Appendix B - Pine Creek

PEAK DISCHARGES FOR SELECTED FREQUENCIES

Report prepared for: autodelin
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Watershed Name: PINE 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^C0(T))*(CHR1^C1(T))* . . . (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 = 3680 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	C0(T)	C1(T)	C2(T)	C3(T)	C4(T)	C5(T)
			Coefficients			
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)      1.910
   Mean watershed slope                     (degrees)          15.900
   2-year 24-hour precipitation intensity   (inches)            2.670
   Mean minimum January temperature         (degrees F)        29.100
   Mean maximum January temperature         (degrees F)        43.000
   ------------------------------------------------------------------


         PEAK DISCHARGE ESTIMATES BASED ON PREDICTION EQUATIONS
                  --------------------------------
                  |Return|  Peak |95%  Confidence|
                  |Period|  Flow |  Lower | Upper |
                  |      |       |  Limit | Limit |
                  | years|  cfs  |  cfs   |  cfs  |
                  --------------------------------
                  |     2|   58.1|   27.4|    123|
                  |     5|   90.7|   46.8|    176|
                  |    10|    113|   59.7|    215|
                  |    20|    135|   71.4|    256|
                  |    25|    142|   75.0|    270|
                  |    50|    165|   85.6|    317|
                  |   100|    188|   95.6|    368|
                  |   500|    244|    117|    511|
                  --------------------------------
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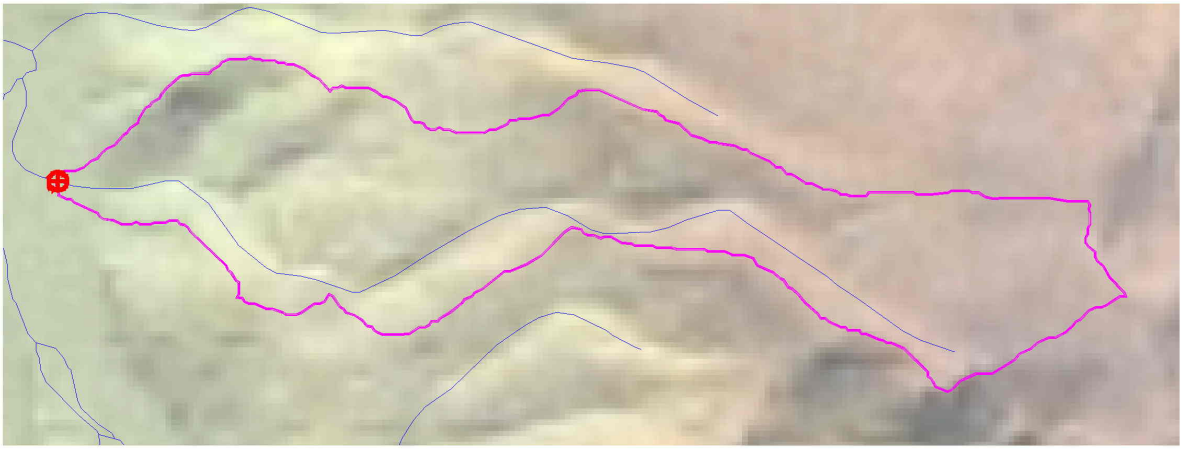
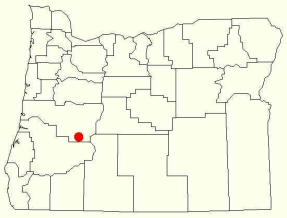


0 1 mile

Pour point

Watershed boundary

N



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