416A-A-1

2003-0056

840 Ocean Ave.
Plan Amendment
Ocean Ridge Realty

on Spreadsheet

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
DRC Copy

2003-0056
Application I. D. Number

03/25/2003
Application Date

Ocean Ridge Realty LLC
Applicant

91 Old Ocean House Road, Cape Elizabeth, ME 04107
Applicant's Mailing Address

Amendment to Plan - Ocean Ridge
Project Name/Description

Consultant/Agent

840 - 840 Ocean Ave, Portland, Maine
Address of Proposed Site

Applicant Ph: (207) 650-3969 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail ☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☐ Other (specify)

Proposed Building square Feet or # of Units | Acreage of Site | R-3 Zoning

Check Review Required:

☐ Site Plan (major/minor) ☐ Subdivision # of lots ☐ PAD Review ☐ 14-403 Streets Review
☐ Flood Hazard ☐ Shoreland ☐ HistoricPreservation ☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB) ☐ Zoning Variance ☐ Other

Fees Paid: Site Plan Subdivision Engineer Review Date

DRC Approval Status:

Reviewer Sebago Technic

☐ Approved ☑ Approved w/Conditions See Attached ☐ Denied

Approval Date 04/02/2003 Approval Expiration 04/02/2004 Extension to ☑ Additional Sheets Attached

☑ Condition Compliance Kandi Talbot (signature) 04/25/2003 (date)

Performance Guarantee ☐ Required* ☐ Not Required

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☐ Performance Guarantee Accepted	date	amount	expiration date
☐ Inspection Fee Paid	date	amount	
☐ Building Permit Issue	date		
☐ Performance Guarantee Reduced	date	remaining balance	signature
☐ Temporary Certificate of Occupancy	date	☐ Conditions (See Attached)	expiration date
☐ Final Inspection	date	signature	
☐ Certificate Of Occupancy	date		
☐ Performance Guarantee Released	date	signature	
☐ Defect Guarantee Submitted	submitted date	amount	expiration date
☐ Defect Guarantee Released	date	signature	

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
ADDENDUM

2003-0056
Application I. D. Number

03/25/2003
Application Date

Amendment to Plan - Ocean Ridge
Project Name/Description

Ocean Ridge Realty LLC
Applicant

91 Old Ocean House Road, Cape Elizabeth, ME 04107
Applicant's Mailing Address

Consultant/Agent

Applicant Ph: (207) 650-3969 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

840 - 840 Ocean Ave, Portland, Maine
Address of Proposed Site

416A A001001
Assessor's Reference: Chart-Block-Lot

Approval Conditions of Planning

1 Building complex 5-8 meet the required setback of 35 feet for a building with 4 or more dwelling units within a building. The plans also show "open terraces". These shall only be of a patio nature and not a constructed deck. If this terrace is a constructed element of the structure such as a deck, then that deck would also need to meet the required 35 ft. To the exterior subdivision line. The plans would need to be revised to reflect a constructed deck that meets the 35-foot setback.

2 A mylar of the revised subdivision plan shall be submitted for signature by the Director of the Planning Division. The revised subdivision plan shall then be recorded in the Registry of Deeds and a mylar copy, along with seven (7) paper copies of the recorded subdivision plan shall be submitted to the City.

Approval Conditions of DRC

1 see planning conditions

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Copy

2003-0056
Application I. D. Number

03/25/2003
Application Date

Ocean Ridge Realty LLC
Applicant

91 Old Ocean House Road, Cape Elizabeth, ME 04107
Applicant's Mailing Address

Amendment to Plan - Ocean Ridge
Project Name/Description

Consultant/Agent

840 - 840 Ocean Ave, Portland, Maine
Address of Proposed Site

Applicant Ph: (207) 650-3969 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail
☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☐ Other (specify)

Proposed Building square Feet or # of Units | Acreage of Site | R-3 Zoning

Check Review Required:

☐ Site Plan (major/minor) ☐ Subdivision # of lots ☐ PAD Review ☐ 14-403 Streets Review
☐ Flood Hazard ☐ Shoreland ☐ HistoricPreservation ☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB) ☐ Zoning Variance ☐ Other

Fees Paid: Site Plan Subdivision Engineer Review Date

Planning Approval Status:

Reviewer Kandi Talbot

☐ Approved ☑ Approved w/Conditions See Attached ☐ Denied

Approval Date 04/02/2003 Approval Expiration 04/02/2004 Extension to ☑ Additional Sheets Attached

☑ OK to Issue Building Permit Kandi Talbot (signature) 04/25/2003 (date)

Performance Guarantee ☐ Required* ☐ Not Required

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☐ Performance Guarantee Accepted	date	amount	expiration date
☐ Inspection Fee Paid	date	amount	
☐ Building Permit Issue	date		
☐ Performance Guarantee Reduced	date	remaining balance	signature
☐ Temporary Certificate of Occupancy	date	☐ Conditions (See Attached)	expiration date
☐ Final Inspection	date	signature	
☐ Certificate Of Occupancy	date		
☐ Performance Guarantee Released	date	signature	
☐ Defect Guarantee Submitted	submitted date	amount	expiration date
☐ Defect Guarantee Released	date	signature	

From: Jeff Amos <JAmos@sebagotechnics.com>
To: "'KCote@ci.portland.me.us'" <KCote@ci.portland.me....
Date: 4/1/03 10:08AM
Subject: Ocean Ridge Condominiums

Kandi,

Here is the information that I promised to you.

The following buildings moved to get proper setback spacing from property lines and each other once the porches were added to the plan:

* Buildings 5-8 were shifted slightly to make more room for the utility corridor between units 4 and 5.
* Buildings 13-16 were moved away from the property line
* Buildings 23-35 were shifted away from each other to get proper spacing

The buildings were not moved more than a few feet. Let me know if you need anything else.

Have a great day.

Jeff Amos, P.E.
Senior Project Engineer
Sebago Technics, Inc
(207) 856-0277

CC: "'84180@sebagotechnics.com'" <84180@sebagotechnics...

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
DRC Copy

2001-0002
Application I. D. Number

Marjem Mortgage Corporation
Applicant

01/11/2001
Application Date

6 Huron Drive, PO Box 2219, Natick, MA 01760
Applicant's Mailing Address

Ocean Ridge Condominiums
Project Name/Description

Sebago Technics
Consultant/Agent

852 - 852 Ocean Ave
Address of Proposed Site

Agent Ph: 856-0277 Agent Fax: 856-2206
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☑ New Building | Building Addition | Change Of Use | Residential ☐ Office ☐ Retail ☐ Manufacturing | Warehouse/Distribution | Parking Lot ☑ Other (specify) 46 Residential Condo Units

46 Units	10.4 acreage	R-3
Proposed Building square Feet or # of Units	Acreage of Site	Zoning

Check Review Required:

☑ Site Plan (major/minor)	Subdivision # of lots	PAD Review	14-403 Streets Review
☐ Flood Hazard	Shoreland	☐ HistoricPreservation	DEP Local Certification
Zoning Conditional Use (ZBA/PB)	☐ Zoning Variance		Other

Fees Paid: Site Plan $500.00 Subdivision $1,150.00 Engineer Review $13,070.17 Date 12/13/2002

DRC Approval Status:

Reviewer Chris Earle/Steve Bushey

Approved	☑ Approved w/Conditions See Attached	Denied

Approval Date 08/14/2001 Approval Expiration 08/14/2002 Extension to _____ ☑ Additional Sheets Attached

☑ Condition Compliance Kandi Talbot (signature) 01/14/2003 (date)

Performance Guarantee ☑ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☑ Performance Guarantee Accepted	12/06/2002 (date)	$752,811.00 (amount)	10/30/2003 (expiration date)
Inspection Fee Paid	(date)	(amount)	
☐ Building Permit Issue	(date)		
Performance Guarantee Reduced	(date)	(remaining balance)	(signature)
☐ Temporary Certificate of Occupancy	(date)	Conditions (See Attached)	(expiration date)
☐ Final Inspection	(date)	(signature)	
☐ Certificate Of Occupancy	(date)		
☐ Performance Guarantee Released	(date)	(signature)	
Defect Guarantee Submitted	(submitted date)	(amount)	(expiration date)
Defect Guarantee Released	(date)	(signature)	

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
DRC Copy

2001-0002
Application I. D. Number

01/11/2001
Application Date

Marjem Mortgage Corporation
Applicant

6 Huron Drive, PO Box 2219, Natick, MA 01760
Applicant's Mailing Address

Ocean Ridge Condominiums
Project Name/Description

Sebago Technics
Consultant/Agent

852 - 852 Ocean Ave
Address of Proposed Site

Agent Ph: 856-0277 Agent Fax: 856-2206
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☑ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail ☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☑ Other (specify) 46 Residential Condo Units

46 Units	10.4 acreage	R-3
Proposed Building square Feet or # of Units	Acreage of Site	Zoning

Check Review Required:

☑ Site Plan (major/minor)	☐ Subdivision # of lots	☐ PAD Review	☐ 14-403 Streets Review
☐ Flood Hazard	☐ Shoreland	☐ HistoricPreservation	☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB)	☐ Zoning Variance		☐ Other

Fees Paid: Site Plan $500.00 Subdivision $1,150.00 Engineer Review $13,070.17 Date 12/13/2002

DRC Approval Status:

Reviewer Chris Earle/Steve Bushey

☐ Approved ☑ Approved w/Conditions See Attached ☐ Denied

Approval Date 08/14/2001 Approval Expiration 08/14/2002 Extension to ____ ☑ Additional Sheets Attached

☑ Condition Compliance Kandi Talbot (signature) 01/14/2003 (date)

Performance Guarantee ☑ Required* ☐ Not Required

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☑ Performance Guarantee Accepted	12/06/2002 (date)	$752,811.00 (amount)	10/30/2003 (expiration date)
☐ Inspection Fee Paid	(date)	(amount)	
☐ Building Permit Issue	(date)		
☐ Performance Guarantee Reduced	(date)	(remaining balance)	(signature)
☐ Temporary Certificate of Occupancy	(date)	☐ Conditions (See Attached)	(expiration date)
☐ Final Inspection	(date)	(signature)	
☐ Certificate Of Occupancy	(date)		
☐ Performance Guarantee Released	(date)	(signature)	
☐ Defect Guarantee Submitted	(submitted date)	(amount)	(expiration date)
☐ Defect Guarantee Released	(date)	(signature)	

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
ADDENDUM

2001-0002
Application I. D. Number

01/11/2001
Application Date

Marjem Mortgage Corporation
Applicant

6 Huron Drive, PO Box 2219, Natick, MA 01760
Applicant's Mailing Address

Ocean Ridge Condominiums
Project Name/Description

Sebago Technics
Consultant/Agent

852 - 852 Ocean Ave
Address of Proposed Site

Agent Ph: 856-0277 Agent Fax: 856-2206
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Approval Conditions of Planning

1 Subdivision

i. that the applicant provide an Emergency Access Agreement to allow the City to plow Ridge Road if emergency vehicles cannot make it into the Ocean Ridge development.

2 ii. the design engineer of record, Sebago Technics, Inc., shall provide a certification upon completion of construction that the work is in substantial conformance to the approved plans and that all conditions of approval have been satisfied. The applicant shall retain the design engineer to provide construction phase services including but not limited to, periodic site inspection for adherence to all required erosion and sedimentation control measures and to address any changes in field conditions which require modifications to the design.

3 Site Plan

i. that Peterson-Rabasco Geoengineers review and approve the August 8, 2001 submittal by the applicant regarding the blasting plan and pre-blast survey.

4 The Planning Board also waived the Technical Standards "the maximum grade for the centerline of all streets shall not exceed 8%" and "street grades at an intersection shall not be more than 3% for a distance of not less than 100 feet from the center of the intersection on each intersecting street"

Approval Conditions of DRC

1

Approval Conditions of Fire

1 Applicant must show hydrant within 800' path of travel.

2 2nd access required or units shall be sprinklered

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Copy

2001-0002
Application I. D. Number

Marjem Mortgage Corporation
Applicant

01/11/2001
Application Date

6 Huron Drive, PO Box 2219, Natick, MA 01760
Applicant's Mailing Address

Ocean Ridge Condominiums
Project Name/Description

Sebago Technics
Consultant/Agent

852 - 852 Ocean Ave
Address of Proposed Site

Agent Ph: 856-0277 Agent Fax: 856-2206
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☑ New Building | Building Addition | ☐ Change Of Use | ☐ Residential | Office | Retail | ☐ Manufacturing | Warehouse/Distribution | | Parking Lot | ☑ Other (specify) 46 Residential Condo Units

46 Units
Proposed Building square Feet or # of Units

10.4 acreage
Acreage of Site

R-3
Zoning

Check Review Required:

☑ Site Plan (major/minor) | ☐ Subdivision # of lots | PAD Review | ☐ 14-403 Streets Review
| Flood Hazard | | Shoreland | ☐ HistoricPreservation | ☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB) | ☐ Zoning Variance | | Other

Fees Paid: Site Plan $500.00 Subdivision $1,150.00 Engineer Review $13,070.17 Date 12/13/2002

Planning Approval Status:

Reviewer Kandi Talbot

☐ Approved | ☑ Approved w/Conditions See Attached | ☐ Denied

Approval Date 08/14/2001 Approval Expiration 08/14/2002 Extension to _____ ☑ Additional Sheets Attached

☑ OK to Issue Building Permit — Kandi Talbot (signature) — 01/14/2003 (date)

Performance Guarantee ☑ Required* | Not Required

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☑ Performance Guarantee Accepted	12/06/2002 (date)	$752,811.00 (amount)	10/30/2003 (expiration date)
☐ Inspection Fee Paid	(date)	(amount)	
Building Permit Issue	(date)		
☐ Performance Guarantee Reduced	(date)	(remaining balance)	(signature)
☐ Temporary Certificate of Occupancy	(date)	☐ Conditions (See Attached)	(expiration date)
☐ Final Inspection	(date)	(signature)	
☐ Certificate Of Occupancy	(date)		
☐ Performance Guarantee Released	(date)	(signature)	
☐ Defect Guarantee Submitted	(submitted date)	(amount)	(expiration date)
Defect Guarantee Released	(date)	(signature)	

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Copy

2001-0002
Application I. D. Number

01/11/2001
Application Date

Marjem Mortgage Corporation
Applicant

6 Huron Drive, PO Box 2219, Natick, MA 01760
Applicant's Mailing Address

Ocean Ridge Condominiums
Project Name/Description

Sebago Technics
Consultant/Agent

852 - 852 Ocean Ave
Address of Proposed Site

Agent Ph: 856-0277 Agent Fax: 856-2206
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☑ New Building | Building Addition | Change Of Use | Residential | Office | Retail | ☐ Manufacturing | Warehouse/Distribution | Parking Lot | ☑ Other (specify) 46 Residential Condo Units

Proposed Building square Feet or # of Units	Acreage of Site	Zoning
46 Units	10.4 acreage	R-3

Check Review Required:

☑ Site Plan (major/minor) | ☐ Subdivision # of lots ____ | ☐ PAD Review | ☐ 14-403 Streets Review

☐ Flood Hazard | ☐ Shoreland | ☐ HistoricPreservation | ☐ DEP Local Certification

☐ Zoning Conditional Use (ZBA/PB) | ☐ Zoning Variance | ☐ Other

Fees Paid: Site Plan $500.00 Subdivision $1,150.00 Engineer Review $13,070.17 Date 12/13/2002

Planning Approval Status:

Reviewer Kandi Talbot

☐ Approved | ☑ Approved w/Conditions See Attached | ☐ Denied

Approval Date 08/14/2001 Approval Expiration 08/14/2002 Extension to ____ ☑ Additional Sheets Attached

☑ OK to Issue Building Permit Kandi Talbot (signature) 01/14/2003 (date)

Performance Guarantee ☑ **Required*** | ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☑ Performance Guarantee Accepted	12/06/2002 (date)	$752,811.00 (amount)	10/30/2003 (expiration date)
☐ Inspection Fee Paid	____ (date)	____ (amount)	
☐ Building Permit Issue	____ (date)		
☐ Performance Guarantee Reduced	____ (date)	____ (remaining balance)	____ (signature)
☐ Temporary Certificate of Occupancy	____ (date)	☐ Conditions (See Attached)	____ (expiration date)
☐ Final Inspection	____ (date)	____ (signature)	
☐ Certificate Of Occupancy	____ (date)		
☐ Performance Guarantee Released	____ (date)	____ (signature)	
☐ Defect Guarantee Submitted	____ (submitted date)	____ (amount)	____ (expiration date)
☐ Defect Guarantee Released	____ (date)	____ (signature)	

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
ADDENDUM

2001-0002
Application I. D. Number

Marjem Mortgage Corporation
Applicant

01/11/2001
Application Date

6 Huron Drive, PO Box 2219, Natick, MA 01760
Applicant's Mailing Address

Ocean Ridge Condominiums
Project Name/Description

Sebago Technics
Consultant/Agent

852 - 852 Ocean Ave
Address of Proposed Site

Agent Ph: 856-0277 Agent Fax: 856-2206
Applicant or Agent Daytime Telephone, Fax

416A A001001
Assessor's Reference: Chart-Block-Lot

Approval Conditions of Planning

1 Subdivision

i. that the applicant provide an Emergency Access Agreement to allow the City to plow Ridge Road if emergency vehicles cannot make it into the Ocean Ridge development.

2 ii. the design engineer of record, Sebago Technics, Inc., shall provide a certification upon completion of construction that the work is in substantial conformance to the approved plans and that all conditions of approval have been satisfied. The applicant shall retain the design engineer to provide construction phase services including but not limited to, periodic site inspection for adherence to all required erosion and sedimentation control measures and to address any changes in field conditions which require modifications to the design.

3 Site Plan

i. that Peterson-Rabasco Geoengineers review and approve the August 8, 2001 submittal by the applicant regarding the blasting plan and pre-blast survey.

4 The Planning Board also waived the Technical Standards "the maximum grade for the centerline of all streets shall not exceed 8%" and "street grades at an intersection shall not be more than 3% for a distance of not less than 100 feet from the center of the intersection on each intersecting street"

Approval Conditions of DRC

1

Approval Conditions of Fire

1 Applicant must show hydrant within 800' path of travel.

2 2nd access required or units shall be sprinklered

Department of Planning & Development
Lee D. Urban, Director

CITY OF PORTLAND

Division Directors
Mark B. Adelson
Housing & Neighborhood Services

Alexander Q. Jaegerman, AICP
Planning

John N. Lufkin
Economic Development

April 2, 2003

Mr. Patrick Tinsman
Ocean Ridge Realty LLC
91 Old Ocean House Road
Cape Elizabeth, ME 04107

RE: Ocean Ridge Condominiums, 840 Ocean Avenue
ID #2003-0056, CBL #416A-A-001

Dear Mr. Tinsman:

This letter is to confirm the revision to the approved subdivision plan of the Ocean Ridge Condominium project located at 840 Ocean Avenue. The approved revision includes the shifting of the building locations for Buildings 5-8, 13-16 and 23-25. The revision also included the addition of a gas line and a phase line shift. The revised plan has been reviewed and approved by the project review staff including representatives of the Planning, Public Works, Building Inspections, Fire and Parks Departments. The following conditions apply to this revision approval:

1. Building complex 5-8 meet the required setback of 35 feet for a building with 4 or more dwelling units within a building. The plans also show "open terraces". These shall only be of a patio nature and not a constructed deck. If this terrace is a constructed element of the structure such as a deck, then that deck would also need to meet the required 35 ft. to the exterior subdivision line. The plans would need to be revised to reflect a constructed deck that meets the 35-foot setback.

2. A mylar of the revised subdivision plan shall be submitted for signature by the Director of the Planning Division. The revised subdivision plan shall then be recorded in the Registry of Deeds and a mylar copy, along with seven (7) paper copies of the recorded subdivision plan shall be submitted to the City.

If you have any questions regarding the revision please contact Kandice Talbot at 874-8901.

Sincerely,

Alexander Jaegerman
Planning Division Director

O:\PLAN\DEVREVW\OCEAN852\REV4-2-03.DOC

From: Marge Schmuckal
To: Kandi Talbot
Date: 4/1/03 4:24PM
Subject: Ocean Ridge Development

Kandi,

I have reviewed the most recent submittals. Thank you for the updates that I needed. This project is located in an R-3 zone as a PRUD Development. All the setbacks, heights, recreational area, length of building, and parking requirements are being met.

Please note that building complex #5 thru #8 meet the required setback of 35 feet for a building with 4 or more dwelling units within a building. The plans also show "open terraces". These shall only be of a patio nature and not a constructed deck. If this terrace is a constructed element of the structure such as a deck, then that deck would also need to meet the required 35' to the exterior subdivision line. The plans would need to be revised to reflect a constructed deck that meets the 35 foot setback.

Marge Schmuckal
Zoning Administrator

CC: Lee Urban; Sarah Hopkins

Sebago Technics
Engineering Expertise You Can Build On

sebagotechnics.com
One Chabot Street
P.O. Box 1339
Westbrook, Maine
04098-1339
Ph. 207-856-0277
Fax 856-2206

December 8, 2005
84180

Jay Reynolds, Development Review Coordinator
City of Portland Planning Division
Department of Planning and Development
389 Congress Street, 4th Floor
Portland, ME 04101

Amended Site Plan Application, Ocean Ridge Condominiums
Ocean Ridge Realty LLC

Dear Jay:

This letter and the enclosed plans and application are provided in association with an Amended Site Plan Application for the Ocean Ridge Condominium project. Sebago Technics performed an as-built survey of the constructed site in November 2005 and created the enclosed As-Built Survey Plan. An Amended Site Plan is also enclosed which notes the changes and revisions. This plan forms the basis of our Amended Site Plan Application in coordination with your review. The Amended Site Plan and the following responses are provided to address the Phase II-Big Items, contained within your memorandum dated October 11, 2005:

1. Basin 2 has not been installed and is proposed to be eliminated. The detention basin as originally designed and approved detained only 0.55 cfs for the 25-year, 24-hour storm event in accordance with the enclosed HydroCad model output data. Allowing the runoff to leave the site without this detention appears insignificant.

2. A note has been added stating that the recreational area construction shall be finalized in accordance with the originally approved plan.

3. It is my understanding that the issue regarding the tree removal along the Phase I/Phase II line is no longer an issue.

4. The stormwater buffer easement area has been cleared. A note has been added on the Amended Site Plan to revegetate this area. A specific revegetation plan of this area will be provided.

5. A note has been added to the outlet control structure of Basin 4 to reorient it in accordance with the original approval.

The applicant is also proposing to install seven (7) additional parking spaces as shown on the Amended Site Plan, and correcting some minor drainage issues.

The applicant is proposing granite curb along the entrance of the access drive. Sidewalk is proposed along the frontage of Ocean Avenue and then along one side of the proposed roads, connecting to the recreation area in the rear of the property.

As mentioned previously, the applicant is proposing a two-phase project. The applicant is proposing 39 parking spaces during phase I and 62 parking spaces during phase II for a total of 101 parking spaces. 100 parking spaces are required under the ordinance. A traffic study has been submitted and reviewed and approved by the Traffic Engineer. The traffic study is included as Attachment 9.

6. Sanitary/Stormwater

Stormwater

The site is predominantly wooded with open rock outcropping areas located throughout the property. The applicant analyzed four watersheds for both the pre and post-developed conditions and a common discharge point was selected for each of the watersheds. The applicant is proposing detention basins around the site. The access road will also have a catch basin system, which will be routed through a Vortechnics Unit and into a proposed storm drain extension to be constructed in Ocean Avenue as part of the development. The storm drain system will reduce the existing surface runoff that presently flows onto Ocean Avenue from the site. Public Works and the Development Review Coordinator have reviewed the stormwater report and plan and find them acceptable. The Development Review Coordinator is recommending that the design engineer be retained during the construction phase to ensure that the site has been constructed as it was engineered. A potential condition of approval is:

- the design engineer of record, Sebago Technics, Inc., shall provide a certification upon completion of construction that the work is in substantial conformance to the approved plans and that all conditions of approval have been satisfied. The applicant shall retain the design engineer to provide construction phase services including but not limited to, periodic site inspection for adherence to all required erosion and sedimentation control measures and to address any changes in field conditions which require modifications to the design.

As mentioned previously, the site will require Site Location review. This project is required to meet the 40% total suspended solid (TSS) removal standard. The applicant is proposing that this be met through the use of vegetated swales, wooded buffers, detention basins and two Vortechnics Units. 43% of the suspended solids are removed in the post-developed condition.

Sanitary

The applicant is proposing to extend the sewer line in Ocean Avenue to the site. A sewer capacity letter is included as Attachment 11.

06/04/01

OCEAN AVENUE STORM DRAIN EXTENSION STUDY

Ocean Ridge Condominiums
Portland, Maine

General

This study has been prepared for Marjem Development Company to evaluate the feasibility of constructing a storm drain extension from the front (eastern end) of the Ocean Ridge Development to a proposed City storm drain system in Ocean Avenue. It includes a review of existing conditions, a stormwater runoff analysis to evaluate downstream drainage system capacity, and a comparison of flows with and without stormwater detention at the front of the Ocean Ridge development. Stormwater management within the development site is described in a separate report.

Existing Conditions

The existing storm drainage system in Ocean Avenue near the project site consists of driveway culverts, open roadside ditches, and several catch basins discharging to the ditches. These ditches drain to an existing 21" corrugated metal pipe culvert under Ocean Avenue approximately 1000 feet south of the site. This culvert discharges to a natural swale that flows east through a wooded area to a deep ravine south of Ashley Lane in the Ocean Woods development. This ravine provides stormwater detention for the Ocean Woods site, and has a 48" reinforced concrete pipe (RCP) outlet to a flow control structure located in Ashley Lane. There is a 54" RCP outlet from the flow control structure. From this point downstream, flow continues in a natural channel to an existing culvert under Presumpscot Street. There is also a storm drain inlet connected to existing combined sewers in the vicinity of the existing Ocean Avenue cross culvert.

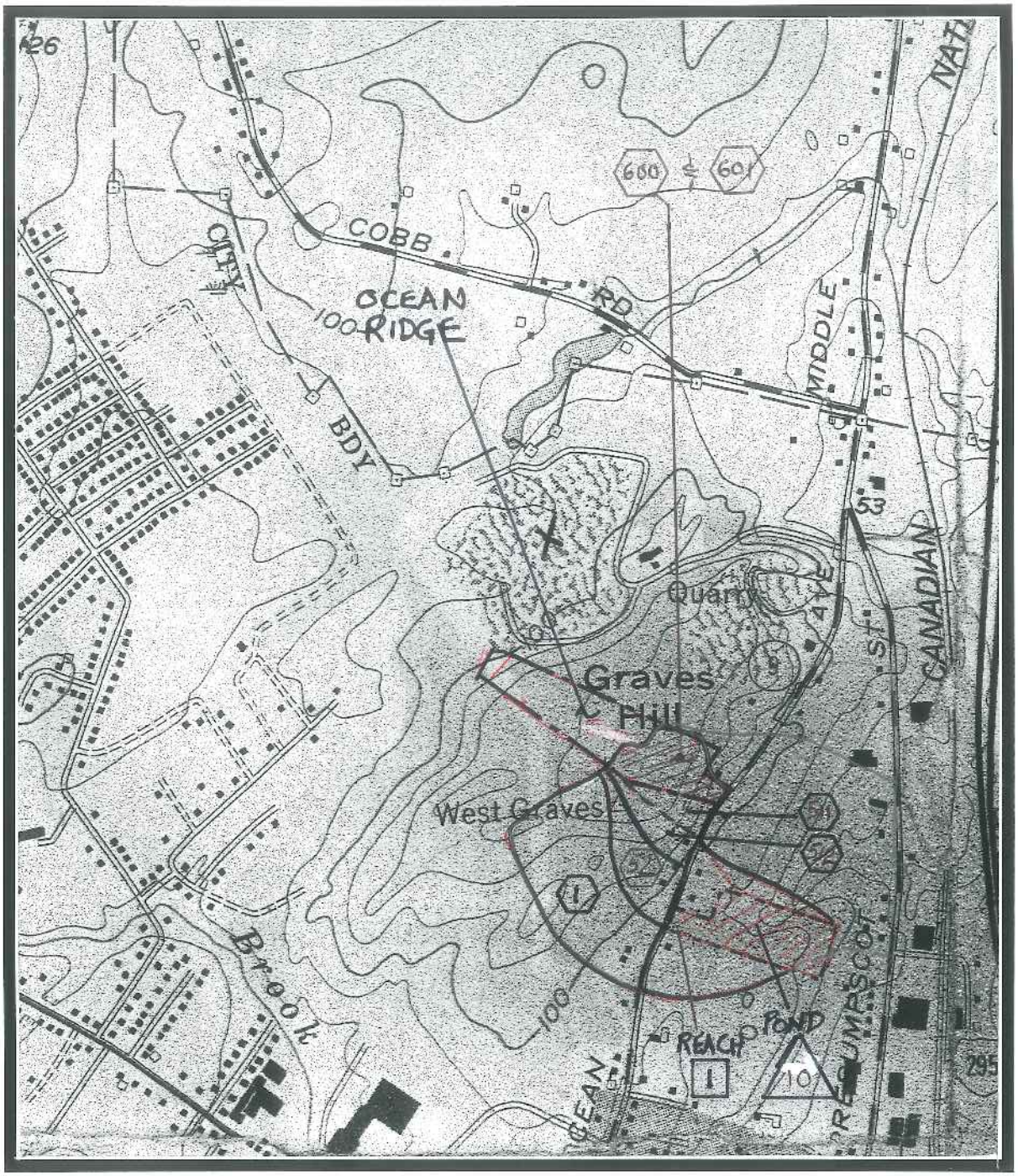
The overall area that is tributary to the off-site drainage system is illustrated in Figure 1. The drainage system in the immediate area of the ravine is shown in Figure 2. The total drainage area at the ravine outlet is approximately 44 acres, and the total drainage area at the Presumpscot Street culvert is approximately 70 acres (measured from USGS topographic maps).

Stormwater Runoff Analysis

Analysis of the existing and proposed runoff conditions was prepared by modifying a previous HydroCAD analysis prepared by Sebago Technics for the Ocean Woods Development in 1998. The study area of that analysis included the front part of the Ocean Ridge site and the area of proposed storm drains on Ocean Avenue. The ravine south of Ashley Lane is included as a detention pond in that HydroCAD model. Proposed conditions are modeled by adding storm drains in Ocean Avenue and routing the post-development drainage areas from the front of the Ocean Ridge site.

84180

FIGURE 1

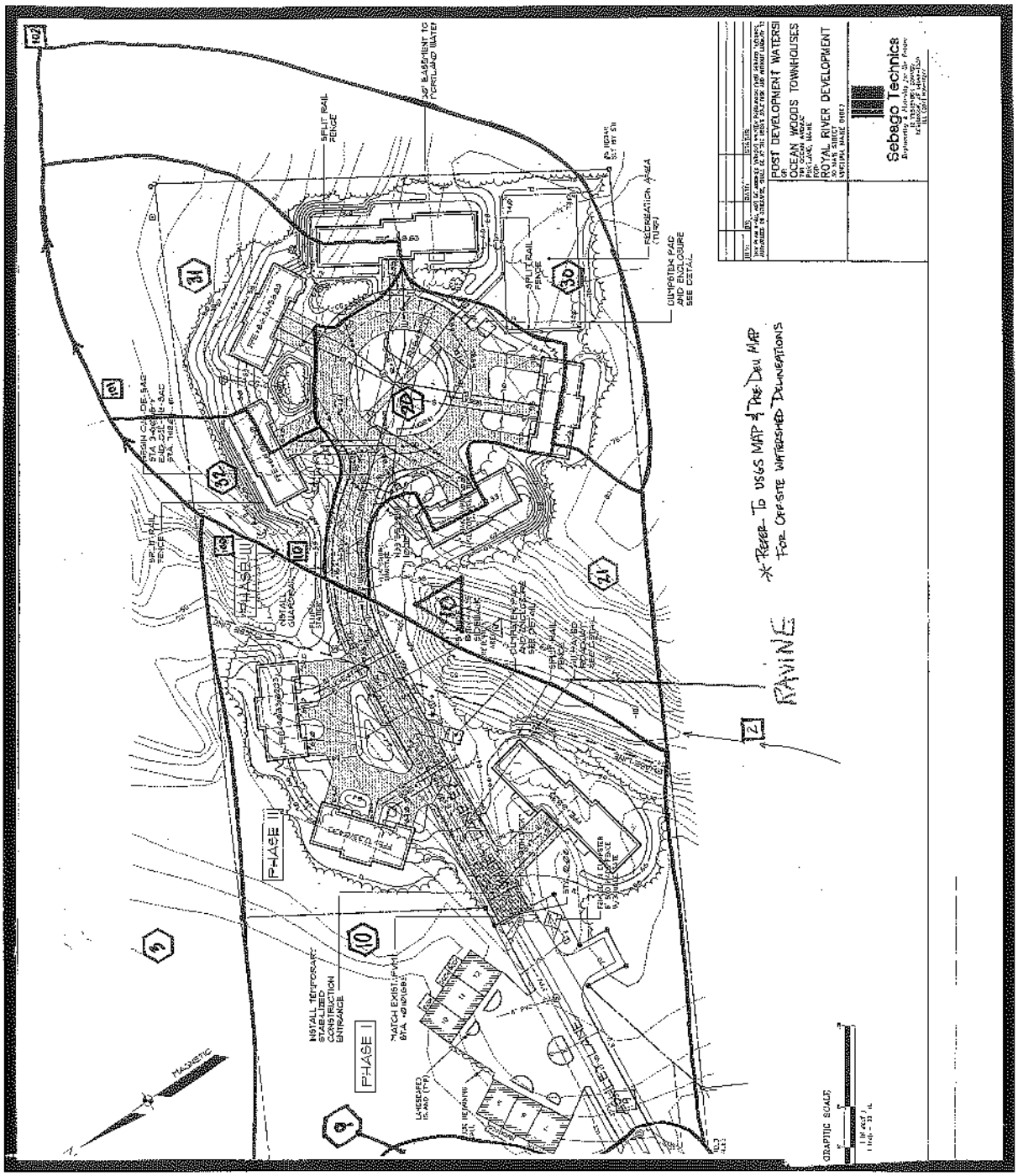


DRAINAGE AREAS
OCEAN RIDGE CONDOMINIUMS
PORTLAND, MAINE

Sebago Technics
Engineering & Planning for the Future

84180

FIGURE 2



DRAINAGE AREAS AT RAVINE

OCEAN RIDGE CONDOMINIUMS
PORTLAND, MAINE

Sebago Technics
Engineering & Planning for the Future

We used two study points from the HydroCAD model to compare post development flows with and without on-site detention at the front of Ocean Ridge. These include the ravine outlet at Ashley Lane (Pond 10) and the outlet channel from the cross culvert on Ocean Avenue (Reach 1). Flows are calculated for a 25-year, 24-hour storm. Results are summarized in the following table. Calculations are attached.

DOWNSTREAM FLOWS WITH AND WITHOUT ON-SITE DETENTION

	Location		
	Reach 1 Flow cfs	**Pond 10 Flow** cfs	**Peak Elevation** ft.
Post-Development Without Detention	38.6	60.0	49.8
Post-Development With Detention	38.5	58.3	49.7

These results are based on the following assumptions:

- The sanitary sewer connection near the existing Ocean Avenue cross culvert will be eliminated when the new storm drain is completed. For the 25-year storm, this would divert approximately 7 cfs from the sanitary sewer to the downstream drainage channel (Reach 1).

- The new cross culvert on Ocean Avenue will be sized to provide approximately the same depth of ponding and storage volume on the upstream side of Ocean Avenue. Enlarging the cross culvert will reduce ponding and increase peak flows further downstream.

We recommend that the City evaluate the benefits and impacts of these assumptions during design of the Ocean Avenue storm drain system.

As indicated in the above table, the use of stormwater detention for the portion of Ocean Ridge draining to Ocean Avenue has an insignificant effect on downstream flows. Peak flow rates at the Ocean Avenue culvert outlet are basically unchanged. Without detention, flows out of the ravine area (Pond 10) are increased by +/- 3%. The effect on flows further downstream would be even less. The area of the Ocean Ridge site within this watershed is 2.8 acres, compared to approximately 44 acres watershed area at the ravine and 70 acres at Presumpscot Street.

Peak water levels in the ravine are raised by 0.1 foot without on-site detention. The bottom elevation of the ravine is +/- 44 feet and the low point elevation on Ashley Lane is +/- 62 feet. Peak water levels for the 25-year storm would be well below the road elevation. By comparison, water levels in the ravine for existing conditions are calculated at elevation 49.3 feet (0.5 feet below the proposed elevation). This calculation, however, is based on a lower flow rate due to the existing diversion of upstream storm flows to the sanitary sewer.

Summary

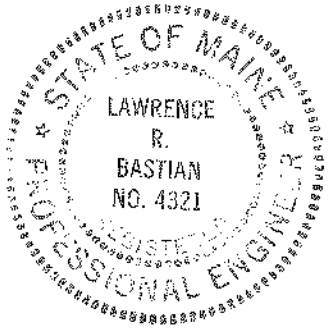
The preceding stormwater runoff evaluation evaluates the feasibility of discharging stormwater runoff from the front (eastern end) of the Ocean Ridge Development to a new City storm drain system in Ocean Avenue, and evaluates the need for on-site detention. Based on this study, we recommend that new storm drains in Ocean Avenue be designed to handle flow from the eastern end of the Ocean Ridge development without on-site detention. This will eliminate the detention basin shown on the site adjacent to Ocean Avenue in previous plan submittals. Following review of this study by the Portland Public Works Department, the applicant looks forward to coordinating design, construction and cost issues with the City.

Prepared by:

SEBAGO TECHNICS, INC.

Lawrence R. Bastian, P.E.
Project Manager

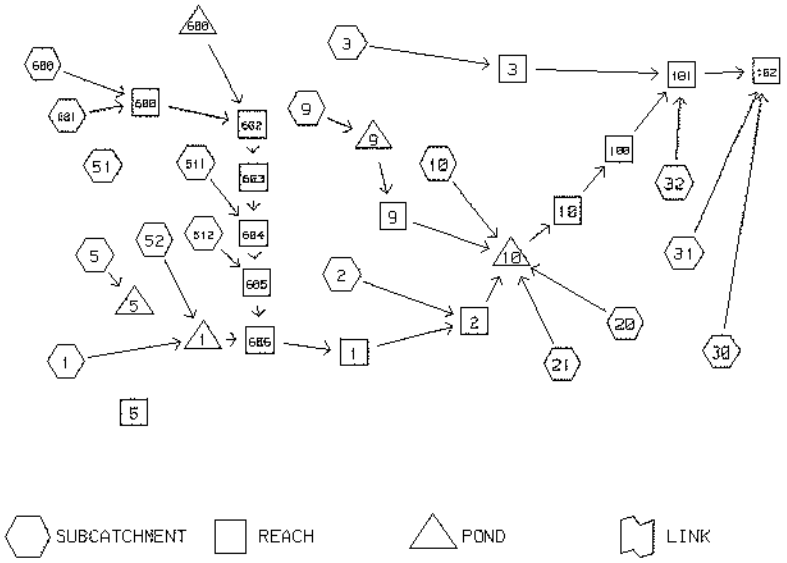
LRB:lrb/dlf



Data for OCEANWOODS + OCEAN RIDGE, post dev w/no CSO — Page 1
TYPE III 24-HOUR RAINFALL= 5.50 IN
Prepared by sebago technics — 4 Jun 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

No On-Site Detention

WATERSHED ROUTING ==========



Proposed Ocean Av. SD w/ Ocean Ridge — eliminates CSO at exist. current

Assumes:

- New SD pipes auto sized
- Pond 1 outlet (culvert crossing) sized for ± same w.s. elev. as existing conditions
- Sub 5 (s. of Ocean Ridge) split into 2 equal areas (51 N & 52 S). Sub 51 then split again into 2 equal areas (Sub 511 & 512) to route into New SD.
- Combined Sewer is eliminated — flow routed to New SD (from Sub 52 to Pond 1).

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 5.50 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	16.65	49.7	7%79 7%84 1%98 86%74	75	-	24.38	12.64	3.62
2	5.33	4.1	47%91 53%74	82	-	21.53	12.01	1.42
3	3.50	14.3	29%82 71%74	76	-	8.88	12.16	.79
5	12.54	19.8	84%74 16%82	75	-	28.18	12.23	2.75
9	1.93	19.7	57%82 21%98 22%77	84	-	5.63	12.22	.54
10	3.22	22.4	0%0 41%76 25%98 28%77 6%95	83	-	8.61	12.26	.88
20	.54	5.3	0%0 67%98 33%77	91	-	2.50	12.02	.17
21	.70	9.8	7%98 11%77 81%76	78	-	2.18	12.10	.17
30	.96	29.2	40%76 9%98 51%77	79	-	2.07	12.36	.24
31	.67	9.5	15%77 33%74 52%76	75	-	1.91	12.10	.15
32	.20	10.1	20%98 30%77 50%76	81	-	.67	12.10	.05
51	6.27	19.8	84%74 16%82	75	-	14.09	12.23	1.37
52	6.27	19.8	84%74 16%82	75	-	14.09	12.23	1.37
511	3.13	19.8	84%74 16%82	75	-	7.03	12.23	.69
512	3.14	19.8	84%74 16%82	75	-	7.06	12.23	.69
600	2.60	10.0	35%98 15%77 51%80	86	-	9.89	12.10	.76
601	.19	6.4	58%98 42%80	90	-	.82	12.04	.06

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)	
1	-	2.0	2.0	.50	.50	.045	500	.0200	4.5	1.9	38.66	
2	-	2.0	5.0	.50	.50	.045	250	.0300	5.5	.8	46.70	
3	-	5.0	6.0	.40	.40	.045	210	.1140	6.8	.5	8.87	
5	-	-	-	-	-	-	-	-	0.0	0.0	0.00	N
9	15.0	-	-	-	-	.024	234	.0500	6.9	.6	5.49	
10	54.0	-	-	-	-	.011	51	.0163	14.6	.1	59.99	
100	-	5.0	6.0	.50	.50	.500	80	.0100	.6	2.1	58.80	
101	-	5.0	8.0	.33	.33	.450	250	.0800	1.4	3.0	63.67	
102	-	-	-	-	-	-	-	-	0.0	0.0	66.21	N
600	12.3	-	-	-	-	.012	36	.0686	14.9	0.0	10.61	
602	14.6	-	-	-	-	.012	280	.0269	10.5	.4	10.36	
603	13.5	-	-	-	-	.012	186	.0398	12.1	.3	10.21	
604	19.2	-	-	-	-	.012	261	.0146	9.2	.5	15.84	
605	23.3	-	-	-	-	.012	296	.0101	8.7	.6	22.48	
606	29.0	-	-	-	-	.012	40	.0100	10.1	.1	40.37	

Pipe Size
12"
15"
15"
24"
24"
30"

Sizes subject to depth of cover at existing outlet
May need to size down to 18"/18"/24"

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
1	0.0	6.0	6.2	.38	31.44	29.18			7	11.7
5	0.0	5.5	6.1	0.00	28.18	28.16	6.74	21.41	0	.1
9	0.0	5.0	4.6	0.00	5.63	5.54			2	1.2
10	42.0	50.0	49.8	.56	62.96	59.95			5	4.2
600	107.2	111.2	0.0	0.00	0.00	0.00			0	0.0

REACH 1 WOODS CHANNEL TO BRIARWOOD SITE

Qin = 40.37 CFS @ 12.23 HRS, VOLUME= 7.19 AF
Qout= 38.66 CFS @ 12.31 HRS, VOLUME= 7.17 AF, ATTEN= 4%, LAG= 4.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.5	.68
.4	1.1	2.32
.6	1.9	4.95
.9	3.2	10.00
1.2	5.3	19.75
1.6	8.3	36.45
2.0	12.0	59.59

2' x 2' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 500 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.64 FT
PEAK VELOCITY= 4.5 FPS
TRAVEL TIME = 1.9 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 2 CHANNEL FROM BRIARWOOD TO SITE

Qin = 46.45 CFS @ 12.26 HRS, VOLUME= 8.59 AF
Qout= 46.70 CFS @ 12.29 HRS, VOLUME= 8.58 AF, ATTEN= 0%, LAG= 1.6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	1.5	4.29
1.0	4.0	16.60
1.5	7.5	38.83
2.2	13.5	85.83
3.0	24.0	184.39
4.0	40.0	364.53
5.0	60.0	625.88

2' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 250 FT
SLOPE= .03 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.61 FT
PEAK VELOCITY= 5.5 FPS
TRAVEL TIME = .8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 CULVERT CROSSING OCEAN AVE.

Qin = 31.44 CFS @ 12.51 HRS, VOLUME= 5.00 AF
Qout= 29.18 CFS @ 12.71 HRS, VOLUME= 5.00 AF, ATTEN= 7%, LAG= 11.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
1.0	100	50	50
3.0	400	500	550
5.0	2000	2400	2950
6.0	20000	11000	13950

STOR-IND METHOD
PEAK STORAGE = 16694 CF
PEAK ELEVATION= 6.2 FT
FLOOD ELEVATION= 6.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**18" CULVERT**
			n=.012 L=10' S=.02'/' Ke=.5 Cc=.9 Cd=.6
2	P	5.9'	**50' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=1.67, 1.69, 1.71, 0, 0, 0, 0, 0

POND 10 DETENTION AREA

Qin = 62.96 CFS @ 12.27 HRS, VOLUME= 10.34 AF
Qout= 59.95 CFS @ 12.34 HRS, VOLUME= 10.32 AF, ATTEN= 5%, LAG= 4.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
42.0	0	0	0
44.0	750	750	750
46.0	3250	4000	4750
48.0	4800	8050	12800
50.0	8000	12800	25600

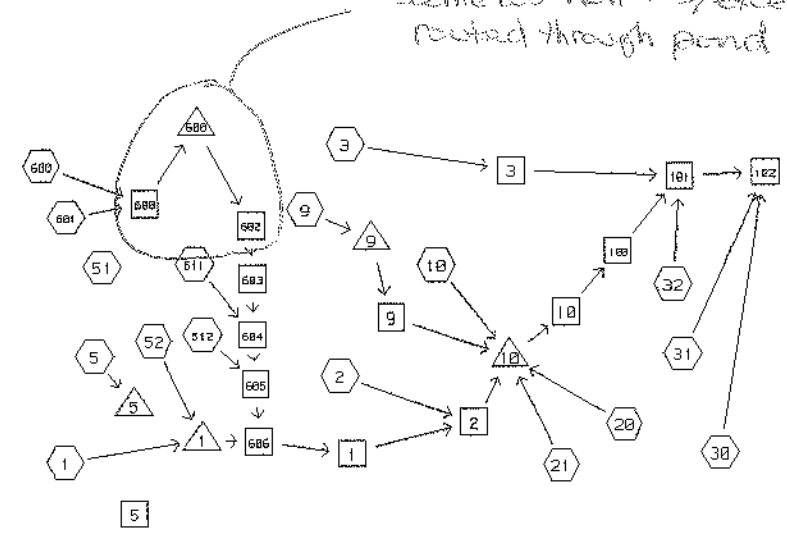
STOR-IND METHOD
PEAK STORAGE = 24321 CF
PEAK ELEVATION= 49.8 FT
FLOOD ELEVATION= 50.0 FT
START ELEVATION= 42.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 6.4 MIN (10.32 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	42.9'	**18" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	46.9'	**2.5' SHARP-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=3.27+.4 H/1.5 L=Length-2(.1 H)

Data for **OCEANWOODS + OCEAN RIDGE, post dev w/no CSO** Page 1
TYPE III 24-HOUR RAINFALL= 5.50 IN w/ Detention @ Site
Prepared by sebago technics 4 Jun 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

WATERSHED ROUTING ==========

Same as Run # 3, except routed through pond



SUBCATCHMENT REACH POND LINK

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 5.50 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	16.65	49.7	7%79 7%84 1%98 86%74	75	-	24.38	12.64	3.62
2	5.33	4.1	47%91 53%74	82	-	21.53	12.01	1.42
3	3.50	14.3	29%82 71%74	76	-	8.88	12.16	.79
5	12.54	19.8	84%74 16%82	75	-	28.18	12.23	2.75
9	1.93	19.7	57%82 21%98 22%77	84	-	5.63	12.22	.54
10	3.22	22.4	0%0 41%76 25%98 28%77 6%95	83	-	8.61	12.26	.88
20	.54	5.3	0%0 67%98 33%77	91	-	2.50	12.02	.17
21	.70	9.8	7%98 11%77 81%76	78	-	2.18	12.10	.17
30	.96	29.2	40%76 9%98 51%77	79	-	2.07	12.36	.24
31	.67	9.5	15%77 33%74 52%76	75	-	1.91	12.10	.15
32	.20	10.1	20%98 30%77 50%76	81	-	.67	12.10	.05
51	6.27	19.8	84%74 16%82	75	-	14.09	12.23	1.37
52	6.27	19.8	84%74 16%82	75	-	14.09	12.23	1.37
511	3.13	19.8	84%74 16%82	75	-	7.03	12.23	.69
512	3.14	19.8	84%74 16%82	75	-	7.06	12.23	.69
600	2.60	10.0	35%98 15%77 51%80	86	-	9.89	12.10	.76
601	.19	6.4	58%98 42%80	90	-	.82	12.04	.06

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)	
1	-	2.0	2.0	.50	.50	.045	500	.0200	4.5	1.9	38.46	
2	-	2.0	5.0	.50	.50	.045	250	.0300	5.5	.8	45.54	
3	-	5.0	6.0	.40	.40	.045	210	.1140	6.8	.5	8.87	
5	-	-	-	-	-	-	-	-	0.0	0.0	0.00	N
9	15.0	-	-	-	-	.024	234	.0500	6.9	.6	5.49	
10	54.0	-	-	-	-	.011	51	.0163	14.5	.1	58.21	
100	-	5.0	6.0	.50	.50	.500	80	.0100	.6	2.1	57.40	
101	-	5.0	8.0	.33	.33	.450	250	.0800	1.4	3.0	61.97	
Pipe Design 102	-	-	-	-	-	-	-	-	0.0	0.0	64.37	N
12" 600	12.3	-	-	-	-	.012	36	.0686	14.9	0.0	10.61	
15" 602	14.6	-	-	-	-	.012	280	.0269	10.1	.5	7.91	
15" 603	13.5	-	-	-	-	.012	186	.0398	11.7	.3	7.88	
4"/18" 604	19.2	-	-	-	-	.012	261	.0146	9.2	.5	14.73	
24" 605	23.3	-	-	-	-	.012	296	.0101	8.7	.6	21.25	
30" 606	29.0	-	-	-	-	.012	40	.0100	10.1	.1	39.28	

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
1	0.0	6.0	6.2	.38	31.44	29.18			7	11.7
5	0.0	5.5	6.1	0.00	28.18	28.16	6.74	21.41	0	.1
9	0.0	5.0	4.6	0.00	5.63	5.54			2	1.2
10	42.0	50.0	49.7	.55	61.40	58.33			5	5.0
600	107.2	111.2	110.0	.14	10.61	7.94			25	6.9

SUBCATCHMENT 600 BASIN 1

PEAK= 9.89 CFS @ 12.10 HRS, VOLUME= .76 AF

ACRES	CN	
.90	98	IMPERVIOUS
.38	77	WOODS D
1.32	80	LAWN D
2.60	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND FLOW**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
RECT/VEE/TRAP CHANNEL	**Segment ID:riprap road ditch**	.4
W=2' D=2' SS= .25 '/' a=20 sq-ft Pw=18.5' r=1.082'		
s=.043 '/' n=.06 V=5.41 fps L=140' Capacity=108.2 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: road ditch**	.2
W=2' D=2' SS= .25 '/' a=20 sq-ft Pw=18.5' r=1.082'		
s=.055 '/' n=.06 V=6.12 fps L=90' Capacity=122.4 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.9
W=2' D=2' SS= .5 & 4 '/' a=8.5 sq-ft Pw=8.5' r=.996'		
s=.09 '/' n=.06 V=7.41 fps L=380' Capacity=63 cfs		

	Total Length= 660 ft Total Tc=	10.0

SUBCATCHMENT 601 BASIN 101

PEAK= .82 CFS @ 12.04 HRS, VOLUME= .06 AF

ACRES	CN	
.11	98	IMPERVIOUS
.08	80	LAWN D
.19	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, Lawn**	5.6
Grass: Dense n=.24 L=30' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC,Driveway**	.1
Paved Kv=20.3282 L=25' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: grass slope**	.7
Short Grass Pasture Kv=7 L=100' s=.12 '/' V=2.42 fps		

	Total Length= 155 ft Total Tc=	6.4

REACH 1 WOODS CHANNEL TO BRIARWOOD SITE

Qin = 39.28 CFS @ 12.29 HRS, VOLUME= 7.17 AF
Qout= 38.46 CFS @ 12.65 HRS, VOLUME= 7.15 AF, ATTEN= 2%, LAG= 22.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.5	.68
.4	1.1	2.32
.6	1.9	4.95
.9	3.2	10.00
1.2	5.3	19.75
1.6	8.3	36.45
2.0	12.0	59.59

2' x 2' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 500 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.64 FT
PEAK VELOCITY= 4.5 FPS
TRAVEL TIME = 1.9 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 2 CHANNEL FROM BRIARWOOD TO SITE

Qin = 45.49 CFS @ 12.31 HRS, VOLUME= 8.57 AF
Qout= 45.54 CFS @ 12.32 HRS, VOLUME= 8.57 AF, ATTEN= 0%, LAG= .8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	1.5	4.29
1.0	4.0	16.60
1.5	7.5	38.83
2.2	13.5	85.83
3.0	24.0	184.39
4.0	40.0	364.53
5.0	60.0	625.88

2' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 250 FT
SLOPE= .03 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.60 FT
PEAK VELOCITY= 5.5 FPS
TRAVEL TIME = .8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 CULVERT CROSSING OCEAN AVE.

Qin = 31.44 CFS @ 12.51 HRS, VOLUME= 5.00 AF
Qout= 29.18 CFS @ 12.71 HRS, VOLUME= 5.00 AF, ATTEN= 7%, LAG= 11.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
1.0	100	50	50
3.0	400	500	550
5.0	2000	2400	2950
6.0	20000	11000	13950

STOR-IND METHOD
PEAK STORAGE = 16694 CF
PEAK ELEVATION= 6.2 FT
FLOOD ELEVATION= 6.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**18" CULVERT**
			n=.012 L=10' S=.02'/' Ke=.5 Cc=.9 Cd=.6
2	P	5.9'	**50' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=1.67, 1.69, 1.71, 0, 0, 0, 0, 0

POND 10 DETENTION AREA

Qin = 61.40 CFS @ 12.30 HRS, VOLUME= 10.33 AF
Qout= 58.33 CFS @ 12.38 HRS, VOLUME= 10.32 AF, ATTEN= 5%, LAG= 5.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
42.0	0	0	0
44.0	750	750	750
46.0	3250	4000	4750
48.0	4800	8050	12800
50.0	8000	12800	25600

STOR-IND METHOD
PEAK STORAGE = 23944 CF
PEAK ELEVATION= 49.7 FT
FLOOD ELEVATION= 50.0 FT
START ELEVATION= 42.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 6.3 MIN (10.21 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	42.9'	**18" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	46.9'	**2.5' SHARP-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=3.27+.4 H/1.5 L=Length-2(.1 H)

OCEAN RIDGE CONDOMINIUMS
3/27/01

Subarea ID	Total Area (Ac.)	House Imp.	Drive Imp.	Road Imp.	Total Imp. Area (Ac.)	% of Tot. Imp.
Basin 1	2.23	0.26	0.2	0.44	0.9	28.48
Basin 101	0.56	0.08	0.02	0.01	0.11	3.48
Basin 2	0.61	0.11	0	0	0.11	3.48
Basin 3	0.58	0	0	0.12	0.12	3.80
Basin 301	0.82	0.16	0.08	0.13	0.37	11.71
Basin 302	1.27	0.31	0.18	0.25	0.74	23.42
Basin 4	1	0.08	0.06	0.12	0.26	8.23
Basin 401	0.64	0.13	0.09	0.13	0.35	11.08
Basin 402	0.13	0.01	0	0	0.01	0.32
Basin 5	0.51	0.06	0.07	0.06	0.19	6.01
TOTALS =	8.35				3.16	100.00

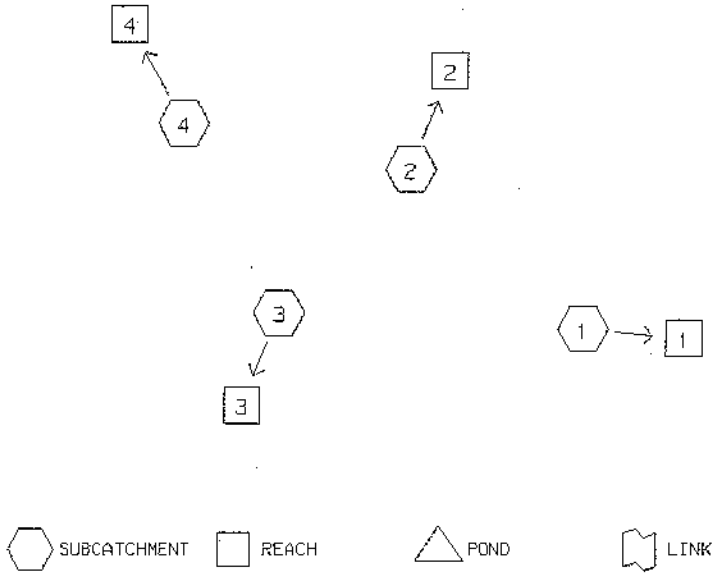
Wooded Buffer #1	Wooded Buffer #2	Veg. Swale #1	Veg. Swale #2	Veg. Swale #3	Veg. Swale #4	Det. Basins	Det. Basins	Vortechnics Unit	NET BMP % TSS REMOVAL	NET WEIGHTED % TSS REMOVAL
								0.5	50	14.24
0.46								0.5	73	2.54
						0.1			10	0.35
						0.1			10	0.38
			0.25			0.1	0.1		39.25	4.60
		0.25				0.1			32.5	7.61
	0.54					0.1			58.6	4.82
	0.54				0.25	0.1			68.95	7.64
	0.54			0.25		0.1			68.95	0.22
									0	0.00
								WEIGHTED % TSS REMOVAL	=	42.39

**40% Removal required

BMP Notes:

Wooded Buffer #1 Length = 75' / Slope = .140 / Hydrologic soil group = D
Wooded Buffer #2 Length = 75' / Slope = .07 / Hydrologic soil group = D
Vegetated Swale #1 Length = 170' / Slope = .012
Vegetated Swale #2 Length = 115' / Slope = .013
Vegetated Swale #3 Length = 100' / Slope = .010
Vegetated Swale #4 Length = 150' / Slope = .015

WATERSHED ROUTING ==========



SUBCATCHMENT 1	= BASIN 1	->	REACH 1
SUBCATCHMENT 2	= BASIN 2	->	REACH 2
SUBCATCHMENT 3	= BASIN 3	->	REACH 3
SUBCATCHMENT 4	= BASIN 4	->	REACH 4
REACH 1	=	->	
REACH 2	=	->	
REACH 3	=	->	
REACH 4	=	->	

SUBCATCHMENT 1 **BASIN 1**

PEAK= 2.80 CFS @ 12.12 HRS, VOLUME= .23 AF

ACRES	CN
2.79	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**BASIN 1 OVERLAND FLOW**	5.6
Woods: Light underbrush n=.4 L=40' P2=3 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 1 CHANNEL FLOW**	5.1
Woodland Kv=5 L=500' s=.108 '/' V=1.64 fps		
	Total Length= 540 ft Total Tc=	10.7

SUBCATCHMENT 2 **BASIN 2**

PEAK= 1.47 CFS @ 12.31 HRS, VOLUME= .16 AF

ACRES	CN
1.95	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND BASIN 2**	17.0
Woods: Light underbrush n=.4 L=80' P2=3 in s=.025 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 2 CHANNEL**	6.4
Woodland Kv=5 L=222' s=.0132 '/' V=.57 fps		
	Total Length= 302 ft Total Tc=	23.4

SUBCATCHMENT 3 **BASIN 3**

PEAK= 1.41 CFS @ 12.33 HRS, VOLUME= .16 AF

ACRES	CN
1.93	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**BASIN 3 OVERLAND FLOW**	22.2
Woods: Light underbrush n=.4 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 3 CONCENTRATED FLOW**	3.3
Woodland Kv=5 L=202' s=.042 '/' V=1.02 fps		
	Total Length= 302 ft Total Tc=	25.5

SUBCATCHMENT 4 BASIN 4

PEAK= 1.20 CFS @ 12.47 HRS, VOLUME= .15 AF

ACRES	CN
1.89	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	27.4
Woods: Light underbrush n=.4 L=120' P2=3 in s=.017 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 4 CHANNEL FLOW**	7.1
Woodland Kv=5 L=462' s=.047 '/' V=1.08 fps		
	Total Length= 582 ft Total Tc=	34.5

REACH 1

Not described

Qin = 2.80 CFS @ 12.12 HRS, VOLUME= .23 AF
Qout= 2.80 CFS @ 12.12 HRS, VOLUME= .23 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2

Not described

Qin = 1.47 CFS @ 12.31 HRS, VOLUME= .16 AF
Qout= 1.47 CFS @ 12.31 HRS, VOLUME= .16 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = 1.41 CFS @ 12.33 HRS, VOLUME= .16 AF
Qout= 1.41 CFS @ 12.33 HRS, VOLUME= .16 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4

Not described

Qin = 1.20 CFS @ 12.47 HRS, VOLUME= .15 AF
Qout= 1.20 CFS @ 12.47 HRS, VOLUME= .15 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

SUBCATCHMENT 1 BASIN 1

PEAK= 6.42 CFS @ 12.11 HRS, VOLUME= .51 AF

ACRES	CN
2.79	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**BASIN 1 OVERLAND FLOW**	5.6
Woods: Light underbrush n=.4 L=40' P2=3 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 1 CHANNEL FLOW**	5.1
Woodland Kv=5 L=500' s=.108 '/' V=1.64 fps		
	Total Length= 540 ft Total Tc=	10.7

SUBCATCHMENT 2 BASIN 2

PEAK= 3.38 CFS @ 12.29 HRS, VOLUME= .35 AF

ACRES	CN
1.95	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND BASIN 2**	17.0
Woods: Light underbrush n=.4 L=80' P2=3 in s=.025 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 2 CHANNEL**	6.4
Woodland Kv=5 L=222' s=.0132 '/' V=.57 fps		
	Total Length= 302 ft Total Tc=	23.4

SUBCATCHMENT 3 BASIN 3

PEAK= 3.24 CFS @ 12.32 HRS, VOLUME= .35 AF

ACRES	CN
1.93	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**BASIN 3 OVERLAND FLOW**	22.2
Woods: Light underbrush n=.4 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 3 CONCENTRATED FLOW**	3.3
Woodland Kv=5 L=202' s=.042 '/' V=1.02 fps		
	Total Length= 302 ft Total Tc=	25.5

SUBCATCHMENT 4 **BASIN 4**

PEAK= 2.77 CFS @ 12.44 HRS, VOLUME= .34 AF

ACRES	CN
1.89	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	27.4
Woods: Light underbrush n=.4 L=120' P2=3 in s=.017 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 4 CHANNEL FLOW**	7.1
Woodland Kv=5 L=462' s=.047 '/' V=1.08 fps		
	Total Length= 582 ft Total Tc=	34.5

REACH 1

Not described

Qin = 6.42 CFS @ 12.11 HRS, VOLUME= .51 AF
Qout= 6.42 CFS @ 12.11 HRS, VOLUME= .51 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2

Not described

Qin = 3.38 CFS @ 12.29 HRS, VOLUME= .35 AF
Qout= 3.38 CFS @ 12.29 HRS, VOLUME= .35 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = 3.24 CFS @ 12.32 HRS, VOLUME= .35 AF
Qout= 3.24 CFS @ 12.32 HRS, VOLUME= .35 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4

Not described

Qin = 2.77 CFS @ 12.44 HRS, VOLUME= .34 AF
Qout= 2.77 CFS @ 12.44 HRS, VOLUME= .34 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

SUBCATCHMENT 1 BASIN 1

PEAK= 8.26 CFS @ 12.11 HRS, VOLUME= .65 AF

ACRES	CN
2.79	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**BASIN 1 OVERLAND FLOW**	5.6
Woods: Light underbrush n=.4 L=40' P2=3 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 1 CHANNEL FLOW**	5.1
Woodland Kv=5 L=500' s=.108 '/' V=1.64 fps		
	Total Length= 540 ft Total Tc=	10.7

SUBCATCHMENT 2 BASIN 2

PEAK= 4.34 CFS @ 12.29 HRS, VOLUME= .45 AF

ACRES	CN
1.95	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND BASIN 2**	17.0
Woods: Light underbrush n=.4 L=80' P2=3 in s=.025 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 2 CHANNEL**	6.4
Woodland Kv=5 L=222' s=.0132 '/' V=.57 fps		
	Total Length= 302 ft Total Tc=	23.4

SUBCATCHMENT 3 BASIN 3

PEAK= 4.16 CFS @ 12.31 HRS, VOLUME= .45 AF

ACRES	CN
1.93	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**BASIN 3 OVERLAND FLOW**	22.2
Woods: Light underbrush n=.4 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 3 CONCENTRATED FLOW**	3.3
Woodland Kv=5 L=202' s=.042 '/' V=1.02 fps		
	Total Length= 302 ft Total Tc=	25.5

SUBCATCHMENT 4 **BASIN 4**

PEAK= 3.56 CFS @ 12.43 HRS, VOLUME= .44 AF

ACRES	CN
1.89	77

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	27.4
Woods: Light underbrush n=.4 L=120' P2=3 in s=.017 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**BASIN 4 CHANNEL FLOW**	7.1
Woodland Kv=5 L=462' s=.047 '/' V=1.08 fps		
	Total Length= 582 ft Total Tc=	34.5

REACH 1

Not described

Qin = 8.26 CFS @ 12.11 HRS, VOLUME= .65 AF
Qout= 8.26 CFS @ 12.11 HRS, VOLUME= .65 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2

Not described

Qin = 4.34 CFS @ 12.29 HRS, VOLUME= .45 AF
Qout= 4.34 CFS @ 12.29 HRS, VOLUME= .45 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = 4.16 CFS @ 12.31 HRS, VOLUME= .45 AF
Qout= 4.16 CFS @ 12.31 HRS, VOLUME= .45 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4

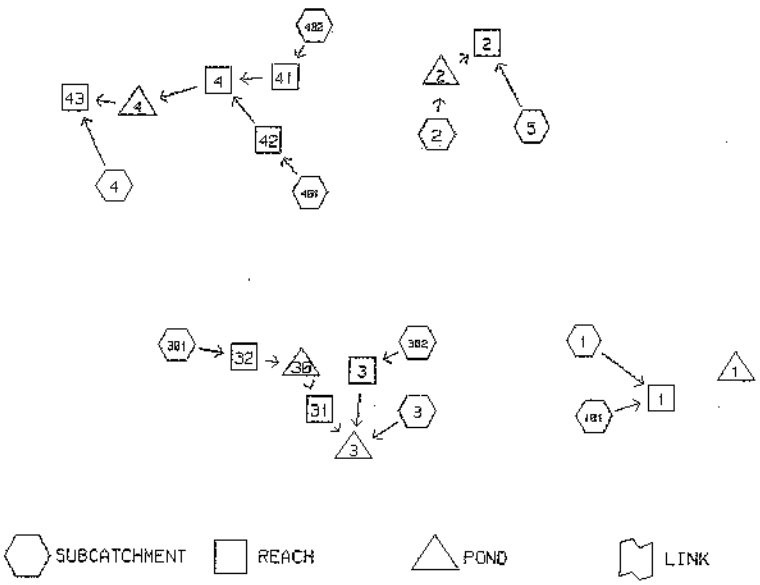
Not described

Qin = 3.56 CFS @ 12.43 HRS, VOLUME= .44 AF
Qout= 3.56 CFS @ 12.43 HRS, VOLUME= .44 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

WATERSHED ROUTING



SUBCATCHMENT 1	= BASIN 1	-> REACH 1
SUBCATCHMENT 2	= BASIN 2	-> POND 2
SUBCATCHMENT 3	= BASIN 3	-> POND 3
SUBCATCHMENT 4	= BASIN 4	-> REACH 43
SUBCATCHMENT 5	= BASIN 5	-> REACH 2
SUBCATCHMENT 101	= BASIN 101	-> REACH 1
SUBCATCHMENT 301	= BASIN 301	-> REACH 32
SUBCATCHMENT 302	= BASIN 302	-> REACH 3
SUBCATCHMENT 401	= BASIN 401	-> REACH 42
SUBCATCHMENT 402	= BASIN 402	-> REACH 41
REACH 1	= CULVERT 1	->
REACH 2	=	->
REACH 3	= VEGETATED SWALE 1	-> POND 3
REACH 4	= LEVEL SPREADER	-> POND 4
REACH 31	= CULVERT 3	-> POND 3

REACH 32	= VEGETATED SWALE 2	->	POND 30
REACH 41	= VEGETATED SWALE 3	->	REACH 4
REACH 42	= VEGETATED SWALE 4	->	REACH 4
REACH 43	=	->	
POND 1	= POND1	->	
POND 2	= POND 2	->	REACH 2
POND 3	= POND 3	->	
POND 4	= POND 4	->	REACH 43
POND 30	= POND 30	->	REACH 31

SUBCATCHMENT 1 BASIN 1

PEAK= 4.26 CFS @ 12.10 HRS, VOLUME= .33 AF

ACRES	CN	
.90	98	IMPERVIOUS
.38	77	WOODS D
1.32	80	LAWN D
2.60	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND FLOW**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.4
W=2' D=2' SS= .5 '/' a=12 sq-ft Pw=10.9' r=1.096'		
s=.043 '/' n=.06 V=5.46 fps L=140' Capacity=65.5 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.2
W=2' D=2' SS= .5 '/' a=12 sq-ft Pw=10.9' r=1.096'		
s=.055 '/' n=.06 V=6.18 fps L=90' Capacity=74.1 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.9
W=2' D=2' SS= .5 & 4 '/' a=8.5 sq-ft Pw=8.5' r=.996'		
s=.09 '/' n=.06 V=7.41 fps L=380' Capacity=63 cfs		
	Total Length= 660 ft Total Tc=	10.0

SUBCATCHMENT 2 BASIN 2

PEAK= .71 CFS @ 12.18 HRS, VOLUME= .06 AF

ACRES	CN	
.11	98	IMPERVIOUS
.18	77	WOODS D
.32	80	LAWN D
.61	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, woods**	14.1
Woods: Light underbrush n=.4 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC, wooded**	.9
Woodland Kv=5 L=60' s=.05 '/' V=1.12 fps		
	Total Length= 100 ft Total Tc=	15.0

SUBCATCHMENT 3 BASIN 3

PEAK= .84 CFS @ 12.09 HRS, VOLUME= .06 AF

ACRES	CN	
.12	98	IMPERVIOUS
.08	77	WOODS D
.38	80	LAWN D
.58	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	7.2
Woods: Light underbrush n=.4 L=30' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.9
Grassed Waterway Kv=15 L=120'	s=.02 '/' V=2.12 fps	
	Total Length= 150 ft Total Tc=	8.1

SUBCATCHMENT 4 BASIN 4

PEAK= .84 CFS @ 12.13 HRS, VOLUME= .07 AF

ACRES	CN	
.04	77	WOODS D
.70	80	LAWN D
.74	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	11.9
Grass: Short n=.15 L=150' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Grassed Waterway Kv=15 L=110'	s=.055 '/' V=3.52 fps	
	Total Length= 260 ft Total Tc=	12.4

SUBCATCHMENT 5 BASIN 5

PEAK= .85 CFS @ 12.09 HRS, VOLUME= .06 AF

ACRES	CN	
.19	98	IMPERVIOUS
.05	77	WOODS D
.27	80	LAWN D
.51	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
DIRECT ENTRY	**Segment ID: BC, pipe**	.5
	Total Length= 50 ft Total Tc=	9.0

SUBCATCHMENT 101 BASIN 101

PEAK= .38 CFS @ 12.04 HRS, VOLUME= .03 AF

ACRES	CN	
.11	98	IMPERVIOUS
.08	80	LAWN D
.19	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, Lawn**	5.6
Grass: Dense n=.24 L=30' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC,Driveway**	.1
Paved Kv=20.3282 L=25' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: grass slope**	.7
Short Grass Pasture Kv=7 L=100' s=.12 '/' V=2.42 fps		
	Total Length= 155 ft Total Tc=	6.4

SUBCATCHMENT 301 BASIN 301

PEAK= 1.48 CFS @ 12.10 HRS, VOLUME= .11 AF

ACRES	CN	
.37	98	IMPERVIOUS
.45	80	LAWN D
.82	88	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.3
Grass: Dense n=.24 L=60' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.4
Grassed Waterway Kv=15 L=50' s=.02 '/' V=2.12 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.6
Grassed Waterway Kv=15 L=80' s=.02 '/' V=2.12 fps		
	Total Length= 190 ft Total Tc=	9.3

SUBCATCHMENT 302 BASIN 302

PEAK= 2.49 CFS @ 12.09 HRS, VOLUME= .19 AF

ACRES	CN	
.74	98	IMPERVIOUS
.05	77	WOODS D
.48	80	LAWN D
1.27	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.2
Paved Kv=20.3282 L=30' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.4
Grassed Waterway Kv=15 L=50' s=.02 '/' V=2.12 fps		
	Total Length= 130 ft Total Tc=	9.1

SUBCATCHMENT 401 BASIN 401

PEAK= 1.25 CFS @ 12.10 HRS, VOLUME= .10 AF

ACRES	CN	
.35	98	IMPERVIOUS
.29	80	LAWN D
.64	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.7
Short Grass Pasture Kv=7 L=70' s=.057 '/' V=1.67 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.4
Grassed Waterway Kv=15 L=70' s=.04 '/' V=3 fps		
	Total Length= 190 ft Total Tc=	9.6

SUBCATCHMENT 402 BASIN 402

PEAK= .33 CFS @ 12.07 HRS, VOLUME= .03 AF

ACRES	CN	
.04	98	IMPERVIOUS
.19	80	LAWN D
.23	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	7.1
Grass: Dense n=.24 L=40' P2=3 in s=.02 '/'		

REACH 1 **CULVERT 1**

Qin = 4.61 CFS @ 12.10 HRS, VOLUME= .36 AF
Qout= 4.57 CFS @ 12.10 HRS, VOLUME= .36 AF, ATTEN= 1%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.22
.3	.2	.94
.4	.4	2.10
1.0	1.3	8.97
1.2	1.4	10.48
1.3	1.6	11.42
1.4	1.6	11.53
1.4	1.7	11.42
1.5	1.7	10.72

17.6" PIPE
n= .012
LENGTH= 60 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .65 FT
PEAK VELOCITY= 6.3 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 2

Not described

Qin = 1.03 CFS @ 12.12 HRS, VOLUME= .13 AF
Qout= 1.03 CFS @ 12.12 HRS, VOLUME= .13 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 **VEGETATED SWALE 1**

Qin = 2.49 CFS @ 12.09 HRS, VOLUME= .19 AF
Qout= 2.19 CFS @ 12.23 HRS, VOLUME= .19 AF, ATTEN= 12%, LAG= 8.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.46
.4	2.9	1.52
.6	4.7	3.11
.9	7.4	5.99
1.2	11.6	11.23
1.6	17.4	19.71
2.0	24.1	30.95

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 170 FT
SLOPE= .012 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .48 FT
PEAK VELOCITY= .6 FPS
TRAVEL TIME = 4.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 **LEVEL SPREADER**

Qin = 1.38 CFS @ 12.24 HRS, VOLUME= .12 AF
Qout= 1.29 CFS @ 12.32 HRS, VOLUME= .12 AF, ATTEN= 6%, LAG= 4.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	2.6	2.02
.2	5.4	6.52
.3	8.4	13.03
.4	12.6	24.26
.6	18.6	43.54
.8	26.4	72.88
1.0	35.0	109.56

25' x 1' CHANNEL
SIDE SLOPE= .1 '/'
n= .15
LENGTH= 100 FT
SLOPE= .14 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .07 FT
PEAK VELOCITY= .8 FPS
TRAVEL TIME = 2.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 31 **CULVERT 3**

Qin = 1.10 CFS @ 12.32 HRS, VOLUME= .11 AF
Qout= 1.09 CFS @ 12.32 HRS, VOLUME= .11 AF, ATTEN= 1%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.27
.3	.2	.60
.6	.5	2.56
.7	.6	2.99
.8	.6	3.26
.9	.6	3.29
.9	.7	3.26
.9	.7	3.06

11" PIPE
n= .012
LENGTH= 50 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .37 FT
PEAK VELOCITY= 4.4 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 32 **VEGETATED SWALE 2**

Qin = 1.48 CFS @ 12.10 HRS, VOLUME= .11 AF
Qout= 1.30 CFS @ 12.21 HRS, VOLUME= .11 AF, ATTEN= 12%, LAG= 6.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.48
.4	2.9	1.58
.6	4.7	3.24
.9	7.4	6.24
1.2	11.6	11.69
1.6	17.4	20.52
2.0	24.1	32.21

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 115 FT
SLOPE= .013 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .35 FT
PEAK VELOCITY= .5 FPS
TRAVEL TIME = 3.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 41 **VEGETATED SWALE 3**

Qin = .33 CFS @ 12.07 HRS, VOLUME= .03 AF
Qout= .28 CFS @ 12.24 HRS, VOLUME= .03 AF, ATTEN= 15%, LAG= 9.9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.42
.4	2.9	1.38
.6	4.7	2.84
.9	7.4	5.47
1.2	11.6	10.25
1.6	17.4	18.00
2.0	24.1	28.25

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 100 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .13 FT
PEAK VELOCITY= .3 FPS
TRAVEL TIME = 5.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 42 **VEGETATED SWALE 4**

Qin = 1.25 CFS @ 12.10 HRS, VOLUME= .10 AF
Qout= 1.10 CFS @ 12.24 HRS, VOLUME= .10 AF, ATTEN= 12%, LAG= 8.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.51
.4	2.9	1.70
.6	4.7	3.48
.9	7.4	6.70
1.2	11.6	12.56
1.6	17.4	22.04
2.0	24.1	34.60

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 150 FT
SLOPE= .015 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .29 FT
PEAK VELOCITY= .5 FPS
TRAVEL TIME = 4.8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 43

Not described

Qin = 1.16 CFS @ 12.22 HRS, VOLUME= .19 AF
Qout= 1.16 CFS @ 12.22 HRS, VOLUME= .19 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 POND1

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
107.2	1450	0	0
111.2	2840	8580	8580

STOR-IND METHOD
PEAK STORAGE = 0 CF
PEAK ELEVATION= 0.0 FT
FLOOD ELEVATION= 111.2 FT
START ELEVATION= 107.2 FT
SPAN=
5 x FINER ROUTING

#	ROUTE	INVERT	OUTLET DEVICES
1	P	107.2'	**10" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	108.6'	**12" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	109.6'	**6.9" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	110.0'	**15' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 2 POND 2

Qin = .71 CFS @ 12.18 HRS, VOLUME= .06 AF
Qout= .42 CFS @ 12.43 HRS, VOLUME= .06 AF, ATTEN= 41%, LAG= 15.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
162.0	1353	0	0
164.0	2452	3805	3805
165.0	3113	2783	6588

STOR-IND METHOD
PEAK STORAGE = 759 CF
PEAK ELEVATION= 162.4 FT
FLOOD ELEVATION= 165.0 FT
START ELEVATION= 162.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 50.4 MIN (.06 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	162.0'	**7" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	163.3'	**8.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	164.6'	**164.6' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 3 POND 3

Qin = 3.68 CFS @ 12.23 HRS, VOLUME= .36 AF
Qout= 1.19 CFS @ 12.73 HRS, VOLUME= .35 AF, ATTEN= 68%, LAG= 29.6 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
158.0	2113	0	0
160.0	4304	6417	6417
162.0	6739	11043	17460
162.6	7772	4353	21813

STOR-IND METHOD
PEAK STORAGE = 5869 CF
PEAK ELEVATION= 159.8 FT
FLOOD ELEVATION= 162.6 FT
START ELEVATION= 158.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 69.8 MIN (.35 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	158.0'	**6" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	160.0'	**9" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	161.0'	**4.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	161.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 4 POND 4

Qin = 1.29 CFS @ 12.32 HRS, VOLUME= .12 AF
Qout= .70 CFS @ 12.60 HRS, VOLUME= .12 AF, ATTEN= 46%, LAG= 16.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
150.0	671	0	0
154.0	2850	7042	7042
155.0	3450	3150	10192

STOR-IND METHOD
PEAK STORAGE = 1410 CF
PEAK ELEVATION= 150.8 FT
FLOOD ELEVATION= 155.0 FT
START ELEVATION= 150.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 41.5 MIN (.12 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	150.0'	**6" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	151.5'	**6.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	152.8'	**4.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	153.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 30 POND 30

Qin = 1.30 CFS @ 12.21 HRS, VOLUME= .11 AF
Qout= 1.10 CFS @ 12.32 HRS, VOLUME= .11 AF, ATTEN= 15%, LAG= 6.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
160.0	1150	0	0
162.0	2006	3156	3156

STOR-IND METHOD
PEAK STORAGE = 765 CF
PEAK ELEVATION= 160.5 FT
FLOOD ELEVATION= 162.0 FT
START ELEVATION= 160.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 24.6 MIN (.11 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	160.0'	**18" CULVERT**
			n=.012 L=30' S=.01'/' Ke=.5 Cc=.9 Cd=.6

SUBCATCHMENT 1 BASIN 1

PEAK= 8.07 CFS @ 12.10 HRS, VOLUME= .62 AF

ACRES	CN		
.90	98	IMPERVIOUS	SCS TR-20 METHOD
.38	77	WOODS D	TYPE III 24-HOUR
1.32	80	LAWN D	RAINFALL= 4.70 IN
2.60	86		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND FLOW**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.4
W=2' D=2' SS= .5 '/' a=12 sq-ft Pw=10.9' r=1.096'		
s=.043 '/' n=.06 V=5.46 fps L=140' Capacity=65.5 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.2
W=2' D=2' SS= .5 '/' a=12 sq-ft Pw=10.9' r=1.096'		
s=.055 '/' n=.06 V=6.18 fps L=90' Capacity=74.1 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.9
W=2' D=2' SS= .5 & 4 '/' a=8.5 sq-ft Pw=8.5' r=.996'		
s=.09 '/' n=.06 V=7.41 fps L=380' Capacity=63 cfs		
	Total Length= 660 ft Total Tc=	10.0

SUBCATCHMENT 2 BASIN 2

PEAK= 1.46 CFS @ 12.17 HRS, VOLUME= .13 AF

ACRES	CN		
.11	98	IMPERVIOUS	SCS TR-20 METHOD
.18	77	WOODS D	TYPE III 24-HOUR
.32	80	LAWN D	RAINFALL= 4.70 IN
.61	82		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, woods**	14.1
Woods: Light underbrush n=.4 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC, wooded**	.9
Woodland Kv=5 L=60' s=.05 '/' V=1.12 fps		
	Total Length= 100 ft Total Tc=	15.0

SUBCATCHMENT 3 BASIN 3

PEAK= 1.68 CFS @ 12.08 HRS, VOLUME= .13 AF

ACRES	CN	
.12	98	IMPERVIOUS
.08	77	WOODS D
.38	80	LAWN D
.58	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	7.2
Woods: Light underbrush n=.4 L=30' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.9
Grassed Waterway Kv=15 L=120'	s=.02 '/' V=2.12 fps	
	Total Length= 150 ft Total Tc=	8.1

SUBCATCHMENT 4 BASIN 4

PEAK= 1.80 CFS @ 12.13 HRS, VOLUME= .15 AF

ACRES	CN	
.04	77	WOODS D
.70	80	LAWN D
.74	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	11.9
Grass: Short n=.15 L=150' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Grassed Waterway Kv=15 L=110'	s=.055 '/' V=3.52 fps	
	Total Length= 260 ft Total Tc=	12.4

SUBCATCHMENT 5 BASIN 5

PEAK= 1.60 CFS @ 12.09 HRS, VOLUME= .12 AF

ACRES	CN	
.19	98	IMPERVIOUS
.05	77	WOODS D
.27	80	LAWN D
.51	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
DIRECT ENTRY	**Segment ID: BC, pipe**	.5
	Total Length= 50 ft Total Tc=	9.0

SUBCATCHMENT 101 BASIN 101

PEAK= .68 CFS @ 12.04 HRS, VOLUME= .05 AF

ACRES	CN	
.11	98	IMPERVIOUS
.08	80	LAWN D
.19	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, Lawn**	5.6
Grass: Dense n=.24 L=30' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC,Driveway**	.1
Paved Kv=20.3282 L=25' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: grass slope**	.7
Short Grass Pasture Kv=7 L=100' s=.12 '/' V=2.42 fps		
	Total Length= 155 ft Total Tc=	6.4

SUBCATCHMENT 301 BASIN 301

PEAK= 2.70 CFS @ 12.09 HRS, VOLUME= .21 AF

ACRES	CN	
.37	98	IMPERVIOUS
.45	80	LAWN D
.82	88	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.3
Grass: Dense n=.24 L=60' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.4
Grassed Waterway Kv=15 L=50' s=.02 '/' V=2.12 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.6
Grassed Waterway Kv=15 L=80' s=.02 '/' V=2.12 fps		
	Total Length= 190 ft Total Tc=	9.3

SUBCATCHMENT 302 BASIN 302

PEAK= 4.39 CFS @ 12.09 HRS, VOLUME= .33 AF

ACRES	CN	
.74	98	IMPERVIOUS
.05	77	WOODS D
.48	80	LAWN D
1.27	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.2
Paved Kv=20.3282 L=30' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.4
Grassed Waterway Kv=15 L=50' s=.02 '/' V=2.12 fps		
	Total Length= 130 ft Total Tc=	9.1

SUBCATCHMENT 401 BASIN 401

PEAK= 2.20 CFS @ 12.09 HRS, VOLUME= .17 AF

ACRES	CN	
.35	98	IMPERVIOUS
.29	80	LAWN D
.64	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.7
Short Grass Pasture Kv=7 L=70' s=.057 '/' V=1.67 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.4
Grassed Waterway Kv=15 L=70' s=.04 '/' V=3 fps		
	Total Length= 190 ft Total Tc=	9.6

SUBCATCHMENT 402 BASIN 402

PEAK= .66 CFS @ 12.06 HRS, VOLUME= .05 AF

ACRES	CN	
.04	98	IMPERVIOUS
.19	80	LAWN D
.23	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	7.1
Grass: Dense n=.24 L=40' P2=3 in s=.02 '/'		

REACH 1 **CULVERT 1**

Qin = 8.69 CFS @ 12.10 HRS, VOLUME= .67 AF
Qout= 8.61 CFS @ 12.10 HRS, VOLUME= .67 AF, ATTEN= 1%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.22
.3	.2	.94
.4	.4	2.10
1.0	1.3	8.97
1.2	1.4	10.48
1.3	1.6	11.42
1.4	1.6	11.53
1.4	1.7	11.42
1.5	1.7	10.72

17.6" PIPE

n= .012
LENGTH= 60 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.00 FT
PEAK VELOCITY= 7.1 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 2

Not described

Qin = 2.16 CFS @ 12.11 HRS, VOLUME= .25 AF
Qout= 2.16 CFS @ 12.11 HRS, VOLUME= .25 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 **VEGETATED SWALE 1**

Qin = 4.39 CFS @ 12.09 HRS, VOLUME= .33 AF
Qout= 3.87 CFS @ 12.21 HRS, VOLUME= .33 AF, ATTEN= 12%, LAG= 7.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.46
.4	2.9	1.52
.6	4.7	3.11
.9	7.4	5.99
1.2	11.6	11.23
1.6	17.4	19.71
2.0	24.1	30.95

6' x 2' CHANNEL

SIDE SLOPE= .33 '/'
n= .15
LENGTH= 170 FT
SLOPE= .012 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .68 FT
PEAK VELOCITY= .7 FPS
TRAVEL TIME = 3.9 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 **LEVEL SPREADER**

Qin = 2.53 CFS @ 12.21 HRS, VOLUME= .22 AF
Qout= 2.37 CFS @ 12.28 HRS, VOLUME= .22 AF, ATTEN= 6%, LAG= 3.9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	2.6	2.02
.2	5.4	6.52
.3	8.4	13.03
.4	12.6	24.26
.6	18.6	43.54
.8	26.4	72.88
1.0	35.0	109.56

25' x 1' CHANNEL
SIDE SLOPE= .1 '/'
n= .15
LENGTH= 100 FT
SLOPE= .14 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .11 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 2.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 31 **CULVERT 3**

Qin = 2.12 CFS @ 12.27 HRS, VOLUME= .20 AF
Qout= 2.11 CFS @ 12.28 HRS, VOLUME= .20 AF, ATTEN= 1%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.27
.3	.2	.60
.6	.5	2.56
.7	.6	2.99
.8	.6	3.26
.9	.6	3.29
.9	.7	3.26
.9	.7	3.06

11" PIPE
n= .012
LENGTH= 50 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .55 FT
PEAK VELOCITY= 5.0 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 32 **VEGETATED SWALE 2**

Qin = 2.70 CFS @ 12.09 HRS, VOLUME= .21 AF
Qout= 2.40 CFS @ 12.19 HRS, VOLUME= .21 AF, ATTEN= 11%, LAG= 5.6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.48
.4	2.9	1.58
.6	4.7	3.24
.9	7.4	6.24
1.2	11.6	11.69
1.6	17.4	20.52
2.0	24.1	32.21

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 115 FT
SLOPE= .013 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .51 FT
PEAK VELOCITY= .6 FPS
TRAVEL TIME = 3.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 41 **VEGETATED SWALE 3**

Qin = .66 CFS @ 12.06 HRS, VOLUME= .05 AF
Qout= .60 CFS @ 12.20 HRS, VOLUME= .05 AF, ATTEN= 9%, LAG= 8.4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.42
.4	2.9	1.38
.6	4.7	2.84
.9	7.4	5.47
1.2	11.6	10.25
1.6	17.4	18.00
2.0	24.1	28.25

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 100 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .24 FT
PEAK VELOCITY= .4 FPS
TRAVEL TIME = 4.4 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 42 **VEGETATED SWALE 4**

Qin = 2.20 CFS @ 12.09 HRS, VOLUME= .17 AF
Qout= 1.93 CFS @ 12.21 HRS, VOLUME= .17 AF, ATTEN= 12%, LAG= 7.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.51
.4	2.9	1.70
.6	4.7	3.48
.9	7.4	6.70
1.2	11.6	12.56
1.6	17.4	22.04
2.0	24.1	34.60

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 150 FT
SLOPE= .015 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .43 FT
PEAK VELOCITY= .6 FPS
TRAVEL TIME = 4.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 43

Not described

Qin = 2.43 CFS @ 12.15 HRS, VOLUME= .36 AF
Qout= 2.43 CFS @ 12.15 HRS, VOLUME= .36 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **POND1**

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
107.2	1450	0	0
111.2	2840	8580	8580

STOR-IND METHOD
PEAK STORAGE = 0 CF
PEAK ELEVATION= 0.0 FT
FLOOD ELEVATION= 111.2 FT
START ELEVATION= 107.2 FT
SPAN=
5 x FINER ROUTING

#	ROUTE	INVERT	OUTLET DEVICES
1	P	107.2'	**10" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	108.6'	**12" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	109.6'	**6.9" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	110.0'	**15' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 2 **POND 2**

Qin = 1.46 CFS @ 12.17 HRS, VOLUME= .13 AF
Qout= .87 CFS @ 12.41 HRS, VOLUME= .13 AF, ATTEN= 41%, LAG= 14.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
162.0	1353	0	0
164.0	2452	3805	3805
165.0	3113	2783	6588

STOR-IND METHOD
PEAK STORAGE = 1418 CF
PEAK ELEVATION= 162.7 FT
FLOOD ELEVATION= 165.0 FT
START ELEVATION= 162.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 39 MIN (.12 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	162.0'	**7" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	163.3'	**8.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	164.6'	**164.6' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 3 POND 3

Qin = 6.96 CFS @ 12.20 HRS, VOLUME= .66 AF
Qout= 2.83 CFS @ 12.58 HRS, VOLUME= .64 AF, ATTEN= 59%, LAG= 23.1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
158.0	2113	0	0
160.0	4304	6417	6417
162.0	6739	11043	17460
162.6	7772	4353	21813

STOR-IND METHOD
PEAK STORAGE = 10651 CF
PEAK ELEVATION= 160.8 FT
FLOOD ELEVATION= 162.6 FT
START ELEVATION= 158.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 69.6 MIN (.64 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	158.0'	**6" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	160.0'	**9" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	161.0'	**4.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	161.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 4 POND 4

Qin = 2.37 CFS @ 12.28 HRS, VOLUME= .22 AF
Qout= 1.11 CFS @ 12.60 HRS, VOLUME= .21 AF, ATTEN= 53%, LAG= 19.5 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
150.0	671	0	0
154.0	2850	7042	7042
155.0	3450	3150	10192

STOR-IND METHOD
PEAK STORAGE = 2764 CF
PEAK ELEVATION= 151.6 FT
FLOOD ELEVATION= 155.0 FT
START ELEVATION= 150.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 39.8 MIN (.21 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	150.0'	**6" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	151.5'	**6.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	152.8'	**4.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	153.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 30 POND 30

Qin = 2.40 CFS @ 12.19 HRS, VOLUME= .21 AF
Qout= 2.12 CFS @ 12.27 HRS, VOLUME= .20 AF, ATTEN= 12%, LAG= 5.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
160.0	1150	0	0
162.0	2006	3156	3156

STOR-IND METHOD
PEAK STORAGE = 1112 CF
PEAK ELEVATION= 160.7 FT
FLOOD ELEVATION= 162.0 FT
START ELEVATION= 160.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 18.8 MIN (.2 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	160.0'	**18" CULVERT**
			n=.012 L=30' S=.01'/' Ke=.5 Cc=.9 Cd=.6

SUBCATCHMENT 1 BASIN 1

PEAK= 9.89 CFS @ 12.10 HRS, VOLUME= .76 AF

ACRES	CN	
.90	98	IMPERVIOUS
.38	77	WOODS D
1.32	80	LAWN D
2.60	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OVERLAND FLOW**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.4
W=2' D=2' SS= .5 '/' a=12 sq-ft Pw=10.9' r=1.096'		
s=.043 '/' n=.06 V=5.46 fps L=140' Capacity=65.5 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.2
W=2' D=2' SS= .5 '/' a=12 sq-ft Pw=10.9' r=1.096'		
s=.055 '/' n=.06 V=6.18 fps L=90' Capacity=74.1 cfs		
RECT/VEE/TRAP CHANNEL	**Segment ID: riprap road ditch**	.9
W=2' D=2' SS= .5 & 4 '/' a=8.5 sq-ft Pw=8.5' r=.996'		
s=.09 '/' n=.06 V=7.41 fps L=380' Capacity=63 cfs		
	Total Length= 660 ft Total Tc=	10.0

SUBCATCHMENT 2 BASIN 2

PEAK= 1.82 CFS @ 12.16 HRS, VOLUME= .16 AF

ACRES	CN	
.11	98	IMPERVIOUS
.18	77	WOODS D
.32	80	LAWN D
.61	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, woods**	14.1
Woods: Light underbrush n=.4 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC, wooded**	.9
Woodland Kv=5 L=60' s=.05 '/' V=1.12 fps		
	Total Length= 100 ft Total Tc=	15.0

SUBCATCHMENT 3 **BASIN 3**

PEAK= 2.09 CFS @ 12.08 HRS, VOLUME= .16 AF

ACRES	CN	
.12	98	IMPERVIOUS
.08	77	WOODS D
.38	80	LAWN D
.58	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	7.2
Woods: Light underbrush n=.4 L=30' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.9
Grassed Waterway Kv=15 L=120'	s=.02 '/' V=2.12 fps	
	Total Length= 150 ft Total Tc=	8.1

SUBCATCHMENT 4 **BASIN 4**

PEAK= 2.28 CFS @ 12.13 HRS, VOLUME= .19 AF

ACRES	CN	
.04	77	WOODS D
.70	80	LAWN D
.74	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	11.9
Grass: Short n=.15 L=150' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Grassed Waterway Kv=15 L=110'	s=.055 '/' V=3.52 fps	
	Total Length= 260 ft Total Tc=	12.4

SUBCATCHMENT 5 **BASIN 5**

PEAK= 1.96 CFS @ 12.09 HRS, VOLUME= .15 AF

ACRES	CN	
.19	98	IMPERVIOUS
.05	77	WOODS D
.27	80	LAWN D
.51	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
DIRECT ENTRY	**Segment ID: BC, pipe**	.5
	Total Length= 50 ft Total Tc=	9.0

SUBCATCHMENT 101 BASIN 101

PEAK= .82 CFS @ 12.04 HRS, VOLUME= .06 AF

ACRES	CN	
.11	98	IMPERVIOUS
.08	80	LAWN D
.19	90	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB, Lawn**	5.6
Grass: Dense n=.24 L=30' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC,Driveway**	.1
Paved Kv=20.3282 L=25' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: grass slope**	.7
Short Grass Pasture Kv=7 L=100' s=.12 '/' V=2.42 fps		
	Total Length= 155 ft Total Tc=	6.4

SUBCATCHMENT 301 BASIN 301

PEAK= 3.28 CFS @ 12.09 HRS, VOLUME= .25 AF

ACRES	CN	
.37	98	IMPERVIOUS
.45	80	LAWN D
.82	88	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.3
Grass: Dense n=.24 L=60' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.4
Grassed Waterway Kv=15 L=50' s=.02 '/' V=2.12 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.6
Grassed Waterway Kv=15 L=80' s=.02 '/' V=2.12 fps		
	Total Length= 190 ft Total Tc=	9.3

SUBCATCHMENT 302 **BASIN 302**

PEAK= 5.28 CFS @ 12.09 HRS, VOLUME= .40 AF

ACRES	CN		
.74	98	IMPERVIOUS	SCS TR-20 METHOD
.05	77	WOODS D	TYPE III 24-HOUR
.48	80	LAWN D	RAINFALL= 5.50 IN
1.27	90		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.2
Paved Kv=20.3282 L=30' s=.02 '/' V=2.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.4
Grassed Waterway Kv=15 L=50' s=.02 '/' V=2.12 fps		
	Total Length= 130 ft Total Tc=	9.1

SUBCATCHMENT 401 **BASIN 401**

PEAK= 2.65 CFS @ 12.09 HRS, VOLUME= .20 AF

ACRES	CN		
.35	98	IMPERVIOUS	SCS TR-20 METHOD
.29	80	LAWN D	TYPE III 24-HOUR
.64	90		RAINFALL= 5.50 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.7
Short Grass Pasture Kv=7 L=70' s=.057 '/' V=1.67 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.4
Grassed Waterway Kv=15 L=70' s=.04 '/' V=3 fps		
	Total Length= 190 ft Total Tc=	9.6

SUBCATCHMENT 402 **BASIN 402**

PEAK= .83 CFS @ 12.06 HRS, VOLUME= .06 AF

ACRES	CN		
.04	98	IMPERVIOUS	SCS TR-20 METHOD
.19	80	LAWN D	TYPE III 24-HOUR
.23	83		RAINFALL= 5.50 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	7.1
Grass: Dense n=.24 L=40' P2=3 in s=.02 '/'		

REACH 1 **CULVERT 1**

Qin = 10.63 CFS @ 12.10 HRS, VOLUME= .82 AF
Qout= 10.53 CFS @ 12.10 HRS, VOLUME= .82 AF, ATTEN= 1%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.22
.3	.2	.94
.4	.4	2.10
1.0	1.3	8.97
1.2	1.4	10.48
1.3	1.6	11.42
1.4	1.6	11.53
1.4	1.7	11.42
1.5	1.7	10.72

17.6" PIPE
n= .012
LENGTH= 60 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.19 FT
PEAK VELOCITY= 7.2 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 2

Not described

Qin = 2.66 CFS @ 12.11 HRS, VOLUME= .31 AF
Qout= 2.66 CFS @ 12.11 HRS, VOLUME= .31 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 **VEGETATED SWALE 1**

Qin = 5.28 CFS @ 12.09 HRS, VOLUME= .40 AF
Qout= 4.67 CFS @ 12.20 HRS, VOLUME= .40 AF, ATTEN= 12%, LAG= 6.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.46
.4	2.9	1.52
.6	4.7	3.11
.9	7.4	5.99
1.2	11.6	11.23
1.6	17.4	19.71
2.0	24.1	30.95

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 170 FT
SLOPE= .012 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .76 FT
PEAK VELOCITY= .8 FPS
TRAVEL TIME = 3.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 **LEVEL SPREADER**

Qin = 3.09 CFS @ 12.20 HRS, VOLUME= .27 AF
Qout= 2.93 CFS @ 12.25 HRS, VOLUME= .26 AF, ATTEN= 5%, LAG= 2.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	2.6	2.02
.2	5.4	6.52
.3	8.4	13.03
.4	12.6	24.26
.6	18.6	43.54
.8	26.4	72.88
1.0	35.0	109.56

25' x 1' CHANNEL
SIDE SLOPE= .1 '/'
n= .15
LENGTH= 100 FT
SLOPE= .14 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .12 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 1.8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 31 **CULVERT 3**

Qin = 2.60 CFS @ 12.26 HRS, VOLUME= .25 AF
Qout= 2.59 CFS @ 12.26 HRS, VOLUME= .25 AF, ATTEN= 1%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.27
.3	.2	.60
.6	.5	2.56
.7	.6	2.99
.8	.6	3.26
.9	.6	3.29
.9	.7	3.26
.9	.7	3.06

11" PIPE
n= .012
LENGTH= 50 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .64 FT
PEAK VELOCITY= 5.2 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 32 **VEGETATED SWALE 2**

Qin = 3.28 CFS @ 12.09 HRS, VOLUME= .25 AF
Qout= 2.91 CFS @ 12.18 HRS, VOLUME= .25 AF, ATTEN= 11%, LAG= 5.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.48
.4	2.9	1.58
.6	4.7	3.24
.9	7.4	6.24
1.2	11.6	11.69
1.6	17.4	20.52
2.0	24.1	32.21

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 115 FT
SLOPE= .013 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .58 FT
PEAK VELOCITY= .7 FPS
TRAVEL TIME = 2.8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 41 **VEGETATED SWALE 3**

Qin = .83 CFS @ 12.06 HRS, VOLUME= .06 AF
Qout= .75 CFS @ 12.19 HRS, VOLUME= .06 AF, ATTEN= 9%, LAG= 7.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.42
.4	2.9	1.38
.6	4.7	2.84
.9	7.4	5.47
1.2	11.6	10.25
1.6	17.4	18.00
2.0	24.1	28.25

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 100 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .28 FT
PEAK VELOCITY= .4 FPS
TRAVEL TIME = 4.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 42 **VEGETATED SWALE 4**

Qin = 2.65 CFS @ 12.09 HRS, VOLUME= .20 AF
Qout= 2.34 CFS @ 12.21 HRS, VOLUME= .20 AF, ATTEN= 12%, LAG= 6.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.51
.4	2.9	1.70
.6	4.7	3.48
.9	7.4	6.70
1.2	11.6	12.56
1.6	17.4	22.04
2.0	24.1	34.60

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 150 FT
SLOPE= .015 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .48 FT
PEAK VELOCITY= .7 FPS
TRAVEL TIME = 3.8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 43

Not described

Qin = 3.03 CFS @ 12.14 HRS, VOLUME= .45 AF
Qout= 3.03 CFS @ 12.14 HRS, VOLUME= .45 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **POND1**

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
107.2	1450	0	0
111.2	2840	8580	8580

STOR-IND METHOD
PEAK STORAGE = 0 CF
PEAK ELEVATION= 0.0 FT
FLOOD ELEVATION= 111.2 FT
START ELEVATION= 107.2 FT
SPAN=
5 x FINER ROUTING

#	ROUTE	INVERT	OUTLET DEVICES
1	P	107.2'	**10" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	108.6'	**12" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	109.6'	**6.9" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	110.0'	**15' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 2 **POND 2**

Qin = 1.82 CFS @ 12.16 HRS, VOLUME= .16 AF
Qout= 1.03 CFS @ 12.42 HRS, VOLUME= .16 AF, ATTEN= 43%, LAG= 15.6 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
162.0	1353	0	0
164.0	2452	3805	3805
165.0	3113	2783	6588

STOR-IND METHOD
PEAK STORAGE = 1782 CF
PEAK ELEVATION= 162.9 FT
FLOOD ELEVATION= 165.0 FT
START ELEVATION= 162.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 37.5 MIN (.16 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	162.0'	**7" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	163.3'	**8.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	164.6'	**164.6' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 3 **POND 3**

Qin = 8.54 CFS @ 12.19 HRS, VOLUME= .81 AF
Qout= 3.55 CFS @ 12.56 HRS, VOLUME= .79 AF, ATTEN= 58%, LAG= 22.1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
158.0	2113	0	0
160.0	4304	6417	6417
162.0	6739	11043	17460
162.6	7772	4353	21813

STOR-IND METHOD
PEAK STORAGE = 12766 CF
PEAK ELEVATION= 161.1 FT
FLOOD ELEVATION= 162.6 FT
START ELEVATION= 158.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 67.7 MIN (.79 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	158.0'	**6" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	160.0'	**9" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	161.0'	**4.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	161.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 4 **POND 4**

Qin = 2.93 CFS @ 12.25 HRS, VOLUME= .26 AF
Qout= 1.54 CFS @ 12.54 HRS, VOLUME= .26 AF, ATTEN= 47%, LAG= 17.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
150.0	671	0	0
154.0	2850	7042	7042
155.0	3450	3150	10192

STOR-IND METHOD
PEAK STORAGE = 3269 CF
PEAK ELEVATION= 151.9 FT
FLOOD ELEVATION= 155.0 FT
START ELEVATION= 150.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 38.8 MIN (.26 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	150.0'	**6" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	151.5'	**6.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	152.8'	**4.5" ORIFICE/GRATE**
			Q=.6 PI r^2 SQR(2g) SQR(H-r)
4	P	153.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 30 POND 30

Qin = 2.91 CFS @ 12.18 HRS, VOLUME= .25 AF
Qout= 2.60 CFS @ 12.26 HRS, VOLUME= .25 AF, ATTEN= 10%, LAG= 4.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
160.0	1150	0	0
162.0	2006	3156	3156

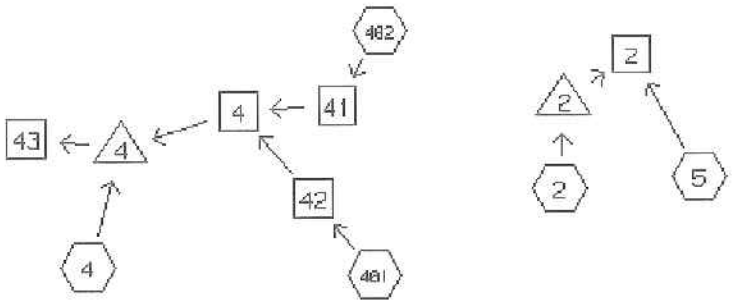
STOR-IND METHOD
PEAK STORAGE = 1249 CF
PEAK ELEVATION= 160.8 FT
FLOOD ELEVATION= 162.0 FT
START ELEVATION= 160.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 17.2 MIN (.24 AF)

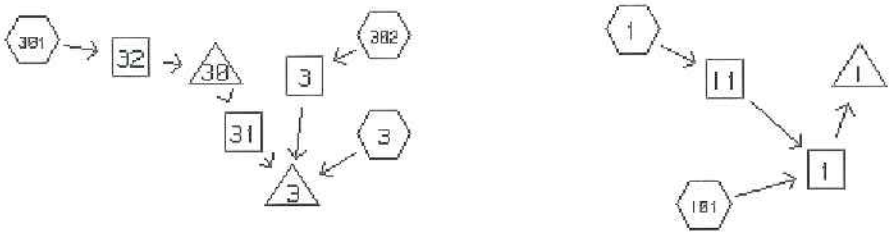
#	ROUTE	INVERT	OUTLET DEVICES
1	P	160.0'	**18" CULVERT**
			n=.012 L=30' S=.01'/' Ke=.5 Cc=.9 Cd=.6

BACK-UP INFORMATION

WATERSHED ROUTING ==========

Spillway Calculations





SUBCATCHMENT REACH POND LINK

SUBCATCHMENT 1	= BASIN 1	-> REACH 11
SUBCATCHMENT 2	= BASIN 2	-> POND 2
SUBCATCHMENT 3	= BASIN 3	-> POND 3
SUBCATCHMENT 4	= BASIN 4	-> POND 4
SUBCATCHMENT 5	= BASIN 5	-> REACH 2
SUBCATCHMENT 101	= BASIN 101	-> REACH 1
SUBCATCHMENT 301	= BASIN 301	-> REACH 32
SUBCATCHMENT 302	= BASIN 302	-> REACH 3
SUBCATCHMENT 401	= BASIN 401	-> REACH 42
SUBCATCHMENT 402	= BASIN 402	-> REACH 41
REACH 1	= CULVERT 1	-> POND 1

REACH 2	=	->	
REACH 3	= VEGETATED SWALE 1	->	POND 3
REACH 4	= LEVEL SPREADER	->	POND 4
REACH 11	=	->	REACH 1
REACH 31	= CULVERT 3	->	POND 3
REACH 32	= VEGETATED SWALE 2	->	POND 30
REACH 41	= VEGETATED SWALE 3	->	REACH 4
REACH 42	= VEGETATED SWALE 4	->	REACH 4
REACH 43	=	->	
POND 1	= POND1	->	
POND 2	= POND 2	->	REACH 2
POND 3	= POND 3	->	
POND 4	= POND 4	->	REACH 43
POND 30	= POND 30	->	REACH 31

POND 1 **POND1**

Qin = 8.04 CFS @ 12.35 HRS, VOLUME= .81 AF
Qout= 8.04 CFS @ 12.40 HRS, VOLUME= .68 AF, ATTEN= 0%, LAG= 3.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
107.2	1450	0	0
111.2	2840	8580	8580

STOR-IND METHOD
PEAK STORAGE = 6700 CF
PEAK ELEVATION= 110.3 FT
FLOOD ELEVATION= 111.2 FT
START ELEVATION= 107.2 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 66.2 MIN (.67 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**15' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 2 **POND 2**

Qin = 2.67 CFS @ 12.02 HRS, VOLUME= .16 AF
Qout= .23 CFS @ 13.90 HRS, VOLUME= .04 AF, ATTEN= 92%, LAG= 113.3 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
162.0	1353	0	0
164.0	2452	3805	3805
165.0	3113	2783	6588

STOR-IND METHOD
PEAK STORAGE = 5479 CF
PEAK ELEVATION= 164.6 FT
FLOOD ELEVATION= 165.0 FT
START ELEVATION= 162.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 289.9 MIN (.04 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	164.6'	**164.6' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 3 **POND 3**

Qin = 12.07 CFS @ 12.01 HRS, VOLUME= .81 AF
Qout= 9.30 CFS @ 12.22 HRS, VOLUME= .47 AF, ATTEN= 23%, LAG= 12.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
158.0	2113	0	0
160.0	4304	6417	6417
162.0	6739	11043	17460
162.6	7772	4353	21813

STOR-IND METHOD
PEAK STORAGE = 16303 CF
PEAK ELEVATION= 161.8 FT
FLOOD ELEVATION= 162.6 FT
START ELEVATION= 158.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 124.6 MIN (.46 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	161.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 4 **POND 4**

Qin = 7.01 CFS @ 12.03 HRS, VOLUME= .45 AF
Qout= 6.65 CFS @ 12.13 HRS, VOLUME= .30 AF, ATTEN= 5%, LAG= 5.9 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
150.0	671	0	0
154.0	2850	7042	7042
155.0	3450	3150	10192

STOR-IND METHOD
PEAK STORAGE = 6561 CF
PEAK ELEVATION= 153.7 FT
FLOOD ELEVATION= 155.0 FT
START ELEVATION= 150.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 105.9 MIN (.3 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	153.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 30 **POND 30**

Qin = 4.18 CFS @ 12.02 HRS, VOLUME= .25 AF
Qout= 3.70 CFS @ 12.09 HRS, VOLUME= .25 AF, ATTEN= 12%, LAG= 4.6 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
160.0	1150	0	0
162.0	2006	3156	3156

STOR-IND METHOD
PEAK STORAGE = 1562 CF
PEAK ELEVATION= 161.0 FT
FLOOD ELEVATION= 162.0 FT
START ELEVATION= 160.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 16.5 MIN (.24 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	160.0'	**18" CULVERT**
			n=.012 L=30' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 1 POND1

Qin = 8.04 CFS @ 12.20 HRS, VOLUME= 1.03 AF
Qout= 8.04 CFS @ 12.70 HRS, VOLUME= .89 AF, ATTEN= 0%, LAG= 30.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
107.2	1450	0	0
111.2	2840	8580	8580

STOR-IND METHOD
PEAK STORAGE = 6700 CF
PEAK ELEVATION= 110.3 FT
FLOOD ELEVATION= 111.2 FT
START ELEVATION= 107.2 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 56.9 MIN (.88 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**15' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 2 POND 2

Qin = 3.48 CFS @ 12.01 HRS, VOLUME= .21 AF
Qout= 1.48 CFS @ 12.40 HRS, VOLUME= .09 AF, ATTEN= 57%, LAG= 23.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
162.0	1353	0	0
164.0	2452	3805	3805
165.0	3113	2783	6588

STOR-IND METHOD
PEAK STORAGE = 5502 CF
PEAK ELEVATION= 164.6 FT
FLOOD ELEVATION= 165.0 FT
START ELEVATION= 162.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 180.2 MIN (.09 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	164.6'	**164.6' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 3 POND 3

Qin = 14.49 CFS @ 12.00 HRS, VOLUME= 1.02 AF
Qout= 14.80 CFS @ 12.12 HRS, VOLUME= .68 AF, ATTEN= 0%, LAG= 7.3 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
158.0	2113	0	0
160.0	4304	6417	6417
162.0	6739	11043	17460
162.6	7772	4353	21813

STOR-IND METHOD
PEAK STORAGE = 16872 CF
PEAK ELEVATION= 161.9 FT
FLOOD ELEVATION= 162.6 FT
START ELEVATION= 158.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 104.5 MIN (.67 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	161.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 4 POND 4

Qin = 9.13 CFS @ 12.02 HRS, VOLUME= .58 AF
Qout= 9.58 CFS @ 12.04 HRS, VOLUME= .44 AF, ATTEN= 0%, LAG= 1.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
150.0	671	0	0
154.0	2850	7042	7042
155.0	3450	3150	10192

STOR-IND METHOD
PEAK STORAGE = 6656 CF
PEAK ELEVATION= 153.8 FT
FLOOD ELEVATION= 155.0 FT
START ELEVATION= 150.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
5 x FINER ROUTING
Tdet= 85.9 MIN (.44 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	153.5'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81**
			Q=C L H^1.5 C=1.6, 1.8, 1.9, 0, 0, 0, 0, 0

POND 30 POND 30

Qin = 5.30 CFS @ 12.01 HRS, VOLUME= .32 AF
Qout= 4.73 CFS @ 12.08 HRS, VOLUME= .31 AF, ATTEN= 11%, LAG= 4.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
160.0	1150	0	0
162.0	2006	3156	3156

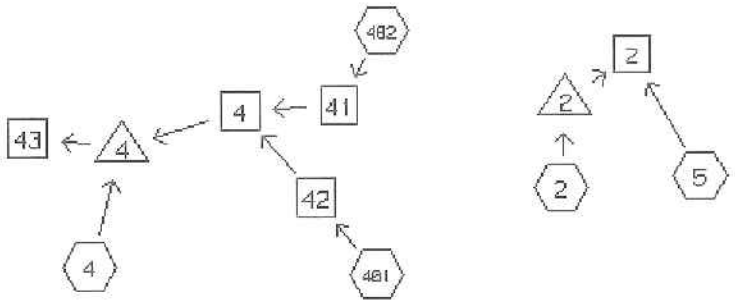
STOR-IND METHOD
PEAK STORAGE = 1821 CF
PEAK ELEVATION= 161.2 FT
FLOOD ELEVATION= 162.0 FT
START ELEVATION= 160.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 15.1 MIN (.31 AF)

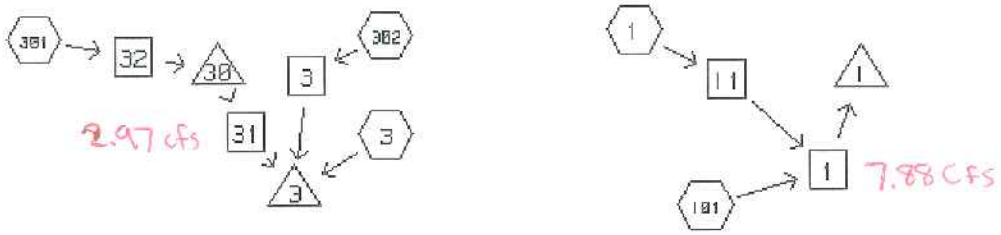
#	ROUTE	INVERT	OUTLET DEVICES
1	P	160.0'	**18" CULVERT**
			n=.012 L=30' S=.01'/' Ke=.5 Cc=.9 Cd=.6

Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

WATERSHED ROUTING ==========

Riprap Outlet Apron Sizing





SUBCATCHMENT REACH POND LINK

SUBCATCHMENT 1	= BASIN 1	-> REACH 11
SUBCATCHMENT 2	= BASIN 2	-> POND 2
SUBCATCHMENT 3	= BASIN 3	-> POND 3
SUBCATCHMENT 4	= BASIN 4	-> POND 4
SUBCATCHMENT 5	= BASIN 5	-> REACH 2
SUBCATCHMENT 101	= BASIN 101	-> REACH 1
SUBCATCHMENT 301	= BASIN 301	-> REACH 32
SUBCATCHMENT 302	= BASIN 302	-> REACH 3
SUBCATCHMENT 401	= BASIN 401	-> REACH 42
SUBCATCHMENT 402	= BASIN 402	-> REACH 41
REACH 1	= CULVERT 1	-> POND 1

REACH 2	=	->	
REACH 3	= VEGETATED SWALE 1	->	POND 3
REACH 4	= LEVEL SPREADER	->	POND 4
REACH 11	=	->	REACH 1
REACH 31	= CULVERT 3	->	POND 3
REACH 32	= VEGETATED SWALE 2	->	POND 30
REACH 41	= VEGETATED SWALE 3	->	REACH 4
REACH 42	= VEGETATED SWALE 4	->	REACH 4
REACH 43	=	->	
POND 1	= POND1	->	
POND 2	= POND 2	->	REACH 2
POND 3	= POND 3	->	
POND 4	= POND 4	->	REACH 43
POND 30	= POND 30	->	REACH 31

Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

REACH 1 **CULVERT 1**

Qin = 7.93 CFS @ 12.26 HRS, VOLUME= .66 AF
Qout= 7.88 CFS @ 12.26 HRS, VOLUME= .66 AF, ATTEN= 1%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.17
.3	.2	.70
.4	.3	1.57
.9	1.0	6.73
1.1	1.2	7.86
1.2	1.3	8.57
1.2	1.3	8.65
1.3	1.3	8.57
1.3	1.4	8.04

15.8" PIPE

n= .012
LENGTH= 60 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.04 FT
PEAK VELOCITY= 6.7 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 31 CULVERT 3

Qin = 3.00 CFS @ 12.10 HRS, VOLUME= .20 AF
Qout= 2.97 CFS @ 12.10 HRS, VOLUME= .20 AF, ATTEN= 1%, LAG= .1 MIN

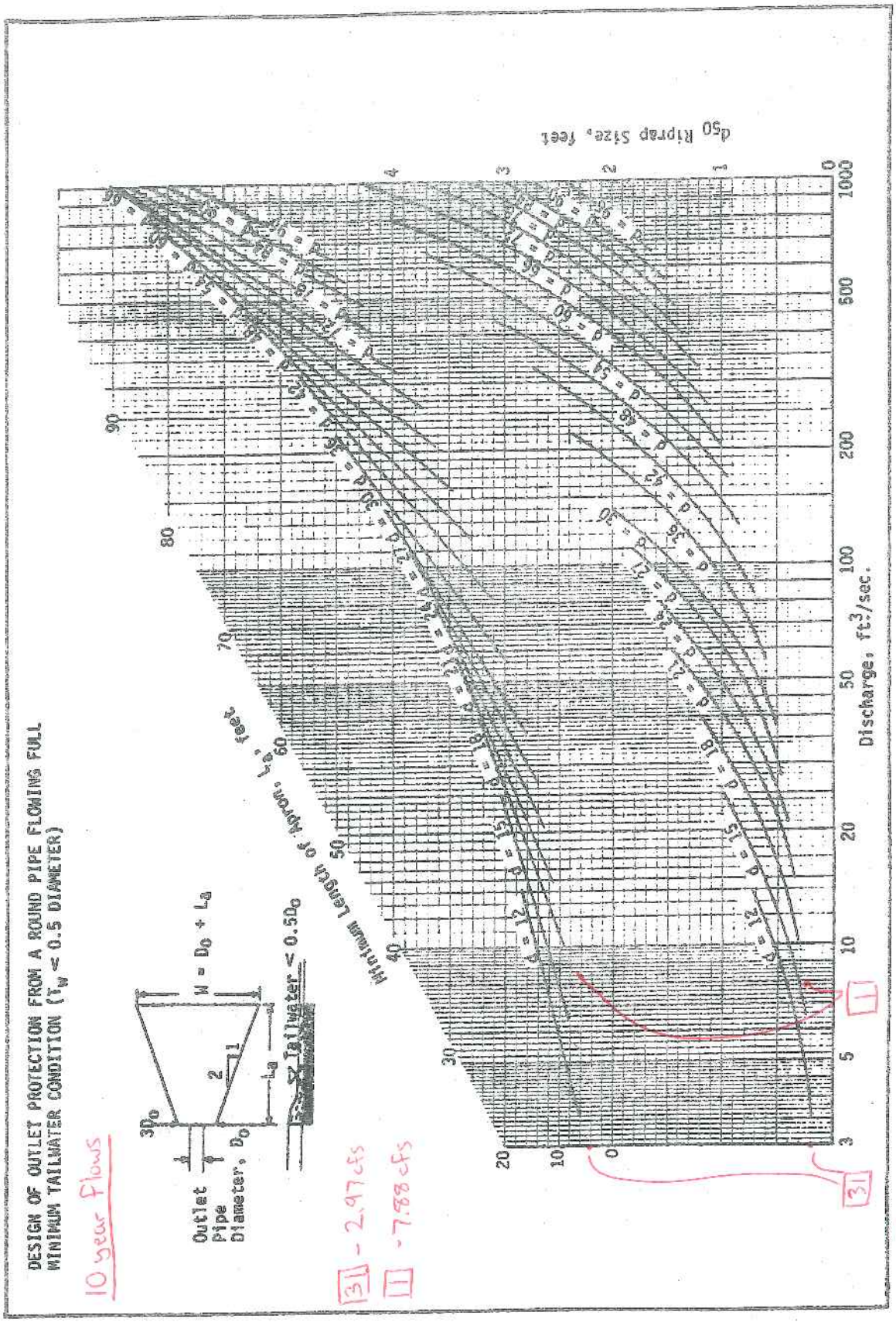
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.27
.3	.2	.60
.6	.5	2.56
.7	.6	2.99
.8	.6	3.26
.9	.6	3.29
.9	.7	3.26
.9	.7	3.06

11" PIPE

n= .012
LENGTH= 50 FT
SLOPE= .01 FT/FT

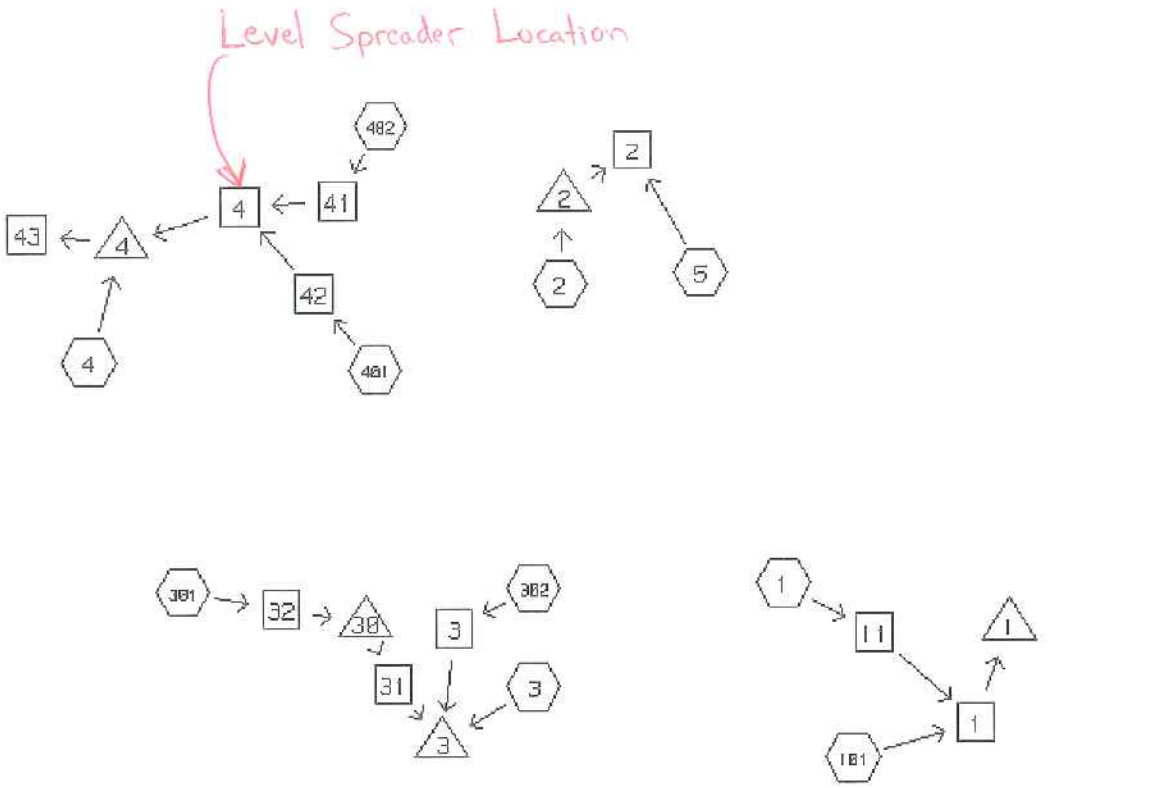
STOR-IND+TRANS METHOD
PEAK DEPTH= .73 FT
PEAK VELOCITY= 5.3 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

Figure 32.1 MINIMUM TAILWATER CONDITION (USDA Soil Conservation Service)



Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

WATERSHED ROUTING ==========



SUBCATCHMENT 1	= BASIN 1	-> REACH 11
SUBCATCHMENT 2	= BASIN 2	-> POND 2
SUBCATCHMENT 3	= BASIN 3	-> POND 3
SUBCATCHMENT 4	= BASIN 4	-> POND 4
SUBCATCHMENT 5	= BASIN 5	-> REACH 2
SUBCATCHMENT 101	= BASIN 101	-> REACH 1
SUBCATCHMENT 301	= BASIN 301	-> REACH 32
SUBCATCHMENT 302	= BASIN 302	-> REACH 3
SUBCATCHMENT 401	= BASIN 401	-> REACH 42
SUBCATCHMENT 402	= BASIN 402	-> REACH 41
REACH 1	= CULVERT 1	-> POND 1

REACH 2	=	->	
REACH 3	= VEGETATED SWALE 1	->	POND 3
REACH 4	= LEVEL SPREADER	->	POND 4
REACH 11	=	->	REACH 1
REACH 31	= CULVERT 3	->	POND 3
REACH 32	= VEGETATED SWALE 2	->	POND 30
REACH 41	= VEGETATED SWALE 3	->	REACH 4
REACH 42	= VEGETATED SWALE 4	->	REACH 4
REACH 43	=	->	
POND 1	= POND1	->	
POND 2	= POND 2	->	REACH 2
POND 3	= POND 3	->	
POND 4	= POND 4	->	REACH 43
POND 30	= POND 30	->	REACH 31

Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

REACH 4 **LEVEL SPREADER**

Qin = 3.52 CFS @ 12.05 HRS, VOLUME= .22 AF
Qout= 3.37 CFS @ 12.10 HRS, VOLUME= .22 AF, ATTEN= 4%, LAG= 2.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	2.6	2.02
.2	5.4	6.52
.3	8.4	13.03
.4	12.6	24.26
.6	18.6	43.54
.8	26.4	72.88
1.0	35.0	109.56

25' x 1' CHANNEL
SIDE SLOPE= .1 '/'
n= .15
LENGTH= 100 FT
SLOPE= .14 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .13 FT
PEAK VELOCITY= 1.0 FPS
TRAVEL TIME = 1.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

$0.25 \times 25' = 6.25$ cfs > 3.52 cfs = Ok

SUBCATCHMENT 401 **BASIN 401**

PEAK= 3.12 CFS @ 11.96 HRS, VOLUME= .17 AF

ACRES	CN	
.35	98	IMPERVIOUS
.29	80	LAWN D
.64	90	

SCS TR-20 METHOD
TYPE II 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID: AB**	8.5
Grass: Dense n=.24 L=50' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: BC**	.7
Short Grass Pasture Kv=7 L=70' s=.057 '/' V=1.67 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID: CD**	.4
Grassed Waterway Kv=15 L=70' s=.04 '/' V=3 fps		
	Total Length= 190 ft Total Tc=	9.6

SUBCATCHMENT 402 **BASIN 402**

PEAK= 1.01 CFS @ 11.92 HRS, VOLUME= .05 AF

ACRES	CN	
.04	98	IMPERVIOUS
.19	80	LAWN D
.23	83	

SCS TR-20 METHOD
TYPE II 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	7.1
Grass: Dense n=.24 L=40' P2=3 in s=.02 '/'		

REACH 41 **VEGETATED SWALE 3**

Qin = 1.01 CFS @ 11.92 HRS, VOLUME= .05 AF
Qout= .84 CFS @ 12.04 HRS, VOLUME= .05 AF, ATTEN= 17%, LAG= 7.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.42
.4	2.9	1.38
.6	4.7	2.84
.9	7.4	5.47
1.2	11.6	10.25
1.6	17.4	18.00
2.0	24.1	28.25

6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 100 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .30 FT
PEAK VELOCITY= .4 FPS
TRAVEL TIME = 3.9 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 42 **VEGETATED SWALE 4**

Qin = 3.12 CFS @ 11.96 HRS, VOLUME= .17 AF
Qout= 2.70 CFS @ 12.06 HRS, VOLUME= .17 AF, ATTEN= 14%, LAG= 6.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	1.3	.51
.4	2.9	1.70
.6	4.7	3.48
.9	7.4	6.70
1.2	11.6	12.56
1.6	17.4	22.04
2.0	24.1	34.60

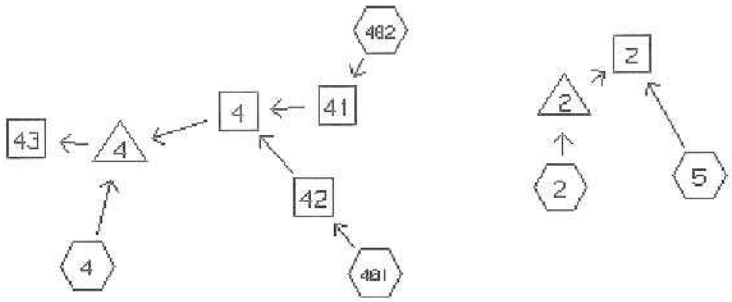
6' x 2' CHANNEL
SIDE SLOPE= .33 '/'
n= .15
LENGTH= 150 FT
SLOPE= .015 FT/FT

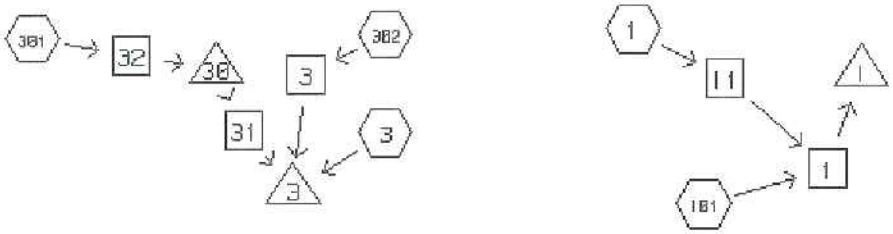
STOR-IND+TRANS METHOD
PEAK DEPTH= .54 FT
PEAK VELOCITY= .7 FPS
TRAVEL TIME = 3.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

WATERSHED ROUTING ==========

Pipe Sizing Calcs





SUBCATCHMENT REACH POND LINK

SUBCATCHMENT 1	= BASIN 1	-> REACH 11
SUBCATCHMENT 2	= BASIN 2	-> POND 2
SUBCATCHMENT 3	= BASIN 3	-> POND 3
SUBCATCHMENT 4	= BASIN 4	-> POND 4
SUBCATCHMENT 5	= BASIN 5	-> REACH 2
SUBCATCHMENT 101	= BASIN 101	-> REACH 1
SUBCATCHMENT 301	= BASIN 301	-> REACH 32
SUBCATCHMENT 302	= BASIN 302	-> REACH 3
SUBCATCHMENT 401	= BASIN 401	-> REACH 42
SUBCATCHMENT 402	= BASIN 402	-> REACH 41
REACH 1	= CULVERT 1	-> POND 1

REACH 2	=	->	
REACH 3	= VEGETATED SWALE 1	->	POND 3
REACH 4	= LEVEL SPREADER	->	POND 4
REACH 11	=	->	REACH 1
REACH 31	= CULVERT 3	->	POND 3
REACH 32	= VEGETATED SWALE 2	->	POND 30
REACH 41	= VEGETATED SWALE 3	->	REACH 4
REACH 42	= VEGETATED SWALE 4	->	REACH 4
REACH 43	=	->	
POND 1	= POND1	->	
POND 2	= POND 2	->	REACH 2
POND 3	= POND 3	->	
POND 4	= POND 4	->	REACH 43
POND 30	= POND 30	->	REACH 31

Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

REACH 31 **CULVERT 3**

Qin = 3.00 CFS @ 12.10 HRS, VOLUME= .20 AF
Qout= 2.97 CFS @ 12.10 HRS, VOLUME= .20 AF, ATTEN= 1%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.27
.3	.2	.60
.6	.5	2.56
.7	.6	2.99
.8	.6	3.26
.9	.6	3.29
.9	.7	3.26
.9	.7	3.06

11" PIPE Use 12"

n= .012
LENGTH= 50 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .73 FT
PEAK VELOCITY= 5.3 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

Data for **OCEAN RIDGE - POST DEVELOPMENT W/ TSS**
TYPE II 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS INC. 24 Apr 01
HydroCAD 5.01 000643 (c) 1986-1998 Applied Microcomputer Systems

REACH 1 **CULVERT 1**

Qin = 7.93 CFS @ 12.26 HRS, VOLUME= .66 AF
Qout= 7.88 CFS @ 12.26 HRS, VOLUME= .66 AF, ATTEN= 1%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.17
.3	.2	.70
.4	.3	1.57
.9	1.0	6.73
1.1	1.2	7.86
1.2	1.3	8.57
1.2	1.3	8.65
1.3	1.3	8.57
1.3	1.4	8.04

15.8" PIPE Use 18"
n= .012
LENGTH= 60 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.04 FT
PEAK VELOCITY= 6.7 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING