Listed below are key characters (in bold) for searching within this file.

Hold down the control key and select the "f" key. Enter either a key character from the list below or document name and select enter for a list of documents containing the search word you entered.

APL – all documents behind this target sheet pertain to the original application submitted by the Applicant.

REVIEW – all documents behind this target sheet pertain to those documents submitted to and from staff as part of the project review.

PBM1 – all documents behind this target sheet are any Planning Board memos with attachments that went to the Board.

PBR1 - all documents behind this target sheet are any Planning Board reports with attachments that went to the Board.

CC1 - all documents behind this target sheet are any City Council memos/reports that went to the City Council.

DRC1 - all documents behind this target sheet are those pertaining to the post review of the project by the Development Review Coordinator.

MISC1 - all documents behind this target sheet are those that may not be included in any of the categories above.

APL

CITY OF PORTLAND, MAINE
PLANNING BOARD

November 10, 1999

Mr. Scott McMullin
P.O. Box 15400
Portland, ME 04112

RE: 4-Lot Residential Subdivision, 696 Allen Avenue

Dear Mr. McMullin:

On November 9, 1999 the Portland Planning Board voted 5-0 (Malone and Krichels absent) on the following motions regarding the four-lot residential subdivision located at 696 Allen Avenue:

1. the Portland Planning Board voted to deny the waiver of curb and sidewalk.

2. That the plan was in conformance with the Subdivision Review Ordinance of the City Land Use Code with the following condition(s):

   i. that the applicant provide a letter from Portland Water District and Portland Sewer Department stating that there is water and sewer capacity in this area.

   ii. that the applicant submit to Planning staff executed copies of the common driveway, drainage, and utility easements and a drainage maintenance agreement including maintenance and enforcement rights to City in the delineated wetland area prior to issuance of building permit.

   iii. that the applicant revise the subdivision plan to show a fire hydrant within 800 ft. of travel.

   iv. that the utilities be located underground.

   v. that a note be added to the recording plat stating that there will no disturbance of the wetland area.

   vi. that language be added to the individual deeds restricting any filling of the wetland area.

   vii. applicant shall submit individual grading plans for each lot including flagging of wetland area.

The approval is based on the submitted plan and the findings related to site plan review standards as contained in Planning Board #61-99, which is attached.

cc: Joseph E. Gray, Jr., Director of Planning and Urban Development
Alexander Jaegerman, Chief Planner
Kandice Talbot, Planner
P. Samuel Hoffses, Building Inspector
Marge Schmuckal, Zoning Administrator
Tony Lombardo, Project Engineer
Development Review Coordinator
William Bray, Director of Public Works
Jeff Tarling, City Arborist
Penny Littell, Associate Corporation Counsel
Lt. Gaylen McDougall, Fire Prevention
Mary Gresik, Building Permit Secretary
Kathleen Brown, Director of Economic Development
Susan Doughty, Assessor's Office
Approval Letter File

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

19990089
I. D. Number

larry walden
Applicant

07/08/1999
Application Date

P.o. Box 15400, Portland, ME 04112
Applicant's Mailing Address

Allen Ave 696 McMullin Subd
Project Name/Description

Pinkham & Greer
Consultant/Agent

696 - 696 Allen Ave
Address of Proposed Site

828-4005 **871-0585**
Applicant or Agent Daytime Telephone, Fax

398 A013
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	Zoning
	1.73	**R3 & R2**

Check Review Required:

☑ Site Plan (major/minor)
☑ Subdivision # of lots **4**
☐ 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 Subdivisio **$600.00** Engineer Review **$460.00** Date **07/08/1999**

Planning Approval Status:

Reviewer **Kandi Talbot**

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

Approval Date **11/09/1999** Approval Expiration **11/09/2000** Extension to ☑ Additional Sheets Attached

☐ OK to Issue Building Permi _____ 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	**11/24/1999** date	**$6,550.00** amount	**04/16/2001** expiration date
☑ Inspection Fee Paid	**11/24/1999** date	**$111.35** amount	
☐ Building Permit Issue	date		
☑ Performance Guarantee Reduced	**06/20/2000** date	**$655.00** remaining balance	**Steve Bushey** 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
D.R.C. Copy

19990089
I. D. Number

larry walden
Applicant

07/08/1999
Application Date

P.o. Box 15400, Portland, ME 04112
Applicant's Mailing Address

Allen Ave 696 McMullin Subd
Project Name/Description

Pinkham & Greer
Consultant/Agent

696 - 696 Allen Ave
Address of Proposed Site

828-4005 **871-0585**
Applicant or Agent Daytime Telephone, Fax

398 A013
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

1.73
Acreage of Site

R3 & R2
Zoning

Check Review Required:

☑ Site Plan (major/minor)
☑ Subdivision # of lots **4**
☐ 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 **$600.00** Engineer Revie **$460.00** Date: **07/08/1999**

DRC Approval Status:

Reviewer **Steve Bushey**

☐ **Approved**
☑ **Approved w/Conditions** see attache
☐ **Denied**

Approval Date **11/09/1999** Approval Expiration **11/09/2000** Extension to ☑ Additional Sheets Attached

☐ Condition Compliance _____ 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	**11/24/1999** date	**$6,550.00** amount	**04/16/2001** expiration date
☑ Inspection Fee Paid	**11/24/1999** date	**$111.35** amount	
☐ Building Permit	date		
☑ Performance Guarantee Reduced	**06/20/2000** date	**$655.00** remaining balance	**Steve Bushey** 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

19990089
I. D. Number

larry walden
Applicant

07/08/1999
Application Date

P.o. Box 15400, Portland, ME 04112
Applicant's Mailing Address

Allen Ave 696 McMullin Subd
Project Name/Description

Pinkham & Greer
Consultant/Agent

696 - 696 Allen Ave
Address of Proposed Site

828-4005 **871-0585**
Applicant or Agent Daytime Telephone, Fax

398 A013
Assessor's Reference: Chart-Block-Lot

DRC Conditions of Approval

see Planning's conditions

Planning Conditions of Approval

i. that the applicant provide a letter from Portland Water District and Portland Sewer Department stating that there is water and sewer capacity in this area.

ii. that the applicant submit to Planning staff executed copies of the common driveway, drainage and utility easements and a drainage maintenance agreement including maintenance and enforcement rights to City in the delineated wetland prior to issuance of a building permit.

iii. that the applicant revise the subdivision plan to show a fire hydrant within 800 ft. of travel.

iv. that the utilties be located underground

v. that a note be added to the recording plat stating that there will be no disturbance of the wetland area

vi. that language be added to the individual deeds restricting any filling of the wetland area.

vii. the applicant shall submit individual grading plans for each lot including flagging of wetland area.

Inspections Conditions of Approval

Fire Conditions of Approval

Applicant must show hydrant within 800' path of travel.

REVIEW

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)
200	110.0	113.5	111.8	.26	17.12	15.27			11	9.0

SUBCATCHMENT 1 AREA NW OF PROJECT

PEAK= 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF

ACRES	CN	
.50	75	HYD B 1/4 AC HOUSE LOTS
2.60	58	HYD B WOODS/GRASS GOOD COND.
.20	83	HYD C 1/4 AC HOUSE LOTS
1.34	72	HYD C WOODS/GRASS GOOD COND.
4.64	65	

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	NEAR SUMMIT ST.	8.6
Grass: Short n=.15 L=100' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	FOLLOWING SHEET FLOW	6.9
Woodland Kv=5 L=360' s=.03 '/' V=.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	STEEPER SLOPED AREAS	2.0
Woodland Kv=5 L=190' s=.1 '/' V=1.58 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	FLAT AREA BEHIND HOUSES	4.9
Short Grass Pasture Kv=7 L=290' s=.02 '/' V=.99 fps		
	Total Length= 940 ft Total Tc=	22.4

SUBCATCHMENT 2 SW AREA CORNER SUMMIT/ALLEN AVE

PEAK= 8.27 CFS @ 12.34 HRS, VOLUME= .92 AF

ACRES	CN	
.75	75	HYD B 1/4 AC HOUSE LOTS
2.85	58	HYD B WOODS/GRASS GOOD COND.
.20	87	HYD D 1/4 AC HOUSE LOTS
1.60	80	HYD D LAWNS GOOD COND.
5.40	68	

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	BACK OF HOUSES	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	9.4
Woodland Kv=5 L=400' s=.02 '/' V=.71 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	ROAD SHOULDER	1.2
Unpaved Kv=16.1345 L=160' s=.02 '/' V=2.28 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	ROAD DITCH	2.5
Grassed Waterway Kv=15 L=315' s=.02 '/' V=2.12 fps		
	Total Length= 975 ft Total Tc=	26.5

SUBCATCHMENT 3 EAST OF PROJECT

PEAK= 3.28 CFS @ 12.60 HRS, VOLUME= .47 AF

ACRES	CN	
.75	83	HYD C 1/4 ACRE HOUSE LOTS
1.35	72	HYD C WOODS/GRASS GOOD COND.
2.10	76	

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	COR ROARING BROOK	38.6
Woods: Dense underbrush n=.8 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	46.8

REACH 100 GRASSED DITCH ON EAST SIDE OF PROJECT

Qin = 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF
Qout= 6.36 CFS @ 12.43 HRS, VOLUME= .70 AF, ATTEN= 4%, LAG= 8.5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.00	0.00	0.00
.10	.43	.16
.20	.92	.53
.30	1.47	1.08
.43	2.28	2.06
.60	3.49	3.78
.80	5.14	6.52
1.00	7.03	10.07

4' x 1' CHANNEL
SIDE SLOPE= .33 '/'
n= .08
LENGTH= 340 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .78 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = 4.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 200 CULVERT AND CB AT ALLEN AVE.

Qin = 17.12 CFS @ 12.41 HRS, VOLUME= 2.09 AF
Qout= 15.27 CFS @ 12.56 HRS, VOLUME= 2.05 AF, ATTEN= 11%, LAG= 9.0 MIN

ELEVATION (FT)	AREA (AC)	INC.STOR (AF)	CUM.STOR (AF)
110.0	.10	0.00	0.00
112.0	.20	.30	.30
114.0	.50	.70	1.00

STOR-IND METHOD
PEAK STORAGE = .26 AF
PEAK ELEVATION= 111.8 FT
FLOOD ELEVATION= 113.5 FT
START ELEVATION= 110.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 22.4 MIN (2.05 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**30" CULVERT** n=.01 L=45' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.5'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	4.71	12.30	.51
2	5.40	26.5	14%75 53%58 4%87 30%80	68	-	6.03	12.35	.68
3	2.10	46.8	36%83 64%72	76	-	2.54	12.61	.37

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.1	4.9	4.47

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)
200	110.0	113.5	111.4	.22	12.48	10.92			13	10.4

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	1.30	12.36	.17
2	5.40	26.5	14%75 53%58 4%87 30%80	68	-	1.95	12.40	.25
3	2.10	46.8	36%83 64%72	76	-	1.07	12.64	.16

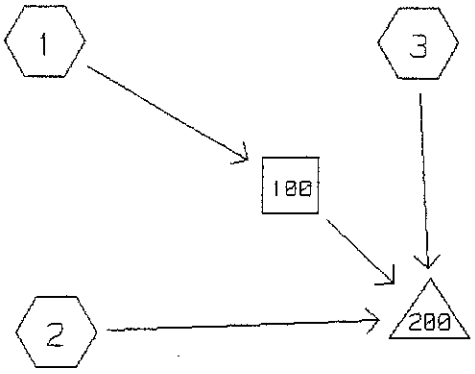
REACH ROUTING BY STOR-IND+TRANS METHOD

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	.8	7.4	1.21

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)
200	110.0	113.5	110.7	.10	3.96	3.06			23	16.4

WATERSHED ROUTING



SUBCATCHMENT REACH POND LINK

SUBCATCHMENT 1	= AREA NW OF PROJECT	-> REACH 100
SUBCATCHMENT 2	= SW AREA CORNER SUMMIT/ALLEN AVE	-> POND 200
SUBCATCHMENT 3	= EAST OF PROJECT	-> POND 200
REACH 100	= GRASSED DITCH ON EAST SIDE OF PROJECT	-> POND 200
POND 200	= CULVERT AND CB AT ALLEN AVE.	->

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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	6.63	12.29	.70
2	5.40	26.5	14%75 53%58 15%87 19%80	69	-	8.62	12.34	.96
3	2.10	46.8	36%83 64%72	76	-	3.28	12.60	.47

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.3	4.5	6.36

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)
200	110.0	113.5	111.8	.27	17.43	15.57			11	8.9

SUBCATCHMENT 1 AREA NW OF PROJECT

PEAK= 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF

ACRES	CN	
.50	75	HYD B 1/4 AC HOUSE LOTS
2.60	58	HYD B WOODS/GRASS GOOD COND.
.20	83	HYD C 1/4 AC HOUSE LOTS
1.34	72	HYD C WOODS/GRASS GOOD COND.
4.64	65	

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 Grass: Short n=.15 L=100' P2=3 in s=.03 '/'	NEAR SUMMIT ST.	8.6
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=360' s=.03 '/' V=.87 fps	FOLLOWING SHEET FLOW	6.9
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=190' s=.1 '/' V=1.58 fps	STEEPER SLOPED AREA	2.0
SHALLOW CONCENTRATED/UPLAND FLOW Short Grass Pasture Kv=7 L=290' s=.02 '/' V=.99 fps	FLAT AREA BEHIND HOUSES	4.9
	Total Length= 940 ft Total Tc=	22.4

SUBCATCHMENT 2 SW AREA CORNER SUMMIT/ALLEN AVE

PEAK= 8.62 CFS @ 12.34 HRS, VOLUME= .96 AF

ACRES	CN	
.75	75	HYD B 1/4 AC HOUSE LOTS
2.85	58	HYD B WOODS/GRASS GOOD COND.
.80	87	HYD D 1/4 AC HOUSE LOTS
1.00	80	HYD D LAWNS GOOD COND.
5.40	69	

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 Grass: Short n=.15 L=100' P2=3 in s=.01 '/'	BACK OF HOUSES	13.4
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=400' s=.02 '/' V=.71 fps	AFTER SHEET FLOW	9.4
SHALLOW CONCENTRATED/UPLAND FLOW Unpaved Kv=16.1345 L=160' s=.02 '/' V=2.28 fps	ROAD SHOULDER	1.2
SHALLOW CONCENTRATED/UPLAND FLOW Grassed Waterway Kv=15 L=315' s=.02 '/' V=2.12 fps	ROAD DITCH	2.5
	Total Length= 975 ft Total Tc=	26.5

SUBCATCHMENT 3 EAST OF PROJECT

PEAK= 3.28 CFS @ 12.60 HRS, VOLUME= .47 AF

ACRES	CN	
.75	83	HYD C 1/4 ACRE HOUSE LOTS
1.35	72	HYD C WOODS/GRASS GOOD COND.
2.10	76	

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	COR ROARING BROOK	38.6
Woods: Dense underbrush n=.8 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	46.8

REACH 100 GRASSED DITCH ON EAST SIDE OF PROJECT

Qin = 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF
Qout= 6.36 CFS @ 12.43 HRS, VOLUME= .70 AF, ATTEN= 4%, LAG= 8.5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.00	0.00	0.00
.10	.43	.16
.20	.92	.53
.30	1.47	1.08
.43	2.28	2.06
.60	3.49	3.78
.80	5.14	6.52
1.00	7.03	10.07

4' x 1' CHANNEL
SIDE SLOPE= .33 '/'
n= .08
LENGTH= 340 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .78 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = 4.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 200 CULVERT AND CB AT ALLEN AVE.

Qin = 17.43 CFS @ 12.41 HRS, VOLUME= 2.13 AF
Qout= 15.57 CFS @ 12.56 HRS, VOLUME= 2.08 AF, ATTEN= 11%, LAG= 8.9 MIN

ELEVATION (FT)	AREA (AC)	INC.STOR (AF)	CUM.STOR (AF)
110.0	.10	0.00	0.00
112.0	.20	.30	.30
114.0	.50	.70	1.00

STOR-IND METHOD
PEAK STORAGE = .27 AF
PEAK ELEVATION= 111.8 FT
FLOOD ELEVATION= 113.5 FT
START ELEVATION= 110.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 22 MIN (2.06 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**30" CULVERT** n=.01 L=45' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.5'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	4.71	12.30	.51
2	5.40	26.5	14%75 53%58 15%87 19%80	69	-	6.34	12.35	.71
3	2.10	46.8	36%83 64%72	76	-	2.54	12.61	.37

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.1	4.9	4.47

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)
200	110.0	113.5	111.5	.22	12.75	11.18			12	10.3

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 IN, SCS U.H.

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

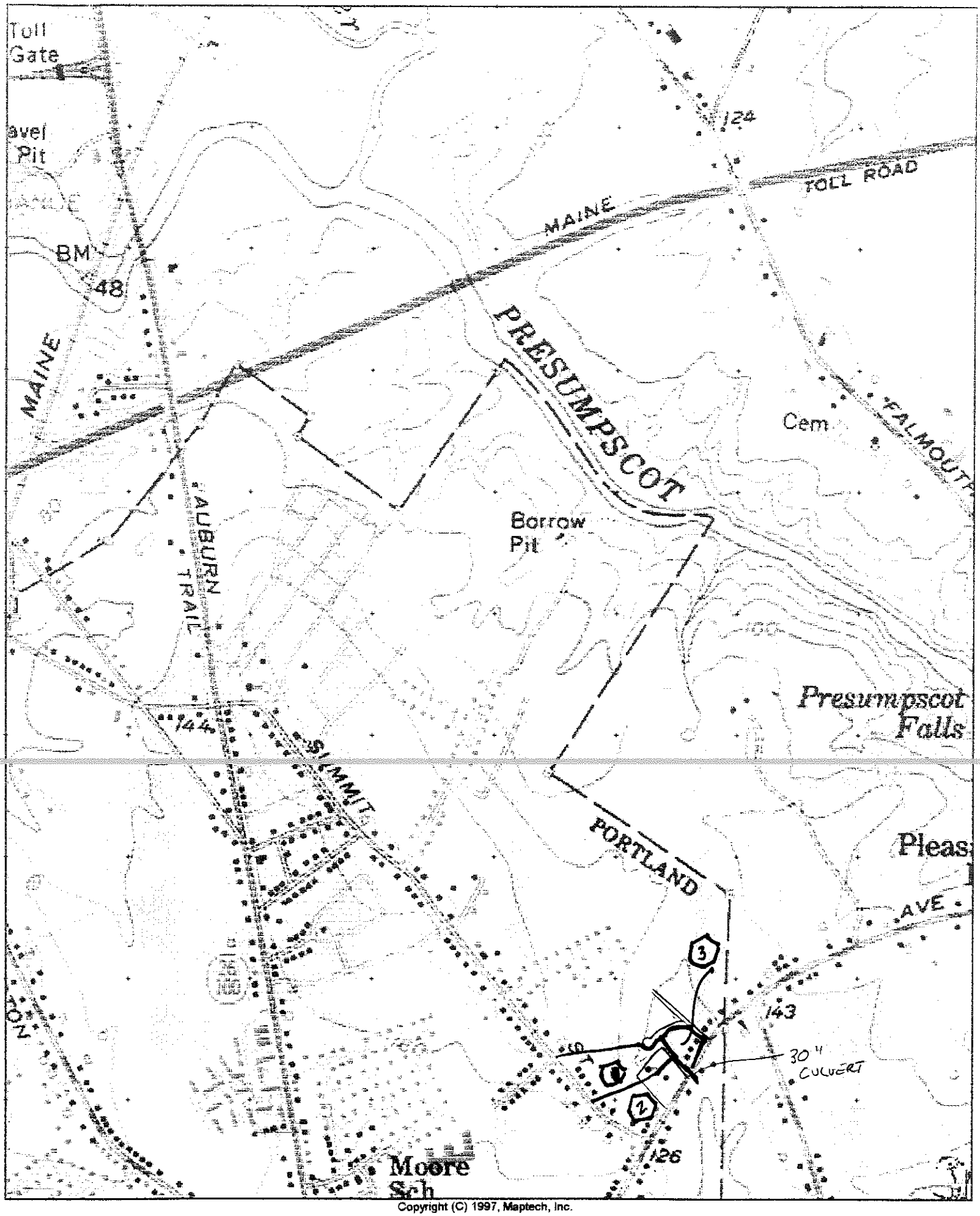
SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	4.64	22.4	11%75 56%58 4%83 29%72	65	-	1.30	12.36	.17
2	5.40	26.5	14%75 53%58 15%87 19%80	69	-	2.14	12.40	.27
3	2.10	46.8	36%83 64%72	76	-	1.07	12.64	.16

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	.8	7.4	1.21

POND ROUTING BY STOR-IND METHOD

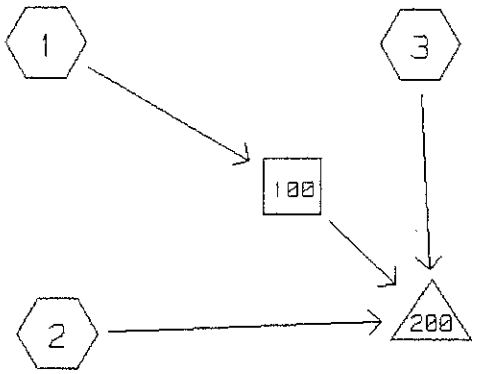
POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	---Qout--- ATTEN. (%)	---Qout--- LAG (MIN)
200	110.0	113.5	110.7	.10	4.10	3.20			22	16.0



1" = 100'

SCOTT McMULLEN

WATERSHED ROUTING



SUBCATCHMENT REACH POND LINK

SUBCATCHMENT 1	= AREA NW OF PROJECT	-> REACH 100
SUBCATCHMENT 2	= SW AREA CORNER SUMMIT/ALLEN AVE	-> POND 200
SUBCATCHMENT 3	= EAST OF PROJECT	-> POND 200
REACH 100	= GRASSED DITCH ON EAST SIDE OF PROJECT	-> POND 200
POND 200	= CULVERT AND CB AT ALLEN AVE.	->

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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	6.63	12.29	.70
2	5.40	26.5	14%75 53%58 4%87 30%80	68	-	8.27	12.34	.92
3	2.10	46.8	36%83 64%72	76	-	3.28	12.60	.47

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.3	4.5	6.36

PUBLIC WORKS ENGINEERING MEMORANDUM

To: *Rick Knowland, Senior Planner*
From: *Anthony Lombardo, P.E., Project Engineer*
Date: *July 19, 1999*
Subject: *McMullin Subdivision....696 Allen Ave.*

The following comments were generated during Public Works Engineering review of proposed driveway entrance. The plans and application were dated July 1999.

- *The Sudivision Plan must show the proposed access to each individual lot. It appears that access to proposed Lot 2 will require some type of driveway easement.*
- *The applicant needs to specify how utilities will service each of the proposed lots.*
- *A Standard Boundary Survey needs to accompany this application.*
- *A detailed erosion and sediment control plan needs to be included as part of the plan set.*
- *Construction details for driveway entrances, culvert installation, etc. will need to be included in the plans.*
- *Public Works is willing to agree to a waiver of sidewalk and curb in lieu of the applicant's financial contribution to future construction of these amenities on Allen Ave. The total amount of this contribution, however, would need to be closer to $10,000 (includes cost of straight granite curb, tipdown curb at driveway entrances, 5' wide paved sidewalk construction and revegetation of disturbed areas). The applicant proposes $7,500, which is not enough to complete the work.*

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

TO: Alex Jaegerman, Chief Planner

FROM: Jim Wendel, P.E., Development Review Coordinator

DATE: August 18, 1997

RE: Pineloch Subdivision
6 Deepwoods Drive (lot 6)
Drainage Problem

As requested, a report of analysis and findings with respect to the drainage problems reported by Mrs. Gina Kelley at 6 Deepwoods Drive has been prepared. The investigation included a site visit on four occasions, research in Public Works for copies of design plans for the project and discussions with Mrs. Kelley. Two of the site visits occurred when runoff could be observed.

The Kelley family applied for a permit to construct a single family home on March 31, 1995 and received a site plan approval April 13, 1995. The house was constructed and the Kelleys moved into the house in mid September of 1995.

In March of 1997 Mrs. Kelley reported to the planning department that landscape work recently completed by their neighbor, the Humeniuks in lot 7, created a drainage problem on their property. Mrs. Kelley also made reference to a possible drainage easement somewhere in the area of the property. She asked the City to investigate the issue. The results of our investigation are presented below.

SOILS

A review of the medium intensity soil survey indicates the site is at the lower elevation of mapped Deerfield Series and near the soil boundary line with the Whately Series. The Deerfield Series consist of deep, moderately well drained, nearly level to gently sloping, coarse-textured soils. These soils are formed in sands of glacial outwash origin. The water table is at a depth of 1' to 2-1/2' in spring and during periods of heavy precipitation. Permeability is very rapid, but the seasonal high water table affects internal drainage for critical periods. These soils have a low available water capacity. Runoff is slow. The Whately Series consist of deep, nearly level, very poorly drained soils. These soils formed in moderately coarse textured sediment of glaciofluvial origin over fine-textured sediment of marine and lacustrine origin. They are in depressions in the coastal areas. The water table is at a depth of 1' throughout the year. The permeability is

moderate to moderately rapid above the fine-textured material and very slow within it. Runoff is very slow and the available water capacity is high. This soil is wet throughout the year, and it receives large quantities of runoff from the surrounding soils when it rains.

TOPGRAPHY

The topography of the Kelley's lot slopes from the right back property corner towards the left common lot sideline with the Humeniuks and the street line. There is an approximate elevation difference of 12' to 15' across the property to the street. The subdivision is located on the lower northeasterly side of a hill that has an approximate elevation change from the Kelley's property to Summit Street of 60'. This is based on the 7.5 minute series USGS map of Portland. The peak of the hill is higher and in the northwest direction along Summit Street. The topography in the rear abutter's land slopes upward and has two naturally defined drainage courses. One of them drains into the Kelleys lot. The entry points for these drainage courses are at the left and right rear corners of the Kelleys property. The right drainage course is much more significant than the left one.

EVALUATION

The specific item of the site landscape construction that initiated Mrs. Kelley's complaint was the construction of an approximately 2 foot high berm along the common property line. She was concerned with the erosion of the side yard lawn and the possible damage to their 24-30 inch high stonewall at the street line by the runoff. The berm contains and re-directs the runoff along the left side yard of the Kelley's lot to the street. Before the berm was constructed the runoff from the Kelley's property used to flow into the Humeniuk's property near the back line of the Kelley's house.

The first visit was in late March of this year shortly after the complaint was received. At that time their was significant snow cover in shaded areas and the snow was melting. The snow cover extended from the abutting wooded back lot to within approximately 8 feet of the back of the house and partially along the left side property line. The runoff was entering the Kelley's property across the rear lot line near the right side property pin and from under the snow cover. The flow traversed diagonally across the whole back yard to the rear corner of the garage where it was directed along the left side yard by the berm, over the stonewall and into a catch basin system in the street that was 60 feet away. The ground was saturated.

The magnitude of the problem observed in the first visit can be described as follows. In the back yard the width of flow was approximately 8 feet wide by 1 inch deep. Along the left side yard there is a well defined vee-ditch created by the berm and the sloping lawn perpendicular to the garage. This flow width was approximately 2 feet and the depth 2-3 inches. The flow into the cul-de-sac was significant and is undesireable for flow to discharge over a sidewalk and onto a

street. The gutter flow width exceeded the width of the first catch basin grate such that some of the flow continued down Deepwoods Drive to the next catch basin. The flow over the stonewall could be characterized as a water fall that you might see in a small mountain brook during spring. Mrs. Kelley indicated that the flow had been running for days.

The second visit was at the end of the day in late April after a day of prolonged rain. The rate of rainfall varied from light to heavy over the course of the day. By this time all snow cover had melted. During this visit the runoff through the Kelley's property was more significant. In addition to the site conditions described above for the first site visit,without the snow cover, there was flow entering the Kelley's lot from the abutter to the right. This flow entered the abutter's property, lot 5, on the right from their back property line as well as from the common corner with the Kelley's. From those separate points of entry they combined at the side property line and flowed within the Kelley's right side yard into the front yard and onto the street. The shape of the flowing water from this area was approximately 3 feet wide by 1-1/2 inches deep. Despite the fully grassed lawn on the properties, erosion of the topsoil was occurring. The erosion in a portion of the front yard was extensive due to the steep grade to the street.

In my conversations with Mrs. Kelley, she indicated their was one other time when the runoff damaged the property. This occurrence was shortly after the drive was base paved. The storm was large enough that a significant area of the driveway gravel was undermined. I do not know when that event occurred.

A review of the reference plans, including the signed subdivision plat, does show the existence of a 20' drainage easement near the Kelley's property. A copy of the drainage easement outlining the rights and ownership of the easement was not obtained. A review of the road design plans required that a shallow swale be constructed within the 20' easement behind lots 1 through 5. During one of the visits to the site the status of the drainage easement was investigated. The easement area contains trees, play gyms and wood piles. The shallow swale was not constructed. See attached copy of a portion of the subdivision plat.

CONCLUSIONS

Based on the site visits, obtained documentation and discussions with Mrs. Kelley the following conclusions can be made:

1. Even before the construction of the berm the Kelley's were already concerned about a perceived drainage problem in their back yard. The construction of the berm likely added to the drainage problem the Kelleys felt they already had and pushed them to take some action. Even though the construction of the berm initiated the complaint, it is not the fundamental problem.

2. There is a significant drainage problem for the Kelleys which has a significant negative impact on their ability to use the property.

3. The drainage problem is intermittent in nature and a result of the location of the site, the topography and the soils. It appears that in this area the subsurface drainage flow from the Deerfield Series breaks to the surface to flow overland. It is an intermittent problem because it is dependent on the water table at a particular time, the time of year and the amount of rainfall.

4. The engineer of record for the project in 1979 recognized a need for surface drainage control within the site in the form of a shallow swale in a drainage easement behind lots 1 through 5.

5. Construction of the swale behind lots 1 through 5 would not solve the Kelley's problem. The Kelley's property was not intended to benefit from the construction of the swale. The flow of runoff into their property is outside and downgradient of the easement. However if the swale had been constructed it would have provided an opportunity for a relatively unobtrusive and inexpensive solution to the problem (installation of a storm drain pipe from the Kelley's property to the drainage easement behind lots 1-5). Other solutions providing a direct drainage system to Deepwoods Drive will likely be more expensive.

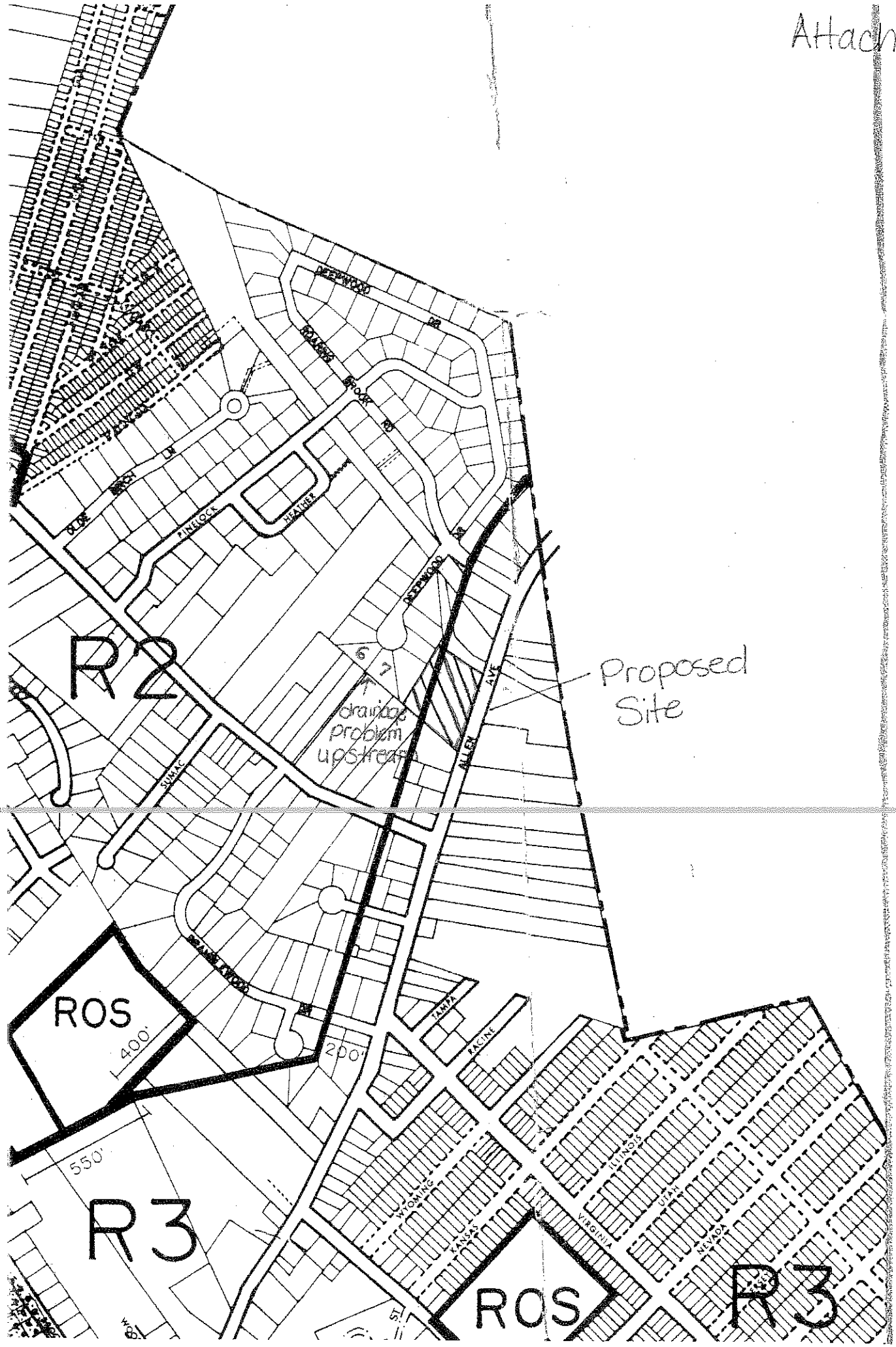
6. The approved site plan for the Kelleys required the construction of swales along the property lines with lots 5 and 7. Providing a swale is associated with a percieved need to control and channel runoff. However it is not clear that at the time of the requirement the magnitude of the volume of runoff was understood.

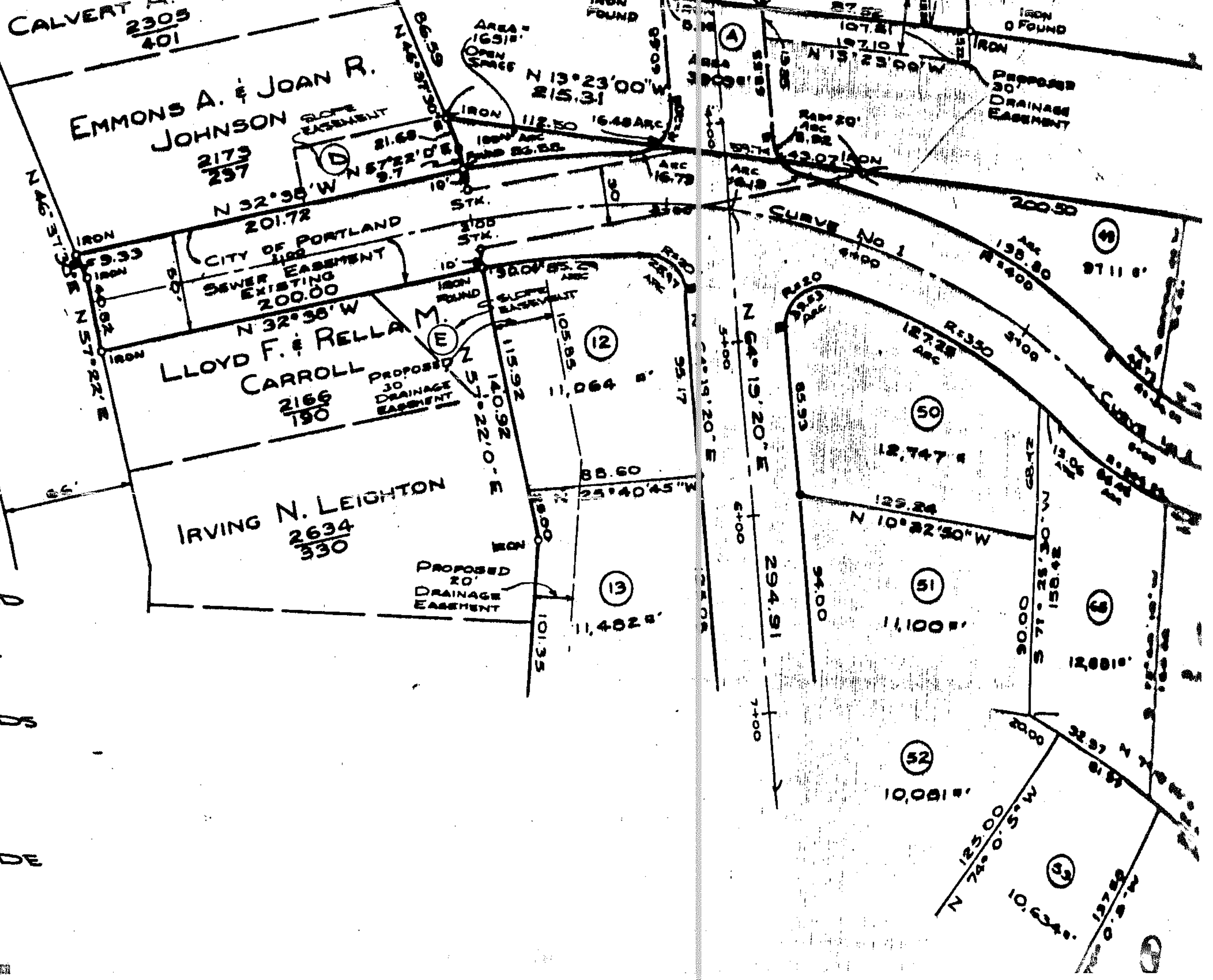
Should you have any questions, please call.

c: Joe Gray, Jr., Director of Planning and Urban Development
Kathy Staples, City Engineer

disk1350.10/#2/6depwds.doc

Attachment 1





TED
T.
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S
ARDS

MADE
5,

August 20, 1999

Mr. Joseph E. Gray
Director of Planning and Urban Development
Portland City Hall
389 Congress Street - 4th Floor
Portland, Maine 04101

RE: Proposed Residential Subdivision: 696 Allen Avenue Vicinity

Dear Mr. Gray:

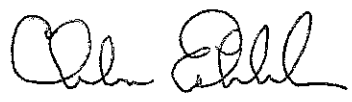
I am writing with regard to the workshop session scheduled before the Portland Planning Board on Tuesday, August 24, 1999. I received notice that the agenda will include a 4-lot subdivision proposal to be located in the vicinity of 696 Allen Avenue. The subdivision plan will be offered by Scott McMullin. I am a resident of 9 Deepwood Drive, and my property abuts the proposed subdivision.

It's my understanding that the workshop session would not permit public comment, and no "final" subdivision plan is being presented for "approval" in any event. Final plan approval would require a separate presentation before the Board during a regularly scheduled meeting. Nevertheless, because you are willing to accept written comments, I did wish to raise my concern regarding potential flooding or drainage arising out of the proposed subdivision.

The proposed area of subdivision, and in particular the area immediately adjacent to my property, includes substantial wetland areas. This area poses a direct threat of flooding to my property. I would ask the Planning Board to pay close attention to the proposed use of this area, and the developer's plans for drainage for the subdivision in general. While I presume that wetland zoning restrictions would prevent actual development of the area adjacent to my property, I remain concerned that a plan for drainage from the developed subdivision into this wetland area would also result in the flooding of my property. I believe specific steps should be required of the developer to insure such flooding will not occur.

I would appreciate receiving continued notice of all Board meetings which may involve consideration of this proposed development. Thank you for your attention and consideration.

Sincerely,



Charles Eshbach

PINKHAM & GREER
CONSULTING ENGINEERS, INC.

170 U.S. Route One
Falmouth, Maine 04105
Tel: 207.781.5242
Fax: 207.781.4245

September 29, 1999
File:99161

Kandi Talbot
Planning Department
City of Portland

RE: Scott McMullin Subdivision

Dear Kandi:

Enclosed please find material pertaining to the above proposed subdivision. The project is located in the vicinity of 696 Allen Avenue. The single-family subdivision will consist of four lots . The site is approximately 1.72 acres and is located in the R-3 and R-2 zone.

I have been in contact with the following regarding utility services to the lots;

Jim Pendicio at Portland Water District has been notified and has indicted water service is adequate and available

Lt. McDougle of the Portland Fire Department has indicted that it meets requirements for fire protection

Frank Brancely of the Department of Public Works has been contacted and plans forwarded to him regarding sewer service

Additionally, I have visited the site several times during the recent rainstorms to observe the overall conditions during storm events. I have modified the drainage calculations and drainage design in order to re-route on site runoff away from abutting properties. This has resulted in the stromwater getting to the culvert system quicker and thus not impacting the wetland located on the northwest corner of the property. We have reduced the flow into the wetland by about 1.5 cfs during large storm events. The site plan depicts the over all drainage and re-grading of the property.

Construction details as requested by Tony Lombardo at Public Works have been included on the detail sheet.

At the workshop meeting, the amount of paving that would be present on the area was questioned. I calculated the amount currently on the property to be

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CONSULTING ENGINEERS, INC.

approximately 3450 sq. ft and the amount after development to be 3693 sq. ft. an increase of 243 sq. ft.

Foundation drains that relate to finished floor elevations have been included as part of the site plan. These relate to the comments of August 16, 1999 by Jim Wendel as part of his review.

We have provided a drainage easement as requested and denoted it on the site plan. The proper forms will be executed with the legal staff as soon as the project is accepted as adequate to insure proper maintenance.

Sincerely,

PINKHAM & GREER

Alan L. Burnell

FIGURE V-1
(page 1 of 2)

DRAINAGE MAINTENANCE AGREEMENT

IN CONSIDERATION OF _____ approval granted by the Planning Board of the City of Portland to a plan entitled _____, _____, dated _____, 199___, and filed with the City of Portland, Department of Planning and Urban Development, 389 Congress Street, Portland, Maine,* and pursuant to a condition thereof, _____, a _____ with a place of business at _____, _____, the owner of the subject premises, does hereby agree, for itself, its successors and assigns (the "Owner"), as follows:

That it will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the surface water drainage system as shown on said plan, including but not limited to the detention basins or basins and the outlet or outlets therefrom, for the benefit of the said City of Portland, all persons in lawful possession of said premises and abutters thereto; further, that the said City of Portland, said persons in lawful possession and said abutters, or any of them, may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice and a reasonable time to perform, the said City of Portland may, by its authorized agents or representatives, enter upon said premises or any of said surface water drainage system in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the Owner upon demand.

This Agreement shall not confer upon the City of Portland or any other person the right to utilize said surface water drainage system for public use or for the development of any other property, and the Owner shall bear no financial responsibility by virtue of this Agreement for enlarging the capacity of said surface water drainage system for any reason whatsoever.

This Agreement shall bind the undersigned only so long as it retains any interest in said premises, and shall run with the land and be binding upon its successors and assigns as their interests may from time to time appear.

Dated at Portland, Maine this _____ day of _____, 19___.

_____

By _____

Its _____

FIGURE V-1
(page 2 of 2)

STATE OF MAINE
CUMBERLAND, ss.

_____, 199__

Personally appeared the above-named _____ _____, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said _____.

Before me,

_____
Notary Public/Attorney at Law

Print name:_____

* Where this Agreement is a condition of subdivision rather than site plan approval, this clause should instead read "and recorded in the Cumberland County Registry of Deeds in Plan Book _____, Page _____."

WETLAND EVALUATION

Prepared for:
Scott McMullin

July 1999

Prepared by:

Pinkham & Greer Consulting Engineers, Inc.
170 U.S. Route One
Falmouth, ME 04105

(207) 781-5242

PINKHAM & GREER
CONSULTING ENGINEERS, INC.

VEGETATION

Vegetation status was determined utilizing the publication "National List of Plant Species that Occur in Wetlands: 1988". This status, based on frequency of occurrence, is as follows:

Indicator Status	% Occur in Wetland
Obligate (Obl)	>99%
Facultative wetland (FACW)	67% - 99%
Facultative (FAC)	34% - 66%
Facultative Upland (FACU)	1% - 33%
Obligate Upland (UPL)	>99%

An area is considered to be a wetland when more than 50% of the species from these strata are either obligate, facultative wetland and/or facultative plant species.

HYDROLOGY

Wetland hydrology, the driving force behind a wetland, was noted along with soil sampling. A few examples of wetland hydrology indicators are drainage patterns within wetlands, soil oxidation characteristics, morphological plant adaptations, deposition of debris on the ground surface, inundation and standing surface water. Using these criteria, the wetland boundary was marked and located on the enclosed base map.

RESULTS AND DISCUSSION

Wetlands delineation indicated that a small area of approximately 15,000 sq. feet met the definition of wetland. Typical hydrophytic vegetation found in this area were red maple, alder, honeysuckle and sensitive fern.

Wetlands are regulated federally by the Army Corps of Engineers and locally by the Maine Department of Environmental Protection. By agreement, a joint review process exists within the state. Projects that impact less than 4,300 square feet and do not occur within a municipal shoreland zone or within another type of protected natural resource are exempt under the Natural Resources Protection Act, 38 M.R.S.A. Section 480-Q(6). I would conclude that this area will not require permitting by local or federal agencies regarding impact from this development.

PINKHAM & GREER

Alan L. Burnell
CSS #417, SE #267

ALB/clb

STORMWATER MANAGEMENT REPORT
SCOTT MCMULLIN

Introduction:

This project consists of the subdivision of a parcel of land, currently 695 Allen Ave, into four residential home lots. This existing house and garage will be located on one of the lots. Existing driveways and driveway openings will be utilized to the greatest extent possible. No road or utility construction will be necessary with the exception of individual home service connections. A sidewalk and curbing will be installed as per City of Portland design standards.

Methodology:

This analysis utilizes the Soil Conservation Service TR-20 method to model and predict stormwater flows. This method uses cover types, ground slope and hydrologic soil conditions to establish stormwater models and predict runoff conditions. Hydrocadd ver 5.11 as developed by Applied Microcomputer Systems of Chocoura N.H. was used to develop the technical report.

Peak flows from the 2-year, 10-year and 25-year stormwater were analyzed. There are 3.0, 4.7 and 5.5 inches of rain in a 24-hour period.

Site Conditions:

An area of approximately 12.14 acres was analyzed and broken into 3 subcatchments. These subcatchments are partially wooded but generally are developed into residential house lots of ¼ to ½ acre in size. Soil types range from sandy outwash hydrologic class B to very fine silt loam hydrologic class D. Subcatchment areas were split to recognize this difference in runoff. The runoff exits the site at a 30" SDR 35 culvert with a headwall that crosses under Allen Ave and outlets to a substantial drainage way south of Allen Ave.

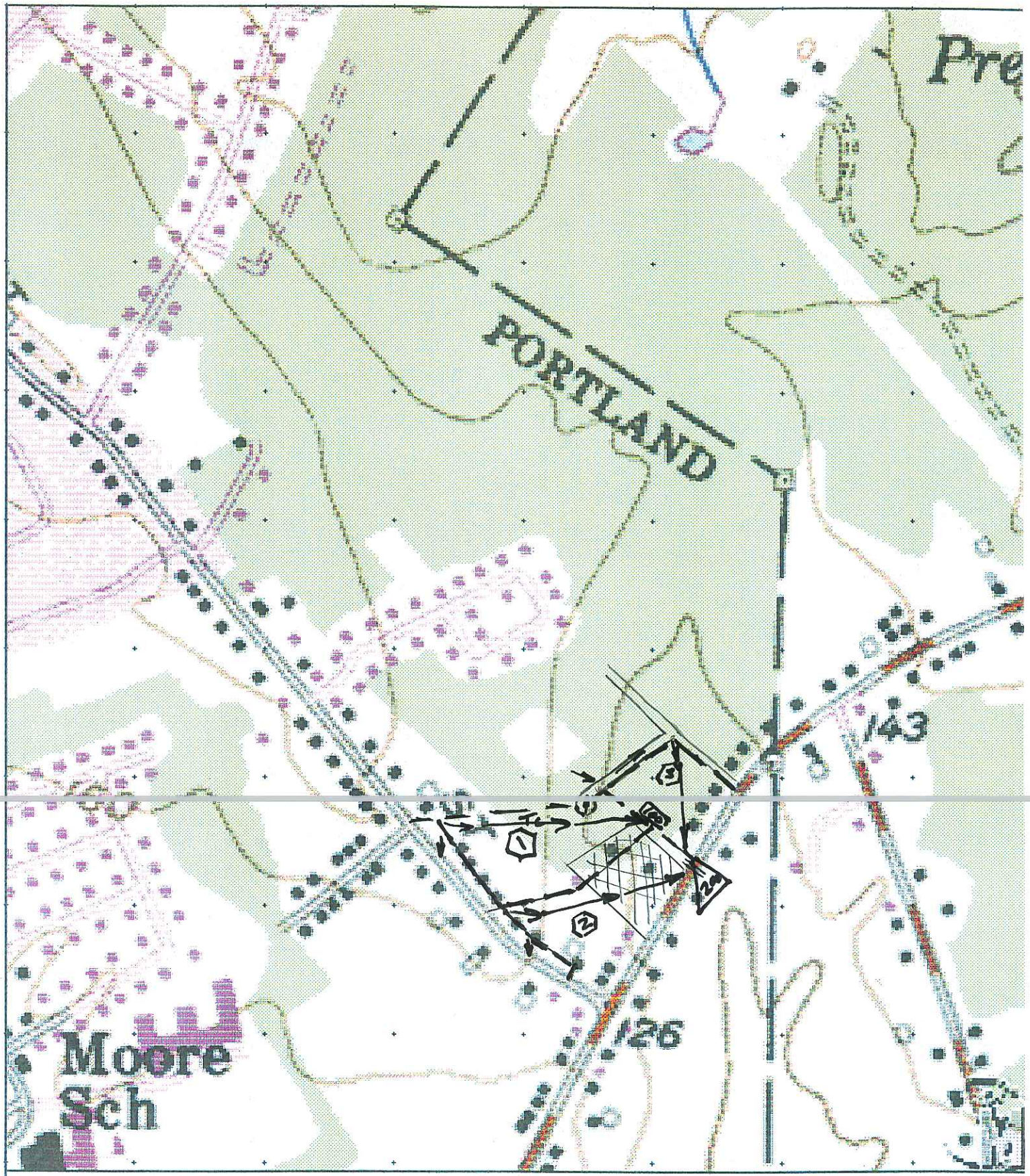
Analysis and Conclusions:

Existing and developed conditions were analyzed in order to compare the impact on the downstream drainage. The table below shows the change that occurred in both peak runoff and peak elevations at the culvert under Allen Avenue.

Table 1
Peak Flows and Peak Elevations

Storm Event	Peak Flows		Peak Elevations	
	Existing	Developed	Existing	Developed
2-year (3.0")	3.43 cfs	3.76	110.7	110.7
10-year (4.7")	11.32	11.85	111.5	111.5
25-year (5.5")	15.58	16.34	111.8	111.8

There is a slight increase in the peak flows after development of 0.33 cfs, 0.53 cfs and 0.76 cfs for the analyzed storms. However, there is no increase in peak elevations due to these slight increases, and therefore no additional flooding will occur from the development. The downstream channel appears capable of handling the slight increase in peak flows and therefore we expect no significant impact on adjacent or downstream properties.

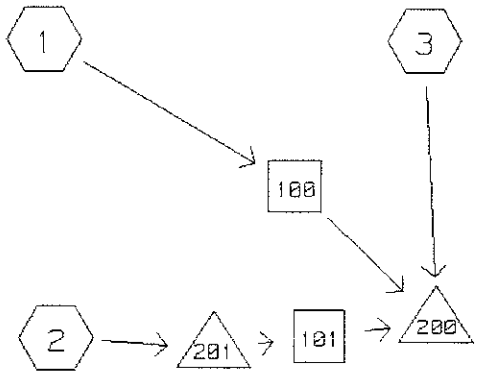


Name: PORTLAND WEST
Date: 7/1/99
Scale: 1 inch equals 500 feet

Location: 043° 42' 45.0" N 070° 16' 53.3" W
Caption: 696 ALLEN AVE.

EXISTING DRAINAGE

WATERSHED ROUTING



SUBCATCHMENT 1	= AREA NW OF PROJECT	-> REACH 100
SUBCATCHMENT 2	= SW AREA CORNER SUMMIT/ALLEN AVE	-> POND 201
SUBCATCHMENT 3	= EAST OF PROJECT	-> POND 200
REACH 100	= GRASSED DITCH ON EAST SIDE OF PROJECT	-> POND 200
REACH 101	= ROAD DITCH AFTER DRIVEWAY	-> POND 200
POND 200	= CULVERT AND CB AT ALLEN AVE.	->
POND 201	= CULVERT AT DRIVEWAY	-> REACH 101

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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	6.63	12.29	.70
2	6.00	41.8	13%75 48%58 13%87 27%80	70	-	8.04	12.55	1.10
3	2.10	46.8	36%83 64%72	76	-	3.28	12.60	.47

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.3	4.5	6.36
101	-	2.0	3.0	-	-	.030	210	.0100	3.3	1.1	7.98

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)
200	110.0	113.5	111.8	.27	17.02	15.58			8	9.3
201	115.0	118.0	116.4	.01	8.04	8.03			0	.4

SUBCATCHMENT 1 AREA NW OF PROJECT

PEAK= 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF

ACRES	CN	
.50	75	HYD B 1/4 AC HOUSE LOTS
2.60	58	HYD B WOODS/GRASS GOOD COND.
.20	83	HYD C 1/4 AC HOUSE LOTS
1.34	72	HYD C WOODS/GRASS GOOD COND.
4.64	65	

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	NEAR SUMMIT ST.	8.6
Grass: Short n=.15 L=100' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	FOLLOWING SHEET FLOW	6.9
Woodland Kv=5 L=360' s=.03 '/' V=.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	STEEPER SLOPED AREA	2.0
Woodland Kv=5 L=190' s=.1 '/' V=1.58 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	FLAT AREA BEHIND HOUSES	4.9
Short Grass Pasture Kv=7 L=290' s=.02 '/' V=.99 fps		
	Total Length= 940 ft Total Tc=	22.4

SUBCATCHMENT 2 SW AREA CORNER SUMMIT/ALLEN AVE

PEAK= 8.04 CFS @ 12.55 HRS, VOLUME= 1.10 AF

ACRES	CN	
.75	75	HYD B 1/4 AC HOUSE LOTS
2.85	58	HYD B WOODS/GRASS GOOD COND.
.80	87	HYD D 1/4 AC HOUSE LOTS
1.60	80	HYD D LAWNS GOOD COND.
6.00	70	

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	BACK OF HOUSES	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	14.1
Woodland Kv=5 L=600' s=.02 '/' V=.71 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	Lawn Area	14.3
Short Grass Pasture Kv=7 L=850' s=.02 '/' V=.99 fps		
	Total Length= 1550 ft Total Tc=	41.8

SUBCATCHMENT 3 EAST OF PROJECT

PEAK= 3.28 CFS @ 12.60 HRS, VOLUME= .47 AF

ACRES	CN	
.75	83	HYD C 1/4 ACRE HOUSE LOTS
1.35	72	HYD C WOODS/GRASS GOOD COND.
2.10	76	

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	COR ROARING BROOK	38.6
Woods: Dense underbrush n=.8 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	46.8

REACH 100 GRASSED DITCH ON EAST SIDE OF PROJECT

Qin = 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF
Qout= 6.36 CFS @ 12.43 HRS, VOLUME= .70 AF, ATTEN= 4%, LAG= 8.5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.00	0.00	0.00
.10	.43	.16
.20	.92	.53
.30	1.47	1.08
.43	2.28	2.06
.60	3.49	3.78
.80	5.14	6.52
1.00	7.03	10.07

4' x 1' CHANNEL
SIDE SLOPE= .33 '/'
n= .08
LENGTH= 340 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .78 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = 4.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 101 ROAD DITCH AFTER DRIVEWAY

Qin = 8.03 CFS @ 12.56 HRS, VOLUME= 1.10 AF
Qout= 7.98 CFS @ 12.59 HRS, VOLUME= 1.09 AF, ATTEN= 1%, LAG= 2.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.00	0.00	0.00
.30	.60	1.12
.60	1.20	3.09
.90	1.80	5.42
1.29	2.58	8.72
1.80	3.60	13.28
2.40	4.80	18.85
3.00	6.00	24.53

2' x 3' CHANNEL

n= .03
LENGTH= 210 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.21 FT
PEAK VELOCITY= 3.3 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 200 CULVERT AND CB AT ALLEN AVE.

Qin = 17.02 CFS @ 12.52 HRS, VOLUME= 2.26 AF
Qout= 15.58 CFS @ 12.68 HRS, VOLUME= 2.22 AF, ATTEN= 8%, LAG= 9.3 MIN

ELEVATION (FT)	AREA (AC)	INC.STOR (AF)	CUM.STOR (AF)
110.0	.10	0.00	0.00
112.0	.20	.30	.30
114.0	.50	.70	1.00

STOR-IND METHOD
PEAK STORAGE = .27 AF
PEAK ELEVATION= 111.8 FT
FLOOD ELEVATION= 113.5 FT
START ELEVATION= 110.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 21.3 MIN (2.19 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**30" CULVERT** n=.01 L=45' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.5'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 201 CULVERT AT DRIVEWAY

Qin = 8.04 CFS @ 12.55 HRS, VOLUME= 1.10 AF
Qout= 8.03 CFS @ 12.56 HRS, VOLUME= 1.10 AF, ATTEN= 0%, LAG= .4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
115.0	100	0	0
116.0	420	260	260
117.0	840	630	890
118.0	10000	5420	6310

STOR-IND METHOD
PEAK STORAGE = 520 CF
PEAK ELEVATION= 116.4 FT
FLOOD ELEVATION= 118.0 FT
START ELEVATION= 115.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 3.3 MIN (1.1 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	115.3'	**8" CULVERT** n=.03 L=20' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	116.0'	**10' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.45, 1.44, 0, 0, 0, 0

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	4.71	12.30	.51
2	6.00	41.8	13%75 48%58 13%87 27%80	70	-	5.95	12.56	.82
3	2.10	46.8	36%83 64%72	76	-	2.54	12.61	.37

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.1	4.9	4.47
101	-	2.0	3.0	-	-	.030	210	.0100	3.1	1.1	5.91

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)
200	110.0	113.5	111.5	.22	12.60	11.32			10	10.6
201	115.0	118.0	116.3	.01	5.95	5.95			0	.4

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 IN, SCS U.H.

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

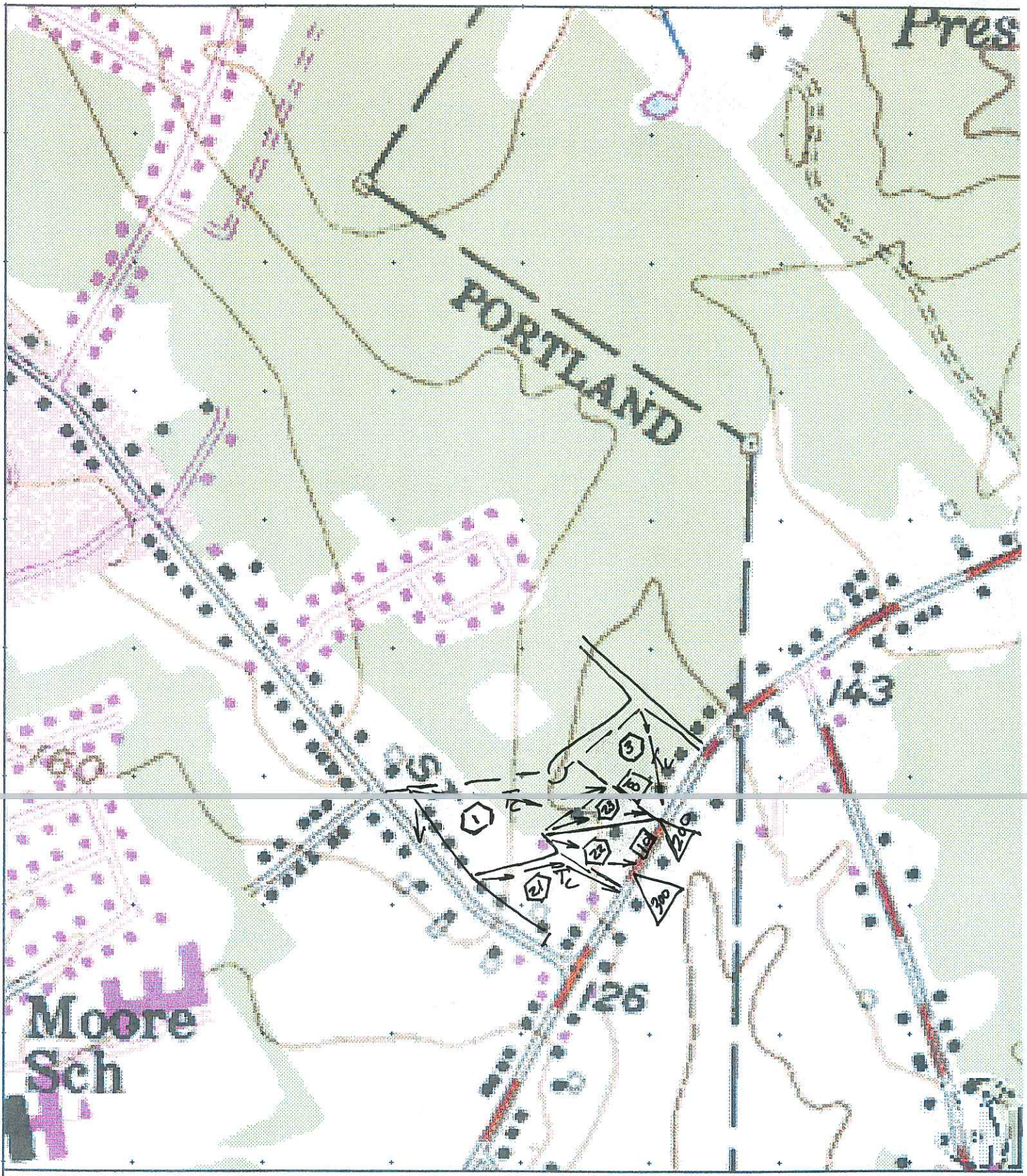
SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	4.64	22.4	11%75 56%58 4%83 29%72	65	-	1.30	12.36	.17
2	6.00	41.8	13%75 48%58 13%87 27%80	70	-	2.10	12.61	.32
3	2.10	46.8	36%83 64%72	76	-	1.07	12.64	.16

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	.8	7.4	1.21
101	-	2.0	3.0	-	-	.030	210	.0100	2.3	1.5	2.08

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)
200	110.0	113.5	110.7	.11	4.36	3.43			21	16.6
201	115.0	118.0	116.1	.01	2.10	2.09			1	.9

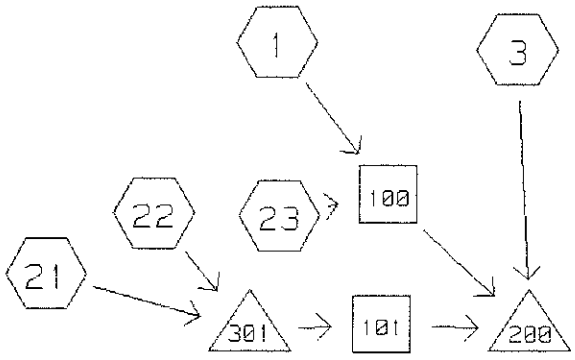


Name: PORTLAND WEST
Date: 9/23/99
Scale: 1 inch equals 500 feet

Location: 043° 42' 43.6" N 070° 16' 51.6" W
Caption: 696 Allen Ave

DEVELOPED DRAINAGE

WATERSHED ROUTING



SUBCATCHMENT 1	= AREA NW OF PROJECT	-> REACH 100
SUBCATCHMENT 3	= EAST OF PROJECT	-> POND 200
SUBCATCHMENT 21	= NORT SIDE OF SUB.#2	-> POND 301
SUBCATCHMENT 22	= AREA WITH EXISTING HOUSE	-> POND 301
SUBCATCHMENT 23	= WEST END SUB. #2	-> REACH 100
REACH 100	= GRASSED DITCH ON EAST SIDE OF PROJECT	-> POND 200
REACH 101	= ROAD DITCH AFTER DRIVEWAY	-> POND 200
POND 200	= CULVERT AND CB AT ALLEN AVE.	->
POND 301	= CULVERT AT NEW DRIVEWAY	-> REACH 101

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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	6.63	12.29	.70
3	2.10	46.8	36%83 64%72	76	-	3.28	12.60	.47
21	4.94	29.4	8%87 68%58 6%80 15%75 3%61	64	-	6.01	12.40	.71
22	.26	14.8	62%87 38%80	84	-	.82	12.16	.07
23	.80	59.3	13%87 63%77 25%80	79	-	1.20	12.75	.20

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.3	4.4	7.01
101	-	2.0	3.0	-	-	.030	60	.0100	3.2	.3	6.51

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 9/23/99 DEV
TYPE III 24-HOUR RAINFALL 25 YR. STORM= 5.50 IN

23 Sep 99

Prepared by Pinkham & Greer

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)	Qpri (CFS)	Qsec (CFS)	---Qout--- ATTEN. (%)	LAG (MIN)
200	110.0	113.5	111.8	.04	16.45	16.34			1	1.7
301	112.0	115.0	113.8	.01	6.51	6.53			0	1.3

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 9/23/99 DEV
TYPE III 24-HOUR RAINFALL 25 YR. STORM= 5.50 IN
23 Sep 99

Prepared by Pinkham & Greer
HydroCAD 5.11 000465 (c) 1986-1999 Applied Microcomputer Systems

SUBCATCHMENT 1 AREA NW OF PROJECT

PEAK= 6.63 CFS @ 12.29 HRS, VOLUME= .70 AF

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

ACRES	CN	
.50	75	HYD B 1/4 AC HOUSE LOTS
2.60	58	HYD B WOODS/GRASS GOOD COND.
.20	83	HYD C 1/4 AC HOUSE LOTS
1.34	72	HYD C WOODS/GRASS GOOD COND.
4.64	65	

Method	Comment	Tc (min)
TR-55 SHEET FLOW	NEAR SUMMIT ST.	8.6
Grass: Short n=.15 L=100' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	FOLLOWING SHEET FLOW	6.9
Woodland Kv=5 L=360' s=.03 '/'	V=.87 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	STEEPER SLOPED AREAS	2.0
Woodland Kv=5 L=190' s=.1 '/'	V=1.58 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	FLAT AREA BEHIND HOUSES	4.9
Short Grass Pasture Kv=7 L=290'	s=.02 '/' V=.99 fps	
	Total Length= 940 ft Total Tc=	22.4

SUBCATCHMENT 3 EAST OF PROJECT

PEAK= 3.28 CFS @ 12.60 HRS, VOLUME= .47 AF

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

ACRES	CN	
.75	83	HYD C 1/4 ACRE HOUSE LOTS
1.35	72	HYD C WOODS/GRASS GOOD COND.
2.10	76	

Method	Comment	Tc (min)
TR-55 SHEET FLOW	COR ROARING BROOK	38.6
Woods: Dense underbrush n=.8 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/'	V=.71 fps	
	Total Length= 450 ft Total Tc=	46.8

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 9/23/99 DEV
TYPE III 24-HOUR RAINFALL 25 YR. STORM= 5.50 IN
23 Sep 99
Prepared by Pinkham & Greer

SUBCATCHMENT 21 NORT SIDE OF SUB.#2

PEAK= 6.01 CFS @ 12.40 HRS, VOLUME= .71 AF

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

ACRES	CN	
.40	87	1/4 AC LOTS D SOIL
3.34	58	WOODS B SOIL GOOD COND.
.30	80	LAWNS D SOIL GOOD COND
.75	75	HYD B 1/4 AC HOUSE LOTS
.15	61	LAWNS HYD B GOOD COND.
4.94	64	

Method	Comment	Tc (min)
TR-55 SHEET FLOW	BEHIND SUMMIT ST. HOUSES	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	FOLLOWING SHEET FLOW	15.0
Woodland Kv=5 L=450' s=.01 '/'	V=.5 fps	.7
RECT/VEE/TRAP CHANNEL	NEW DITCH LOTS 1 & 2	
W=1' D=2' SS= .33 '/' a=14.12 sq-ft Pw=13.8' r=1.026'		
s=.02 '/' n=.033 V=6.48 fps L=255' Capacity=91.5 cfs		.3
RECT/VEE/TRAP CHANNEL	ROAD DITCH	
W=2' D=3' SS= .33 '/' a=33.27 sq-ft Pw=21.1' r=1.573'		
s=.01 '/' n=.035 V=5.74 fps L=100' Capacity=191.1 cfs		
	Total Length= 905 ft Total Tc=	29.4

SUBCATCHMENT 22 AREA WITH EXISTING HOUSE

PEAK= .82 CFS @ 12.16 HRS, VOLUME= .07 AF

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

ACRES	CN	
.16	87	1/4 ACRE LOT D SOIL
.10	80	LAWN D SOIL
.26	84	

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ALONG LAWN	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER LAWN	1.4
Grassed Waterway Kv=15 L=125'	s=.01 '/' V=1.5 fps	
	Total Length= 225 ft Total Tc=	14.8

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 9/23/99 DEV
TYPE III 24-HOUR RAINFALL 25 YR. STORM= 5.50 IN

23 Sep 99

Prepared by Pinkham & Greer

SUBCATCHMENT 23 WEST END SUB. #2

PEAK= 1.20 CFS @ 12.75 HRS, VOLUME= .20 AF

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

ACRES	CN	
.10	87	1/4 ACRE HOUSE LOTS D SOIL
.50	77	WOODS GOOD COND D SOIL
.20	80	LAWNS D SOIL GOOD COND
.80	79	

Method	Comment	Tc (min)
TR-55 SHEET FLOW	NEAR PROPERTY LINE	51.0
Woods: Dense underbrush n=.8	L=100' P2=3 in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.3
Woodland Kv=5	L=250' s=.01 '/' V=.5 fps	
	Total Length= 350 ft Total Tc=	59.3

REACH 100 GRASSED DITCH ON EAST SIDE OF PROJECT

Qin = 7.26 CFS @ 12.31 HRS, VOLUME= .90 AF
Qout= 7.01 CFS @ 12.45 HRS, VOLUME= .89 AF, ATTEN= 3%, LAG= 8.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.00	0.00	0.00
.10	.43	.16
.20	.92	.53
.30	1.47	1.08
.43	2.28	2.06
.60	3.49	3.78
.80	5.14	6.52
1.00	7.03	10.07

4' x 1' CHANNEL
SIDE SLOPE= .33 '/'
n= .08
LENGTH= 340 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .83 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = 4.4 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 101 ROAD DITCH AFTER DRIVEWAY

Qin = 6.53 CFS @ 12.40 HRS, VOLUME= .79 AF
Qout= 6.51 CFS @ 12.41 HRS, VOLUME= .79 AF, ATTEN= 0%, LAG= .5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.00	0.00	0.00
.30	.60	1.12
.60	1.20	3.09
.90	1.80	5.42
1.29	2.58	8.72
1.80	3.60	13.28
2.40	4.80	18.85
3.00	6.00	24.53

2' x 3' CHANNEL

n= .03
LENGTH= 60 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.03 FT
PEAK VELOCITY= 3.2 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 200 CULVERT AND CB AT ALLEN AVE.

Qin = 16.45 CFS @ 12.45 HRS, VOLUME= 2.15 AF
Qout= 16.34 CFS @ 12.47 HRS, VOLUME= 2.15 AF, ATTEN= 1%, LAG= 1.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
110.0	100	0	0
112.0	1660	1760	1760
114.0	10000	11660	13420

STOR-IND METHOD
PEAK STORAGE = 1626 CF
PEAK ELEVATION= 111.8 FT
FLOOD ELEVATION= 113.5 FT
START ELEVATION= 110.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 3 MIN (2.12 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**30" CULVERT** n=.01 L=45' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.5'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 301 CULVERT AT NEW DRIVEWAY

Qin = 6.51 CFS @ 12.38 HRS, VOLUME= .79 AF
Qout= 6.53 CFS @ 12.40 HRS, VOLUME= .79 AF, ATTEN= 0%, LAG= 1.3 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
112.0	100	0	0
114.0	350	450	450
115.0	900	625	1075

STOR-IND METHOD
PEAK STORAGE = 416 CF
PEAK ELEVATION= 113.8 FT
FLOOD ELEVATION= 115.0 FT
START ELEVATION= 112.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.7 MIN (.79 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	112.0'	**15" CULVERT** n=.01 L=20' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.9'	**10' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.45, 1.44, 0, 0, 0, 0

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	4.71	12.30	.51
3	2.10	46.8	36%83 64%72	76	-	2.54	12.61	.37
21	4.94	29.4	8%87 68%58 6%80 15%75 3%61	64	-	4.23	12.41	.51
22	.26	14.8	62%87 38%80	84	-	.66	12.16	.06
23	.80	59.3	13%87 63%77 25%80	79	-	.94	12.76	.15

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 9/23/99 DEV
TYPE III 24-HOUR RAINFALL 10 YR. STORM=4.7"

Prepared by Pinkham & Greer

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	1.2	4.8	4.99
101	-	2.0	3.0	-	-	.030	60	.0100	2.9	.3	4.59

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)
200	110.0	113.5	111.5	.03	11.85	11.85			0	1.3
301	112.0	115.0	113.3	.01	4.62	4.62			0	.8

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 9/23/99 DEV
TYPE III 24-HOUR RAINFALL 2 YR. STORM= 3.00 IN

Prepared by Pinkham & Greer
HydroCAD 5.11 000465 (c) 1986-1999 Applied Microcomputer Systems

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 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	4.64	22.4	11%75 56%58 4%83 29%72	65	-	1.30	12.36	.17
3	2.10	46.8	36%83 64%72	76	-	1.07	12.64	.16
21	4.94	29.4	8%87 68%58 6%80 15%75 3%61	64	-	1.12	12.49	.17
22	.26	14.8	62%87 38%80	84	-	.34	12.17	.03
23	.80	59.3	13%87 63%77 25%80	79	-	.43	12.79	.07

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)
100	-	4.0	1.0	.33	.33	.080	340	.0100	.8	6.9	1.50
101	-	2.0	3.0	-	-	.030	60	.0100	2.0	.5	1.28

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)
200	110.0	113.5	110.8	.02	3.76	3.76			0	1.7
301	112.0	115.0	112.6	0.00	1.29	1.29			0	1.2

PINKHAM & GREER
CONSULTING ENGINEERS, INC.

170 U.S. Route One
Falmouth, Maine 04105
Tel: 207.781.5242
Fax: 207.781.4245

MEMORANDUM

TO: Kandi Talbot

FROM: Alan Burnell

DATE: September 30, 1999

RE:Scott McMullin Subdivision

FILE: 99161

Kandi, these are drawings that were a casualty of our printer breakdown yesterday and did not get included in the package dropped off this morning. They show the drainage patterns pre and post grading so that you can determine offsite impact. We have graded everything so that it does not impact any neighboring property owners. All the water created on site is turned inward and then out-letted to a storm drain or ditch.

Sorry for any inconvenience this may have caused for you.

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

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

Post-it® Fax Note 7671	Date 10/20	# of pages ▶ 1
To Alan Burnell	From Kandi Talbot	
Co./Dept.	Co.	
Phone # –	Phone # 874-8901	
Fax # 781-4245	Fax # 756-8258	

MEMO

TO: Kandi Talbot, Planner

FROM: Steve Bushey, DeLuca-Hoffman Associates, Inc.

RE: Scott McMullin Subdivision Application – Review Memo #2

I have reviewed the application materials contained within the October 14, 1999 memorandum from Pinkham and Greer to this office and unfortunately still find the stormwater review to be incomplete. I offer the following comments:

1. The Applicant's computations continue to show a slight reduction in the runoff curve number for the area identified as Subcatchment 2 in the predevelopment and Subcatchments 21, 22, and 23 in the postdevelopment. It seems unrealistic that an area which is undeveloped, except for a single home currently, and will be developed with a total of four houses in the future could have less runoff, notwithstanding changes in flow patterns and times of concentration. I continue to request further support for these computational assumptions.

2. The time of concentration computations continue to include the use of a Manning's n equal to 0.8. Per the MeDEP and local SCS practice, this value should not generally exceed 0.4 in the State of Maine. The Applicant should redo the computations with the correct value.

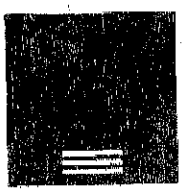
3. The Applicant's computations include a routing only one of three existing culverts along Allen Avenue. This is identified as Pond 201 which is an 8" pipe. The invert elevation for this pipe does not match the plan invert. In addition, a second 8" CMP is located at the southwest corner of the site. A third pipe of unknown size is also shown on the plans. Each of these culverts should be accounted for within the Subcatchment 2 flow regime.

4. The modeling of two separate ponds (#200 and #202) appears to be incorrect in that each of the two pipe inlets (24" and 12", respectively) share common storage areas. These inlets should be modeled as 1 pond with the 12", 24" and broad-crested weir outlet devices.

5. The Applicant should obtain drainage rights from the Portland Water District and any abutting owners to account for the impoundment of water which will occur off the Applicant's property.

c: Tony Lombardo, Public Works

JN1359.95/Memo10-18-McMullin



DELUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
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TEL 207 775 1121
FAX 207 879 0896

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

MEMORANDUM

TO: Kandi Talbot, Planner

FROM: Steve Bushey

RE: Scott McMullin Subdivision Application – Review Memo #3

DATE: October 25, 1999

I have reviewed the application materials within the October 21, 1999 Memorandum from Pinkham and Greer to this office and find that my earlier comments have been substantially addressed. Based on my review I find the application materials to be in accordance with the City of Portland Standards for Stormwater Management and Erosion and Sedimentation Control. I do recommend that the Public Works Department review the proposed driveway culverts and the culvert inlets into the City's street drainage system. They should comment regarding the acceptability of the culvert inlet conditions.

If you have any questions, please call.

Stephen Bushey, P.E.

A:1359.95/memo10-25

LETTER OF TRANSMITTAL

PINKHAM & GREER
CONSULTING ENGINEERS, INC.

170 U.S. Route One
Falmouth, Maine 04105
Tel: 207.781.5242

DATE	JOB NO.
10/26/99	99161

ATTENTION KANDI TALBOT

RE McMULLIN SUBDIVISION

TO CITY OF PORTLAND - PLANNING DEPT.
389 CONGRESS ST - 4TH FLOOR
PORTLAND ME 04101

GENTLEMEN:

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

COPIES	DATE	DESCRIPTION	ACTION
1	10/21/99	LETTER TO STEVE BUSHEY, & HYDROCAD REPORT	FOR YOUR USE

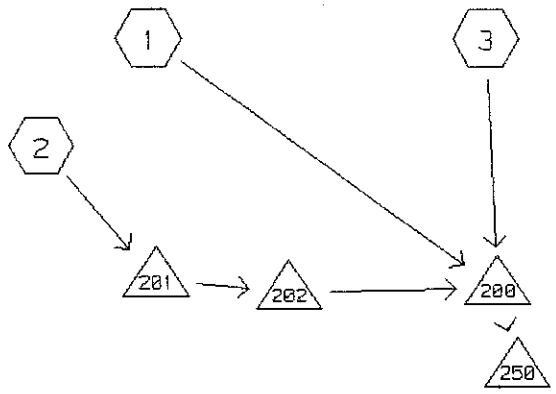
IF TRANSMITTALS ARE NOT AS INDICATED, PLEASE NOTIFY US AT ONCE.

REMARKS _____

COPY TO _____

SIGNED: Mark R Bylean

WATERSHED ROUTING



SUBCATCHMENT REACH POND LINK

SUBCATCHMENT 1	= AREA NW OF PROJECT	-> POND 200
SUBCATCHMENT 2	= SW AREA CORNER SUMMIT/ALLEN AVE	-> POND 201
SUBCATCHMENT 3	= EAST OF PROJECT	-> POND 200
POND 200	= CULVERT AND CB AT ALLEN AVE	-> POND 250
POND 201	= DRIVEWAY CULVERT	-> POND 202
POND 202	= DRIVEWAY CULVERT	-> POND 200
POND 250	= CATCH BASIN	->

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 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	4.64	24.4	11%75 56%58 4%83 29%72	65	-	1.27	12.40	.17
2	6.00	22.6	13%75 48%58 13%87 27%80	70	-	2.77	12.32	.32
3	2.10	30.4	36%83 64%72	76	-	1.33	12.41	.16

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 10/20/99 EXI
TYPE III 24-HOUR RAINFALL 3.00 IN = 2 YR STORM

21 Oct 99

Prepared by Pinkham & Greer

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)	Qpri (CFS)	Qsec (CFS)	---Qout--- ATTEN. (%)	---Qout--- LAG (MIN)
200	110.0	113.5	111.1	.03	5.67	5.56			2	1.9
201	115.3	118.0	117.0	.02	2.77	2.76			1	2.8
202	114.4	116.0	116.0	.01	2.76	3.08			0	1.4
250	109.5	113.7	110.6	0.00	5.56	5.56			0	0.0

SUBCATCHMENT 1 AREA NW OF PROJECT

PEAK= 1.27 CFS @ 12.40 HRS, VOLUME= .17 AF

ACRES	CN	
.50	75	HYD B 1/4 AC HOUSE LOTS
2.60	58	HYD B WOODS/GRASS GOOD COND.
.20	83	HYD C 1/4 AC HOUSE LOTS
1.34	72	HYD C WOODS/GRASS GOOD COND.
4.64	65	

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 Grass: Short n=.15 L=100' P2=3 in s=.03 '/'	NEAR SUMMIT ST.	8.6
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=360' s=.03 '/' V=.87 fps	FOLLOWING SHEET FLOW	6.9
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=190' s=.1 '/' V=1.58 fps	STEEPER SLOPED AREA	2.0
SHALLOW CONCENTRATED/UPLAND FLOW Short Grass Pasture Kv=7 L=290' s=.01 '/' V=.7 fps	FLAT AREA BEHIND HOUSES	6.9
	Total Length= 940 ft Total Tc=	24.4

SUBCATCHMENT 2 SW AREA CORNER SUMMIT/ALLEN AVE

PEAK= 2.77 CFS @ 12.32 HRS, VOLUME= .32 AF

ACRES	CN	
.75	75	HYD B 1/4 AC HOUSE LOTS
2.85	58	HYD B WOODS/GRASS GOOD COND
.80	87	HYD D 1/4 AC HOUSE LOTS
1.60	80	HYD D LAWNS GOOD COND.
6.00	70	

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 Grass: Short n=.15 L=100' P2=3 in s=.01 '/'	BACK OF HOUSES	13.4
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=350' s=.02 '/' V=.71 fps	AFTER SHEET FLOW	8.2
RECT/VEE/TRAP CHANNEL W=3' D=1' SS= .1 '/' a=13 sq-ft Pw=23.1' r=.563' s=.01 '/' n=.033 V=3.07 fps L=175' Capacity=39.9 cfs	DITCH ALONG PROPERTY LINE	1.0
	Total Length= 625 ft Total Tc=	22.6

SUBCATCHMENT 3 EAST OF PROJECT

PEAK= 1.33 CFS @ 12.41 HRS, VOLUME= .16 AF

ACRES	CN	
.75	83	HYD C 1/4 ACRE HOUSE LOTS
1.35	72	HYD C WOODS/GRASS GOOD COND.
2.10	76	

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	COR ROARING BROOK	22.2
Woods: Light underbrush n=.4 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	30.4

POND 200 CULVERT AND CB AT ALLEN AVE.

Qin = 5.67 CFS @ 12.40 HRS, VOLUME= .65 AF
Qout= 5.56 CFS @ 12.43 HRS, VOLUME= .64 AF, ATTEN= 2%, LAG= 1.9 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
109.8	100	0	0
110.0	400	50	50
112.0	1550	1950	2000
113.0	2200	1875	3875
114.0	5000	3600	7475

STOR-IND METHOD
PEAK STORAGE = 1166 CF
PEAK ELEVATION= 111.1 FT
FLOOD ELEVATION= 113.5 FT
START ELEVATION= 110.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 8 MIN (.64 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**24" CULVERT** n=.01 L=12' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.6'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0
3	P	110.9'	**12" CULVERT** n=.01 L=18' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 201 DRIVEWAY CULVERT

Qin = 2.77 CFS @ 12.32 HRS, VOLUME= .32 AF
Qout= 2.76 CFS @ 12.37 HRS, VOLUME= .32 AF, ATTEN= 1%, LAG= 2.8 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
115.3	100	0	0
116.0	420	182	182
118.0	1100	1520	1702

STOR-IND METHOD
PEAK STORAGE = 977 CF
PEAK ELEVATION= 117.0 FT
FLOOD ELEVATION= 118.0 FT
START ELEVATION= 115.3 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 7.9 MIN (.32 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	115.3'	**8" CULVERT** n=.03 L=20' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	116.9'	**10' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 202 DRIVEWAY CULVERT

Qin = 2.76 CFS @ 12.37 HRS, VOLUME= .32 AF
Qout= 3.08 CFS @ 12.39 HRS, VOLUME= .32 AF, ATTEN= 0%, LAG= 1.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
114.4	100	0	0
116.0	300	320	320

STOR-IND METHOD
PEAK STORAGE = 323 CF
PEAK ELEVATION= 116.0 FT
FLOOD ELEVATION= 116.0 FT
START ELEVATION= 114.4 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 4.2 MIN (.32 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	114.4'	**8" CULVERT** n=.03 L=20' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	115.9'	**20' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0

POND 250 CATCH BASIN

Qin = 5.56 CFS @ 12.43 HRS, VOLUME= .64 AF
Qout= 5.56 CFS @ 12.43 HRS, VOLUME= .64 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
109.5	13	0	0
113.6	13	51	51
113.7	2000	101	152

STOR-IND METHOD
PEAK STORAGE = 14 CF
PEAK ELEVATION= 110.6 FT
FLOOD ELEVATION= 113.7 FT
START ELEVATION= 109.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (.64 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	109.5'	**30" CULVERT** n=.01 L=10' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.6'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.45, 1.44, 0, 0, 0, 0

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 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	4.64	24.4	11%75 56%58 4%83 29%72	65	-	4.57	12.33	.51
2	6.00	22.6	13%75 48%58 13%87 27%80	70	-	7.86	12.29	.83
3	2.10	30.4	36%83 64%72	76	-	3.13	12.39	.37

Data for 99161 SCOTT MCMULLIN ALLEN AVE ALB 10/20/99 EXI
TYPE III 24-HOUR RAINFALL 4.70 IN = 10 YR. STORM

Prepared by Pinkham & Greer
HydroCAD 5.11 000465 (c) 1986-1999 Applied Microcomputer Systems

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)
200	110.0	113.5	112.0	.05	15.89	15.36			3	2.5
201	115.3	118.0	117.3	.03	7.86	8.14			0	.7
202	114.4	116.0	116.3	.01	8.14	8.30			0	.1
250	109.5	113.7	111.5	0.00	15.36	15.36			0	0.0

SUBCATCHMENT 1 AREA NW OF PROJECT

PEAK= 4.57 CFS @ 12.33 HRS, VOLUME= .51 AF

ACRES	CN	
.50	75	HYD B 1/4 AC HOUSE LOTS
2.60	58	HYD B WOODS/GRASS GOOD COND.
.20	83	HYD C 1/4 AC HOUSE LOTS
1.34	72	HYD C WOODS/GRASS GOOD COND.
4.64	65	

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	NEAR SUMMIT ST.	8.6
Grass: Short n=.15 L=100' P2=3 in s=.03 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	FOLLOWING SHEET FLOW	6.9
Woodland Kv=5 L=360' s=.03 '/' V=.87 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	STEEPER SLOPED AREA	2.0
Woodland Kv=5 L=190' s=.1 '/' V=1.58 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	FLAT AREA BEHIND HOUSES	6.9
Short Grass Pasture Kv=7 L=290' s=.01 '/' V=.7 fps		
	Total Length= 940 ft Total Tc=	24.4

SUBCATCHMENT 2 SW AREA CORNER SUMMIT/ALLEN AVE

PEAK= 7.86 CFS @ 12.29 HRS, VOLUME= .83 AF

ACRES	CN	
.75	75	HYD B 1/4 AC HOUSE LOTS
2.85	58	HYD B WOODS/GRASS GOOD COND.
.80	87	HYD D 1/4 AC HOUSE LOTS
1.60	80	HYD D LAWNS GOOD COND.
6.00	70	

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	BACK OF HOUSES	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/' V=.71 fps		
RECT/VEE/TRAP CHANNEL	DITCH ALONG PROPERTY LINE	1.0
W=3' D=1' SS= .1 '/' a=13 sq-ft Pw=23.1' r=.563'		
s=.01 '/' n=.033 V=3.07 fps L=175' Capacity=39.9 cfs		
	Total Length= 625 ft Total Tc=	22.6

SUBCATCHMENT 3 EAST OF PROJECT

PEAK= 3.13 CFS @ 12.39 HRS, VOLUME= .37 AF

ACRES	CN	
.75	83	HYD C 1/4 ACRE HOUSE LOTS
1.35	72	HYD C WOODS/GRASS GOOD COND.
2.10	76	

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	COR ROARING BROOK	22.2
Woods: Light underbrush n=.4 L=100' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	AFTER SHEET FLOW	8.2
Woodland Kv=5 L=350' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	30.4

POND 200 CULVERT AND CB AT ALLEN AVE.

Qin = 15.89 CFS @ 12.32 HRS, VOLUME= 1.70 AF
Qout= 15.36 CFS @ 12.36 HRS, VOLUME= 1.70 AF, ATTEN= 3%, LAG= 2.5 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
109.8	100	0	0
110.0	400	50	50
112.0	1550	1950	2000
113.0	2200	1875	3875
114.0	5000	3600	7475

STOR-IND METHOD
PEAK STORAGE = 1968 CF
PEAK ELEVATION= 112.0 FT
FLOOD ELEVATION= 113.5 FT
START ELEVATION= 110.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 4.8 MIN (1.68 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	110.0'	**24" CULVERT** n=.01 L=12' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	113.6'	**50' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0
3	P	110.9'	**12" CULVERT** n=.01 L=18' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 201 DRIVEWAY CULVERT

Qin = 7.86 CFS @ 12.29 HRS, VOLUME= .83 AF
Qout= 8.14 CFS @ 12.30 HRS, VOLUME= .83 AF, ATTEN= 0%, LAG= .7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
115.3	100	0	0
116.0	420	182	182
118.0	1100	1520	1702

STOR-IND METHOD
PEAK STORAGE = 1172 CF
PEAK ELEVATION= 117.3 FT
FLOOD ELEVATION= 118.0 FT
START ELEVATION= 115.3 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 6.3 MIN (.83 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	115.3'	**8" CULVERT** n=.03 L=20' S=.01'/' Ke=.5 Cc=.9 Cd=.6
2	P	116.9'	**10' BROAD-CRESTED RECTANGULAR WEIR X 1.81** Q=C L H^1.5 C=1.48, 1.45, 1.44, 1.44, 0, 0, 0, 0