

354-B-3

2003-0226

374 Riverside Ind. Hwy

Bld. Addition

Paradigm Window Solutions

on Spreadsheet

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

2003-0226
Application I. D. Number

10/20/2003
Application Date

Paradigm Window Solutions
Applicant
374 Riverside Ind. Parkway, Portland, ME 04101
Applicant's Mailing Address

Paradigm Building Addition
Project Name/Description
374 - 374 Riverside Ind Pkwy, Portland, Maine
Address of Proposed Site

Consultant/Agent
Applicant Ph: (207) 878-9701 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

354 B003001
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) _____

17,779 s.f. Proposed Building square Feet or # of Units Acreage of Site IM Zoning

Check Review Required:

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

Fees Paid: Site Plan \$500.00 Subdivision _____ Engineer Review _____ Date 10/27/2003

Planning Approval Status:

Reviewer _____

- Approved Approved w/Conditions See Attached Denied

Approval Date _____ Approval Expiration _____ Extension to _____ Additional Sheets Attached

OK to Issue Building Permit _____ signature _____ 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 Site Plan Application

If you or the property owner owe real estate taxes, personal property taxes or user charges on any property within the City of Portland, payment arrangements must be made before permit applications can be received by the Inspections Division.

Address of Proposed Development: 374 Riverside		Zone: I-M
Total Square Footage of Proposed Structure: 17,779	Square Footage of Lot: 219,141 (5.03 ac)	
Tax Assessor's Chart, Block & Lot: Chart# Block# Lot# 354 B 3	Property owner's mailing address: Paradigm Window Solutions 374 Riverside Industrial Parkway Portland, Maine	Telephone #: 878-9701
Consultant/Agent, mailing address, phone # & contact person: Jeffrey R. Perry c/o Sebago Technics, Inc. One Chabot Street Westbrook, Maine 04092 207-856-0277	Applicant's name, mailing address, telephone #/Fax#/Pager#: Paradigm Window Solutions 374 Riverside Industrial Pkwy Portland, Maine 207-878-9701 phone	Project name: Paradigm Building Addition
<p>Proposed Development (check all that apply)</p> <p> <input type="checkbox"/> New Building <input checked="" type="checkbox"/> Building Addition <input type="checkbox"/> Change of Use <input type="checkbox"/> Residential <input type="checkbox"/> Office <input type="checkbox"/> Retail <input checked="" type="checkbox"/> Manufacturing <input type="checkbox"/> Warehouse/Distribution <input checked="" type="checkbox"/> Parking lot <input type="checkbox"/> Subdivision (\$500.00) + amount of lots _____ (\$25.00 per lot) \$ _____ <input type="checkbox"/> Site Location of Development (\$3,000.00) (except for residential projects which shall be \$200.00 per lot _____) <input type="checkbox"/> Traffic Movement (\$1,000.00) <input checked="" type="checkbox"/> Stormwater Quality (\$250.00) <input type="checkbox"/> Section 14-403 Review (\$400.00 + \$25.00 per lot) <input type="checkbox"/> Other _____ </p> <p>Major Development (more than 10,000 sq. ft.)</p> <p> <input checked="" type="checkbox"/> Under 50,000 sq. ft. (\$500.00) <input type="checkbox"/> 50,000 - 100,000 sq. ft. (\$1,000.00) <input checked="" type="checkbox"/> Parking Lots over 100 spaces (\$1,000.00) <input type="checkbox"/> 100,000 - 200,000 sq. ft. (\$2,000.00) <input type="checkbox"/> 200,000 - 300,000 sq. ft. (\$3,000.00) <input type="checkbox"/> Over 300,000 sq. ft. (\$5,000.00) <input type="checkbox"/> After-the-fact Review (\$1,000.00 + applicable application fee) </p> <p>Minor Site Plan Review</p> <p> <input type="checkbox"/> Less than 10,000 sq. ft. (\$400.00) <input type="checkbox"/> After-the-fact Review (\$1,000.00 + applicable application fee) </p> <p>Plan Amendments</p> <p> <input type="checkbox"/> Planning Staff Review (\$250.00) <input type="checkbox"/> Planning Board Review (\$500.00) </p>		
- Please see next page -		

Who billing will be sent to: (Company, Contact Person, Address, Phone #)

Paradigm Window Solutions
374 Riverside Industrial Parkway
Portland, Maine

Scott Koocher (207)878-9701

Submittals shall include (9) separate folded packets of the following:

- a. copy of application
- b. cover letter stating the nature of the project
- c. site plan containing the information found in the attached sample plans check list

Amendment to Plans: Amendment applications should include 6 separate packets of the above (a, b, & c)
ALL PLANS MUST BE FOLDED NEATLY AND IN PACKET FORM

Section 14-522 of the Zoning Ordinance outlines the process, copies are available at the counter at .50 per page (8.5 x11)
you may also visit the web site: ci.portland.me.us chapter 14

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant:



(AGENT)

Date: 10/20/03

This application is for site review ONLY, a building Permit application and associated fees will be required prior to construction.



October 17, 2003
97041

Sara Hopkins, Development Review Program Director
Planning and Urban Development
City Hall
389 Congress Street
Portland, Maine 04101

Paradigm Window Solutions - Building Addition
Site Plan Application

Dear Sara:

On behalf of Paradigm Window Solutions, we are pleased to submit the following application for staff-level, Site Plan Review. Proposed is a 17,779 SF building addition for manufacturing with 6 loading docks.

The expanded parking lot will provide 160 spaces, up from the current capacity of 72. The attached exhibit summarizes the building and parking area calculations.

Additional site improvements include a revised entrance, stormwater management and landscaping. As a result of the stormwater management and reconfiguration of the driveway access, approximately 3,500 SF of wetlands will be impacted. Utilities servicing the addition will be via existing services from the existing building.

Paradigm currently operates two shifts. The first shift, 7 am to 4:30 pm employs 150 people. This shift is forecast to grow by 15 employees. The second shift, 8:30 pm to 6:30 am, employs 60 people and is forecast to grow by 50 to 60 employees in the first year of operation.

The applicant is looking to begin construction this fall with an anticipated completion date of early to mid spring 2004. After your review of the enclosed information, please contact me with any questions.

Sincerely,

SEBAGO TECHNICS, INC.



Jeffrey R. Perry
Project Manager

JRP:jrp/df

Enclosures

cc Scott Koocher, Paradigm
Pete Pelletier, Allied Cook Construction

**BUILDING AREA AND PARKING SUMMARY
PARADIGM WINDOWS
EXPANSION 10-17-03**

	Bldg Area		Parking Required by SF			Parking Spaces Provided
			Mfg 1/1000	Ofc 1/400	Sub Totals	
Existing (1973)	Mfg	49,376	49			
	Ofc	10,712		27		
Subtotals		60,088	49	27	76	72
Addition	Mfg	17,779	18		18	160
TOTALS		77,867	67	27	94	

**CITY OF PORTLAND, MAINE
SITE PLAN CHECKLIST**

PARADIGM WINDOW SOLUTIONS - ADDITION

Project Name, Address of Project

Application Number

Submitted () & Date	Item	Required Information	Section 14-525 (b,c)
✓	(1)	Standard boundary survey (stamped by a registered surveyor, at a scale of not less than 1 inch to 100 feet and including:	l
✓	(2)	Name and address of applicant and name of proposed development	a
✓	(3)	Scale and north points	b
✓	(4)	Boundaries of the site	c
✓	(5)	Total land area of site	d
✓	(6)	Topography - existing and proposed (2 feet intervals or less)	e
✓	(7)	Plans based on the boundary survey including:	2
✓	(8)	Existing soil conditions	a
✓	(9)	Location of water courses, marshes, rock outcroppings and wooded areas	b
✓	(10)	Location, ground floor area and grade elevations of building and other structures existing and proposed, elevation drawings of exterior facades, and materials to be used	c
✓	(11)	Approx location of buildings or other structures on parcels abutting the site	d
✓	(12)	Location of on-site waste receptacles	e
✓	(13)	Public utilities	e
✓	(14)	Water and sewer mains	e
✓	(15)	Culverts, drains, existing and proposed, showing size and directions of flows	e
✓	(16)	Location and dimensions, and ownership of easements, public or private rights-of-way, both existing and proposed	f
✓	(17)	Location and dimensions of on-site pedestrian and vehicular access ways	g
✓	(18)	Parking areas	g
✓	(19)	Loading facilities	g
✓	(20)	Design of ingress and egress of vehicles to and from the site onto public streets	g
✓	(21)	Curb and sidewalks	g
✓	(22)	Landscape plan showing:	h
✓	(23)	Location of existing proposed vegetation	h
✓	(24)	Type of vegetation	h
✓	(25)	Quantity of plantings	h
✓	(26)	Size of proposed landscaping	h
✓	(27)	Existing areas to be preserved	h
✓	(28)	Preservation measures to be employed	h
✓	(29)	Details of planting and preservation specifications	h
✓	(30)	Location and dimensions of all fencing and screening	i
✓	(31)	Location and intensity of outdoor lighting system	j
✓	(32)	Location of fire hydrants, existing and proposed	k
✓	(33)	Written statement	c
✓	(34)	Description of proposed uses to be located on site	l
N/A	(35)	Quantity and type of residential, if any	l
✓	(36)	Total land area of the site	b2
✓	(37)	Total floor area and ground coverage of each proposed building and structure	b2
N/A	(38)	General summary of existing and proposed easements or other burdens	c3
✓	(39)	Method of handling solid waste disposal	4
N/A	(40)	Applicant's evaluation of availability of off-site public facilities, including sewer, water and streets	5
✓	(41)	Description of any problems of drainage or topography, or a representation that there are none	6
✓	(42)	An estimate of the time period required for completion of the development	7
N/A	(43)	A list of all state and federal regulatory approvals to which the development may be subject to	8
N/A	(44)	The status of any pending applications	8
N/A	(45)	Anticipated timeframe for obtaining such permits	h8

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

December 18, 2003

Paradigm Window Solutions
PO Box 10109
Portland, ME 04104

Dear applicant:

RE: Application for Minor Site Plan, Paradigm Window Solutions
(CBL#354B003) (ID#2003-0226)

On December 18, 2003, the Portland Planning Authority granted minor site plan approval for the construction of a building addition at 374 Riverside Industrial Parkway, with the following conditions:

1. *Applicant shall meet the conditions outlined in the Development Review Coordinator's memorandum dated December 18, 2003, which is attached.*

Where submission drawings are available in electronic form, the applicant shall submit any available electronic CADD.DXF files.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

Please note the following provisions and requirements for all site plan approvals:

1. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. A one-year extension may be granted by this department if requested by the applicant in writing prior to the expiration date of the site plan.
2. A performance guarantee in a form acceptable to the City of Portland and an inspection fee equal to 2.0% of the performance guarantee will have to be posted before beginning any site construction or issuance of a building permit.
3. A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

4. Prior to construction, a pre-construction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.
5. A street opening permit is required for your site. Please contact Carol Merritt at 874-8300, ext. 8822. (Only excavators licensed by the City of Portland are eligible.)

If there are any questions, please contact Sarah Hopkins at 874-8620.

Sincerely,



Alexander Jaegerman
Planning Division Director

cc: Lee D. Urban, Planning and Development Department Director
Sarah Hopkins, Development Review Services Manager
Marge Schmuckal, Zoning Administrator
Jay Reynolds, Development Review Coordinator
Karen Dunfey, Inspections
Larry Ash, Traffic Engineer
Tony Lombardo, Project Engineer
Eric Labelle, City Engineer
Jeff Tarling, City Arborist
Penny Littell, Associate Corporation Counsel
Lt. Gaylen McDougall, Fire Prevention
Don Hall, Appraiser, Assessor's Office
Approval Letter File



DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

■ ROADWAY DESIGN
■ ENVIRONMENTAL ENGINEERING
■ TRAFFIC STUDIES AND MANAGEMENT
■ PERMITTING
■ AIRPORT ENGINEERING
■ SITE PLANNING
■ CONSTRUCTION ADMINISTRATION

MEMORANDUM

DATE: December 18, 2003

TO: Jay Reynolds, Portland Planning Authority

FROM: Stephen R. Bushey, P.E.

SUBJECT: Paradigm Window Solutions
Site Plan review

DeLuca-Hoffman Associates, Inc. has reviewed the submission materials prepared by Sebago Technics dated 12/12/03 and find that our earlier comments of December 4, 2003 have been substantially addressed. We offer the following for your consideration.

1. In to improve water quality treatment benefits we recommend that Casco Traps or similar hoods be inserted into each of the catch basin outlets.
2. We recommend that some sort of trash rack or other similar structure be installed at the inlet into the Basin control structure to prevent debris from entering and potential clogging the outlet control orifices.

Based on the materials provided it is our opinion that the project can be reviewed for approval at this time.

If you have any questions please call.

Srb/jn1350.10/I:/paradigmmemo12-18-03

From: Jeffrey Perry <jperry@sebagotechnics.com>
To: 'Sarah Hopkins ' <SH@portlandmaine.gov>
Date: Fri, Dec 5, 2003 10:21 AM
Subject: RE: RE: paradigm

Sarah, in response to our phone conversation this am, and reviewing Steve's comments, I offer the following:

SITE LOCATION

The project will not require a site location permit. The existing impervious area (building and parking) is 2.62 ac. This was constructed in 1973 (supported by information on the City of Portland property record card) and is therefore exempt from the site location law which went into effect in 1975. The new impervious area is 1.28 SF.

DRIVEWAY LAYOUT

The geometry of the driveway layout was designed to facilitate truck-turning movements on-site without impacting traffic on Riverside Industrial Parkway.

WETLAND IMPACTS

The total area of wetland impact associated with the new development is 3,450 SF. This is below the threshold of 4,300 SF, requiring a permit.

We will be responding to the remainder of Steve's comments as quickly as possible.

Thank you.
Jeff Perry, Project Manager
jperry@sebagotechnics.com
Sebago Technics
One Chabot Street
Westbrook, Maine 04098
207.856.0277

-----Original Message-----

From: Sarah Hopkins [mailto:SH@portlandmaine.gov]
Sent: Friday, December 05, 2003 6:20 AM
To: jperry@sebagotechnics.com
Subject: Re: RE: paradigm

oops. I'll give you a call, but here are the attachments.

>>> Jeffrey Perry <jperry@sebagotechnics.com> 12/05 9:05 AM >>>
Sarah, there are no attachments...can you give me a call this am to discuss?
Thanks

-----Original Message-----

From: Sarah Hopkins [mailto:SH@portlandmaine.gov]
Sent: Thursday, December 04, 2003 10:45 AM

To: jerry@sebagotechnics.com
Subject: paradigm

Jeff,

Steve Bushey's comments are attached. It appears that this must be reviewed under Site Location. We will schedule you for a Planning Board workshop unless you can shave off a little pavement (?????!!!!)

The only other comment was from the Traffic Engineer who asked whether the driveway can be consolidated and narrowed?

Start shaving!
-Sarah

From: "Steve Bushey" <SBushey@DelucaHoffman.com>
To: "Jeffrey Perry " <port-web#c##091#sebagotechnics.c...>
Date: Fri, Dec 5, 2003 11:10 AM
Subject: RE: RE: paradigm

Sarah,

Those are the numbers you need to know re: Site Law. I agree with Jeff's conclusions and it is apparent the project only needs Site Plan Approval. Sorry to make them go through the effort although it was probably good for the record to have that confirmed.

Stephen Bushey, P.E.
Senior Engineer
DeLuca-Hoffman Associates, Inc.
Tel. 207-775-1121
Fax 207-879-0896
sbushey@delucahoffman.com

-----Original Message-----

From: Jeffrey Perry
[mailto:port-web#c##091#sebagotechnics.com#093##c#jperry@portlandmaine.gov]
Sent: Friday, December 05, 2003 10:21 AM
To:
port-web#c##091#sebagotechnics.com#093##c#Portland.CityHall#c#SH@portlandmaine.gov
Subject: RE: RE: paradigm

Sarah, in response to our phone conversation this am, and reviewing Steve's comments, I offer the following:

SITE LOCATION

The project will not require a site location permit. The existing impervious area (building and parking) is 2.62 ac. This was constructed in 1973 (supported by information on the City of Portland property record card) and is therefore exempt from the site location law which went into effect in 1975. The new impervious area is 1.28 SF.

DRIVEWAY LAYOUT

The geometry of the driveway layout was designed to facilitate truck-turning movements on-site without impacting traffic on Riverside Industrial Parkway.

WETLAND IMPACTS

STORMWATER MANAGEMENT PLAN

Paradigm Windows
400 Riverside Street
Portland, Maine

A. Narrative

The following Stormwater Management Plan has been prepared for Paradigm Windows to evaluate stormwater runoff and erosion control for the proposed commercial building and parking expansion.

1. Development Location

The proposed development is located at 400 Riverside Street in Portland, ME and encompasses nearly all of the existing 5.0 ± acre property.

2. Surface Water on or Abutting the Site

The existing site slopes toward the western property corner, where a wetland is located at the bottom of a gully. All onsite surface water drains to the wetland and exits the west property corner and flows into the Maine Turnpike roadside ditch.

Freshwater wetlands were delineated by Sebago Technics, Inc and are shown on the plans.

3. Downstream Lakes and Ponds

There are no downstream lakes and ponds. The project is in the Presumpscot River Watershed.

4. General Topography

See Section 2.

5. Flooding

The existing site is located well above an existing wetland. The wetland is not currently subject to flooding now or in the proposed condition.

6. Alterations to Natural Drainage Ways

No alterations to natural drainage ways are proposed.

7. Alterations to Land Cover

Construction of the building addition and associated parking will modify the existing land cover. The new facilities will be constructed in areas that are presently best described as woods.

8. Modeling Assumptions

The quantitative analysis of peak runoff rates from the development utilized the USDA Soil Conservation Service (SCS) TR-20 Runoff Simulation Model, as contained in the HydroCAD computer software program (Version 6.00). Runoff curve numbers were determined for each pre-development and post-development subwatershed by measuring the area of each hydrologic soil group within each type of land cover. Weighted curve numbers were then calculated using curve numbers for various cover types and hydrologic soil groups, assuming "good" conditions as defined in U.S Soil Conservation Service (SCS) publications. Times of concentration and travel times were determined from site topographic maps in accordance with SCS procedures. A maximum length of 150 feet was used for sheet flow.

The watershed peak runoff rates were analyzed for the 2, 10 and 25-year frequency, 24-hour duration storm events. A Type III rainfall distribution was applied to these storms. The rainfall amounts for Cumberland County are as follows:

Storm Frequency Precipitation (in./24 hr)	
2-year	3.0
10-year	4.7
25-year	5.5

On-site soils were obtained from the Cumberland County Soils Survey. A copy of the Cumberland County Soils Survey is included with this report.

9. Stormwater Quantity Control

The following table summarizes the results of stormwater calculations for the design storm events for the project areas. Calculations and computer modeling sheets are provided with this report.

Table 1 - Stormwater Runoff Summary Table for Onsite Study Points Pre-Development vs. Post-Development										
Study Point	Total Watershed Area (Ac)		Avg. Weighted Curve No. (Cn)		Peak Rates of Runoff (cfs)					
					2-Year		10-Year		25-Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post		
POI 1	4.25	4.39	83.0	91.2	5.8	5.4	11.7	11.4	14.6	13.2

As the above result tables show, Study Point 1 shows no increase in the post-development flow rate when compared to the existing condition for the 2, 10 and 25-year/24 hour design storms. Based on the results of this evaluation, the proposed stormwater design is not expected to cause any additional flooding, erosion or other adverse conditions downstream of the site.

10. Water Quality Treatment

Best Management Practices (BMPs) will be implemented to reduce the impacts of site development on downstream water quality. The project is required to meet the Basic Stabilization Standard.

11. Off-Site Credits

Not applicable.

12. Development Impacts

There are no anticipated negative development impacts. See Section 9 for further explanation.

B. Drainage Area Maps

1. Topographic Map

A copy of the USGS 7.5 minute topographic map showing the site boundaries is attached.

2. Soils Map

The SCS medium intensity soil map showing the site boundaries is attached.

C. Pre-Development Drainage Plan

The pre-development drainage plan showing information in subsections C.1 through C.16 is enclosed.

D. Post-Development Drainage Plan

The post-development drainage plan showing information requested in subsections D.1 through D.19 is enclosed.

E. Runoff Analysis

The pre- and post-development runoff analysis of the site was prepared in accordance with acceptable engineering practice as provided under the DEP Stormwater Law. The analysis was prepared using the HydroCAD watershed analysis model, Release 6.00. HydroCAD uses the SCS TR-20 methodology. Soil mapping used in the analysis was obtained from the SCS medium intensity soil survey for Cumberland County. Calculations are included with this section and include the following information for each pre-development and post-development subwatershed:

curve number computations, time of concentration calculations, travel time calculations, peak discharge calculations, and reservoir routing calculations.

F. Stormwater Quantity Control Plan

1. Variance Submissions: Not applicable

2. Drainage System Sizing

The onsite drainage system was sized using Hydraflow. Sizing calculations have been included with this submittal.

3. Stormwater Detention and Retention System Submissions

Stormwater will be detained in the onsite detention pond. All applicable cross sections and details are provided on the plans.

G. Stormwater Quality Treatment Plan

1. Basic Stabilization

a. Ditches and Swales – Design calculations are provided as noted in subsection F.2 above.

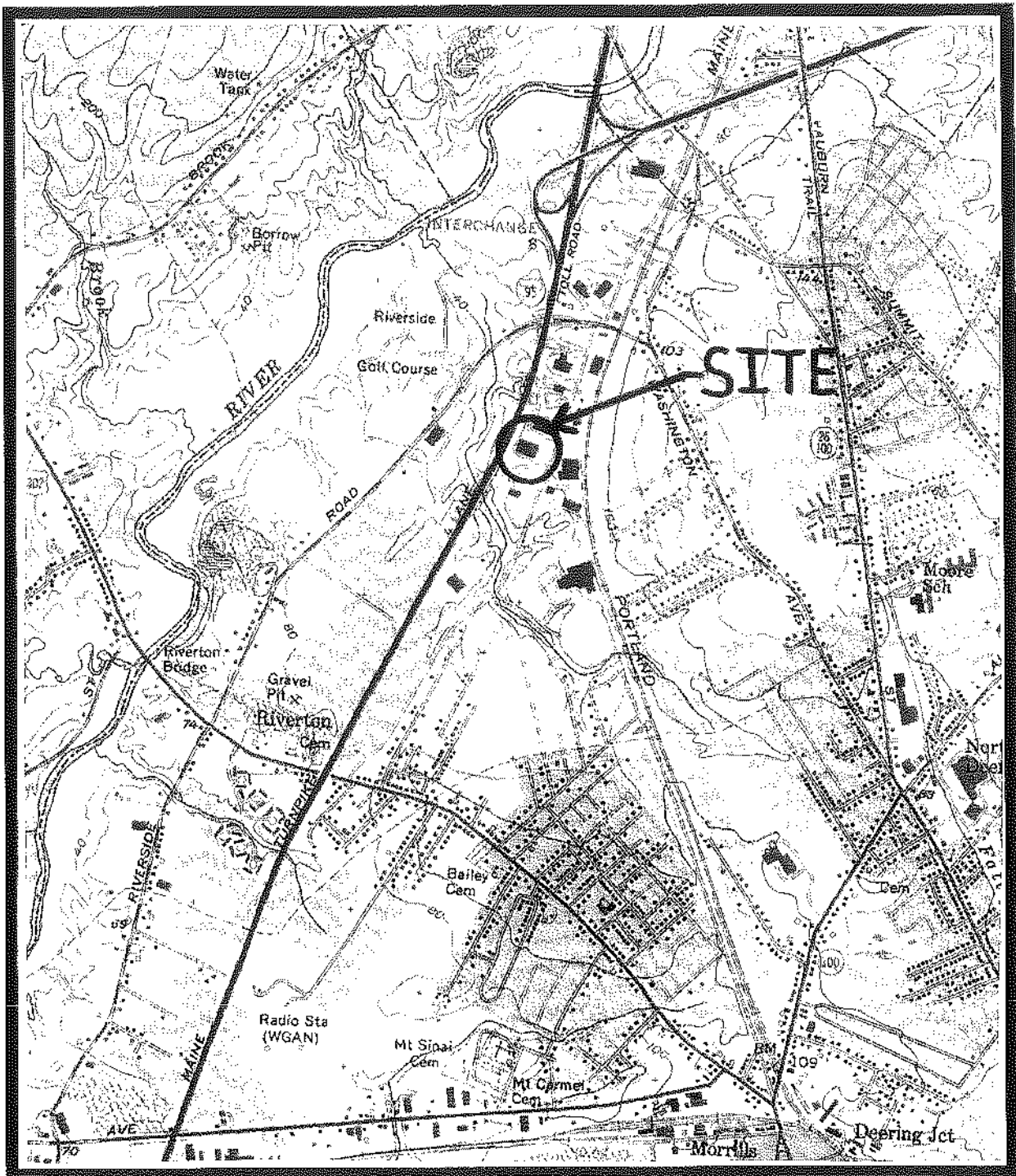
- b. Culvert and Storm Drain Outfalls – Design calculations are provided as noted in subsection F.2 above.
 - c. Earthen Slopes and Embankments – Details for stabilizing earthen slopes are included in the plans.
 - d. Disturbed Areas – Specifications for revegetating disturbed areas are provided in the Erosion Control Plans. Details for paving and other proposed permanent surface treatments are shown on the plans.
 - e. Gravel Drives and Roads – Not Applicable
 - f. Maintenance - The Maintenance Plan of Stormwater Management Facilities is provided in this submittal.
- 2. 80 % TSS Removal – Not Applicable
 - 3. Sliding Scale TSS Removal – Not Applicable
 - 4. Phosphorus Removal – Not Applicable
 - 5. Control Plan for Thermal Impacts – Not Applicable
 - 6. Control Plan for Other Pollutants - Not Applicable

Prepared by,

SEBAGO TECHNICS, INC.

Jeffrey D. Amos, P.E.
Senior Project Engineer

FIGURE 1



SITE LOCATION MAP

USGS TOPOGRAPHIC

7.5 MIN. QUADRANGLE

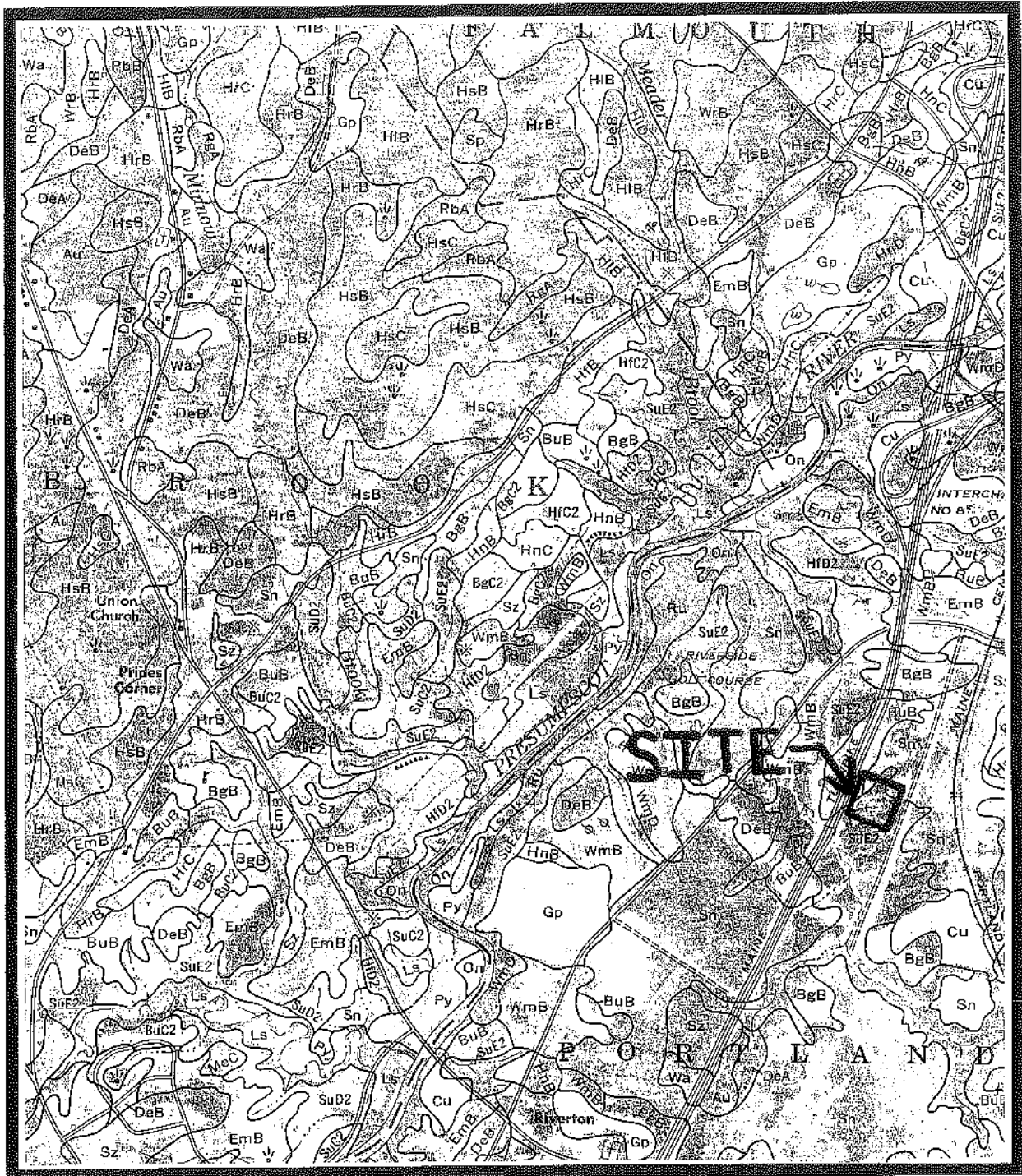
PORTLAND WEST, MAINE

1"=2000'

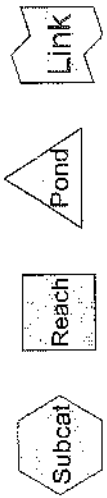
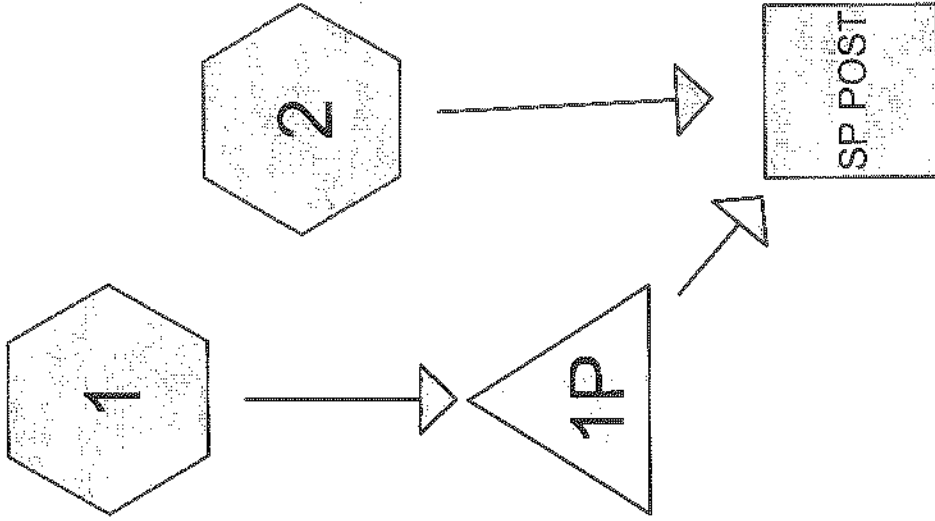


Sebago Technics
Engineering & Planning for the Future

FIGURE 2



MEDIUM INTENSITY SOIL SURVEY
CUMBERLAND COUNTY
SHEET 75
SCALE 1:20,000



Drainage Diagram for 97041PRE&POST

Prepared by Sebago Technics, Inc. 10/15/2003

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

97041PRE&POST

Type III 24-hr Rainfall=3.00"

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: POST DEVELOPMENT

Tc=6.0 min CN=93 Area=4.040 ac Runoff= 10.15 cfs 0.717 af

Subcatchment 2: POND BYPASS AREA

Tc=19.1 min CN=70 Area=0.350 ac Runoff= 0.17 cfs 0.019 af

Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Tc=12.2 min CN=83 Area=4.250 ac Runoff= 5.82 cfs 0.474 af

Reach SP POST: (new node)

Inflow= 5.37 cfs 0.733 af
Outflow= 5.37 cfs 0.733 af

Reach SP PRE: (new node)

Inflow= 5.82 cfs 0.474 af
Outflow= 5.82 cfs 0.474 af

Pond 1P: (new node)

Peak Storage= 4,147 cf Inflow= 10.15 cfs 0.717 af
Primary= 5.21 cfs 0.714 af Outflow= 5.21 cfs 0.714 af

Runoff Area = 8.640 ac Volume = 1.209 af Average Depth = 1.68"

97041PRE&POST

Type III 24-hr Rainfall=3.00"

Prepared by Sebago Technics, Inc.

Page 2

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Subcatchment 1: POST DEVELOPMENT

Runoff = 10.15 cfs @ 12.09 hrs, Volume= 0.717 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
3.230	98	Impervious
0.810	74	>75% Grass cover, Good, HSG C
4.040	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0267	1.6		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.9		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
3.9					Direct Entry, 6.0 Minimum per TR-55
6.0	260	Total			

Subcatchment 2: POND BYPASS AREA

Runoff = 0.17 cfs @ 12.31 hrs, Volume= 0.019 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	75	0.0400	0.1		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
5.7	65	0.2500	0.2		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
19.1	140	Total			

Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Runoff = 5.82 cfs @ 12.17 hrs, Volume= 0.474 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

97041PRE&POST

Type III 24-hr Rainfall=3.00"

Prepared by Sebago Technics, Inc.

Page 3

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Area (ac)	CN	Description
1.890	98	Impervious
1.690	70	Woods, Good, HSG C
0.670	74	>75% Grass cover, Good, HSG C
4.250	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	70	0.0100	0.1		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
1.0	80	0.0250	1.4		Sheet Flow, BC Smooth surfaces n= 0.011 P2= 3.00"
0.8	130	0.0200	2.9		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.2	45	0.0440	3.1		Shallow Concentrated Flow, DE Grassed Waterway Kv= 15.0 fps
0.1	110	0.0800	28.4	2,723.76	Trap/Vee/Rect Channel Flow, EF Bot.W=1.00' D=6.00' Z= 2.5 ' n= 0.030
0.1	110	0.0650	31.5	7,176.13	Trap/Vee/Rect Channel Flow, FG Bot.W=20.00' D=6.00' Z= 3.0 ' n= 0.030
12.2	545	Total			

Reach SP POST: (new node)

Inflow = 5.37 cfs @ 12.25 hrs, Volume= 0.733 af
 Outflow = 5.37 cfs @ 12.25 hrs, Volume= 0.733 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Reach SP PRE: (new node)

Inflow = 5.82 cfs @ 12.17 hrs, Volume= 0.474 af
 Outflow = 5.82 cfs @ 12.17 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: (new node)

Inflow = 10.15 cfs @ 12.09 hrs, Volume= 0.717 af
 Outflow = 5.21 cfs @ 12.24 hrs, Volume= 0.714 af, Atten= 49%, Lag= 9.0 min
 Primary = 5.21 cfs @ 12.24 hrs, Volume= 0.714 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 60.35' Storage= 4,147 cf
 Plug-Flow detention time= 8.0 min calculated for 0.714 af (100% of inflow)
 Storage and wetted areas determined by Prismatic sections

97041PRE&POST

Type III 24-hr Rainfall=3.00"

Prepared by Sebago Technics, Inc.

Page 4

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

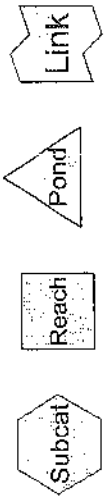
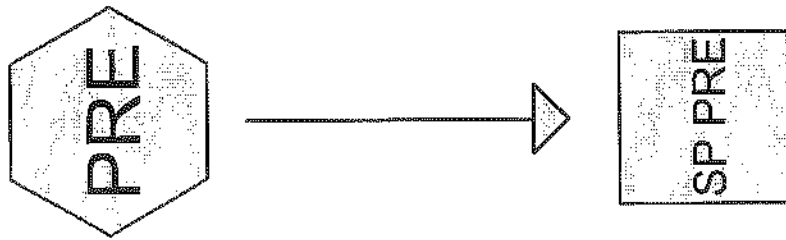
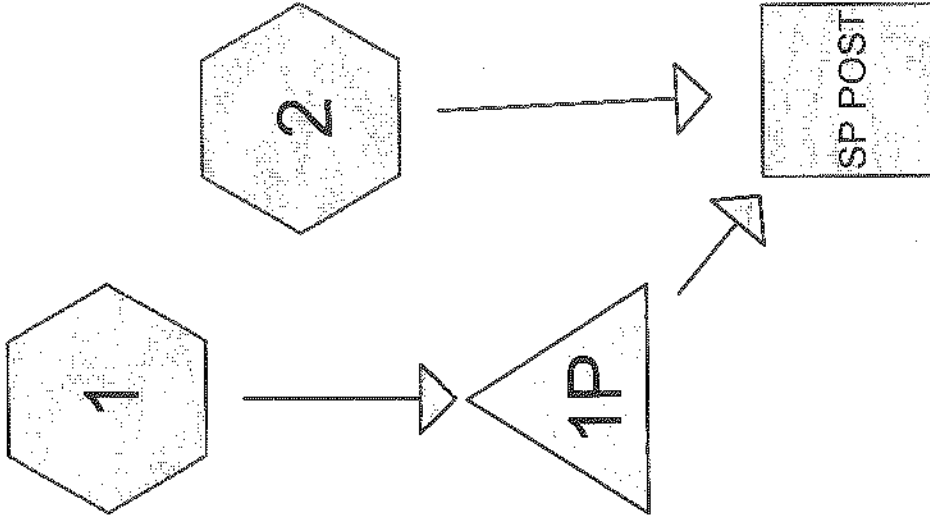
10/15/2003

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	250	0	0
58.00	725	975	975
60.00	1,675	2,400	3,375
62.00	2,750	4,425	7,800
64.00	4,100	6,850	14,650

Primary OutFlow (Free Discharge)

- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	56.00'	10.0" Vert. Orifice/Grate C= 0.600
2	Primary	60.35'	14.0" Vert. Orifice/Grate C= 0.600
3	Primary	62.37'	15.0' long x 15.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63



Drainage Diagram for 97041PRE&POST
 Prepared by Sebago Technics, Inc. 10/15/2003
 HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

97041PRE&POST

Type III 24-hr Rainfall=4.70"

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=4.70"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: POST DEVELOPMENT

Tc=6.0 min CN=93 Area=4.040 ac Runoff= 17.05 cfs 1.246 af

Subcatchment 2: POND BYPASS AREA

Tc=19.1 min CN=70 Area=0.350 ac Runoff= 0.49 cfs 0.048 af

Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Tc=12.2 min CN=83 Area=4.250 ac Runoff= 11.73 cfs 0.961 af

Reach SP POST: (new node)

Inflow= 11.43 cfs 1.292 af
Outflow= 11.43 cfs 1.292 af

Reach SP PRE: (new node)

Inflow= 11.73 cfs 0.961 af
Outflow= 11.73 cfs 0.961 af

Pond 1P: (new node)

Peak Storage= 7,432 cf Inflow= 17.05 cfs 1.246 af
Primary= 11.00 cfs 1.243 af Outflow= 11.00 cfs 1.243 af

Runoff Area = 8.640 ac Volume = 2.256 af Average Depth = 3.13"

Subcatchment 1: POST DEVELOPMENT

Runoff = 17.05 cfs @ 12.09 hrs, Volume= 1.246 af

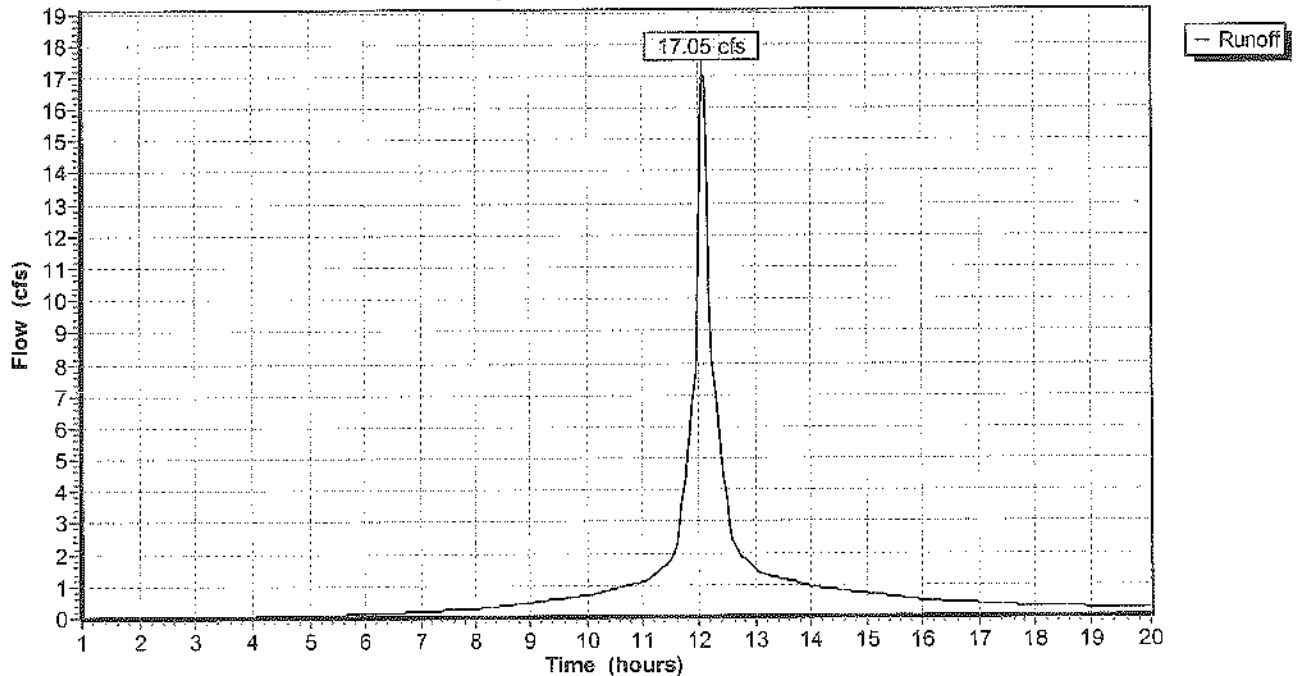
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
3.230	98	Impervious
0.810	74	>75% Grass cover, Good, HSG C
4.040	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0267	1.6		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.9		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
3.9					Direct Entry, 6.0 Minimum per TR-55
6.0	260	Total			

Subcatchment 1: POST DEVELOPMENT

Hydrograph Plot



Subcatchment 2: POND BYPASS AREA

Runoff = 0.49 cfs @ 12.28 hrs, Volume= 0.048 af

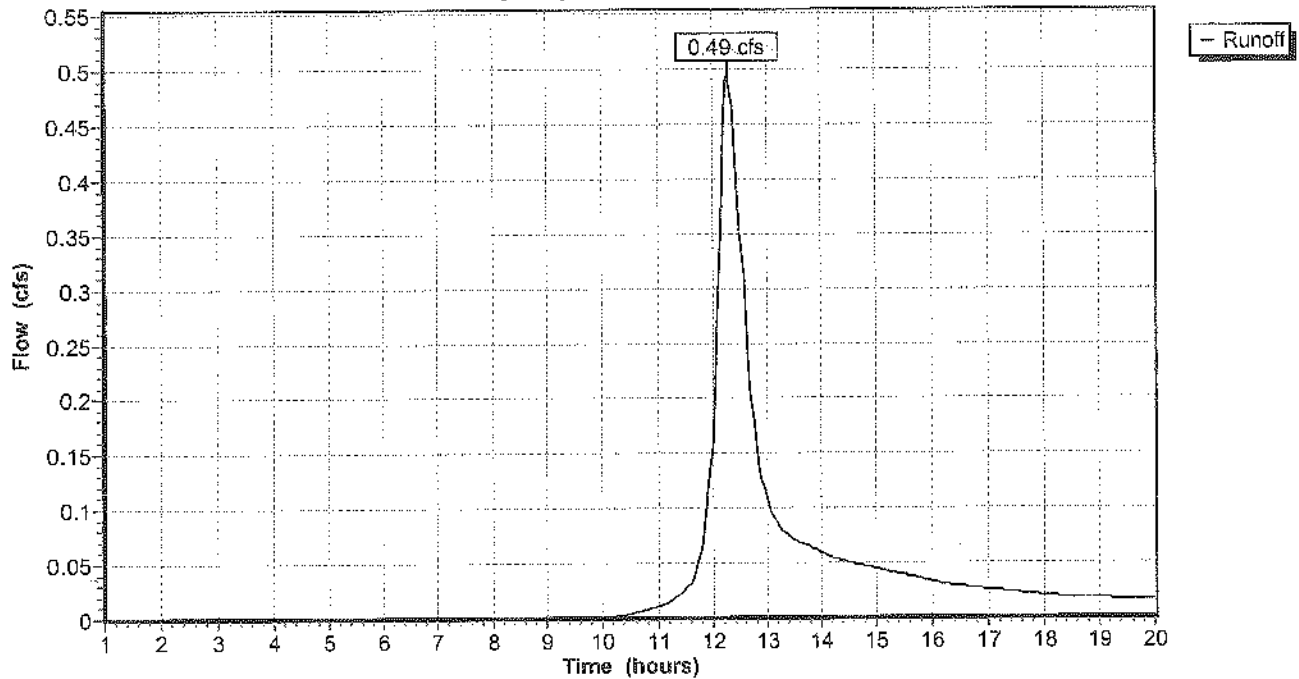
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	75	0.0400	0.1		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
5.7	65	0.2500	0.2		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
19.1	140	Total			

Subcatchment 2: POND BYPASS AREA

Hydrograph Plot



Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Runoff = 11.73 cfs @ 12.17 hrs, Volume= 0.961 af

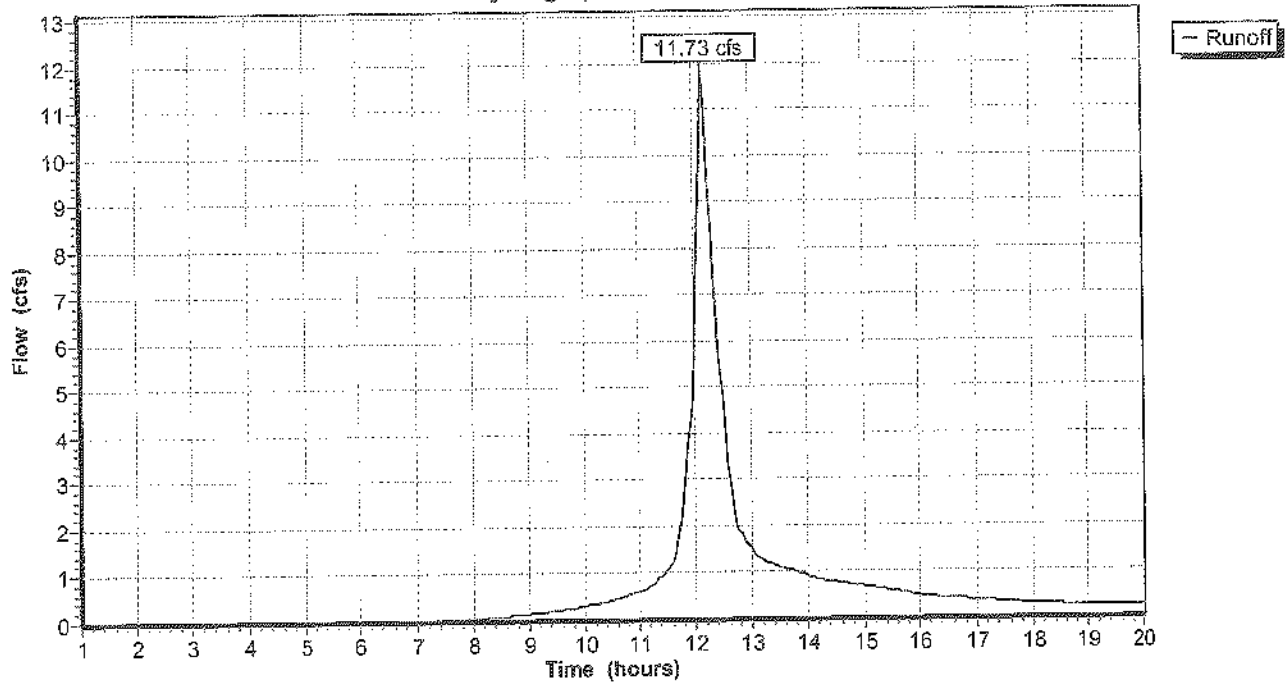
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
1.890	98	Impervious
1.690	70	Woods, Good, HSG C
0.670	74	>75% Grass cover, Good, HSG C
4.250	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	70	0.0100	0.1		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
1.0	80	0.0250	1.4		Sheet Flow, BC Smooth surfaces n= 0.011 P2= 3.00"
0.8	130	0.0200	2.9		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.2	45	0.0440	3.1		Shallow Concentrated Flow, DE Grassed Waterway Kv= 15.0 fps
0.1	110	0.0800	28.4	2,723.76	Trap/Vee/Rect Channel Flow, EF Bot.W=1.00' D=6.00' Z= 2.5 ' n= 0.030
0.1	110	0.0650	31.5	7,176.13	Trap/Vee/Rect Channel Flow, FG Bot.W=20.00' D=6.00' Z= 3.0 ' n= 0.030
12.2	545	Total			

Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Hydrograph Plot



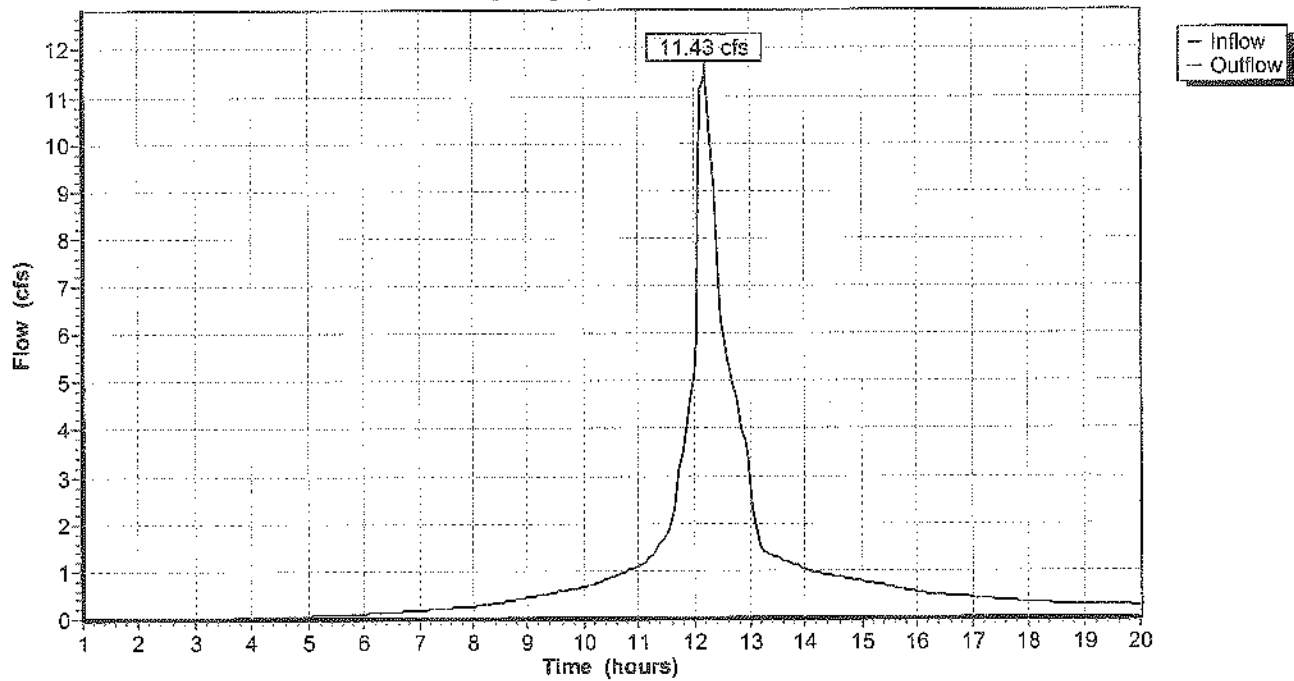
Reach SP POST: (new node)

Inflow = 11.43 cfs @ 12.19 hrs, Volume= 1.292 af
Outflow = 11.43 cfs @ 12.19 hrs, Volume= 1.292 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Reach SP POST: (new node)

Hydrograph Plot



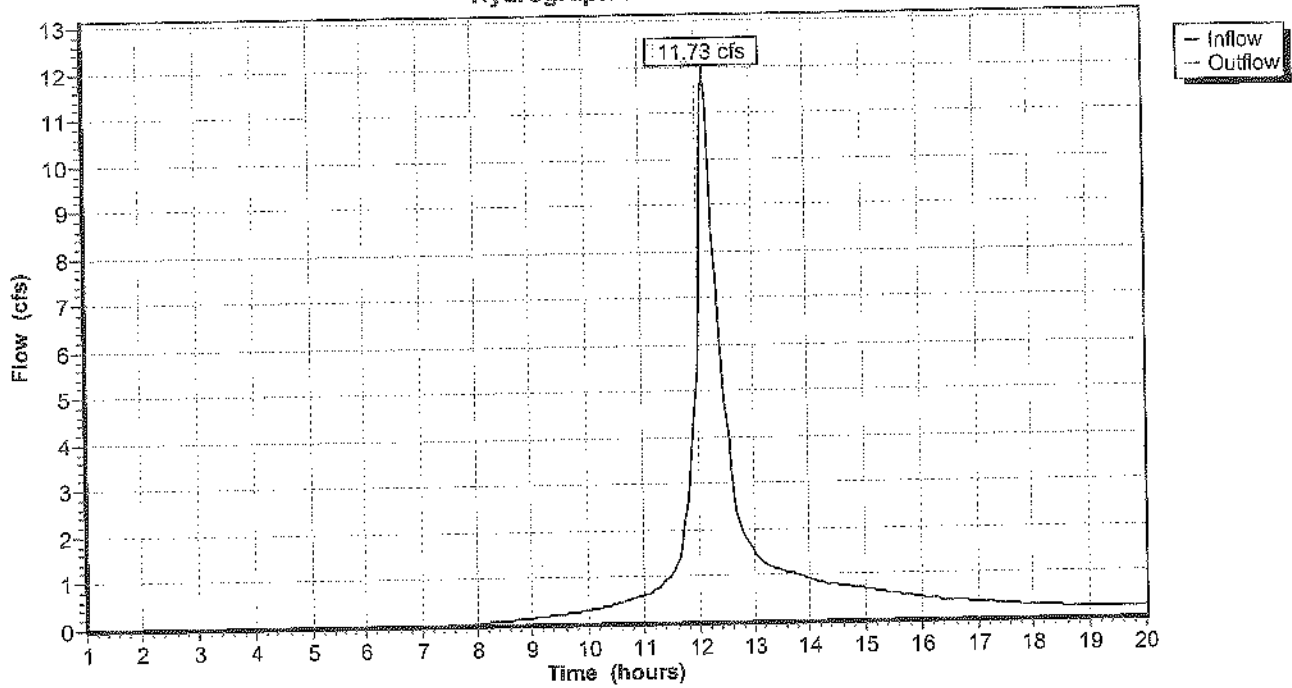
Reach SP PRE: (new node)

Inflow = 11.73 cfs @ 12.17 hrs, Volume= 0.961 af
Outflow = 11.73 cfs @ 12.17 hrs, Volume= 0.961 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Reach SP PRE: (new node)

Hydrograph Plot



Pond 1P: (new node)

Inflow = 17.05 cfs @ 12.09 hrs, Volume= 1.246 af
 Outflow = 11.00 cfs @ 12.19 hrs, Volume= 1.243 af, Atten= 36%, Lag= 6.1 min
 Primary = 11.00 cfs @ 12.19 hrs, Volume= 1.243 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 61.83' Storage= 7,432 cf
 Plug-Flow detention time= 8.2 min calculated for 1.240 af (100% of inflow)
 Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	250	0	0
58.00	725	975	975
60.00	1,675	2,400	3,375
62.00	2,750	4,425	7,800
64.00	4,100	6,850	14,650

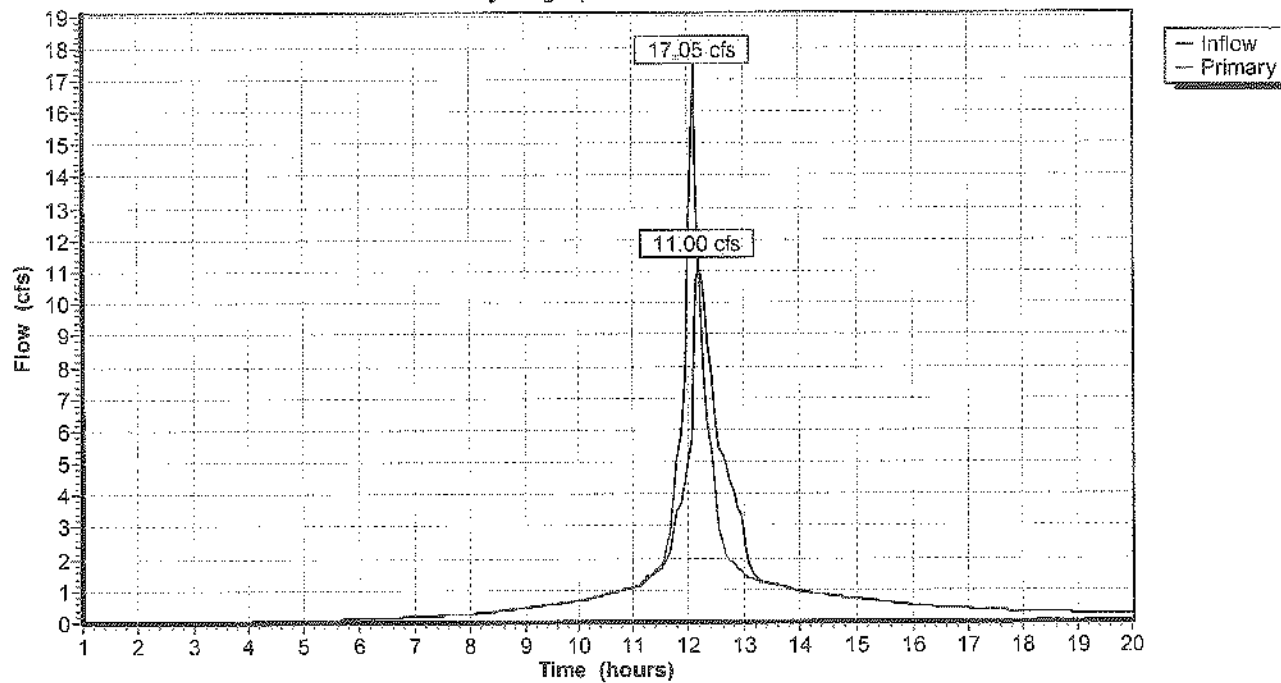
Primary OutFlow (Free Discharge)

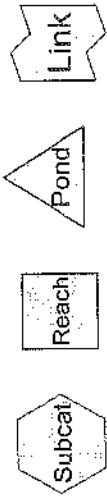
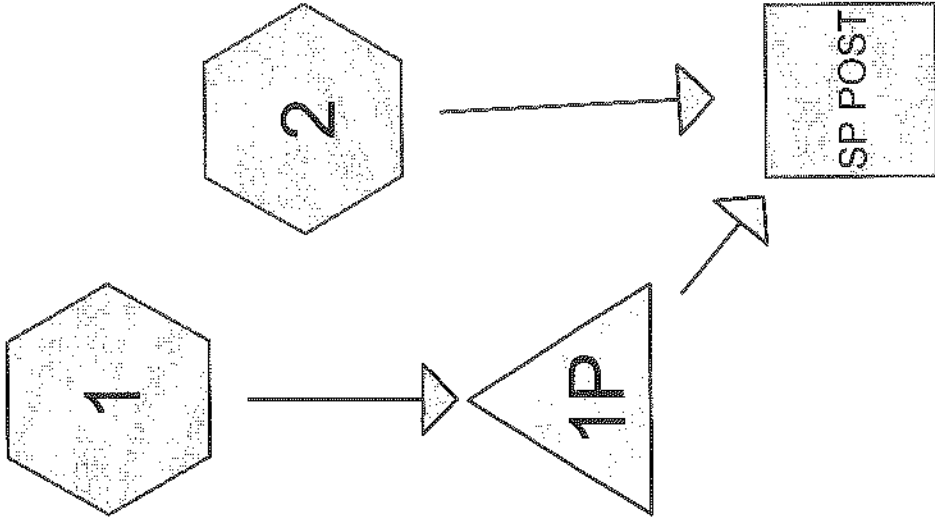
- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	56.00'	10.0" Vert. Orifice/Grate C= 0.600
2	Primary	60.35'	14.0" Vert. Orifice/Grate C= 0.600
3	Primary	62.37'	15.0' long x 15.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60			
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63			

Pond 1P: (new node)

Hydrograph Plot





Drainage Diagram for 97041PRE&POST
 Prepared by Sebago Technics, Inc. 10/15/2003
 HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

97041PRE&POST

Type III 24-hr Rainfall=5.50"

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: POST DEVELOPMENT

Tc=6.0 min CN=93 Area=4.040 ac Runoff= 20.27 cfs 1.499 af

Subcatchment 2: POND BYPASS AREA

Tc=19.1 min CN=70 Area=0.350 ac Runoff= 0.67 cfs 0.065 af

Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Tc=12.2 min CN=83 Area=4.250 ac Runoff= 14.60 cfs 1.205 af

Reach SP POST: (new node)

Inflow= 13.19 cfs 1.560 af
Outflow= 13.19 cfs 1.560 af

Reach SP PRE: (new node)

Inflow= 14.60 cfs 1.205 af
Outflow= 14.60 cfs 1.205 af

Pond 1P: (new node)

Peak Storage= 9,065 cf Inflow= 20.27 cfs 1.499 af
Primary= 12.58 cfs 1.496 af Outflow= 12.58 cfs 1.496 af

Runoff Area = 8.640 ac Volume = 2.769 af Average Depth = 3.85"

Subcatchment 1: POST DEVELOPMENT

Runoff = 20.27 cfs @ 12.09 hrs, Volume= 1.499 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.230	98	Impervious
0.810	74	>75% Grass cover, Good, HSG C
4.040	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0267	1.6		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.9		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
3.9					Direct Entry, 6.0 Minimum per TR-55
6.0	260	Total			

Subcatchment 2: POND BYPASS AREA

Runoff = 0.67 cfs @ 12.27 hrs, Volume= 0.065 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	75	0.0400	0.1		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.00"
5.7	65	0.2500	0.2		Sheet Flow, BC Woods: Light underbrush n= 0.400 P2= 3.00"
19.1	140	Total			

Subcatchment PRE: PRE DEVELOPMENT WATERSHED

Runoff = 14.60 cfs @ 12.17 hrs, Volume= 1.205 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr Rainfall=5.50"

97041PRE&POST

Type III 24-hr Rainfall=5.50"

Prepared by Sebago Technics, Inc.

Page 3

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Area (ac)	CN	Description
1.890	98	Impervious
1.690	70	Woods, Good, HSG C
0.670	74	>75% Grass cover, Good, HSG C
4.250	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	70	0.0100	0.1		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.00"
1.0	80	0.0250	1.4		Sheet Flow, BC Smooth surfaces n= 0.011 P2= 3.00"
0.8	130	0.0200	2.9		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.2	45	0.0440	3.1		Shallow Concentrated Flow, DE Grassed Waterway Kv= 15.0 fps
0.1	110	0.0800	28.4	2,723.76	Trap/Vee/Rect Channel Flow, EF Bot.W=1.00' D=6.00' Z= 2.5 '/' n= 0.030
0.1	110	0.0650	31.5	7,176.13	Trap/Vee/Rect Channel Flow, FG Bot.W=20.00' D=6.00' Z= 3.0 '/' n= 0.030
12.2	545	Total			

Reach SP POST: (new node)

Inflow = 13.19 cfs @ 12.20 hrs, Volume= 1.560 af
 Outflow = 13.19 cfs @ 12.20 hrs, Volume= 1.560 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Reach SP PRE: (new node)

Inflow = 14.60 cfs @ 12.17 hrs, Volume= 1.205 af
 Outflow = 14.60 cfs @ 12.17 hrs, Volume= 1.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: (new node)

Inflow = 20.27 cfs @ 12.09 hrs, Volume= 1.499 af
 Outflow = 12.58 cfs @ 12.20 hrs, Volume= 1.496 af, Atten= 38%, Lag= 6.5 min
 Primary = 12.58 cfs @ 12.20 hrs, Volume= 1.496 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 62.37' Storage= 9,065 cf
 Plug-Flow detention time= 8.2 min calculated for 1.496 af (100% of inflow)
 Storage and wetted areas determined by Prismatic sections

97041PRE&POST

Type III 24-hr Rainfall=5.50"

Prepared by Sebago Technics, Inc.

Page 4

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

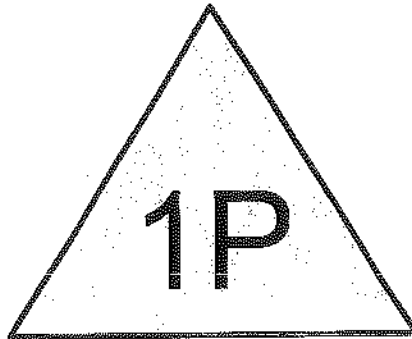
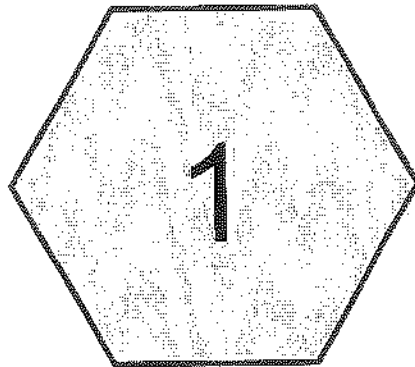
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	250	0	0
58.00	725	975	975
60.00	1,675	2,400	3,375
62.00	2,750	4,425	7,800
64.00	4,100	6,850	14,650

Primary OutFlow (Free Discharge)

- 1=Orifice/Grate
- 2=Orifice/Grate
- 3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	56.00'	10.0" Vert. Orifice/Grate C= 0.600
2	Primary	60.35'	14.0" Vert. Orifice/Grate C= 0.600
3	Primary	62.37'	15.0' long x 15.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60			
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63			

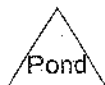
Spillway Calculations



Subcat



Reach



Pond



Link

Drainage Diagram for 97041SPILL
Prepared by Sebago Technics, Inc. 10/15/2003
HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

97041SPILL

Type III 24-hr Rainfall=5.50" SPILLWAY CALCULATION

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 000643 © 1986-2001 Applied Microcomputer Systems

10/15/2003

Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points

Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: POST DEVELOPMENT

Tc=6.0 min CN=93 Area=4.040 ac Runoff= 20.27 cfs 1.499 af

Pond 1P: (new node)

Peak Storage= 11,192 cf Inflow= 20.27 cfs 1.499 af

Primary= 19.76 cfs 1.288 af Outflow= 19.76 cfs 1.288 af

Runoff Area = 4.040 ac Volume = 1.499 af Average Depth = 4.45"

Subcatchment 1: POST DEVELOPMENT

Runoff = 20.27 cfs @ 12.09 hrs, Volume= 1.499 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
3.230	98	Impervious
0.810	74	>75% Grass cover, Good, HSG C
4.040	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	150	0.0267	1.6		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.9		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
3.9					Direct Entry, 6.0 Minimum per TR-55
6.0	260	Total			

Pond 1P: (new node)

Inflow = 20.27 cfs @ 12.09 hrs, Volume= 1.499 af
 Outflow = 19.76 cfs @ 12.11 hrs, Volume= 1.288 af, Atten= 3%, Lag= 1.2 min
 Primary = 19.76 cfs @ 12.11 hrs, Volume= 1.288 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 62.99' Storage= 11,192 cf
 Plug-Flow detention time= 81.1 min calculated for 1.285 af (86% of inflow)
 Storage and wetted areas determined by Prismatic sections

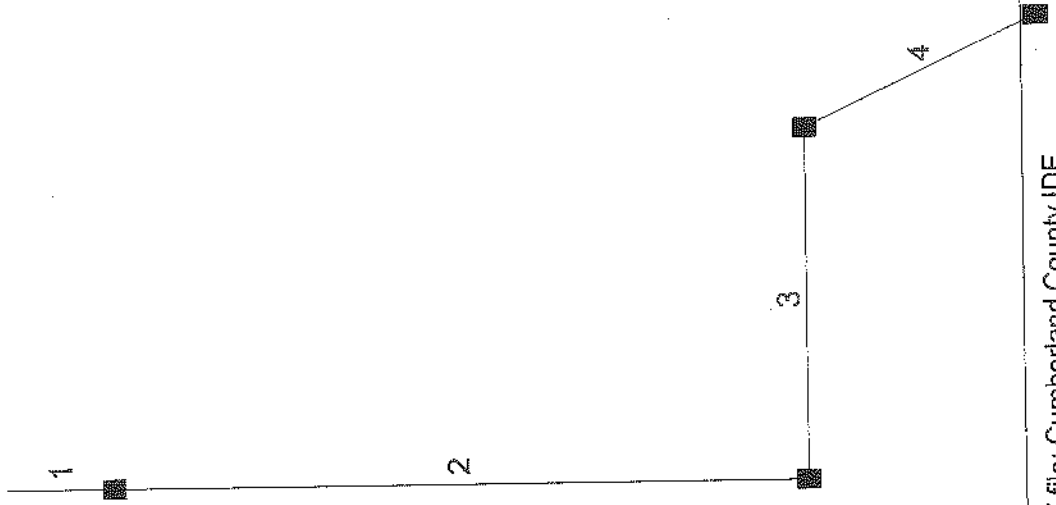
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	250	0	0
58.00	725	975	975
60.00	1,675	2,400	3,375
62.00	2,750	4,425	7,800
64.00	4,100	6,850	14,650

Primary OutFlow (Free Discharge)
 1=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	62.37'	15.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Pipe Sizing Calculations

Hydraflow Plan View



Project file: 97041hyd.stm

IDF file: Cumberland County.IDF

No. Lines: 4

10-15-2003

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		7.58	15 c	42.0	57.00	59.10	5.000	57.66	60.34	0.30	End
2		6.07	15 c	272.0	64.40	66.90	0.919	65.41	67.90	0.77	1
3		3.60	15 c	171.0	67.00	69.60	1.520	68.68	70.36	0.41	2

Project File: 97041hyd.stm

IDF File: Cumberland County; IDF Total No. Lines: 4

Run Date: 10-15-2003

NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.

Hydraflow Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check	JL coeff (K)	Minor loss (ft)			
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Sf (%)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)				EGL elev (ft)	Sf (%)	Ave Sf (%)
1	15	7.58	57.00	57.66	0.66	0.66	11.56	2.08	59.74	4.620	42.0	59.10	60.34	1.24	1.22	6.19	0.60	60.93	1.267	2.944	1.236	0.50	0.30
2	15	6.07	64.40	65.41	1.01*	1.06	5.74	0.51	65.92	0.916	272	66.90	67.90	1.00	1.05	5.76	0.52	68.42	0.923	0.920	2.502	1.50	0.77
3	15	3.60	67.00	68.68	1.25	1.23	2.94	0.13	68.81	0.312	171	69.60	70.36	0.76**	0.78	4.62	0.33	70.69	0.663	0.488	N/A	1.25	0.41

Project File: 97041hyd.stm

IDF File: Cumberland County IDF

Total number of lines: 4

Run Date: 10-15-2003

NOTES: Initial tailwater elevation = 57.65886 (ft), * Normal depth assumed, ** Critical depth assumed.

Maintenance of Stormwater Facilities Plan

MAINTENANCE PLAN OF STORMWATER MANAGEMENT FACILITIES

The owner or operator of the proposed project will be responsible for the maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book. Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5 year time span. The maintenance log book will be made available to the DEP upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

Sweeping

1. Paved surfaces shall be swept or vacuumed at least twice annually in the Spring to remove all Winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events.

Catch Basins

1. All catch basins, and any other field inlets throughout the collection system, need to be inspected on a monthly basis to assure that the inlet entry point is clear of debris and will allow the intended water entry. At that time, these will be cleared, if necessary on a yearly basis or when sediment reaches two thirds of total volume. Catch basins need to be vacuumed and cleaned of all accumulated sediment. This work must be done by a vacuum truck under contract. The removed material must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

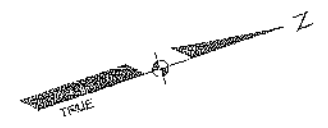
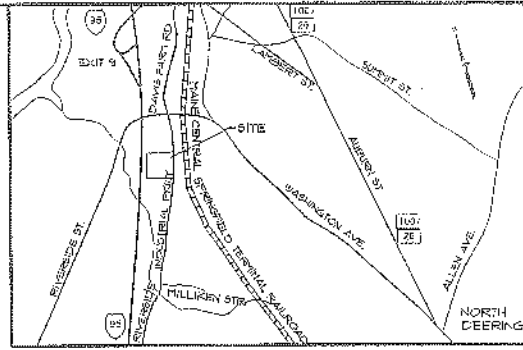
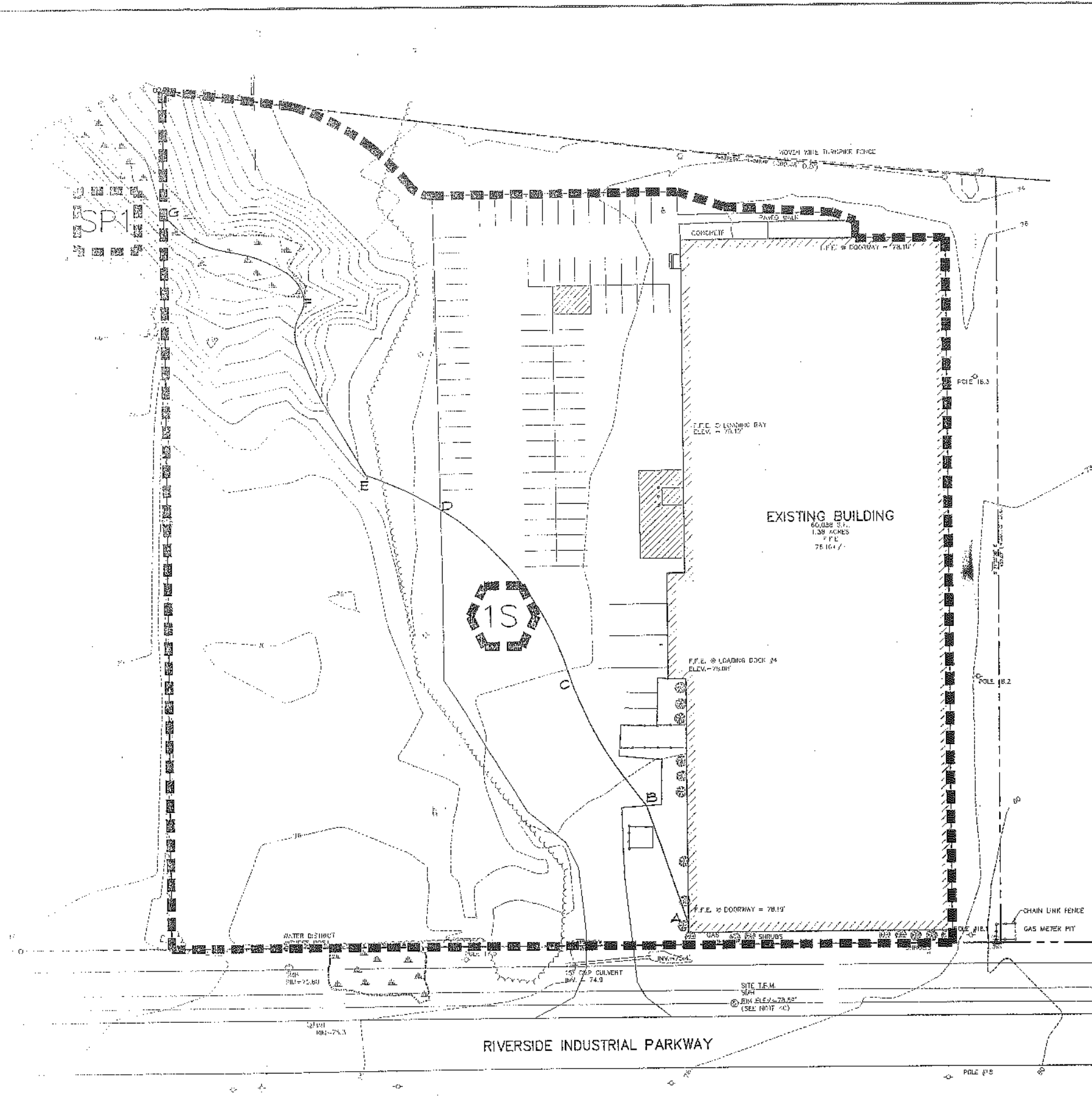
Ditches, Swales and Culverts

1. Open swales and ditches need to be inspected on a monthly basis or after a major rainfall event to assure that debris or sediments do not reduce the effectiveness of the system. Debris needs to be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the structure and proper functioning.
2. Vegetated ditches should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be repaired and revegetated.
3. Riprap ditches where stone is displaced should be replaced and chinked to assure stability. With time, riprap may need to be added. Vegetation growing through riprap should be removed on a yearly schedule.
4. If sediment in culverts or piped drainage systems exceeds 20% of the diameter of the pipe, it should be removed. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to not flush the sediments into the

retention/detention pond as it will reduce the pond's capacity and hasten the time when it must be cleaned. All pipes should be inspected on an annual basis.

Detention Ponds

1. After each significant rainfall event, or at least monthly, the detention basin will be visually inspected to assure that the outlet structure is not blocked and that no sign of erosion is apparent within the berm or riprap.
2. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the structure and proper functioning.
3. The pond will be inspected on an annual basis to assure that significant sediment accumulation has not occurred. Whenever the sediment is within three inches of the outlet invert the accumulated sediment shall be removed and disposed of properly.
4. On a semi-annual basis, remove debris from the outlets and emergency overflow channel.
5. In the Winter, cut above ice level and remove vegetation in the pond.
6. Remove sediment if it occupies 15% of the pond volume.

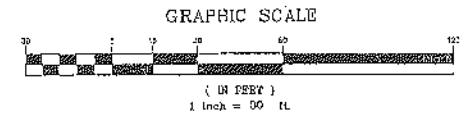


LEGEND

EXISTING	DESCRIPTION	PROPOSED
---	PROPERTY/ROW	---
---	EASEMENT	---
---	IRON PIPE/ROD	---
CI/LI	CURVE/LINE NO.	CI/LI
---	BUILDING	---
---	WETLANDS	---
---	EDGE WETLAND	---
---	EDGE PAVEMENT	---
---	TREELINE	---
---	GAS	---
---	WATER	---
---	SEWER	---
---	LIGHT POLE	---
---	UTILITY POLE	---
---	HYDRANT	---
---	MANHOLE	---
---	CULVERT	---
---	BARB WIRE FENCE	---
---	SHRUB	---
---	CONTOURS	---

LEGEND

---	WATERSHED BOUNDARY
---	SUBCATCHMENT LABEL
---	THE OF CONCENTRATION PATH
---	ELOYD POINT



REV.	BY	DATE	STATUS

Sebago Technics
 Engineering Services You Can Build On
 100 Chestnut Street
 Westbrook, ME 04092-1308
 Tel: (207) 898-0277

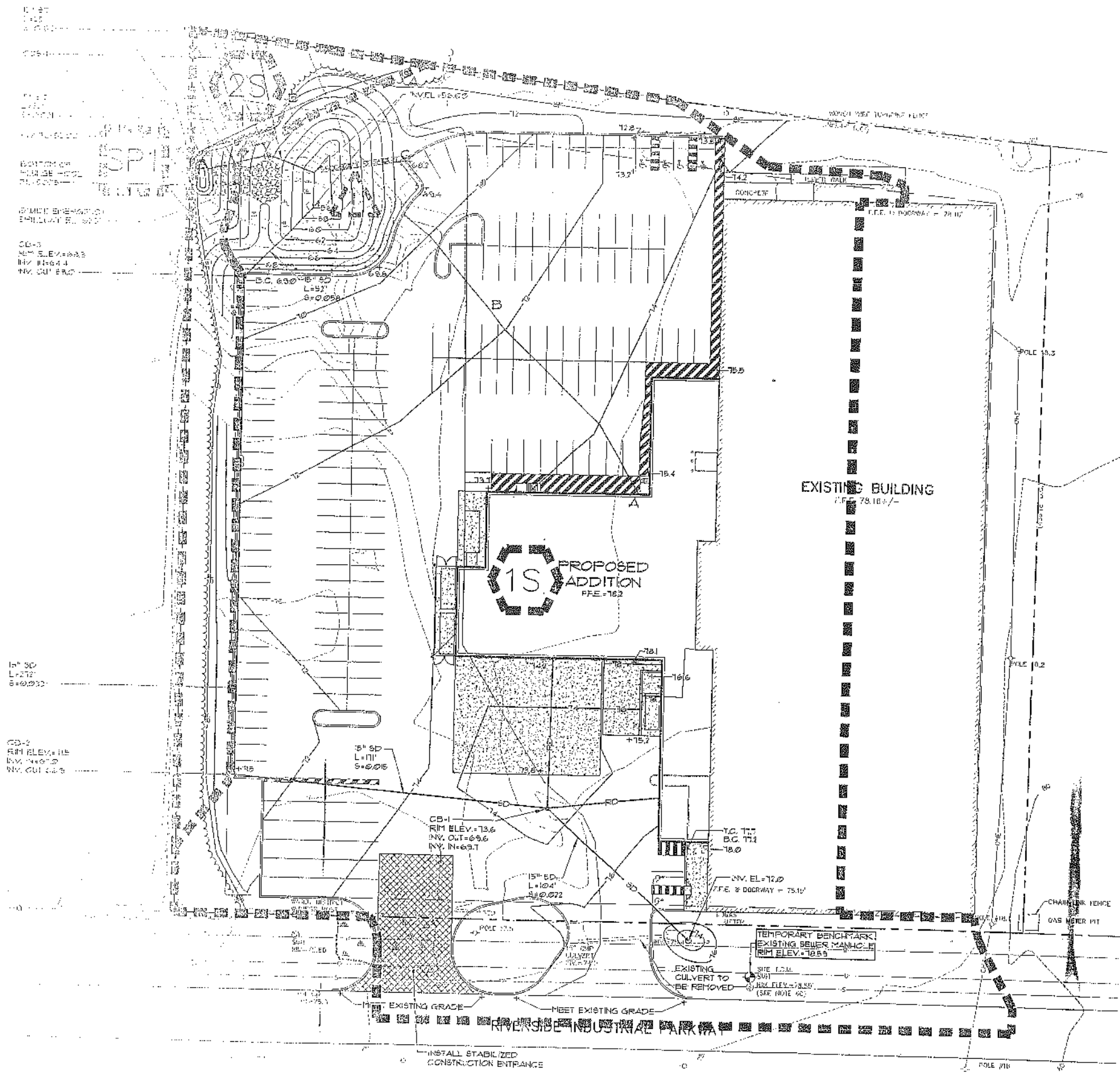
PROJECT NO. FIELD BOOK DESIGN | CHECK DRAWN
 97041 507 JRP ASS

PRE DEVELOPMENT DRAINAGE MAP
 OF:
PARADIGM WINDOWS SOLUTIONS
 400 RIVERSIDE STREET
 PORTLAND, MAINE 04103
 FOR:
PARADIGM WINDOWS SOLUTIONS
 400 RIVERSIDE STREET
 PORTLAND, MAINE 04103

DATE	SCALE
9/20/03	1" = 30'

SHEET 1 OF 1

97041.PRF

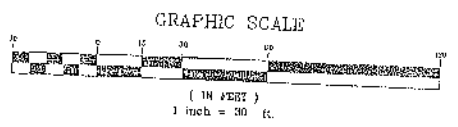


LEGEND

EXISTING	DESCRIPTION	PROPOSED
---	PROPERTY/ROW	---
---	SETBACK	---
---	BASEMENT	---
---	CENTERLINE	---
---	MONUMENT	---
---	IRON PIPE/ROD	---
---	BUILDING	---
---	WETLANDS	---
---	EDGE WETLAND	---
---	SIGN	---
---	EDGE PAVEMENT	---
---	CURBLINE	---
---	TREELINE	---
---	CONTOURS	---
---	GAS	---
---	WATER	---
---	SEWER	---
---	STORM DRAIN	---
---	OVERHEAD ELEC. & TEL	---
---	LIGHT POLE	---
---	UTILITY POLE	---
---	HYDRANT	---
---	CATCH BASIN	---
---	MANHOLE	---
---	CULVERT	---
---	SPOT GRADE	---
---	CHAIN LINK FENCE	---
---	BARB WIRE FENCE	---
---	STOCKADE FENCE	---
---	DECIDUOUS TREE	---
---	CONIFEROUS TREE	---
---	SILT FENCE	---
---	GUARDRAIL	---
---	BENCHMARK	---
---	RIFFRAP	---

LEGEND

---	WATERSHED BOUNDARY
---	SUBCATCHMENT LABEL
---	TIME OF CONCENTRATION PATH
---	STUDY POINT
---	POND LABEL



REV.	BY	DATE	STATUS

THIS PLAN SHALL NOT BE APPROVED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, ADDITIONS OR DELETIONS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

Sebago Technics
 Engineering Reporting You Can Build On
 1000 Depot Street
 Lewiston, ME 04240
 Tel: (207) 808-2827

PROJECT NO: 97041
 FIELD BOOK: 507
 DESIGN: JRP
 CHECK: JRP
 DRAWN: ASD

POST DEVELOPMENT WATERSHED MAP
 OF: PARADIGM WINDOWS SOLUTIONS
 400 RIVERSIDE STREET
 LEWISTON, ME 04240
 PARADIGM WINDOWS SOLUTIONS
 400 RIVERSIDE STREET
 LEWISTON, MAINE 04240