

US EPA ARCHIVE DOCUMENT

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|--|--|--|--|--|--|--|
| USFS APPENDIX B Tables | | | | | | |
| Please note that EPA translated all figures to t/mi ² /yr, corrected some errors (e.g., length of period), and compared North Fork Eel data with that in the USEPA North Fork Eel River Sediment TMDL (2002), so numbers may vary from those in the draft TMDL. | | | | | | |
| | | | | | | |
| TABLE 1: | | | | | | |
| MIDDLE FORK EEL RIVER DISCHARGE DATA (In body of report) | | | | | | |

**TABLE 2:
LANDSLIDES: NUMBER, AREA, AND DELIVERED VOLUME (CUBIC YARDS) BY YEAR**

| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 |
|---------|------------------|------------------|------------------|-----------------------|
| Number | 3164 | 249 | 709 | 4122 |
| Area | 9307.04 | 835.81 | 3382.72 | 13525.57 acres |
| Volume* | 19689648 | 1938039 | 3342149 | 24969836 cuyds |

*Volume delivered to the stream system in cubic yards

Note: 22 landslides occupying 123.38 acres and delivering 77,036 cuyd were not dated; these were lumped with 1940-69
To convert cubic yards to tons, multiply by 1.5

TABLE 3: LANDSLIDE DELIVERED VOLUME (CUBIC YARDS), AREA AND RATE BY WATERSHED 1940-2002

| Watershed | Watershed Area (acres) | Landslide cuyds | Landslide cuyd/ac | Landslide cy/ac/yr |
|-------------------|-------------------------------|------------------------|--------------------------|---------------------------|
| Black Butte River | 103586 | 9928532 | 95.8482 | 1.545939 |
| Elk/Dos Rios | 73931 | 2074125 | 28.05488 | 0.452498 |
| Round Valley | 63619 | 1735134 | 27.27383 | 0.439901 |
| Upper Middle Fork | 131162 | 2342343 | 17.8584 | 0.288039 |
| Williams/Thatcher | 109581 | 8889701 | 81.12448 | 1.308459 |
| Total Mid. Eel | 481879 | 24969836 | 51.81765 | 0.835768 |

To convert cubic yards to tons, multiply by 1.5

TABLE 4: LANDSLIDE DELIVERED VOLUME (CUBIC YARDS) BY DISTURBANCE CLASS BY WATERSHED

| | Natural | Fire | Harvest | Roads | Other | Total | Check Total |
|-------------------|----------|----------|----------|----------|----------|----------|-------------|
| Black Butte River | 9424204 | 23927.41 | 12042.22 | 410974.8 | 57383.27 | 9928532 | |
| Elk/Dos Rios | 1980434 | 555.5556 | 11310.18 | 41863.62 | 39962 | 2074125 | |
| Round Valley | 1636790 | 3422.222 | 4554.815 | 90367.04 | 0 | 1735134 | |
| Upper Middle Fork | 2100904 | 0 | 13868.53 | 75546.18 | 152024.6 | 2342343 | |
| Williams/Thatcher | 7300358 | 453538.8 | 57854.07 | 235379.3 | 842571.5 | 8889701 | |
| Total Mid. Eel | 22442690 | 481444 | 99629.83 | 854130.9 | 1091941 | 24969836 | 24969836 |

Mgt Total 953760.7
Mgt % 0.038197
Natl Total 24016075
Nat'l % 0.961803

To convert cubic yards to tons, multiply by 1.5

**TABLE 5A: TOTAL LANDSLIDE & SMALL SOURCE SEDIMENT VOLUME (CUBIC YARDS)
BY DISTURBANCE CLASS BY YEAR**

| | Total Cubic Yards | | | | | | |
|----------------------|-------------------|----------------|----------------|-----------------|-----------------|-----------------------------------|-------|
| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 | | | |
| Landslides | | | | | | | |
| Natural | 18831825 | 1905454 | 3285614 | 24022893 | | | |
| Road | 775919.1 | 32584.74 | 38808.94 | 847312.8 | | | |
| Harvest | 81904.09 | 0 | 17725.74 | 99629.83 | | | |
| Total | 19689648 | 1938039 | 3342149 | 24969836 | | | |
| Small Sources | | | | | | Total small source cuyd/yr | |
| Roads | 86670 | 43335 | 49113 | 179118 | 179118 | 2889 | 49113 |
| Gullies | 5130 | 2565 | 2907 | 10602 | 10602 | 171 | |
| Timb. Harv. | 1080 | 540 | 612 | 2232 | 2232 | 36 | |
| Streambks | 9097320 | 4548660 | 5155148 | 18801128 | 18801128 | 303244 | |
| Total | 9190200 | 4595100 | 5207780 | 18993080 | 18993080 | 306340 | |
| All sources | | | | | | | |
| Total | 28879848 | 6533139 | 8549929 | 43962916 | | | |

Note: Disturbance T and TC grouped with Roads, F, FH, and "Other" grouped with Natural;
Time period 4 grouped with time period 1

Note: The sum of the number of years in each photo interval equals the period of record 1940-2002 (62 years) as follows:

1940-1969 = 30 years

1970-1984 = 15 years

1985-2002 = 17 years

Total 1940-2002 = 62 years

Note: Rates per year for small sources (roads/gullies/timber) from approx. 1992-2002; (stream bank data) from Grouse Creek (1944-1998)

TABLE 5B: LANDSLIDE & SMALL SOURCE SEDIMENT RATE (CUBIC YARDS PER YEAR) BY DISTURBANCE CLASS

| | Cubic Yards per Year | | | |
|--------------------|----------------------|-----------------|---------------|-----------------|
| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 |
| Landslides | | | | |
| Natural* | 649373.3 | 136103.9 | 193271.4 | 387466 |
| Road | 26755.83 | 2327.481 | 2282.879 | 13666.34 |
| Harvest | 2824.279 | 0 | 1042.691 | 1606.933 |
| Total | 678953.4 | 138431.3 | 196597 | 402739.3 |
| Small So. | | | | |
| Roads | 2889 | 2889 | 2889 | 2889 |
| Gullies | 171 | 171 | 171 | 171 |
| Tim. Harv. | 36 | 36 | 36 | 36 |
| Streambks | 303244 | 303244 | 303244 | 303244 |
| Total | 306340 | 306340 | 306340 | 306340 |
| All Sources | | | | |
| Total | 985293.4 | 444771.3 | 502937 | 709079.3 |

Total Sediment (Cuyd/yr) 1985-2002

| | Volume | % of Total |
|----------------------|----------|------------|
| Total Natural | 496686.4 | 0.987572 |
| Total Human | 6250.57 | 0.012428 |
| Grand Total | 502937 | |

*Note: The area (753 square miles) used in computations is total watershed area

Note: Disturbance T and TC grouped with Roads, F, FH, and "Other" grouped with Natural;

Time period 4 grouped with time period 1

Note: The sum of the number of years in each photo interval equals the period of record 1940-2002 (62 years) as follows:

1940-1969 = 30 years

1970-1984 = 15 years

1985-2002 = 17 years

Total 1940-2002 = 62 years

Note: Rates per year for small sources (roads/gullies/timber) from approx. 1992-2002; (stream bank data) from Grouse Creek (1944-1998)

TABLE 5C: LANDSLIDE & SMALL SOURCE SEDIMENT RATE (CUBIC YARDS PER ACRE PER YEAR) BY DISTURBANCE CLASS

| | Cubic Yards/Acre/Year | | | | | |
|--------------------|-----------------------|-----------|-----------|-----------|--------|----------|
| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 | | |
| Landslides | | | | | | |
| Natural* | 1.347586 | 0.282444 | 0.401079 | 0.804073 | | |
| Road | 0.055524 | 0.00483 | 0.004737 | 0.028361 | | |
| Harvest | 0.005861 | 0 | 0.002164 | 0.003335 | | |
| Total | 1.408971 | 0.287274 | 0.40798 | 0.835768 | | |
| Small So. | | | | | | |
| Roads | 0.005995 | 0.005995 | 0.005995 | 0.005995 | 2889 | 0.005995 |
| Gullies | 0.000355 | 0.000355 | 0.000355 | 0.000355 | 171 | 0.000355 |
| Tim. Harv. | 7.47E-05 | 7.47E-05 | 7.47E-05 | 7.47E-05 | 36 | 7.47E-05 |
| Streambks | 0.006425 | 0.006425 | 0.629295 | 0.629295 | 303244 | 0.629295 |
| Total | 0.01285 | 0.01285 | 0.63572 | 0.63572 | | |
| All Sources | | | | | | |
| Total | 1.42182 | 0.300124 | 1.0437 | 1.471488 | | |

Note: Disturbance T and TC grouped with Roads, F, FH, and "Other" grouped with Natural;
Time period 4 grouped with time period 1

Note: The sum of the number of years in each photo interval equals the period of record 1940-2002 (62 years) as follows:

1940-1969 = 30 years

1970-1984 = 15 years

1985-2002 = 17 years

Total 1940-2002 = 62 years

Note: Rates per year for small sources (roads/gullies/timber) from approx. 1992-2002; (stream bank data) from Grouse Creek (1944-1998)

TABLE 5D: LANDSLIDE & SMALL SOURCE SEDIMENT RATE (TONS PER SQUARE MILE PER YEAR) AND TOTAL CUBIC YARDS BY DISTURBANCE CLASS

| | Tons/Square Mile/Year | | | | | Total Cubic Yards | | | |
|--------------------|-----------------------|-----------|-----------|-----------|--------------------|-------------------|-----------|-----------|-----------|
| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 | | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 |
| Landslides | | | | | Landslides | | | | |
| Natural* | 1293.675 | 271.1448 | 385.0335 | 771.9062 | Natural | 18831825 | 1905454 | 3285614 | 24022893 |
| Road | 53.30272 | 4.636786 | 4.54793 | 27.22594 | Road | 775919.1 | 32584.74 | 38808.94 | 847312.8 |
| Harvest | 5.626502 | 0 | 2.077238 | 3.201316 | Harvest | 81904.09 | 0 | 17725.74 | 99629.83 |
| Total | 1352.605 | 275.7816 | 391.6587 | 802.3334 | Total | 19689648 | 1938039 | 3342149 | 24969836 |
| Small So. | | | | | Small So. | | | | |
| Roads | 5.755439 | 5.755439 | 5.755439 | 5.755439 | Roads | 86670 | 43335 | 49113 | 179118 |
| Gullies | 0.340665 | 0.340665 | 0.340665 | 0.340665 | Gullies | 5130 | 2565 | 2907 | 10602 |
| Tim. Harv. | 0.071719 | 0.071719 | 0.071719 | 0.071719 | Timb. Harv. | 1080 | 540 | 612 | 2232 |
| Streambks | 604.1199 | 604.1199 | 604.1199 | 604.1199 | Streambks | 9097320 | 4548660 | 5155148 | 18801128 |
| Total | 610.2877 | 610.2877 | 610.2877 | 610.2877 | Total | 9190200 | 4595100 | 5207780 | 18993080 |
| All Sources | | | | | All Sources | | | | |
| Total | 1962.892 | 886.0693 | 1001.946 | 1412.621 | Total | 28879848 | 6533139 | 8549929 | 43962916 |

Note: One cubic yard = 1.5 tons = 3,000 pounds
 Watershed area = 481,879 acres = 752.94 square miles

Note: Disturbance T and TC grouped with Roads, F, FH, and "Other" grouped with Natural;
 Time period 4 grouped with time period 1

Note: The sum of the number of years in each photo interval equals the period of record 1940-2002 (62 years) as follows:

- 1940-1969 = 30 years
- 1970-1984 = 15 years
- 1985-2002 = 17 years

Total 1940-2002 = 62 years

Note: Rates per year for small sources (roads/gullies/timber) from approx. 1992-2002; (stream bank data) from Grouse Creek (1944-1998)

**TABLE 6: SEDIMENT PRODUCTION IN CUBIC YARDS 1985-2002
LANDSLIDES & SMALL SOURCES BY DISTURBANCE BY WATERSHED BY OWNERSHIP**

NATIONAL FOREST LANDS (CUYD)

| | Small Sources: Gullies, and Streambanks | | | | Landslides: Delivered Sediment | | | | Total Sed. | |
|-----------------------|---|---------|--------------|-------------|--------------------------------|----------|----------|----------|-----------------|----------|
| | Roads | Gullies | Timber Harv. | Streambanks | Total Small | Natural | Harvest | Roads | Total Landslide | |
| Black Butte River | 9078 | 612 | 221 | 877472 | 887383 | 729630.2 | 5745.926 | 3448.889 | 738825.1 | 1626208 |
| Elk/Dos Rios | 7548 | 1326 | 0 | 0 | 8874 | 549470.1 | 2709.85 | 8161.456 | 560341.4 | 569215.4 |
| Round Valley/Covelo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Upper Middle Fork Eel | 18360 | 153 | 391 | 1096840 | 1115744 | 223877.3 | 0 | 2508.367 | 226385.7 | 1342130 |
| Williams/Thatcher | 1955 | 816 | 0 | 0 | 2771 | 761190.2 | 0 | 0 | 761190.2 | 763961.2 |
| Total Middle Eel | 36941 | 2907 | 612 | 1974312 | 2014772 | 2264168 | 8455.776 | 14118.71 | 2286742 | 4301514 |

NON-NATIONAL FOREST LANDS (CUYD)

| | Small Sources: Gullies, and Streambanks | | | | Landslides: Delivered Sediment | | | | Total Sed. | |
|-----------------------|---|---------|--------------|-------------|--------------------------------|----------|----------|----------|-----------------|----------|
| | Roads | Gullies | Timber Harv. | Streambanks | Total Small | Natural | Harvest | Roads | Total Landslide | |
| Black Butte River | 1496 | 0 | 0 | 0 | 1496 | 190910.8 | 6296.296 | 2222.222 | 199429.304 | 200925.3 |
| Elk/Dos Rios | 1309 | 0 | 0 | 932314 | 933623 | 572328.5 | 507 | 6047.139 | 578882.7 | 1512506 |
| Round Valley/Covelo | 2414 | 0 | 0 | 356473 | 358887 | 148495.6 | 0 | 12000 | 160495.6 | 519382.6 |
| Upper Middle Fork Eel | 51 | 0 | 0 | 0 | 51 | 16926.67 | 2466.667 | 0 | 19393.33 | 19444.33 |
| Williams/Thatcher | 6902 | 0 | 0 | 1892049 | 1898951 | 92414.49 | 370.3704 | 4420.871 | 97205.74 | 1996157 |
| Total Middle Eel | 12172 | 0 | 0 | 3180836 | 3193008 | 1021076 | 9640.333 | 24690.23 | 1055407 | 4248415 |

* Included with NFS

ALL OWNERSHIPS (CUYD)

| | Small Sources: Gullies, and Streambanks | | | | Landslides: Delivered Sediment | | | | Total Sed. | | |
|-----------------------|---|---------|--------------|-------------|--------------------------------|----------|----------|----------|---------------------------|----------|---------|
| | Roads | Gullies | Timber Harv. | Streambanks | Total Small | Natural | Harvest | Roads | Total Landslide | | |
| Black Butte River | 10574 | 612 | 221 | 877472 | 888879 | 920541 | 12042.22 | 5671.111 | 938254.4 | 1827133 | |
| Elk/Dos Rios | 8857 | 1326 | 0 | 932314 | 942497 | 1121799 | 3216.85 | 14208.59 | 1139224 | 2081721 | |
| Round Valley/Covelo | 2414 | 0 | 0 | 356473 | 358887 | 148495.6 | 0 | 12000 | 160495.6 | 519382.6 | |
| Upper Middle Fork Eel | 18411 | 153 | 391 | 1096840 | 1115795 | 240804 | 2466.667 | 2508.367 | 245779 | 1361574 | |
| Williams/Thatcher | 8857 | 816 | 0 | 1892049 | 1901722 | 853975.1 | 0 | 4420.871 | 858395.9 | 2760118 | |
| Total Middle Eel | 49113 | 2907 | 612 | 5155148 | 5207780 | 3285614 | 17725.74 | 38808.94 | 3342149 | 8549929 | |
| | | | | | | | | | Sum NFS + NON-NFS Lands = | 3342149 | 8549929 |

Note: Rates per year for small sources (roads/gullies/timber) from approx. 1992-2002; (stream bank data) from Grouse Creek (1944-1998)

**TABLE 7: SEDIMENT RATE IN CUBIC YARDS PER YEAR 1985-2002
LANDSLIDES & SMALL SOURCES BY DISTURBANCE BY WATERSHED BY OWNERSHIP**

NATIONAL FOREST LANDS (CUYD/YEAR)

| | Small Sources: Gullies, and Streambanks | | | | Landslides: Delivered Sediment | | | | | Total Sed. |
|-----------------------|---|---------|--------------|-------------|--------------------------------|----------|----------|----------|-----------------|------------|
| | Roads | Gullies | Timber Harv. | Streambanks | Total Small | Natural | Harvest | Roads | Total Landslide | |
| Black Butte River | 534 | 36 | 13 | 51616 | 52199 | 42919.43 | 337.9956 | 202.8758 | 43460.3 | 95659.3 |
| Elk/Dos Rios | 444 | 78 | NA | 0 | 522 | 32321.77 | 159.4029 | 480.0856 | 32961.26 | 33483.26 |
| Round Valley/Covelo | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Upper Middle Fork Eel | 1080 | 9 | 23 | 64520 | 65632 | 13169.26 | 0 | 147.551 | 13316.81 | 78948.81 |
| Williams/Thatcher | 115 | 48 | NA | 0 | 163 | 44775.89 | 0 | 0 | 44775.89 | 44938.89 |
| Total Middle Eel | 2173 | 171 | 36 | 116136 | 118516 | 133186.3 | 497.3986 | 830.5124 | 134514.3 | 253030.3 |

NON-NATIONAL FORESET LANDS (CUYD/YEAR)

| | Small Sources: Gullies, and Streambanks | | | | Landslides: Delivered Sediment | | | | | Total Sed. |
|-----------------------|---|---------|--------------|-------------|--------------------------------|----------|----------|----------|-----------------|------------|
| | Roads | Gullies | Timber Harv. | Streambanks | Total Small | Natural | Harvest | Roads | Total Landslide | |
| Black Butte River | 88 | NA | NA * | | 88 | 11230.05 | 370.3704 | 130.719 | 11731.14 | 11819.14 |
| Elk/Dos Rios | 77 | NA | NA | 54842 | 54919 | 33666.38 | 29.82353 | 355.7141 | 34051.92 | 88970.92 |
| Round Valley/Covelo | 142 | NA | NA | 20969 | 21111 | 8735.033 | 0 | 705.8824 | 9440.915 | 30551.92 |
| Upper Middle Fork Eel | 3 | NA | NA * | | 3 | 995.6863 | 145.098 | 0 | 1140.784 | 1143.784 |
| Williams/Thatcher | 406 | NA | NA | 111297 | 111703 | 5436.147 | 21.78649 | 260.0512 | 5717.984 | 117421 |
| Total Middle Eel | 716 | 0 | 0 | 187108 | 187824 | 60063.29 | 567.0784 | 1452.367 | 62082.74 | 249906.7 |

* Included with NFS

ALL OWNERSHIPS (CUYD/YEAR)

| | Small Sources: Gullies, and Streambanks | | | | Landslides: Delivered Sediment | | | | | Total Sed. |
|---------------------------|---|---------|--------------|-------------|--------------------------------|----------|----------|----------|-----------------|--------------------|
| | Roads | Gullies | Timber Harv. | Streambanks | Total Small | Natural | Harvest | Roads | Total Landslide | |
| Black Butte River | 622 | 36 | 13 | 51616 | 52287 | 54149.47 | 708.366 | 333.5948 | 55191.43 | 107478.4 |
| Elk/Dos Rios | 521 | 78 | NA | 54842 | 55441 | 65988.15 | 189.2265 | 835.7997 | 67013.18 | 122454.2 |
| Round Valley/Covelo | 142 | NA | 0 | 20969 | 21111 | 8735.033 | 0 | 705.8824 | 9440.915 | 30551.92 |
| Upper Middle Fork Eel | 1083 | 9 | 23 | 64520 | 65635 | 14164.94 | 145.098 | 147.551 | 14457.59 | 80092.59 |
| Williams/Thatcher | 521 | 48 | 0 | 111297 | 111866 | 50233.83 | 0 | 260.0512 | 50493.88 | 162359.9 |
| Total Middle Eel | 2889 | 171 | 36 | 303244 | 306340 | 193271.4 | 1042.691 | 2282.879 | 196597 | 502937 |
| Sum NFS + NON-NFS Lands = | | | | | | | | | 196597 | 502937 |
| Harv + Rd = | | | | | | | | | 3325.57 | % Human = 0.016916 |

Note: Rates per year for small sources (roads/gullies/timber) from approx. 1992-2002; (stream bank data) from Grouse Creek (1944-1998)

TABLE 8A: COMPARISON OF LANDSLIDE SEDIMENT IN NORTH AND MIDDLE FORKS OF EEL RIVER

NORTH FORK EEL

Total Tons Delivered

| Tons Deliv. | 1944-1960 | 1960-1975 | 1975-1990 | 1990-1998 | 1944-1998 |
|--------------|---------------|---------------|--------------|-------------|---------------|
| None | 233900 | 566800 | 72400 | 2500 | 875600 |
| Road | 6800 | 16500 | 0 | 0 | 23300 |
| Harvest | 2300 | 6600 | 0 | 0 | 8900 |
| Road/Harv. | 0 | 20800 | 0 | 0 | 20800 |
| Total | 243000 | 610700 | 72400 | 2500 | 928600 |

| | |
|-------------------------|-----------------|
| Rd+Harv+Rd&Harv | 53000 |
| SRNF lands = 112 sq.mi. | Sq. Miles Acres |
| | 112 71680 |

| Human | Natural | Ratio | % |
|-------|---------|----------|----------|
| 53000 | 875600 | 0.057075 | 5.707517 |

Tons per square mile per year

| Tons/sqmi/yr | tons/sqmi/yr | | | | tons/ac/yr cuyd/ac/yr | |
|-----------------|--------------|------------|-----------|-----------|-----------------------|-------------------------|
| | 1944-1960 | 1960-1975 | 1975-1990 | 1990-1998 | 1944-1998 | 1944-1998 |
| None | 131 | 337 | 43 | 1 | 145 | 0.226211 0.150792 |
| Road | 4 | 10 | 0 | 0 | 4 | 0.00602 0.004013 |
| Harvest | 1 | 4 | 0 | 0 | 1 | 0.002299 0.001533 |
| Road&Har. | 0 | 12 | 0 | 0 | 3 | 0.005374 0.003582 |
| Total | 136 | 364 | 43 | 1 | 154 | 0.239904 0.15992 |
| Rd+Harv+Rd/Harv | | | | | | 0.013693 |

| tons/ac/yr | 1944-1998 | | |
|------------|-----------|----------|----------|
| Human | Natural | Ratio | % |
| 0.013693 | 0.226211 | 0.057075 | 5.707517 |

Data from Mark Smith, USFS Six Rivers National Forest 2003; personal communication; Addresses Forest Service lands only.

TABLE 8B: COMPARISON OF LANDSLIDE SEDIMENT IN NORTH AND MIDDLE FORKS OF EEL RIVER

MIDDLE FORK EEL

Total Tons

| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 |
|-------------------|------------------|------------------|------------------|------------------|
| Landslides | | | | |
| Natural | 28247737 | 2858181 | 4928421 | 36034340 |
| Road | 1163879 | 48877.1 | 58213.41 | 1270969 |
| Harvest | 122856.1 | 0 | 26588.61 | 149444.7 |
| Total | 29534472 | 2907058 | 5013223 | 37454754 |

Total Cubic Yards

| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 |
|-------------------|------------------|------------------|------------------|------------------|
| Landslides | | | | |
| Natural | 18831825 | 1905454 | 3285614 | 24022893 |
| Road | 775919.1 | 32584.74 | 38808.94 | 847312.8 |
| Harvest | 81904.09 | 0 | 17725.74 | 99629.83 |
| Total | 19689648 | 1938039 | 3342149 | 24969836 |

Tons/square mile/year

| | 1940-1969 | 1970-1984 | 1985-2002 | 1940-2002 |
|-------------------|------------------|------------------|------------------|------------------|
| Landslides | | | | |
| Natural | 1293.675 | 271.1448 | 385.0335 | 771.9062 |
| Road | 53.30272 | 4.636786 | 4.54793 | 27.22594 |
| Harvest | 5.626502 | 0 | 2.077238 | 3.201316 |
| Total | 1352.605 | 275.7816 | 391.6587 | 802.3334 |

TABLE 9: COMPARISON OF LANDSLIDE SEDIMENT IN MIDDLE, NORTH, AND SOUTH FORKS EEL RIVER

CUBIC YARDS PER ACRE PER YEAR

| Watershed | N.Fk. Eel | M.Fk. Eel | M.Fk. Eel | M.Fk. Eel | S.Fk. Eel |
|----------------|-----------|-----------|-----------|-----------|------------|
| Agency | USFS | USFS | USGS* | SCS | TetraTech* |
| Year | 2003 | 2003 | 1986 | 1970 | 1998 |
| Land Base | FS Land | All Lands | All Land | All Land | All Land |
| Time Period | 1944-1998 | 1940-2002 | | 1941-1965 | 1942-1965 |
| Natural | 0.150792 | 0.804073 | NA | NA | NA |
| Road | 0.007595 | 0.028361 | NA | NA | NA |
| Harvest | 0.001533 | 0.003335 | NA | NA | NA |
| Total | 0.15992 | 0.835768 | 5.934809 | 1.33 | 2.26 |

TONS PER SQUARE MILE PER YEAR

| Watershed | N.Fk. Eel | M.Fk. Eel | M.Fk. Eel | M.Fk. Eel | S.Fk. Eel |
|----------------|-----------|-----------|-----------|-----------|-------------|
| Agency | USFS | USFS | USGS* | SCS | TetraTech** |
| Year | 2003 | 2003 | 1986 | 1970 | 1998 |
| Land Base | FS Land | All Lands | All Land | All Land | All Land |
| Time Period | 1944-1998 | 1940-2002 | | | 1942-1965 |
| Natural | 145 | 772 | NA | NA | NA |
| Road | 7 | 27 | NA | NA | NA |
| Harvest | 1 | 3 | NA | NA | NA |
| Total | 153 | 802 | 5697 | 1277 | 2170 |

*USGS (1986) Values for the Middle fork of the Eel are for total sediment

476800 acres

4245000 tons/yr

2829717 cuyd/yr

5.934809 cuyd/ac/yr

Cubic yards per acre * 960 = tons per square mile (1.5 tons/cuyd * 640 acres/sqmi = 960)

**Tetra Tech also reported cuyd/ac/yr values for: 1966-81 = 1.03 and 1981-96 = 0.54

North Fork Eel data address Forest Service Lands only; Mark Smith USFS Six Rivers N.F. 2003

**TABLE 10: LANDSLIDE SEDIMENT DELIVERY IN MIDDLE FORK EEL RIVER FROM USFS REPORT 2001
CUBIC YARDS PER ACRE PER YEAR PER SUBWATERSHED**

| Watershed | USFS TMDL STUDY 2003 | | | | USFS REPORT 2001 |
|-------------------|------------------------|-----------------|-------------------|--------------------|--------------------|
| | Watershed Area (acres) | Landslide cuyds | Landslide cuyd/ac | Landslide cy/ac/yr | Landslide cy/ac/yr |
| Black Butte River | 103586 | 9928532 | 95.8482 | 1.545939 | 1.33 |
| Elk/Dos Rios | 73931 | 2074125 | 28.05488 | 0.452498 | 0.96 |
| Round Valley | 63619 | 1735134 | 27.27383 | 0.439901 | no data |
| Upper Middle Fork | 131162 | 2342343 | 17.8584 | 0.288039 | 0.62 |
| Williams/Thatcher | 109581 | 8889701 | 81.12448 | 1.308459 | 1.17 |
| Total Mid. Eel | 481879 | 24969836 | 51.81765 | 0.835768 | no data |