	---	---	0.504	---	0.504
0.80	118	208.80	---	---	---	---	---	---	---	---	0.563	---	0.563
1.20	177	209.20	---	---	---	---	---	---	---	---	0.622	---	0.622
1.60	236	209.60	---	---	---	---	---	---	---	---	0.681	---	0.681
2.00	294	210.00	---	---	---	---	---	---	---	---	0.741	---	0.741
2.40	353	210.40	---	---	---	---	---	---	---	---	0.800	---	0.800
2.80	412	210.80	---	---	---	---	---	---	---	---	0.859	---	0.859
3.20	471	211.20	---	---	---	---	---	---	---	---	0.919	---	0.919
3.60	530	211.60	---	---	---	---	---	---	---	---	0.978	---	0.978
4.00	589	212.00	---	---	---	---	---	---	---	---	1.037	---	1.037

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	26.1693	6.2000	0.7786	--------
2	30.1225	6.6000	0.7676	--------
3	0.0000	0.0000	0.0000	--------
5	52.3308	9.8000	0.8367	--------
10	54.7383	10.8000	0.8016	--------
25	101.9813	15.8000	0.8971	--------
50	98.1551	15.7000	0.8577	--------
100	106.5909	17.0000	0.8462	--------

File name: CT-DOT.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	3.99	2.99	2.43	2.06	1.80	1.60	1.45	1.32	1.22	1.14	1.06	1.00
2	4.59	3.49	2.85	2.43	2.13	1.90	1.72	1.58	1.46	1.36	1.27	1.20
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.49	4.30	3.57	3.06	2.69	2.40	2.17	1.99	1.84	1.71	1.60	1.50
10	5.99	4.81	4.04	3.51	3.11	2.80	2.55	2.35	2.18	2.03	1.91	1.80
25	6.70	5.52	4.71	4.12	3.66	3.30	3.01	2.76	2.56	2.38	2.23	2.10
50	7.30	6.06	5.20	4.57	4.09	3.70	3.38	3.12	2.90	2.71	2.54	2.40
100	7.79	6.55	5.68	5.02	4.51	4.10	3.76	3.48	3.24	3.04	2.86	2.70

Tc = time in minutes. Values may exceed 60.

Precip. file name: TollandCounty.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.60	3.20	0.00	4.10	4.80	5.50	6.20	6.90
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00