

Appendix B - Simpson Creek PEAK DISCHARGES FOR SELECTED FREQUENCIES

Report prepared for: autodelin
Time: 10:53

Date: 06/07/2007

Watershed Name: +

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:

$$Q(T) = (10.0^{C0(T)}) * (CHR1^{C1(T)}) * \dots * (CHRn^{Cn(T)})$$

 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:

WESTERN INTERIOR WATERSHEDS - > 3125 FEET

WATERSHED ELEVATION = 3750 FEET

For western interior watersheds with mean elevations above 3125 feet, peaks are estimated using the prediction equations for western interior watersheds above 3000 feet.

Prediction Equation for Interior Watersheds > 3000 Feet

$$Q(T) = (10.0^{C0(T)}) * (X1^{C1(T)}) * (X2^{C2(T)}) * (X3^{C3(T)}) * (X4^{C4(T)}) * (X5^{C5(T)})$$

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

Note: * = multiplication, ^ = exponentiation

Prediction Equation Coefficients

Return Period T	Coefficients					
	C0(T)	C1(T)	C2(T)	C3(T)	C4(T)	C5(T)
2	-2.506E+00	1.021E+00	8.124E-01	2.050E+00	3.541E+00	-1.867E+00
5	-2.107E+00	1.020E+00	9.022E-01	1.649E+00	3.611E+00	-2.017E+00
10	-1.811E+00	1.021E+00	9.506E-01	1.471E+00	3.620E+00	-2.137E+00
20	-1.551E+00	1.021E+00	9.844E-01	1.352E+00	3.623E+00	-2.246E+00
25	-1.475E+00	1.021E+00	9.930E-01	1.321E+00	3.624E+00	-2.278E+00
50	-1.260E+00	1.022E+00	1.014E+00	1.243E+00	3.624E+00	-2.366E+00
100	-1.071E+00	1.022E+00	1.030E+00	1.182E+00	3.621E+00	-2.440E+00

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500 -7.047E-01 1.023E+00 1.053E+00 1.079E+00 3.601E+00 -2.566E+00

Required Watershed Characteristics

Drainage area	(square miles)	11.300
Mean watershed slope	(degrees)	14.300
2-year 24-hour precipitation intensity	(inches)	2.530
Mean minimum January temperature	(degrees F)	27.900
Mean maximum January temperature	(degrees F)	42.500

PEAK DISCHARGE ESTIMATES BASED ON PREDICTION EQUATIONS

Return Period years	Peak Flow cfs	95% Confidence	
		Lower Limit cfs	Upper Limit cfs
2	258	123	539
5	407	213	778
10	511	273	955
20	613	329	1140
25	646	346	1210
50	751	396	1420
100	858	445	1660
500	1120	547	2310

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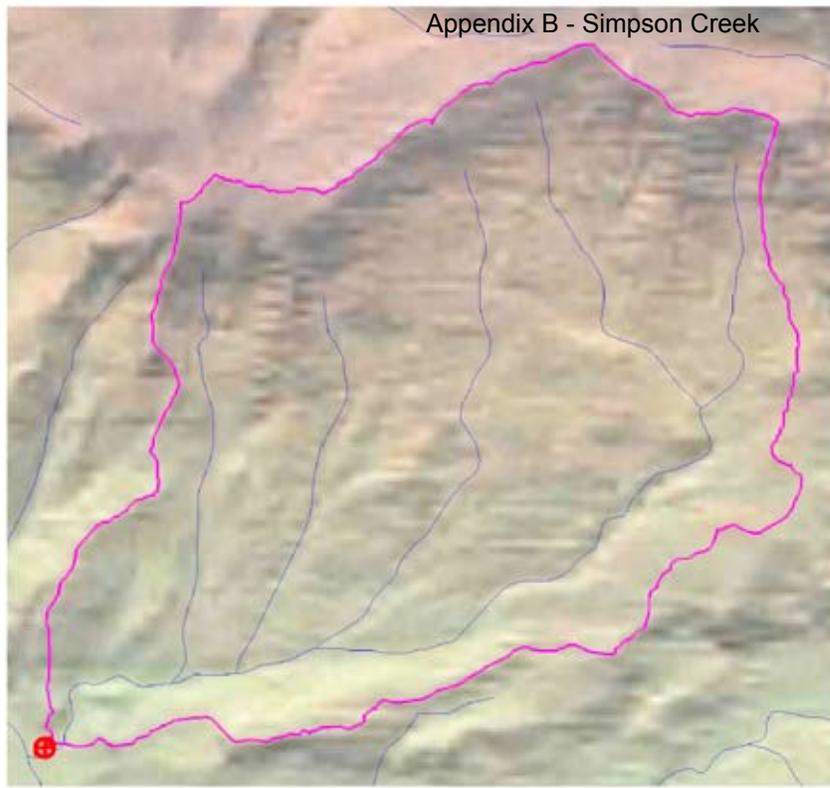
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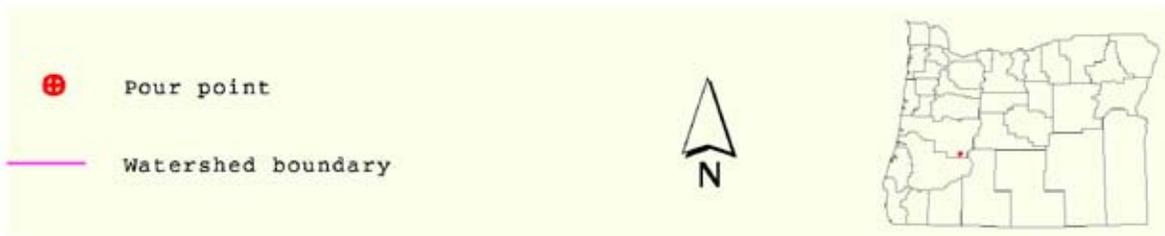
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Culvert Scour Assessment



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