

Appendix B - Buck Creek PEAK DISCHARGES FOR SELECTED FREQUENCIES

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Watershed Name: BUCK CR

PEAK DISCHARGE CALCULATION BY PREDICTION EQUATION

Peak discharges for the ungaged watershed have been determined from a set of hydrologic prediction equations derived using generalized least squares. The models relate peak discharges to physical watershed characteristics such as area and precipitation. The equations take this form:

$$Q(T) = (10.0^{C_0(T)}) * (CHR_1^{C_1(T)}) * \dots * (CHR_n^{C_n(T)})$$

Q(T) = Peak Discharge for Return Period T
Cx(T) = Coefficient x for Return Period T
CHR1 = The First Watershed Characteristic
CHRn = The nth Watershed Characteristic

Note: * = multiplication, ^ = exponentiation

For this ungaged watershed, peak discharges were estimated using prediction equations for this flood region:

COASTAL WATERSHEDS

Prediction Equation for Coastal Watersheds

$$Q(T) = (10.0^{C_0(T)}) * (X_1^{C_1(T)}) * (X_2^{C_2(T)}) * (X_3^{C_3(T)}) * (X_4^{C_4(T)}) * (X_5^{C_5(T)})$$

Q(T) = Peak Discharge for Return Period T
Cx(T) = Coefficient x for Return Period T
X1 = Drainage area (square miles)
X2 = 2-year 24-hour precipitation intensity (inches)
X3 = Soil permeability (inches/hour)
X4 = Mean maximum January temperature (degrees F)
X5 = Soil storage capacity (inches)

Note: * = multiplication, ^ = exponentiation

Prediction Equation Coefficients

Return Period		Coefficients					
T		C0(T)	C1(T)	C2(T)	C3(T)	C4(T)	C5(T)
2	-1.296E+00	9.489E-01	1.360E+00	-1.576E-01	1.280E+00	-4.421E-01	
5	-1.881E+00	9.385E-01	1.272E+00	-2.234E-01	1.738E+00	-5.026E-01	
10	-2.095E+00	9.324E-01	1.226E+00	-2.552E-01	1.926E+00	-5.267E-01	
20	-2.248E+00	9.273E-01	1.190E+00	-2.812E-01	2.069E+00	-5.438E-01	
25	-2.291E+00	9.258E-01	1.179E+00	-2.888E-01	2.109E+00	-5.484E-01	
50	-2.410E+00	9.215E-01	1.151E+00	-3.111E-01	2.223E+00	-5.605E-01	
100	-2.516E+00	9.176E-01	1.126E+00	-3.319E-01	2.325E+00	-5.701E-01	
500	-2.723E+00	9.099E-01	1.078E+00	-3.770E-01	2.527E+00	-5.855E-01	

Required Watershed Characteristics

Drainage area (square miles) 1.540
2-year 24-hour precipitation intensity (inches) 3.420

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Soil permeability	(inches/hour)	2.620
Mean maximum January temperature	(degrees F)	47.100
Soil storage capacity	(inches)	0.130

PEAK DISCHARGE ESTIMATES BASED ON PREDICTION EQUATIONS

Return Period years	Peak Flow cfs	95% Confidence	
		Lower Limit cfs	Upper Limit cfs
2	119	70.3	201
5	171	104	282
10	208	126	343
20	243	145	409
25	255	151	430
50	290	169	500
100	326	184	578
500	409	217	774

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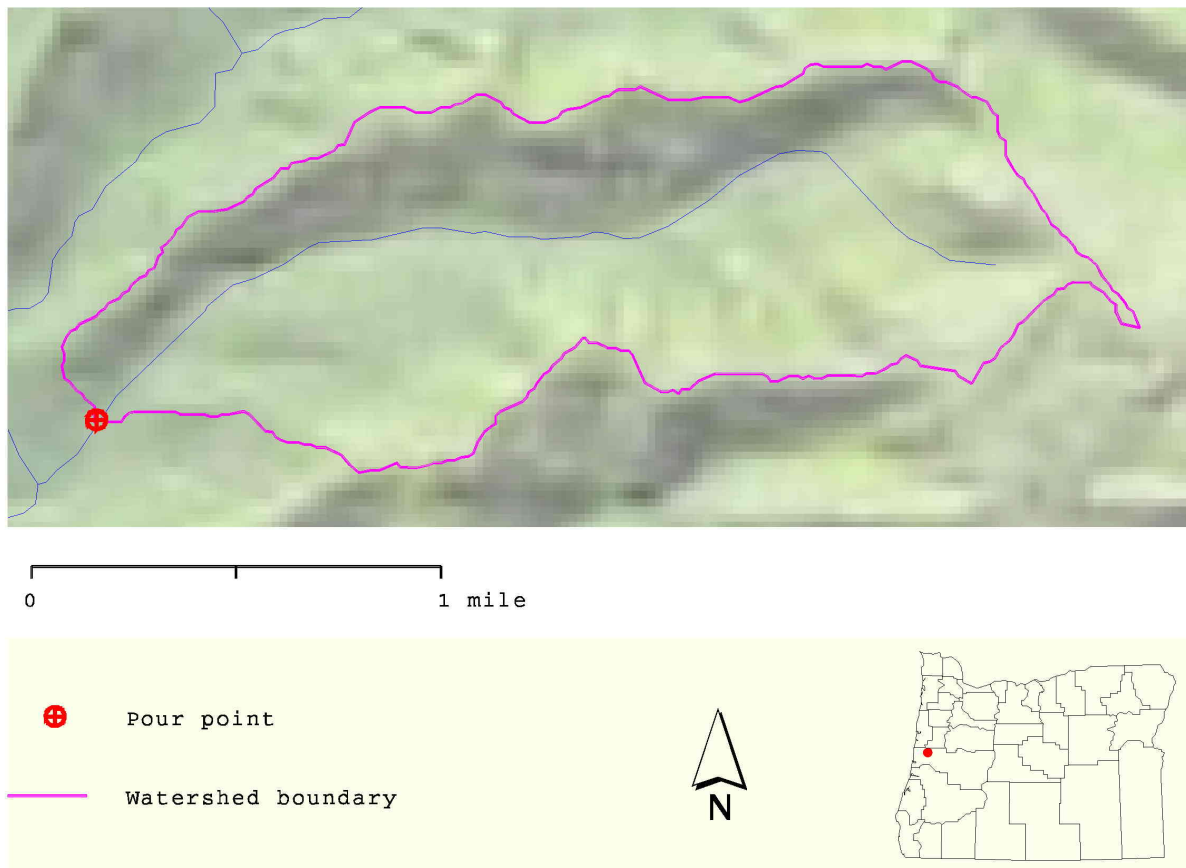
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