## Appendix 11M4 Sutter Bypass Weir Spill Frequencies

|                      |             |             |      |        | _           |             |          |             |              |              |          |             |             |             |           |        |             |             |       |        |
|----------------------|-------------|-------------|------|--------|-------------|-------------|----------|-------------|--------------|--------------|----------|-------------|-------------|-------------|-----------|--------|-------------|-------------|-------|--------|
|                      |             |             |      |        | T           | able 1a. Co | unt of Y | ears That I | Exceed Flow  | / Magnitude  | and Du   | ration Thre | esholds Bet | ween 1922 a | and 2003  | 5      |             |             |       |        |
|                      |             |             |      |        | Or          | a Ferry, Mo |          | eir, and Co | olusa weir S | pill Results | - Altern | ative 1A C  | ompared to  | NO ACTION A | Aiternati | ve     |             |             |       |        |
| Number of years that |             | > 0 da      | ys   |        |             | >10 da      | ys       |             |              | > 20 da      | ys       |             |             | > 30 da     | ys        |        |             | > 45 da     | /S    |        |
| contain events with  |             |             |      |        |             |             |          |             |              |              |          |             |             |             |           |        |             |             |       |        |
| consecutive days of  |             |             |      |        |             |             |          |             |              |              |          |             |             |             |           |        |             |             |       |        |
| spills (max 7 day    |             |             |      |        |             |             |          |             |              |              |          |             |             |             |           |        |             |             |       |        |
| gap to count as new  | No Action   | Alternative |      |        | No Action   | Alternative |          |             | No Action    | Alternative  |          |             | No Action   | Alternative |           |        | No Action   | Alternative |       |        |
| event)               | Alternative | 1A          | Diff | erence | Alternative | 1A          | Diff     | erence      | Alternative  | 1A           | Diff     | erence      | Alternative | 1A          | Diff      | erence | Alternative | 1A          | Diffe | erence |
| > 0 cfs              | 67          | 65          | -2   | -3.0%  | 44          | 44          | 0        | 0.0%        | 30           | 29           | -1       | -3.3%       | 22          | 21          | -1        | -4.5%  | 8           | 7           | -1    | -12.5% |
| > 1,000 cfs          | 65          | 64          | -1   | -1.5%  | 44          | 44          | 0        | 0.0%        | 30           | 29           | -1       | -3.3%       | 19          | 19          | 0         | 0.0%   | 8           | 7           | -1    | -12.5% |
| > 2,000 cfs          | 61          | 61          | 0    | 0.0%   | 44          | 44          | 0        | 0.0%        | 28           | 26           | -2       | -7.1%       | 18          | 16          | -2        | -11.1% | 6           | 5           | -1    | -16.7% |
| > 3,000 cfs          | 59          | 58          | -1   | -1.7%  | 43          | 42          | -1       | -2.3%       | 26           | 23           | -3       | -11.5%      | 15          | 14          | -1        | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 4,000 cfs          | 59          | 58          | -1   | -1.7%  | 42          | 39          | -3       | -7.1%       | 24           | 21           | -3       | -12.5%      | 15          | 14          | -1        | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 6,000 cfs          | 54          | 53          | -1   | -1.9%  | 38          | 37          | -1       | -2.6%       | 20           | 20           | 0        | 0.0%        | 12          | 11          | -1        | -8.3%  | 4           | 3           | -1    | -25.0% |
| > 8,000 cfs          | 53          | 51          | -2   | -3.8%  | 36          | 32          | -4       | -11.1%      | 19           | 19           | 0        | 0.0%        | 10          | 10          | 0         | 0.0%   | 3           | 2           | -1    | -33.3% |
| > 10,000 cfs         | 50          | 49          | -1   | -2.0%  | 32          | 30          | -2       | -6.3%       | 17           | 17           | 0        | 0.0%        | 10          | 9           | -1        | -10.0% | 2           | 2           | 0     | 0.0%   |

|                      |             |             |       |        | Т           | able 1b. Co | unt of Ye | ears That I  | Exceed Flow   | v Magnitude  | and Du | ration Thre | esholds Bet  | ween 1922 a | and 2003 | 3      |             |             |      |        |
|----------------------|-------------|-------------|-------|--------|-------------|-------------|-----------|--------------|---------------|--------------|--------|-------------|--------------|-------------|----------|--------|-------------|-------------|------|--------|
|                      |             |             |       |        |             |             | Total V   | Veir Spill I | Results - Alt | ternative 1A | Compar | red to No A | Action Alter | native      |          |        |             |             |      |        |
| Number of vears that |             | > 0 da      | ys    |        |             | >10 da      | ys        |              |               | > 20 da      | ys     |             |              | > 30 da     | ys       |        |             | > 45 day    | S    |        |
| contain events with  |             |             |       |        |             |             |           |              |               |              |        |             |              |             |          |        |             |             |      |        |
| consecutive days of  |             |             |       |        |             |             |           |              |               |              |        |             |              |             |          |        |             |             |      |        |
| spills (max 7 day    |             |             |       |        |             |             |           |              |               |              |        |             |              |             |          |        |             |             |      |        |
| gap to count as new  | No Action   | Alternative |       |        | No Action   | Alternative |           |              | No Action     | Alternative  |        |             | No Action    | Alternative |          |        | No Action   | Alternative |      |        |
| event)               | Alternative | 1A          | Diffe | erence | Alternative | 1A          | Diffe     | erence       | Alternative   | 1A           | Diffe  | erence      | Alternative  | 1A          | Diffe    | erence | Alternative | 1A          | Diff | erence |
| > 0 cfs              | 71          | 70          | -1    | -1.4%  | 50          | 50          | 0         | 0.0%         | 38            | 37           | -1     | -2.6%       | 26           | 25          | -1       | -3.8%  | 15          | 13          | -2   | -13.3% |
| > 1,000 cfs          | 70          | 70          | 0     | 0.0%   | 49          | 47          | -2        | -4.1%        | 37            | 34           | -3     | -8.1%       | 25           | 25          | 0        | 0.0%   | 14          | 13          | -1   | -7.1%  |
| > 2,000 cfs          | 69          | 68          | -1    | -1.4%  | 48          | 45          | -3        | -6.3%        | 34            | 33           | -1     | -2.9%       | 23           | 22          | -1       | -4.3%  | 13          | 12          | -1   | -7.7%  |
| > 3,000 cfs          | 68          | 68          | 0     | 0.0%   | 46          | 45          | -1        | -2.2%        | 32            | 31           | -1     | -3.1%       | 22           | 22          | 0        | 0.0%   | 13          | 11          | -2   | -15.4% |
| > 4,000 cfs          | 67          | 65          | -2    | -3.0%  | 44          | 44          | 0         | 0.0%         | 31            | 28           | -3     | -9.7%       | 22           | 21          | -1       | -4.5%  | 10          | 7           | -3   | -30.0% |
| > 6,000 cfs          | 62          | 62          | 0     | 0.0%   | 44          | 43          | -1        | -2.3%        | 29            | 27           | -2     | -6.9%       | 20           | 20          | 0        | 0.0%   | 8           | 7           | -1   | -12.5% |
| > 8,000 cfs          | 59          | 58          | -1    | -1.7%  | 42          | 42          | 0         | 0.0%         | 25            | 24           | -1     | -4.0%       | 17           | 15          | -2       | -11.8% | 5           | 4           | -1   | -20.0% |
| > 10,000 cfs         | 57          | 56          | -1    | -1.8%  | 41          | 40          | -1        | -2.4%        | 24            | 21           | -3     | -12.5%      | 15           | 14          | -1       | -6.7%  | 4           | 4           | 0    | 0.0%   |

|                      |             |             |       |       | Т           | able 1c. Co | unt of Ye | ears That I | Exceed Flow | / Magnitude    | and Dur | ration Thre | esholds Bet | ween 1922 a | nd 2003 |       |             |             |       |        |
|----------------------|-------------|-------------|-------|-------|-------------|-------------|-----------|-------------|-------------|----------------|---------|-------------|-------------|-------------|---------|-------|-------------|-------------|-------|--------|
|                      |             |             |       |       |             | Tot         | al Sutte  | r Bypass F  | low Results | s - Alternativ | e 1A Co | mpared to   | No Action   | Alternative |         |       |             |             |       |        |
| Number of years that |             | > 0 da      | ys    |       |             | >10 da      | ys        |             |             | > 20 da        | ys      |             |             | > 30 da     | ys      |       |             | > 45 da     | /S    |        |
| contain events with  |             |             |       |       |             |             |           |             |             |                |         |             |             |             |         |       |             |             |       |        |
| consecutive days of  |             |             |       |       |             |             |           |             |             |                |         |             |             |             |         |       |             |             |       |        |
| spills (max 7 day    | No Action   | Alternative |       |       | No Action   | Alternative |           |             | No Action   | Alternative    |         |             | No Action   | Alternative |         |       | No Action   | Alternative |       |        |
| event)               | Alternative | 14          | Diffe | rence | Alternative | 14          | Diff      | erence      | Alternative | 14             | Diffe   | erence      | Alternative | 14          | Diffe   | rence | Alternative | 14          | Diffe | rence  |
| > 0 cfs              | 82          | 82          | 0     | 0.0%  | 82          | 82          | 0         | 0.0%        | 82          | 82             | 0       | 0.0%        | 82          | 82          | 0       | 0.0%  | 82          | 82          | 0     | 0.0%   |
| > 1 000 cfs          | 81          | 81          | 0     | 0.0%  | 76          | 76          | 0         | 0.0%        | 69          | 69             | Ő       | 0.0%        | 60          | 60          | 0       | 0.0%  | 47          | 47          | 0     | 0.0%   |
| > 2.000 cfs          | 81          | 81          | 0     | 0.0%  | 67          | 67          | 0         | 0.0%        | 52          | 52             | 0       | 0.0%        | 41          | 41          | 0       | 0.0%  | 33          | 33          | 0     | 0.0%   |
| > 3.000 cfs          | 81          | 81          | 0     | 0.0%  | 62          | 60          | -2        | -3.2%       | 49          | 48             | -1      | -2.0%       | 38          | 37          | -1      | -2.6% | 24          | 23          | -1    | -4.2%  |
| > 4,000 cfs          | 80          | 80          | 0     | 0.0%  | 59          | 58          | -1        | -1.7%       | 46          | 46             | 0       | 0.0%        | 32          | 31          | -1      | -3.1% | 19          | 19          | 0     | 0.0%   |
| > 6,000 cfs          | 76          | 76          | 0     | 0.0%  | 55          | 54          | -1        | -1.8%       | 40          | 38             | -2      | -5.0%       | 26          | 26          | 0       | 0.0%  | 13          | 13          | 0     | 0.0%   |
| > 8,000 cfs          | 73          | 73          | 0     | 0.0%  | 47          | 47          | 0         | 0.0%        | 35          | 33             | -2      | -5.7%       | 23          | 22          | -1      | -4.3% | 11          | 10          | -1    | -9.1%  |
| > 10,000 cfs         | 68          | 68          | 0     | 0.0%  | 46          | 45          | -1        | -2.2%       | 33          | 30             | -3      | -9.1%       | 22          | 22          | 0       | 0.0%  | 9           | 8           | -1    | -11.1% |

|                      |             |             |       |        | -           |             |          | -           |             |              |          |             |             | 1000        | 1.0000     |        |             |             |       |        |
|----------------------|-------------|-------------|-------|--------|-------------|-------------|----------|-------------|-------------|--------------|----------|-------------|-------------|-------------|------------|--------|-------------|-------------|-------|--------|
|                      |             |             |       |        | 1           | able 2a. Co | unt of Y | ears That I | Exceed Flow | / Magnitude  | and Du   | ration Thre | esholds Bet | ween 1922 a | ind 2003   | 5      |             |             |       |        |
|                      |             |             |       |        | Or          | a Ferry, No |          | eir, and Co | iusa weir S | pill Results | - Altern | ative 1B C  | ompared to  | NO ACTION A | liternativ | ve     |             |             |       |        |
| Number of vears that |             | > 0 da      | ys    |        |             | >10 da      | ys       |             |             | > 20 da      | ys       |             |             | > 30 da     | ys         |        |             | > 45 da     | /S    |        |
| contain events with  |             |             |       |        |             |             |          |             |             |              |          |             |             |             |            |        |             |             |       |        |
| consecutive days of  |             |             |       |        |             |             |          |             |             |              |          |             |             |             |            |        |             |             |       |        |
| spills (max 7 day    |             |             |       |        |             |             |          |             |             |              |          |             |             |             |            |        |             |             |       |        |
| gap to count as new  | No Action   | Alternative |       |        | No Action   | Alternative |          |             | No Action   | Alternative  |          |             | No Action   | Alternative |            |        | No Action   | Alternative |       |        |
| event)               | Alternative | 1B          | Diffe | erence | Alternative | 1B          | Diff     | erence      | Alternative | 1B           | Diff     | erence      | Alternative | 1B          | Diffe      | erence | Alternative | 1B          | Diffe | erence |
| > 0 cfs              | 67          | 65          | -2    | -3.0%  | 44          | 44          | 0        | 0.0%        | 30          | 29           | -1       | -3.3%       | 22          | 21          | -1         | -4.5%  | 8           | 8           | 0     | 0.0%   |
| > 1,000 cfs          | 65          | 64          | -1    | -1.5%  | 44          | 44          | 0        | 0.0%        | 30          | 29           | -1       | -3.3%       | 19          | 19          | 0          | 0.0%   | 8           | 8           | 0     | 0.0%   |
| > 2,000 cfs          | 61          | 61          | 0     | 0.0%   | 44          | 44          | 0        | 0.0%        | 28          | 25           | -3       | -10.7%      | 18          | 16          | -2         | -11.1% | 6           | 5           | -1    | -16.7% |
| > 3,000 cfs          | 59          | 58          | -1    | -1.7%  | 43          | 42          | -1       | -2.3%       | 26          | 23           | -3       | -11.5%      | 15          | 14          | -1         | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 4,000 cfs          | 59          | 58          | -1    | -1.7%  | 42          | 39          | -3       | -7.1%       | 24          | 20           | -4       | -16.7%      | 15          | 14          | -1         | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 6,000 cfs          | 54          | 53          | -1    | -1.9%  | 38          | 37          | -1       | -2.6%       | 20          | 19           | -1       | -5.0%       | 12          | 10          | -2         | -16.7% | 4           | 3           | -1    | -25.0% |
| > 8,000 cfs          | 53          | 51          | -2    | -3.8%  | 36          | 32          | -4       | -11.1%      | 19          | 19           | 0        | 0.0%        | 10          | 10          | 0          | 0.0%   | 3           | 3           | 0     | 0.0%   |
| > 10,000 cfs         | 50          | 49          | -1    | -2.0%  | 32          | 31          | -1       | -3.1%       | 17          | 17           | 0        | 0.0%        | 10          | 9           | -1         | -10.0% | 2           | 2           | 0     | 0.0%   |

|                      |             |             |       |       | Т           | able 2b. Co | unt of Ye | ears That I  | Exceed Flov   | v Magnitude | and Dur | ration Thre | esholds Bet  | ween 1922 a | and 2003 | 3      |             |             |       |        |
|----------------------|-------------|-------------|-------|-------|-------------|-------------|-----------|--------------|---------------|-------------|---------|-------------|--------------|-------------|----------|--------|-------------|-------------|-------|--------|
|                      |             |             |       |       |             |             | Total \   | Neir Spill I | Results - Alt | ernative 1B | Compar  | red to No A | Action Alter | native      |          |        |             |             |       |        |
| Number of vears that |             | > 0 da      | ys    |       |             | >10 da      | ys        |              |               | > 20 da     | ys      |             |              | > 30 da     | iys      |        |             | > 45 day    | /S    |        |
| contain events with  |             |             |       |       |             |             |           |              |               |             |         |             |              |             |          |        |             |             |       |        |
| consecutive days of  |             |             |       |       |             |             |           |              |               |             |         |             |              |             |          |        |             |             |       |        |
| spills (max 7 day    |             |             |       |       |             |             |           |              |               |             |         |             |              |             |          |        |             |             |       |        |
| gap to count as new  | No Action   | Alternative |       |       | No Action   | Alternative |           |              | No Action     | Alternative |         |             | No Action    | Alternative |          |        | No Action   | Alternative |       |        |
| event)               | Alternative | 18          | Diffe | rence | Alternative | 18          | Ditte     | erence       | Alternative   | 18          | Ditte   | erence      | Alternative  | 1B          | Diffe    | erence | Alternative | 1B          | Ditte | rence  |
| > 0 cfs              | 71          | 71          | 0     | 0.0%  | 50          | 50          | 0         | 0.0%         | 38            | 37          | -1      | -2.6%       | 26           | 25          | -1       | -3.8%  | 15          | 13          | -2    | -13.3% |
| > 1,000 cfs          | 70          | 71          | 1     | 1.4%  | 49          | 46          | -3        | -6.1%        | 37            | 35          | -2      | -5.4%       | 25           | 24          | -1       | -4.0%  | 14          | 13          | -1    | -7.1%  |
| > 2,000 cfs          | 69          | 69          | 0     | 0.0%  | 48          | 46          | -2        | -4.2%        | 34            | 34          | 0       | 0.0%        | 23           | 22          | -1       | -4.3%  | 13          | 12          | -1    | -7.7%  |
| > 3,000 cfs          | 68          | 68          | 0     | 0.0%  | 46          | 46          | 0         | 0.0%         | 32            | 32          | 0       | 0.0%        | 22           | 22          | 0        | 0.0%   | 13          | 10          | -3    | -23.1% |
| > 4,000 cfs          | 67          | 65          | -2    | -3.0% | 44          | 44          | 0         | 0.0%         | 31            | 28          | -3      | -9.7%       | 22           | 21          | -1       | -4.5%  | 10          | 8           | -2    | -20.0% |
| > 6,000 cfs          | 62          | 62          | 0     | 0.0%  | 44          | 42          | -2        | -4.5%        | 29            | 26          | -3      | -10.3%      | 20           | 19          | -1       | -5.0%  | 8           | 8           | 0     | 0.0%   |
| > 8,000 cfs          | 59          | 59          | 0     | 0.0%  | 42          | 42          | 0         | 0.0%         | 25            | 24          | -1      | -4.0%       | 17           | 15          | -2       | -11.8% | 5           | 4           | -1    | -20.0% |
| > 10,000 cfs         | 57          | 56          | -1    | -1.8% | 41          | 41          | 0         | 0.0%         | 24            | 21          | -3      | -12.5%      | 15           | 14          | -1       | -6.7%  | 4           | 4           | 0     | 0.0%   |

|                      |             |             |       |       | Т           | able 2c. Co | unt of Ye | ears That I | Exceed Flow | / Magnitude    | and Dur      | ation Thre | esholds Bet | ween 1922 a | nd 2003 |        |             |             |       | -      |
|----------------------|-------------|-------------|-------|-------|-------------|-------------|-----------|-------------|-------------|----------------|--------------|------------|-------------|-------------|---------|--------|-------------|-------------|-------|--------|
|                      |             |             |       |       |             | Tot         | al Sutte  | r Bypass F  | low Results | s - Alternativ | e 1B Co      | mpared to  | No Action   | Alternative |         |        |             |             |       |        |
| Number of years that |             | > 0 da      | ys    |       |             | >10 da      | ys        |             |             | > 20 da        | ys           |            |             | > 30 da     | ys      |        |             | > 45 da     | /s    |        |
| contain events with  |             |             |       |       |             |             |           |             |             |                |              |            |             |             |         |        |             |             |       |        |
| consecutive days of  |             |             |       |       |             |             |           |             |             |                |              |            |             |             |         |        |             |             |       |        |
| spills (max 7 day    | No Action   | Alternetive |       |       | No Action   | Alternetive |           |             | No Astion   | Alternetive    |              |            | No Action   | Alternetive |         |        | No Action   | Alternative |       |        |
| gap to count as new  | NO ACTION   | Alternative | D.11  |       | NO ACTION   | Alternative | <b>D</b>  |             | NO ACTION   | Alternative    | <b>D</b> ''' |            | NO ACTION   | Alternative | <b></b> |        | NO ACTION   | Alternative |       |        |
| event)               | Alternative | 18          | Diffe | rence | Alternative | 1B          | Diff      | erence      | Alternative | 1B             | Diffe        | erence     | Alternative | 18          | Diffe   | erence | Alternative | 18          | Diffe | erence |
| > 0 cfs              | 82          | 82          | 0     | 0.0%  | 82          | 82          | 0         | 0.0%        | 82          | 82             | 0            | 0.0%       | 82          | 82          | 0       | 0.0%   | 82          | 82          | 0     | 0.0%   |
| > 1,000 cfs          | 81          | 81          | 0     | 0.0%  | 76          | 76          | 0         | 0.0%        | 69          | 69             | 0            | 0.0%       | 60          | 61          | 1       | 1.7%   | 47          | 47          | 0     | 0.0%   |
| > 2,000 cfs          | 81          | 81          | 0     | 0.0%  | 67          | 68          | 1         | 1.5%        | 52          | 52             | 0            | 0.0%       | 41          | 41          | 0       | 0.0%   | 33          | 33          | 0     | 0.0%   |
| > 3,000 cfs          | 81          | 81          | 0     | 0.0%  | 62          | 60          | -2        | -3.2%       | 49          | 48             | -1           | -2.0%      | 38          | 37          | -1      | -2.6%  | 24          | 23          | -1    | -4.2%  |
| > 4,000 cfs          | 80          | 80          | 0     | 0.0%  | 59          | 58          | -1        | -1.7%       | 46          | 46             | 0            | 0.0%       | 32          | 32          | 0       | 0.0%   | 19          | 19          | 0     | 0.0%   |
| > 6,000 cfs          | 76          | 76          | 0     | 0.0%  | 55          | 54          | -1        | -1.8%       | 40          | 38             | -2           | -5.0%      | 26          | 26          | 0       | 0.0%   | 13          | 13          | 0     | 0.0%   |
| > 8,000 cfs          | 73          | 73          | 0     | 0.0%  | 47          | 48          | 1         | 2.1%        | 35          | 33             | -2           | -5.7%      | 23          | 22          | -1      | -4.3%  | 11          | 10          | -1    | -9.1%  |
| > 10,000 cfs         | 68          | 68          | 0     | 0.0%  | 46          | 45          | -1        | -2.2%       | 33          | 30             | -3           | -9.1%      | 22          | 22          | 0       | 0.0%   | 9           | 8           | -1    | -11.1% |

|                       |             |             |       |       | Т           | able 3a. Co | unt of Ye | ears That I | Exceed Flow | v Magnitude  | and Du   | Iration Thre | esholds Bet  | ween 1922 : | and 2003   | 3      |             |             |       |        |
|-----------------------|-------------|-------------|-------|-------|-------------|-------------|-----------|-------------|-------------|--------------|----------|--------------|--------------|-------------|------------|--------|-------------|-------------|-------|--------|
|                       |             |             |       |       | <u> </u>    | Turieny, wi | Suiton V  | in, and c   | Jusa weir   | Spin Results | - Alteri | Tative 2 CO  | Inpared to I | NO ACTION A | Internativ | e      | <del></del> |             |       |        |
| Number of years that  |             | > 0 da      | ys    |       | <u> </u>    | >10 da      | iys       |             | <u> </u>    | > 20 da      | ys       |              | <u> </u>     | > 30 da     | iys        |        |             | > 45 da     | ys    |        |
| contain events with   |             |             |       |       |             |             |           |             |             |              | 1        |              |              |             |            |        |             |             | 1     |        |
| consecutive days of   |             |             |       |       |             |             |           |             |             |              | 1        |              |              |             |            |        |             |             | 1     |        |
| spills (max 7 day gap |             |             |       |       |             |             |           |             |             |              | 1        |              |              |             |            |        |             |             | 1     |        |
| to count as new       | No Action   | Alternative |       |       | No Action   | Alternative |           |             | No Action   | Alternative  | 1        |              | No Action    | Alternative |            |        | No Action   | Alternative | 1     |        |
| event)                | Alternative | 2           | Diffe | rence | Alternative | 2           | Diff      | erence      | Alternative | 2            | Diff     | erence       | Alternative  | 2           | Diffe      | erence | Alternative | 2           | Diff∉ | erence |
| > 0 cfs               | 67          | 65          | -2    | -3.0% | 44          | 44          | 0         | 0.0%        | 30          | 29           | -1       | -3.3%        | 22           | 21          | -1         | -4.5%  | 8           | 7           | -1    | -12.5% |
| > 1,000 cfs           | 65          | 64          | -1    | -1.5% | 44          | 44          | 0         | 0.0%        | 30          | 29           | -1       | -3.3%        | 19           | 19          | 0          | 0.0%   | 8           | 7           | -1    | -12.5% |
| > 2,000 cfs           | 61          | 61          | 0     | 0.0%  | 44          | 44          | 0         | 0.0%        | 28          | 26           | -2       | -7.1%        | 18           | 16          | -2         | -11.1% | 6           | 5           | -1    | -16.7% |
| > 3,000 cfs           | 59          | 58          | -1    | -1.7% | 43          | 42          | -1        | -2.3%       | 26          | 23           | -3       | -11.5%       | 15           | 14          | -1         | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 4,000 cfs           | 59          | 58          | -1    | -1.7% | 42          | 39          | -3        | -7.1%       | 24          | 21           | -3       | -12.5%       | 15           | 14          | -1         | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 6,000 cfs           | 54          | 53          | -1    | -1.9% | 38          | 37          | -1        | -2.6%       | 20          | 20           | 0        | 0.0%         | 12           | 12          | 0          | 0.0%   | 4           | 3           | -1    | -25.0% |
| > 8,000 cfs           | 53          | 51          | -2    | -3.8% | 36          | 32          | -4        | -11.1%      | 19          | 19           | 0        | 0.0%         | 10           | 10          | 0          | 0.0%   | 3           | 2           | -1    | -33.3% |
| > 10,000 cfs          | 50          | 49          | -1    | -2.0% | 32          | 30          | -2        | -6.3%       | 17          | 17           | 0        | 0.0%         | 10           | 9           | -1         | -10.0% | 2           | 2           | 0     | 0.0%   |

|  |             |             |       |       | Т           | able 3b. Co | unt of Ye | ears That I | Exceed Flow | v Magnitude  | and Du  | ration Thre | esholds Bet  | ween 1922 a | and 2003 |        |             |             |       |        |
|--|-------------|-------------|-------|-------|-------------|-------------|-----------|-------------|-------------|--------------|---------|-------------|--------------|-------------|----------|--------|-------------|-------------|-------|--------|
|  |             |             |       |       |             |             | Total     | Weir Spill  | Results - A | Iternative 2 | Compare | ed to No A  | ction Altern | ative       |          |        |             |             |       |        |
| Number of years that   |             | > 0 da      | ys    |       |             | >10 da      | ys        |             |             | > 20 da      | ys      |             |              | > 30 da     | ys       |        |             | > 45 da     | ys    |        |
| contain events with<br>consecutive days of<br>spills (max 7 day gap<br>to count as new | No Action   | Alternative |       |       | No Action   | Alternative |           |             | No Action   | Alternative  |         |             | No Action    | Alternative |          |        | No Action   | Alternative |       |        |
| event)   | Alternative | 2           | Diffe | rence | Alternative | 2           | Diffe     | erence      | Alternative | 2            | Diffe   | erence      | Alternative  | 2           | Diffe    | erence | Alternative | 2           | Diffe | rence  |
| > 0 cfs  | 71          | 70          | -1    | -1.4% | 50          | 50          | 0         | 0.0%        | 38          | 36           | -2      | -5.3%       | 26           | 25          | -1       | -3.8%  | 15          | 14          | -1    | -6.7%  |
| > 1,000 cfs  | 70          | 70          | 0     | 0.0%  | 49          | 47          | -2        | -4.1%       | 37          | 34           | -3      | -8.1%       | 25           | 25          | 0        | 0.0%   | 14          | 13          | -1    | -7.1%  |
| > 2,000 cfs  | 69          | 68          | -1    | -1.4% | 48          | 45          | -3        | -6.3%       | 34          | 33           | -1      | -2.9%       | 23           | 22          | -1       | -4.3%  | 13          | 12          | -1    | -7.7%  |
| > 3,000 cfs  | 68          | 68          | 0     | 0.0%  | 46          | 45          | -1        | -2.2%       | 32          | 31           | -1      | -3.1%       | 22           | 22          | 0        | 0.0%   | 13          | 12          | -1    | -7.7%  |
| > 4,000 cfs  | 67          | 65          | -2    | -3.0% | 44          | 44          | 0         | 0.0%        | 31          | 28           | -3      | -9.7%       | 22           | 21          | -1       | -4.5%  | 10          | 7           | -3    | -30.0% |
| > 6,000 cfs  | 62          | 62          | 0     | 0.0%  | 44          | 43          | -1        | -2.3%       | 29          | 27           | -2      | -6.9%       | 20           | 19          | -1       | -5.0%  | 8           | 7           | -1    | -12.5% |
| > 8,000 cfs  | 59          | 58          | -1    | -1.7% | 42          | 42          | 0         | 0.0%        | 25          | 24           | -1      | -4.0%       | 17           | 15          | -2       | -11.8% | 5           | 4           | -1    | -20.0% |
| > 10,000 cfs   | 57          | 56          | -1    | -1.8% | 41          | 40          | -1        | -2.4%       | 24          | 21           | -3      | -12.5%      | 15           | 14          | -1       | -6.7%  | 4           | 4           | 0     | 0.0%   |

|  |             |             |       |       | Т           | able 3c. Co | unt of Ye | ears That I | Exceed Flov | v Magnitude | and Du  | ration Thre | esholds Bet | ween 1922 a | ind 2003 |       |             |             |       |       |
|--|-------------|-------------|-------|-------|-------------|-------------|-----------|-------------|-------------|-------------|---------|-------------|-------------|-------------|----------|-------|-------------|-------------|-------|-------|
| Number of years that                       |             | > 0 da      | ys    |       |             | >10 da      | ys        | а Буразз    | liow result | > 20 da     | ys 2001 | iipareu to  |             | > 30 da     | ys       |       |             | > 45 day    | s     |       |
| contain events with<br>consecutive days of |             |             |       |       |             |             |           |             |             |             |         |             |             |             |          |       |             |             |       |       |
| to count as new                            | No Action   | Alternative |       |       | No Action   | Alternative |           |             | No Action   | Alternative |         |             | No Action   | Alternative |          |       | No Action   | Alternative |       |       |
| event)                                     | Alternative | 2           | Diffe | rence | Alternative | 2           | Diffe     | erence      | Alternative | 2           | Diffe   | erence      | Alternative | 2           | Diffe    | rence | Alternative | 2           | Diffe | rence |
| > 0 cfs                                    | 82          | 82          | 0     | 0.0%  | 82          | 82          | 0         | 0.0%        | 82          | 82          | 0       | 0.0%        | 82          | 82          | 0        | 0.0%  | 82          | 82          | 0     | 0.0%  |
| > 1,000 cfs                                | 81          | 81          | 0     | 0.0%  | 76          | 76          | 0         | 0.0%        | 69          | 69          | 0       | 0.0%        | 60          | 60          | 0        | 0.0%  | 47          | 47          | 0     | 0.0%  |
| > 2,000 cfs                                | 81          | 81          | 0     | 0.0%  | 67          | 67          | 0         | 0.0%        | 52          | 52          | 0       | 0.0%        | 41          | 41          | 0        | 0.0%  | 33          | 33          | 0     | 0.0%  |
| > 3,000 cfs                                | 81          | 81          | 0     | 0.0%  | 62          | 60          | -2        | -3.2%       | 49          | 48          | -1      | -2.0%       | 38          | 37          | -1       | -2.6% | 24          | 23          | -1    | -4.2% |
| > 4,000 cfs                                | 80          | 80          | 0     | 0.0%  | 59          | 58          | -1        | -1.7%       | 46          | 46          | 0       | 0.0%        | 32          | 31          | -1       | -3.1% | 19          | 19          | 0     | 0.0%  |
| > 6,000 cfs                                | 76          | 76          | 0     | 0.0%  | 55          | 54          | -1        | -1.8%       | 40          | 38          | -2      | -5.0%       | 26          | 26          | 0        | 0.0%  | 13          | 13          | 0     | 0.0%  |
| > 8,000 cfs                                | 73          | 73          | 0     | 0.0%  | 47          | 47          | 0         | 0.0%        | 35          | 33          | -2      | -5.7%       | 23          | 22          | -1       | -4.3% | 11          | 10          | -1    | -9.1% |
| > 10,000 cfs                               | 68          | 68          | 0     | 0.0%  | 46          | 45          | -1        | -2.2%       | 33          | 30          | -3      | -9.1%       | 22          | 22          | 0        | 0.0%  | 9           | 9           | 0     | 0.0%  |

|  |             |             |       |       | ۲<br>O      | Fable 4a. Co<br>Ind Ferry, M | ount of Y | ears That<br>/eir. and C | Exceed Flov<br>olusa Weir | v Magnitude<br>Spill Results | and Du<br>s - Alter | uration Thre | esholds Bet<br>ompared to | ween 1922<br>No Action A | and 2003<br>Iternativ | }<br>e |             |             |       |        |
|--|-------------|-------------|-------|-------|-------------|------------------------------|-----------|--------------------------|---------------------------|------------------------------|---------------------|--------------|---------------------------|--------------------------|-----------------------|--------|-------------|-------------|-------|--------|
| Number of years that   |             | > 0 da      | ys    |       |             | >10 da                       | iys       |                          |                           | > 20 da                      | ys                  |              |                           | > 30 da                  | iys                   | -      |             | > 45 da     | ys    |        |
| contain events with<br>consecutive days of<br>spills (max 7 day gap<br>to count as new | No Action   | Alternative |       |       | No Action   | Alternative                  |           |                          | No Action                 | Alternative                  |                     |              | No Action                 | Alternative              |                       |        | No Action   | Alternative | l     |        |
| event)   | Alternative | 3           | Diffe | rence | Alternative | 3                            | Diff      | erence                   | Alternative               | 3                            | Diff                | ference      | Alternative               | 3                        | Diff                  | erence | Alternative | 3           | Diffe | rence  |
| > 0 cfs  | 67          | 66          | -1    | -1.5% | 44          | 44                           | 0         | 0.0%                     | 30                        | 29                           | -1                  | -3.3%        | 22                        | 20                       | -2                    | -9.1%  | 8           | 8           | 0     | 0.0%   |
| > 1,000 cfs  | 65          | 65          | 0     | 0.0%  | 44          | 44                           | 0         | 0.0%                     | 30                        | 28                           | -2                  | -6.7%        | 19                        | 19                       | 0                     | 0.0%   | 8           | 8           | 0     | 0.0%   |
| > 2,000 cfs  | 61          | 61          | 0     | 0.0%  | 44          | 44                           | 0         | 0.0%                     | 28                        | 25                           | -3                  | -10.7%       | 18                        | 16                       | -2                    | -11.1% | 6           | 6           | 0     | 0.0%   |
| > 3,000 cfs  | 59          | 59          | 0     | 0.0%  | 43          | 41                           | -2        | -4.7%                    | 26                        | 22                           | -4                  | -15.4%       | 15                        | 14                       | -1                    | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 4,000 cfs  | 59          | 59          | 0     | 0.0%  | 42          | 38                           | -4        | -9.5%                    | 24                        | 20                           | -4                  | -16.7%       | 15                        | 14                       | -1                    | -6.7%  | 5           | 4           | -1    | -20.0% |
| > 6,000 cfs  | 54          | 54          | 0     | 0.0%  | 38          | 36                           | -2        | -5.3%                    | 20                        | 19                           | -1                  | -5.0%        | 12                        | 10                       | -2                    | -16.7% | 4           | 3           | -1    | -25.0% |
| > 8,000 cfs  | 53          | 51          | -2    | -3.8% | 36          | 32                           | -4        | -11.1%                   | 19                        | 19                           | 0                   | 0.0%         | 10                        | 10                       | 0                     | 0.0%   | 3           | 3           | 0     | 0.0%   |
| > 10,000 cfs   | 50          | 49          | -1    | -2.0% | 32          | 31                           | -1        | -3.1%                    | 17                        | 17                           | 0                   | 0.0%         | 10                        | 9                        | -1                    | -10.0% | 2           | 2           | 0     | 0.0%   |

|   |             |             |       |       | Т           | able 4b. Co | unt of Y | ears That I | Exceed Flow | v Magnitude  | and Du  | ration Thre | esholds Bet  | ween 1922 a | and 2003 |        |           |             |       |        |
|---|-------------|-------------|-------|-------|-------------|-------------|----------|-------------|-------------|--------------|---------|-------------|--------------|-------------|----------|--------|-----------|-------------|-------|--------|
|   |             |             |       |       |             |             | Total    | Weir Spill  | Results - A | Iternative 3 | Compare | ed to No A  | ction Altern | ative       |          |        |           |             |       |        |
| Number of years that  |             | > 0 da      | ys    |       |             | >10 da      | ys       |             |             | > 20 da      | ys      |             |              | > 30 da     | ys       |        |           | > 45 day    | s     |        |
| contain events with<br>consecutive days of<br>spills (max 7 day gap | No. Action  | Altornativo |       |       | No. Action  | Altornativa |          |             | No Astion   | Altornativo  |         |             | No Action    | Altornative |          |        | No Action | Altornativa |       |        |
| to count as new   | Alternative | Alternative | Diffe | onco  | Alternative | Alternative | Diff     | aranca      |             | Alternative  | Diff    | ranca       |              | Alternative | Diffe    | ranca  |           | Alternative | Diffe | ronco  |
| event)  | 74          | 74          | Onie  | 0.00/ | 50          | 54          |          | 0.00/       | Alternative | 20           | 0       | 5.00/       |              | 01          | 0        | 7 70/  | 45        | 10          |       | 40.00/ |
| > 0 cis   | 71          | 71          | 0     | 0.0%  | 50          | 51          | 1        | 2.0%        | 38          | 30           | -2      | -5.3%       | 26           | 24          | -2       | -1.1%  | 15        | 13          | -2    | -13.3% |
| > 1,000 cfs   | 70          | 71          | 1     | 1.4%  | 49          | 47          | -2       | -4.1%       | 37          | 36           | -1      | -2.7%       | 25           | 24          | -1       | -4.0%  | 14        | 13          | -1    | -7.1%  |
| > 2,000 cfs   | 69          | 69          | 0     | 0.0%  | 48          | 47          | -1       | -2.1%       | 34          | 34           | 0       | 0.0%        | 23           | 22          | -1       | -4.3%  | 13        | 11          | -2    | -15.4% |
| > 3,000 cfs   | 68          | 69          | 1     | 1.5%  | 46          | 47          | 1        | 2.2%        | 32          | 32           | 0       | 0.0%        | 22           | 22          | 0        | 0.0%   | 13        | 9           | -4    | -30.8% |
| > 4,000 cfs   | 67          | 66          | -1    | -1.5% | 44          | 45          | 1        | 2.3%        | 31          | 28           | -3      | -9.7%       | 22           | 20          | -2       | -9.1%  | 10        | 8           | -2    | -20.0% |
| > 6,000 cfs   | 62          | 62          | 0     | 0.0%  | 44          | 43          | -1       | -2.3%       | 29          | 26           | -3      | -10.3%      | 20           | 20          | 0        | 0.0%   | 8         | 7           | -1    | -12.5% |
| > 8,000 cfs   | 59          | 59          | 0     | 0.0%  | 42          | 42          | 0        | 0.0%        | 25          | 23           | -2      | -8.0%       | 17           | 15          | -2       | -11.8% | 5         | 4           | -1    | -20.0% |
| > 10,000 cfs  | 57          | 58          | 1     | 1.8%  | 41          | 40          | -1       | -2.4%       | 24          | 20           | -4      | -16.7%      | 15           | 14          | -1       | -6.7%  | 4         | 4           | 0     | 0.0%   |

|                       |             |                  |       |       | Т           | able 4c. Co      | unt of Ye | ears That | Exceed Flov | / Magnitude      | and Du   | ration Thre | esholds Bet | ween 1922 a      | and 2003 | 1     |             |                  |       |        |
|-----------------------|-------------|------------------|-------|-------|-------------|------------------|-----------|-----------|-------------|------------------|----------|-------------|-------------|------------------|----------|-------|-------------|------------------|-------|--------|
|                       |             |                  |       |       |             | То               | tal Sutte | er Bypass | Flow Result | s - Alternati    | ve 3 Cor | npared to   | No Action A | Alternative      |          |       |             |                  |       |        |
| Number of years that  |             | > 0 da           | ys    |       |             | >10 da           | ys        |           |             | > 20 da          | ys       |             |             | > 30 da          | iys      |       |             | > 45 day         | S     |        |
| contain events with   |             |                  |       |       |             |                  |           |           |             |                  |          |             |             |                  |          |       |             |                  |       |        |
| consecutive days of   |             |                  |       |       |             |                  |           |           |             |                  |          |             |             |                  |          |       |             |                  |       |        |
| spills (max 7 day gap | No Action   | Altornativa      |       |       | No Action   | Alternetive      |           |           | No Action   | Altornotivo      |          |             | No Action   | Altornotivo      |          |       | No Action   | Altornativa      |       |        |
| to count as new       | Alternative | Alternative<br>3 | Diffe | rence | Alternative | Alternative<br>3 | Diff      | erence    | Alternative | Alternative<br>3 | Diffe    | erence      | Alternative | Alternative<br>3 | Diffe    | rence | Alternative | Alternative<br>3 | Diffe | rence  |
| > 0 cfs               | 82          | 82               | 0     | 0.0%  | 82          | 82               | 0         | 0.0%      | 82          | 82               | 0        | 0.0%        | 82          | 82               | 0        | 0.0%  | 82          | 82               | 0     | 0.0%   |
| > 1.000 cfs           | 81          | 81               | 0     | 0.0%  | 76          | 76               | 0         | 0.0%      | 69          | 69               | õ        | 0.0%        | 60          | 61               | 1        | 1.7%  | 47          | 47               | 0     | 0.0%   |
| > 2.000 cfs           | 81          | 81               | 0     | 0.0%  | 67          | 68               | 1         | 1.5%      | 52          | 52               | 0        | 0.0%        | 41          | 41               | 0        | 0.0%  | 33          | 33               | 0     | 0.0%   |
| > 3,000 cfs           | 81          | 81               | 0     | 0.0%  | 62          | 60               | -2        | -3.2%     | 49          | 48               | -1       | -2.0%       | 38          | 37               | -1       | -2.6% | 24          | 23               | -1    | -4.2%  |
| > 4,000 cfs           | 80          | 80               | 0     | 0.0%  | 59          | 58               | -1        | -1.7%     | 46          | 46               | 0        | 0.0%        | 32          | 32               | 0        | 0.0%  | 19          | 19               | 0     | 0.0%   |
| > 6,000 cfs           | 76          | 76               | 0     | 0.0%  | 55          | 54               | -1        | -1.8%     | 40          | 38               | -2       | -5.0%       | 26          | 25               | -1       | -3.8% | 13          | 13               | 0     | 0.0%   |
| > 8,000 cfs           | 73          | 73               | 0     | 0.0%  | 47          | 49               | 2         | 4.3%      | 35          | 32               | -3       | -8.6%       | 23          | 22               | -1       | -4.3% | 11          | 9                | -2    | -18.2% |
| > 10,000 cfs          | 68          | 69               | 1     | 1.5%  | 46          | 45               | -1        | -2.2%     | 33          | 30               | -3       | -9.1%       | 22          | 21               | -1       | -4.5% | 9           | 8                | -1    | -11.1% |