

Appendix B - Deadwood Trib North PEAK DISCHARGES FOR SELECTED FREQUENCIES

Report prepared for: autodelin
Time: 17:00

Date: 06/06/2007

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:

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

 $Q(T)$ = Peak Discharge for Return Period T
 $C_x(T)$ = Coefficient x for Return Period T
 CHR_1 = The First Watershed Characteristic
 CHR_n = 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
 $C_x(T)$ = Coefficient x for Return Period T
 X_1 = Drainage area (square miles)
 X_2 = 2-year 24-hour precipitation intensity (inches)
 X_3 = Soil permeability (inches/hour)
 X_4 = Mean maximum January temperature (degrees F)
 X_5 = Soil storage capacity (inches)

Note: * = multiplication, ^ = exponentiation

Prediction Equation Coefficients

Return Period T	Coefficients					
T	$C_0(T)$	$C_1(T)$	$C_2(T)$	$C_3(T)$	$C_4(T)$	$C_5(T)$
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) 0.430
 2-year 24-hour precipitation intensity (inches) 3.740

Culvert Scour Assessment

Appendix B - Deadwood Trib North

Soil permeability	(inches/hour)	2.680
Mean maximum January temperature	(degrees F)	47.100
Soil storage capacity	(inches)	0.130

PEAK DISCHARGE ESTIMATES BASED ON PREDICTION EQUATIONS

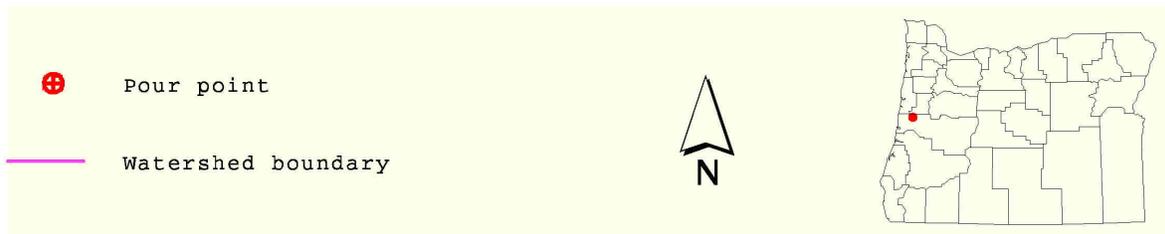
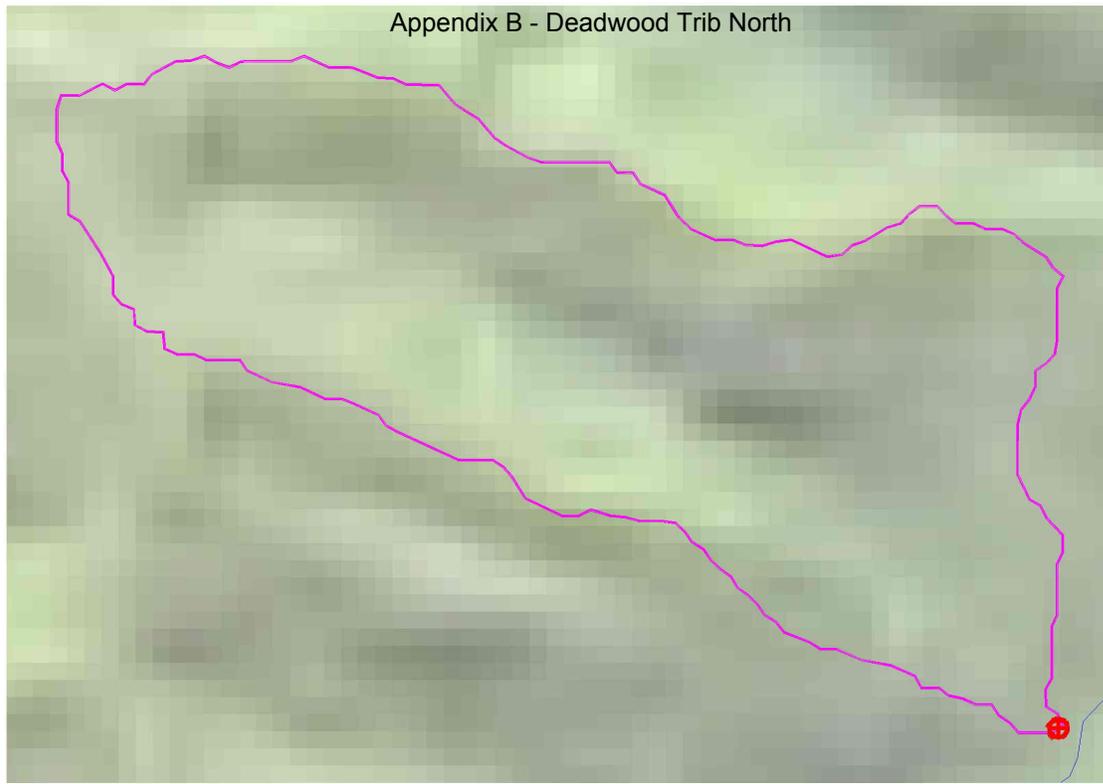
Return Period years	Peak Flow cfs	95% Confidence	
		Lower Limit cfs	Upper Limit cfs
2	39.9	23.4	68.0
5	57.7	34.8	95.5
10	70.1	42.1	117
20	82.4	48.6	140
25	86.4	50.7	147
50	98.7	56.7	172
100	111	61.9	199
500	140	73.2	268

REFERENCES

- Cooper, R.M., Estimation of peak discharges for rural, unregulated streams in western Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5116, 134 p.
- Cooper, R.M., Estimation of peak discharges for rural, unregulated streams in eastern Oregon: Oregon Water Resources Department Open File Report SW 06-00, 150 p.
- Thomas, B.E., Hjalmarson, H.W., and Waltemeyer, S.D., 1993, Methods for estimating magnitude and frequency of floods in the Southwestern United States: U.S. Geological Survey Open-File Report 93-419, 211 p.
- Harris, D.D., Hubbard, L.E. and Hubbard, L.E., 1979, Magnitude and frequency of floods in western Oregon: U.S. Geological Survey Open-File Report, 79-553, 29 p.
- Harris, D.D., and Hubbard, L.E., 1982. Magnitude and frequency of floods in eastern Oregon: U.S. Geological Survey Water Resources Investigations Report 82-4078, 39 p.
- Sumioka, S.S., Kresch, D.L., and Kasnick, K.D., 1997, Magnitude and frequency of floods in Washington: U.S. Geological Survey Water Resources Investigations Report 97-4277, 91 p.
- Interagency Advisory Committee on Water Data, 1982, Guidelines for determining flood flow frequency: Bulletin 17B of the Hydrology Subcommittee, Office of Water Data Coordination, U.S. Geological Survey, Reston, Virginia, 28 p.
- Riggs, H.C., 1973, Regional analysis of streamflow characteristics: U.S. Geological Survey Techniques of Water Resources Investigations, book 4, chapter B3, 15 p.
- Tasker, G.D., and Stedinger, J.R., 1989, An operational GLS model for hydrologic regression: Journal of Hydrology, v. 111, p. 361-375
- Wiley, J.B., Atkins, Jr., J.T., and Tasker, G.D., 2000, Magnitude and frequency of peak discharges for rural, unregulated streams in West Virginia: U.S. Geological Survey Water-Resources Investigations

Report 00-4080, 93 p. Appendix B - Deadwood Trib North

Culvert Scour Assessment



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Report and output shapefile is available for 7 days at:
<http://www1.wrd.state.or.us/files/wars/070606.170054.zip>