



**NOVEMBER 29, 1995 FLOOD ANALYSIS**  
**THE BIG PICTURE**

Upper Baker Normal Full Pool 724 feet  
 Upper Baker November 15<sup>th</sup> requirement **707.9** feet  
 Lower Baker (Shannon) Full 438.6 feet  
 Upper Baker powerhouse maximum 4,800 (?)  
 Ross November 20<sup>th</sup> level is **1595.6**  
 Ross minimum winter pool at 1592.1  
 Ross powerhouse maximum 14,000 cfs

| Date          | Time | ROSS <sup>1</sup> |     | UPPER BAKER   |       | NHALEM | MARMT | L/B    | CON | MT V | SAUK | CORPS FLOOD NOTES <sup>2</sup>  |
|---------------|------|-------------------|-----|---------------|-------|--------|-------|--------|-----|------|------|---|
|               |      | Elev.             | Out | Elev.         | Out   |        |       |        |     |      |      | SRM   |
| 26-Nov        | 1115 |                   |     |               |       |        |       |        |     |      |      | Corps calls PSE and request they go to 10,000 cfs discharge.  |
| 26-Nov        | 1130 |                   |     |               |       |        |       |        |     |      |      | Corps calls SCL and requested last 6-hour average inflow. Told it was 6,300 cfs. Corps advises SCL it would take a discharge of 9,000 cfs over inflow averaged over the next 5 days for Ross to get to its Dec 1 <sup>st</sup> flood control pool. Currently Ross is discharging 14,500 cfs. 4 <sup>th</sup> turbine not working. As soon as it comes on line they will go to full powerhouse capacity and close spill gates. |
| <b>27-Nov</b> | 0700 |                   |     | <b>709.42</b> | 9,800 |        |       | 11,800 |     |      |      | Corps calls PSE to get status report. U/B inflow = 3,370 cfs. Outflow 9,800 L/B inflow (local) 1,180, outflow 11,800. L/B to increase to 13,300 cfs in a couple of hours  |
| 27-Nov        | 0715 | 1,595.48          |     |               |       |        |       |        |     |      |      | SCL advises Corp current status elev. 1595.48. Inflow = 13,560 cfs. Outflow 13,200 cfs. Gorge outflow= 14,400 cfs. Diablo outflow = 15,000 cfs. All 4 turbines now working at Ross.   |
| 27-Nov        | 0800 |                   |     |               |       |        |       |        |     |      |      | SCL requested to go to 18,000 cfs outflow at Ross due to very wet weather forecast. Current turbine capacity 13,600. Corps requested 4,400 spill at Ross. SCL advises needed supervisor approval before accommodating Corp request.   |

<sup>1</sup> Ross and Upper Baker columns obtained from Corps of Engineers Hydraulic Study. All other data columns obtained from USGS.

<sup>2</sup> All info from Corps log books obtained from FOIA request.



**NOVEMBER 29, 1995 FLOOD ANALYSIS**  
**THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |        | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V  | SAUK | CORPUS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER   |
|--------|------|-------------------|--------|-------------|-------|--------|-------|-------|-------|-------|------|--|
|        |      | Elev.             | Out    | Elev.       | Out   |        | SRM   | SHAW  | CON   | MVEV  | SAK  |  |
| 27-Nov | 0830 |                   |        |             |       |        |       |       |       |       |      | Corps contacts SCL supervisor. Supervisor reluctant to spill but ultimately agrees to do so. Corps expecting major damage on Skagit later tonight. SCL during flood would like to keep 5,000 cfs out of Ross for power generation but would go to zero if requested to do so.  |
| 27-Nov | 1200 | 1,595.20          | 18,000 | 708.77      | 10000 | 19245  | 18309 | 11925 | 42860 | 51856 | 9917 |  |
| 27-Nov | 1250 |                   |        |             |       |        |       |       |       |       |      | SCL advises it would create no problem for them if Corps gave order to maintain 26,000 cfs at Newhalem. .08 inches of rain in past 4 hrs at Diablo.  |
| 27-Nov | 1300 | 1,595.13          | 18,000 | 708.66      | 10000 | 19200  | 20303 | 11950 | 42970 | 51685 | 9917 | Corps calls Dave Brookings, Skagit County Public Works and ask him if it is okay to target Newhalem at 26,000 cfs although that would induce minor flooding in Concrete later that day. Release would mean flood stage of 28 feet would be achieved 2-3 hours before it naturally would have occurred. Corps assures Brookings they would cut back discharges 8 hrs. before Concrete forecasted to go to 90,000 cfs. This is one of those ounce of prevention worth a pound of cure questions. Brookings advised Corps, "Go for it." |
| 27-Nov | 1310 |                   |        |             |       |        |       |       |       |       |      | Corps calls SCL and advised them to go to 26,000 cfs at Newhalem.  |
| 27-Nov | 1400 | 1,595.08          | 23,000 | 708.59      | 10000 | 19200  | 22156 | 11925 | 42805 | 51343 | 9880 |  |
| 27-Nov | 1410 |                   |        |             |       |        |       |       |       |       |      | Corps calls SCL and explained flood forecast scenario. SCL says they will be targeting 26,000 cfs at Newhalem shortly, first needed to manually open the Diablo spillway gates and sandbag Diablo powerhouse. SCL anticipates Ross discharge at 23,000 cfs.  |
| 27-Nov | 1500 | 1,595.02          | 23,000 | 708.46      | 10000 | 19965  | 22576 | 11950 | 42805 | 50917 | 9880 |  |
| 27-Nov | 1600 | 1,594.92          | 23,000 | 708.32      | 10000 | 26020  | 22734 | 12025 | 43025 | 50748 | 9880 |  |
| 27-Nov | 1700 | 1,594.81          | 23,000 | 708.21      | 10000 | 23520  | 25257 | 11950 | 44125 | 50452 | 9880 |  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS**  
**THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |        | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER   |
|--------|------|-------------------|--------|-------------|-------|--------|-------|-------|-------|-------|-------|---|
|        |      | Elev.             | Out    | Elev.       | Out   |        | SRM   | SHAW  | CON   | MVEV  | SAK   |   |
| 27-Nov | 1750 |                   |        |             |       |        |       |       |       |       |       | SCL advises Corps Ross outflow still 23,000 cfs. Newhalem at 25,000 cfs.  |
| 27-Nov | 1800 | 1,594.71          | 23,000 | 708.10      | 10000 | 25520  | 28552 | 11975 | 45280 | 50199 | 9954  |   |
| 27-Nov | 1900 | 1,594.60          | 23,000 | 708.00      | 10000 | 25720  | 27588 | 11925 | 46105 | 49989 | 9991  |   |
| 27-Nov | 2000 | 1,594.49          | 23,000 | 707.86      | 10000 | 25870  | 28210 | 11975 | 46875 | 49863 | 10066 |   |
| 27-Nov | 2020 |                   |        |             |       |        |       |       |       |       |       | PSE contacts Corps. U/B at elev. 707.86. PSE requested to end spill because powerhouse can pass current inflow. Corps agrees so long as inflow are being passed until further notice. PSE agrees not to raise U/B beyond 707.9 feet. PSE says they are drafting L/B to provide for high flows on Wednesday.   |
| 27-Nov | 2100 | 1,594.38          | 23000  | 707.86      | 4900  | 25870  | 28609 | 11900 | 48635 | 49696 | 10140 |   |
| 27-Nov | 2130 |                   |        |             |       |        |       |       |       |       |       | SCL wanted to know Corps plans for tonight. Corps advises early afternoon plans were to reduce Ross outflow to 5,000 around midnight OR same reduction if F.C. not required to accommodate SCL. SCL advises they prefer to leave as is at 23,000 cfs because of the problem getting staff to Ross by boat and truck to Diablo to make necessary gate closures. Corps replies they would prefer to continue the present spill until tomorrow. SCL stated they would check and get back to Corps. |
| 27-Nov | 2200 | 1,594.27          | 23000  | 707.86      | 4900  | 25820  | 28723 | 11800 | 50200 | 49779 | 10215 |   |
| 27-Nov | 2245 |                   |        |             |       |        |       |       |       |       |       | SCL calls Corps and they both agree to continue present spill rate (23,000 cfs) until tomorrow morning.   |
| 27-Nov | 2300 | 1,594.16          | 23000  | 707.86      | 5000  | 25820  | 29009 | 11650 | 51460 | 49947 | 10253 |   |
| 27-Nov | 2400 | 1,594.06          | 23000  | 707.86      | 5000  | 25870  | 28780 | 8529  | 49735 | 50157 | 10328 |   |
| 28-Nov | 100  | 1,593.96          | 23000  | 707.85      | 5000  | 25870  | 29181 | 8508  | 49515 | 50621 | 10442 |   |
| 28-Nov | 200  | 1,593.86          | 23000  | 707.85      | 5000  | 25770  | 29124 | 8487  | 49680 | 51130 | 10632 |   |
| 28-Nov | 300  | 1,593.77          | 23000  | 707.85      | 5000  | 25820  | 29238 | 8466  | 50320 | 51899 | 10901 |   |
| 28-Nov | 400  | 1,593.68          | 23000  | 707.65      | 5000  | 25770  | 29584 | 8466  | 51520 | 52676 | 11370 |   |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM | MARMT | L/B  | CON          | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER  |
|--------|------|-------------------|-------|-------------|------|--------|-------|------|--------------|-------|-------|--|
|        |      | Elev.             | Out   | Elev.       | Out  |        | SRM   | SHAW | CON          | MVEV  | SAK   |  |
| 28-Nov | 0415 | 1,593.66          | 23000 |             |      |        |       |      |              |       |       | SCL advises Ross elev. 1593.66. Inflow 10,000 cfs. Outflow 23,000 cfs. Pool dropping .1 foot per hour, predicted to hit flood control pool of <b>1592.81 by noon today</b> . Since 2200 only ¼ inch of rain at Ross, .4 inches at Diablo. Workers scheduled to be at project at 0800 and expect to begin shutting things down.                           |
| 28-Nov | 500  | 1,593.60          | 23000 | 707.67      | 5000 | 25770  | 29931 | 8466 | 51760        | 53503 | 11967 |  |
| 28-Nov | 0520 |                   |       |             |      |        |       |      |              |       |       | Corps checks with PSE for status. U/B 707.65 5,000 cfs outflow, 4,809 inflow. L/B 8,200 cfs outflow  |
| 28-Nov | 0555 |                   |       |             |      |        |       |      |              |       |       | Corps talks to SCL. Requested cutback to 5,000 cfs outflow. Due to availability of personnel this change might take an hour or two but will be done ASAP. Most current prediction is Concrete to go to 90,000 cfs by 11 am. Concrete flows predicted to go to over 194,000 cfs unregulated and 150,000 cfs regulated.                                    |
| 28-Nov | 600  | 1,593.52          | 23000 | 707.67      | 5000 | 25770  | 30279 | 8466 | 53320        | 54161 | 12826 |  |
| 28-Nov | 700  | 1,593.44          | 23000 | 707.68      | 5000 | 25820  | 30687 | 8487 | 54520        | 54691 | 13840 |  |
| 28-Nov | 800  | 1,593.38          | 23000 | 707.71      | 5000 | 25720  | 31509 | 8466 | 56440        | 55314 | 15175 |  |
| 28-Nov | 900  | 1,593.32          | 23000 | 707.75      | 5000 | 8045   | 32219 | 8594 | 58240        | 55986 | 16767 |  |
| 28-Nov | 1000 | 1,593.39          | 5000  | 707.88      | 5000 | 7625   | 27701 | 8550 | 59920        | 56708 | 18332 |  |
| 28-Nov | 1030 |                   |       |             |      |        |       |      |              |       |       | Corps calls SCL. Ross Elev. 1593.30 Inflow 7,400 cfs. Outflow 5,000 cfs. Corps requested average daily outflow to be kept at 5,000 cfs. Raining hard (.1, .1, .1, .15, .15) last 5 hrs at Ross. SCL advises they will "probably" release a steady 5,000 cfs until night where they may cut back a bit and release more during peak power hours tomorrow. |
| 28-Nov | 1100 | 1,593.48          | 5000  | 707.94      | 5000 | 7602   | 18752 | 8616 | <b>62380</b> | 57390 | 19641 |  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |      | UPPER BAKER |      | NHALEM       | MARMT | L/B   | CON    | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER  |
|--------|------|-------------------|------|-------------|------|--------------|-------|-------|--------|-------|-------|--|
|        |      | Elev.             | Out  | Elev.       | Out  |              | SRM   | SHAW  | CON    | MVEV  | SAK   |  |
| 28-Nov | 1115 |                   |      |             |      |              |       |       |        |       |       | Corps calls NWS and they hedged severely in forecast. Possibly huge flood event peaking Nov 30 <sup>th</sup> . Corps passes info to Dave Brookings at Skagit County. U/B 707.86 L/B inflow 10,026  |
| 28-Nov | 1135 |                   |      |             |      |              |       |       |        |       |       | Corps calls PSE. Elev U/B at 1100 = 707.86 Flood control pool = 707.9 Corps request PSE hold pool at 707.9 and pass inflow until necessary to prevent major damage at Concrete. Currently Concrete above flood stage of 28 feet <b>at 28.03.</b> |
| 28-Nov | 1200 | <b>1,593.57</b>   | 5000 | 707.94      | 5000 | 7671         | 17484 | 8594  | 64120  | 58174 | 20937 |  |
| 28-Nov | 1300 | 1,593.67          | 5000 | 707.95      | 5000 | 7694         | 17968 | 8770  | 66040  | 59061 | 22103 |  |
| 28-Nov | 1400 | 1,593.77          | 5000 | 707.97      | 5000 | 7786         | 18309 | 12250 | 68695  | 59767 | 22955 |  |
| 28-Nov | 1500 | 1,593.89          | 5000 | 707.93      | 5000 | 7855         | 18554 | 15620 | 67720  | 60574 | 23763 |  |
| 28-Nov | 1600 | 1,594.01          | 5000 | 707.89      | 5000 | 7970         | 19098 | 19310 | 71555  | 61580 | 24525 |  |
| 28-Nov | 1700 | 1,594.09          | 5000 | 707.96      | 5000 | 8170         | 20761 | 23360 | 75585  | 62256 | 25299 |  |
| 28-Nov | 1800 | 1,594.21          | 5000 | 708.05      | 5000 | 8195         | 23369 | 24740 | 79420  | 63348 | 25962 |  |
| 28-Nov | 1820 |                   |      |             |      |              |       |       |        |       |       | Corps calls PSE. Skagit at Concrete is 30.5 (78,000 cfs). <b>Requested PSE close U/B from 18,000 cfs down to 5,000 cfs.</b> L/B is passing inflow.   |
| 28-Nov | 1900 | 1,594.30          | 5000 | 708.59      | 5000 | 8220         | 26192 | 29430 | 83775  | 64254 | 26757 |  |
| 28-Nov | 2000 | 1,594.38          | 5000 | 708.46      | 5000 | 8245         | 28438 | 17360 | 85075  | 65060 | 28887 |  |
| 28-Nov | 2100 | 1,594.46          | 5000 | 708.81      | 5000 | 8195         | 29699 | 13350 | 78835  | 66036 | 35106 |  |
| 28-Nov | 2200 | 1,594.60          | 5000 | 709.09      | 5000 | <b>14800</b> | 30512 | 13275 | 80590  | 67187 | 38904 |  |
| 28-Nov | 2300 | 1,594.73          | 5000 | 709.59      | 5000 | 15800        | 31391 | 13150 | 84165  | 68195 | 42196 |  |
| 28-Nov | 2400 | 1,594.86          | 5000 | 710.16      | 5000 | 17355        | 36159 | 13300 | 90040  | 69295 | 44747 |  |
| 29-Nov | 100  | 1,594.60          | 5000 | 710.35      | 5000 | 17310        | 38913 | 13450 | 95080  | 70583 | 46887 |  |
| 29-Nov | 200  | 1,594.75          | 5000 | 710.69      | 5000 | 17265        | 40188 | 13625 | 98860  | 71887 | 48666 |  |
| 29-Nov | 300  | 1,594.88          | 5000 | 711.05      | 5000 | 17310        | 41024 | 13775 | 104460 | 73206 | 50392 |  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |      | UPPER BAKER |      | NHALEM | MARMT | L/B   | CON    | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup>   |
|--------|------|-------------------|------|-------------|------|--------|-------|-------|--------|-------|-------|--|
|        |      | Elev.             | Out  | Elev.       | Out  |        |       |       |        |       |       |  |
| 29-Nov | 0355 |                   |      |             |      |        |       |       |        |       |       | SCL calls Corps and advises that they called last night at 2200 hours (NOTE: no entry and increase at Newhalem) and informed Corps they had to open up Gorge to pass local inflows & Ross 5,000 cfs. Newhalem flow jumped to 17,000 cfs from 7,500 within 2 hrs. Still holding Ross to 5,000 cfs or less. Ross inflows still at 21,500+. |
| 29-Nov | 400  | 1,595.07          | 5000 | 711.45      | 5000 | 17310  | 41931 | 14025 | 108800 | 74442 | 51810 |  |
| 29-Nov | 500  | 1,595.22          | 5000 | 711.86      | 5000 | 17310  | 41996 | 14250 | 113210 | 76223 | 52992 |  |
| 29-Nov | 600  | 1,595.42          | 5000 | 712.27      | 5000 | 17400  | 42583 | 14475 | 116430 | 77188 | 53844 |  |
| 29-Nov | 700  | 1,595.63          | 5000 | 712.70      | 5000 | 17580  | 43633 | 14825 | 121120 | 78519 | 54444 |  |
| 29-Nov | 800  | 1,595.80          | 5000 | 713.11      | 5000 | 17670  | 45358 | 15110 | 121960 | 80024 | 54961 | Corps contacts Dave Brookings. Advises NWS forecast of 45 ft at Concrete and 39 ft at Mt. Vernon, dependent on Corps losing control of the river upstream. Corps feels they have better than 50/50 chance of keeping the dams from filling. If they keep dams full Mt. Vernon would be 37 ft and Concrete 40 feet.                       |
| 29-Nov | 900  | 1,596.00          | 5000 | 713.54      | 5000 | 18300  | 45894 | 15410 | 126160 | 82039 | 55394 |  |
| 29-Nov | 0920 |                   |      |             |      |        |       |       |        |       |       | Corps states L/B outflow at 0900 was 9,000 cfs spilled, 3,800 discharged.  |
| 29-Nov | 1000 | 1,596.20          | 5000 | 713.99      | 5000 | 18885  | 47921 | 15590 | 127920 | 83401 | 55915 |  |
| 29-Nov | 1100 | 1,596.41          | 5000 | 714.42      | 5000 | 21675  | 49083 | 15860 | 128640 | 85597 | 56701 |  |
| 29-Nov | 1130 |                   |      |             |      |        |       |       |        |       |       | Corps notifies SCL to begin calculating hourly inflows to Ross. Quickly approaching gate regulation schedule. Corps advises SCL to expect Corps to increase discharges by 3 p.m. as inflows increase and pool rises. Corps will call Dave Brookings when they begin to increase flows from Ross.   |
| 29-Nov | 1200 | 1,596.68          | 5000 | 714.89      | 5000 | 27830  | 51435 | 16100 | 130480 | 87572 | 57845 |  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |      | UPPER BAKER |      | NHALEM | MARMT | L/B   | CON    | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER   |
|--------|------|-------------------|------|-------------|------|--------|-------|-------|--------|-------|-------|---|
|        |      | Elev.             | Out  | Elev.       | Out  |        | SRM   | SHAW  | CON    | MVEV  | SAK   |   |
| 29-Nov | 1210 |                   |      |             |      |        |       |       |        |       |       | Corps calls PSE for status report.<br>U/B Time elev Inflow<br>1000 713.95 29,294<br>1100 714.37 27,852<br>1200 714.84 30,638  |
| 29-Nov | 1230 |                   |      |             |      |        |       |       |        |       |       | Corps calls PSE to discuss surcharging U/B to elev. 727 feet. Corps feels will not need to go to gate regulation schedule. However, if they do they are assuming they will have 3 feet of storage. PSE does not commit to 727 ft level.                     |
| 29-Nov | 1300 | 1,596.95          | 5000 | 715.32      | 5000 | 30030  | 55248 | 16340 | 131440 | 89643 | 59179 |   |
| 29-Nov | 1315 |                   |      |             |      |        |       |       |        |       |       | SCL cannot get people to their power house if they are spilling water. They can handle 13,000 through the powerhouse. Corps to begin gate regulation next hour.   |
| 29-Nov | 1350 |                   |      |             |      |        |       |       |        |       |       | Corps notifies SCL to expect to have people camp out at the dams because if NWS forecast pans out we will be releasing 14,000 cfs by 3 a.m. Given uncertainty of inflow to Ross Corps suggest to SCL that they start heading people to the dam before dark. |
| 29-Nov | 1400 | 1,597.33          | 5000 | 715.77      | 5000 | 30470  | 59153 | 19820 | 136240 | 91811 | 60889 |   |
| 29-Nov | 1410 |                   |      |             |      |        |       |       |        |       |       | Corps advises PSE they will hold 5,000 cfs for some time to come. Expected to reach "gate regulation" by 6 a.m. tomorrow. By that time Concrete should peak and Corps will probably be increasing flows.  |
| 29-Nov | 1415 |                   |      |             |      |        |       |       |        |       |       | Corps request SCL go to 8,000 cfs as per gate regulation schedule. Corps calls Dave Brookings and notified them that they were increasing discharge from Ross to 8,000 cfs. May go to 15,000 cfs by midnight.   |
| 29-Nov | 1500 | 1,597.57          | 6600 | 716.16      | 5000 | 30305  | 61658 | 20210 | 139280 | 93743 | 63914 |   |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM | MARMT | L/B   | CON    | MT V   | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER  |
|--------|------|-------------------|-------|-------------|------|--------|-------|-------|--------|--------|-------|--|
|        |      | Elev.             | Out   | Elev.       | Out  |        |       |       |        |        |       |  |
| 29-Nov | 1530 |                   |       |             |      |        |       |       |        |        |       | PSE advises no problem with surcharging to 727. Corps now doubts surcharge will be necessary but in case it is they want to be on 727 curve.<br><br>SCL advises Corps that due to vortex forming when powerhouse flow was increased the 1500 hour elevation of the reservoir is artificially low and makes the inflow calculation artificially low. Corps waits for 1600 hr. data to recalculate inflow before making an outflow decision. |
| 29-Nov | 1600 | 1,597.80          | 8000  | 716.51      | 5000 | 29755  | 61658 | 20540 | 142000 | 95770  | 72610 |  |
| 29-Nov | 1615 |                   |       |             |      |        |       |       |        |        |       | Corps realizes inflow 40,000 cfs at Ross. Elev. 1597.8 Gate regulation schedule says to release at least 6,000 cfs BUT because powerhouse changes create problems in reading forebay elevation, Corps leaves outflow at 8,000 cfs.   |
| 29-Nov | 1700 | 1,598.09          | 8000  | 716.81      | 5000 | 27830  | 60475 | 20900 | 146320 | 97983  | 72807 |  |
| 29-Nov | 1715 |                   |       |             |      |        |       |       |        |        |       | Corps determines Ross inflow 46,000 cfs. Ross "forebay" elev. 1597.09 Gate regulation schedule suggest outflow of 12,000 cfs. Corps request SCL to go to 12,000 cfs. outflow.  |
| 29-Nov | 1800 | 1,598.35          | 10600 | 717.05      | 4805 | 27775  | 58350 | 21530 | 148560 | 100050 | 73597 |  |
| 29-Nov | 1830 |                   |       |             |      |        |       |       |        |        |       | PSE advises Corps inflows dropping and it doesn't look like U. Baker will come close to induced surcharge storage.   |
| 29-Nov | 1900 | 1,598.59          | 12000 | 717.27      | 4887 | 27270  | 55319 | 22100 | 152880 | 102920 | 73004 |  |
| 29-Nov | 1915 |                   |       |             |      |        |       |       |        |        |       | Ross inflow 46,000 cfs. Forebay elev. 1598.59. No change in 12,000 cfs outflow.  |
| 29-Nov | 2000 | 1,598.83          | 12000 | 717.46      | 4774 | 26920  | 52485 | 21020 | 156190 | 104820 | 72217 |  |
| 29-Nov | 2045 |                   |       |             |      |        |       |       |        |        |       | SCL advises Corps they are switching to a remotely operated gate @ the lowest dam (Gorge). That will cause some minor flow change @ Newhalem.  |





**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM       | MARMT | L/B   | CON           | MT V   | SAUK  | CORPUS FLOOD NOTES <sup>2</sup>  |
|--------|------|-------------------|-------|-------------|------|--------------|-------|-------|---------------|--------|-------|--|
|        |      | Elev.             | Out   | Elev.       | Out  |              |       |       |               |        |       |  |
| 29-Nov | 2050 |                   |       |             |      |              |       |       |               |        |       | Corps states, "PSE has been digging a hole in Lower Baker to prepare for when U/B spills, probably 4 a.m. <b>right after Concrete peaks.</b> "   |
| 29-Nov | 2100 | 1,599.06          | 12000 | 717.63      | 4764 | 26170        | 50739 | 21200 | 158980        | 106740 | 70654 | Corps speaks with SCL re induced surcharge. SCL agrees to up to 2 feet of surcharge storage. Corps Wagner concerned that (1) Corps won't save any flow for induced surcharge (2) won't save any flow off the peak (3) won't be able to save Fir Island anyway; but Corps can relieve flooding sooner. Weather forecast is for 4 days of cooler less rainy weather.   |
| 29-Nov | 2200 | 1,599.30          | 12000 | 717.81      | 4759 | 26470        | 47853 | 19010 | <b>159070</b> | 108680 | 69396 |  |
| 29-Nov | 2300 | 1,599.53          | 12000 | 717.95      | 4757 | 26720        | 46769 | 17750 | 156910        | 110810 | 67672 |  |
| 29-Nov | 2330 |                   |       |             |      |              |       |       |               |        |       | Corps advises SCL they will do induced surcharge. SCL wants to start when elevation reaches 1602 feet. SCL agrees to plan.   |
| 29-Nov | 2400 | 1,599.73          | 12000 | 718.06      | 4757 | 26820        | 45894 | 17150 | 154000        | 113310 | 64844 |  |
| 30-Nov | 100  | 1,599.95          | 12000 | 718.13      | 4747 | 26670        | 44692 | 16430 | 151760        | 115670 | 58911 |  |
| 30-Nov | 0115 |                   |       |             |      |              |       |       |               |        |       | Corps calls PSE. U/B 718.13 Outflow 4,757 cfs. L/B 436.95 Spill gates 2,730 cfs Powerhouse 3,800 cfs. Pool still rising. 2 gates open filling at 0.1 ft per hour. Corps wants to wait till 0230 to open another gate. PSE can hold outflow to current flows for another 5 hours until they need to at least match inflow and get to a stable pool there. Corps doesn't want them to use up their 1 to 1.5 ft of room completely before we begin releasing from U/B later this morning. |
| 30-Nov | 200  | 1,600.14          | 12000 | 718.24      | 4755 | <b>25820</b> | 44029 | 15290 | 149280        | 117470 | 54789 |  |
| 30-Nov | 0215 |                   |       |             |      |              |       |       |               |        |       | SCL calls Corps and advises Gorge and Diablo are finally starting to draft a little. Newhalem at <b>25,420</b> . SCL wants to raise Ross powerhouse to 13,500. Corps agrees.   |
| 30-Nov | 300  | 1,600.31          | 13000 | 718.38      | 4755 | 23470        | 43041 | 14075 | 146160        | 119450 | 51308 |  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM | MARMT | L/B   | CON    | MT V   | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER   |
|--------|------|-------------------|-------|-------------|------|--------|-------|-------|--------|--------|-------|---|
|        |      | Elev.             | Out   | Elev.       | Out  |        | SRM   | SHAW  | CON    | MVEW   | SAK   |   |
| 30-Nov | 400  | 1,600.48          | 13500 | 718.50      | 4757 | 23170  | 41153 | 12875 | 140880 | 121370 | 48015 |   |
| 30-Nov | 500  | 1,600.67          | 13500 | 718.57      | 4750 | 22320  | 38281 | 11575 | 136880 | 123490 | 45219 |   |
| 30-Nov | 600  | 1,600.80          | 13500 | 718.63      | 4755 | 22220  | 36903 | 10400 | 129440 | 124830 | 42578 |   |
| 30-Nov | 700  | 1,601.01          | 13500 | 718.70      | 4752 | 22120  | 35974 | 9386  | 123760 | 127260 | 40087 |   |
| 30-Nov | 0745 |                   |       |             |      |        |       |       |        |        |       | Corps talks to SCL about proposed gate schedule for surcharge. When pool hits 1602 Corps proposes to cut powerhouse to 5,000 cfs and open all gates 1 foot (7,200 cfs spill, 5,000 cfs powerhouse) = 12,200 cfs. When pool hits 1603 cut powerhouse to zero, open all gates to 2 ft. = 15,000 cfs. If pool goes to 1604.3 or .4 then open powerhouse 7,500 cfs. Follow inflows down and reverse order of spill gates to meet target flows whatever they may be at the time. |
| 30-Nov | 800  | 1,601.15          | 13500 | 718.77      | 4735 | 22070  | 35420 | 8616  | 118600 | 128630 | 37811 |   |
| 30-Nov | 0830 |                   |       |             |      |        |       |       |        |        |       | SCL manager called to discuss surcharge plan. Latest runs through Corps spreadsheet show Ross reservoir at 1602.0 by 1600 hours today. Plan is to go to phase 1 of surcharge (open gates 1 foot, powerhouse at 5-6000 cfs.) at that time. Model does not show necessity for phase 2 assuming inflow forecast is correct.  |
| 30-Nov | 900  | 1,601.32          | 13500 | 718.80      | 4870 | 21970  | 34260 | 8004  | 112300 | 130180 | 35668 |   |
| 30-Nov | 0945 |                   |       |             |      |        |       |       |        |        |       | PSE request 1 hr notice from Corps before Corps wants to increase release from U/B. L/B near full and PSE needs to open gates and create some room to take the flow from U/B. U/B not spilling anything. Sending 4,870 cfs through powerhouse. L/B elev 437.32 Powerhouse 3,794 Spilling 2,920  |
| 30-Nov | 1000 | 1,601.44          | 13500 | 718.84      | 4870 | 13600  | 34018 | 7500  | 108100 | 131390 | 33789 |   |
| 30-Nov | 1020 |                   |       |             |      |        |       |       |        |        |       | SCL advises drop in Newhalem gage due to gate closure at Diablo and Gorge.  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM | MARMT | L/B   | CON    | MT V   | SAUK  | CORPS FLOOD NOTES <sup>2</sup>  |
|--------|------|-------------------|-------|-------------|------|--------|-------|-------|--------|--------|-------|---|
|        |      | Elev.             | Out   | Elev.       | Out  |        |       |       |        |        |       |   |
| 30-Nov | 1030 |                   |       |             |      |        |       |       |        |        |       | PSE request to stop spilling from L/B for 2 hours in order that they could feed fish at facility below dam. Fish had not been fed for two days.   |
| 30-Nov | 1100 | 1,601.57          | 13500 | 718.88      | 4880 | 12700  | 32338 | 7220  | 103340 | 132220 | 32362 |   |
| 30-Nov | 1200 | 1,601.68          | 13500 | 718.92      | 4880 | 12840  | 25531 | 4341  | 98440  | 132780 | 30963 | Corps calls SCL. Concrete flows have receded to 107,000 cfs (34.8 ft). Corps request SCL open all 12 spill gates 1 ft. at 1400 hrs. First Corps wants to know if that request is possible and how long it would take. Corps justified action by stating if inflows send the pool to 1602.0 or 02.6 they would be covered. SCL likes the idea because they can maintain powerhouse capacity while spilling 7,200 cfs. Current pool at 1601.57. |
| 30-Nov | 1300 | 1,601.83          | 13500 | 718.96      | 4890 | 13880  | 24226 | 6860  | 93190  | 133340 | 29722 |   |
| 30-Nov | 1400 | 1,601.92          | 17000 | 718.99      | 4890 | 19335  | 23316 | 6820  | 89550  | 132970 | 28633 |   |
| 30-Nov | 1450 |                   |       |             |      |        |       |       |        |        |       | SCL calls Corps and advises on first attempt to open all gates 1 ft. 11 of the 12 were opened in 33 minutes. 1 gate experienced electrical problems but was fixed in 15 minutes.  |
| 30-Nov | 1500 | 1,602.02          | 19525 | 719.03      | 4890 | 22970  | 24930 | 6780  | 86400  | 132590 | 27500 |   |
| 30-Nov | 1600 | 1,602.06          | 19525 | 719.06      | 4900 | 23120  | 28894 | 6900  | 82475  | 131660 | 26450 |   |
| 30-Nov | 1700 | 1,602.10          | 19525 | 719.09      | 4900 | 22620  | 31686 | 7060  | 78705  | 130090 | 25479 |   |
| 30-Nov | 1800 | 1,602.15          | 20000 | 719.12      | 4901 | 22570  | 32160 | 7100  | 75065  | 128530 | 24644 | Corps request PSE to increase U/B discharge to 5,000 cfs over inflow to begin floodwater evacuation. Inflow = 7,230 cfs plus 5,000 cfs is approx 12,000 cfs U/B level 719.09 L/B 437.74   |
| 30-Nov | 1900 | 1,602.19          | 20000 | 719.09      | 4896 | 22570  | 31745 | 15080 | 76235  | 126450 | 23938 | Corps calls Skagit County and gives them run-down on operation of Baker and Ross dams.  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date   | Time | ROSS <sup>1</sup> |       | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V   | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER  |
|--------|------|-------------------|-------|-------------|-------|--------|-------|-------|-------|--------|-------|--|
|        |      | Elev.             | Out   | Elev.       | Out   |        | SRM   | SHAW  | CON   | MVEV   | SAK   |  |
| 30-Nov | 2000 | 1,602.23          | 20700 | 718.98      | 11872 | 22670  | 31273 | 15080 | 80590 | 124560 | 23300 | Corps talks with newspaper reporter from the Tacoma News Tribune. Gave reporter suggestions for article. Main point was that they took 60,000 cfs off the peak at Concrete and only started increasing flows from Ross (8,000 to 12,000) after the forecasted peak at Concrete. In other words, the Corps did not exacerbate the peak at Concrete by changing their regulation scheme. |
| 30-Nov | 2045 |                   |       |             |       |        |       |       |       |        |       | SCL calls Corps and advises that pool behind Gorge is rising and current gate setting would begin to damage their project. SCL requested to increase outflow at Gorge to maintain pool level. Corps agrees because "it is his right to do so". SCL plan is not to draft Gorge but only pass inflow.  |
| 30-Nov | 2100 | 1,602.27          | 20700 | 718.87      | 11872 | 22770  | 31391 | 14930 | 81305 | 121900 | 22783 |  |
| 30-Nov | 2200 | 1,602.29          | 20700 | 718.80      | 11872 | 23470  | 31097 | 15020 | 81630 | 119540 | 22160 |  |
| 30-Nov | 2230 |                   |       |             |       |        |       |       |       |        |       | SCL calls Corps to advise that Newhalem flows are now at approx. 24,000 cfs.   |
| 30-Nov | 2300 | 1,602.31          | 20700 | 718.70      | 11872 | 23470  | 31273 | 15020 | 80330 | 116440 | 21600 |  |
| 30-Nov | 2400 | 1,602.34          | 20700 | 718.55      | 11670 | 23470  | 31391 | 14850 | 80785 | 114070 | 21047 |  |
| 1-Dec  | 100  | 1,602.35          | 20700 | 718.45      | 11667 | 23420  | 31332 | 15020 | 79940 | 110980 | 20555 |  |
| 1-Dec  | 200  | 1,602.38          | 20700 | 718.31      | 11667 | 23420  | 30980 | 14960 | 79355 | 108110 | 20068 |  |
| 1-Dec  | 300  | 1,602.37          | 20700 | 718.24      | 11670 | 23370  | 30863 | 14900 | 78900 | 105300 | 19747 |  |
| 1-Dec  | 400  | 1,602.39          | 20700 | 718.16      | 11665 | 23320  | 30687 | 14900 | 77795 | 103000 | 19428 |  |
| 1-Dec  | 500  | 1,602.38          | 20700 | 718.02      | 11665 | 23270  | 30570 | 14875 | 76820 | 100430 | 18955 |  |
| 1-Dec  | 600  | 1,602.39          | 20700 | 717.85      | 11665 | 23270  | 30337 | 14900 | 76885 | 98516  | 18590 | SCL calls Corps with 0500 and 0600 Ross readings. Holding steady at 1602.38. SCL would open Ross up another 2,000 cfs without extra personnel. More than that would have to wait until after 0800 hours when staff is at Diablo and Gorge to handle new water.   |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date  | Time | ROSS <sup>1</sup> |       | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V  | SAUK  | CORPUS FLOOD NOTES <sup>2</sup>  |
|-------|------|-------------------|-------|-------------|-------|--------|-------|-------|-------|-------|-------|--|
|       |      | Elev.             | Out   | Elev.       | Out   |        |       |       |       |       |       |  |
| 1-Dec | 0620 |                   |       |             |       |        |       |       |       |       |       | Corps calls PSE for current readings. Still drafting U/B. Corps tells PSE that as soon as they hear from Skagit flood engineer (E. Sabo) how levees are doing in Mt. Vernon Corps may want to increase outflow by another 5,000 cfs sometime after 0800 hrs.                               |
| 1-Dec | 0630 |                   |       |             |       |        |       |       |       |       |       | Corps request SCL to open Ross up about another 2,000 cfs. SCL concurs by opening up 2 gates up to 3.2 ft. = additional 2,000 cfs  |
| 1-Dec | 700  | 1,602.38          | 20700 | 717.75      | 11665 | 23170  | 30221 | 14875 | 76495 | 96179 | 18229 |  |
| 1-Dec | 0730 |                   |       |             |       |        |       |       |       |       |       | Corps speaks with Sabo. Sabo advises to keep Concrete stage below 31 feet (81,500 cfs) during evacuation of U/B <b>(and Ross)</b> .  |
| 1-Dec | 800  | 1,602.36          | 21500 | 717.64      | 11665 | 23070  | 29989 | 14900 | 75650 | 94483 | 17820 | At 0700 Concrete at 76,500 (30.23). As per message with Sabo Corps request PSE increase 5,000 cfs from U/B. Total U/B release <b>16,700</b> . 4,800 through powerhouse, 11,900 spillage.   |
| 1-Dec | 0850 |                   |       |             |       |        |       |       |       |       |       | SCL advises Corps that Ross Elev. 1602.36 down .01 ft from 7 a.m. Corps and SCL agree to target Newhalem at 26,000 cfs for the time being. No increase currently planned. After pool drops a tenth or so SCL planned to drop all the manual gates and regulate out of the automatic gates. |
| 1-Dec | 900  | 1,602.34          | 21500 | 717.44      | 16667 | 22870  | 29699 | 19820 | 77925 | 93074 | 17466 |  |
| 1-Dec | 1000 | 1,602.32          | 21500 | 717.24      | 16667 | 25470  | 29469 | 19760 | 78575 | 91480 | 17265 |  |
| 1-Dec | 1100 | 1,602.29          | 21500 | 717.04      | 16667 | 26070  | 30163 | 19700 | 78120 | 90362 | 16966 |  |
| 1-Dec | 1200 | 1,602.26          | 21500 | 716.85      | 16667 | 26170  | 31745 | 19850 | 77795 | 89252 | 16817 |  |
| 1-Dec | 1300 | 1,602.21          | 21500 | 716.66      | 16667 | 26170  | 31982 | 19730 | 77080 | 87637 | 16570 |  |
| 1-Dec | 1325 |                   |       |             |       |        |       |       |       |       |       | Corps request PSE to increase discharge from U/B to 20,000 cfs. 4,800 through powerhouse, 15,200 spill. Corps attempting to get pool down by Sunday (Dec 3 <sup>rd</sup> ). Concrete at 1230 was 77,800. Increase would send gage to 81,000 cfs.   |



**NOVEMBER 29, 1995 FLOOD ANALYSIS**  
**THE BIG PICTURE**

| Date  | Time | ROSS <sup>1</sup> |       | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup>  |
|-------|------|-------------------|-------|-------------|-------|--------|-------|-------|-------|-------|-------|---|
|       |      | Elev.             | Out   | Elev.       | Out   |        |       |       |       |       |       |   |
| 1-Dec | 1350 |                   |       |             |       |        |       |       |       |       |       | Corps ask SCL if they could investigate whether there is room in the river for more than 26,000 cfs at Newhalem. NWS forecast 2" rain for Sunday 12/3 which would mean pool would be at 1598.20.  |
| 1-Dec | 1400 | 1,602.19          | 23000 | 716.46      | 16667 | 26170  | 31922 | 19640 | 76495 | 86613 | 16472 |   |
| 1-Dec | 1500 | 1,602.12          | 23900 | 716.17      | 20003 | 26120  | 31922 | 23390 | 78835 | 86040 | 16228 | SCL returns Corp 1350 phone call. SCL spoke with "3 individuals familiar with situation" on of whom just came up through Marblemount. At 26,000 at Newhalem there is less than 1 foot before river goes over Hwy 20. For now, Corps decides to hold at 26,000 cfs. May reconsider tomorrow.   |
| 1-Dec | 1600 | 1,602.10          | 23900 | 715.94      | 20001 | 26170  | 31922 | 23390 | 79420 | 85028 | 15841 |   |
| 1-Dec | 1700 | 1,602.02          | 23900 | 715.68      | 19999 | 26170  | 31922 | 23330 | 80330 | 84400 | 15554 | Corps calls Skagit County to advise they were regulating Concrete to 31 feet or less and discharging 23,900 from Ross. Will increase Ross 2,000 cfs every 2 hrs and needed someone from County to monitor conditions at Marblemount. County arranges for Marblemount fire department to observe river during increase. Fire Dept. reports 4 feet of freeboard at 1800. Corps requested SCL to increase flow at 1730 And 1930 by 2,000 cfs at each time. Two increases resulted in a rise from 26,075 to 29,150, a 3,075 rise. SCL calls and requested no further increases because of concern at the project. |
| 1-Dec | 1800 | 1,601.97          | 24300 | 715.40      | 19834 | 26170  | 31686 | 23180 | 80330 | 83463 | 15175 |   |
| 1-Dec | 1900 | 1,601.96          | 24300 | 715.12      | 19829 | 27570  | 31568 | 23060 | 79355 | 82842 | 14940 |   |
| 1-Dec | 2000 | 1,601.88          | 24300 | 714.69      | 19229 | 27620  | 32338 | 22940 | 78965 | 81855 | 14712 |   |
| 1-Dec | 2100 | 1,601.83          | 24300 | 714.41      | 19222 | 29315  | 32695 | 22850 | 78315 | 81732 | 14535 |   |
| 1-Dec | 2200 | 1,601.75          | 24300 | 714.13      | 19224 | 29315  | 33595 | 22700 | 78315 | 81303 | 14273 |   |
| 1-Dec | 2300 | 1,601.70          | 24300 | 713.84      | 19219 | 29425  | 34018 | 22520 | 77665 | 80875 | 14099 |   |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date  | Time | ROSS <sup>1</sup> |       | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER   |
|-------|------|-------------------|-------|-------------|-------|--------|-------|-------|-------|-------|-------|---|
|       |      | Elev.             | Out   | Elev.       | Out   |        |       |       |       |       |       |   |
| 1-Dec | 2400 | 1,601.62          | 24300 | 713.56      | 19212 | 29590  | 34079 | 22460 | 77145 | 80631 | 13883 |   |
| 2-Dec | 100  | 1,601.58          | 24300 | 713.28      | 18917 | 29590  | 34139 | 22370 | 76755 | 80388 | 13798 |   |
| 2-Dec | 200  | 1,601.52          | 24300 | 713.00      | 18609 | 29535  | 34321 | 22280 | 77795 | 80024 | 13712 |   |
| 2-Dec | 300  | 1,601.46          | 24300 | 712.72      | 18653 | 29425  | 34139 | 22220 | 77405 | 79903 | 13626 |   |
| 2-Dec | 400  | 1,601.39          | 24300 | 712.46      | 18612 | 29370  | 34079 | 22040 | 77925 | 79722 | 13584 |   |
| 2-Dec | 500  | 1,601.31          | 24300 | 712.21      | 18309 | 29315  | 33958 | 21980 | 76885 | 79661 | 13541 |   |
| 2-Dec | 600  | 1,601.24          | 24300 | 711.93      | 18307 | 29205  | 33595 | 21830 | 77015 | 79420 | 13499 |   |
| 2-Dec | 700  | 1,601.20          | 24300 | 711.68      | 18300 | 29150  | 33415 | 21680 | 77145 | 79179 | 13414 |   |
| 2-Dec | 0730 |                   |       |             |       |        |       |       |       |       |       | Corps to call Skagit County at 0800 to see if Marblemount can take another 4,000 cfs. If yes Corps will increase Ross another 2,000 cfs for two hours.  |
| 2-Dec | 800  | 1,601.14          | 24300 | 711.40      | 17993 | 29150  | 33355 | 21560 | 76885 | 78879 | 13161 | Dave Brookings calls Corps. Advises Corps that Marblemount can take another 4,000 cfs. Corps calls SCL and request another 2,000 cfs per hour for 2 hours for a total outflow of 28,300 cfs and a target Marblemount flow of 38,880 and Concrete stage of 31 ft. 1 ft. freeboard at Marblemount highway at 24,300 out from Ross (34,900 cfs @ Marblemount). 38,900 cfs will raise stage 0.7 ft. SCL will call back when these two changes are stabilized. |
| 2-Dec | 900  | 1,601.05          | 24700 | 711.08      | 18295 | 29535  | 33294 | 21470 | 76235 | 78579 | 12993 | Corps calls SCL and is informed that SCL had not done the 0800 change at Ross because it takes 2 hours to do gate change. Corps request increase in Ross discharge to 28,300 cfs to be accomplished by 1000-1100. Current 24,700 outflow. SCL having to use manual gates to increase outflows because of flow control.  |
| 2-Dec | 1000 | 1,600.97          | 25500 | 710.83      | 18288 | 30910  | 33535 | 21410 | 76170 | 78639 | 12910 | Corps calls Marblemount FD and alerted them that river levels would rise just over 0.5 ft. by mid-afternoon due to increase flow at Ross.   |



**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date  | Time | ROSS <sup>1</sup> |              | UPPER BAKER |       | NHALEM | MARMT | L/B   | CON   | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup>   |
|-------|------|-------------------|--------------|-------------|-------|--------|-------|-------|-------|-------|-------|--|
|       |      | Elev.             | Out          | Elev.       | Out   |        |       |       |       |       |       |  |
| 2-Dec | 1100 | 1,600.85          | 28000        | 710.51      | 18286 | 30910  | 34321 | 21200 | 74415 | 78280 | 12826 | Corps request PSE to decrease U/B outflow to 13,500 cfs. U/B elev. 710.51. Corps wanted to be below 710.<br><br>Corps contacts SCL to advise them about how to make changes. If Corps provides them with a target flow at Newhalem, along with desired release @ Ross, then they can make changes "in the middle" at Gorge and Diablo to meet the target constraint at Newhalem. |
| 2-Dec | 1200 | 1,600.76          | 28300        | 710.30      | 15786 | 31405  | 34625 | 21080 | 74415 | 78220 | 12619 |  |
| 2-Dec | 1230 |                   |              |             |       |        |       |       |       |       |       | Corps request PSE to decrease discharge from U/B to 8,200 cfs (by 5,000 cfs) at 1300 and down to 5,000 cfs at 1400.  |
| 2-Dec | 1300 | 1,600.66          | 28300        | 710.16      | 13502 | 32340  | 34747 | 15530 | 70515 | 77863 | 12291 | Corps request PSE to reduce discharge from U/B to 8,200 and hold it there so that bottom of flood pool (Elev 707.9) can be reached before the time precip begins tomorrow.   |
| 2-Dec | 1400 | 1,600.57          | 28300        | 710.06      | 8300  | 32175  | 35236 | 10025 | 66280 | 77684 | 12129 |  |
| 2-Dec | 1500 | 1,600.46          | 28300        | 709.95      | 8300  | 30800  | 35789 | 9950  | 64120 | 77447 | 11927 | Corps calls SCL to inform them of latest plan. Corps request SCL reduce discharge out of Ross to target of <b>21,000 cfs by 1800 tonight.</b>  |
| 2-Dec | 1600 | 1,600.36          | 28300        | 709.85      | 8300  | 30690  | 35175 | 9950  | 63040 | 77506 | 11687 |  |
| 2-Dec | 1700 | 1,600.25          | 28300        | 709.74      | 8300  | 30690  | 34382 | 9950  | 62800 | 77033 | 11528 |  |
| 2-Dec | 1800 | 1,600.14          | <b>28300</b> | 709.64      | 8300  | 25970  | 34321 | 9950  | 63040 | 76974 | 11488 |  |
| 2-Dec | 1900 | 1,600.03          | 28300        | 709.53      | 8300  | 23020  | 33958 | 9950  | 62920 | 76326 | 11409 |  |
| 2-Dec | 2000 | 1,599.92          | 28300        | 709.42      | 8300  | 22620  | 29469 | 9950  | 62680 | 75857 | 11370 |  |
| 2-Dec | 2100 | 1,599.80          | 28300        | 709.32      | 8300  | 21770  | 26971 | 9950  | 62560 | 75098 | 11252 |  |
| 2-Dec | 2200 | 1,599.68          | 28300        | 709.21      | 8300  | 21720  | 26303 | 9925  | 61060 | 74461 | 11134 |  |
| 2-Dec | 2300 | 1,599.57          | 28300        | 709.10      | 8300  | 20955  | 25806 | 9925  | 60400 | 73539 | 11057 |  |
| 2-Dec | 2400 | 1,599.44          | 28300        | 709.00      | 8300  | 21000  | 25367 | 9925  | 58480 | 72796 | 10979 |  |
| 3-Dec | 100  | 1,599.32          | <b>28300</b> | 708.89      | 8300  | 21090  | 24930 | 9900  | 56200 | 72114 | 10979 |  |





**NOVEMBER 29, 1995 FLOOD ANALYSIS  
THE BIG PICTURE**

| Date  | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM       | MARMT | L/B  | CON          | MT V  | SAUK  | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER  |
|-------|------|-------------------|-------|-------------|------|--------------|-------|------|--------------|-------|-------|--|
|       |      | Elev.             | Out   | Elev.       | Out  |              | SRM   | SHAW | CON          | MVEV  | SAK   |  |
| 3-Dec | 0145 |                   |       |             |      |              |       |      |              |       |       | SCL called Corps and advised that discharge from Ross was <b>20,200</b> not 21,000. 21,000 was discharge at Newhalem. Corps instructs SCL to increase Ross discharge to 21,000.  |
| 3-Dec | 200  | 1,599.20          | 28300 | 708.78      | 8300 | 21090        | 24930 | 9900 | 54280        | 71268 | 10940 |  |
| 3-Dec | 300  | 1,599.08          | 28300 | 708.68      | 8300 | 21135        | 24930 | 9900 | 53200        | 70150 | 10901 |  |
| 3-Dec | 400  | 1,598.95          | 28300 | 708.57      | 8300 | 21090        | 24930 | 9875 | 52960        | 69319 | 10901 |  |
| 3-Dec | 500  | <b>1,598.82</b>   | 28300 | 708.47      | 8300 | 21135        | 24876 | 9875 | 51880        | 68658 | 10786 |  |
| 3-Dec | 0540 |                   |       |             |      |              |       |      |              |       |       | Corps request SCL to "ramp up" to 26,000 cfs at Newhalem. SCL makes change from 21,000 to <b>22,500</b> and will make another to 24,500 after crews arrive at 0800. Corps will cut back U/B before noon. Ross pool <b>1599.5</b> .   |
| 3-Dec | 600  | 1,598.70          | 28300 | 708.37      | 8300 | 21135        | 24604 | 9900 | 51280        | 67675 | 10786 |  |
| 3-Dec | 700  | 1,598.57          | 28300 | 708.28      | 8300 | 22220        | 24767 | 9850 | <b>50680</b> | 66594 | 10747 | Corps wants to keep Concrete at or below zero damage level of 62,000 cfs, currently at <b>52,000</b> cfs.  |
| 3-Dec | 0730 |                   |       |             |      |              |       |      |              |       |       | Corps request PSE to stop spilling U/B. Current elev. 708.3. Inflow 2,500 cfs., outflow 4,600 powerhouse. Flood control pool (707.9) should be reached by 2100 today.  |
| 3-Dec | 800  | 1,598.44          | 28300 | 708.19      | 8300 | <b>22370</b> | 24984 | 9850 | 50500        | 65524 | 10747 | Corps calls SCL and confirmed the <b>26,000 cfs</b> target at Newhalem. SCL informs Corps that at 28,000 cfs (done yesterday) there were problems with a sewage tank in Diablo overtopping causing raw sewage to get into river, also some water in Diablo powerhouse where some electrical switches are. Corps thinks problems were minor but also recognized some problems with hwy east of Marblemount. |
| 3-Dec | 900  | 1,598.31          | 28300 | 708.11      | 8300 | 25620        | 25751 | 6462 | 48635        | 64202 | 10671 |  |
| 3-Dec | 1000 | 1,598.18          | 28300 | 708.03      | 8300 | 25970        | 27307 | 4188 | 45775        | 63209 | 10594 |  |
| 3-Dec | 1100 | 1,598.05          | 28300 | 707.96      | 8300 | 26320        | 28952 | 4171 | 44895        | 61969 | 10480 |  |
| 3-Dec | 1200 | 1,597.92          | 28300 | 707.89      | 8300 | 26670        | 29238 | 4171 | 44840        | 60795 | 10366 |  |



**NOVEMBER 29, 1995 FLOOD ANALYSIS**  
**THE BIG PICTURE**

| Date  | Time | ROSS <sup>1</sup> |       | UPPER BAKER |      | NHALEM | MARMT | L/B | CON | MT V | SAUK | CORPS FLOOD NOTES <sup>2</sup><br>RE ROSS AND UPPER BAKER                            |
|-------|------|-------------------|-------|-------------|------|--------|-------|-----|-----|------|------|--|
|       |      | Elev.             | Out   | Elev.       | Out  |        |       |     |     |      |      |  |
| 3-Dec | 1300 | 1,597.79          | 28300 | 707.83      | 8300 |        |       |     |     |      |      |  |
| 3-Dec | 1400 | 1,597.66          | 28300 | 707.79      | 8300 |        |       |     |     |      |      |  |
| 3-Dec | 1500 | 1,597.53          | 28300 | 707.74      | 8300 |        |       |     |     |      |      |  |
| 3-Dec | 1600 | 1,597.40          | 28300 | 707.71      | 8300 |        |       |     |     |      |      |  |
| 3-Dec | 1700 | 1,597.27          | 28300 | 707.68      | 8300 |        |       |     |     |      |      |  |
| 3-Dec | 1800 | 1,597.14          | 28300 | 707.64      | 8300 | 26,525 |       |     |     |      |      | SCL reports that Ross Elev. 1598.21. Newhalem = 26,525 Ross discharge 24,800 cfs     |
| 3-Dec | 1900 | 1,597.02          | 28300 |             |      |        |       |     |     |      |      |  |
| 3-Dec | 2000 | 1,596.89          | 28300 |             |      |        |       |     |     |      |      |  |
| 3-Dec | 2100 | 1,596.77          | 28300 |             |      |        |       |     |     |      |      |  |
| 3-Dec | 2200 | 1,596.69          | 23000 |             |      |        |       |     |     |      |      |  |
| 3-Dec | 2300 |                   |       |             |      |        |       |     |     |      |      | Corps notifies PSE that the flood control status is officially terminated this hour. |
| 3-Dec | 2400 |                   |       |             |      |        |       |     |     |      |      |  |
|       |      |                   |       |             |      |        |       |     |     |      |      |  |

**OTHER NOTES IN CORPS LOG BOOK**

- 12/4/95 0830 SCL request slower drawdown for Ross. Corps wanted definitive drawdown plan.
- 12/4/95 1000 SCL calls Corps and proposed drafting Ross at 5,000 cfs over inflow to reach flood control rule curve by Saturday, 9 December OR in the alternative, 6,000 cfs over inflow to reach flood control curve by Friday, 8 December. SCL advises that if cold weather comes in on Thursday they will go to full powerhouse which would draft Ross even faster. Corps needed time to discuss proposal.
- 12/4/95 1100 Corps approves 6,000 cfs drawdown plan.