

Libby : April Runoff Forecast & Flood Control Calculation

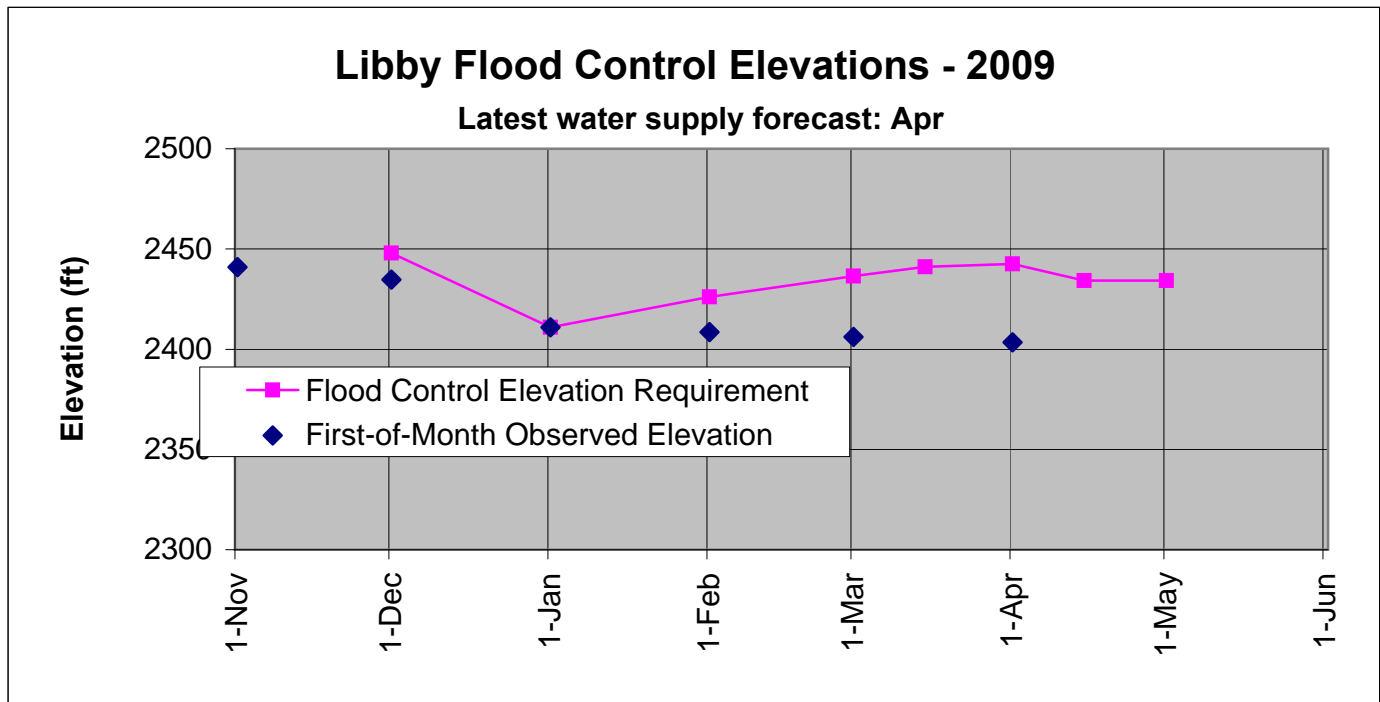
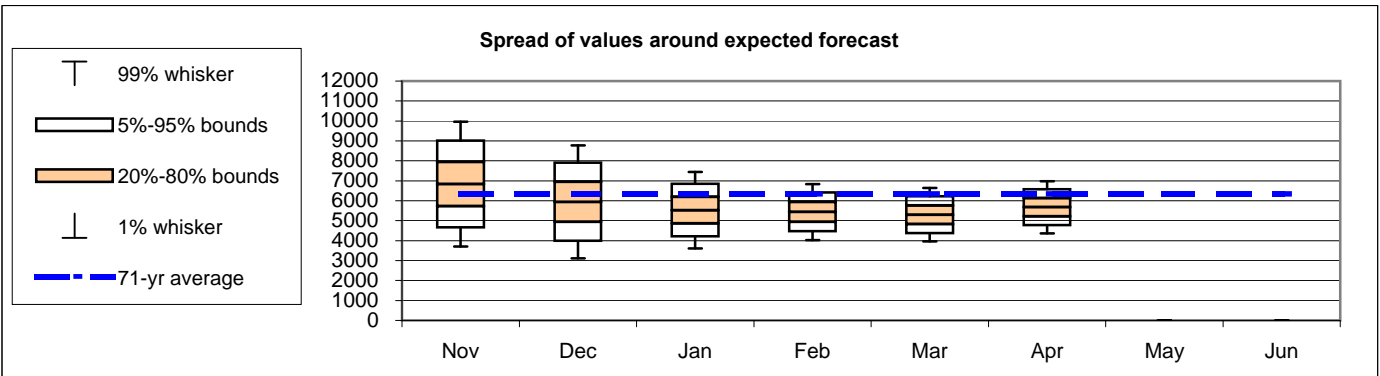
WY 2009

| Runoff Forecast and Flood Control | | | |
|-----------------------------------|---------|--------|-----|
| Most Probable Runoff Volume: | Apr-Aug | 5672 | KAF |
| | Apr-Jul | 5165 | KAF |
| | May-Jul | 4696 | KAF |
| 30-Apr Flood Control Space | | 1092 | KAF |
| 30-Apr Flood Control Elevation | | 2434.2 | ft |

| 1929-1999 Average | Percent of Average |
|-------------------|--------------------|
| 6337 | 90% |
| 5771 | 90% |
| 5247 | 90% |

| Seasonal Flood Control | | VARQ Flood Control Implemented | | | | | | |
|-------------------------|--------|--------------------------------|--------|--------|--------|--------|-----|-----|
| Forecast Date >> | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun |
| Apr-Aug Runoff Forecast | 6828 | 5944 | 5526 | 5436 | 5296 | 5672 | | |
| First-of-Month Elev | 2441.0 | 2434.7 | 2411.0 | 2408.6 | 2406.1 | 2403.5 | | |

| Date >> | 30-Nov | 31-Dec | 31-Jan | 28-Feb | 15-Mar | 31-Mar | 15-Apr | 30-Apr |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Flood Control Space | 500 | 2000 | 1421 | 1000 | 800 | 739 | 1092 | 1092 |
| Flood Control Elevation | 2448.0 | 2411.0 | 2426.2 | 2436.4 | 2441.1 | 2442.6 | 2434.2 | 2434.2 |



Notes:

1. The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Joel Fenolio (206 764-6683), Amy Reese (206 764-3660), or Kenneth Brettman (206 764-6567).
2. Subsequent forecasts may differ from the originally published forecast due to updated values for precipitation, snow or streamflow.
3. Vermillion River snow measurements, with adjustments, are serving as a surrogate for Marble Canyon.

Libby : April Runoff Forecast & Flood Control Calculation

| Apr-Aug Runoff Forecast Calculation: | | | | | | |
|--------------------------------------|------------------------|--------|----------------|--------------------|------------------------|-----------------------|
| Variable | Month(s) | Units | Observed Value | Percent of Average | Regression Coefficient | Marginal Runoff (KAF) |
| | | | A | | B | =A*B |
| Glacier NP RP, BC | ∑Oct,Nov,Dec Prcp | inches | 20.75 | 95% | 19.4 | 401.8 |
| Kaslo, BC | ∑Oct,Nov,Dec Prcp | inches | 10.74 | 95% | 43.1 | 462.9 |
| Fortine 1N, MT | ∑Oct,Nov,Dec Prcp | inches | 2.95 | 75% | 104.8 | 309.3 |
| West Glacier, MT | ∑Oct,Nov,Dec Prcp | inches | 8.14 | 95% | 46.1 | 375.0 |
| Banff, AB | ∑Dec-to-Mar Prcp | inches | 3.92 | 91% | 69.1 | 270.8 |
| Fernie, BC | ∑Dec-to-Mar Prcp | inches | 12.21 | 63% | 30.6 | 373.4 |
| Cranbrook, BC | ∑Dec-to-Mar Prcp | inches | 4.90 | 90% | 56.6 | 277.6 |
| Libby 1 NE RS, MT | ∑Dec-to-Mar Prcp | inches | 9.01 | 123% | 65.0 | 585.5 |
| Vermillion R #3, BC | 1-Apr SWE ³ | inches | 10.39 | 90% | ---- | |
| Marble Canyon, BC | 1-Apr SWE ³ | inches | 12.95 | | 47.0 | 609.0 |
| East Creek, BC | 1-Apr SWE | inches | 23.94 | 66% | 17.8 | 427.0 |
| Hawkins Lake, MT | 1-Apr SWE | inches | 23.80 | 90% | 19.9 | 474.3 |
| Stahl Peak, MT | 1-Apr SWE | inches | 30.70 | 88% | 19.8 | 607.4 |
| Intercept | | | 1 | | 497.9 | 497.9 |
| 1-Apr Forecast (KAF) | | | | | ∑ | 5671.7 |

Data used in Libby Water Supply Forecast

WY 2009

| Climate Data | June | July | Aug | Sep | | | | | | |
|---------------------------|--------|--------|--------|--------|--------|--------|-------|-------|--------|-------|
| SOI | 0.30 | 0.20 | 0.80 | 1.50 | | | | | | |
| Precipitation Data | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Units | |
| Cranbrook A, BC | | | 49.80 | 8.48 | 17.00 | 49.20 | | | mm | |
| Fernie, BC | 74.00 | 68.30 | 85.00 | 77.00 | 57.00 | 91.20 | | | mm | |
| Glacier NP Rogrs Pass, BC | 164.40 | 174.60 | 188.00 | | | | | | mm | |
| Kaslo, BC | 82.00 | 91.60 | 99.20 | | | | | | mm | |
| Banff, AB | | | 39.10 | 12.00 | 24.50 | 24.00 | | | mm | |
| Fortine 1N, MT | 0.46 | 0.65 | 1.84 | | | | | | inch | |
| West Glacier, MT | 1.37 | 3.20 | 3.57 | | | | | | inch | |
| Libby 1 NE RS, MT | 0.62 | 0.76 | 2.75 | 2.20 | 1.51 | 2.55 | | | inch | |
| Snow Water Equiv | | | | 1-Jan | 1-Feb | 1-Mar | 1-Apr | 1-May | 15-May | Units |
| Vermillion Rvr No. 3, BC | | | | 126 | 192 | 202 | 264 | | | mm |
| East Creek, BC | | | | 326 | 424 | 503 | 608 | | | mm |
| Morrissey Ridge, BC | | | | | | | | | | mm |
| Moyie Mountain, BC | | | | | | | | | | mm |
| Sullivan Mine, BC | | | | | | | | | | mm |
| Hawkins Lake, MT | | | | | 13.3 | 15.3 | 23.8 | | | inch |
| Stahl Peak, MT | | | | | 18.4 | 22.5 | 30.7 | | | inch |
| Streamflow | | | | Jan | Feb | Mar | Apr | May | Jun | Units |
| Libby Inflow Volume | | | | 166.0 | 130.0 | 154.7 | | | | KAF |
| Reservoir Elevation | 1-Nov | 1-Dec | 1-Jan | 1-Feb | 1-Mar | 1-Apr | 1-May | 1-Jun | Units | |
| Libby FOM Elev | 2441.0 | 2434.7 | 2411.0 | 2408.6 | 2406.1 | 2403.5 | | | feet | |