

Rainfall and Flooding from the Early December Multi-hazards Storm – How did THAT Happen?

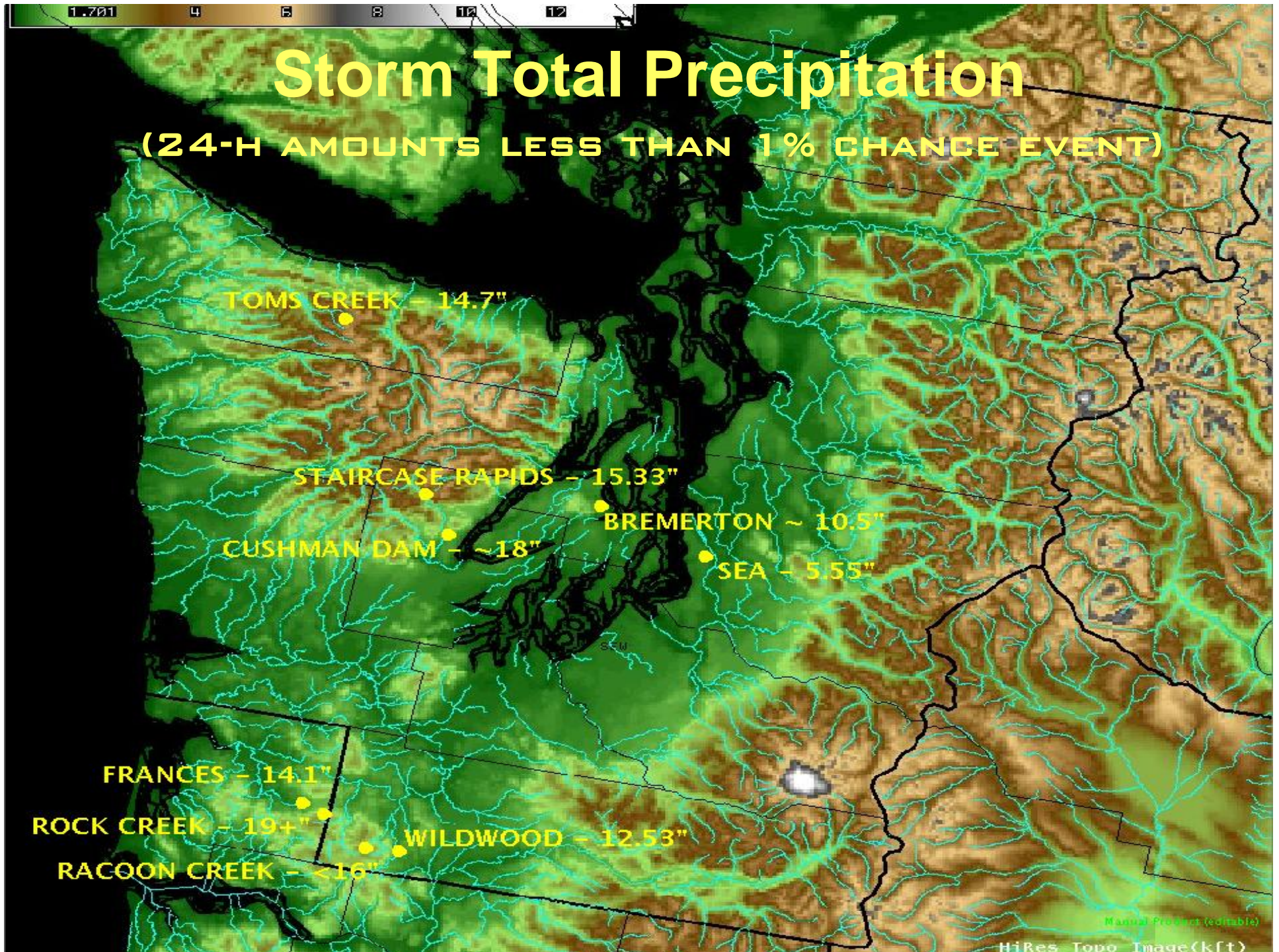


Pacific Northwest
Weather Workshop
February 29, 2008

J. Brent Bower
Sr. Service
Hydrologist
NWS Seattle

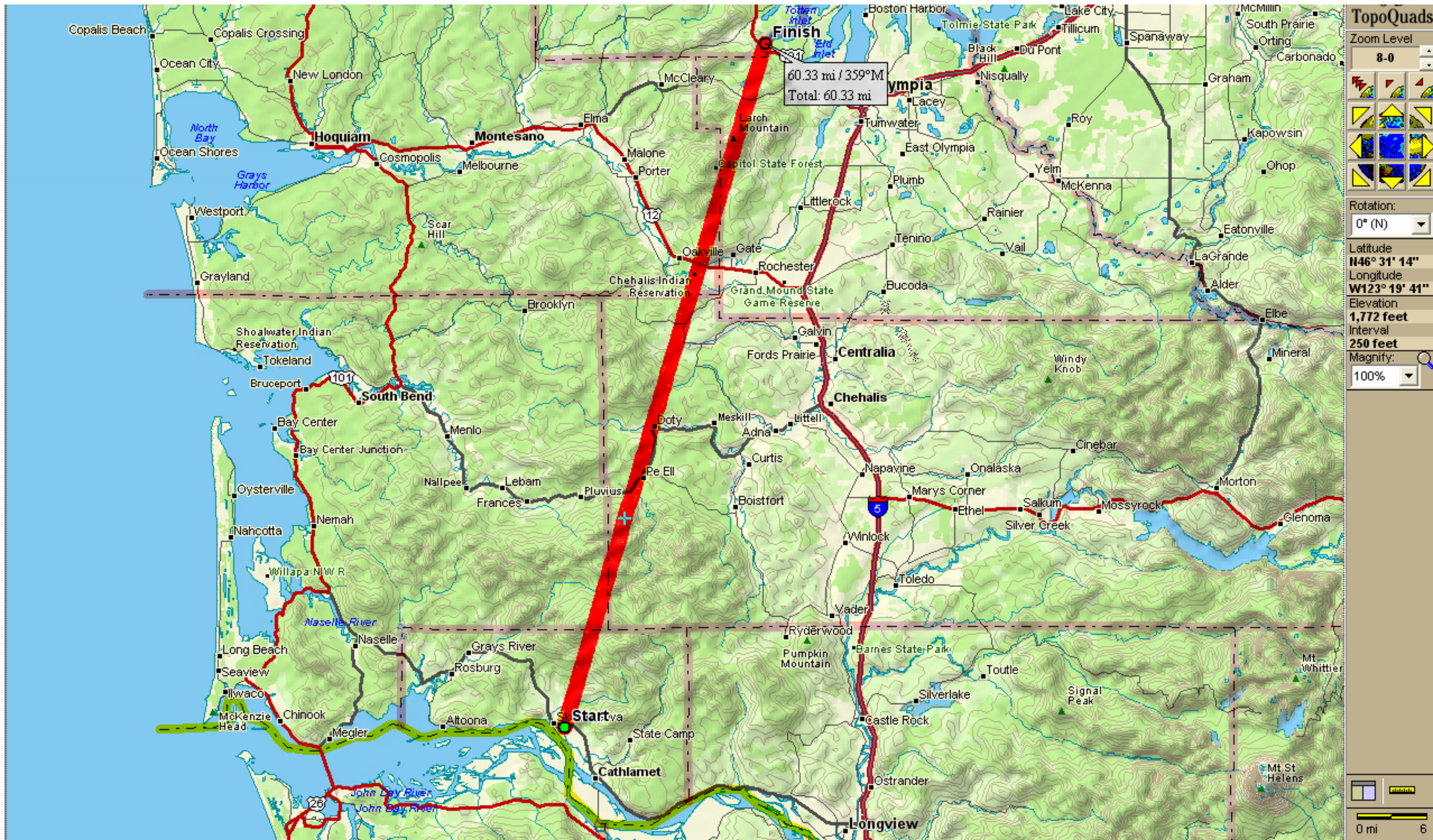
Storm Total Precipitation

(24-H AMOUNTS LESS THAN 1% CHANCE EVENT)



Manual Product (editable)

HiRes Topo Image(kft)



TopoQuads

Zoom Level
8-0



Rotation:
0° (N)

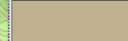
Latitude
N46° 31' 14"

Longitude
W123° 19' 41"

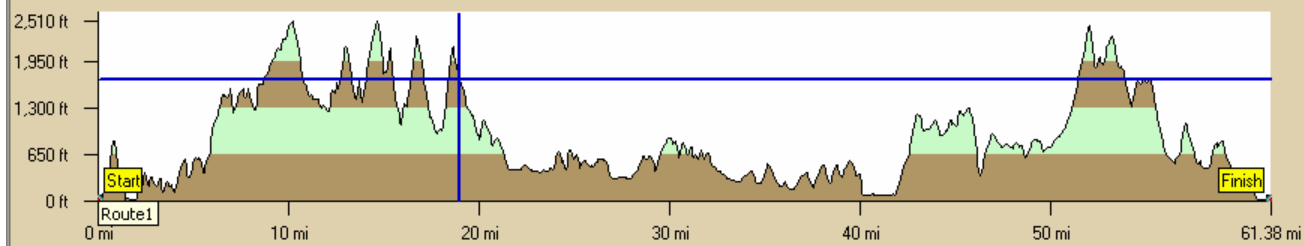
Elevation
1,772 feet

Interval
250 feet

Magnify:
100%



Find Print MapData Draw GPS Route Profile 3-D Map Display NetLink



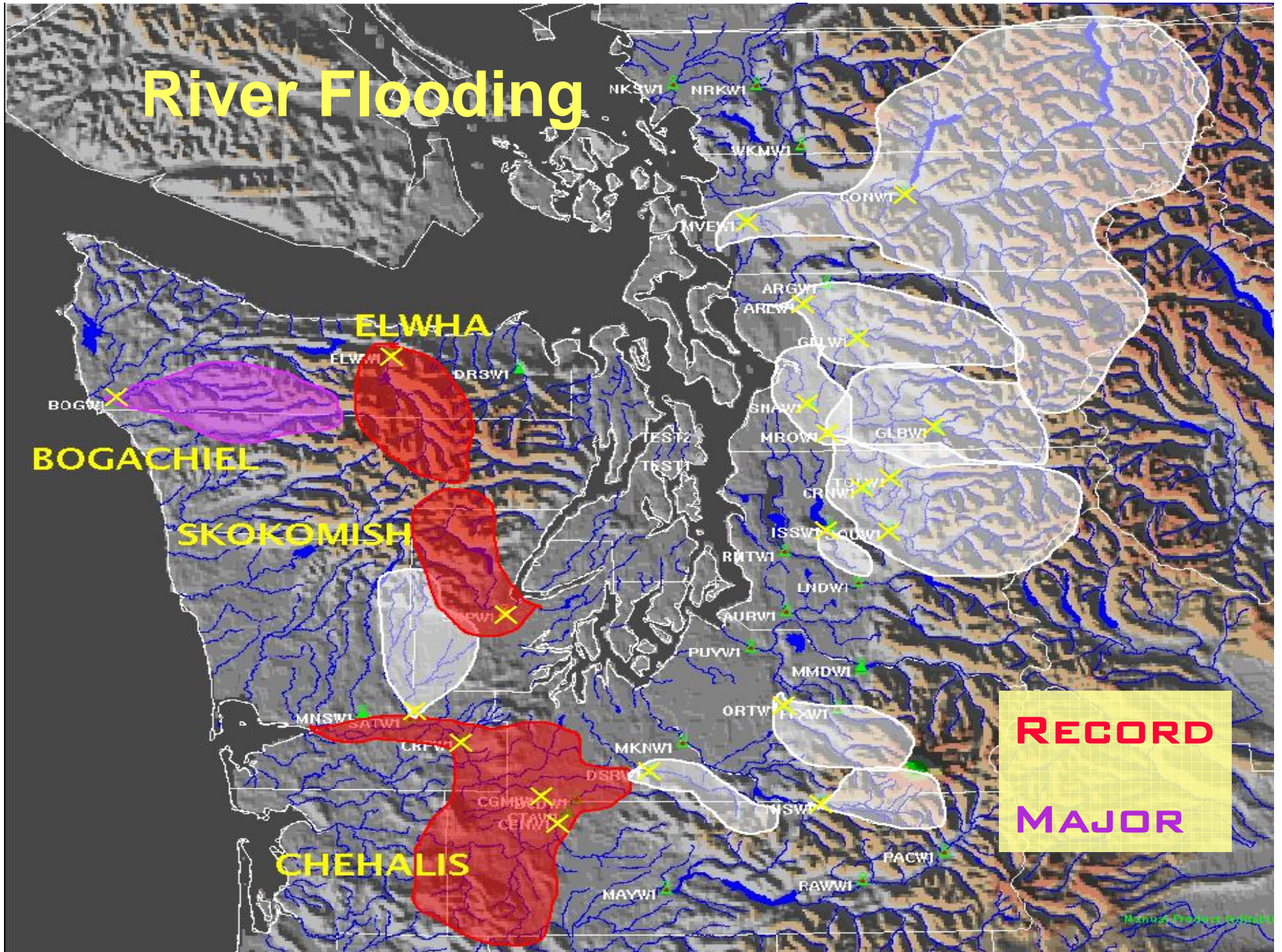
Latitude: N46° 31' 13.67"
 Longitude: W123° 19' 41.08"
 Lin Dist: 18.99 mi
 Terr Dist: 18.99 mi
 Climb Dist: 10.50 mi
 Desc Dist: 8.30 mi

Reverse Clear More





River Flooding

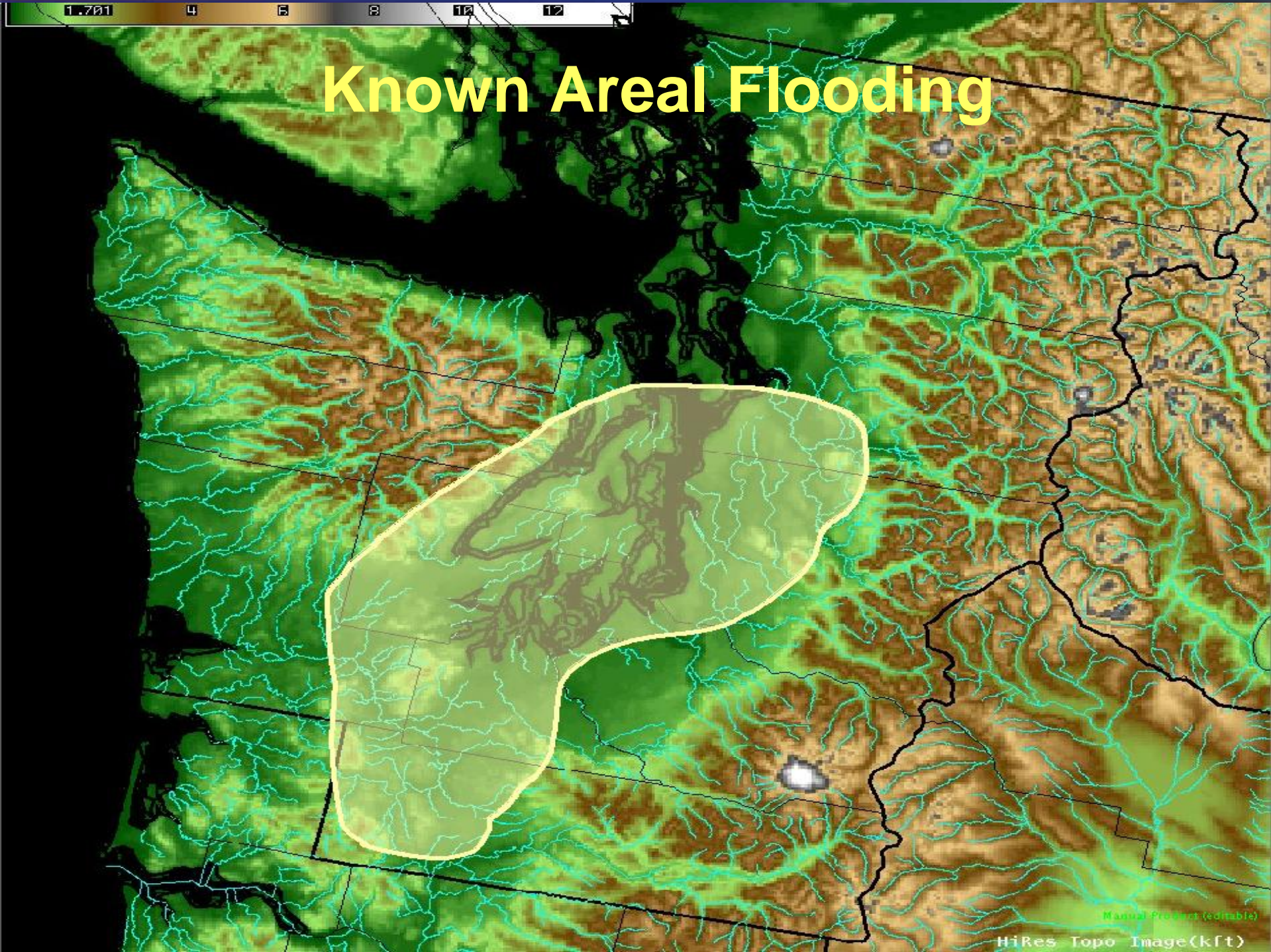


Flood Stats

- Official warning point rivers in flood = 16
- Official warning point rivers above major = 4
- Forecast points at or above flood = 21
- Forecast points above Major = 6
- Forecast points with new records = 5



Known Areal Flooding



Areal Flood and Landslides

- Several hundreds of rescues
 - Helicopter, SAR boats, vehicles, personal water craft
 - Rooftops, cars, through hole dug into roof
- Many injuries, near escapes
- Areal flood
 - Much of the area
 - Much of the damage
 - Moderate intensity for extended period
 - 2 fatalities
- Landslides
 - Dozens in Seattle
 - Many more across Region
 - Homes, apartments evacuated
 - 1 fatality



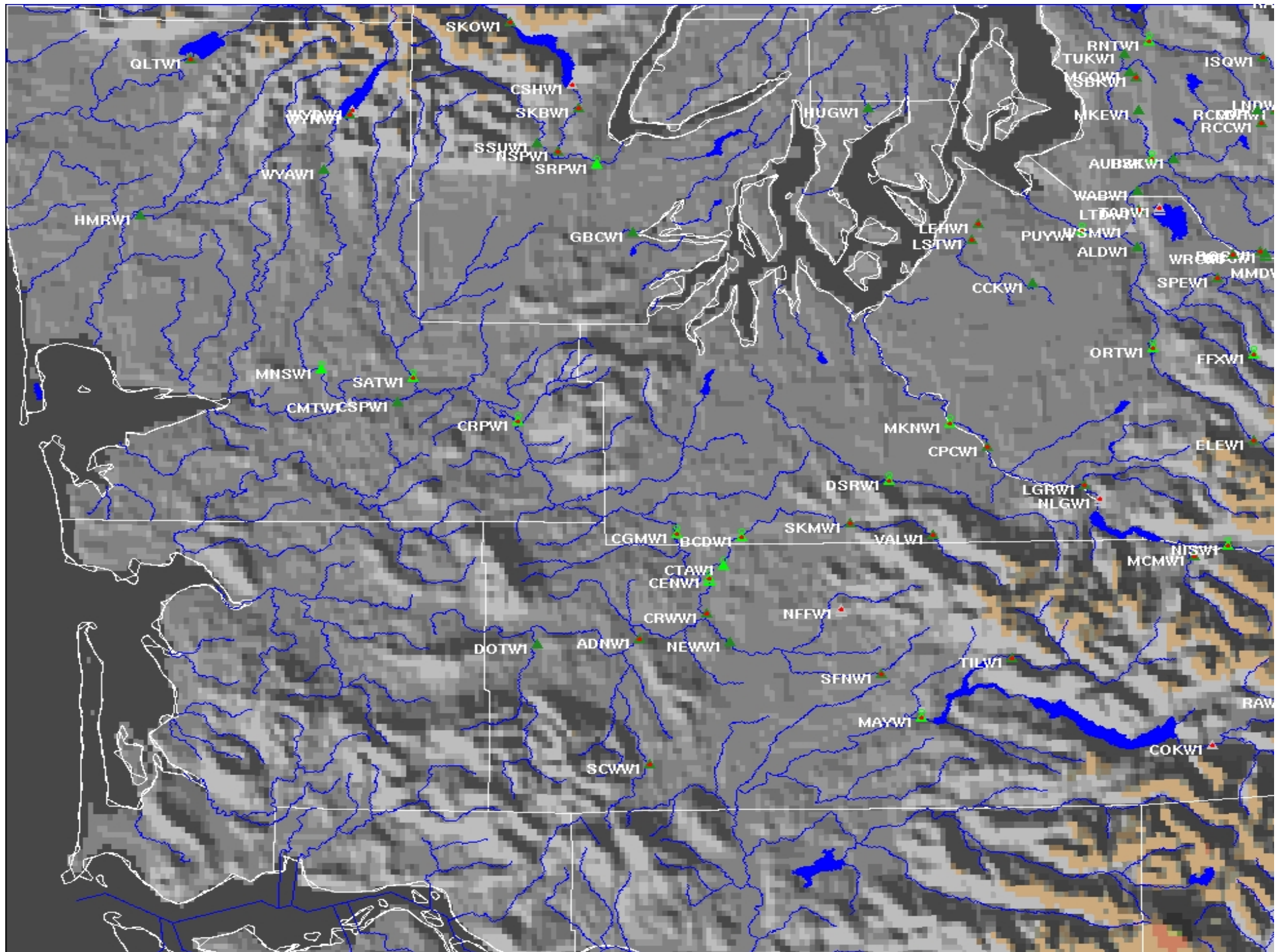
Known Landslides

> 1000 IN SOUTH WEST ALONE

Manual Product (editable)

HiRes Topo Image(kft)





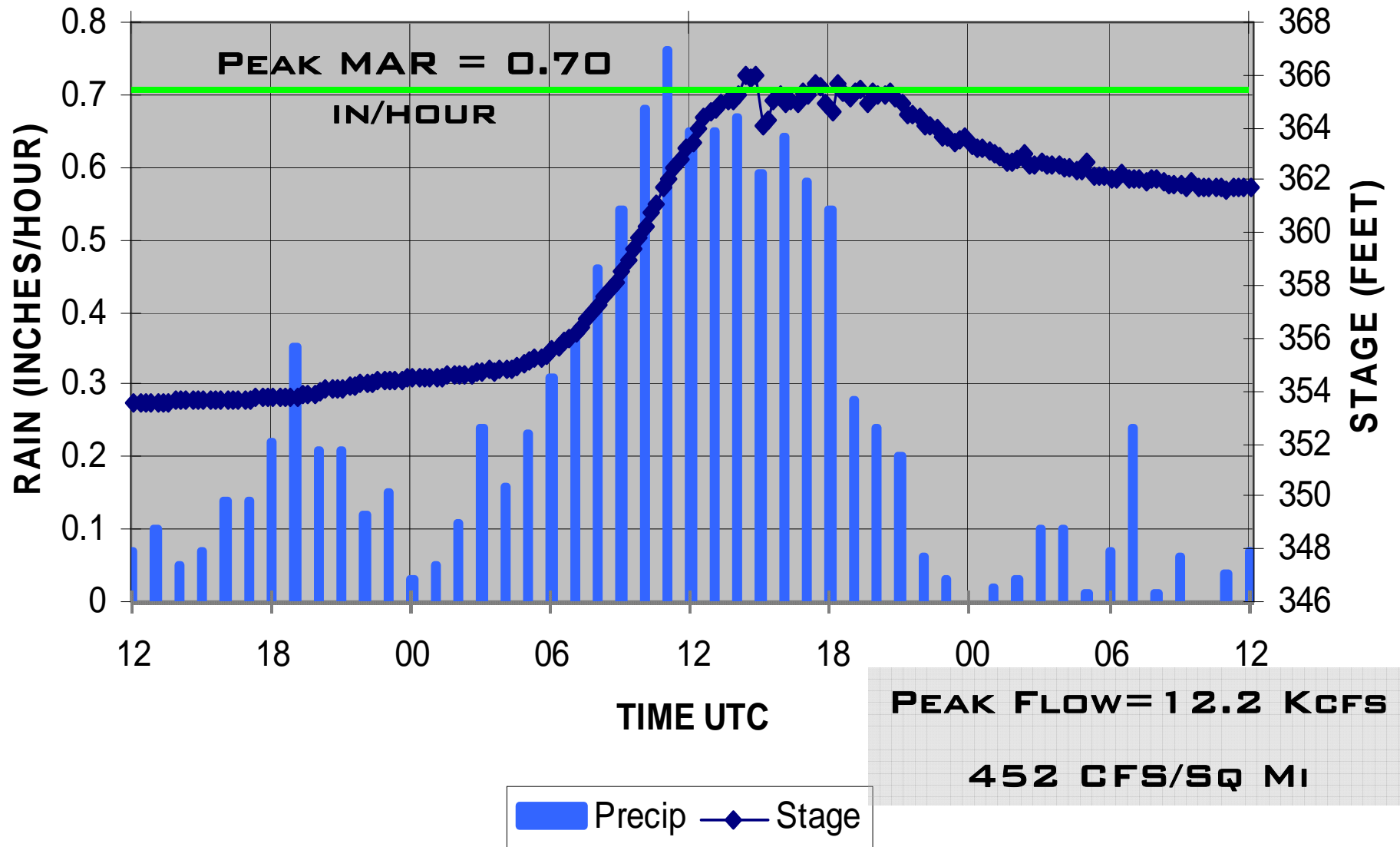
SF Chehalis - Wildwood

DAYS

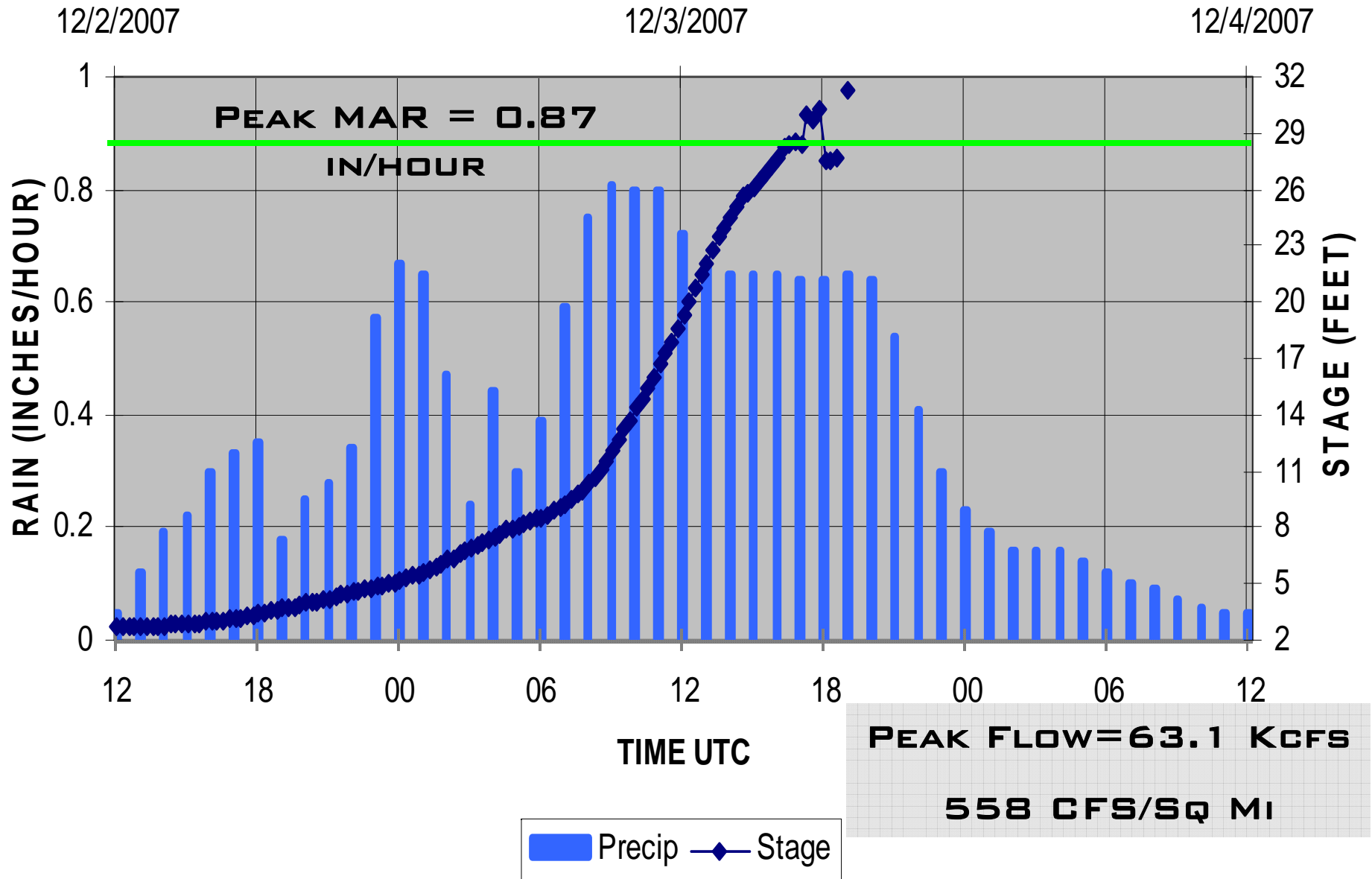
12/2/2007

12/3/2007

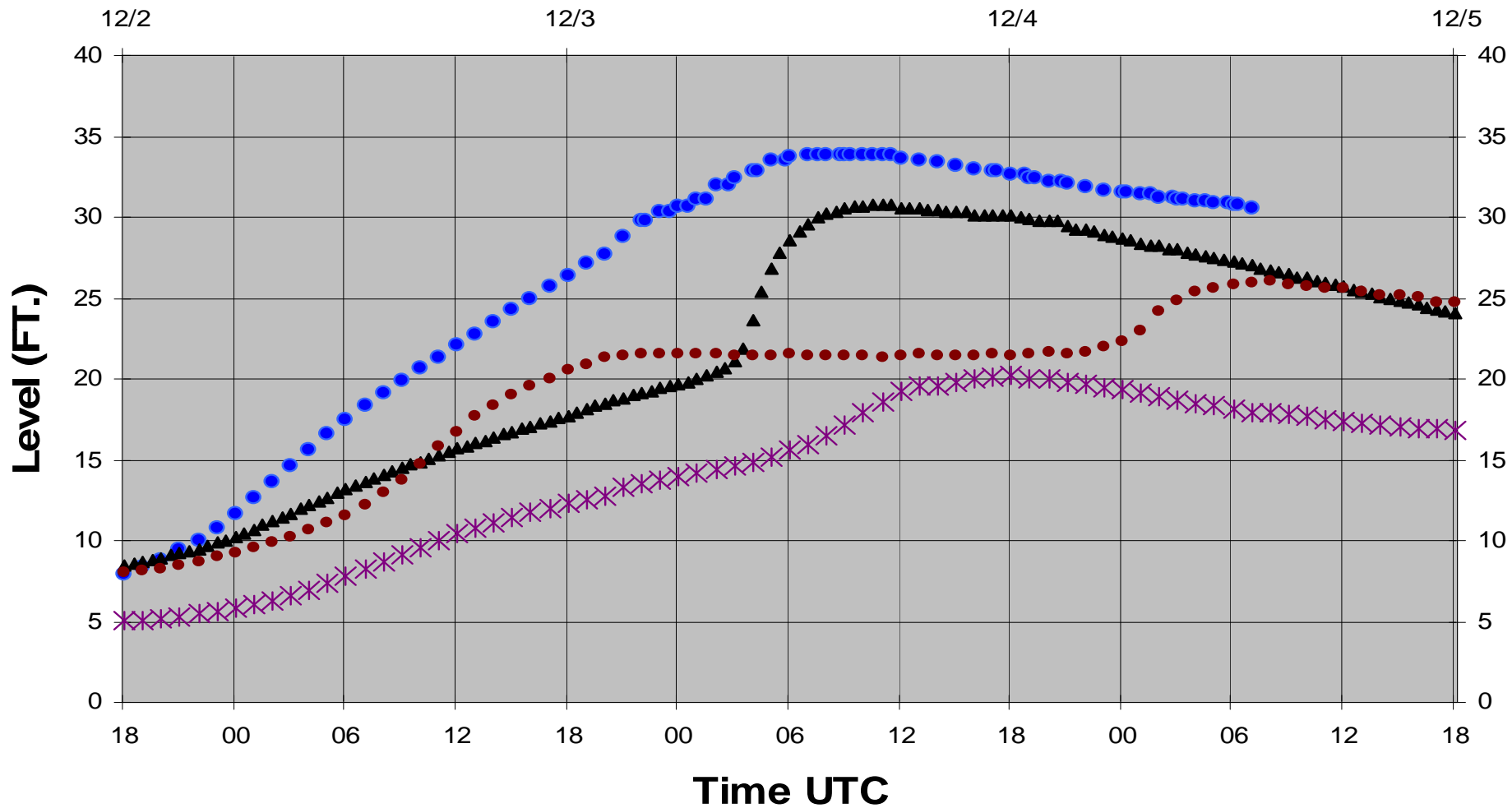
12/4/2007



Chehalis - Doty - Rock Creek



Chehalis River



Flood Stats

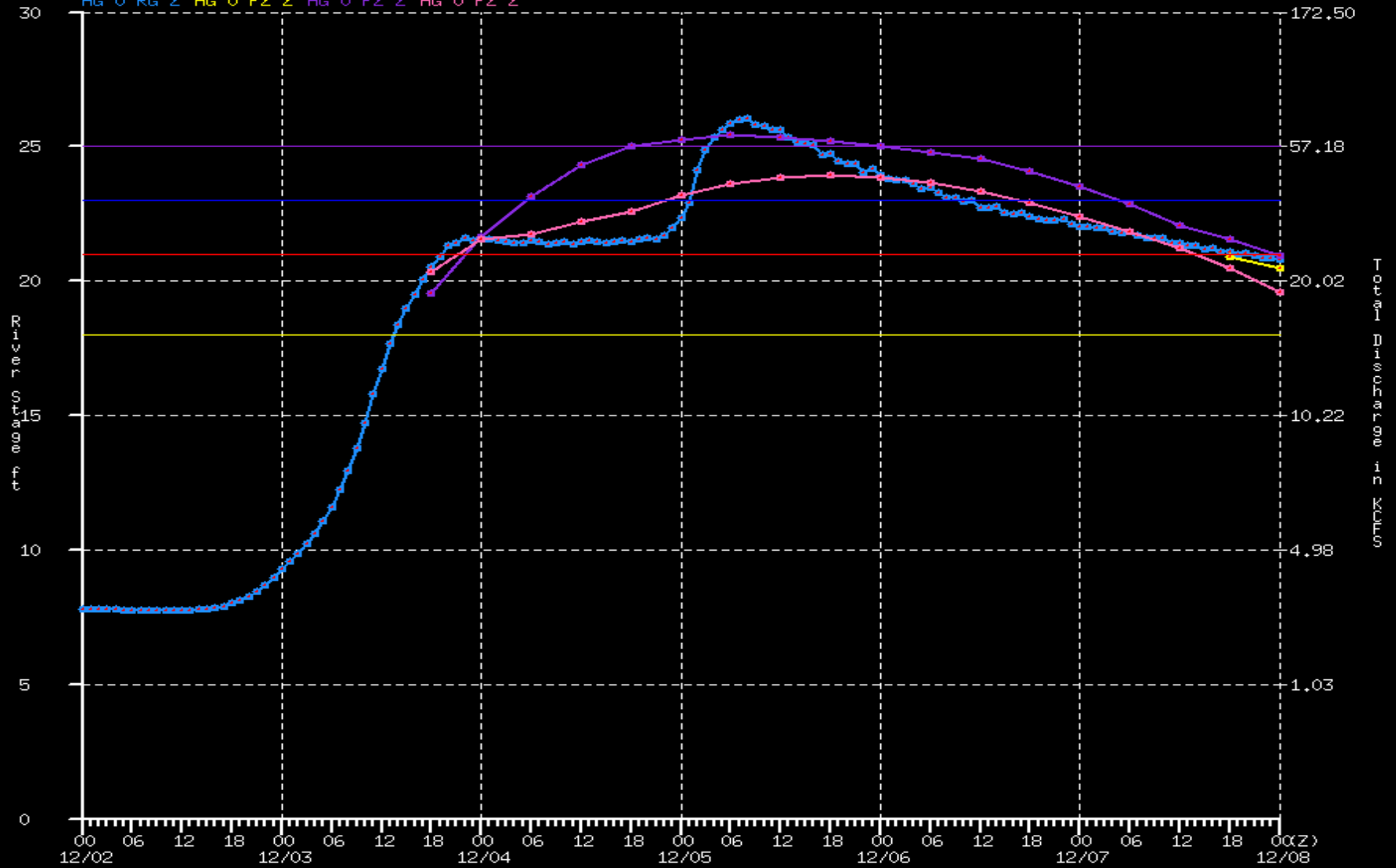
- Chehalis – Doty 63100 cfs 558 cfs/sq mi Peak MAP 0.87 in/h
- SF Chehalis – Wildwood 12200 cfs 452 cfs/sq mi Peak MAP 0.70 in/h
- Newaukum – Centralia 12900 cfs 83 cfs/sq mi Peak MAP 0.13 in/h
- Chehalis – Centralia 70300 cfs 108 cfs/sq mi Peak MAP 0.18 in/h
- Chehalis – Grand Mound 79100 cfs 88 cfs/sq mi Peak MAP 0.14 in/h
- Chehalis – Porter 74600 cfs 58 cfs/sq mi Peak MAP 0.09 in/h

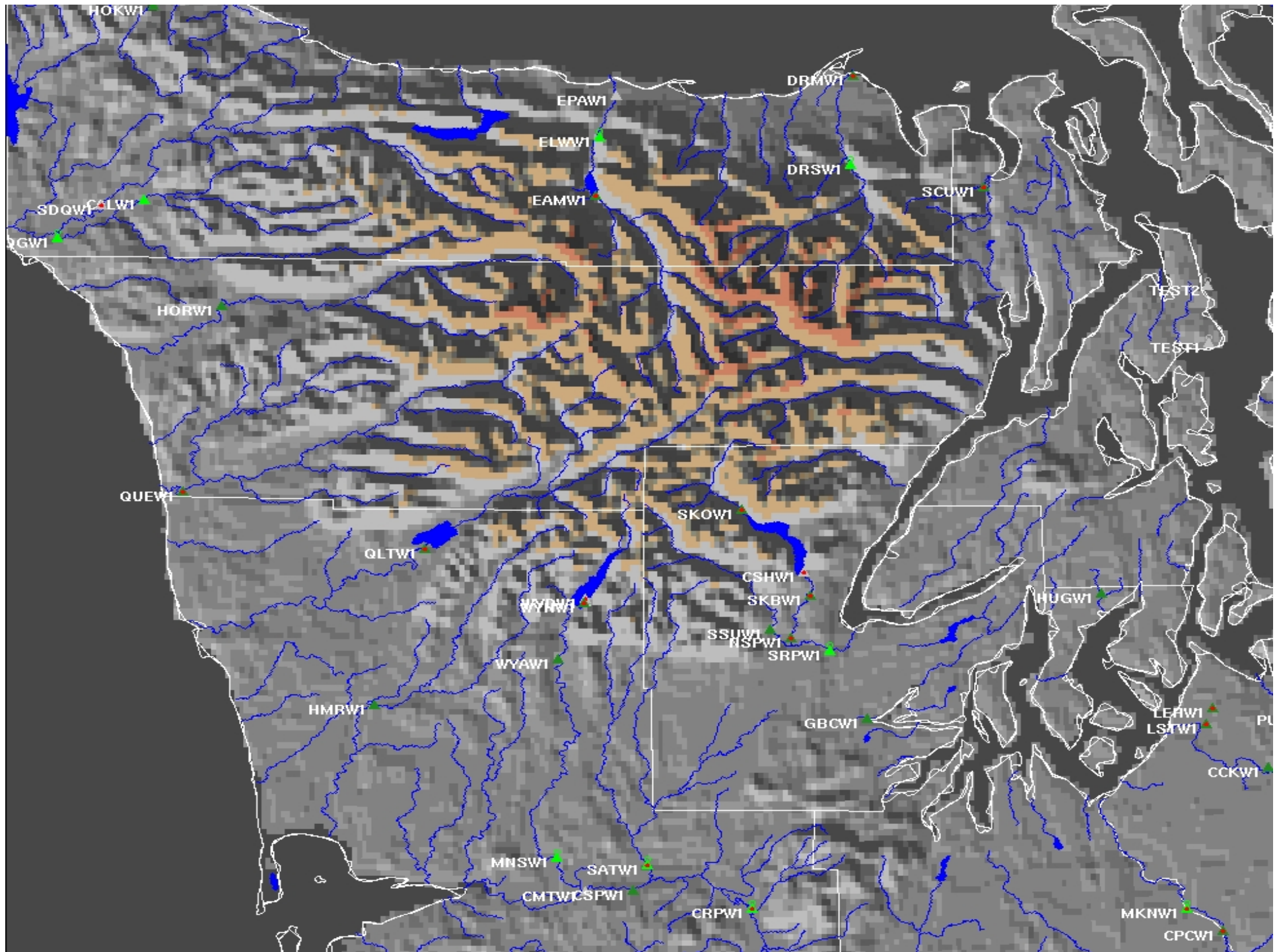
- NF Skokomish – Staircase 20000 cfs 350 cfs/sq mi Peak MAP 0.54 in/h

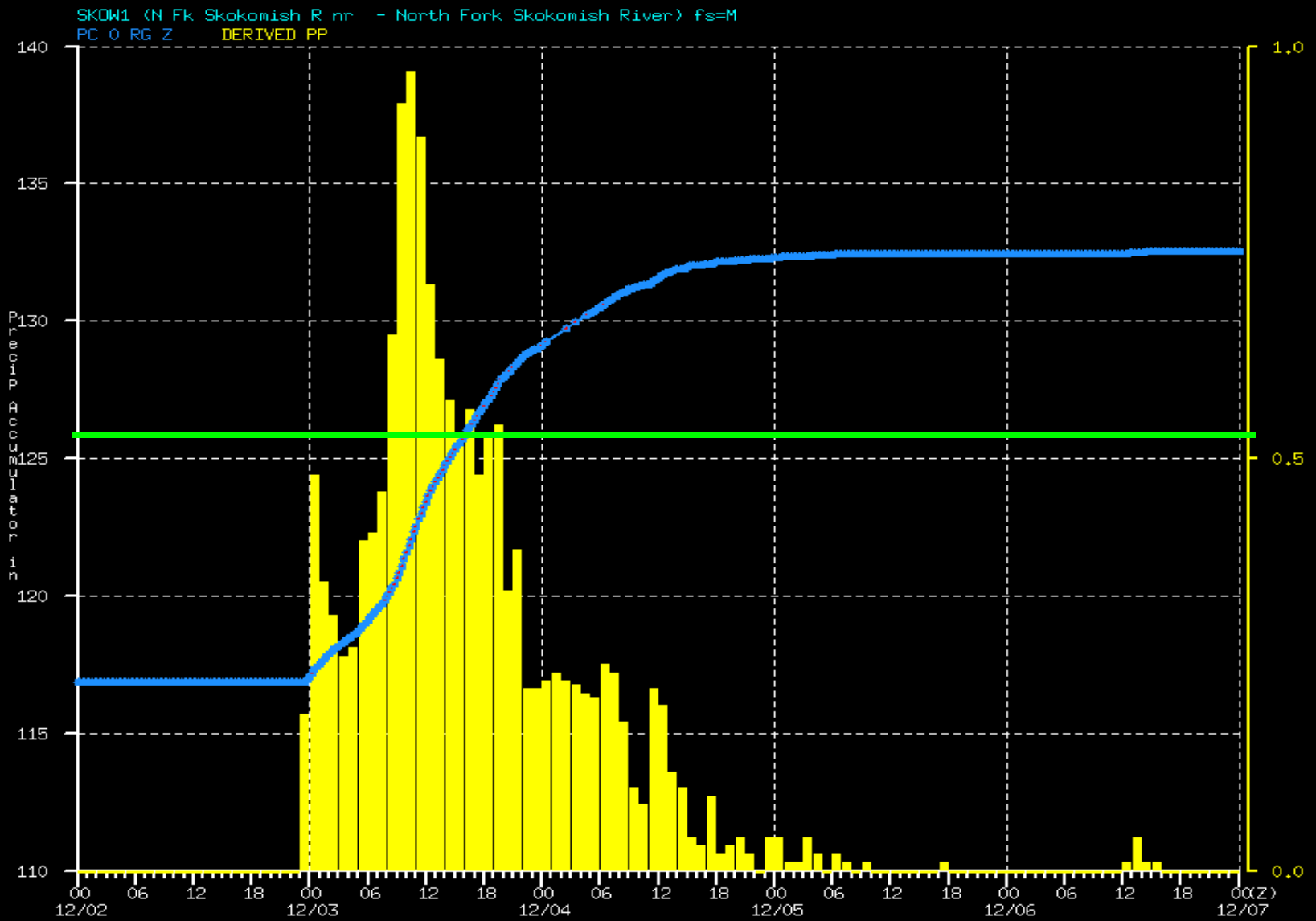


Interesting Hydrographs

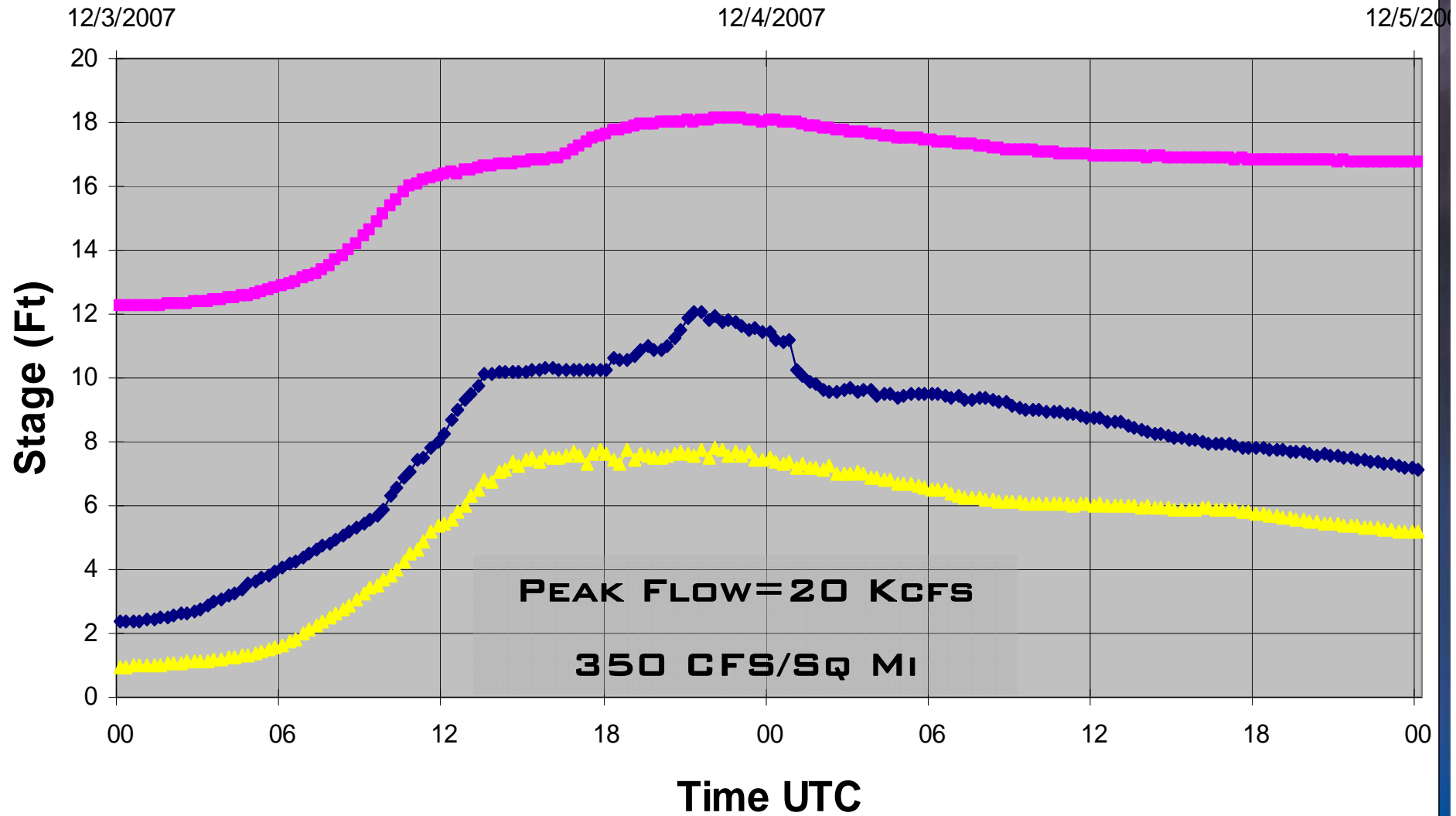
CRPW1 (Chehalis River at Po - Chehalis River) fs=21.0
HG 0 RG Z HG 0 FZ Z HG 0 FZ Z HG 0 FZ Z







Skokomish River



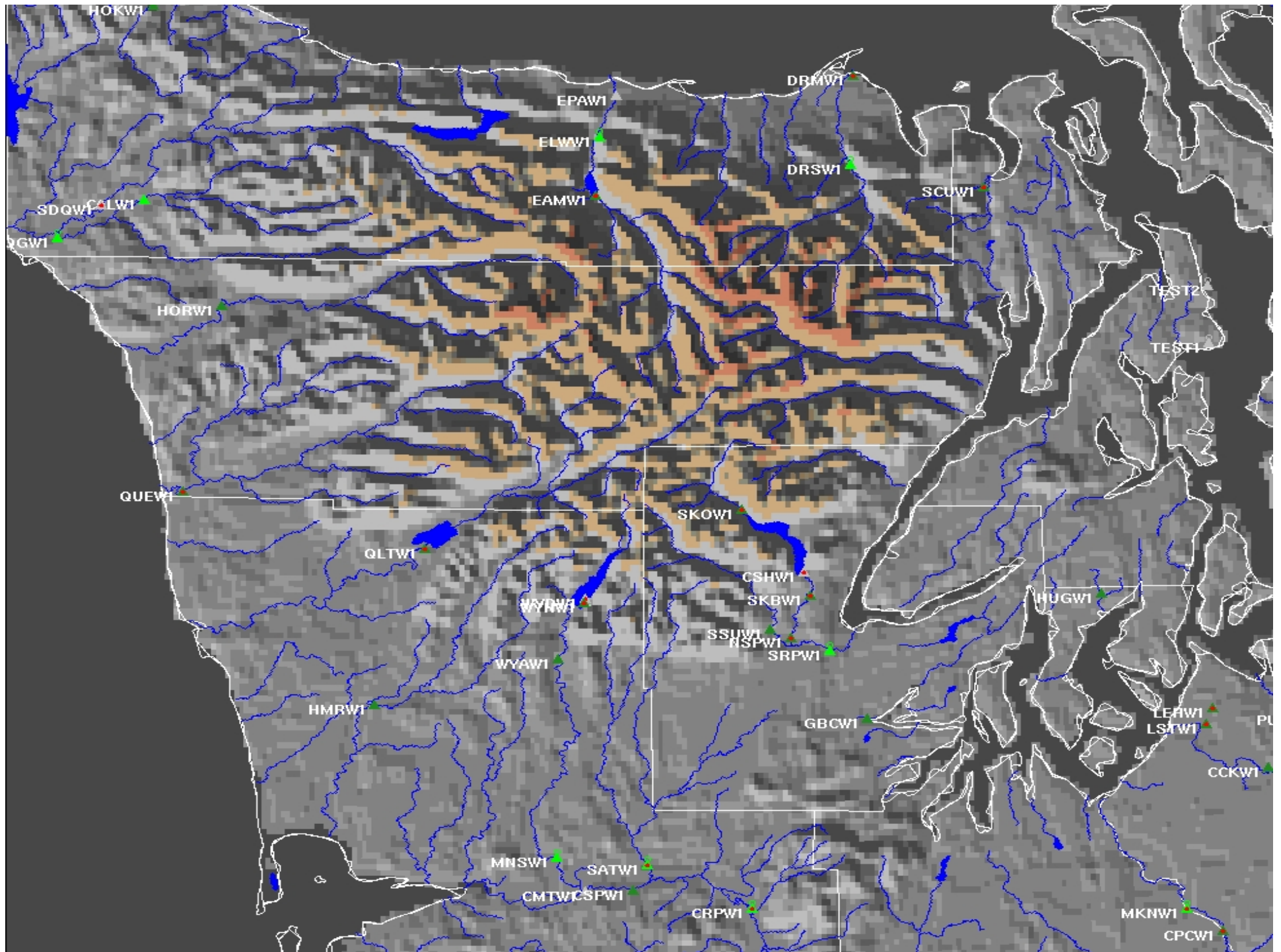
—■— Potlach —◆— NF Staircase —▲— SF Union

Flood Stats

- Chehalis – Doty 63100 cfs 558 cfs/sq mi Peak MAP 0.87 in/h
- SF Chehalis – Wildwood 12200 cfs 452 cfs/sq mi Peak MAP 0.70 in/h
- Newaukum – Centralia 12900 cfs 83 cfs/sq mi Peak MAP 0.13 in/h
- Chehalis – Centralia 70300 cfs 108 cfs/sq mi Peak MAP 0.18 in/h
- Chehalis – Grand Mound 79100 cfs 88 cfs/sq mi Peak MAP 0.14 in/h
- Chehalis – Porter 74600 cfs 58 cfs/sq mi Peak MAP 0.09 in/h

- NF Skokomish – Staircase 20000 cfs 350 cfs/sq mi Peak MAP 0.54 in/h





Dungeness R. - SNOTEL

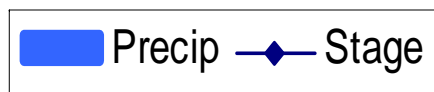
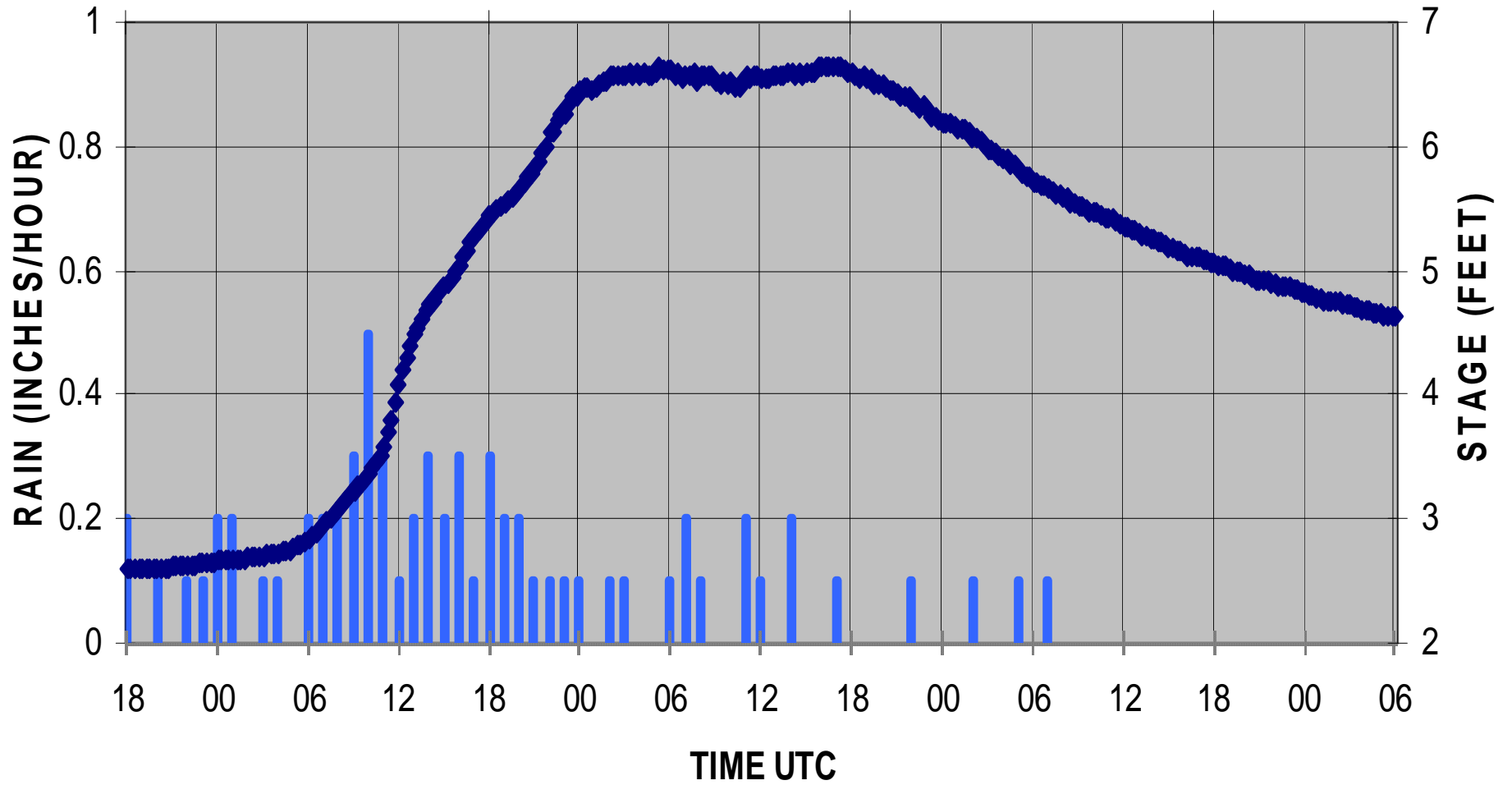
DAYS

12/2/2007

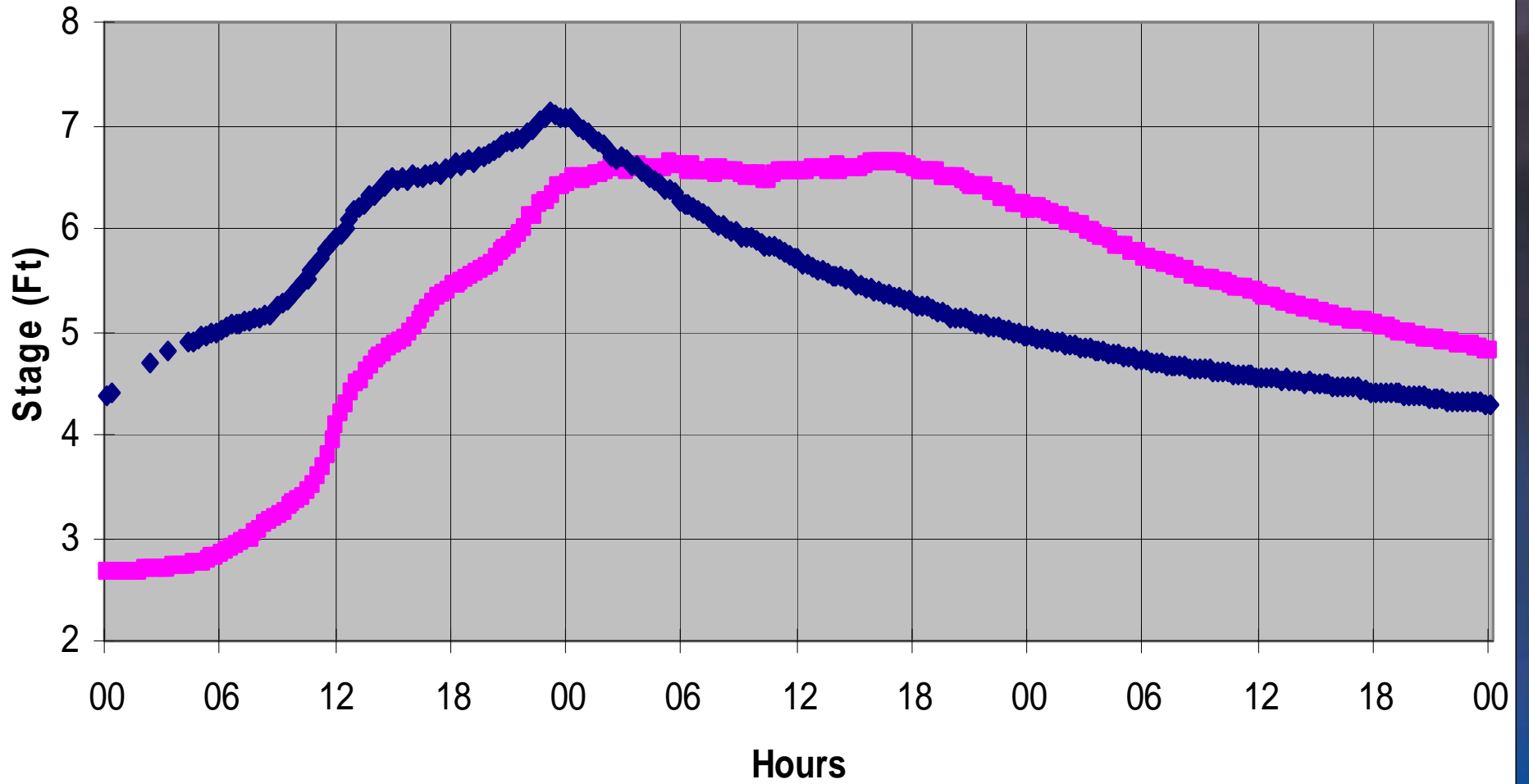
12/3/2007

12/4/2007

12/5/2007



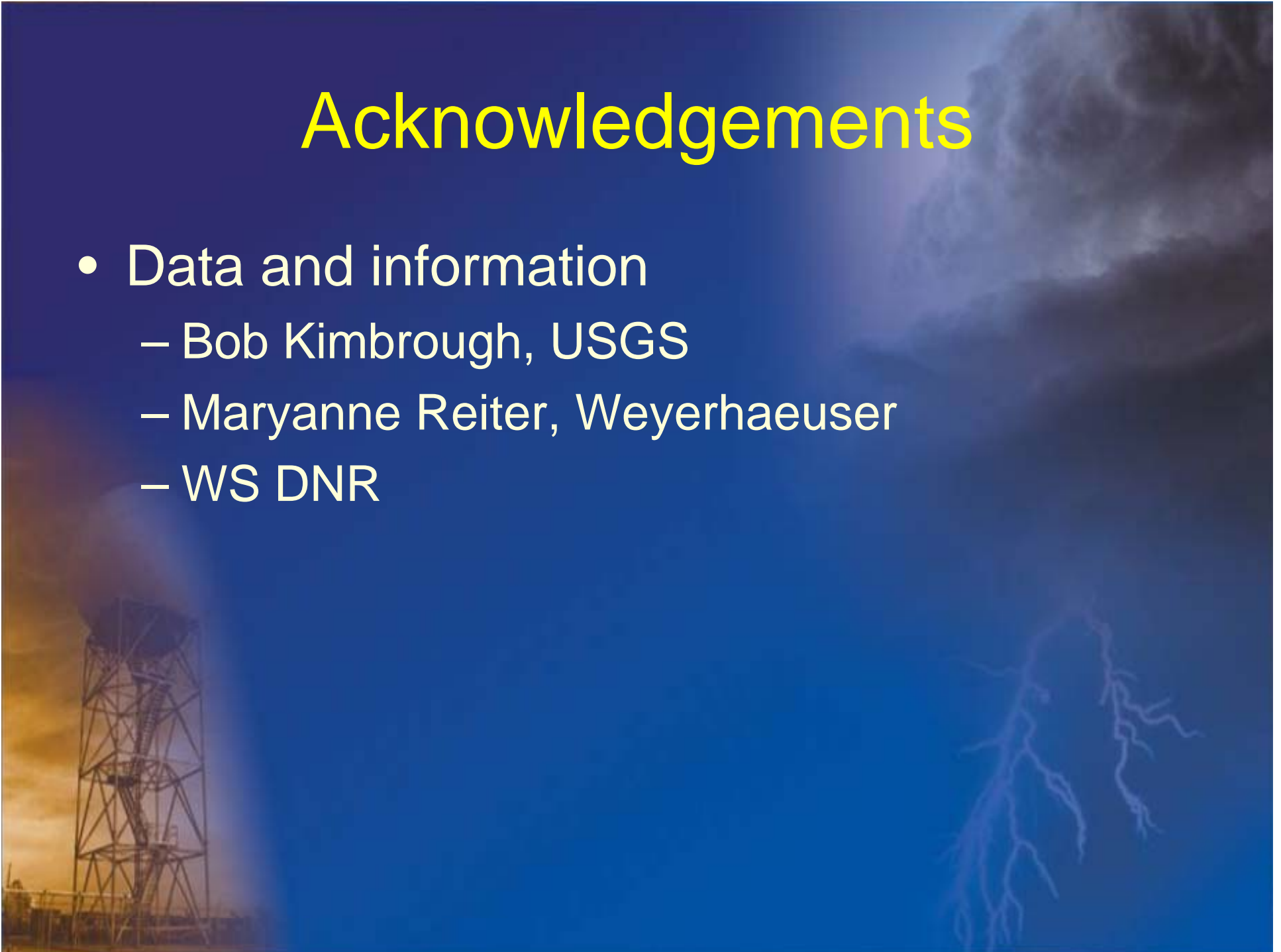
Dungeness R



—■— Dec-07 —◆— Nov-03

Acknowledgements

- Data and information
 - Bob Kimbrough, USGS
 - Maryanne Reiter, Weyerhaeuser
 - WS DNR



EXIT 77
6 WEST
Pe Ell
Raymond

4 9:57 AM

Chehalis River

