



Prepared for:

Talen Energy
835 Hamilton St., Suite 150
Allentown, PA 18101

RUN-ON AND RUN-OFF CONTROL SYSTEM PLAN

Per Requirements of 40 CFR §257.81

**Brunner Island SES Ash Landfill 8
East Manchester Township, Pennsylvania**

Prepared by:

Geosyntec 
consultants

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Project Number ME1207A

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1. INTRODUCTION

1.1 Organization and Terms of Reference

Geosyntec Consultants (Geosyntec) has prepared this Run-on and Run-off Control System Plan for Talen Generation, LLC (Talen) to demonstrate compliance of the existing Brunner Island SES Ash Landfill 8 (Ash Landfill 8) in East Manchester Township, Pennsylvania with the operating criteria of the Federal Coal Combustion Residuals (CCR) Rule. On 17 April 2015, the USEPA published the final rule for disposal of CCR from electric power utilities under Subtitle D of the Resource Conservation and Recovery Act (RCRA), contained in Section 257 of Title 40 of the Code of Federal Regulations (40 CFR 257 Subpart D), referred to here as the CCR Rule. Section 257.81 contains the requirements for run-on and run-off controls of CCR landfills. In this Run-on and Run-off Control Systems Plan, the specific requirements of §257.81 are identified and addressed.

This Run-on and Run-off Control System Plan was prepared by Mr. Mike Nolden, E.I.T., and it was reviewed in accordance with Geosyntec's internal review policy by Mr. Michael Houlihan, P.E. and Mr. Thomas Ramsey, P.E., all of Geosyntec. Mr. Ramsey is a registered Professional Engineer in the Commonwealth of Pennsylvania.

1.2 Site Location

Ash Landfill 8 is located on Brunner Island, south of the Brunner Island Steam Electric Station (SES) located in East Manchester Township, York County, Pennsylvania. The site is shown on a United States Geological Survey 7.5-minute topographic map for the York Haven Quadrangle (Figure 1). Ash Landfill 8 is constructed on top of the closed CCR surface impoundment Ash Basin 5. Ash Landfill 8 and Ash Basin 5 are located adjacent to the Susquehanna River and south of the central portion of the power station.

1.3 Landfill Description and Permit Status

Ash Landfill 8, also called Disposal Area 8, is a CCR landfill constructed in 2008 to accept coal combustion residuals and other wastes produced by the Brunner Island SES, as described by Form R of the Pennsylvania Department of Environmental Protection (PADEP) Class II Residual Waste Disposal Facility permit (PADEP Permit) application package (PPL 2008b). Ash Basin 5 was closed in 1987 (ERM 2007) and was neither impounding water nor receiving CCR on the effective date of the CCR Rule (i.e., 19 October 2015) and therefore is not regulated under the CCR Rule.

Ash Landfill 8 is regulated under the Pennsylvania Residual Waste Regulations of Title 25 PA Code, Chapters 287 and 288. The unit is permitted as a PADEP Class II Residual Waste Disposal Facility. Ash Landfill 8 was constructed and is operated under Permit No. 301354 for a Landfill—Class I, II, or III (PADEP 2008), which was issued in August 2008.

A stormwater management plan (Appendix A) was submitted to and approved by PADEP as part of the waste disposal permit application process. It is presented as Attachment 1.7 of Volume 1 of the Design Package prepared by Civil and Environmental Consultants, Inc. and modified by PPL (PPL 2008a), which is appended to the PADEP Permit application.

2. CCR RULE REQUIREMENTS FOR RUN-ON/ RUN-OFF CONTROLS (§257.81)

2.1 Run-On and Run-Off Control Requirements for CCR Landfills (§257.81)

As described in §257.81, an existing CCR landfill must design, construct, operate, and maintain run-on/run-off controls to prevent flow onto and from active cells from a 24-hr, 25-yr storm event. The rule requires that the CCR landfill be designed, constructed, operated, and maintained to collect and control at least the water volume resulting from a 24-hour, 25-year storm (§257.81(a)). Additionally, the CCR landfill must comply with 40 CFR §257.3-3 which regulates discharge of pollutants into the waters of the United States (§257.81(b)). Section 257.81(c) of the rule requires that the owner or operator of a CCR landfill prepare an initial run-on and run-off control system plan documenting, with supporting engineering calculations, how the control systems have been designed and constructed to meet the requirements of §257.81(a). Pages 21389-21390 of the Preamble to the CCR rule describes the type of documentation that is expected to be included in the Run-On and Run-Off Control System Plan.

2.2 Compliance with Run-On and Run-Off Controls Requirements

Part 3 of this document presents the demonstration of compliance with the requirements of §257.81. Section 257.81(a) addresses the performance requirement of the run-on and run-off control system, which is addressed by the identification of the design storm in Section 3.3. The requirement of §257.81(b), which addresses the handling requirements of run-off collected from the landfill, is satisfied by and monitored under the facility's National Pollutant Discharge Elimination System (NPDES) permit program.

The specific documentation that is expected to be provided in the Run-on and Run-Off Control System Plan is described in the Preamble at pages 21389-21390. The table below summarizes the minimum CCR Rule requirements for a run-on and run-off control system plan from §257.81(c) and the Preamble, and the location in this document where those requirements are addressed.

| RULE SECTION | RULE REQUIREMENT | LOCATION WHERE ADDRESSED IN DOCUMENT |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| §257.81(c)(1) | Owner or operator must prepare initial and periodic run-on and run-off control system plans for the unit | Part 3 |
| | Document how the run-on and run-off controls have been designed and constructed. | Section 3.2 |
| Preamble Pages 21389-21390 | Identification of 24-hr, 25-yr Storm | Section 3.3 |
| | Characterization of Rainfall Abstractions | Section 3.4 |
| | Selection and Basis of Run-Off Model | Section 3.5 |
| | Selection and Basis of Run-On and Run-Off Routing Model | Section 3.6 |
| | Selection and design Run-On and Run-Off Management System | Section 3.7 |
| | Supporting Engineering Calculations. | Section 3.8 |
| §257.81(c)(5) | Written Certification from qualified professional engineer that initial Run-On and Run-Off Control System Plan meets the requirements of §257.81(c). | Section 4 |

3. RUN-ON AND RUN-OFF CONTROL SYSTEM PLAN

3.1 Introduction

A stormwater management plan was prepared for Ash Landfill 8 in 2008 (PPL 2008a, Attachment 1.7) as part of the Residual Waste Landfill permit application for the unit. The information presented in the following sections demonstrates the compliance of the plan with the requirements of the CCR Rule §257.81(c)(1) and preamble.

The CCR Rule (preamble Page. 21389) defines *run-on* to mean any liquid that drains overland onto any part of a CCR landfill. Conversely, the CCR Rule defines *run-off* to mean any liquid that drains overland from any part of the CCR landfill.

3.2 Description of Run-On and Run-Off Controls Design and Construction

The design for the Run-On and Run-Off Control System for Ash Landfill 8 is provided in the application for Residual Waste Landfill permit in Attachment 1.7 of PPL (2008a). A description of the design of these controls is provided under *Design Methods* of Attachment 1.7 of PPL(2008a). The design and construction of these controls are described below.

Design of Run-On and Run-Off Controls

The run-on control system is generally designed to control run-on and run-off with passive structures (Attachment L1 of PPL 2008b).

Ash Landfill 8 was designed with a perimeter berm to prevent stormwater moving across the ground surface (i.e. the top of closed Ash Basin 5) from entering the active area of Ash Landfill 8 (Benjamin Wilburn, personal communication, 1 December 2015). Thus there is no run-on to the landfill.

Stormwater falling on the closed portions of the landfill will be directed to the surface of Ash Basin 5 by a series of benches and channels (Attachment 1.7 of PPL 2008a). This run-off flows downslope to bench channels, where it is directed to one of several downcomers, is collected by the stormwater channel at the perimeter of Ash Landfill 8 (Sheets 7 and 16 of the Permit Drawings, Appendix B). Stormwater is directed via open channels across the closed Ash Basin 5 surface to an outfall discharging to the Susquehanna River under a National Pollutant Discharge Elimination System (NPDES) permit (Attachment L1 of PPL 2008b; Attachment 1.7 of PPL 2008a).

Ash Landfill 8 is designed such that stormwater falling on the liner (i.e., run-off from the active portion of the landfill) is collected in the landfill's leachate collection system for treatment and discharge (Attachment 1.7 of PPL 2008a). A series of tarps and diversion berms, covering the inactive work areas of the active cell of the landfill, directs stormwater to bench drains, where it is eventually discharged as described above for the closed portions of the landfill (see Cell 1 Clean Runoff Diversion Berm Plan and Section, Appendix C).

Construction of Run-On and Run-Off Controls

The Construction Summary Report prepared by Advanced GeoServices (Advanced 2009) verifies that the perimeter berm was built to designed base grades shown on Drawing E325747 Sheet 5.

No additional as-built or construction documentation was located to verify that the run-on and run-off controls were constructed per the design.

Specific requirements for the Run-On and Run-Off Control Systems Plan, as outlined by the Rule Preamble (Pages 21389 and 21390), are addressed below.

3.3 Identification of the Design Storm

The identification of the design storm is described in the *Design Methods* of Attachment 1.7 of PPL (2008a). Attachment 1.7 of PPL (2008a) shows that the stormwater control features of Ash Landfill 8 were designed for the 24-hour, 25-year storm. The precipitation intensity associated with the event was determined for York County, Pennsylvania from tables published by PADEP (Attachment 1.7 of PPL (2008a)) as 5.5 inches.

3.4 Characterization of Rainfall Abstractions

Characterization of rainfall abstraction is included in the *Calculations* section of Attachment 1.7 of PPL (2008a). Attachment 1.7 shows abstractions are characterized by a runoff curve number (CN) and that the runoff curve was selected for ground conditions of 75% grass cover.

3.5 Selection and Basis of Run-Off Model

The run-off model used for the design of the control system is described in the *Design Methods* of Attachment 1.7 of PPL (2008a). Attachment 1.7 states that the run-off volumes and flow rates were calculated using a computer program implementing the methodology of the Soil Conservation Service Technical Release No. 20 (TR-20). Attachment 1.7 shows that the stormwater discharge to the run-off control features was calculated based on the final landfill configuration.

3.6 Selection and Basis of Run-On and Run-Off Routing Model

The selection and basis of the Run-On and Run-off Routing Model is not discussed in the approved stormwater management plan.

3.7 Selection and Design of Run-On and Run-Off Management System

Selection and design of the run-on and run-off management system is described in the Calculations section of Attachment 1.7 of PPL (2008a). Attachment 1.7 shows that the specific features of the run-on and run-off controls (i.e., the channel dimensions and lining material) were selected using channel lining software and PADEP worksheets. Attachment 1.7 shows that acceptable shear stresses were the basis for selecting the channel lining material.

3.8 Supporting Engineering Calculations

Engineering calculations supporting the design of the run-on and run-off controls at Ash Landfill 8 are attached to Attachment 1.7 of PPL (2008a).

4. Certification by Qualified Professional Engineer

Per §257.81(c)(5), the owner or operator of the unit must obtain a written certification from a qualified professional engineer that the Run-on and Run-off Control System Plan meets the requirements of the CCR Rule.

Certification for Run-On and Run-Off Control System Plan

CCR Unit: Brunner Island SES Ash Landfill 8

Certification

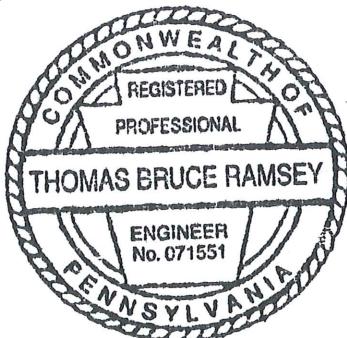
I, Thomas B. Ramsey, a registered professional engineer in the Commonwealth of Pennsylvania certify that the Run-On and Run-Off Control System Plan for the Brunner Island SES Ash Landfill 8 is in compliance with requirements of 40 CFR §257.81(c). This certification is based on my review of information described in this certification report.

Printed Name Thomas B. Ramsey

PE License Number PA071551 State Pennsylvania

Signature T.B.R. Date 12 Oct 2016

Seal



5. REFERENCES

- CEC. (2007). "Final Land Development Plans and Permit Drawings." Civil & Environmental Consultants, Inc. March 2007.
- ERM. (2007). "Technical Memorandum: Flood Impact on Ash Basin 4, 5, 6, and 7 Dikes Study – Brunner Island Station." Environmental Resource Management. October 2007.
- PADEP (2008). "Permit for Solid Waste Disposal and/or Processing Unit; Permit No. 301354." Pennsylvania Department of Environmental Protection, Waste Management Division, Southcentral Region. Harrisburg, PA.
- PPL (2007). "Channel design data." Pennsylvania Power & Light. December 2007.
- PPL (2008a). "Disposal Areas 8 Class II Residual Waste Disposal Facility Landfill Design Package and Plans." Volumes 1 & 2. PPL Generation, LLC. January 2008.
- PPL (2008b). "Disposal Area 8 Class II Residual Waste Disposal Facility Permit Application Forms." PPL Generation, LLC. January 2008.
- United States Environmental Protection Agency (USEPA) (2015). "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule." Chapter 40 Code of Federal Regulations, Parts 257 and 261. 17 April 2015.

FIGURES



U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY



YORK HAVEN QUADRANGLE
PENNSYLVANIA
7.5-MINUTE SERIES

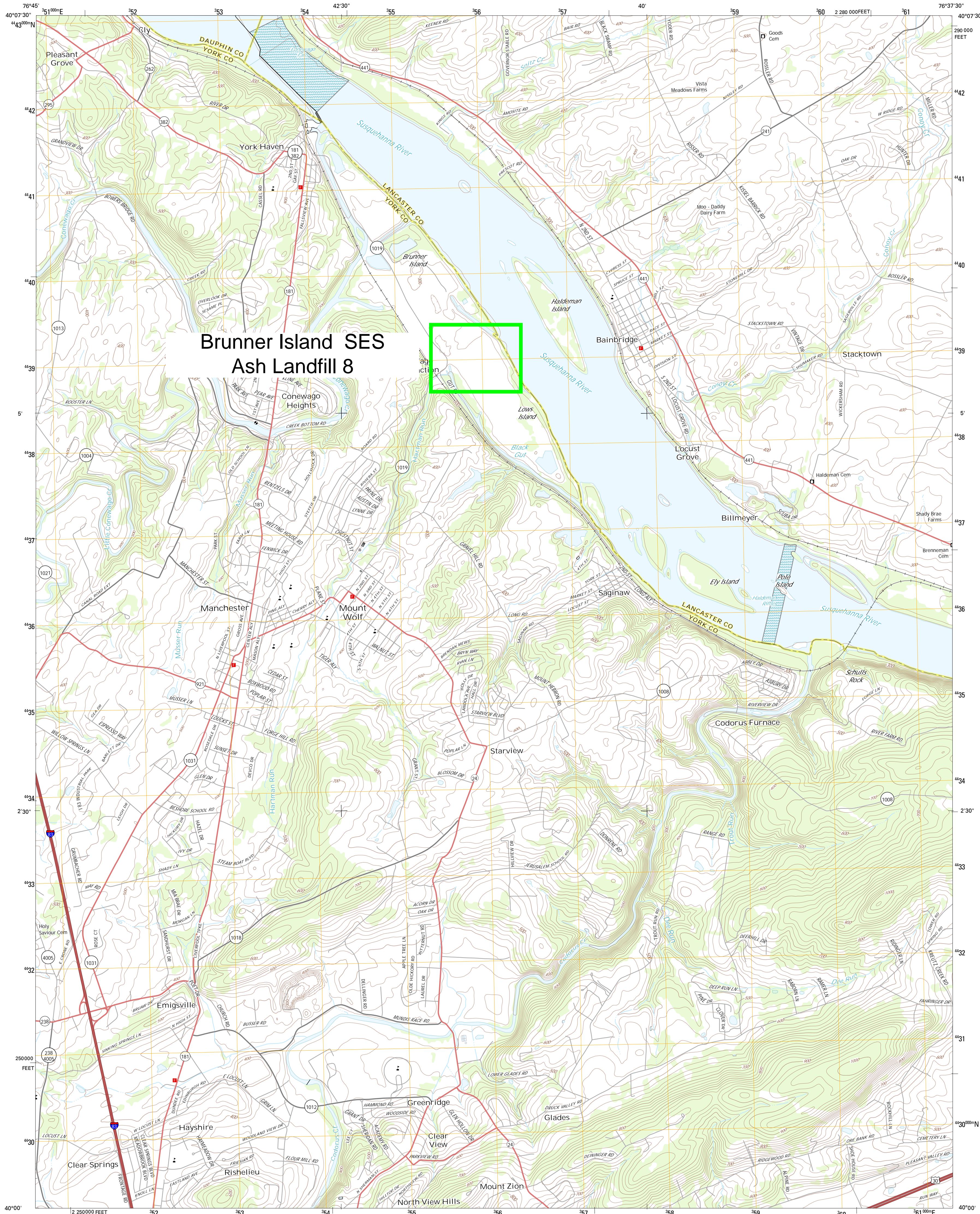


Figure 1
Unit Location Map

APPENDIX A
STORMWATER MANAGEMENT PLAN
(Attachment 1.7 of PPL 2008a)

BRUNNER ISLAND LLC

DISPOSAL AREA 8

**STORMWATER MANAGEMENT PLAN
NARRATIVE**

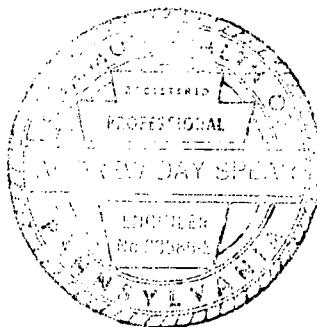
**EAST MANCHESTER TOWNSHIP
YORK COUNTY**

PREPARED BY:



**ANDREW D. SPEAR, P.E.
SENIOR ENGINEER
PPL GENERATION LLC
ALLENTOWN, PENNSYLVANIA**

FEBRUARY, 2008



GENERAL PROJECT DESCRIPTION

Disposal Area 8 will be a Type II Residual Waste Landfill located on top of Retired Ash Basin No. 5 at PPL's Brunner Island Steam Electric Station, East Manchester Township, York County. Ash Basin 5 is about 100 acres and is located about a half mile south of the Power Plant. It has earthen dikes ranging up to 30 feet in height, and contains about 40 feet of fly ash and bottom ash, with a soil cover.

The soil cover came from a site at the north end of Brunner Island and consists of sand and gravel washings (silts primarily) from an old sand and gravel operation run by Pennsy Supply.

Basin 5 has two other waste disposal facilities on top: Mill Rejects Disposal Tomb located at the northeast corner and Mill Rejects Disposal Cell 1 at the southwest corner. These facilities are also closed.

The proposed landfill will be regulated under the Pennsylvania Residual Waste Regulations 25 PA Code Chapters 287 and 288. The liner will have a composite liner system with a leakage detection and a leachate collection system. Flow from these systems will be treated initially in Brunner Island's Ash Basin 6 and eventually in a new waste water treatment plant scheduled for early in the next decade. By regulation, the stormwater runoff facilities on the landfill are designed for the 25 year, 24 hour storm.

The landfill will contain primarily scrubber sludge from a new waste water treatment plant located on Basin 4 just north of the project site, off-spec gypsum (by-product of the scrubbers) and mill rejects (pyretic shale fragments removed from the coal prior to burning). Other minor miscellaneous wastes such as intake debris, fire brick, storage pond sediment will also go into the landfill. All waste will be trucked to the landfill from the Power Plant. No waste will be brought in from off-site.

The landfill will be developed in three cells. The first cell will be about 8.3 acres, cell 2 will extend towards the east and will add another 5 acres and cell 3 will extend to the east edge of Basin 5 and will add another 5.6 acres. The first cell will contain about 10 years worth of waste and the entire site will hold over 30 years of waste. If maximum waste generation predictions occur for all the wastes, the life on the landfill will be half these years.

DESCRIPTION OF STORMWATER HANDLING

Rainfall that lands on the liner will be collected in the landfill's leachate collection system and will be pumped as an industrial waste water into the Plant's new bottom ash troughs located next to the disposal area site and thence to Basin 6 initially for treatment if necessary before its discharge to the river. Basin 6 is the main NPDES permitted discharge point for the Plant.

Initially, the landfill will generate very little runoff onto Basin 5, since the base of the liner is below grade. As the landfill grows, clean runoff from its outsides will run along benches and channels onto Basin 5's surface. The proposed channels across Basin 5 are very flat by necessity since the basin surface is nearly flat. Stormwater runoff from Area 8 will be directed through these channels to Basin 5's original discharge structure (two 60-inch risers). The Basin's discharge structure discharges to the Susquehanna River and are part of the Plant's NPDES Permit.

As such, this landfill will never generate more runoff onto Basin 5 than what goes there now. Eventually, when the landfill is capped and closed, it will have a soil cover and be vegetated. Thus the nature of the site – soil cover with vegetation – will be as it is now.

In summary, there are no new permanent stormwater discharge facilities planned for this project.

DESIGN METHODS

The WinTR-55 Urban Hydrology for Small Watersheds computer program was used to determine stormwater runoff volumes and flow rates. The program uses the Soil Conservation Service Technical Release No. 20 (TR-20) methodology for Hydrograph Generation. Peak runoff flow rates were determined for the 25 year, 24 hour storm. The precipitation amount for that storm (5.5 inches) for York County is found in Table 1 of the DEP Erosion and Sediment Control Program Manual, March 2000 (included herewith).

Software by North American Green was used to design the channel linings.

The stormwater management system design was totally redone by PPL from what was originally prepared by Civil and Environmental Consultants.

CALCULATIONS

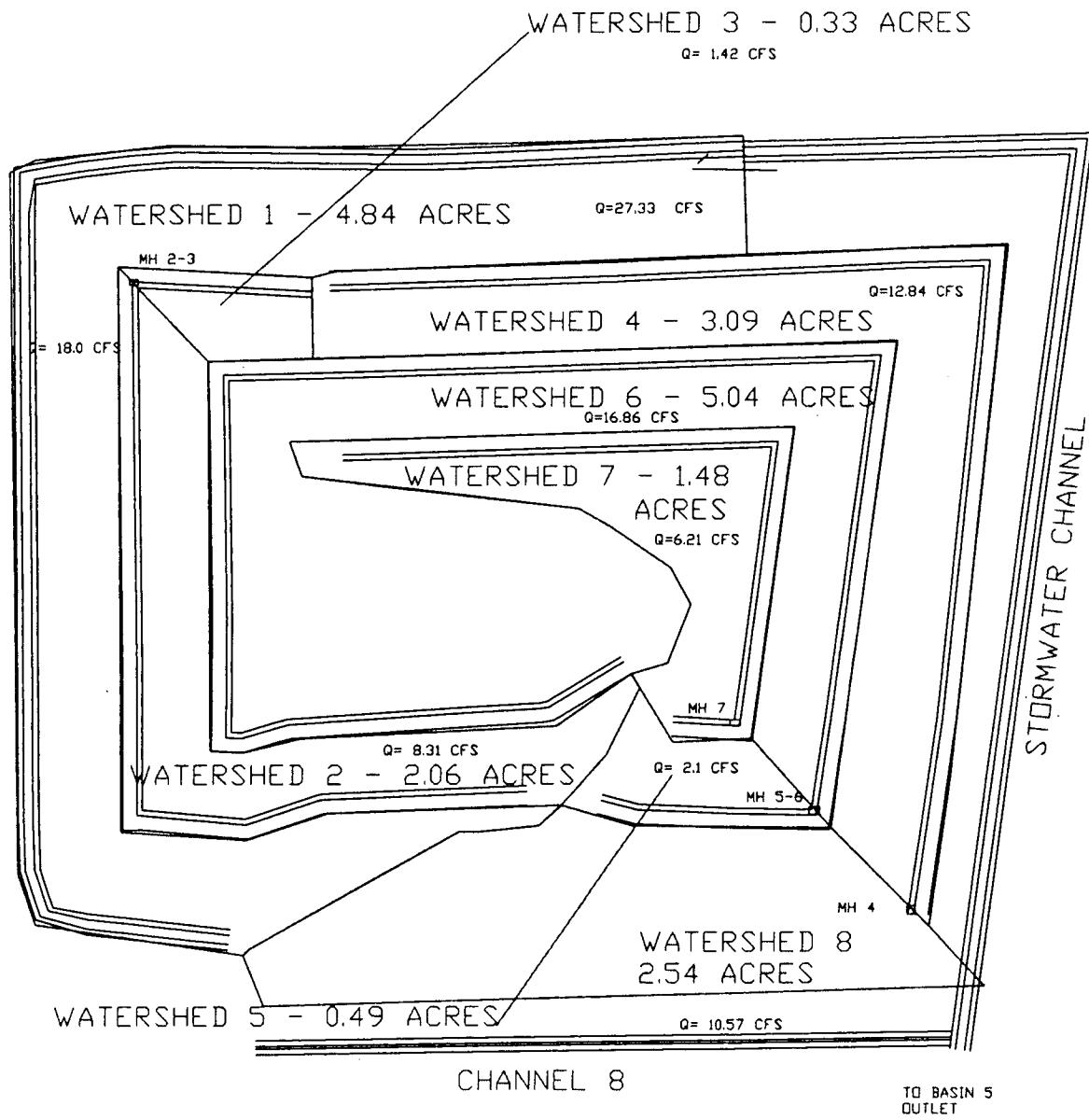
WinTR-55 was used to calculate the runoff flows to the benches and channels, based on the final landfill configuration. Input data included watershed areas as shown on Drawing (F033 – sheet 20) and on the attached sketch. The input and calculation sheets for the software are included as an attachment to this document. A runoff curve number of 74 was used, which is appropriate for 75% grass cover.

The calculated flows were then plugged into the channel lining software to determine the appropriate lining material. Worksheet #21 from the DEP Manual is included showing the various linings and other design criteria. Linings were selected based on acceptable shear stresses, generally with a factor of safety of greater than 1.5. Data is provided for the channels with the linings and with grass. The grass channels require more depth because of the resultant slower velocities. Thus the channels depths are based on the grass channel computations.

WAIVER REQUEST

PPL requests a waiver from the requirements of the township stormwater ordinance for several reasons:

1. The landfill will not create an increase in stormwater runoff volume or rate off site.
2. All stormwater runoff will remain on PPL property until it reaches the Susquehanna River. There are no risks of off-site flooding as a result of this project.
3. The landfill will be built on a closed ash basin. By regulation, infiltration is discouraged through a closed basin cap into the waste below. An excerpt from the regulations states: Section 289 (impoundments) 289.242 Cover (b)(i) **The cap shall minimize the migration of precipitation into the landfill.**
4. Stormwater channels across Basin 5 will be flatter than allowed in the ordinance. While the channels undoubtedly will have low spots, the entire basin is surrounded by dikes and runoff will eventually reach the discharge structure as it does now.



ATTACHMENTS

STORMWATER RUNOFF CALCULATIONS

CHANNEL, MANHOLE AND DOWNCOMER DESIGN
CALCULATIONS

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE

PERMIT DRAWINGS

**BRUNNER ISLAND
DISPOSAL AREA 8**

**STORMWATER RUNOFF CALCULATIONS
USING TR-55 COMPUTER SOFTWARE**

Spear

Area 8
Benches
York County, Pennsylvania

Hydrograph Peak/Peak Time Table

| Sub-Area or Reach Identifier | Peak Flow and Peak Time (hr) by Rainfall Return Period |
|------------------------------|--------------------------------------------------------|
| | 25-Yr (cfs) |
| | (hr) |

SUBAREAS

| | |
|---------|-------|
| Bench 1 | 18.00 |
| | 12.01 |

| | |
|---------|-------|
| Bench 2 | 8.31 |
| | 11.95 |

| | |
|---------|-------|
| Bench 3 | 1.42 |
| | 11.93 |

| | |
|---------|-------|
| Bench 4 | 12.84 |
| | 11.95 |

| | |
|---------|-------|
| Bench 5 | 2.10 |
| | 11.93 |

| | |
|---------|-------|
| Bench 6 | 16.86 |
| | 12.07 |

| | |
|---------|-------|
| Bench 7 | 6.21 |
| | 11.94 |

| | |
|-----------|-------|
| Channel 8 | 10.57 |
| | 11.94 |



REACHES

OUTLET 71.73



DESIGN Q
25 YR , 24 HR STORM

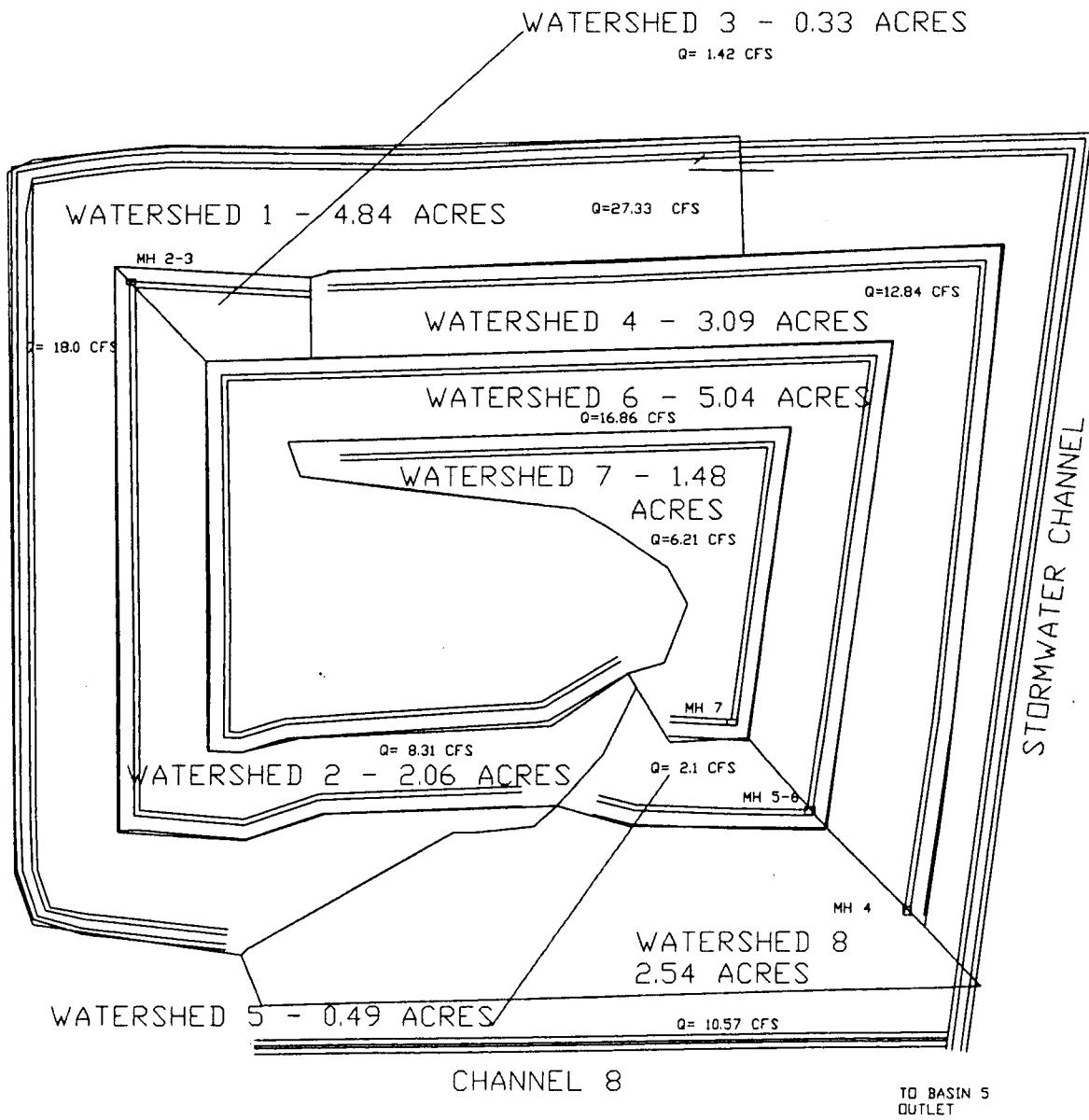


TABLE 1
Pennsylvania Rainfall By Counties
(For Use With Technical Release 55 - Urban Hydrology for Small Watersheds)

| COUNTY | 24 HR RAINFALL FOR VARIOUS FREQUENCIES | | | | | | COUNTY | 24 HOUR RAINFALL FOR VARIOUS FREQUENCIES | | | | | | | |
|------------|----------------------------------------|-------|-------|--------|--------|--------|--------|------------------------------------------|-------|-------|--------|--------|--------|---------|-----|
| | 1 yr. | 2 yr. | 5 yr. | 10 yr. | 25 yr. | 50 yr. | | 1 yr | 2 yr. | 5 yr. | 10 yr. | 25 yr. | 50 yr. | 100 yr. | |
| Adams | 2.5 | 3.0 | 3.9 | 4.8 | 5.3 | 6.0 | 6.7 | Lackawanna | 2.4 | 2.9 | 3.9 | 4.7 | 5.2 | 5.8 | 6.5 |
| Allegheny | 2.3 | 2.6 | 3.3 | 3.9 | 4.4 | 4.9 | 5.2 | Lancaster | 2.5 | 3.1 | 4.1 | 5.0 | 5.5 | 6.2 | 6.9 |
| Armstrong | 2.3 | 2.6 | 3.3 | 3.9 | 4.4 | 4.9 | 5.2 | Lawrence | 2.2 | 2.5 | 3.2 | 3.7 | 4.2 | 4.7 | 4.8 |
| Beaver | 2.3 | 2.6 | 3.2 | 3.8 | 4.3 | 4.7 | 4.9 | Lebanon | 2.5 | 3.0 | 4.0 | 4.8 | 5.3 | 6.0 | 6.7 |
| Bedford | 2.4 | 2.8 | 3.6 | 4.5 | 4.9 | 5.5 | 6.0 | Lehigh | 2.5 | 3.1 | 4.1 | 4.9 | 5.5 | 6.1 | 6.9 |
| Berks | 2.5 | 3.1 | 4.1 | 4.9 | 5.5 | 6.1 | 6.9 | Luzerne | 2.4 | 2.9 | 3.9 | 4.7 | 5.2 | 5.8 | 6.4 |
| Blair | 2.4 | 2.8 | 3.6 | 4.3 | 4.8 | 5.3 | 5.8 | Lycoming | 2.4 | 2.8 | 3.6 | 4.3 | 4.9 | 5.5 | 5.9 |
| Bradford | 2.3 | 2.8 | 3.6 | 4.2 | 4.9 | 5.4 | 5.8 | McKean | 2.2 | 2.6 | 3.3 | 3.9 | 4.4 | 4.8 | 5.2 |
| Bucks | 2.5 | 3.3 | 4.2 | 5.0 | 5.8 | 6.4 | 7.2 | Mercer | 2.2 | 2.5 | 3.2 | 3.7 | 4.2 | 4.7 | 4.8 |
| Butler | 2.3 | 2.6 | 3.3 | 3.8 | 4.3 | 4.8 | 5.0 | Mifflin | 2.4 | 2.8 | 3.6 | 4.4 | 4.8 | 5.5 | 6.0 |
| Cambridg | 2.4 | 2.8 | 3.4 | 4.2 | 4.8 | 5.2 | 5.7 | Monroe | 2.5 | 3.0 | 4.0 | 4.8 | 5.4 | 6.1 | 6.8 |
| Cameron | 2.3 | 2.7 | 3.4 | 4.0 | 4.5 | 5.0 | 5.4 | Montgomery | 2.6 | 3.2 | 4.2 | 5.0 | 5.7 | 6.4 | 7.1 |
| Carbon | 2.5 | 3.0 | 4.0 | 4.8 | 5.3 | 6.0 | 6.7 | Montour | 2.4 | 2.9 | 3.7 | 4.5 | 5.0 | 5.6 | 6.2 |
| Centre | 2.3 | 2.8 | 3.6 | 4.3 | 4.8 | 5.4 | 5.8 | Northampton | 2.5 | 3.1 | 4.1 | 4.9 | 5.5 | 6.1 | 6.9 |
| Chester | 2.6 | 3.2 | 4.2 | 5.0 | 5.6 | 6.3 | 7.1 | Northumberland | 2.4 | 2.9 | 3.8 | 4.6 | 5.0 | 5.7 | 6.3 |
| Clarion | 2.2 | 2.6 | 3.3 | 3.7 | 4.4 | 4.8 | 5.1 | Perry | 2.4 | 2.9 | 3.8 | 4.6 | 5.0 | 5.7 | 6.3 |
| Clearfield | 2.3 | 2.7 | 3.5 | 4.0 | 4.6 | 5.1 | 5.5 | Philadelphia | 2.6 | 3.3 | 4.3 | 5.0 | 5.7 | 6.4 | 7.3 |
| Clinton | 2.3 | 2.8 | 3.6 | 4.2 | 4.8 | 5.3 | 5.7 | Pike | 2.6 | 3.0 | 4.0 | 4.9 | 5.4 | 6.1 | 7.0 |
| Columbia | 2.4 | 2.9 | 3.7 | 4.6 | 5.1 | 5.7 | 6.2 | Potter | 2.3 | 2.7 | 3.4 | 4.0 | 4.6 | 5.0 | 5.4 |
| Crawford | 2.2 | 2.5 | 3.1 | 3.6 | 4.2 | 4.7 | 4.8 | Schuylkill | 2.5 | 3.0 | 3.9 | 4.7 | 5.3 | 5.9 | 6.5 |
| Cumberland | 2.4 | 2.9 | 3.8 | 4.7 | 5.1 | 5.8 | 6.4 | Snyder | 2.4 | 2.9 | 3.7 | 4.5 | 5.0 | 5.6 | 6.1 |
| Dauphin | 2.5 | 2.9 | 3.9 | 4.8 | 5.2 | 5.9 | 6.5 | Somerset | 2.4 | 2.6 | 3.5 | 4.3 | 4.8 | 5.3 | 5.8 |
| Delaware | 2.6 | 3.3 | 4.2 | 5.0 | 5.7 | 6.4 | 7.3 | Sullivan | 2.4 | 2.8 | 3.7 | 4.4 | 4.9 | 5.5 | 6.0 |
| Elk | 2.3 | 2.7 | 3.4 | 3.9 | 4.5 | 4.9 | 5.3 | Susquehanna | 2.4 | 2.9 | 3.8 | 4.5 | 5.0 | 5.7 | 6.2 |
| Erie | 2.1 | 2.5 | 3.1 | 3.6 | 4.1 | 4.6 | 4.7 | Tioga | 2.3 | 2.7 | 3.5 | 4.2 | 4.7 | 5.1 | 5.6 |
| Fayette | 2.4 | 2.7 | 3.4 | 4.1 | 4.6 | 5.1 | 5.6 | Union | 2.4 | 2.8 | 3.7 | 4.4 | 4.9 | 5.5 | 6.0 |
| Forest | 2.2 | 2.6 | 3.3 | 3.8 | 4.3 | 4.8 | 5.1 | Venango | 2.2 | 2.5 | 3.3 | 3.7 | 4.2 | 4.7 | 4.9 |
| Franklin | 2.4 | 2.9 | 3.8 | 4.8 | 5.1 | 5.9 | 6.4 | Warren | 2.2 | 2.5 | 3.2 | 3.8 | 4.3 | 4.8 | 4.9 |
| Fulton | 2.4 | 2.8 | 3.7 | 4.6 | 4.9 | 5.6 | 6.2 | Washington | 2.3 | 2.6 | 3.3 | 3.9 | 4.4 | 4.9 | 5.2 |
| Greene | 2.3 | 2.6 | 3.4 | 3.9 | 4.4 | 4.9 | 5.2 | Wayne | 2.4 | 2.9 | 3.9 | 4.7 | 5.2 | 6.0 | 6.7 |
| Huntingdon | 2.4 | 2.8 | 3.7 | 4.6 | 4.9 | 5.5 | 5.9 | Westmoreland | 2.3 | 2.7 | 3.4 | 4.0 | 4.6 | 5.0 | 5.4 |
| Indiana | 2.3 | 2.7 | 3.4 | 4.0 | 4.5 | 5.0 | 5.4 | Wyoming | 2.4 | 2.9 | 3.8 | 4.5 | 5.0 | 5.6 | 6.2 |
| Jefferson | 2.3 | 2.6 | 3.4 | 3.9 | 4.5 | 4.9 | 5.3 | York | 2.5 | 3.1 | 4.1 | 4.9 | 5.5 | 6.2 | 6.9 |
| Juniata | 2.4 | 2.9 | 3.7 | 4.5 | 4.9 | 5.6 | 6.1 | | | | | | | | |

WinTR-55 Current Data Description

--- Identification Data ---

User: Spear Date: 1/30/2008
Project: Area 8 Units: English
SubTitle: Benches Areal Units: &Acres
State: Pennsylvania
County: York
Filename: C:\Documents and Settings\SPEARAD\Application Data\WinTR-55\Area 8.w55

--- Sub-Area Data ---

| Name | Description | Reach | Area (ac) | RCN | Tc |
|-----------|-------------|--------|-----------|-----|------|
| Bench 1 | | Outlet | 4.84 | 74 | .193 |
| Bench 2 | | Outlet | 2.06 | 74 | .132 |
| Bench 3 | | Outlet | 0.33 | 74 | 0.1 |
| Bench 4 | | Outlet | 3.09 | 74 | .115 |
| Bench 5 | | Outlet | 0.49 | 74 | 0.1 |
| Bench 6 | | Outlet | 5.04 | 74 | .269 |
| Bench 7 | | Outlet | 1.48 | 74 | .109 |
| Channel 8 | | Outlet | 3.6 | 74 | .111 |

Total area: 20.93 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

| 2-Yr | 5-Yr | 10-Yr | 25-Yr | 50-Yr | 100-Yr | 1-Yr |
|------|------|-------|-------|-------|--------|------|
| 3.1 | 4.1 | 4.9 | 5.5 | .0 | .0 | .0 |

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Spear

Area 8
Benches
York County, Pennsylvania

Storm Data

Rainfall Depth by Rainfall Return Period

| 2-Yr | 5-Yr | 10-Yr | 25-Yr | 50-Yr | 100-Yr | 1-Yr |
|------|------|-------|-------|-------|--------|------|
| 3.1 | 4.1 | 4.9 | 5.5 | .0 | .0 | .0 |

Storm Data Source: User-provided custom storm data

Rainfall Distribution Type: Type II

Dimensionless Unit Hydrograph: <standard>

Spear

Area 8
Benches
York County, Pennsylvania

Sub-Area Time of Concentration Details

| Sub-Area Identifier/ | Flow Length | Slope | Mannings's n | End Area | Wetted Perimeter | Velocity | Travel Time (hr) |
|----------------------|-------------|--------|--------------|----------|------------------|----------|----------------------------|
| <hr/> | | | | | | | |
| Bench 1 | | | | | | | |
| SHEET | 100 | 0.0800 | 0.150 | | | | 0.095 |
| SHALLOW | 221 | 0.0800 | 0.050 | | | | 0.013 |
| CHANNEL | 1763 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.761 | 0.085 |
| | | | | | | | Time of Concentration .193 |
| | | | | | | | ===== |
| Bench 2 | | | | | | | |
| SHEET | 100 | 0.1200 | 0.150 | | | | 0.081 |
| SHALLOW | 62 | 0.1200 | 0.050 | | | | 0.003 |
| CHANNEL | 1000 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.787 | 0.048 |
| | | | | | | | Time of Concentration .132 |
| | | | | | | | ===== |
| Bench 3 | | | | | | | |
| SHEET | 74 | 0.2700 | 0.150 | | | | 0.046 |
| CHANNEL | 185 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.710 | 0.009 |
| | | | | | | | Time of Concentration 0.1 |
| | | | | | | | ===== |
| Bench 4 | | | | | | | |
| SHEET | 74 | 0.2700 | 0.150 | | | | 0.046 |
| CHANNEL | 1420 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.717 | 0.069 |
| | | | | | | | Time of Concentration .115 |
| | | | | | | | ===== |
| Bench 5 | | | | | | | |
| SHEET | 100 | 0.1500 | 0.150 | | | | 0.074 |
| CHANNEL | 243 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.625 | 0.012 |
| | | | | | | | Time of Concentration 0.1 |
| | | | | | | | ===== |
| Bench 6 | | | | | | | |
| SHEET | 100 | 0.0300 | 0.150 | | | | 0.141 |
| SHALLOW | 210 | 0.0300 | 0.050 | | | | 0.021 |
| SHALLOW | 188 | 0.1100 | 0.050 | | | | 0.010 |
| CHANNEL | 2006 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.745 | 0.097 |
| | | | | | | | Time of Concentration .269 |
| | | | | | | | ===== |
| Bench 7 | | | | | | | |
| SHEET | 100 | 0.1500 | 0.150 | | | | 0.074 |
| SHALLOW | 100 | 0.1500 | 0.050 | | | | 0.004 |
| CHANNEL | 638 | 0.0200 | 0.023 | 9.00 | 18.20 | 5.717 | 0.031 |
| | | | | | | | Time of Concentration .109 |
| | | | | | | | ===== |
| Channel 8 | | | | | | | |

Spear

Area 8
Benches
York County, Pennsylvania

Sub-Area Time of Concentration Details (continued)

| Sub-Area Identifier/ | Flow Length | Mannings's Slope | n | End Area | Wetted Perimeter | Velocity | Travel Time (hr) |
|----------------------|-------------|------------------|-------|-----------------------|------------------|----------|------------------|
| SHEET | 100 | 0.1100 | 0.150 | | | | 0.084 |
| SHALLOW | 180 | 0.1100 | 0.050 | | | | 0.009 |
| CHANNEL | 734 | 0.0200 | 0.023 | 18.00 | 13.25 | 11.327 | 0.018 |
| | | | | Time of Concentration | | | .111 |
| | | | | | | | ===== |

Area 8
Benches

Name of printed page file:
TR20.out

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Flow Rate (cfs) | Peak Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|----------------------|----------------------|
| Bench 1 | 0.008 | | 2.765 | | 12.01 | 18.00 | 2380.52 |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.012 (cfs) | hr (cfs) | 0.012 hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 9.169 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 |
| 9.254 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 9.340 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 |
| 9.425 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 |
| 9.510 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 9.596 | 0.08 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 |
| 9.681 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.10 |
| 9.766 | 0.10 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 |
| 9.852 | 0.11 | 0.11 | 0.12 | 0.12 | 0.12 | 0.12 |
| 9.937 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.14 |
| 10.022 | 0.14 | 0.14 | 0.14 | 0.15 | 0.15 | 0.15 |
| 10.108 | 0.15 | 0.15 | 0.16 | 0.16 | 0.16 | 0.17 |
| 10.193 | 0.17 | 0.17 | 0.17 | 0.18 | 0.18 | 0.18 |
| 10.278 | 0.19 | 0.19 | 0.19 | 0.20 | 0.20 | 0.20 |
| 10.364 | 0.21 | 0.21 | 0.21 | 0.22 | 0.22 | 0.22 |
| 10.449 | 0.23 | 0.23 | 0.24 | 0.24 | 0.24 | 0.25 |
| 10.534 | 0.25 | 0.25 | 0.26 | 0.26 | 0.27 | 0.27 |
| 10.620 | 0.28 | 0.28 | 0.28 | 0.29 | 0.30 | 0.30 |
| 10.705 | 0.31 | 0.31 | 0.31 | 0.32 | 0.33 | 0.33 |
| 10.790 | 0.34 | 0.34 | 0.35 | 0.36 | 0.37 | 0.37 |
| 10.876 | 0.38 | 0.38 | 0.39 | 0.40 | 0.41 | 0.41 |
| 10.961 | 0.42 | 0.42 | 0.43 | 0.44 | 0.45 | 0.45 |
| 11.046 | 0.46 | 0.47 | 0.48 | 0.49 | 0.50 | 0.51 |
| 11.132 | 0.52 | 0.53 | 0.54 | 0.55 | 0.57 | 0.58 |
| 11.217 | 0.59 | 0.60 | 0.61 | 0.64 | 0.65 | 0.67 |
| 11.302 | 0.68 | 0.69 | 0.71 | 0.72 | 0.75 | 0.76 |
| 11.388 | 0.78 | 0.79 | 0.81 | 0.82 | 0.84 | 0.87 |
| 11.473 | 0.89 | 0.90 | 0.92 | 0.94 | 0.96 | 0.99 |
| 11.558 | 1.08 | 1.15 | 1.24 | 1.33 | 1.44 | 1.69 |
| 11.644 | 1.85 | 2.02 | 2.23 | 2.47 | 2.72 | 3.28 |
| 11.729 | 3.58 | 3.92 | 4.27 | 4.67 | 5.10 | 6.03 |
| 11.814 | 6.54 | 7.09 | 7.70 | 8.38 | 9.16 | 10.06 |
| 11.900 | 12.08 | 13.14 | 14.17 | 15.14 | 16.00 | 17.28 |
| 11.985 | 17.67 | 17.90 | 18.00 | 17.95 | 17.76 | 16.92 |
| 12.070 | 16.21 | 15.33 | 14.34 | 13.30 | 12.23 | 11.18 |
| 12.155 | 9.22 | 8.35 | 7.58 | 6.93 | 6.38 | 5.51 |
| 12.241 | 5.17 | 4.86 | 4.59 | 4.36 | 4.15 | 3.80 |
| 12.326 | 3.65 | 3.52 | 3.40 | 3.29 | 3.19 | 3.00 |
| 12.411 | 2.92 | 2.84 | 2.76 | 2.69 | 2.63 | 2.49 |
| 12.497 | 2.43 | 2.37 | 2.31 | 2.25 | 2.20 | 2.10 |

WinTR-20 Version 1.0

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.012 (cfs) | hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|
|----------------------|------------|---------------------|-----------------|----------------|----------|

WinTR-55, Version 1.00.08

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Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Flow Rate (cfs) | Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|----------------------|------------|
| 12.582 | 2.05 | 2.01 | 1.97 | 1.93 | 1.90 | 1.86 | 1.83 |
| 12.667 | 1.80 | 1.77 | 1.75 | 1.73 | 1.71 | 1.69 | 1.67 |
| 12.753 | 1.65 | 1.64 | 1.62 | 1.61 | 1.59 | 1.58 | 1.56 |
| 12.838 | 1.55 | 1.54 | 1.52 | 1.51 | 1.50 | 1.48 | 1.47 |
| 12.923 | 1.46 | 1.45 | 1.44 | 1.42 | 1.41 | 1.40 | 1.39 |
| 13.009 | 1.37 | 1.36 | 1.35 | 1.34 | 1.33 | 1.32 | 1.30 |
| 13.094 | 1.29 | 1.28 | 1.27 | 1.26 | 1.25 | 1.25 | 1.24 |
| 13.179 | 1.23 | 1.22 | 1.21 | 1.20 | 1.20 | 1.19 | 1.18 |
| 13.265 | 1.17 | 1.17 | 1.16 | 1.15 | 1.15 | 1.14 | 1.13 |
| 13.350 | 1.13 | 1.12 | 1.11 | 1.11 | 1.10 | 1.09 | 1.09 |
| 13.435 | 1.08 | 1.07 | 1.07 | 1.06 | 1.05 | 1.05 | 1.04 |
| 13.521 | 1.03 | 1.03 | 1.02 | 1.01 | 1.01 | 1.00 | 0.99 |
| 13.606 | 0.99 | 0.98 | 0.98 | 0.97 | 0.97 | 0.96 | 0.95 |
| 13.691 | 0.95 | 0.94 | 0.94 | 0.93 | 0.93 | 0.92 | 0.92 |
| 13.777 | 0.91 | 0.91 | 0.90 | 0.90 | 0.89 | 0.89 | 0.88 |
| 13.862 | 0.88 | 0.87 | 0.87 | 0.86 | 0.86 | 0.85 | 0.85 |
| 13.947 | 0.85 | 0.84 | 0.84 | 0.83 | 0.83 | 0.82 | 0.82 |
| 14.033 | 0.81 | 0.81 | 0.80 | 0.80 | 0.79 | 0.79 | 0.79 |
| 14.118 | 0.78 | 0.78 | 0.78 | 0.77 | 0.77 | 0.77 | 0.76 |
| 14.203 | 0.76 | 0.76 | 0.76 | 0.76 | 0.75 | 0.75 | 0.75 |
| 14.289 | 0.75 | 0.75 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| 14.374 | 0.74 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.72 |
| 14.459 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.71 | 0.71 |
| 14.545 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.70 | 0.70 |
| 14.630 | 0.70 | 0.70 | 0.70 | 0.69 | 0.69 | 0.69 | 0.69 |
| 14.715 | 0.69 | 0.69 | 0.69 | 0.68 | 0.68 | 0.68 | 0.68 |
| 14.801 | 0.68 | 0.68 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 |
| 14.886 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| 14.971 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.64 | 0.64 |
| 15.057 | 0.64 | 0.64 | 0.64 | 0.64 | 0.63 | 0.63 | 0.63 |
| 15.142 | 0.63 | 0.63 | 0.63 | 0.62 | 0.62 | 0.62 | 0.62 |
| 15.227 | 0.62 | 0.62 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 |
| 15.313 | 0.61 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| 15.398 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.58 |
| 15.483 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.57 | 0.57 |
| 15.569 | 0.57 | 0.57 | 0.57 | 0.56 | 0.56 | 0.56 | 0.56 |
| 15.654 | 0.56 | 0.56 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 |
| 15.739 | 0.55 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| 15.825 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.52 | 0.52 |
| 15.910 | 0.52 | 0.52 | 0.52 | 0.52 | 0.51 | 0.51 | 0.51 |
| 15.995 | 0.51 | 0.51 | 0.51 | 0.50 | 0.50 | 0.50 | 0.50 |
| 16.081 | 0.50 | 0.50 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 |
| 16.166 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.48 | 0.48 |
| 16.251 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| 16.336 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.47 |
| 16.422 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 |
| 16.507 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 |
| 16.592 | 0.47 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 16.678 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 16.763 | 0.46 | 0.46 | 0.46 | 0.46 | 0.45 | 0.45 | 0.45 |
| 16.848 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | | | Benches | | | | |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment of (cfs) | 0.012 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment of (cfs) | 0.012 hr (cfs) |
|----------------------|------------|---------------------|--------------------|----------------|------------|---------------------|--------------------|----------------|
| 16.934 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.44 |
| 17.019 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| 17.104 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| 17.190 | 0.44 | 0.44 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| 17.275 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| 17.360 | 0.43 | 0.43 | 0.43 | 0.43 | 0.42 | 0.42 | 0.42 | 0.42 |
| 17.446 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 |
| 17.531 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.41 |
| 17.616 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| 17.702 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| 17.787 | 0.41 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 17.872 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 17.958 | 0.40 | 0.40 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 18.043 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 18.128 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.38 | 0.38 | 0.38 |
| 18.214 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 18.299 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 18.384 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 18.470 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 18.555 | 0.37 | 0.37 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 18.640 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 18.726 | 0.36 | 0.36 | 0.36 | 0.36 | 0.35 | 0.35 | 0.35 | 0.35 |
| 18.811 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 18.896 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.34 |
| 18.982 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 19.067 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 19.152 | 0.34 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 19.238 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 19.323 | 0.33 | 0.33 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 19.408 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 19.494 | 0.32 | 0.32 | 0.32 | 0.32 | 0.31 | 0.31 | 0.31 | 0.31 |
| 19.579 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 19.664 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.30 | 0.30 | 0.30 |
| 19.750 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 19.835 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 19.920 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.006 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.091 | 0.29 | 0.29 | 0.29 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.176 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.261 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.347 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.432 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.517 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.603 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.688 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.773 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 20.859 | 0.28 | 0.28 | 0.28 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 20.944 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.029 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.115 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 21.200 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of (cfs) | 0.012 (cfs) | hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------|-------------|----------|
| 21.285 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.371 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.456 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.541 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.627 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.712 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.797 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 21.883 | 0.27 | 0.27 | 0.27 | 0.26 | 0.26 | 0.26 |
| 21.968 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.053 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.139 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.224 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.309 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.395 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.480 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.565 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.651 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.736 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.821 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 22.907 | 0.26 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 22.992 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.077 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.163 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.248 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.333 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.419 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.504 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.589 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.675 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.760 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 23.845 | 0.25 | 0.25 | 0.25 | 0.25 | 0.24 | 0.24 |
| 23.931 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 24.016 | 0.24 | 0.24 | 0.24 | 0.23 | 0.22 | 0.21 |
| 24.101 | 0.17 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 |
| 24.187 | 0.06 | 0.05 | | | | 0.07 |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| Bench 2 | 0.003 | | 2.753 | | 11.95 | 8.31 | 2581.65 |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of (cfs) | 0.008 (cfs) | hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------|-------------|----------|
|----------------------|------------|---------------------|-----------------|----------|-------------|----------|

Area 8
Benches

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| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Peak Time (hr) | Flow Rate (cfs) | Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|----------------|-----------------|------------|
| 9.837 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 9.895 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 |
| 9.954 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 10.012 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 10.070 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.008 hr (cfs) | 0.008 hr (cfs) | 0.008 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|----------------|----------------|
| 10.129 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 10.187 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 10.245 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 |
| 10.304 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 10.362 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.10 |
| 10.421 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 10.479 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 10.537 | 0.11 | 0.11 | 0.11 | 0.12 | 0.12 | 0.12 |
| 10.596 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 | 0.13 |
| 10.654 | 0.13 | 0.13 | 0.13 | 0.13 | 0.14 | 0.14 |
| 10.712 | 0.14 | 0.14 | 0.14 | 0.14 | 0.15 | 0.15 |
| 10.771 | 0.15 | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 |
| 10.829 | 0.16 | 0.16 | 0.16 | 0.17 | 0.17 | 0.17 |
| 10.887 | 0.17 | 0.17 | 0.18 | 0.18 | 0.18 | 0.18 |
| 10.946 | 0.18 | 0.19 | 0.19 | 0.19 | 0.19 | 0.20 |
| 11.004 | 0.20 | 0.20 | 0.20 | 0.20 | 0.21 | 0.21 |
| 11.062 | 0.21 | 0.21 | 0.22 | 0.22 | 0.23 | 0.23 |
| 11.121 | 0.23 | 0.23 | 0.24 | 0.24 | 0.25 | 0.25 |
| 11.179 | 0.25 | 0.26 | 0.26 | 0.27 | 0.27 | 0.28 |
| 11.238 | 0.28 | 0.28 | 0.29 | 0.29 | 0.30 | 0.30 |
| 11.296 | 0.31 | 0.31 | 0.32 | 0.32 | 0.33 | 0.33 |
| 11.354 | 0.34 | 0.34 | 0.35 | 0.35 | 0.36 | 0.37 |
| 11.413 | 0.37 | 0.37 | 0.38 | 0.38 | 0.39 | 0.40 |
| 11.471 | 0.40 | 0.41 | 0.41 | 0.42 | 0.43 | 0.44 |
| 11.529 | 0.45 | 0.47 | 0.50 | 0.53 | 0.57 | 0.65 |
| 11.588 | 0.69 | 0.73 | 0.77 | 0.82 | 0.86 | 0.91 |
| 11.646 | 1.04 | 1.12 | 1.22 | 1.32 | 1.42 | 1.52 |
| 11.704 | 1.72 | 1.82 | 1.92 | 2.02 | 2.14 | 2.27 |
| 11.763 | 2.57 | 2.74 | 2.91 | 3.08 | 3.24 | 3.41 |
| 11.821 | 3.76 | 3.96 | 4.20 | 4.47 | 4.79 | 5.15 |
| 11.879 | 5.94 | 6.34 | 6.73 | 7.10 | 7.44 | 7.74 |
| 11.938 | 8.16 | 8.27 | 8.31 | 8.31 | 8.27 | 8.20 |
| 11.996 | 8.03 | 7.94 | 7.83 | 7.69 | 7.53 | 7.31 |
| 12.055 | 6.67 | 6.26 | 5.81 | 5.35 | 4.89 | 4.45 |
| 12.113 | 3.67 | 3.33 | 3.05 | 2.81 | 2.61 | 2.44 |
| 12.171 | 2.16 | 2.04 | 1.94 | 1.86 | 1.78 | 1.72 |
| 12.230 | 1.61 | 1.57 | 1.53 | 1.49 | 1.45 | 1.42 |
| 12.288 | 1.36 | 1.34 | 1.31 | 1.29 | 1.27 | 1.26 |
| 12.346 | 1.22 | 1.20 | 1.18 | 1.16 | 1.15 | 1.13 |
| 12.405 | 1.10 | 1.08 | 1.07 | 1.06 | 1.04 | 1.03 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 12.463 | 1.00 | 0.98 | 0.96 | 0.94 | 0.93 | 0.91 | 0.90 |
| 12.521 | 0.89 | 0.88 | 0.86 | 0.85 | 0.84 | 0.83 | 0.81 |
| 12.580 | 0.80 | 0.79 | 0.78 | 0.77 | 0.76 | 0.75 | 0.75 |
| 12.638 | 0.74 | 0.73 | 0.73 | 0.72 | 0.72 | 0.71 | 0.70 |
| 12.697 | 0.70 | 0.70 | 0.69 | 0.69 | 0.69 | 0.68 | 0.68 |
| 12.755 | 0.67 | 0.67 | 0.67 | 0.66 | 0.66 | 0.65 | 0.65 |
| 12.813 | 0.65 | 0.64 | 0.64 | 0.64 | 0.63 | 0.63 | 0.63 |
| 12.872 | 0.62 | 0.62 | 0.61 | 0.61 | 0.61 | 0.60 | 0.60 |
| 12.930 | 0.60 | 0.60 | 0.59 | 0.59 | 0.58 | 0.58 | 0.58 |
| 12.988 | 0.57 | 0.57 | 0.57 | 0.56 | 0.56 | 0.56 | 0.55 |
| 13.047 | 0.55 | 0.55 | 0.54 | 0.54 | 0.54 | 0.53 | 0.53 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.008 hr (cfs) | hr (cfs) | ----- |
|----------------------|------------|---------------------|-----------------|-------------------|----------|-------|
| 13.105 | 0.53 | 0.53 | 0.52 | 0.52 | 0.52 | 0.52 |
| 13.163 | 0.51 | 0.51 | 0.51 | 0.50 | 0.50 | 0.50 |
| 13.222 | 0.50 | 0.50 | 0.49 | 0.49 | 0.49 | 0.49 |
| 13.280 | 0.48 | 0.48 | 0.48 | 0.48 | 0.47 | 0.47 |
| 13.338 | 0.47 | 0.47 | 0.47 | 0.47 | 0.46 | 0.46 |
| 13.397 | 0.46 | 0.46 | 0.45 | 0.45 | 0.45 | 0.45 |
| 13.455 | 0.44 | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 |
| 13.514 | 0.43 | 0.43 | 0.43 | 0.43 | 0.42 | 0.42 |
| 13.572 | 0.42 | 0.42 | 0.41 | 0.41 | 0.41 | 0.41 |
| 13.630 | 0.41 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 13.689 | 0.40 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 13.747 | 0.39 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 13.805 | 0.38 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 13.864 | 0.37 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 13.922 | 0.36 | 0.36 | 0.35 | 0.35 | 0.35 | 0.35 |
| 13.980 | 0.35 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 14.039 | 0.34 | 0.34 | 0.34 | 0.33 | 0.33 | 0.33 |
| 14.097 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.32 |
| 14.155 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 14.214 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 14.272 | 0.32 | 0.32 | 0.31 | 0.31 | 0.31 | 0.31 |
| 14.331 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 14.389 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 14.447 | 0.31 | 0.31 | 0.30 | 0.30 | 0.30 | 0.30 |
| 14.506 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 14.564 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 14.622 | 0.30 | 0.30 | 0.29 | 0.29 | 0.29 | 0.29 |
| 14.681 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 14.739 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 14.797 | 0.29 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 14.856 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 14.914 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 14.972 | 0.28 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 15.031 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 15.089 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |

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Area 8
Benches

Name of printed page file:
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| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Peak Time (hr) | Flow Rate (cfs) | Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|----------------|-----------------|------------|
| 15.148 | 0.27 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 15.206 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 15.264 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 15.323 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 15.381 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 15.439 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.24 |
| 15.498 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 15.556 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 15.614 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.23 | 0.23 |
| 15.673 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 15.731 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 15.789 | 0.23 | 0.23 | 0.23 | 0.22 | 0.22 | 0.22 | 0.22 |
| 15.848 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 15.906 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 15.965 | 0.22 | 0.22 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 16.023 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of (cfs) | 0.008 (cfs) | hr (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------|-------------|----------|
| 16.081 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 16.140 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 16.198 | 0.21 | 0.21 | 0.21 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.256 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.315 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.373 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.431 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.490 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.548 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.606 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 16.665 | 0.20 | 0.20 | 0.20 | 0.20 | 0.19 | 0.19 | 0.19 |
| 16.723 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 16.782 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 16.840 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 16.898 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 16.957 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 17.015 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 17.073 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 17.132 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.18 | 0.18 |
| 17.190 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.248 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.307 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.365 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.424 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.482 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.540 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 17.599 | 0.18 | 0.18 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 |
| 17.657 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 17.715 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 17.774 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |

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Area 8
Benches

Name of printed page file:
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| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 17.832 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| | 17.890 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| | 17.949 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| | 18.007 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| | 18.065 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 |
| | 18.124 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.182 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.241 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.299 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.357 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.416 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.474 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 18.532 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.591 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.649 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.707 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.766 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.824 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.882 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.941 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | 18.999 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of (cfs) | 0.008 (cfs) | hr (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------|-------------|----------|
| 19.058 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 19.116 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 19.174 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 19.233 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 19.291 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 19.349 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 19.408 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 |
| 19.466 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.524 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.583 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.641 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.699 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.758 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.816 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 19.875 | 0.13 | 0.13 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 19.933 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 19.991 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.050 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.108 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.166 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.225 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.283 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.341 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.400 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.458 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |

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Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 20.516 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.575 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.633 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.692 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.750 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.808 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.867 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.925 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 20.983 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 21.042 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 21.100 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 21.158 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 21.217 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 21.275 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 21.333 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.11 | 0.11 |
| 21.392 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.450 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.509 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.567 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.625 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.684 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.742 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.800 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.859 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.917 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 21.975 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.008 hr (cfs) | 0.008 hr (cfs) | 0.008 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|----------------|----------------|
| 22.034 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.092 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.150 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.209 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.267 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.326 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.384 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.442 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.501 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.559 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.617 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.676 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.734 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.792 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.851 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.909 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 22.967 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 23.026 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 23.084 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 23.143 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 23.201 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.259 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.318 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.376 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.434 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.493 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.551 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.609 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.668 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| | 23.726 | 0.11 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| | 23.785 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| | 23.843 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| | 23.901 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| | 23.960 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| | 24.018 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| | 24.076 | 0.07 | 0.06 | 0.05 | | | |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|

| | | | | | | | |
|---------|-----------|--|-------|--|-------|------|---------|
| Bench 3 | 0.520E-03 | | 1.914 | | 11.93 | 1.42 | 2732.12 |
|---------|-----------|--|-------|--|-------|------|---------|

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 (cfs) | hr (cfs) | 0.006 (cfs) | hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|-------------|----------|
| 11.277 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 11.322 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 |
| 11.366 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 11.410 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 (cfs) | hr (cfs) | 0.006 (cfs) | hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|-------------|----------|
| 11.454 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 11.499 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 |
| 11.543 | 0.09 | 0.09 | 0.10 | 0.11 | 0.11 | 0.12 | 0.13 |
| 11.587 | 0.13 | 0.14 | 0.14 | 0.14 | 0.15 | 0.15 | 0.16 |
| 11.631 | 0.17 | 0.18 | 0.19 | 0.21 | 0.22 | 0.24 | 0.25 |
| 11.675 | 0.27 | 0.28 | 0.30 | 0.31 | 0.32 | 0.33 | 0.34 |
| 11.720 | 0.35 | 0.36 | 0.38 | 0.40 | 0.42 | 0.44 | 0.47 |
| 11.764 | 0.49 | 0.52 | 0.54 | 0.56 | 0.58 | 0.60 | 0.62 |
| 11.808 | 0.64 | 0.66 | 0.68 | 0.71 | 0.75 | 0.79 | 0.84 |
| 11.852 | 0.90 | 0.96 | 1.02 | 1.07 | 1.13 | 1.18 | 1.23 |
| 11.896 | 1.28 | 1.32 | 1.35 | 1.38 | 1.40 | 1.42 | 1.42 |
| 11.941 | 1.42 | 1.41 | 1.39 | 1.37 | 1.35 | 1.33 | 1.31 |
| 11.985 | 1.29 | 1.27 | 1.26 | 1.25 | 1.24 | 1.22 | 1.20 |
| 12.029 | 1.17 | 1.12 | 1.07 | 1.00 | 0.93 | 0.86 | 0.78 |
| 12.073 | 0.71 | 0.65 | 0.59 | 0.53 | 0.49 | 0.45 | 0.42 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 12.117 | 0.40 | 0.37 | 0.35 | 0.34 | 0.32 | 0.31 | 0.29 |
| 12.162 | 0.28 | 0.27 | 0.27 | 0.26 | 0.25 | 0.25 | 0.24 |
| 12.206 | 0.24 | 0.24 | 0.23 | 0.23 | 0.23 | 0.23 | 0.22 |
| 12.250 | 0.22 | 0.22 | 0.21 | 0.21 | 0.21 | 0.20 | 0.20 |
| 12.294 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.19 | 0.19 |
| 12.339 | 0.19 | 0.19 | 0.19 | 0.18 | 0.18 | 0.18 | 0.18 |
| 12.383 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 12.427 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 |
| 12.471 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 |
| 12.515 | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | 0.13 | 0.13 |
| 12.560 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 | 0.12 | 0.12 |
| 12.604 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 12.648 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 12.692 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 12.736 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 12.781 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 12.825 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 12.869 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 12.913 | 0.10 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 |
| 12.957 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 13.002 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 13.046 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 |
| 13.090 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 13.134 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 13.179 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 13.223 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 13.267 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 13.311 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.07 |
| 13.355 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 13.400 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 13.444 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 13.488 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 13.532 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 13.576 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 13.621 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.665 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of (cfs) | 0.006 (cfs) | hr (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------|-------------|----------|
| 13.709 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.753 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.797 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.842 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.886 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.930 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 13.974 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 14.019 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 14.063 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 14.107 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 14.151 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 14.195 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 14.240 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 14.284 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 14.328 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| Bench 4 | 0.005 | | 2.761 | | 11.95 | 12.84 | 2659.35 |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 (cfs) | hr (cfs) | 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 9.468 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 9.519 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 |
| 9.570 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 9.621 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 9.672 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 |
| 9.723 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 9.773 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 9.824 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 9.875 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 9.926 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 9.977 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 10.028 | 0.09 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 10.078 | 0.10 | 0.10 | 0.10 | 0.10 | 0.11 | 0.11 |
| 10.129 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 10.180 | 0.11 | 0.11 | 0.12 | 0.12 | 0.12 | 0.12 |
| 10.231 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 | 0.13 |
| 10.282 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 10.333 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 10.383 | 0.14 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 10.434 | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 | 0.16 |
| 10.485 | 0.16 | 0.16 | 0.17 | 0.17 | 0.17 | 0.17 |
| 10.536 | 0.17 | 0.17 | 0.17 | 0.18 | 0.18 | 0.18 |
| 10.587 | 0.18 | 0.18 | 0.19 | 0.19 | 0.19 | 0.19 |
| 10.638 | 0.19 | 0.19 | 0.20 | 0.20 | 0.20 | 0.20 |
| 10.689 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.22 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 (cfs) | hr (cfs) | 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 10.739 | 0.22 | 0.22 | 0.22 | 0.23 | 0.23 | 0.23 |
| 10.790 | 0.23 | 0.24 | 0.24 | 0.24 | 0.24 | 0.25 |
| 10.841 | 0.25 | 0.25 | 0.25 | 0.26 | 0.26 | 0.26 |
| 10.892 | 0.26 | 0.27 | 0.27 | 0.27 | 0.27 | 0.28 |
| 10.943 | 0.28 | 0.28 | 0.29 | 0.29 | 0.29 | 0.29 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 10.994 | 0.30 | 0.30 | 0.30 | 0.30 | 0.31 | 0.31 | 0.31 |
| 11.044 | 0.31 | 0.32 | 0.32 | 0.33 | 0.33 | 0.33 | 0.34 |
| 11.095 | 0.34 | 0.34 | 0.35 | 0.35 | 0.35 | 0.36 | 0.36 |
| 11.146 | 0.37 | 0.37 | 0.38 | 0.38 | 0.39 | 0.39 | 0.40 |
| 11.197 | 0.40 | 0.41 | 0.41 | 0.41 | 0.42 | 0.42 | 0.43 |
| 11.248 | 0.43 | 0.44 | 0.45 | 0.45 | 0.46 | 0.46 | 0.47 |
| 11.299 | 0.47 | 0.48 | 0.48 | 0.49 | 0.49 | 0.50 | 0.51 |
| 11.349 | 0.51 | 0.52 | 0.52 | 0.53 | 0.54 | 0.54 | 0.55 |
| 11.400 | 0.56 | 0.56 | 0.57 | 0.57 | 0.58 | 0.58 | 0.59 |
| 11.451 | 0.60 | 0.60 | 0.61 | 0.62 | 0.63 | 0.63 | 0.64 |
| 11.502 | 0.65 | 0.65 | 0.67 | 0.68 | 0.71 | 0.74 | 0.79 |
| 11.553 | 0.84 | 0.90 | 0.96 | 1.02 | 1.08 | 1.14 | 1.20 |
| 11.604 | 1.25 | 1.30 | 1.36 | 1.42 | 1.50 | 1.60 | 1.72 |
| 11.655 | 1.85 | 1.99 | 2.14 | 2.29 | 2.43 | 2.57 | 2.70 |
| 11.705 | 2.83 | 2.95 | 3.07 | 3.21 | 3.36 | 3.54 | 3.75 |
| 11.756 | 3.97 | 4.21 | 4.45 | 4.69 | 4.93 | 5.15 | 5.36 |
| 11.807 | 5.57 | 5.79 | 6.03 | 6.31 | 6.65 | 7.07 | 7.55 |
| 11.858 | 8.09 | 8.65 | 9.22 | 9.80 | 10.35 | 10.88 | 11.37 |
| 11.909 | 11.81 | 12.18 | 12.47 | 12.68 | 12.81 | 12.84 | 12.80 |
| 11.960 | 12.71 | 12.57 | 12.42 | 12.25 | 12.09 | 11.94 | 11.80 |
| 12.010 | 11.65 | 11.48 | 11.26 | 10.96 | 10.56 | 10.04 | 9.43 |
| 12.061 | 8.77 | 8.08 | 7.40 | 6.74 | 6.12 | 5.55 | 5.05 |
| 12.112 | 4.62 | 4.26 | 3.96 | 3.70 | 3.48 | 3.29 | 3.11 |
| 12.163 | 2.96 | 2.83 | 2.71 | 2.61 | 2.53 | 2.45 | 2.39 |
| 12.214 | 2.33 | 2.29 | 2.24 | 2.20 | 2.16 | 2.12 | 2.08 |
| 12.265 | 2.05 | 2.01 | 1.98 | 1.95 | 1.93 | 1.90 | 1.88 |
| 12.315 | 1.87 | 1.85 | 1.83 | 1.81 | 1.79 | 1.76 | 1.74 |
| 12.366 | 1.72 | 1.69 | 1.67 | 1.65 | 1.63 | 1.61 | 1.60 |
| 12.417 | 1.58 | 1.57 | 1.55 | 1.53 | 1.51 | 1.49 | 1.46 |
| 12.468 | 1.44 | 1.41 | 1.39 | 1.37 | 1.35 | 1.33 | 1.32 |
| 12.519 | 1.30 | 1.29 | 1.28 | 1.26 | 1.25 | 1.23 | 1.21 |
| 12.570 | 1.20 | 1.18 | 1.16 | 1.15 | 1.14 | 1.13 | 1.12 |
| 12.621 | 1.11 | 1.10 | 1.09 | 1.09 | 1.08 | 1.07 | 1.06 |
| 12.671 | 1.06 | 1.05 | 1.04 | 1.04 | 1.03 | 1.03 | 1.03 |
| 12.722 | 1.02 | 1.02 | 1.01 | 1.01 | 1.00 | 1.00 | 0.99 |
| 12.773 | 0.99 | 0.98 | 0.98 | 0.97 | 0.97 | 0.96 | 0.96 |
| 12.824 | 0.96 | 0.95 | 0.95 | 0.94 | 0.94 | 0.93 | 0.93 |
| 12.875 | 0.92 | 0.92 | 0.91 | 0.91 | 0.90 | 0.90 | 0.90 |
| 12.926 | 0.89 | 0.89 | 0.89 | 0.88 | 0.87 | 0.87 | 0.86 |
| 12.976 | 0.86 | 0.85 | 0.85 | 0.84 | 0.84 | 0.84 | 0.83 |
| 13.027 | 0.83 | 0.83 | 0.82 | 0.82 | 0.81 | 0.81 | 0.80 |
| 13.078 | 0.80 | 0.80 | 0.79 | 0.79 | 0.79 | 0.78 | 0.78 |
| 13.129 | 0.78 | 0.78 | 0.77 | 0.77 | 0.77 | 0.76 | 0.76 |
| 13.180 | 0.76 | 0.75 | 0.75 | 0.75 | 0.75 | 0.74 | 0.74 |
| 13.231 | 0.74 | 0.74 | 0.74 | 0.73 | 0.73 | 0.73 | 0.72 |
| 13.281 | 0.72 | 0.72 | 0.72 | 0.71 | 0.71 | 0.71 | 0.71 |

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Area 8
Benches

| Line Start Time (hr) | Flow Values @ time increment of 0.007 hr (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) |
|----------------------|------------------------------------------------|-------|-------|-------|-------|-------|
|----------------------|------------------------------------------------|-------|-------|-------|-------|-------|

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 13.332 | 0.71 | 0.70 | 0.70 | 0.70 | 0.69 | 0.69 | 0.69 |
| 13.383 | 0.69 | 0.68 | 0.68 | 0.68 | 0.68 | 0.67 | 0.67 |
| 13.434 | 0.67 | 0.67 | 0.66 | 0.66 | 0.66 | 0.66 | 0.65 |
| 13.485 | 0.65 | 0.65 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| 13.536 | 0.64 | 0.63 | 0.63 | 0.63 | 0.62 | 0.62 | 0.62 |
| 13.587 | 0.62 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 |
| 13.637 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.59 | 0.59 |
| 13.688 | 0.59 | 0.59 | 0.59 | 0.58 | 0.58 | 0.58 | 0.58 |
| 13.739 | 0.58 | 0.58 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 |
| 13.790 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.55 |
| 13.841 | 0.55 | 0.55 | 0.55 | 0.55 | 0.54 | 0.54 | 0.54 |
| 13.892 | 0.54 | 0.54 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| 13.942 | 0.53 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.51 |
| 13.993 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.50 | 0.50 |
| 14.044 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.49 | 0.49 |
| 14.095 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 |
| 14.146 | 0.49 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| 14.197 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| 14.247 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 |
| 14.298 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 |
| 14.349 | 0.47 | 0.47 | 0.47 | 0.46 | 0.46 | 0.46 | 0.46 |
| 14.400 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 14.451 | 0.46 | 0.46 | 0.46 | 0.46 | 0.45 | 0.45 | 0.45 |
| 14.502 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| 14.553 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.44 |
| 14.603 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| 14.654 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| 14.705 | 0.44 | 0.44 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| 14.756 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| 14.807 | 0.43 | 0.43 | 0.43 | 0.42 | 0.42 | 0.42 | 0.42 |
| 14.858 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 |
| 14.908 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.41 |
| 14.959 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| 15.010 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.40 |
| 15.061 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 15.112 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 15.163 | 0.40 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 15.213 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 15.264 | 0.39 | 0.39 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 15.315 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 15.366 | 0.38 | 0.38 | 0.38 | 0.37 | 0.37 | 0.37 | 0.37 |
| 15.417 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 15.468 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.36 | 0.36 |
| 15.519 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 15.569 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.35 | 0.35 |
| 15.620 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 15.671 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 15.722 | 0.35 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 15.773 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 15.824 | 0.34 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 15.874 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|------------------------------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| Line Start Time (hr) | Flow Values @ time increment of 0.007 hr | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) |
| 15.925 | 0.33 | 0.33 | 0.33 | 0.32 | 0.32 | 0.32 | 0.32 |
| 15.976 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 16.027 | 0.32 | 0.32 | 0.32 | 0.32 | 0.31 | 0.31 | 0.31 |
| 16.078 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 16.129 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 16.179 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 16.230 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 16.281 | 0.31 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 16.332 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 16.383 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 16.434 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 16.485 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 16.535 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 16.586 | 0.30 | 0.30 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 16.637 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 16.688 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 16.739 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 16.790 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 16.840 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 16.891 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.28 |
| 16.942 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 16.993 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 17.044 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 17.095 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 17.145 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 17.196 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.27 | 0.27 |
| 17.247 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 17.298 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 17.349 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 17.400 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 17.451 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 17.501 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 17.552 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 17.603 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 17.654 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 17.705 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 17.756 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 17.806 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.25 |
| 17.857 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 17.908 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 17.959 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 18.010 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 18.061 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 18.111 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 18.162 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 18.213 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 18.264 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 18.315 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 18.366 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 18.417 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.23 |
| 18.467 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Flow Rate (cfs) | Peak Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|----------------------|----------------------|
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|----------------------|----------------------|

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Area 8
Benches

| Line Start Time (hr) | Flow Values @ time increment of 0.007 hr | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) |
|----------------------|------------------------------------------|-------|-------|-------|-------|-------|-------|
| 18.518 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 18.569 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 18.620 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 18.671 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 18.722 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.22 |
| 18.772 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 18.823 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 18.874 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 18.925 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 18.976 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 19.027 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.21 | 0.21 |
| 19.077 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 19.128 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 19.179 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 19.230 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 19.281 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 19.332 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.20 | 0.20 |
| 19.383 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 19.433 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 19.484 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 19.535 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 19.586 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 19.637 | 0.20 | 0.20 | 0.20 | 0.19 | 0.19 | 0.19 | 0.19 |
| 19.688 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 19.738 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 19.789 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 19.840 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 19.891 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 19.942 | 0.19 | 0.19 | 0.19 | 0.18 | 0.18 | 0.18 | 0.18 |
| 19.993 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.043 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.094 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.145 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.196 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.247 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.298 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.349 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.399 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.450 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.501 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.552 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.603 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.654 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.704 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.755 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.806 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 20.857 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.908 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 20.959 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.009 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.060 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |

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Area 8
Benches

| Line Start Time (hr) | Flow Values @ time increment of 0.007 hr | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) |
|----------------------|------------------------------------------|-------|-------|-------|-------|-------|-------|
| 21.111 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.162 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.213 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.264 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.315 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.365 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.416 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.467 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.518 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.569 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.620 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.670 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.721 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.772 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.823 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.874 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.925 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 21.975 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.026 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.077 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.128 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.179 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.230 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.281 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.331 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.382 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.433 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.484 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 22.535 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.586 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.636 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.687 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.738 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.789 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.840 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.891 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.941 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 22.992 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.043 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.094 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.145 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 23.196 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.247 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.297 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.348 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.399 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.450 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.501 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.552 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.602 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| | 23.653 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 23.704 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.755 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.806 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.857 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.907 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 23.958 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 24.009 | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.13 | 0.12 |
| 24.060 | 0.11 | 0.10 | 0.09 | 0.08 | 0.07 | 0.07 | 0.06 | |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| Bench 5 | 0.770E-03 | | 2.156 | | 11.93 | 2.10 | 2732.12 |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 11.037 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 11.082 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 11.126 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 11.170 | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 |
| 11.214 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 11.259 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.08 |
| 11.303 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 11.347 | 0.08 | 0.08 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 11.391 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 11.435 | 0.09 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 11.480 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.11 | 0.11 | |
| 11.524 | 0.11 | 0.12 | 0.12 | 0.13 | 0.14 | 0.15 | 0.16 | |
| 11.568 | 0.17 | 0.18 | 0.19 | 0.19 | 0.20 | 0.21 | 0.21 | |
| 11.612 | 0.22 | 0.23 | 0.24 | 0.25 | 0.27 | 0.29 | 0.31 | |
| 11.656 | 0.33 | 0.35 | 0.38 | 0.40 | 0.42 | 0.44 | 0.46 | |
| 11.701 | 0.47 | 0.49 | 0.50 | 0.52 | 0.54 | 0.56 | 0.59 | |
| 11.745 | 0.62 | 0.66 | 0.69 | 0.73 | 0.77 | 0.80 | 0.83 | |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 11.789 | 0.86 | 0.89 | 0.92 | 0.95 | 0.98 | 1.01 | 1.05 |
| 11.833 | 1.11 | 1.17 | 1.25 | 1.33 | 1.42 | 1.50 | 1.59 |
| 11.877 | 1.67 | 1.75 | 1.83 | 1.89 | 1.95 | 2.00 | 2.04 |
| 11.922 | 2.08 | 2.10 | 2.10 | 2.10 | 2.08 | 2.06 | 2.03 |
| 11.966 | 2.00 | 1.97 | 1.94 | 1.91 | 1.89 | 1.87 | 1.85 |
| 12.010 | 1.83 | 1.81 | 1.78 | 1.73 | 1.66 | 1.58 | 1.48 |
| 12.054 | 1.38 | 1.27 | 1.16 | 1.05 | 0.96 | 0.87 | 0.79 |
| 12.099 | 0.72 | 0.67 | 0.62 | 0.59 | 0.55 | 0.52 | 0.50 |
| 12.143 | 0.47 | 0.45 | 0.44 | 0.42 | 0.41 | 0.39 | 0.38 |
| 12.187 | 0.37 | 0.37 | 0.36 | 0.36 | 0.35 | 0.35 | 0.34 |
| 12.231 | 0.34 | 0.33 | 0.33 | 0.32 | 0.32 | 0.32 | 0.31 |
| 12.275 | 0.31 | 0.30 | 0.30 | 0.30 | 0.30 | 0.29 | 0.29 |
| 12.320 | 0.29 | 0.29 | 0.29 | 0.28 | 0.28 | 0.28 | 0.27 |
| 12.364 | 0.27 | 0.27 | 0.26 | 0.26 | 0.26 | 0.25 | 0.25 |
| 12.408 | 0.25 | 0.25 | 0.25 | 0.24 | 0.24 | 0.24 | 0.24 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 (cfs) | hr (cfs) | (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|-------|
| 12.452 | 0.23 | 0.23 | 0.22 | 0.22 | 0.21 | 0.21 |
| 12.496 | 0.21 | 0.21 | 0.21 | 0.20 | 0.20 | 0.20 |
| 12.541 | 0.20 | 0.19 | 0.19 | 0.19 | 0.19 | 0.18 |
| 12.585 | 0.18 | 0.18 | 0.18 | 0.18 | 0.17 | 0.17 |
| 12.629 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 12.673 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 |
| 12.717 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 12.762 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 |
| 12.806 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 12.850 | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 |
| 12.894 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 12.939 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 12.983 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 13.027 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 13.071 | 0.13 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 |
| 13.115 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 13.160 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 13.204 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 13.248 | 0.12 | 0.12 | 0.12 | 0.11 | 0.11 | 0.11 |
| 13.292 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 13.336 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 13.381 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 13.425 | 0.11 | 0.11 | 0.11 | 0.11 | 0.10 | 0.10 |
| 13.469 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 13.513 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 13.557 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 13.602 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 13.646 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.09 |
| 13.690 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 13.734 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 13.779 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 13.823 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 13.867 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 |
| 13.911 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 13.955 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.000 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.044 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.088 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.132 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.176 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.221 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 14.265 | 0.08 | 0.08 | 0.08 | 0.08 | 0.07 | 0.07 | 0.07 |
| 14.309 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.353 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.397 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.442 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.486 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.530 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.574 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.619 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.663 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of (cfs) | 0.006 (cfs) | hr (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------|-------------|----------|
| 14.707 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.751 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.795 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.840 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.884 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.928 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 14.972 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.06 | 0.06 |
| 15.016 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.061 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.105 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.149 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.193 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.237 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.282 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.326 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.370 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.414 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.459 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.503 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.547 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.591 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.635 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 15.680 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.05 |
| 15.724 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 15.768 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 15.812 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 15.856 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 15.901 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 15.945 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 15.989 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| | 16.033 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
| Bench 6 | 0.008 | | 2.765 | | 12.07 | 16.86 | 2139.73 |

Line

| Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.017 (cfs) | hr (cfs) | 0.017 hr (cfs) |
|-----------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 9.211 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 |
| 9.330 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 |
| 9.449 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| 9.568 | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 | 0.09 |
| 9.687 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.10 |
| 9.806 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.12 |
| 9.925 | 0.12 | 0.12 | 0.13 | 0.13 | 0.13 | 0.14 |
| 10.044 | 0.14 | 0.14 | 0.14 | 0.15 | 0.15 | 0.16 |
| 10.163 | 0.16 | 0.16 | 0.17 | 0.17 | 0.18 | 0.18 |

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Area 8
Benches

Line

| Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.017 (cfs) | hr (cfs) | 0.017 hr (cfs) |
|-----------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 10.282 | 0.18 | 0.19 | 0.19 | 0.20 | 0.20 | 0.21 |
| 10.401 | 0.21 | 0.21 | 0.22 | 0.23 | 0.23 | 0.24 |
| 10.520 | 0.24 | 0.24 | 0.25 | 0.26 | 0.26 | 0.27 |
| 10.639 | 0.27 | 0.28 | 0.29 | 0.30 | 0.30 | 0.31 |
| 10.757 | 0.32 | 0.32 | 0.33 | 0.34 | 0.34 | 0.36 |
| 10.876 | 0.37 | 0.37 | 0.38 | 0.39 | 0.40 | 0.41 |
| 10.995 | 0.42 | 0.43 | 0.44 | 0.46 | 0.47 | 0.48 |
| 11.114 | 0.49 | 0.50 | 0.51 | 0.52 | 0.54 | 0.57 |
| 11.233 | 0.58 | 0.60 | 0.61 | 0.63 | 0.65 | 0.68 |
| 11.352 | 0.70 | 0.72 | 0.74 | 0.76 | 0.78 | 0.82 |
| 11.471 | 0.85 | 0.87 | 0.89 | 0.92 | 0.95 | 1.05 |
| 11.590 | 1.12 | 1.21 | 1.33 | 1.47 | 1.63 | 1.83 |
| 11.709 | 2.33 | 2.65 | 3.01 | 3.40 | 3.84 | 4.33 |
| 11.828 | 5.50 | 6.20 | 6.98 | 7.87 | 8.89 | 4.88 |
| 11.947 | 12.38 | 13.51 | 14.54 | 15.43 | 16.12 | 11.19 |
| 12.066 | 16.86 | 16.58 | 16.03 | 15.25 | 14.30 | 16.60 |
| 12.185 | 11.14 | 10.14 | 9.19 | 8.33 | 7.55 | 12.20 |
| 12.304 | 5.88 | 5.46 | 5.10 | 4.78 | 4.50 | 6.35 |
| 12.422 | 3.82 | 3.63 | 3.46 | 3.31 | 3.17 | 4.02 |
| 12.541 | 2.79 | 2.68 | 2.58 | 2.49 | 2.40 | 2.91 |
| 12.660 | 2.16 | 2.10 | 2.04 | 1.99 | 1.94 | 2.24 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 12.779 | 1.81 | 1.78 | 1.75 | 1.72 | 1.70 | 1.68 | 1.65 |
| 12.898 | 1.63 | 1.61 | 1.59 | 1.57 | 1.55 | 1.53 | 1.51 |
| 13.017 | 1.49 | 1.47 | 1.45 | 1.44 | 1.42 | 1.40 | 1.39 |
| 13.136 | 1.37 | 1.35 | 1.34 | 1.33 | 1.31 | 1.30 | 1.29 |
| 13.255 | 1.27 | 1.26 | 1.25 | 1.24 | 1.23 | 1.22 | 1.21 |
| 13.374 | 1.20 | 1.19 | 1.18 | 1.17 | 1.16 | 1.15 | 1.14 |
| 13.493 | 1.13 | 1.12 | 1.11 | 1.10 | 1.09 | 1.08 | 1.07 |
| 13.612 | 1.06 | 1.05 | 1.04 | 1.03 | 1.02 | 1.02 | 1.01 |
| 13.731 | 1.00 | 0.99 | 0.98 | 0.98 | 0.97 | 0.96 | 0.95 |
| 13.850 | 0.95 | 0.94 | 0.93 | 0.93 | 0.92 | 0.91 | 0.90 |
| 13.969 | 0.90 | 0.89 | 0.88 | 0.88 | 0.87 | 0.86 | 0.86 |
| 14.087 | 0.85 | 0.84 | 0.84 | 0.83 | 0.83 | 0.82 | 0.82 |
| 14.206 | 0.81 | 0.81 | 0.80 | 0.80 | 0.79 | 0.79 | 0.79 |
| 14.325 | 0.78 | 0.78 | 0.78 | 0.78 | 0.77 | 0.77 | 0.77 |
| 14.444 | 0.77 | 0.76 | 0.76 | 0.76 | 0.76 | 0.75 | 0.75 |
| 14.563 | 0.75 | 0.75 | 0.74 | 0.74 | 0.74 | 0.74 | 0.73 |
| 14.682 | 0.73 | 0.73 | 0.73 | 0.72 | 0.72 | 0.72 | 0.72 |
| 14.801 | 0.71 | 0.71 | 0.71 | 0.71 | 0.70 | 0.70 | 0.70 |
| 14.920 | 0.70 | 0.69 | 0.69 | 0.69 | 0.69 | 0.68 | 0.68 |
| 15.039 | 0.68 | 0.68 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 |
| 15.158 | 0.66 | 0.66 | 0.66 | 0.66 | 0.65 | 0.65 | 0.65 |
| 15.277 | 0.65 | 0.64 | 0.64 | 0.64 | 0.64 | 0.63 | 0.63 |
| 15.396 | 0.63 | 0.63 | 0.62 | 0.62 | 0.62 | 0.62 | 0.61 |
| 15.515 | 0.61 | 0.61 | 0.61 | 0.60 | 0.60 | 0.60 | 0.60 |
| 15.633 | 0.59 | 0.59 | 0.59 | 0.59 | 0.58 | 0.58 | 0.58 |
| 15.752 | 0.58 | 0.57 | 0.57 | 0.57 | 0.57 | 0.56 | 0.56 |
| 15.871 | 0.56 | 0.56 | 0.55 | 0.55 | 0.55 | 0.55 | 0.54 |
| 15.990 | 0.54 | 0.54 | 0.54 | 0.53 | 0.53 | 0.53 | 0.53 |
| 16.109 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.51 | 0.51 |
| 16.228 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.50 | 0.50 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of 0.017 (cfs) | hr (cfs) | ----- |
|----------------------|------------|--------------|--------------|-----------------|----------------|----------|-------|
| 16.347 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| 16.466 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 |
| 16.585 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.48 | 0.48 |
| 16.704 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| 16.823 | 0.48 | 0.48 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 |
| 16.942 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.46 |
| 17.061 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 17.180 | 0.46 | 0.46 | 0.46 | 0.46 | 0.45 | 0.45 | 0.45 |
| 17.298 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| 17.417 | 0.45 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 |
| 17.536 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 |
| 17.655 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| 17.774 | 0.43 | 0.43 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 |
| 17.893 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.41 |
| 18.012 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| 18.131 | 0.41 | 0.41 | 0.41 | 0.40 | 0.40 | 0.40 | 0.40 |

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Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 18.250 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 18.369 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 18.488 | 0.39 | 0.39 | 0.39 | 0.39 | 0.38 | 0.38 | 0.38 |
| 18.607 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 18.726 | 0.38 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 18.844 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.36 | 0.36 |
| 18.963 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 19.082 | 0.36 | 0.36 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 19.201 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.34 |
| 19.320 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 19.439 | 0.34 | 0.34 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 19.558 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.32 |
| 19.677 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 19.796 | 0.32 | 0.32 | 0.32 | 0.31 | 0.31 | 0.31 | 0.31 |
| 19.915 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 20.034 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 20.153 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 20.272 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.391 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.509 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.628 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.747 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.866 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 20.985 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 21.104 | 0.29 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.223 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.342 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.461 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.580 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.699 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.818 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 21.937 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 22.055 | 0.28 | 0.28 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 22.174 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 22.293 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of (cfs) | 0.017 hr (cfs) | hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------|----------------|----------|
| 22.412 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 22.531 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 22.650 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 22.769 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 22.888 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 23.007 | 0.27 | 0.27 | 0.27 | 0.26 | 0.26 | 0.26 |
| 23.126 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 23.245 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 23.364 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 23.483 | 0.26 | 0.26 | 0.26 | 0.25 | 0.26 | 0.26 |
| 23.602 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 23.720 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| | 23.839 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| | 23.958 | 0.26 | 0.26 | 0.26 | 0.25 | 0.25 | 0.24 |
| | 24.077 | 0.24 | 0.23 | 0.21 | 0.20 | 0.18 | 0.16 |
| | 24.196 | 0.12 | 0.10 | 0.09 | 0.07 | 0.06 | 0.05 |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| Bench 7 | 0.002 | | 2.745 | | 11.94 | 6.21 | 2687.53 |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 (cfs) | hr (cfs) | 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 10.111 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 10.159 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 |
| 10.207 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 10.256 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 10.304 | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 |
| 10.352 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 10.400 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 10.448 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.08 |
| 10.497 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 10.545 | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 | 0.09 |
| 10.593 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 10.641 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.10 |
| 10.689 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 10.737 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 10.786 | 0.11 | 0.11 | 0.11 | 0.11 | 0.12 | 0.12 |
| 10.834 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 10.882 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 10.930 | 0.13 | 0.13 | 0.13 | 0.14 | 0.14 | 0.14 |
| 10.978 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.15 |
| 11.027 | 0.15 | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 |
| 11.075 | 0.16 | 0.16 | 0.16 | 0.17 | 0.17 | 0.17 |
| 11.123 | 0.17 | 0.17 | 0.17 | 0.18 | 0.18 | 0.18 |
| 11.171 | 0.19 | 0.19 | 0.19 | 0.19 | 0.20 | 0.20 |
| 11.219 | 0.20 | 0.20 | 0.20 | 0.21 | 0.21 | 0.21 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 (cfs) | hr (cfs) | 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|----------------|----------|----------------|
| 11.268 | 0.22 | 0.22 | 0.22 | 0.23 | 0.23 | 0.23 |
| 11.316 | 0.23 | 0.24 | 0.24 | 0.24 | 0.25 | 0.25 |
| 11.364 | 0.25 | 0.26 | 0.26 | 0.26 | 0.27 | 0.27 |
| 11.412 | 0.27 | 0.27 | 0.28 | 0.28 | 0.28 | 0.29 |
| 11.460 | 0.29 | 0.29 | 0.30 | 0.30 | 0.31 | 0.31 |
| 11.509 | 0.31 | 0.32 | 0.33 | 0.34 | 0.38 | 0.40 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 11.557 | 0.43 | 0.46 | 0.49 | 0.52 | 0.54 | 0.57 | 0.60 |
| 11.605 | 0.62 | 0.64 | 0.67 | 0.70 | 0.73 | 0.78 | 0.84 |
| 11.653 | 0.90 | 0.97 | 1.04 | 1.11 | 1.18 | 1.24 | 1.30 |
| 11.701 | 1.36 | 1.41 | 1.47 | 1.52 | 1.59 | 1.66 | 1.75 |
| 11.749 | 1.85 | 1.96 | 2.07 | 2.19 | 2.30 | 2.41 | 2.51 |
| 11.798 | 2.61 | 2.70 | 2.79 | 2.90 | 3.02 | 3.17 | 3.35 |
| 11.846 | 3.56 | 3.81 | 4.07 | 4.34 | 4.60 | 4.87 | 5.12 |
| 11.894 | 5.36 | 5.58 | 5.77 | 5.93 | 6.06 | 6.15 | 6.20 |
| 11.942 | 6.21 | 6.18 | 6.13 | 6.06 | 5.98 | 5.89 | 5.81 |
| 11.990 | 5.73 | 5.66 | 5.60 | 5.54 | 5.46 | 5.35 | 5.20 |
| 12.039 | 5.00 | 4.75 | 4.45 | 4.13 | 3.81 | 3.48 | 3.17 |
| 12.087 | 2.88 | 2.61 | 2.37 | 2.18 | 2.01 | 1.87 | 1.75 |
| 12.135 | 1.65 | 1.56 | 1.48 | 1.41 | 1.35 | 1.30 | 1.25 |
| 12.183 | 1.21 | 1.17 | 1.14 | 1.12 | 1.09 | 1.08 | 1.06 |
| 12.231 | 1.04 | 1.02 | 1.01 | 0.99 | 0.98 | 0.96 | 0.95 |
| 12.280 | 0.93 | 0.92 | 0.91 | 0.90 | 0.89 | 0.89 | 0.88 |
| 12.328 | 0.87 | 0.86 | 0.85 | 0.84 | 0.83 | 0.82 | 0.81 |
| 12.376 | 0.80 | 0.79 | 0.78 | 0.77 | 0.76 | 0.76 | 0.75 |
| 12.424 | 0.74 | 0.74 | 0.73 | 0.72 | 0.71 | 0.70 | 0.68 |
| 12.472 | 0.67 | 0.66 | 0.65 | 0.64 | 0.64 | 0.63 | 0.62 |
| 12.520 | 0.62 | 0.61 | 0.61 | 0.60 | 0.59 | 0.58 | 0.58 |
| 12.569 | 0.57 | 0.56 | 0.55 | 0.55 | 0.54 | 0.54 | 0.53 |
| 12.617 | 0.53 | 0.53 | 0.52 | 0.52 | 0.52 | 0.51 | 0.51 |
| 12.665 | 0.51 | 0.50 | 0.50 | 0.50 | 0.50 | 0.49 | 0.49 |
| 12.713 | 0.49 | 0.49 | 0.49 | 0.48 | 0.48 | 0.48 | 0.48 |
| 12.761 | 0.47 | 0.47 | 0.47 | 0.47 | 0.46 | 0.46 | 0.46 |
| 12.810 | 0.46 | 0.46 | 0.46 | 0.46 | 0.45 | 0.45 | 0.45 |
| 12.858 | 0.45 | 0.44 | 0.44 | 0.44 | 0.44 | 0.43 | 0.43 |
| 12.906 | 0.43 | 0.43 | 0.43 | 0.43 | 0.42 | 0.42 | 0.42 |
| 12.954 | 0.42 | 0.41 | 0.41 | 0.41 | 0.41 | 0.40 | 0.40 |
| 13.002 | 0.40 | 0.40 | 0.40 | 0.40 | 0.39 | 0.39 | 0.39 |
| 13.051 | 0.39 | 0.39 | 0.39 | 0.38 | 0.38 | 0.38 | 0.38 |
| 13.099 | 0.38 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 13.147 | 0.37 | 0.37 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 13.195 | 0.36 | 0.36 | 0.36 | 0.36 | 0.35 | 0.35 | 0.35 |
| 13.243 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.34 | 0.34 |
| 13.292 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 13.340 | 0.34 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 13.388 | 0.33 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 13.436 | 0.32 | 0.32 | 0.32 | 0.32 | 0.31 | 0.31 | 0.31 |
| 13.484 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.30 |
| 13.532 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 13.581 | 0.30 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 13.629 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.28 | 0.28 |
| 13.677 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of 0.007 (cfs) | hr (cfs) | ----- (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------------|----------|-------------|
| 13.725 | 0.28 | 0.28 | 0.28 | 0.28 | 0.27 | 0.27 | 0.27 |

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Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 13.773 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 13.822 | 0.27 | 0.27 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 13.870 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.25 |
| 13.918 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 13.966 | 0.25 | 0.25 | 0.25 | 0.24 | 0.24 | 0.24 | 0.24 |
| 14.014 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 14.063 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.23 | 0.23 |
| 14.111 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 14.159 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 14.207 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 14.255 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.22 |
| 14.303 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 14.352 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 14.400 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 14.448 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 14.496 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 14.544 | 0.22 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 14.593 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 14.641 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 14.689 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 14.737 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.20 |
| 14.785 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 14.834 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 14.882 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 14.930 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 14.978 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.19 | 0.19 |
| 15.026 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 15.075 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 15.123 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 15.171 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 15.219 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.18 | 0.18 |
| 15.267 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 15.315 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 15.364 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 15.412 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 15.460 | 0.18 | 0.18 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 |
| 15.508 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 15.556 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 15.605 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 15.653 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 15.701 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 |
| 15.749 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 15.797 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 15.846 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 15.894 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 15.942 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 15.990 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16.038 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16.087 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16.135 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area Line | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Flow Rate (cfs) | Rate (csm) |
|--------------------------------|--------------------------|--------------------------------|--------------------------|-------------------|----------------|----------------------------|---------------|
| Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of (cfs) | 0.007 (cfs) | hr (cfs) | |
| 16.183 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16.231 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16.279 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16.327 | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 |
| 16.376 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.424 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.472 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.520 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.568 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.617 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.665 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.713 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.761 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.809 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.858 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.906 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 16.954 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 |
| 17.002 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.050 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.098 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.147 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.195 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.243 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.291 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.339 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.388 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.436 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.484 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.532 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.580 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 17.629 | 0.13 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 | 0.12 |
| 17.677 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 17.725 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 17.773 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 17.821 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 17.870 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 17.918 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 17.966 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 18.014 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 18.062 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 18.110 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 18.159 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 18.207 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| 18.255 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.11 | 0.11 |
| 18.303 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.351 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.400 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.448 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.496 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.544 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.592 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|---------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 18.641 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.689 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.737 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.785 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.833 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.882 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 18.930 | 0.11 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 18.978 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.026 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.074 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.122 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.171 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.219 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.267 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.315 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.363 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.412 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.460 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.508 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 19.556 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.604 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.653 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.701 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.749 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.797 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.845 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.893 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.942 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 19.990 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.038 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.086 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.134 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.183 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.231 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.279 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.327 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.375 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.424 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.472 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 20.520 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 |
| 20.568 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.616 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.665 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.713 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.761 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.809 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.857 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 20.905 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 20.954 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.002 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.050 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 21.098 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.146 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.195 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.243 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.291 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.339 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.387 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.436 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.484 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.532 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.580 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.628 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.676 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.725 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.773 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.821 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.869 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.917 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 21.966 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.014 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.062 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.110 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.158 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.207 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.255 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.303 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.351 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.399 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.448 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.496 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.544 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.592 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.640 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.688 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.737 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.785 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.833 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.881 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.929 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 22.978 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 23.026 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 23.074 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |

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Area 8
Benches

Name of printed page file:
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| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 23.122 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.170 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.219 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.267 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.315 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.363 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.411 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.459 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| | 23.508 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of (cfs) | 0.007 hr (cfs) | hr (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------|----------------|----------|
| 23.556 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 23.604 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 23.652 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 23.700 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 23.749 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.07 | 0.07 |
| 23.797 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 23.845 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 23.893 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 23.941 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 23.990 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 24.038 | 0.07 | 0.06 | 0.06 | 0.05 | | | |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| Channel 8 | 0.004 | | 2.757 | | 11.94 | 10.57 | 2675.64 |

| Line Start Time (hr) | Flow (cfs) | Values (cfs) | @ time (cfs) | increment (cfs) | of (cfs) | 0.007 hr (cfs) | hr (cfs) |
|----------------------|------------|--------------|--------------|-----------------|----------|----------------|----------|
| 9.660 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 9.709 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 |
| 9.758 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 9.807 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 9.856 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 9.905 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| 9.954 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 |
| 10.004 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 10.053 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 |
| 10.102 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 10.151 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| 10.200 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| 10.249 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.11 | 0.11 |
| 10.298 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| 10.347 | 0.11 | 0.11 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 10.396 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 |
| 10.445 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 10.494 | 0.13 | 0.13 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 10.543 | 0.14 | 0.14 | 0.14 | 0.14 | 0.15 | 0.15 | 0.15 |
| 10.592 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 |
| 10.641 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.17 | 0.17 |
| 10.691 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.18 | 0.18 |
| 10.740 | 0.18 | 0.18 | 0.18 | 0.18 | 0.19 | 0.19 | 0.19 |
| 10.789 | 0.19 | 0.19 | 0.19 | 0.20 | 0.20 | 0.20 | 0.20 |
| 10.838 | 0.20 | 0.20 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 10.887 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.23 |
| 10.936 | 0.23 | 0.23 | 0.23 | 0.23 | 0.24 | 0.24 | 0.24 |
| 10.985 | 0.24 | 0.24 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 11.034 | 0.25 | 0.26 | 0.26 | 0.26 | 0.27 | 0.27 | 0.27 |

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Area 8
Benches

| Line Start Time (hr) | Flow Values @ time increment of 0.007 hr | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) |
|----------------------|------------------------------------------|-------|-------|-------|-------|-------|-------|
| 11.083 | 0.27 | 0.28 | 0.28 | 0.28 | 0.29 | 0.29 | 0.29 |
| 11.132 | 0.29 | 0.30 | 0.30 | 0.30 | 0.31 | 0.31 | 0.32 |
| 11.181 | 0.32 | 0.33 | 0.33 | 0.33 | 0.34 | 0.34 | 0.34 |
| 11.230 | 0.35 | 0.35 | 0.35 | 0.36 | 0.36 | 0.37 | 0.37 |
| 11.279 | 0.38 | 0.38 | 0.39 | 0.39 | 0.40 | 0.40 | 0.40 |
| 11.329 | 0.41 | 0.41 | 0.42 | 0.42 | 0.43 | 0.43 | 0.44 |
| 11.378 | 0.44 | 0.45 | 0.45 | 0.46 | 0.46 | 0.46 | 0.47 |
| 11.427 | 0.47 | 0.48 | 0.48 | 0.49 | 0.49 | 0.50 | 0.50 |
| 11.476 | 0.51 | 0.52 | 0.52 | 0.53 | 0.53 | 0.54 | 0.55 |
| 11.525 | 0.57 | 0.59 | 0.62 | 0.65 | 0.70 | 0.75 | 0.80 |
| 11.574 | 0.85 | 0.90 | 0.95 | 0.99 | 1.03 | 1.07 | 1.11 |
| 11.623 | 1.16 | 1.22 | 1.30 | 1.39 | 1.49 | 1.61 | 1.73 |
| 11.672 | 1.85 | 1.96 | 2.08 | 2.19 | 2.28 | 2.38 | 2.47 |
| 11.721 | 2.57 | 2.68 | 2.81 | 2.96 | 3.13 | 3.31 | 3.51 |
| 11.770 | 3.70 | 3.90 | 4.08 | 4.26 | 4.43 | 4.59 | 4.76 |
| 11.819 | 4.94 | 5.16 | 5.42 | 5.74 | 6.12 | 6.54 | 6.99 |
| 11.868 | 7.45 | 7.91 | 8.36 | 8.79 | 9.20 | 9.57 | 9.89 |
| 11.917 | 10.16 | 10.36 | 10.50 | 10.57 | 10.57 | 10.51 | 10.41 |
| 11.966 | 10.29 | 10.15 | 10.01 | 9.87 | 9.75 | 9.64 | 9.53 |
| 12.016 | 9.40 | 9.24 | 9.02 | 8.71 | 8.31 | 7.82 | 7.29 |
| 12.065 | 6.73 | 6.17 | 5.62 | 5.11 | 4.63 | 4.21 | 3.84 |
| 12.114 | 3.54 | 3.29 | 3.07 | 2.89 | 2.72 | 2.58 | 2.45 |
| 12.163 | 2.34 | 2.25 | 2.16 | 2.09 | 2.02 | 1.97 | 1.92 |
| 12.212 | 1.88 | 1.85 | 1.82 | 1.79 | 1.76 | 1.73 | 1.70 |
| 12.261 | 1.67 | 1.64 | 1.62 | 1.60 | 1.57 | 1.56 | 1.54 |
| 12.310 | 1.53 | 1.51 | 1.50 | 1.49 | 1.47 | 1.45 | 1.43 |
| 12.359 | 1.42 | 1.40 | 1.38 | 1.36 | 1.34 | 1.33 | 1.31 |
| 12.408 | 1.30 | 1.29 | 1.28 | 1.27 | 1.25 | 1.24 | 1.22 |
| 12.457 | 1.20 | 1.18 | 1.16 | 1.14 | 1.12 | 1.11 | 1.09 |
| 12.506 | 1.08 | 1.07 | 1.06 | 1.05 | 1.04 | 1.03 | 1.01 |
| 12.555 | 1.00 | 0.99 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 |
| 12.604 | 0.92 | 0.91 | 0.91 | 0.90 | 0.89 | 0.89 | 0.88 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 12.653 | 0.88 | 0.87 | 0.87 | 0.86 | 0.85 | 0.85 | 0.85 |
| 12.703 | 0.84 | 0.84 | 0.84 | 0.83 | 0.83 | 0.83 | 0.82 |
| 12.752 | 0.82 | 0.81 | 0.81 | 0.81 | 0.80 | 0.80 | 0.79 |
| 12.801 | 0.79 | 0.79 | 0.78 | 0.78 | 0.78 | 0.78 | 0.77 |
| 12.850 | 0.77 | 0.76 | 0.76 | 0.75 | 0.75 | 0.75 | 0.74 |
| 12.899 | 0.74 | 0.74 | 0.73 | 0.73 | 0.73 | 0.73 | 0.72 |
| 12.948 | 0.72 | 0.71 | 0.71 | 0.70 | 0.70 | 0.70 | 0.69 |
| 12.997 | 0.69 | 0.69 | 0.68 | 0.68 | 0.68 | 0.68 | 0.67 |
| 13.046 | 0.67 | 0.67 | 0.66 | 0.66 | 0.65 | 0.65 | 0.65 |
| 13.095 | 0.65 | 0.64 | 0.64 | 0.64 | 0.64 | 0.63 | 0.63 |
| 13.144 | 0.63 | 0.63 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 |
| 13.193 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.60 |
| 13.242 | 0.60 | 0.60 | 0.60 | 0.59 | 0.59 | 0.59 | 0.59 |
| 13.291 | 0.59 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 |
| 13.341 | 0.57 | 0.57 | 0.57 | 0.57 | 0.56 | 0.56 | 0.56 |
| 13.390 | 0.56 | 0.56 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 |
| 13.439 | 0.55 | 0.54 | 0.54 | 0.54 | 0.54 | 0.53 | 0.53 |
| 13.488 | 0.53 | 0.53 | 0.53 | 0.52 | 0.52 | 0.52 | 0.52 |
| 13.537 | 0.52 | 0.52 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | 0.007 hr (cfs) | Flow (cfs) | 0.007 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|----------------|------------|----------------|
| 13.586 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| 13.635 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.48 |
| 13.684 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.47 |
| 13.733 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.47 | 0.46 |
| 13.782 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.45 |
| 13.831 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.44 | 0.44 |
| 13.880 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.43 |
| 13.929 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.42 | 0.42 |
| 13.978 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.41 | 0.41 |
| 14.028 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| 14.077 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 14.126 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.39 | 0.39 |
| 14.175 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 14.224 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 |
| 14.273 | 0.39 | 0.39 | 0.39 | 0.38 | 0.38 | 0.38 | 0.38 |
| 14.322 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 14.371 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 14.420 | 0.38 | 0.38 | 0.38 | 0.37 | 0.37 | 0.37 | 0.37 |
| 14.469 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 14.518 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 |
| 14.567 | 0.37 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 14.616 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 14.666 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| 14.715 | 0.36 | 0.36 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 14.764 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 14.813 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| 14.862 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 14.911 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| 14.960 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.33 | 0.33 |
| 15.009 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 15.058 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| 15.107 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.32 |
| 15.156 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 15.205 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| 15.254 | 0.32 | 0.32 | 0.32 | 0.31 | 0.31 | 0.31 | 0.31 |
| 15.303 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 15.353 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| 15.402 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 15.451 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 15.500 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| 15.549 | 0.30 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 15.598 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 15.647 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.28 | 0.28 |
| 15.696 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 15.745 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 15.794 | 0.28 | 0.28 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 15.843 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 15.892 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| 15.941 | 0.27 | 0.27 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 15.991 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 16.040 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | (cfs) | (cfs) | (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|-------|-------|-------|
| 16.089 | 0.26 | 0.26 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.138 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.187 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.236 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.285 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.334 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.383 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 16.432 | 0.25 | 0.25 | 0.25 | 0.25 | 0.24 | 0.24 | 0.24 |
| 16.481 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.530 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.579 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.628 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.678 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.727 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.776 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 16.825 | 0.24 | 0.24 | 0.24 | 0.23 | 0.23 | 0.23 | 0.23 |
| 16.874 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 16.923 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 16.972 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 17.021 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 17.070 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 17.119 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 17.168 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 17.217 | 0.23 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.266 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.316 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.365 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.414 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.463 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.512 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| 17.561 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.21 |
| 17.610 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.659 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.708 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.757 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.806 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.855 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.904 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 17.953 | 0.21 | 0.21 | 0.21 | 0.21 | 0.20 | 0.20 | 0.20 |
| 18.003 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.052 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.101 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.150 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.199 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.248 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.297 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 18.346 | 0.20 | 0.20 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.395 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.444 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.493 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.542 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of (cfs) | 0.007 (cfs) | hr (cfs) | ----- |
|----------------------|------------|---------------------|-----------------|----------|-------------|----------|-------|
| 18.591 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.640 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.690 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |
| 18.739 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 18.788 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 18.837 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 18.886 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 18.935 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 18.984 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 19.033 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
| 19.082 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 19.131 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 19.180 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 19.229 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 19.278 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 19.328 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| 19.377 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 19.426 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 |
| 19.475 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 19.524 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 19.573 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 19.622 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 19.671 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 19.720 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 |
| 19.769 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.15 |
| 19.818 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 19.867 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 19.916 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 19.965 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.015 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.064 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.113 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.162 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.211 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.260 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.309 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.358 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.407 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.456 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.505 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20.554 | 0.15 | 0.15 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 |
| 20.603 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.653 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.702 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.751 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.800 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.849 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.898 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.947 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 20.996 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.045 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|-------|
| 21.094 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.143 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.192 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.241 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.290 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.340 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.389 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.438 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.487 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.536 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.585 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.634 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |

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Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 21.683 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.732 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.781 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.830 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.879 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.928 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 21.977 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.027 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.076 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.125 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.174 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.223 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.272 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.321 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.370 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.419 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.468 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| 22.517 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | 0.13 |
| 22.566 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.615 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.665 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.714 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.763 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.812 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.861 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.910 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 22.959 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.008 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.057 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.106 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.155 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.204 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.253 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.302 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.352 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.401 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.450 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.499 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.548 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.007 hr (cfs) | ----- |
|----------------------|------------|---------------------|-----------------|-------------------|-------|
| 23.597 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.646 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.695 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.744 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.793 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.842 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| 23.891 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |

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Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| | 23.940 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| | 23.990 | 0.13 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 |
| | 24.039 | 0.11 | 0.11 | 0.10 | 0.09 | 0.08 | 0.07 |
| | 24.088 | 0.05 | | | | | 0.06 |

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| OUTLET | 0.031 | | 2.731 | | 12.00 | 71.73 | 2310.82 |

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 9.174 | 0.05 | 0.05 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | |
| 9.219 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | |
| 9.263 | 0.11 | 0.11 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | |
| 9.307 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 | 0.13 | |
| 9.351 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | |
| 9.395 | 0.13 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | |
| 9.440 | 0.14 | 0.14 | 0.14 | 0.14 | 0.17 | 0.20 | 0.20 | |
| 9.484 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.21 | 0.21 | |
| 9.528 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.22 | 0.22 | |
| 9.572 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.23 | 0.23 | |
| 9.616 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.24 | 0.25 | |
| 9.661 | 0.29 | 0.29 | 0.29 | 0.30 | 0.30 | 0.30 | 0.30 | |
| 9.705 | 0.31 | 0.31 | 0.31 | 0.31 | 0.32 | 0.32 | 0.32 | |
| 9.749 | 0.32 | 0.33 | 0.33 | 0.33 | 0.33 | 0.34 | 0.34 | |
| 9.793 | 0.34 | 0.34 | 0.35 | 0.35 | 0.35 | 0.35 | 0.37 | |
| 9.837 | 0.41 | 0.41 | 0.42 | 0.42 | 0.42 | 0.43 | 0.43 | |
| 9.882 | 0.43 | 0.43 | 0.44 | 0.44 | 0.44 | 0.45 | 0.45 | |
| 9.926 | 0.45 | 0.46 | 0.46 | 0.46 | 0.47 | 0.47 | 0.47 | |
| 9.970 | 0.48 | 0.48 | 0.49 | 0.49 | 0.49 | 0.50 | 0.50 | |
| 10.014 | 0.50 | 0.51 | 0.51 | 0.51 | 0.52 | 0.52 | 0.52 | |
| 10.059 | 0.53 | 0.53 | 0.54 | 0.54 | 0.54 | 0.55 | 0.55 | |
| 10.103 | 0.56 | 0.60 | 0.62 | 0.62 | 0.62 | 0.63 | 0.63 | |
| 10.147 | 0.64 | 0.64 | 0.65 | 0.65 | 0.66 | 0.66 | 0.67 | |
| 10.191 | 0.67 | 0.68 | 0.68 | 0.69 | 0.69 | 0.70 | 0.70 | |
| 10.235 | 0.71 | 0.71 | 0.72 | 0.73 | 0.73 | 0.74 | 0.74 | |
| 10.280 | 0.75 | 0.75 | 0.76 | 0.76 | 0.77 | 0.78 | 0.78 | |
| 10.324 | 0.79 | 0.79 | 0.80 | 0.80 | 0.81 | 0.82 | 0.82 | |
| 10.368 | 0.83 | 0.83 | 0.84 | 0.85 | 0.85 | 0.86 | 0.87 | |
| 10.412 | 0.87 | 0.88 | 0.88 | 0.89 | 0.90 | 0.90 | 0.91 | |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 10.456 | 0.91 | 0.92 | 0.93 | 0.93 | 0.94 | 0.95 | 0.95 | |
| 10.501 | 0.96 | 0.97 | 0.97 | 0.98 | 0.99 | 0.99 | 1.00 | |

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Area 8
Benches

Name of printed page file:
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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 10.545 | 1.01 | 1.02 | 1.02 | 1.03 | 1.04 | 1.05 | 1.06 |
| 10.589 | 1.06 | 1.07 | 1.08 | 1.09 | 1.09 | 1.10 | 1.11 |
| 10.633 | 1.12 | 1.13 | 1.13 | 1.14 | 1.15 | 1.16 | 1.17 |
| 10.677 | 1.18 | 1.19 | 1.20 | 1.21 | 1.22 | 1.23 | 1.24 |
| 10.722 | 1.25 | 1.26 | 1.27 | 1.28 | 1.29 | 1.30 | 1.31 |
| 10.766 | 1.32 | 1.33 | 1.34 | 1.35 | 1.36 | 1.37 | 1.38 |
| 10.810 | 1.39 | 1.40 | 1.41 | 1.42 | 1.43 | 1.45 | 1.46 |
| 10.854 | 1.47 | 1.48 | 1.49 | 1.50 | 1.52 | 1.53 | 1.54 |
| 10.899 | 1.55 | 1.56 | 1.57 | 1.58 | 1.60 | 1.61 | 1.62 |
| 10.943 | 1.63 | 1.64 | 1.66 | 1.67 | 1.68 | 1.70 | 1.71 |
| 10.987 | 1.72 | 1.73 | 1.75 | 1.76 | 1.77 | 1.78 | 1.80 |
| 11.031 | 1.81 | 1.87 | 1.89 | 1.91 | 1.92 | 1.94 | 1.96 |
| 11.075 | 1.98 | 1.99 | 2.01 | 2.03 | 2.05 | 2.06 | 2.08 |
| 11.120 | 2.10 | 2.11 | 2.13 | 2.15 | 2.17 | 2.20 | 2.22 |
| 11.164 | 2.25 | 2.27 | 2.30 | 2.32 | 2.34 | 2.37 | 2.39 |
| 11.208 | 2.41 | 2.44 | 2.46 | 2.48 | 2.51 | 2.53 | 2.56 |
| 11.252 | 2.59 | 2.62 | 2.65 | 2.67 | 2.75 | 2.78 | 2.81 |
| 11.296 | 2.84 | 2.87 | 2.90 | 2.92 | 2.95 | 2.98 | 3.01 |
| 11.341 | 3.04 | 3.07 | 3.10 | 3.13 | 3.17 | 3.20 | 3.23 |
| 11.385 | 3.27 | 3.30 | 3.33 | 3.36 | 3.39 | 3.42 | 3.45 |
| 11.429 | 3.48 | 3.52 | 3.55 | 3.58 | 3.62 | 3.66 | 3.69 |
| 11.473 | 3.73 | 3.77 | 3.80 | 3.84 | 3.87 | 3.91 | 3.96 |
| 11.517 | 4.02 | 4.10 | 4.19 | 4.32 | 4.47 | 4.65 | 4.85 |
| 11.562 | 5.07 | 5.30 | 5.53 | 5.77 | 6.01 | 6.25 | 6.48 |
| 11.606 | 6.72 | 6.97 | 7.23 | 7.53 | 7.87 | 8.26 | 8.71 |
| 11.650 | 9.21 | 9.76 | 10.33 | 10.93 | 11.54 | 12.16 | 12.77 |
| 11.694 | 13.37 | 13.96 | 14.55 | 15.15 | 15.77 | 16.43 | 17.15 |
| 11.739 | 17.94 | 18.81 | 19.74 | 20.73 | 21.76 | 22.82 | 23.88 |
| 11.783 | 24.96 | 26.01 | 27.05 | 28.09 | 29.13 | 30.24 | 31.43 |
| 11.827 | 32.73 | 34.21 | 35.88 | 37.75 | 39.83 | 42.03 | 44.33 |
| 11.871 | 46.72 | 49.14 | 51.57 | 53.97 | 56.33 | 58.63 | 60.78 |
| 11.915 | 62.77 | 64.59 | 66.19 | 67.57 | 68.71 | 69.63 | 70.30 |
| 11.960 | 70.80 | 71.16 | 71.40 | 71.55 | 71.63 | 71.69 | 71.73 |
| 12.004 | 71.67 | 71.55 | 71.31 | 70.86 | 70.18 | 69.16 | 67.82 |
| 12.048 | 66.19 | 64.22 | 62.04 | 59.75 | 57.34 | 54.91 | 52.48 |
| 12.092 | 50.10 | 47.84 | 45.65 | 43.62 | 41.74 | 39.93 | 38.24 |
| 12.136 | 36.66 | 35.15 | 33.71 | 32.34 | 31.06 | 29.85 | 28.71 |
| 12.181 | 27.62 | 26.62 | 25.70 | 24.82 | 24.01 | 23.26 | 22.54 |
| 12.225 | 21.87 | 21.23 | 20.62 | 20.05 | 19.49 | 18.97 | 18.48 |
| 12.269 | 18.01 | 17.59 | 17.18 | 16.79 | 16.45 | 16.11 | 15.80 |
| 12.313 | 15.51 | 15.23 | 14.96 | 14.70 | 14.45 | 14.20 | 13.96 |
| 12.357 | 13.72 | 13.48 | 13.26 | 13.04 | 12.83 | 12.63 | 12.45 |
| 12.402 | 12.27 | 12.10 | 11.94 | 11.78 | 11.63 | 11.47 | 11.31 |
| 12.446 | 11.15 | 10.99 | 10.83 | 10.66 | 10.50 | 10.35 | 10.20 |
| 12.490 | 10.05 | 9.92 | 9.79 | 9.67 | 9.55 | 9.43 | 9.32 |
| 12.534 | 9.21 | 9.10 | 8.99 | 8.87 | 8.76 | 8.65 | 8.54 |
| 12.579 | 8.43 | 8.33 | 8.24 | 8.15 | 8.06 | 7.98 | 7.91 |
| 12.623 | 7.83 | 7.76 | 7.69 | 7.63 | 7.56 | 7.50 | 7.43 |
| 12.667 | 7.37 | 7.32 | 7.26 | 7.21 | 7.16 | 7.11 | 7.07 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Peak Flow ----- | | |
|--------------------------|-----------------------|-------------------------------------|--------------------|-----------------|-----------|------------|
| | | | | Elevation (ft) | Time (hr) | Rate (cfs) |
| Start Time (hr) | Flow (cfs) | Values @ time increment of 0.006 hr | (cfs) | (cfs) | (cfs) | (cfs) |
| 12.711 | 7.03 | 6.99 | 6.95 | 6.91 | 6.87 | 6.83 |
| 12.755 | 6.75 | 6.71 | 6.67 | 6.64 | 6.60 | 6.56 |
| 12.800 | 6.50 | 6.47 | 6.44 | 6.42 | 6.39 | 6.36 |
| 12.844 | 6.30 | 6.27 | 6.24 | 6.21 | 6.18 | 6.15 |
| 12.888 | 6.09 | 6.06 | 6.04 | 6.01 | 5.99 | 5.96 |
| 12.932 | 5.91 | 5.89 | 5.86 | 5.83 | 5.80 | 5.77 |
| 12.976 | 5.71 | 5.69 | 5.66 | 5.63 | 5.61 | 5.58 |
| 13.021 | 5.54 | 5.52 | 5.49 | 5.47 | 5.45 | 5.42 |
| 13.065 | 5.37 | 5.34 | 5.32 | 5.30 | 5.27 | 5.25 |
| 13.109 | 5.21 | 5.19 | 5.17 | 5.16 | 5.14 | 5.12 |
| 13.153 | 5.08 | 5.06 | 5.04 | 5.02 | 5.00 | 4.99 |
| 13.197 | 4.95 | 4.94 | 4.92 | 4.91 | 4.90 | 4.88 |
| 13.242 | 4.85 | 4.83 | 4.82 | 4.80 | 4.78 | 4.77 |
| 13.286 | 4.74 | 4.72 | 4.71 | 4.69 | 4.68 | 4.67 |
| 13.330 | 4.64 | 4.63 | 4.61 | 4.60 | 4.58 | 4.57 |
| 13.374 | 4.53 | 4.52 | 4.50 | 4.49 | 4.48 | 4.46 |
| 13.419 | 4.44 | 4.43 | 4.41 | 4.40 | 4.38 | 4.37 |
| 13.463 | 4.34 | 4.32 | 4.31 | 4.29 | 4.28 | 4.26 |
| 13.507 | 4.24 | 4.22 | 4.21 | 4.20 | 4.19 | 4.17 |
| 13.551 | 4.14 | 4.13 | 4.12 | 4.10 | 4.09 | 4.07 |
| 13.595 | 4.05 | 4.04 | 4.02 | 4.01 | 4.00 | 3.99 |
| 13.640 | 3.97 | 3.96 | 3.94 | 3.93 | 3.92 | 3.91 |
| 13.684 | 3.88 | 3.87 | 3.86 | 3.85 | 3.84 | 3.83 |
| 13.728 | 3.81 | 3.80 | 3.79 | 3.78 | 3.77 | 3.76 |
| 13.772 | 3.73 | 3.72 | 3.71 | 3.70 | 3.69 | 3.68 |
| 13.816 | 3.66 | 3.65 | 3.64 | 3.63 | 3.62 | 3.61 |
| 13.861 | 3.59 | 3.58 | 3.57 | 3.55 | 3.54 | 3.53 |
| 13.905 | 3.51 | 3.50 | 3.50 | 3.49 | 3.48 | 3.47 |
| 13.949 | 3.45 | 3.43 | 3.42 | 3.41 | 3.40 | 3.39 |
| 13.993 | 3.37 | 3.36 | 3.35 | 3.34 | 3.33 | 3.32 |
| 14.037 | 3.31 | 3.30 | 3.29 | 3.28 | 3.27 | 3.26 |
| 14.082 | 3.24 | 3.23 | 3.23 | 3.22 | 3.21 | 3.20 |
| 14.126 | 3.19 | 3.19 | 3.18 | 3.17 | 3.17 | 3.16 |
| 14.170 | 3.15 | 3.14 | 3.14 | 3.13 | 3.13 | 3.12 |
| 14.214 | 3.11 | 3.11 | 3.10 | 3.10 | 3.09 | 3.09 |
| 14.259 | 3.08 | 3.08 | 3.07 | 3.07 | 3.06 | 3.06 |
| 14.303 | 3.05 | 3.05 | 3.05 | 3.04 | 3.04 | 3.03 |
| 14.347 | 3.03 | 3.02 | 3.02 | 2.97 | 2.96 | 2.95 |
| 14.391 | 2.95 | 2.95 | 2.94 | 2.94 | 2.94 | 2.93 |
| 14.435 | 2.93 | 2.92 | 2.92 | 2.91 | 2.91 | 2.91 |
| 14.480 | 2.90 | 2.90 | 2.89 | 2.89 | 2.89 | 2.88 |
| 14.524 | 2.88 | 2.88 | 2.87 | 2.87 | 2.86 | 2.86 |
| 14.568 | 2.85 | 2.85 | 2.84 | 2.84 | 2.84 | 2.83 |
| 14.612 | 2.83 | 2.82 | 2.82 | 2.82 | 2.81 | 2.81 |
| 14.656 | 2.80 | 2.80 | 2.80 | 2.79 | 2.79 | 2.78 |
| 14.701 | 2.78 | 2.78 | 2.77 | 2.77 | 2.77 | 2.76 |
| 14.745 | 2.76 | 2.75 | 2.75 | 2.75 | 2.74 | 2.73 |
| 14.789 | 2.73 | 2.73 | 2.72 | 2.72 | 2.72 | 2.71 |
| 14.833 | 2.71 | 2.70 | 2.70 | 2.70 | 2.69 | 2.69 |
| 14.877 | 2.68 | 2.68 | 2.67 | 2.67 | 2.67 | 2.66 |
| 14.922 | 2.66 | 2.66 | 2.65 | 2.65 | 2.65 | 2.64 |

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|

Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | Flow (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|
| 14.966 | 2.63 | 2.63 | 2.62 | 2.62 | 2.61 |
| 15.010 | 2.61 | 2.60 | 2.60 | 2.59 | 2.59 |
| 15.054 | 2.58 | 2.58 | 2.57 | 2.57 | 2.56 |
| 15.099 | 2.56 | 2.56 | 2.55 | 2.55 | 2.54 |
| 15.143 | 2.54 | 2.53 | 2.52 | 2.52 | 2.51 |
| 15.187 | 2.51 | 2.50 | 2.50 | 2.49 | 2.49 |
| 15.231 | 2.48 | 2.48 | 2.47 | 2.47 | 2.46 |
| 15.275 | 2.46 | 2.45 | 2.45 | 2.44 | 2.44 |
| 15.320 | 2.44 | 2.43 | 2.43 | 2.42 | 2.41 |
| 15.364 | 2.41 | 2.41 | 2.40 | 2.39 | 2.39 |
| 15.408 | 2.38 | 2.38 | 2.37 | 2.37 | 2.36 |
| 15.452 | 2.36 | 2.36 | 2.35 | 2.34 | 2.34 |
| 15.496 | 2.33 | 2.33 | 2.33 | 2.32 | 2.32 |
| 15.541 | 2.31 | 2.31 | 2.30 | 2.30 | 2.29 |
| 15.585 | 2.28 | 2.28 | 2.27 | 2.27 | 2.26 |
| 15.629 | 2.26 | 2.25 | 2.25 | 2.24 | 2.24 |
| 15.673 | 2.23 | 2.23 | 2.22 | 2.22 | 2.21 |
| 15.717 | 2.21 | 2.21 | 2.20 | 2.20 | 2.19 |
| 15.762 | 2.18 | 2.18 | 2.17 | 2.17 | 2.16 |
| 15.806 | 2.16 | 2.15 | 2.15 | 2.14 | 2.14 |
| 15.850 | 2.13 | 2.13 | 2.12 | 2.12 | 2.11 |
| 15.894 | 2.11 | 2.10 | 2.10 | 2.09 | 2.09 |
| 15.939 | 2.08 | 2.08 | 2.07 | 2.07 | 2.06 |
| 15.983 | 2.05 | 2.05 | 2.04 | 2.04 | 2.03 |
| 16.027 | 2.03 | 2.03 | 2.02 | 2.02 | 2.01 |
| 16.071 | 1.96 | 1.95 | 1.95 | 1.95 | 1.94 |
| 16.115 | 1.94 | 1.94 | 1.93 | 1.93 | 1.93 |
| 16.160 | 1.92 | 1.92 | 1.92 | 1.92 | 1.91 |
| 16.204 | 1.91 | 1.91 | 1.91 | 1.90 | 1.90 |
| 16.248 | 1.90 | 1.90 | 1.89 | 1.89 | 1.89 |
| 16.292 | 1.89 | 1.89 | 1.89 | 1.88 | 1.88 |
| 16.336 | 1.88 | 1.88 | 1.88 | 1.88 | 1.87 |
| 16.381 | 1.87 | 1.87 | 1.87 | 1.87 | 1.86 |
| 16.425 | 1.86 | 1.86 | 1.86 | 1.86 | 1.85 |
| 16.469 | 1.85 | 1.85 | 1.85 | 1.85 | 1.85 |
| 16.513 | 1.84 | 1.84 | 1.84 | 1.84 | 1.84 |
| 16.557 | 1.84 | 1.83 | 1.83 | 1.83 | 1.83 |
| 16.602 | 1.83 | 1.83 | 1.82 | 1.82 | 1.82 |
| 16.646 | 1.82 | 1.82 | 1.81 | 1.81 | 1.81 |
| 16.690 | 1.81 | 1.81 | 1.81 | 1.81 | 1.80 |
| 16.734 | 1.80 | 1.80 | 1.80 | 1.80 | 1.79 |
| 16.779 | 1.79 | 1.79 | 1.79 | 1.79 | 1.78 |
| 16.823 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 |
| 16.867 | 1.77 | 1.77 | 1.77 | 1.77 | 1.77 |
| 16.911 | 1.77 | 1.77 | 1.76 | 1.76 | 1.76 |
| 16.955 | 1.76 | 1.76 | 1.76 | 1.75 | 1.75 |
| 17.000 | 1.75 | 1.75 | 1.75 | 1.74 | 1.74 |
| 17.044 | 1.74 | 1.74 | 1.74 | 1.74 | 1.73 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 17.088 | 1.73 | 1.73 | 1.73 | 1.73 | 1.73 | 1.73 | 1.73 |
| 17.132 | 1.72 | 1.72 | 1.72 | 1.72 | 1.72 | 1.72 | 1.72 |
| 17.176 | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | 0.006 hr (cfs) | Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | 0.006 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|----------------|----------------------|------------|---------------------|-----------------|-------------------|----------------|
| 17.221 | 1.71 | 1.70 | 1.70 | 1.70 | 1.70 | 17.265 | 1.70 | 1.69 | 1.69 | 1.69 | 1.69 |
| 17.265 | 1.70 | 1.69 | 1.69 | 1.69 | 1.69 | 17.309 | 1.69 | 1.69 | 1.68 | 1.68 | 1.68 |
| 17.309 | 1.69 | 1.68 | 1.68 | 1.68 | 1.67 | 17.353 | 1.68 | 1.68 | 1.67 | 1.67 | 1.67 |
| 17.353 | 1.68 | 1.67 | 1.67 | 1.67 | 1.66 | 17.397 | 1.67 | 1.67 | 1.66 | 1.66 | 1.66 |
| 17.397 | 1.67 | 1.66 | 1.66 | 1.66 | 1.66 | 17.442 | 1.66 | 1.65 | 1.65 | 1.65 | 1.65 |
| 17.442 | 1.66 | 1.65 | 1.65 | 1.65 | 1.65 | 17.486 | 1.65 | 1.64 | 1.64 | 1.64 | 1.64 |
| 17.486 | 1.65 | 1.64 | 1.64 | 1.64 | 1.64 | 17.530 | 1.65 | 1.64 | 1.64 | 1.64 | 1.64 |
| 17.530 | 1.65 | 1.63 | 1.63 | 1.63 | 1.63 | 17.574 | 1.64 | 1.63 | 1.63 | 1.63 | 1.63 |
| 17.574 | 1.64 | 1.62 | 1.62 | 1.62 | 1.62 | 17.619 | 1.63 | 1.62 | 1.62 | 1.62 | 1.62 |
| 17.619 | 1.63 | 1.62 | 1.62 | 1.61 | 1.61 | 17.663 | 1.62 | 1.61 | 1.61 | 1.61 | 1.61 |
| 17.663 | 1.62 | 1.61 | 1.61 | 1.61 | 1.61 | 17.707 | 1.61 | 1.60 | 1.60 | 1.60 | 1.60 |
| 17.707 | 1.61 | 1.60 | 1.60 | 1.60 | 1.60 | 17.751 | 1.60 | 1.59 | 1.59 | 1.58 | 1.58 |
| 17.751 | 1.60 | 1.59 | 1.59 | 1.59 | 1.59 | 17.795 | 1.59 | 1.58 | 1.58 | 1.58 | 1.57 |
| 17.795 | 1.59 | 1.57 | 1.57 | 1.57 | 1.57 | 17.840 | 1.58 | 1.56 | 1.56 | 1.56 | 1.56 |
| 17.840 | 1.58 | 1.56 | 1.56 | 1.56 | 1.56 | 17.884 | 1.57 | 1.55 | 1.55 | 1.55 | 1.55 |
| 17.884 | 1.57 | 1.55 | 1.55 | 1.55 | 1.55 | 17.928 | 1.57 | 1.55 | 1.55 | 1.55 | 1.55 |
| 17.928 | 1.57 | 1.54 | 1.54 | 1.54 | 1.54 | 17.972 | 1.56 | 1.54 | 1.54 | 1.54 | 1.54 |
| 17.972 | 1.56 | 1.53 | 1.53 | 1.53 | 1.53 | 18.016 | 1.55 | 1.53 | 1.53 | 1.53 | 1.53 |
| 18.016 | 1.55 | 1.53 | 1.53 | 1.53 | 1.53 | 18.061 | 1.54 | 1.52 | 1.52 | 1.52 | 1.52 |
| 18.061 | 1.54 | 1.52 | 1.52 | 1.52 | 1.52 | 18.105 | 1.53 | 1.52 | 1.52 | 1.51 | 1.51 |
| 18.105 | 1.53 | 1.52 | 1.52 | 1.52 | 1.52 | 18.149 | 1.52 | 1.51 | 1.51 | 1.50 | 1.50 |
| 18.149 | 1.52 | 1.51 | 1.51 | 1.51 | 1.51 | 18.193 | 1.51 | 1.50 | 1.50 | 1.49 | 1.49 |
| 18.193 | 1.51 | 1.50 | 1.50 | 1.50 | 1.50 | 18.237 | 1.50 | 1.49 | 1.49 | 1.49 | 1.49 |
| 18.237 | 1.50 | 1.49 | 1.49 | 1.49 | 1.49 | 18.282 | 1.49 | 1.48 | 1.48 | 1.48 | 1.48 |
| 18.282 | 1.49 | 1.48 | 1.48 | 1.48 | 1.48 | 18.326 | 1.49 | 1.47 | 1.47 | 1.47 | 1.47 |
| 18.326 | 1.49 | 1.47 | 1.47 | 1.47 | 1.47 | 18.370 | 1.48 | 1.47 | 1.47 | 1.47 | 1.47 |
| 18.370 | 1.48 | 1.46 | 1.46 | 1.46 | 1.46 | 18.414 | 1.47 | 1.46 | 1.46 | 1.46 | 1.46 |
| 18.414 | 1.47 | 1.45 | 1.45 | 1.45 | 1.45 | 18.459 | 1.46 | 1.45 | 1.45 | 1.45 | 1.45 |
| 18.459 | 1.46 | 1.44 | 1.44 | 1.44 | 1.44 | 18.503 | 1.45 | 1.44 | 1.44 | 1.44 | 1.44 |
| 18.503 | 1.45 | 1.43 | 1.43 | 1.43 | 1.43 | 18.547 | 1.44 | 1.43 | 1.43 | 1.43 | 1.43 |
| 18.547 | 1.44 | 1.43 | 1.43 | 1.43 | 1.43 | 18.591 | 1.43 | 1.42 | 1.42 | 1.42 | 1.42 |
| 18.591 | 1.43 | 1.42 | 1.42 | 1.42 | 1.42 | 18.635 | 1.42 | 1.41 | 1.41 | 1.41 | 1.41 |
| 18.635 | 1.42 | 1.41 | 1.41 | 1.41 | 1.41 | 18.680 | 1.41 | 1.40 | 1.40 | 1.40 | 1.40 |
| 18.680 | 1.41 | 1.40 | 1.40 | 1.40 | 1.40 | 18.724 | 1.40 | 1.39 | 1.39 | 1.39 | 1.39 |
| 18.724 | 1.40 | 1.39 | 1.39 | 1.39 | 1.39 | 18.768 | 1.39 | 1.38 | 1.38 | 1.38 | 1.38 |
| 18.768 | 1.39 | 1.38 | 1.38 | 1.38 | 1.38 | 18.812 | 1.38 | 1.37 | 1.37 | 1.37 | 1.37 |
| 18.812 | 1.38 | 1.37 | 1.37 | 1.37 | 1.37 | 18.856 | 1.38 | 1.37 | 1.37 | 1.36 | 1.36 |
| 18.856 | 1.38 | 1.37 | 1.37 | 1.37 | 1.37 | 18.901 | 1.37 | 1.36 | 1.36 | 1.36 | 1.36 |
| 18.901 | 1.37 | 1.36 | 1.36 | 1.36 | 1.36 | 18.945 | 1.36 | 1.35 | 1.35 | 1.35 | 1.35 |
| 18.945 | 1.36 | 1.35 | 1.35 | 1.35 | 1.35 | 18.989 | 1.35 | 1.34 | 1.34 | 1.34 | 1.34 |
| 18.989 | 1.35 | 1.34 | 1.34 | 1.34 | 1.34 | 19.033 | 1.34 | 1.33 | 1.33 | 1.33 | 1.33 |
| 19.033 | 1.34 | 1.33 | 1.33 | 1.33 | 1.33 | 19.077 | 1.33 | 1.33 | 1.33 | 1.32 | 1.32 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 19.122 | 1.32 | 1.32 | 1.32 | 1.32 | 1.32 | 1.32 | 1.31 |
| 19.166 | 1.31 | 1.31 | 1.31 | 1.31 | 1.31 | 1.31 | 1.30 |
| 19.210 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 |
| 19.254 | 1.29 | 1.29 | 1.29 | 1.29 | 1.29 | 1.29 | 1.29 |
| 19.299 | 1.29 | 1.28 | 1.28 | 1.28 | 1.28 | 1.28 | 1.28 |
| 19.343 | 1.28 | 1.28 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 |
| 19.387 | 1.27 | 1.27 | 1.26 | 1.26 | 1.26 | 1.26 | 1.26 |
| 19.431 | 1.26 | 1.26 | 1.26 | 1.25 | 1.25 | 1.25 | 1.25 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 hr (cfs) |
|----------------------|------------|---------------------|-----------------|-------------------|------------|---------------------|-----------------|-------------------|
| 19.475 | 1.25 | 1.25 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| 19.520 | 1.24 | 1.24 | 1.24 | 1.24 | 1.23 | 1.23 | 1.23 | 1.23 |
| 19.564 | 1.23 | 1.23 | 1.23 | 1.23 | 1.22 | 1.22 | 1.22 | 1.22 |
| 19.608 | 1.22 | 1.22 | 1.22 | 1.22 | 1.21 | 1.21 | 1.21 | 1.21 |
| 19.652 | 1.21 | 1.21 | 1.21 | 1.21 | 1.20 | 1.20 | 1.20 | 1.20 |
| 19.696 | 1.20 | 1.20 | 1.20 | 1.20 | 1.19 | 1.19 | 1.19 | 1.19 |
| 19.741 | 1.19 | 1.19 | 1.19 | 1.19 | 1.18 | 1.18 | 1.18 | 1.18 |
| 19.785 | 1.18 | 1.18 | 1.18 | 1.18 | 1.17 | 1.17 | 1.17 | 1.17 |
| 19.829 | 1.18 | 1.17 | 1.17 | 1.17 | 1.16 | 1.16 | 1.16 | 1.16 |
| 19.873 | 1.17 | 1.16 | 1.16 | 1.16 | 1.15 | 1.15 | 1.15 | 1.15 |
| 19.917 | 1.16 | 1.16 | 1.16 | 1.15 | 1.14 | 1.14 | 1.14 | 1.14 |
| 19.962 | 1.15 | 1.15 | 1.15 | 1.14 | 1.13 | 1.13 | 1.13 | 1.13 |
| 20.006 | 1.14 | 1.14 | 1.14 | 1.13 | 1.12 | 1.12 | 1.12 | 1.12 |
| 20.050 | 1.13 | 1.13 | 1.13 | 1.13 | 1.11 | 1.11 | 1.11 | 1.11 |
| 20.094 | 1.12 | 1.12 | 1.12 | 1.12 | 1.11 | 1.11 | 1.11 | 1.11 |
| 20.139 | 1.12 | 1.12 | 1.12 | 1.12 | 1.11 | 1.11 | 1.11 | 1.11 |
| 20.183 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 |
| 20.227 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 |
| 20.271 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 |
| 20.315 | 1.11 | 1.11 | 1.11 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| 20.360 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| 20.404 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| 20.448 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| 20.492 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| 20.536 | 1.10 | 1.10 | 1.10 | 1.10 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20.581 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20.625 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20.669 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20.713 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20.757 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20.802 | 1.09 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 20.846 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 20.890 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 20.934 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 20.979 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 21.023 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 21.067 | 1.08 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 21.111 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |

Area 8
Benches

Name of printed page file:
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(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 21.155 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 21.200 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 21.244 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 21.288 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 21.332 | 1.07 | 1.07 | 1.07 | 1.06 | 1.06 | 1.06 | 1.06 |
| 21.376 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| 21.421 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| 21.465 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| 21.509 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| 21.553 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.05 |
| 21.597 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| 21.642 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| 21.686 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |

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Area 8
Benches

| Line Start Time (hr) | Flow Values @ time (cfs) | increment of 0.006 hr (cfs) | Flow Values @ time (cfs) | increment of 0.006 hr (cfs) | Flow Values @ time (cfs) | increment of 0.006 hr (cfs) |
|----------------------|--------------------------|-----------------------------|--------------------------|-----------------------------|--------------------------|-----------------------------|
| 21.730 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| 21.774 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| 21.819 | 1.05 | 1.05 | 1.05 | 1.04 | 1.04 | 1.04 |
| 21.863 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| 21.907 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| 21.951 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| 21.995 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| 22.040 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| 22.084 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.03 |
| 22.128 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| 22.172 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| 22.216 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| 22.261 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| 22.305 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| 22.349 | 1.03 | 1.03 | 1.03 | 1.02 | 1.02 | 1.02 |
| 22.393 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 |
| 22.437 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 |
| 22.482 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 |
| 22.526 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 |
| 22.570 | 1.02 | 1.02 | 1.02 | 1.02 | 1.02 | 1.01 |
| 22.614 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 |
| 22.659 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 |
| 22.703 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 |
| 22.747 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 |
| 22.791 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 | 1.01 |
| 22.835 | 1.01 | 1.01 | 1.01 | 1.00 | 1.00 | 1.00 |
| 22.880 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 22.924 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 22.968 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 23.012 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 23.056 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 23.101 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 |
| 23.145 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |

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Area 8
Benches

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STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Rate (cfs) | Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|-----------------|-----------------|
| 23.189 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 23.233 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 23.277 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 23.322 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 23.366 | 0.99 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| 23.410 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| 23.454 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| 23.499 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| 23.543 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| 23.587 | 0.98 | 0.98 | 0.98 | 0.97 | 0.97 | 0.97 | 0.97 |
| 23.631 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| 23.675 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| 23.720 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| 23.764 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| 23.808 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| 23.852 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| 23.896 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| 23.941 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |

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Area 8
Benches

| Line Start Time (hr) | Flow (cfs) | Values @ time (cfs) | increment (cfs) | of 0.006 (cfs) | hr (cfs) | ----- |
|----------------------|------------|---------------------|-----------------|----------------|----------|-------|
| 23.985 | 0.96 | 0.96 | 0.96 | 0.96 | 0.95 | 0.94 |
| 24.029 | 0.93 | 0.91 | 0.89 | 0.86 | 0.83 | 0.80 |
| 24.073 | 0.68 | 0.65 | 0.61 | 0.58 | 0.50 | 0.41 |
| 24.117 | 0.36 | 0.34 | 0.32 | 0.31 | 0.29 | 0.28 |
| 24.162 | 0.25 | 0.23 | 0.22 | 0.21 | 0.19 | 0.18 |
| 24.206 | 0.16 | 0.10 | 0.10 | 0.09 | 0.09 | 0.08 |
| 24.250 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.05 |

Area 8
Benches

Name of printed page file:
TR20.out

(continued)

STORM 25-Yr

| Area or Reach Identifier | Drainage Area (sq mi) | Rain Gage ID or Location | Runoff Amount (in) | Elevation (ft) | Time (hr) | Peak Flow Rate (cfs) | Peak Flow Rate (csm) |
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|----------------------|----------------------|
|--------------------------|-----------------------|--------------------------|--------------------|----------------|-----------|----------------------|----------------------|

WinTR-20 Version 1.0

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01/31/2008 9:12

Area 8
Benches

| Area or Reach Identifier | Drainage Area (sq mi) | Alternate | Peak Flow by Storm |
|--------------------------|-----------------------|-----------|--------------------|
| | | | 25-Yr (cfs) |
| Bench 1 | 0.756E-02 | | 18.0 |
| Bench 2 | 0.322E-02 | | 8.3 |
| Bench 3 | 0.520E-03 | | 1.4 |
| Bench 4 | 0.483E-02 | | 12.8 |
| Bench 5 | 0.770E-03 | | 2.1 |
| Bench 6 | 0.788E-02 | | 16.9 |
| Bench 7 | 0.231E-02 | | 6.2 |
| Channel 8 | 0.395E-02 | | 10.6 |
| OUTLET | 0.03 | | 71.7 |

WinTR-55, Version 1.00.08

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1/31/2008 9:15:15 AM

**BRUNNER ISLAND
DISPOSAL AREA 8**

BENCH CHANNELS

MAX SECTION – BENCH 1

27.33 CFS

S75

North American Green - ECMD5 Version 4.3

1/31/2008 102 41 PM COMPUTED BY: Spear

PROJECT NAME: Area B

PROJECT NO.: Bench Channel - max flow - S75

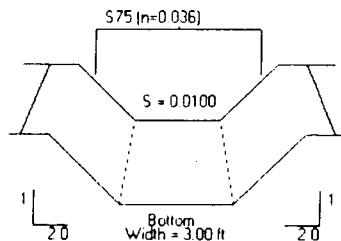
FROM STATION/REACH: TO STATION/REACH:

DRAINAGE AREA:

DESIGN FREQUENCY Q=27.3 cfs

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area [sq ft] | Hydraulic Radius [ft] | Normal Depth [ft] |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 27.3 | 1.0 | 3.64 | 7.49 | 0.84 | 1.33 |



Not to Scale

LINER RESULTS

| Reach | Manning Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------|---------|-----------------------------------|----------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | S75 | Unvegetated | | | | | 1.55 | 0.83 | 1.87 | STABLE |
| | Stable D | | | | | | | | | |

[Back to Input Screen](#)



NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Area 8
COMPUTED BY: Spear
FROM STATION/REACH:
DRAINAGE AREA:

PROJECT NO.: Bench Channel - max flow - S75
DATE: 1/31/2008
TO STATION/REACH:
DESIGN FREQUENCY: Q= 27.3 cfs

INPUT PARAMETERS

Channel Discharge : 27.3 cfs (.77 m^3/s)
Peak Flow Period : 1 hours
Channel Slope : 0.01 ft/ft (0.01 m/m)
Channel Bottom Width : 3.0 ft (.91 m)
Left Side Slope : 2:1
Right Side Slope : 2:1

Channel Lining : S75 Staple D
Permi. Shear(Tp) : 1.55 psf (74.2 Pa)
Phase = 0

CALCULATIONS

Initial Depth Estimate = $0.16 * (27.3 / (0.010^{0.5}))^{0.375} = 1.31 \text{ ft (.40 m)}$
Final Channel Depth (after 7 iterations) = 1.33 ft (0.40 m)
Flow Area = $(3.0 * 1.3) + (0.5 * 1.33^2 * (2.0+2.0)) = 7.5 \text{ sq.ft (0.7 m}^2)$
Wet Per. = $3.0 + (1.3 * ((2.0^2)+1)^{.5} + ((2.0^2)+1)^{.5}) = 8.9 \text{ ft (2.7 m)}$
Hydraulic Radius = $(7.5 / 8.9) = 0.8 \text{ ft (0.3 m)}$
Channel Velocity = $(1.486/0.036)*(0.8^{0.667})*(0.010^{.5}) = 3.6 \text{ fps (1.1 m/s)}$

Channel Effective Manning's Roughness = 0.036
Calculated Shear (Td) = $62.4 * 1.33 * 0.010 = 0.83 \text{ psf (39.6 Pa)}$
Safety Factor = $(Tp/Td) = (1.55 / 0.83) = 1.87$

VEGETATED

North American Green - ECMDS Version 4.3

1/31/2008 10:24:40 AM COMPUTED BY: Spear

PROJECT NAME: Area 8

PROJECT NO.: Bench Channel max flow

FROM STATION/REACH: TO STATION/REACH:

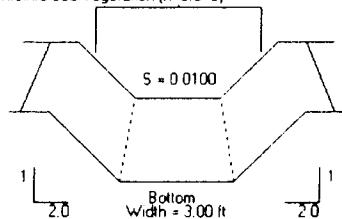
DRAINAGE AREA:

DESIGN FREQUENCY: D = 27.3 cfs

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area [sq ft] | Hydraulic Radius [ft] | Normal Depth [ft] |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 27.3 | 1.0 | 3.20 | 8.53 | 0.90 | 1.45 |

Uninforced Vegetation (n=0.043)



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|-------|------------|--------------------------------|-------------------------------|---------------|----------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | | D | Bunch | 50-75% | 3.33 | 0.90 | 3.69 | STABLE |
| | | Soil | | | | Sandy Loam | 0.035 | 0.070 | 0.50 | UNSTABLE |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Area 8
COMPUTED BY: Spear
FROM STATION/REACH:
DRAINAGE AREA:
PROJECT NO.: Bench Channel - max flow - grass
DATE: 1/31/2008
TO STATION/REACH:
DESIGN FREQUENCY: Q= 27.3 cfs

INPUT PARAMETERS

Channel Discharge : 27.3 cfs (.77 m³/s)
Peak Flow Period : 1 hours
Channel Slope : 0.01 ft/ft (0.01 m/m)
Channel Bottom Width : 3.0 ft (.91 m)
Left Side Slope : 2:1
Right Side Slope : 2:1

Channel Lining : Unreinforced Vegetation Bunch 50-75%
Permi. Shear(T_p) : 3.33 psf (159.4 Pa)

Phase = 1
Class = D Vegetation
Soil = Sandy Loam
Allowable Soil Shear(Ta): 0.035 psf (1.67580000713468 Pa)

CALCULATIONS

$$\begin{aligned}
 \text{Initial Depth Estimate} &= 0.16 * (27.3 / (0.010^{0.5}))^{0.375} = 1.31 \text{ ft (.40 m)} \\
 \text{Final Channel Depth (after 7 iterations)} &= 1.45 \text{ ft (0.44 m)} \\
 \text{Flow Area} &= (3.0 * 1.4) + (0.5 * 1.45^2 * (2.0+2.0)) = 8.5 \text{ sq.ft (0.8 m}^2\text{)} \\
 \text{Wet Per.} &= 3.0 + (1.4 * ((2.0^2)+1)^{.5} + ((2.0^2)+1)^{.5})) = 9.5 \text{ ft (2.9 m)} \\
 \text{Hydraulic Radius} &= (8.5 / 9.5) = 0.9 \text{ ft (0.3 m)} \\
 \text{Channel Velocity} &= (1.486/0.043)*(0.9^{0.667})*(0.010^{0.5}) = 3.2 \text{ fps (1.0 m/s)}
 \end{aligned}$$

| | |
|----------------------------------------------------|----------------------|
| Calculated Effective Manning's Roughness | = 0.043 |
| Calculated Shear (T_d) = $62.4 * 1.45 * 0.010$ | = 0.90 psf (43.2 Pa) |
| Safety Factor = (T_p/T_d) = (3.33 / 0.90) | = 3.69 |

$$\text{Effective Stress on Soil (Te)} = 0.9 * (1 - 0.40) * (0.0156 / 0.043)^2 = 0.07 \text{ psf (3.4 Pa)}$$

Safety Factor = (Ta/Te) = (0.04 /0.070)

= 0.50

DISPSOSAL AREA 8
BENCH CHANNELS
VEGETATED CHANNEL DEPTHS
VARIOUS CFS
1.42 TO 18.00

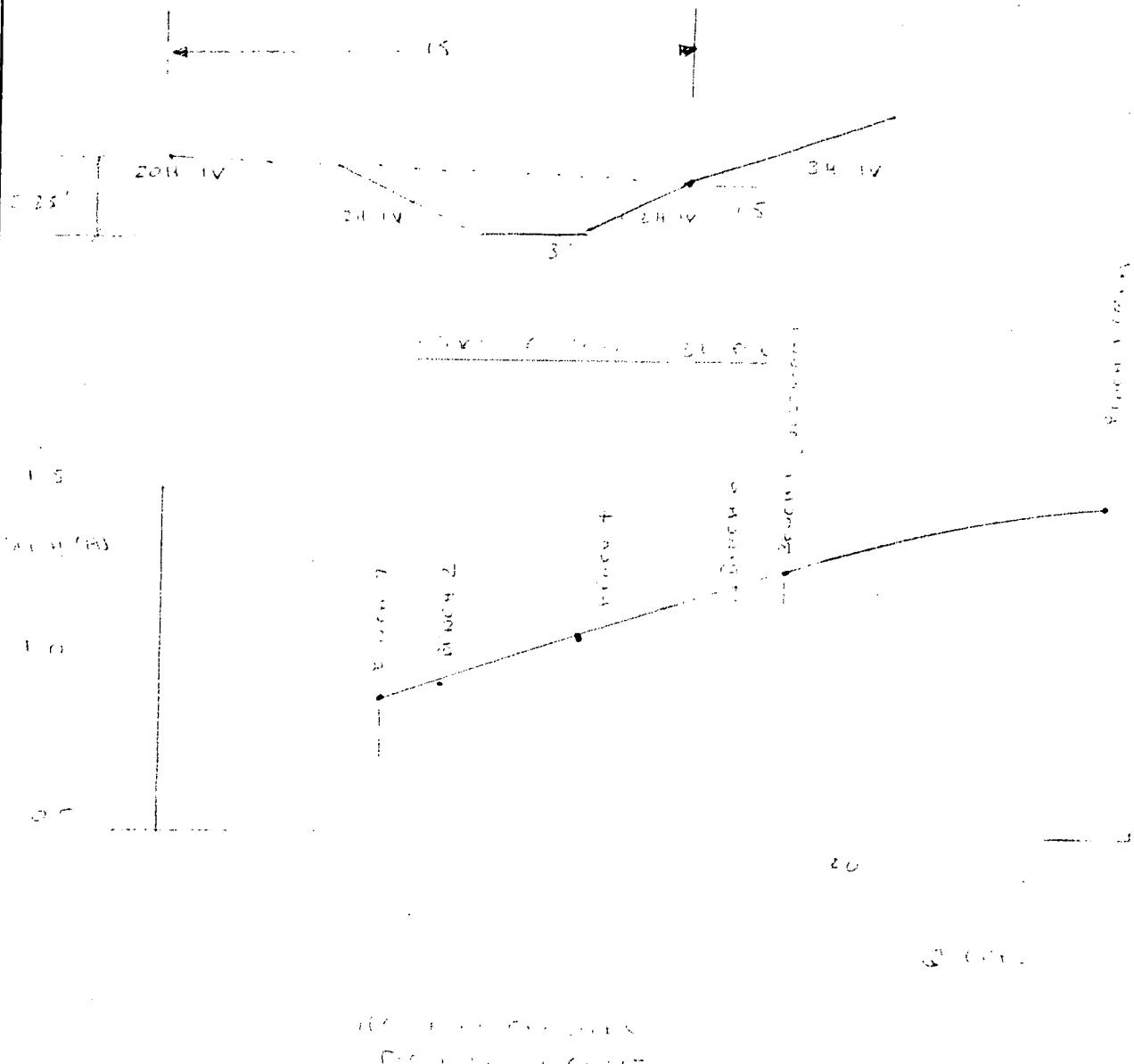
USED TO DEVELOP
VEGETATED FLOW DEPTH CHART
AND TABLE

(NEXT TWO PAGES)

Dept. _____
 Date 20 _____
 Designed by _____
 Approved by _____

**PPL
CALCULATION SHEET**

ER No. _____
 Sht. No. _____ of _____



Dept. _____
 Date 20 _____
 Designed by _____
 Approved by _____

**PPL
CALCULATION SHEET**

ER No. _____
 Sht. No. _____ of _____

BENCH SPANNING DATA

| S.No. | Span length in feet | Capacity in tons | |
|-------|------------------------|------------------------|------------------------|
| | | Capacity at 10% sag | Capacity at 20% sag |
| 1 | 10' 0" | 1.45 | 1.25 |
| 2 | 12' 0" | 1.24 | 1.0 |
| 3 | 16' 0" | 0.92 | 1.0 |
| 4 | 20' 0" | 0.71 | 0.75 |
| 5 | 24' 0" | 1.07 | 1.0 |
| 6 | 28' 0" | 0.58 | 0.5 |
| 7 | 32' 0" | 1.20 | 1.0 |
| 8 | 36' 0" | 0.87 | 1.0 |

Span length in feet or in meters

Capacity in tons or in kilonewtons

North American Green - ECMD5 Version 4.3

1/31/2008 02:43 PM COMPUTED BY Spear

PROJECT NAME Area B

PROJECT NO. Bench Channel - 18 cfs - S75

FROM STATION/REACH:

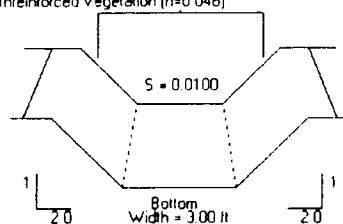
TO STATION/REACH:

DRAINAGE AREA: DESIGN FREQUENCY Q = 27.3 cfs

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 18.0 | 1.0 | 2.66 | 6.76 | 0.79 | 1.24 |

Unreinforced Vegetation (n=0.048)



Not to Scale

LINER RESULTS

| Reach | Manning Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|-------|------------|--------------------------------|-------------------------------|---------------|----------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | | D | Bunch | 50-75% | 3.33 | 0.77 | 4.32 | STABLE |
| | | Soil | | | | Sandy Loam | 0.035 | 0.049 | 0.71 | UNSTABLE |

[Back to Input Screen](#)

North American Green: ECMS Version 4.3

1/31/2008 102 43 PM COMPUTED BY: Spear

PROJECT NAME: Area B

PROJECT NO.: Bench Channel-12 cfs-S75

FROM STATION/REACH:

TO STATION/REACH:

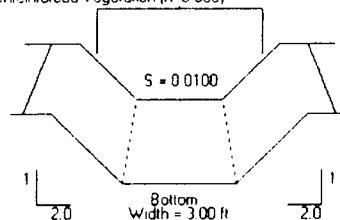
DRAINAGE AREA:

DESIGN FREQUENCY Q= 27.3 cfs

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius(ft) | Normal Depth (ft) |
|--------------------|---------------------------|----------------|--------------|-------------------------|----------------------|
| 12.0 | 1.0 | 2.21 | 5.44 | 0.70 | 1.06 |

Unreinforced Vegetation (n=0.053)



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------------|---------|--------------------------------------|-------------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | D | Bunch | 50-75% | 3.33 | 0.66 | 5.03 | STABLE | |
| | | Sod | | | Sandy Loam | 0.035 | 0.034 | 1.02 | STABLE | |

[Back to Input Screen](#)

North American Green - ECMS Version 4.3

1/31/2008 02:44 PM COMPUTED BY Spear

PROJECT NAME: Area 8

PROJECT NO.: Bench Channel - 8 cfs - S75

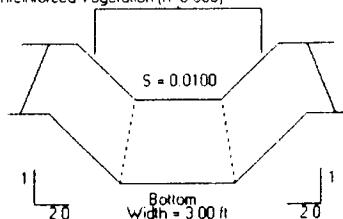
FROM STATION/REACH: TO STATION/REACH:

DRAINAGE AREA: DESIGN FREQUENCY:

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq.ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 8.0 | 1.0 | 1.81 | 4.42 | 0.62 | 0.91 |

Unreinforced Vegetation (n=0.060)



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------------|---------|--------------------------------------|-------------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | D | Bunch | 50-75% | | 3.33 | 0.57 | 5.83 | STABLE |
| | | Soil | | | Sandy Loam | | 0.035 | 0.023 | 1.51 | STABLE |

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North American Green - ECMDSS Version 4.3

1/31/2008 10:45 PM COMPUTED BY: Spear

PROJECT NAME: Area 8

PROJECT NO.: Bench Channel - 6.2 cfs S75

FROM STATION/REACH:

TO STATION/REACH:

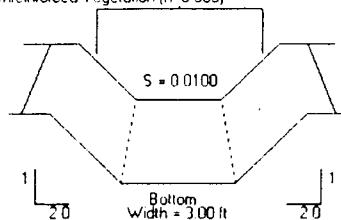
DRAINAGE AREA:

DESIGN FREQUENCY

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 6.2 | 1.0 | 1.59 | 330 | 0.58 | 0.84 |

Unreinforced Vegetation (n=0.065)



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|--------|---------|--------------------------------------|-------------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | D | Bunch | 50-75% | | 3.33 | 0.52 | 6.39 | STABLE |
| | | Sod | Sandy Loam | | | | 0.035 | 0.018 | 1.93 | STABLE |

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North American Green ECMS Version 4.3

1/31/2008 10:07 PM [COMPUTED BY: Spear]

PROJECT NAME Area 8

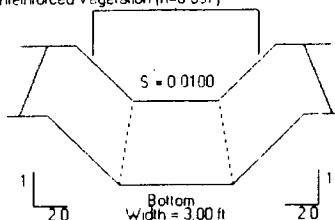
PROJECT NO. Bench Channel 2.1 cfs 575

FROM STATION/REACH: TO STATION/REACH:

DRAINAGE AREA DESIGN FREQUENCY

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area [sq ft] | Hydraulic Radius [ft] | Normal Depth [ft] |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 21 | 1.0 | 0.87 | 2.40 | 0.43 | 0.58 |

Unreinforced Vegetation ($n=0.097$)

Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------------|---------|-----------------------------------|----------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | D | Bunch | 50-75% | | 3.33 | 0.36 | 9.23 | STABLE |
| | | Soil | | | Sandy Loam | | 0.035 | 0.006 | 6.24 | STABLE |

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North American Green : ECMS Version 4.3

1/31/2008 03:08 PM COMPUTED BY: Spear

PROJECT NAME: Area 8

PROJECT NO.: Bench Channel - 1.42 cfs - 575

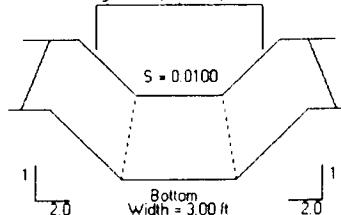
FROM STATION/REACH: TO STATION/REACH:

DRAINAGE AREA:

DESIGN FREQUENCY:

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area [sq. ft.] | Hydraulic Radius [ft] | Normal Depth [ft] |
|--------------------|---------------------------|----------------|----------------|--------------------------|----------------------|
| 1.4 | 1.0 | 0.69 | 2.06 | 0.39 | 0.51 |

Unreinforced Vegetation ($n=0.115$)

Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|--------|---------|--------------------------------------|-------------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | D | Bunch | 50-75% | 3.33 | 0.32 | 10.42 | STABLE | |
| | | Soil | Sandy Loam | | | 0.035 | 0.004 | 9.93 | STABLE | |

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**BRUNNER ISLAND
DISPOSAL AREA 8**

CHANNEL 8 CALCULATIONS

CHANNEL 8
UPPER SECTION
S75 LINING

North American Green: ECMDS Version 4.3

2/4/2008 02:20 PM [COMPUTED BY: spear]

PROJECT NAME: Area 8

PROJECT NO.: Channel 8 - steeper section - S75

FROM STATION/REACH: 0+00

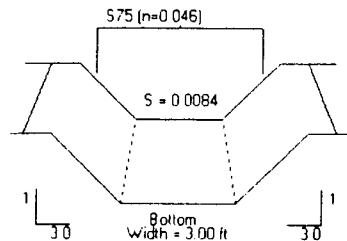
TO STATION/REACH: 3+00

DRAINAGE AREA:

DESIGN FREQUENCY: 10.57 cfs

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area (sq ft) | Hydraulic Radius [ft] | Normal Depth [ft] |
|--------------------|---------------------------|----------------|--------------|--------------------------|----------------------|
| 10.6 | 0.5 | 2.08 | 5.10 | 0.59 | 0.90 |



LINER RESULTS

Not to Scale

| Reach | Manning Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------|---------|--------------------------------------|-------------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | S75 | Unvegetated | | | | | 1.55 | 0.47 | 3.30 | STABLE |
| | Stable D | | | | | | | | | |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Area 8
COMPUTED BY: spear
FROM STATION/REACH: 0+00
DRAINAGE AREA:

PROJECT NO.: Channel 8 - steeper section - S75
DATE: 2/4/2008
TO STATION/REACH: 3+00
DESIGN FREQUENCY: 10.57 cfs

INPUT PARAMETERS

Channel Discharge : 10.6 cfs (.30 m^3/s)
Peak Flow Period : 0.5 hours
Channel Slope : 0.008 ft/ft (0.008 m/m)
Channel Bottom Width : 3.0 ft (.91 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : S75 Staple D
Permi. Shear(Tp) : 1.55 psf (74.2 Pa)
Phase = 0

CALCULATIONS

Initial Depth Estimate = $0.16 * (10.6 / (0.008^{0.5}))^{0.375} = 0.95 \text{ ft (.29 m)}$
Final Channel Depth (after 7 iterations) = .9 ft (0.27 m)
Flow Area = $(3.0 * 0.9) + (0.5 * 0.90^2 * (3.0 + 3.0)) = 5.1 \text{ sq.ft (0.5 m}^2)$
Wet Per. = $3.0 + (0.9 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 8.7 \text{ ft (2.6 m)}$
Hydraulic Radius = $(5.1 / 8.7) = 0.6 \text{ ft (0.2 m)}$
Channel Velocity = $(1.486 / 0.046) * (0.6^{0.667}) * (0.008^{0.5}) = 2.1 \text{ fps (0.6 m/s)}$

Channel Effective Manning's Roughness = 0.046
Calculated Shear (Td) = $62.4 * 0.90 * 0.008 = 0.47 \text{ psf (22.5 Pa)}$
Safety Factor = $(Tp/Td) = (1.55 / 0.47) = 3.30$

CHANNEL 8
UPPER SECTION
VEGETATED

North American Green - ECMDS Version 4.3

PROJECT NAME Area 8

FROM STATION/REACH: 0+00 TO STATION/REACH: 3+00

2/4/2008 102 21 PM COMPUTED BY spea

PROJECT NO: Channel 8 - steeper section - grass

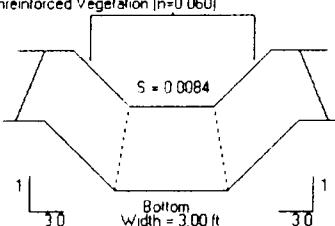
DRAINAGE AREA:

DESIGN FREQUENCY 10 57 cfs

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 10.6 | 0.5 | 1.71 | 6.20 | 0.66 | 1.02 |

Unreinforced Vegetation ($n=0.060$)



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------------|---------|--------------------------------|-------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | | D | Bunch | 50-75% | 3.33 | 0.54 | 6.21 | STABLE |
| | | Soil | | | Sandy Loam | | 0.035 | 0.022 | 1.62 | STABLE |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Area 8

COMPUTED BY: spear

FROM STATION/REACH: 0+00

DRAINAGE AREA:

PROJECT NO.: Channel 8 - steeper section - grass

DATE: 2/4/2008

TO STATION/REACH: 3+00

DESIGN FREQUENCY: 10.57 cfs

INPUT PARAMETERS

Channel Discharge : 10.6 cfs (.30 m^3/s)

Peak Flow Period : 0.5 hours

Channel Slope : 0.008 ft/ft (0.008 m/m)

Channel Bottom Width : 3.0 ft (.91 m)

Left Side Slope : 3:1

Right Side Slope : 3:1

Channel Lining : Unreinforced Vegetation Bunch 50-75%

Permi. Shear(Tp) : 3.33 psf (159.4 Pa)

Phase = 1

Class = D Vegetation

Soil = Sandy Loam

Allowable Soil Shear(Ta): 0.035 psf (1.67580000713468 Pa)

CALCULATIONS

Initial Depth Estimate = $0.16 * (10.6 / (0.008^{0.5}))^{0.375} = 0.95 \text{ ft (.29 m)}$

Final Channel Depth (after 6 iterations) = 1.02 ft (0.31 m)

Flow Area = $(3.0 * 1.0) + (0.5 * 1.02^2 * (3.0 + 3.0)) = 6.2 \text{ sq.ft (0.6 m}^2)$

Wet Per. = $3.0 + (1.0 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 9.5 \text{ ft (2.9 m)}$

Hydraulic Radius = $(6.2 / 9.5) = 0.7 \text{ ft (0.2 m)}$

Channel Velocity = $(1.486 / 0.060) * (0.7^{0.667}) * (0.008^{0.5}) = 1.7 \text{ fps (0.5 m/s)}$

Channel Effective Manning's Roughness = 0.060

Calculated Shear (Td) = $62.4 * 1.02 * 0.008 = 0.54 \text{ psf (25.7 Pa)}$

Safety Factor = $(Tp/Td) = (3.33 / 0.54) = 6.21$

Effective Stress on Soil (Te) = $0.5 * (1 - 0.40) * (0.0156 / 0.060)^2 = 0.02 \text{ psf (1.0 Pa)}$

Safety Factor = (Ta/Te) = (0.04 /0.022)

= 1.62



CHANNEL 8
LOWER SECTION
S75 LINING

North American Green ECMDS Version 4.3

2/4/2008 102:23 PM COMPUTED BY spear

PROJECT NAME: Area 8

PROJECT NO.: Channel 8 - Waller section - S75

FROM STATION/REACH: 3+00

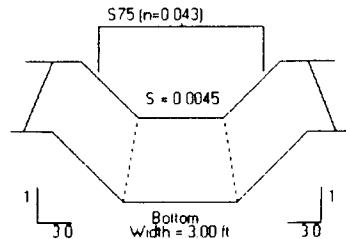
TO STATION/REACH: end

DRAINAGE AREA:

DESIGN FREQUENCY 10 57 cfs

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq.ft) | Hydraulic Radius(ft) | Normal Depth (ft) |
|-----------------|------------------------|----------------|--------------|----------------------|-------------------|
| 10.6 | 0.5 | 1.73 | 613 | 0.65 | 1.01 |



Not to Scale

LINER RESULTS

| Reach | Manning Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------|---------|--------------------------------|-------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | S75 | Unvegetated | | | | | 1.55 | 0.28 | 5.44 | STABLE |
| | Stable D | | | | | | | | | |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Area 8

COMPUTED BY: spear

FROM STATION/REACH: 3+00

DRAINAGE AREA:

PROJECT NO.: Channel 8 - flatter section - S75

DATE: 2/4/2008

TO STATION/REACH: end

DESIGN FREQUENCY: 10.57 cfs

INPUT PARAMETERS

Channel Discharge : 10.6 cfs (.30 m^3/s)

Peak Flow Period : 0.5 hours

Channel Slope : 0.005 ft/ft (0.005 m/m)

Channel Bottom Width : 3.0 ft (.91 m)

Left Side Slope : 3:1

Right Side Slope : 3:1

Channel Lining : S75 Staple D

Permi. Shear(Tp) : 1.55 psf (74.2 Pa)

Phase = 0

CALCULATIONS

Initial Depth Estimate = $0.16 * (10.6 / (0.005^0.5))^0.375 = 1.07 \text{ ft (.33 m)}$

Final Channel Depth (after 7 iterations) = 1.01 ft (0.31 m)

Flow Area = $(3.0 * 1.0) + (0.5 * 1.01^2 * (3.0 + 3.0)) = 6.1 \text{ sq.ft (0.6 m}^2)$

Wet Per. = $3.0 + (1.0 * ((3.0^2) + 1)^{.5} + ((3.0^2) + 1)^{.5}) = 9.4 \text{ ft (2.9 m)}$

Hydraulic Radius = $(6.1 / 9.4) = 0.7 \text{ ft (0.2 m)}$

Channel Velocity = $(1.486 / 0.043) * (0.7^{0.667}) * (0.005^{.5}) = 1.7 \text{ fps (0.5 m/s)}$

Channel Effective Manning's Roughness = 0.043

Calculated Shear (Td) = $62.4 * 1.01 * 0.005 = 0.28 \text{ psf (13.6 Pa)}$

Safety Factor = $(Tp/Td) = (1.55 / 0.28) = 5.44$

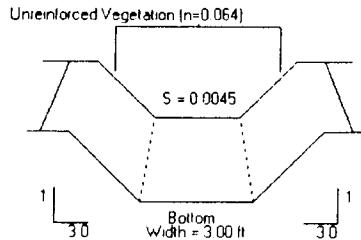
CHANNEL 8
LOWER SECTION
VEGETATED

North American Green - ECMD5 Version 4.3
PROJECT NAME: Area 8
FROM STATION/REACH: 3+00 TO STATION/REACH: end

2/4/2008 02:22 PM COMPUTED BY: spear
PROJECT NO.: Channel 8 - Lower section - grass
DRAINAGE AREA: DESIGN FREQUENCY: 10.57 cfs

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 10.6 | 0.5 | 1.30 | 8.13 | 0.76 | 1.22 |



LINER RESULTS

Not to Scale

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|------------|-------|--------|--------------------------------|-------------------------------|---------------|---------|
| | | | Staple Pattern | Phase | Class | Type | | | | |
| Straight | Unreinforced | Vegetation | | D | Bunch | 50-75% | 3.33 | 0.34 | 9.72 | STABLE |
| | | Soil | | Sandy Loam | | | 0.035 | 0.012 | 2.82 | STABLE |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Area 8

COMPUTED BY: spear

FROM STATION/REACH: 3+00

DRAINAGE AREA:

PROJECT NO.: Channel 8 - flatter section - grass

DATE: 2/4/2008

TO STATION/REACH: end

DESIGN FREQUENCY: 10.57 cfs

INPUT PARAMETERS

Channel Discharge : 10.6 cfs (.30 m^3/s)

Park Flow Period : 0.5 hours

Channel Slope : 0.005 ft/ft (0.005 m/m)

Channel Bottom Width : 3.0 ft (.91 m)

Left Side Slope : 3:1

Right Side Slope : 3:1

Channel Lining : Unreinforced Vegetation Bunch 50-75%

Permi. Shear(Tp) : 3.33 psf (159.4 Pa)

Phase = 1

Class = D Vegetation

Soil = Sandy Loam

Allowable Soil Shear(Ta): 0.035 psf (1.67580000713468 Pa)

CALCULATIONS

Initial Depth Estimate = $0.16 * (10.6 / (0.005^{0.5}))^{0.375} = 1.07 \text{ ft (.33 m)}$

Final Channel Depth (after 5 iterations) = 1.22 ft (0.37 m)

Flow Area = $(3.0 * 1.2) + (0.5 * 1.22^2 * (3.0 + 3.0)) = 8.1 \text{ sq.ft (0.8 m}^2)$

Wet Per. = $3.0 + (1.2 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 10.7 \text{ ft (3.3 m)}$

Hydraulic Radius = $(8.1 / 10.7) = 0.8 \text{ ft (0.2 m)}$

Channel Velocity = $(1.486 / 0.064) * (0.8^{0.667}) * (0.005^{0.5}) = 1.3 \text{ fps (0.4 m/s)}$

Channel Effective Manning's Roughness = 0.064

Calculated Shear (Td) = $62.4 * 1.22 * 0.005 = 0.34 \text{ psf (16.4 Pa)}$

Safety Factor = $(Tp/Td) = (3.33 / 0.34) = 9.72$

Effective Stress on Soil (Te) = $0.3 * (1 - 0.40) * (0.0156 / 0.064)^2 = 0.01 \text{ psf (0.6 Pa)}$

Safety Factor = (Ta/Te) = (0.04 /0.012)

= 2.82

**BRUNNER ISLAND
DISPOSAL AREA 8**

STORMWATER CHANNEL CALCULATIONS

AREA 8

STORMWATER CHANNEL

UPPER END TO S+50

STS LINING

North American Green ECMS Version 4.3

2/1/2008 10:24:43 PM COMPUTED BY: Spear

PROJECT NAME: Disposal Area 8

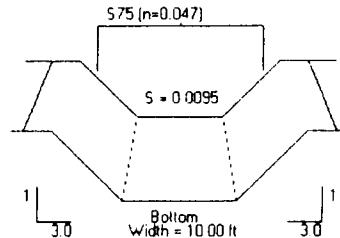
PROJECT NO.: Storm Channel S75

FROM STATION/REACH: 0+00 TO STATION/REACH: 5+50

DRAINAGE AREA: 27.33 cfs DESIGN FREQUENCY: 25 yr. 24 hour

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 27.3 | 0.5 | 2.48 | 11.02 | 0.71 | 0.87 |



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|-------|------|--------------------------------|-------------------------------|---------------|---------|
| | | | Staple Pattern | Phase | Class | Type | | | | |
| Straight | S75 | Unvegetated | | | | | 1.55 | 0.52 | 2.99 | STABLE |
| | Staple D | | | | | | | | | |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Disposal Area 8
COMPUTED BY: Spear
FROM STATION/REACH: 0+00
DRAINAGE AREA: 27.33 cfs

PROJECT NO.: Storm Channel - S75
DATE: 2/1/2008
TO STATION/REACH: 5+50
DESIGN FREQUENCY: 25 yr-24 hour

INPUT PARAMETERS

Channel Discharge : 27.3 cfs (.77 m³/s)
Peak Flow Period : 0.5 hours
Channel Slope : 0.01 ft/ft (0.01 m/m)
Channel Bottom Width : 10.0 ft (3.05 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : S75 Staple D
Permi. Shear(Tp) : 1.55 psf (74.2 Pa)
Phase = 0

CALCULATIONS

Initial Depth Estimate = $0.16 * (27.3 / (0.010^{0.5}))^{0.375} = 1.32 \text{ ft (.40 m)}$
Final Channel Depth (after 8 iterations) = .87 ft (0.27 m)
Flow Area = $(10.0 * 0.9) + (0.5 * 0.87^2 * (3.0 + 3.0)) = 11.0 \text{ sq.ft (1.0 m}^2)$
Wet Per. = $10.0 + (0.9 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 15.5 \text{ ft (4.7 m)}$
Hydraulic Radius = $(11.0 / 15.5) = 0.7 \text{ ft (0.2 m)}$
Channel Velocity = $(1.486 / 0.047) * (0.7^{0.667}) * (0.010^{0.5}) = 2.5 \text{ fps (0.8 m/s)}$

Channel Effective Manning's Roughness = 0.047
Calculated Shear (Td) = $62.4 * 0.87 * 0.010 = 0.52 \text{ psf (24.8 Pa)}$
Safety Factor = $(Tp/Td) = (1.55 / 0.52) = 2.99$

STORMWATER CHANNEL
UPPER END TO 5+50
VEGETATED

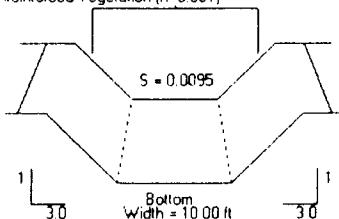
North American Green - ECMS Version 4.3
PROJECT NAME: Disposal Area B
FROM STATION/REACH: 0+00 (TO STATION/REACH: 5+50)

2/1/2008 02:43 PM COMPUTED BY: Spear
PROJECT NO: Storm Channel - grass
DRAINAGE AREA: 27.03 cts DESIGN FREQUENCY: 25 yr-24 hour

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 27.3 | 0.5 | 2.32 | 11.77 | 0.74 | 0.92 |

Unreinforced Vegetation (n=0.051)



Not to Scale

LINER RESULTS

| Reach | Manning Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------------|---------|--------------------------------|-------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | | D | Bunch | 50-75% | 3.33 | 0.55 | 6.09 | STABLE |
| | | Soil | | | Sandy Loam | | 0.035 | 0.030 | 1.15 | STABLE |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Disposal Area 8
COMPUTED BY: Spear
FROM STATION/REACH: 0+00
DRAINAGE AREA: 27.33 cfs

PROJECT NO.: Storm Channel - grass
DATE: 2/1/2008
TO STATION/REACH: 5+50
DESIGN FREQUENCY: 25 yr-24 hour

INPUT PARAMETERS

Channel Discharge : 27.3 cfs (.77 m³/s)
Peak Flow Period : 0.5 hours
Channel Slope : 0.01 ft/ft (0.01 m/m)
Channel Bottom Width : 10.0 ft (3.05 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : Unreinforced Vegetation Bunch 50-75%

Permi. Shear(Tp) : 3.33 psf (159.4 Pa)

Phase = 1
Class = D Vegetation
Soil = Sandy Loam
Allowable Soil Shear(Ta): 0.035 psf (1.67580000713468 Pa)

CALCULATIONS

Initial Depth Estimate = $0.16 * (27.3 / (0.010^{0.5}))^{0.375} = 1.32 \text{ ft (.40 m)}$
Final Channel Depth (after 8 iterations) = .92 ft (0.28 m)
Flow Area = $(10.0 * 0.9) + (0.5 * 0.92^2 * (3.0 + 3.0)) = 11.8 \text{ sq.ft (1.1 m}^2)$
Wet Per. = $10.0 + (0.9 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 15.8 \text{ ft (4.8 m)}$
Hydraulic Radius = $(11.8 / 15.8) = 0.7 \text{ ft (0.2 m)}$
Channel Velocity = $(1.486 / 0.051) * (0.7^{0.667}) * (0.010^{0.5}) = 2.3 \text{ fps (0.7 m/s)}$

Channel Effective Manning's Roughness = 0.051
Calculated Shear (Td) = $62.4 * 0.92 * 0.010 = 0.55 \text{ psf (26.2 Pa)}$
Safety Factor = $(Tp/Td) = (3.33 / 0.55) = 6.09$

Effective Stress on Soil (Te) = $0.5 * (1 - 0.40) * (0.0156 / 0.051)^2 = 0.03 \text{ psf (1.5 Pa)}$

Safety Factor = (I_a/I_e) = (0.04 / 0.030)

= 1.15

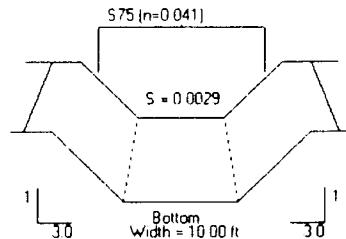
STORMWATER CHANNEL
MIDDLE SECTION
S+50 - 17+50
S75 LINING

North American Green : ECMS Version 4.3
PROJECT NAME: Disposal Area 8
FROM STATION/REACH: 5+50 TO STATION/REACH: 17+50

2/1/2008 02:45 PM COMPUTED BY: Sceo
PROJECT NO.: Storm Channel-S75
DRAINAGE AREA: 27.33 cfs DESIGN FREQUENCY: 25 yr-24 hour

HYDRAULIC RESULTS

| Discharge (cfs) | Peak Flow Period (hrs) | Velocity (fps) | Area (sq ft) | Hydraulic Radius (ft) | Normal Depth (ft) |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 27.3 | 0.5 | 1.91 | 1511 | 0.98 | 1.13 |



Not to Scale

LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|------|---------|--------------------------------|-------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | S75 | Unvegetated | | | | | 1.55 | 0.20 | 7.59 | STABLE |
| | Staple D | | | | | | | | | |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Disposal Area 8 PROJECT NO.: Storm Channel - S75
COMPUTED BY: Spear DATE: 2/1/2008
FROM STATION/REACH: 5+50 TO STATION/REACH: 17+50
DRAINAGE AREA: 27.33 cfs DESIGN FREQUENCY: 25 yr-24 hour

INPUT PARAMETERS

Channel Discharge : 27.3 cfs (.77 m³/s)
Peak Flow Period : 0.5 hours
Channel Slope : 0.003 ft/ft (0.003 m/m)
Channel Bottom Width : 10.0 ft (3.05 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : S75 Staple D
Permi. Shear(Tp) : 1.55 psf (74.2 Pa)
Phase = 0

CALCULATIONS

Initial Depth Estimate = $0.16 * (27.3 / (0.003^{0.5}))^{0.375} = 1.65 \text{ ft (.50 m)}$
Final Channel Depth (after 8 iterations) = 1.13 ft (0.34 m)
Flow Area = $(10.0 * 1.1) + (0.5 * 1.13^2 * (3.0 + 3.0)) = 15.1 \text{ sq.ft (1.4 m}^2)$
Wet Per. = $10.0 + (1.1 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 17.1 \text{ ft (5.2 m)}$
Hydraulic Radius = $(15.1 / 17.1) = 0.9 \text{ ft (0.3 m)}$
Channel Velocity = $(1.486 / 0.041) * (0.9^{0.667}) * (0.003^{0.5}) = 1.8 \text{ fps (0.6 m/s)}$

Channel Effective Manning's Roughness = 0.041
Calculated Shear (Td) = $62.4 * 1.13 * 0.003 = 0.20 \text{ psf (9.8 Pa)}$
Safety Factor = $(Tp/Td) = (1.55 / 0.20) = 7.59$

STORMWATER CHANNEL
MIDDLE SECTION
S+SO - 17+SO
VEGETATED

North American Green - ECMDS Version 4.3

2/1/2008 02:46 PM COMPUTED BY: Spear

PROJECT NAME: Disposal Area 8

PROJECT NO.: Storm Channel class

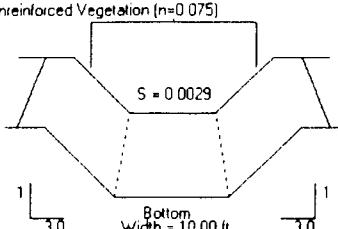
FROM STATION/REACH: 5+50 TO STATION/REACH: 17+50

DRAINAGE AREA: 27.33 cts DESIGN FREQUENCY: 25 yr-24 hour

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area (sq ft) | Hydraulic Radius [ft] | Normal Depth [ft] |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 27.3 | 0.5 | 1.17 | 23.26 | 1.16 | 1.58 |

Unreinforced Vegetation (n=0.075)



LINER RESULTS

| Reach | Matting Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|-------|------------|--------------------------------|-------------------------------|---------------|---------|
| | | | Staple Pattern | Phase | Class | Type | | | | |
| Straight | Unreinforced | Vegetation | | C | Bunch | 50-75% | 4.20 | 0.29 | 14.70 | STABLE |
| | | Soil | | | | Sandy Loam | 0.035 | 0.007 | 4.78 | STABLE |

Not to Scale

[Back to Input Screen](#)



NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Disposal Area 8
COMPUTED BY: Spear
FROM STATION/REACH: 5+50
DRAINAGE AREA: 27.33 cfs

PROJECT NO.: Storm Channel - grass
DATE: 2/1/2008
TO STATION/REACH: 17+50
DESIGN FREQUENCY: 25 yr-24 hour

INPUT PARAMETERS

Channel Discharge : 27.3 cfs (.77 m^3/s)
Peak Flow Period : 0.5 hours
Channel Slope : 0.003 ft/ft (0.003 m/m)
Channel Bottom Width : 10.0 ft (3.05 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : Unreinforced Vegetation Bunch 50-75%
Permi. Shear(Tp) : 4.20 psf (201.1 Pa)

Phase = 1
Class = C Vegetation
Soil = Sandy Loam
Allowable Soil Shear(Ta): 0.035 psf (1.67580000713468 Pa)

CALCULATIONS

Initial Depth Estimate = $0.16 * (27.3 / (0.003^0.5))^{0.375} = 1.65 \text{ ft (.50 m)}$
Final Channel Depth (after 6 iterations) = 1.58 ft (0.48 m)
Flow Area = $(10.0 * 1.6) + (0.5 * 1.58^2 * (3.0 + 3.0)) = 23.3 \text{ sq.ft (2.2 m}^2)$
Wet Per. = $10.0 + (1.6 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 20.0 \text{ ft (6.1 m)}$
Hydraulic Radius = $(23.3 / 20.0) = 1.2 \text{ ft (0.4 m)}$
Channel Velocity = $(1.486 / 0.075) * (1.2^{0.667}) * (0.003^{0.5}) = 1.2 \text{ fps (0.4 m/s)}$

Channel Effective Manning's Roughness = 0.075
Calculated Shear (Td) = $62.4 * 1.58 * 0.003 = 0.29 \text{ psf (13.7 Pa)}$
Safety Factor = $(Tp/Td) = (4.20 / 0.29) = 14.70$

Effective Stress on Soil (Te) = $0.3 * (1 - 0.40) * (0.0156 / 0.075)^2 = 0.01 \text{ psf (0.4 Pa)}$

Safety Factor = (Ta/Te) = (0.04 /0.007)

= 4.78

STORMWATER CHANNEL
END SECTION
17+50 TO END
S75 LINING

North American Green ECMS Version 4.3

12/1/2008 102:52 PM COMPUTED BY Spear

PROJECT NAME Disposal Area B

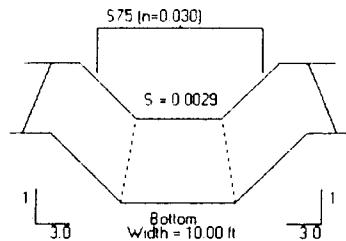
PROJECT NO.: Storm Channel-S75

FROM STATION/REACH: 17+50 TO STATION/REACH: end

DRAINAGE AREA: 71 73 cts DESIGN FREQUENCY: 25 yr-24 hour

HYDRAULIC RESULTS

| Discharge [cts] | Peak Flow Period [hrs] | Velocity (fps) | Area (sq ft) | Hydraulic Radius [ft] | Normal Depth [ft] |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 71.7 | 0.5 | 3.00 | 23.89 | 1.18 | 1.61 |



Not to Scale

LINER RESULTS

| Reach | Lining Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|-------------|--------------------|----------------------------|-------|------|---------|--------------------------------|-------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | S75 | Unvegetated | | | | | 1.55 | 0.29 | 5.32 | STABLE |
| | Stable D | | | | | | | | | |

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NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Disposal Area 8
COMPUTED BY: Spear
FROM STATION/REACH: 17+50
DRAINAGE AREA: 71.73 cfs

PROJECT NO.: Storm Channel - S75
DATE: 2/1/2008
TO STATION/REACH: end
DESIGN FREQUENCY: 25 yr-24 hour

INPUT PARAMETERS

Channel Discharge : 71.7 cfs (2.03 m³/s)
Flow Period : 0.5 hours
Channel Slope : 0.003 ft/ft (0.003 m/m)
Channel Bottom Width : 10.0 ft (3.05 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : S75 Staple D
Permi. Shear(Tp) : 1.55 psf (74.2 Pa)
Phase = 0

CALCULATIONS

Initial Depth Estimate = $0.16 * (71.7 / (0.003^{0.5}))^{0.375} = 2.38 \text{ ft (.72 m)}$
Final Channel Depth (after 7 iterations) = 1.61 ft (0.49 m)
Flow Area = $(10.0 * 1.6) + (0.5 * 1.61^2 * (3.0 + 3.0)) = 23.9 \text{ sq.ft (2.2 m}^2)$
Wet Per. = $10.0 + (1.6 * ((3.0^2) + 1)^{0.5} + ((3.0^2) + 1)^{0.5}) = 20.2 \text{ ft (6.2 m)}$
Hydraulic Radius = $(23.9 / 20.2) = 1.2 \text{ ft (0.4 m)}$
Channel Velocity = $(1.486 / 0.030) * (1.2^{0.667}) * (0.003^{0.5}) = 3.0 \text{ fps (0.9 m/s)}$

Channel Effective Manning's Roughness = 0.030
Calculated Shear (Td) = $62.4 * 1.61 * 0.003 = 0.29 \text{ psf (14.0 Pa)}$
Safety Factor = $(Tp/Td) = (1.55 / 0.29) = 5.32$

STORMWATER CHANNEL
END SECTION
17+50 TO END
VEGETATED

North American Green - ECMD5 Version 4.3

2/1/2008 102:51 PM COMPUTED BY: Spec

PROJECT NAME: Disposal Area B

PROJECT NO.: Storm Channel grass

FROM STATION/REACH: 17+50 TO STATION/REACH: end

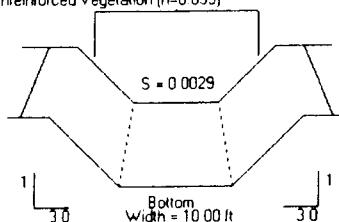
DRAINAGE AREA: 71.73 cfs

DESIGN FREQUENCY: 25 yr/24 hour

HYDRAULIC RESULTS

| Discharge [cfs] | Peak Flow Period [hrs] | Velocity [fps] | Area [sq ft] | Hydraulic Radius [ft] | Normal Depth [ft] |
|-----------------|------------------------|----------------|--------------|-----------------------|-------------------|
| 71.7 | 0.5 | 1.93 | 37.14 | 1.54 | 2.23 |

Unreinforced Vegetation ($n=0.055$)



Not to Scale

LINER RESULTS

| Reach | Lining Type | Stability Analysis | Vegetation Characteristics | | | | Permissible Shear Stress (psf) | Calculated Shear Stress (psf) | Safety Factor | Remarks |
|----------|--------------|--------------------|----------------------------|-------|--------|---------|--------------------------------|-------------------------------|---------------|---------|
| | | | Phase | Class | Type | Density | | | | |
| Straight | Unreinforced | Vegetation | C | Bunch | 50-75% | 0.035 | 4.20 | 0.40 | 10.42 | STABLE |
| | | Soil | Sandy Loam | | | | 0.035 | 0.019 | 1.82 | STABLE |

[Back to Input Screen](#)

NORTH AMERICAN GREEN EROSION CONTROL MATERIALS DESIGN SOFTWARE VERSION 4.3
NORTH AMERICAN GREEN CHANNEL PROTECTION - ENGLISH/S.I.
USER SPECIFIED CHANNEL LINING BACK-UP COMPUTATIONS

PROJECT NAME: Disposal Area 8
COMPUTED BY: Spear
FROM STATION/REACH: 17+50
DRAINAGE AREA: 71.73 cfs

PROJECT NO.: Storm Channel - grass
DATE: 2/1/2008
TO STATION/REACH: end
DESIGN FREQUENCY: 25 yr-24 hour

INPUT PARAMETERS

Channel Discharge : 71.7 cfs (2.03 m³/s)
Peak Flow Period : 0.5 hours
Channel Slope : 0.003 ft/ft (0.003 m/m)
Channel Bottom Width : 10.0 ft (3.05 m)
Left Side Slope : 3:1
Right Side Slope : 3:1

Channel Lining : Unreinforced Vegetation Bunch 50-75%
Permi. Shear(Tp) : 4.20 psf (201.1 Pa)

Phase = 1
Class = C Vegetation
Soil = Sandy Loam
Allowable Soil Shear(Ta): 0.035 psf (1.67580000713468 Pa)

CALCULATIONS

Initial Depth Estimate = $0.16 * (71.7 / (0.003^{0.5}))^{0.375} = 2.38$ ft (.72 m)
Final Channel Depth (after 8 iterations) = 2.23 ft (0.68 m)
Flow Area = $(10.0 * 2.2) + (0.5 * 2.23^2 * (3.0 + 3.0)) = 37.1$ sq.ft (3.4 m²)
Wet Per. = $10.0 + (2.2 * ((3.0^2 + 1)^{0.5} + ((3.0^2 + 1)^{0.5})^2)) = 24.1$ ft (7.3 m)
Hydraulic Radius = $(37.1 / 24.1) = 1.5$ ft (0.5 m)
Channel Velocity = $(1.486 / 0.055) * (1.5^{0.667}) * (0.003^{0.5}) = 1.9$ fps (0.6 m/s)

Channel Effective Manning's Roughness = 0.055
Calculated Shear (Td) = $62.4 * 2.23 * 0.003 = 0.40$ psf (19.3 Pa)
Safety Factor = $(Tp/Td) = (4.20 / 0.40) = 10.42$

Effective Stress on Soil (Te) = $0.4 * (1 - 0.40) * (0.0156 / 0.055)^2 = 0.02$ psf (0.9 Pa)

Safety Factor = (Ta/Te) = (0.04 /0.019)

= 1.82

"

**BRUNNER ISLAND
DISPOSAL AREA 8**

**BENCH MANHOLE AND DOWNCOMER PIPE
CALCULATIONS**

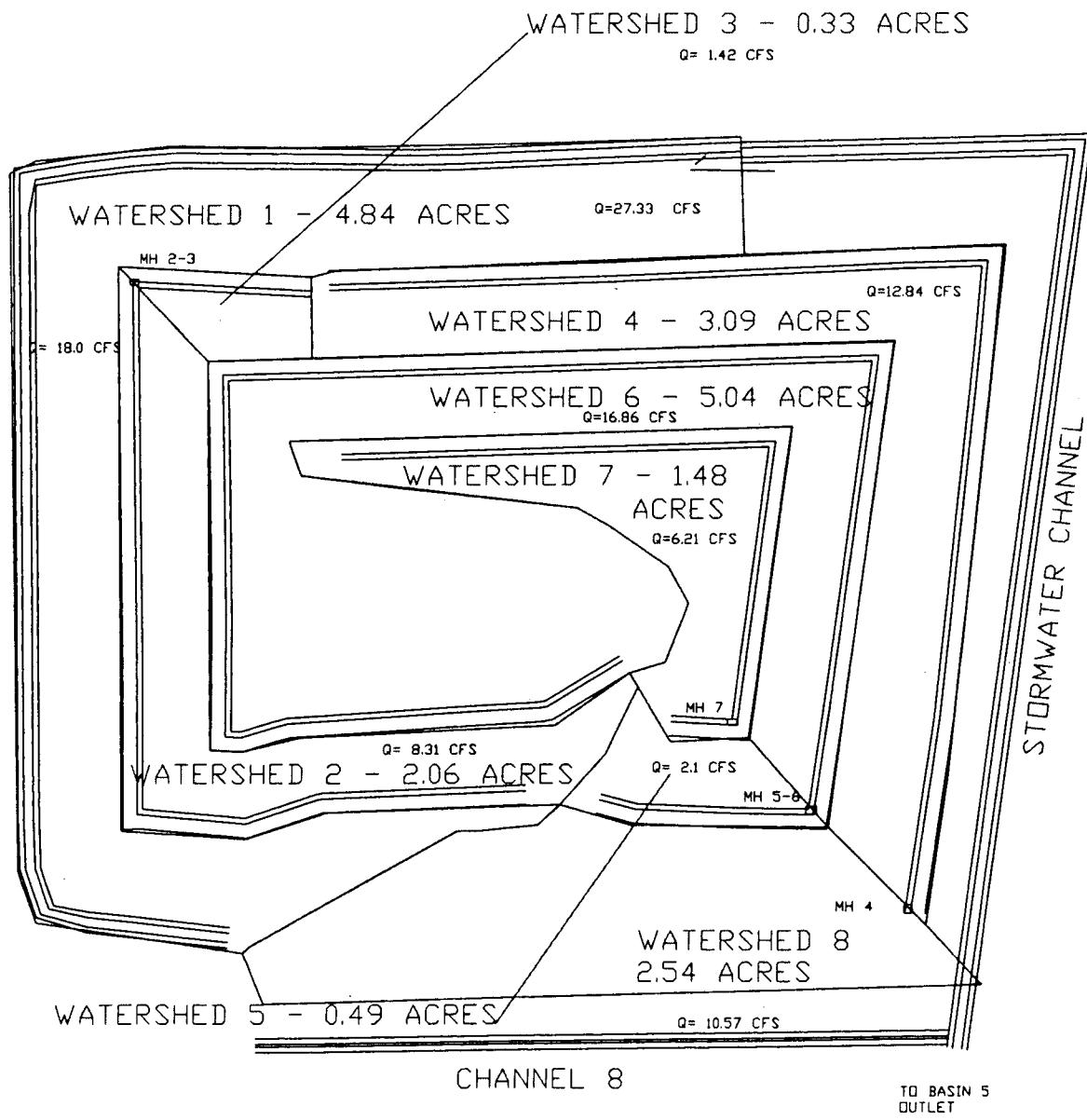
ALL MANHOLES HAVE TYPE M INLETS

**MANHOLE 2-3 HAS AN 18 INCH DIAMETER OUTLET
PIPE**

MANHOLE 4 HAS A 30 INCH DIAMETER OUTLET PIPE

MANHOLE 5-6 HAS A 24 INCH DIAMETER OUTLET PIPE

MANHOLE 7 HAS AN 18 INCH DIAMETER OUTLET PIPE



Dept. _____
 Date 215 2008
 Designed by ADT
 Approved by _____

PPL
CALCULATION SHEET

PROJECT AREA E
BENCH GRAIN INLET
AND DOWNSPOUTS

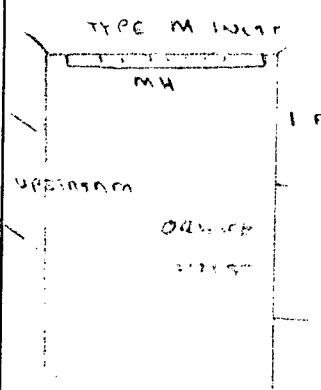
ER No. _____

Sht. No. 1 of _____

DESIGN Q's

| | MANHOLE | W.D. IN FEET | OUTFLOW |
|--|---------|--------------|---------|
| | MH 2-3 | 9.73 | - |
| | MH 4 | 12.64 | 25.17 |
| | MH 5-6 | 18.96 | 6.21 |
| | MH 7 | 6.21 | - |

BENCH



PIPE CAPACITY

SLOPE = 2%

LEAD = 10 FT

2 x 4 Box

SEE ATTACHED SKETCH
 FOR LOCATION OF
 MANHOLES.



OUTLET
 OF MH 2-3
 AND MH 4
 PROTECTED BY
 ENDS
 DIVERSIFIER

MANHOLE INLET CAPACITY

SEE ATTACHED TYPE M INLET CAPACITY CHART

MAXIMUM MANHOLE INLET Q = 18.96 CFS

INLET HEADS ~0.17 FT - CHANNEL 1.5 FT DEEP MIN OK

DISPOSAL AREA 8 - BENCH MANHOLE INLETS

CROSS SLOPES 1V:6H AND 1V:4H Δ
 1V:6H AND 1V:8H \circ
 1V:12H AND 1V:4H (OR 1V:2H) \blacktriangle
 1V:12H AND 1V:12H \bullet

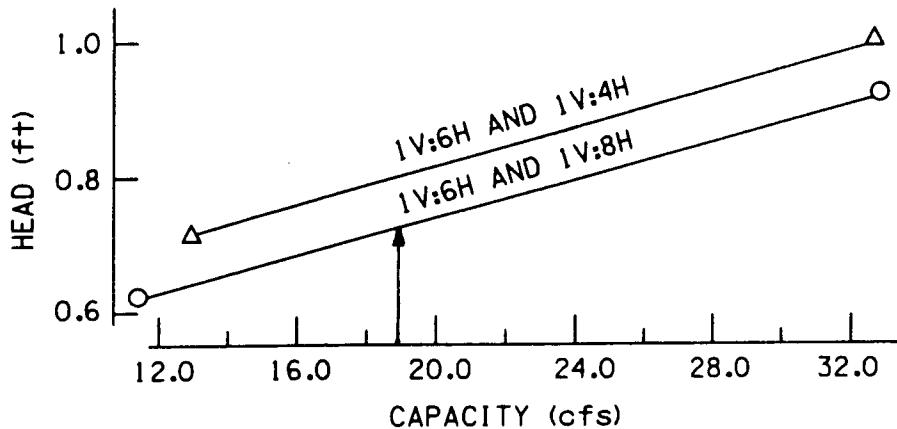


FIGURE 10.5.5 (A) (ENGLISH)
 CAPACITY OF TYPE M INLET (MEDIAN)
 OR TYPE S INLET AT SUMP CONDITION

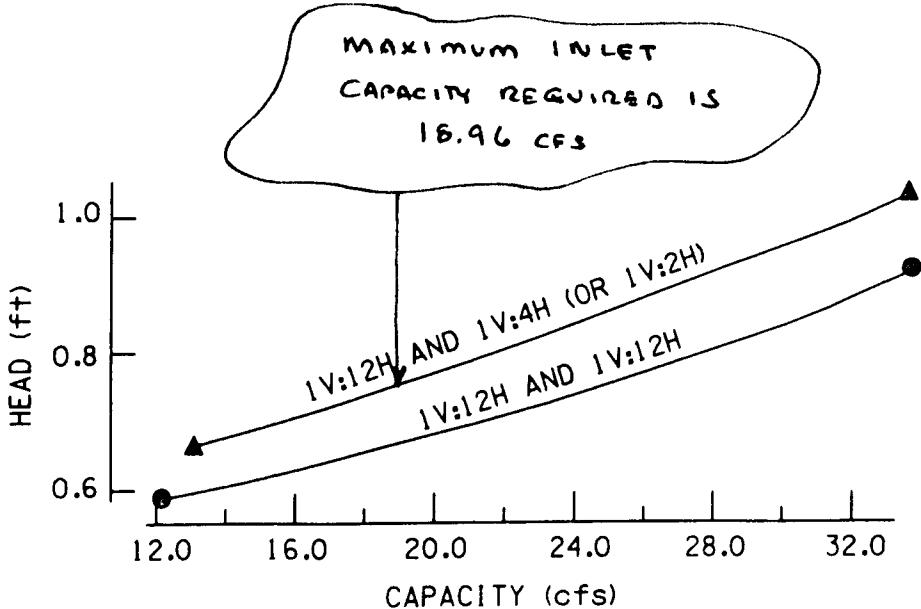


FIGURE 10.5.5(B) (ENGLISH)
 CAPACITY OF TYPE M INLET (MEDIAN)
 OR TYPE S INLET AT SUMP CONDITION

Dept.
 Date 215 20.08
 Designed by
 Approved by

PPL
CALCULATION SHEET

ER No.

PROJECT AREA 6
BEACH DRAIN INLET
AND DOWNCOMERS

Sht. No. ... 2 ... of ...

CHECK INLET CAPACITY : H = 1.7 FT ABOVE TOP OF PIPE

| PIPE SIZES | |
|---------------|-----|
| $Q' s = 9.73$ | 18" |
| 38.01 | 30" |
| 25.17 | 24" |
| 6.21 | 18" |

CALCS. OFF, ATTACHED NOMOGRAM

SET 3 = 1.5 , H = 3.2 H/D = 2.1 $\therefore Q/D^{5/2} = 4.9$ $Q_{cap} = 13.50$

SET 4 = 2.0 , H = 3.7 H/D = 1.85 $\therefore Q/D^{5/2} = 4.6$ $Q_{cap} = 26.02$

SET 5 = 2.5 , H = 4.2 H/D = 1.66 $\therefore Q/D^{5/2} = 4.0$ $Q_{cap} = 39.52$

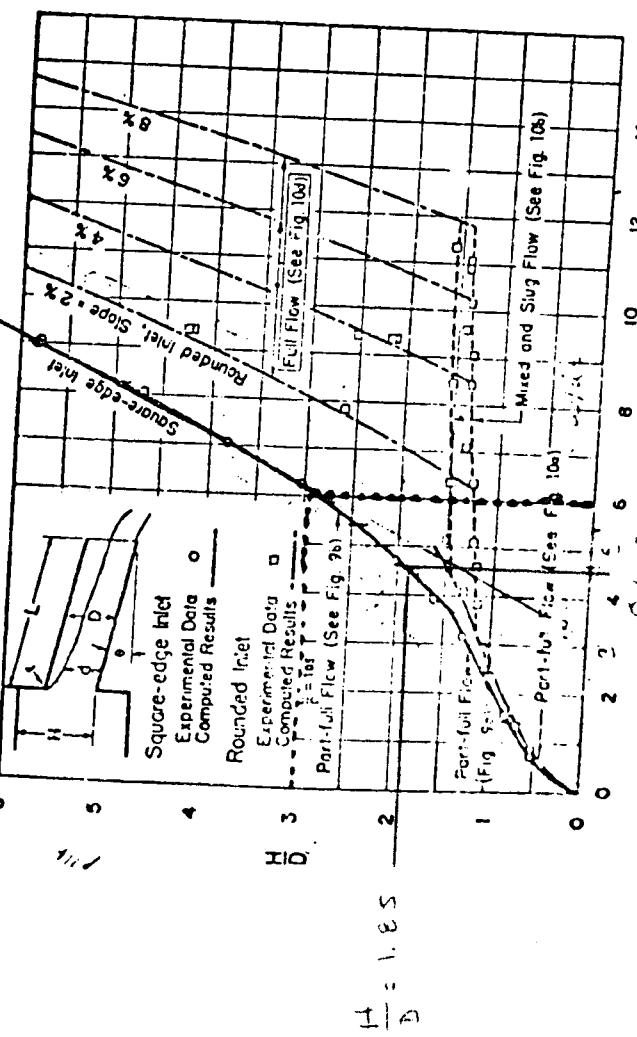
$$\Theta \approx M D^{3/2} + 3 D^{5/2}$$

1.7

1.9

5

7



25

Figure 11 Comparison of Head Discharge Curves for Square-edged And Rounded Inlets
Line Cited On Screen Slides

Dept. _____
 Date 2/5 2008
 Designed by _____
 Approved by _____

**PPL
CALCULATION SHEET**

ER No. _____
 Sht. No. 3 of _____

PROJECT AREA B
BENCH DRAW. INLES
AND DOWNCOMERS

CHECK PIPE CAPACITY - FLAT SECTION - SLOPE = 2%
LENGTH = 10 FT

REF. DEP MANUAL - PG 45

$$Q = a [(zgh) / (1 + K_m + K_p L)]^{0.5}$$

CHECK 1.5' = D a = 1.77 K_p = 0.0243 h = 2.65 K_m = 1

Q = 15.4 cfs > MH 2-3(9.72) AND MH 7(6.21) OK

CHECK 2.0' = D a = 2.14 K_p = 0.0165 h = 3.10 K_m = 1

Q = 30.15 GOOD FOR MH 5-6 OK

TRY 2.5'

2.5' = D a = 4.91 K_p = 0.0123 h = 3.15 K_m = 1

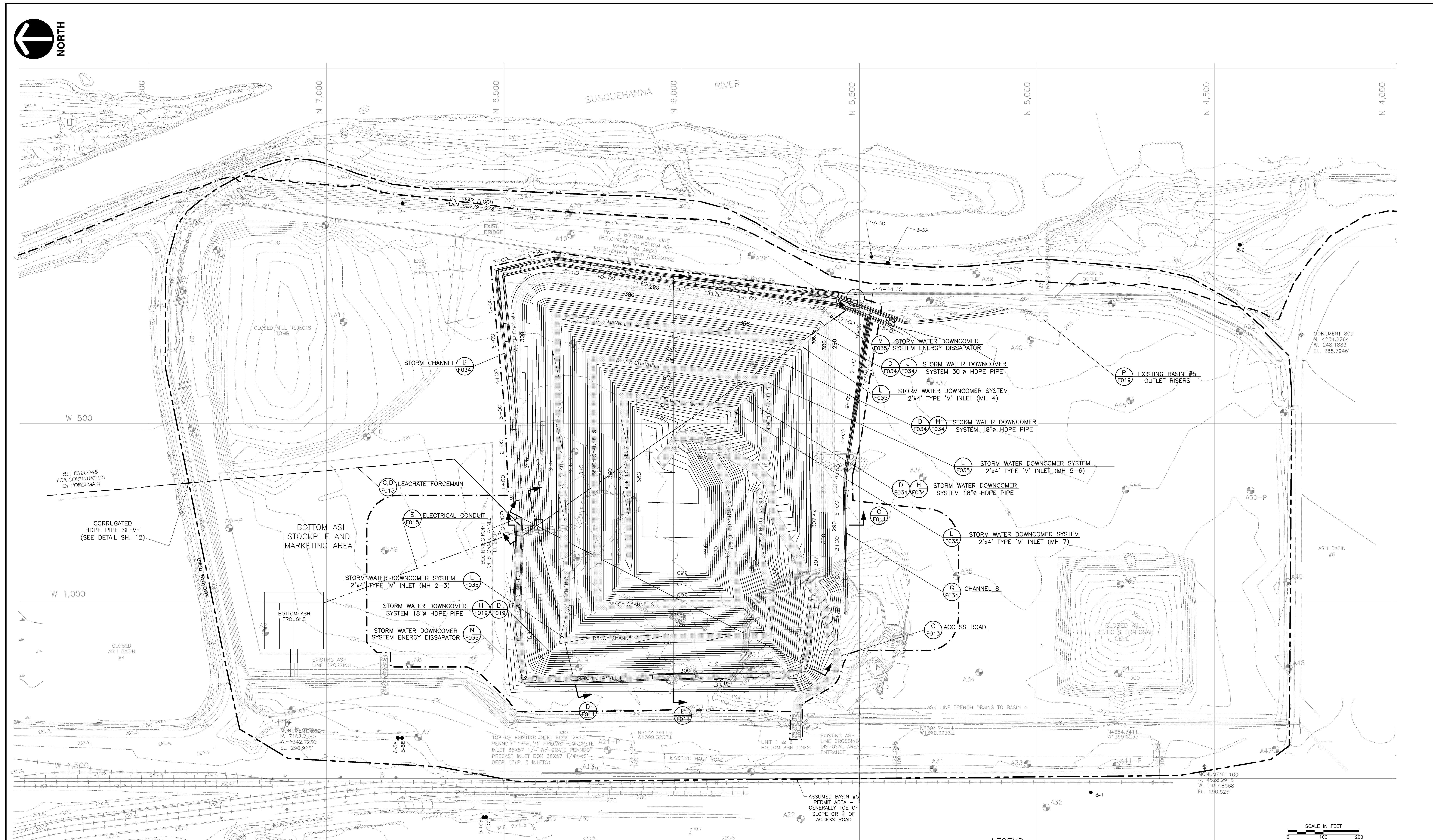
Q = 48.00 GOOD FOR MH 4 OK

NO NEED TO CHECK STEPPED SECTION

DOWNCOMER PIPES

| | |
|--------|-----|
| MH 2-3 | 18" |
| NH 4 | 30" |
| MH 5-6 | 24" |
| MH 7 | 18" |

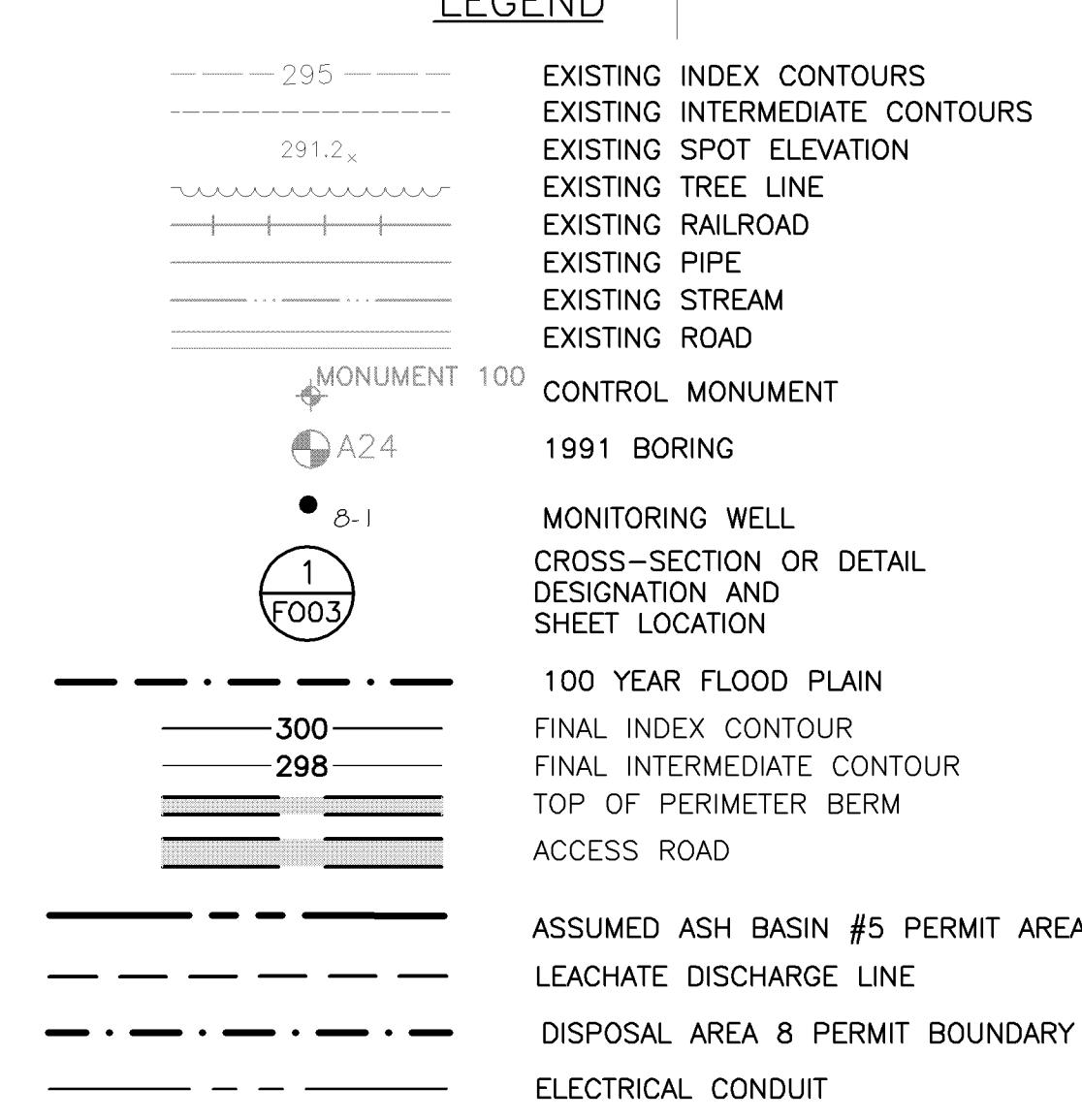
APPENDIX B
RELEVANT PERMIT DRAWINGS (CEC 2007)



NOTES

- NOTES:

 1. THIS DRAWING REPRESENTS THE TOP OF FINAL COVER GRADES. WHEN FILLING, THE TOP OF WASTE GRADES SHALL ACCOUNT FOR THE 2-FEET THICK FINAL COVER LAYER AND APPLICABLE SLOPE CORRECTION.
 2. THE SLOPE STABILITY ANALYSIS FOR AREA 8 ASSUMES STRENGTH PARAMETERS FOR THE BASIN 5 WASTE. DURING INITIAL OPERATION OF AREA 8, THE WASTE STREAM SHALL BE SAMPLED, TESTED AND EVALUATED WITH THE DESIGN STABILITY ANALYSIS BY AN ENGINEER TO DETERMINE IF THE ANALYSIS IS VALID FOR THE FACILITY'S WASTE





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BRI - BRUNNER ISLAND LLC

PPL BRUNNER ISLAND, LLC
INNER ISLAND STEAM ELECTRIC STATION

JUNIOR ISLAND STEAM ELECTRIC STATION
DISPOSAL AREA 8

DISPOSAL AREA 8
WEST MANCHESTER TWP PENNSYLVANIA

AST MANCHESTER TWF., PENNSTEVENIA


| | | |
|--------------|--------------|--------------|
| 2/9/07 | APPROVED BY: | DWN BY: DKS |
| E: 1" = 100' | CPT | CHKD BY: CPT |

E. 1 = 100 GDI CHRD. BY. GDI SHEET

| | |
|------------------|----------------|
| FINAL COVER PLAN | STREET |
| | DRAWING NUMBER |

FINAL COVER PLAN

| | | | | | | |
|---|-------|----------|----------------------------------------------------------------------|-----|--|-----|
| | | | | | | |
| 2 | 08/08 | 38005895 | DIRECTED LEACHATE COLLECTION TO SCRUBBER WASTE WATER TREATMENT PLANT | JTE | | ADS |
| 1 | 06/08 | 38005895 | REVISED DWG PER PPL ENGINEER'S COMMENTS AND MARKED PRINTS | JTE | | ADS |
| 0 | 11/07 | 36014405 | ISSUED WITH PPL DRAWING NUMBER AND PPL ENGINEER'S ADDITIONS | JTE | | ADS |



APPENDIX C

CELL 1 CLEAN RUNOFF DIVERSION

BERM PLAN AND SECTIONS

