|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 1. Land use categories in Faga'alu subwatersheds (NOAA Ocean Service and Coastal Services Center, 2010) | | | | | | | | | | | | |
| Subwatershed (pourpoint) | Cumulative Area km2 | Cumulative % | Area km2 | % of area | % Bare Land | % High Intensity Developed | % Developed Open Space | % Grassland (agriculture) | % Forest | % Scrub/ Shrub | % Disturbed | % Undisturbed |
| UPPER (FG1) | 0.9 | 48.2 | 0.9 | 48.0 | 0.4 | 0.0 | 0.0 | 0.1 | 82.4 | 17.1 | 0.4 | 99.6 |
| LOWER\_QUARRY (FG2) | 1.17 | 63.0 | 0.27 | 14.5 | 5.7 | 0.7 | 0.1 | 0.5 | 92.1 | 0.9 | 6.5 | 93.5 |
| LOWER\_VILLAGE (FG3) | 1.78 | 95.5 | 0.6 | 32.5 | 0.0 | 9.0 | 2.6 | 0.2 | 87.6 | 0.6 | 11.7 | 88.3 |
| LOWER (FG3) | 1.78 | 95.5 | 0.88 | 47.3 | 1.8 | 6.4 | 1.8 | 0.3 | 89.0 | 0.7 | 10.1 | 89.9 |
| TOTAL (FG3) | 1.78 | 95.5 | 1.78 | 95.7 | 1.1 | 3.2 | 0.9 | 0.2 | 85.7 | 9.0 | 5.2 | 94.8 |
| Fagaalu Stream | 1.86 | 100.0 | 0.08 | 4.5 | 1.0 | 4.6 | 1.1 | 0.2 | 84.5 | 8.6 | 6.8 | 93.2 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 2. Sediment yield from subwatersheds in Faga'alu | | | | | | | | | | |
| Storm Start | Storm# | Precip (mm) | UPPER tons | UPPER PE % | LOWER tons | TOTAL tons | SSY data source | TOTAL PE % | % UPPER | % LOWER |
| 02/02/2012 | 1 | 16 | 0.05 | 31 | 0.82 | 0.87 | T-YSI | 75 | 5.0 | 94.0 |
| 02/03/2012 | 2 | 24 | 0.08 | 31 | 1.82 | 1.9 | T-YSI | 75 | 4.0 | 95.0 |
| 02/05/2012 | 3 | 19 | 0.05 | 31 | 0.76 | 0.81 | T-YSI | 75 | 6.0 | 93.0 |
| 02/05/2012 | 4 | 83 | 0.44 | 31 | 6.54 | 6.98 | T-YSI | 75 | 6.0 | 93.0 |
| 03/08/2012 | 5 | 23 | 0.06 | 31 | 2.28 | 2.34 | T-YSI | 75 | 2.0 | 97.0 |
| 03/09/2012 | 6 | 18 | 0.17 | 31 | 2.0 | 2.16 | T-YSI | 75 | 7.0 | 92.0 |
| 03/16/2012 | 7 | 22 | 0.05 | 31 | 1.2 | 1.25 | T-YSI | 75 | 3.0 | 96.0 |
| 03/17/2012 | 8 | 30 | 0.07 | 31 | 2.37 | 2.44 | T-YSI | 75 | 2.0 | 97.0 |
| 03/21/2012 | 9 | 14 | 0.14 | 31 | 1.01 | 1.15 | T-YSI | 75 | 12.0 | 87.0 |
| 03/22/2012 | 10 | 35 | 0.33 | 31 | 4.35 | 4.67 | T-YSI | 75 | 7.0 | 92.0 |
| 03/25/2012 | 11 | 49 | 0.63 | 31 | 7.66 | 8.29 | T-YSI | 75 | 7.0 | 92.0 |
| 05/02/2012 | 12 | 30 | 0.02 | 31 | 3.45 | 3.46 | T-YSI | 75 | 0.0 | 99.0 |
| 05/08/2012 | 13 | 25 | 0.1 | 31 | 2.84 | 2.94 | T-YSI | 75 | 3.0 | 96.0 |
| 05/22/2012 | 14 | 33 | 0.47 | 31 | 6.12 | 6.59 | T-YSI | 75 | 7.0 | 92.0 |
| 03/06/2013 | 15 | 21 | 0.06 | 28 | 0.85 | 0.9 | int. grab | 36 | 6.0 | 93.0 |
| 04/16/2013 | 16 | 53 | 0.53 | 28 | 3.88 | 4.41 | int. grab | 36 | 12.0 | 87.0 |
| 04/23/2013 | 17 | 83 | 9.55 | 28 | 16.86 | 26.41 | int. grab | 36 | 36.0 | 63.0 |
| 04/30/2013 | 18 | 112 | 0.48 | 28 | 7.57 | 8.05 | int. grab | 36 | 5.0 | 94.0 |
| 06/05/2013 | 19 | 170 | 4.69 | 28 | 34.73 | 39.42 | int. grab | 36 | 11.0 | 88.0 |
| 06/16/2013 | 20 | 28 | 0.13 | 38 | 0.42 | 0.55 | T-OBS | 39 | 23.0 | 76.0 |
| 02/14/2014 | 21 | 18 | 0.22 | 38 | 1.54 | 1.76 | T-OBS | 52 | 12.0 | 87.0 |
| 02/15/2014 | 22 | 11 | 0.02 | 38 | 0.5 | 0.52 | T-OBS | 52 | 3.0 | 96.0 |
| 02/18/2014 | 23 | 11 | 0.0 | 38 | 0.09 | 0.09 | T-OBS | 52 | 1.0 | 98.0 |
| 02/20/2014 | 24 | 29 | 0.12 | 38 | 3.65 | 3.76 | T-OBS | 52 | 3.0 | 96.0 |
| 02/21/2014 | 25 | 51 | 1.84 | 38 | 7.71 | 9.56 | T-OBS | 52 | 19.0 | 80.0 |
| 02/24/2014 | 26 | 20 | 0.06 | 38 | 0.44 | 0.5 | T-OBS | 52 | 12.0 | 87.0 |
| 02/25/2014 | 27 | 60 | 0.53 | 38 | 6.96 | 7.49 | T-OBS | 52 | 7.0 | 92.0 |
| 02/27/2014 | 28 | 35 | 0.24 | 38 | 1.94 | 2.17 | T-OBS | 52 | 10.0 | 89.0 |
| Total/Avg: | 28 | 1123 | 21.1 | 33 | 130.4 | 151.4 |  | 60 | 14 | 86 |
| Tons/km2 |  |  | 23.5 |  | 148.1 | 85.1 |  |  | - | - |
| DR |  |  | 1 |  | 6.3 | 3.6 |  |  | - | - |

|  |  |  |  |
| --- | --- | --- | --- |
| Table 3. Sediment yield from disturbed portions of subwatersheds in Faga'alu | | | |
|  | UPPER | LOWER | TOTAL |
| fraction disturbed (%) | 0.4 | 10.1 | 5.2 |
| SSY from forested areas (tons) | 21.0 | 18.6 | 39.6 |
| SSY from disturbed areas (tons) | 0.1 | 111.8 | 111.8 |
| % SSY from disturbed areas | 0.4 | 86 | 74 |
| sSSY from disturbed areas (tons/km2) | 23.5 | 1257.7 | 1208.1 |
| DR for sSSY from disturbed areas | - | 54 | 51 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 4. Sediment yield from subwatersheds in Faga'alu | | | | | | | | | |
| Storm Start | Storm# | Precip (mm) | UPPER tons | LOWER\_QUARRY tons | LOWER\_VILLAGE tons | TOTAL tons | % UPPER | % LOWER\_QUARRY | % LOWER\_VILLAGE |
| 03/06/2013 | 1 | 21 | 0.06 | 0.23 | 0.61 | 0.9 | 6.0 | 25.0 | 67.0 |
| 04/16/2013 | 2 | 53 | 0.53 | 3.49 | 0.39 | 4.41 | 12.0 | 79.0 | 8.0 |
| 04/23/2013 | 3 | 83 | 9.55 | 7.06 | 9.8 | 26.41 | 36.0 | 26.0 | 37.0 |
| 04/30/2013 | 4 | 112 | 0.48 | 0.68 | 6.89 | 8.05 | 5.0 | 8.0 | 85.0 |
| 06/05/2013 | 5 | 170 | 4.69 | 30.6 | 4.13 | 39.42 | 11.0 | 77.0 | 10.0 |
| 02/14/2014 | 6 | 18 | 0.22 | 0.99 | 0.55 | 1.76 | 12.0 | 56.0 | 31.0 |
| 02/20/2014 | 7 | 29 | 0.12 | 1.14 | 2.5 | 3.76 | 3.0 | 30.0 | 66.0 |
| 02/21/2014 | 8 | 51 | 1.84 | 3.91 | 3.81 | 9.56 | 19.0 | 40.0 | 39.0 |
| Total/Avg: | 8 | 537 | 17 | 48 | 29 | 94 | 19 | 51 | 30 |
| Tons/km2 |  |  | 19 | 178 | 47 | 53 | - | - | - |
| DR |  |  | 1.0 | 9.17 | 2.4 | 2.7 | - | - | - |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 5. Sediment yield from disturbed portions of subwatersheds in Faga'alu | | | | |
|  | UPPER | LOWER\_QUARRY | LOWER\_VILLAGE | TOTAL |
| fraction disturbed (%) | 0.4 | 6.5 | 11.7 | 5.2 |
| SSY from forested areas (tons) | 17.4 | 4.9 | 10.5 | 32.8 |
| SSY from disturbed areas (tons) | 0.1 | 43.19 | 18.2 | 61.5 |
| % SSY from disturbed areas | 0.4 | 90 | 64 | 65 |
| sSSY from disturbed areas (tons/km2) | 19.4 | 2461.2 | 255.2 | 664.2 |
| DR for sSSY from disturbed areas |  | 126.6 | 13.1 | 34.2 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 6. Goodness-of-fit statistics for SSYEV-storm metric relationships. | | | | | | |
| Model | Pearson | Spearman | r2 | RMSE(tons) | alpha | Beta |
| Psum\_upper | 0.80 | 0.80 | 0.64 | 2.85 | 0.000 | 1.95 |
| Psum\_total | 0.83 | 0.86 | 0.69 | 2.36 | 0.041 | 1.26 |
| EI\_upper | 0.37 | 0.35 | 0.14 | 5.40 | 0.002 | 0.82 |
| EI\_total | 0.72 | 0.58 | 0.51 | 3.41 | 0.002 | 1.32 |
| Qsum\_upper | 0.89 | 0.89 | 0.79 | 2.26 | 0.000 | 1.17 |
| Qsum\_total | 0.83 | 0.82 | 0.69 | 2.64 | 0.000 | 1.13 |
| Qmax\_upper | 0.89 | 0.94 | 0.79 | 2.25 | 0.353 | 1.44 |
| Qmax\_total | 0.89 | 0.89 | 0.79 | 2.22 | 1.380 | 1.81 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 7. Annual SSY estimates | | | | |
|  | SSY Qmax (2014) | SSY Table 2 | SSY Table 3 | SSY ALL |
| Precip(mm) | 2279 | 1123 (49%) | 537 (24%) | 2780 (122%) |
| UPPER | 29 | 40 | 70 | 43 |
| LOWER | - | 390 | 310 | - |
| LOWER\_QUARRY | - | - | 190 | - |
| LOWER\_VILLAGE | - | - | 120 | - |
| TOTAL | 392 | 450 | 380 | 341 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table . Annual sSSY estimates | | | | |
|  | sSSY Qmax (2014) | sSSY Table 2 | sSSY Table 3 | sSSY ALL |
| Precip(mm) | 2279 | 1123 (49%) | 537 (24%) | 2780 (122%) |
| UPPER | 33 | 50 | 80 | 47 |
| LOWER | - | 300 | 350 | - |
| LOWER\_QUARRY | - | - | 710 | - |
| LOWER\_VILLAGE | - | - | 190 | - |
| TOTAL | 220 | 170 | 210 | 191 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Table 1. Water discharge from subwatersheds in Faga'alu | | | | | | | |
| Storm Start | Storm# | Precip (mm) | UPPER m3 | LOWER m3 | TOTAL m3 | % Upper | % Lower |
| 02/02/2012 | 1 | 16 | 8277 | 13002 | 21279 | 38 | 61 |
| 02/03/2012 | 2 | 24 | 14229 | 20385 | 34614 | 41 | 58 |
| 02/05/2012 | 3 | 19 | 7983 | 11793 | 19776 | 40 | 59 |
| 02/05/2012 | 4 | 83 | 48860 | 65642 | 114502 | 42 | 57 |
| 02/23/2012 | 5 | 17 | 8088 | 9804 | 17892 | 45 | 54 |
| 03/08/2012 | 6 | 23 | 3552 | 2884 | 6436 | 55 | 44 |
| 03/09/2012 | 7 | 18 | 8870 | 7174 | 16044 | 55 | 44 |
| 03/16/2012 | 8 | 22 | 4247 | 5607 | 9854 | 43 | 56 |
| 03/17/2012 | 9 | 30 | 4536 | 6319 | 10855 | 41 | 58 |
| 03/21/2012 | 10 | 14 | 5833 | 6334 | 12167 | 47 | 52 |
| 03/22/2012 | 11 | 35 | 10405 | 14119 | 24524 | 42 | 57 |
| 03/25/2012 | 12 | 49 | 25404 | 24618 | 50022 | 50 | 49 |
| 05/02/2012 | 13 | 30 | 762 | 2633 | 3395 | 22 | 77 |
| 05/08/2012 | 14 | 25 | 2966 | 3046 | 6012 | 49 | 50 |
| 05/22/2012 | 15 | 33 | 12357 | 10607 | 22964 | 53 | 46 |
| 05/23/2012 | 16 | 88 | 103982 | 18346 | 122328 | 85 | 14 |
| 05/24/2012 | 17 | 34 | 40234 | 18628 | 58862 | 68 | 31 |
| 05/26/2012 | 18 | 40 | 32284 | 21696 | 53980 | 59 | 40 |
| 06/03/2012 | 19 | 19 | 12091 | 7830 | 19921 | 60 | 39 |
| 06/04/2012 | 20 | 49 | 32590 | 11482 | 44072 | 73 | 26 |
| 06/04/2012 | 21 | 52 | 48663 | 39327 | 87990 | 55 | 44 |
| 06/06/2012 | 22 | 12 | 7995 | 5111 | 13106 | 61 | 38 |
| 06/07/2012 | 23 | 10 | 9456 | 6328 | 15784 | 59 | 40 |
| 07/08/2012 | 24 | 33 | 3863 | 3470 | 7333 | 52 | 47 |
| 07/27/2012 | 25 | 28 | 1607 | 2548 | 4155 | 38 | 61 |
| 07/27/2012 | 26 | 2 | 1391 | 1201 | 2592 | 53 | 46 |
| 08/09/2012 | 27 | 36 | 14363 | 6557 | 20920 | 68 | 31 |
| 03/05/2013 | 28 | 33 | 3658 | 12948 | 16606 | 22 | 77 |
| 03/06/2013 | 29 | 21 | 7731 | 20126 | 27857 | 27 | 72 |
| 03/07/2013 | 30 | 34 | 23148 | 59587 | 82735 | 27 | 72 |
| 03/11/2013 | 31 | 43 | 17176 | 35679 | 52855 | 32 | 67 |
| 03/21/2013 | 32 | 15 | 1074 | 2654 | 3728 | 28 | 71 |
| 03/23/2013 | 33 | 1 | 540 | 4236 | 4776 | 11 | 88 |
| 04/16/2013 | 34 | 53 | 9476 | 25403 | 34879 | 27 | 72 |
| 04/17/2013 | 35 | 42 | 15630 | 38115 | 53745 | 29 | 70 |
| 04/20/2013 | 36 | 27 | 3867 | 18748 | 22615 | 17 | 82 |
| 04/23/2013 | 37 | 83 | 59162 | 28128 | 87290 | 67 | 32 |
| 04/30/2013 | 38 | 112 | 79137 | 35623 | 114760 | 68 | 31 |
| 05/11/2013 | 39 | 0 | 959 | 1840 | 2799 | 34 | 65 |
| 06/05/2013 | 40 | 170 | 134031 | 20593 | 154624 | 86 | 13 |
| 06/16/2013 | 41 | 28 | 7519 | 5181 | 12700 | 59 | 40 |
| 07/17/2013 | 42 | 11 | 1334 | 1274 | 2608 | 51 | 48 |
| 07/17/2013 | 43 | 25 | 10739 | 20923 | 31662 | 33 | 66 |
| 07/19/2013 | 44 | 51 | 23106 | 54199 | 77305 | 29 | 70 |
| 08/05/2013 | 45 | 14 | 4923 | 5259 | 10182 | 48 | 51 |
| 08/10/2013 | 46 | 73 | 21896 | 57456 | 79352 | 27 | 72 |
| 08/15/2013 | 47 | 27 | 2719 | 5881 | 8600 | 31 | 68 |
| 08/16/2013 | 48 | 192 | 110915 | 126802 | 237717 | 46 | 53 |
| 08/19/2013 | 49 | 36 | 13122 | 24668 | 37790 | 34 | 65 |
| 09/01/2013 | 50 | 40 | 6501 | 10338 | 16839 | 38 | 61 |
| 02/14/2014 | 51 | 18 | 8186 | 7593 | 15779 | 51 | 48 |
| 02/15/2014 | 52 | 11 | 1521 | 1807 | 3328 | 45 | 54 |
| 02/18/2014 | 53 | 11 | 487 | 1945 | 2432 | 20 | 79 |
| 02/20/2014 | 54 | 29 | 4466 | 16654 | 21120 | 21 | 78 |
| 02/21/2014 | 55 | 51 | 18868 | 38930 | 57798 | 32 | 67 |
| 02/22/2014 | 56 | 0 | 1242 | 1650 | 2892 | 42 | 57 |
| 02/24/2014 | 57 | 20 | 1298 | 1822 | 3120 | 41 | 58 |
| 02/25/2014 | 58 | 60 | 21531 | 50910 | 72441 | 29 | 70 |
| 02/27/2014 | 59 | 35 | 21133 | 25064 | 46197 | 45 | 54 |
| 03/06/2014 | 60 | 43 | 14636 | 20282 | 34918 | 41 | 58 |
| 03/13/2014 | 61 | 14 | 3095 | 4164 | 7259 | 42 | 57 |
| 03/13/2014 | 62 | 20 | 6021 | 7580 | 13601 | 44 | 55 |
| 03/14/2014 | 63 | 16 | 12159 | 17707 | 29866 | 40 | 59 |
| 03/14/2014 | 64 | 11 | 1088 | 2170 | 3258 | 33 | 66 |
| 04/01/2014 | 65 | 32 | 640 | 4595 | 5235 | 12 | 87 |
| 04/06/2014 | 66 | 54 | 15600 | 30873 | 46473 | 33 | 66 |
| 04/08/2014 | 67 | 19 | 2851 | 6040 | 8891 | 32 | 67 |
| 04/09/2014 | 68 | 10 | 2761 | 5445 | 8206 | 33 | 66 |
| 04/11/2014 | 69 | 6 | 998 | 2299 | 3297 | 30 | 69 |
| 04/17/2014 | 70 | 9 | 802 | 1958 | 2760 | 29 | 70 |
| 04/18/2014 | 71 | 17 | 4262 | 9356 | 13618 | 31 | 68 |
| 04/19/2014 | 72 | 36 | 15826 | 47596 | 63422 | 24 | 75 |
| 04/25/2014 | 73 | 20 | 6642 | 11828 | 18470 | 35 | 64 |
| 04/26/2014 | 74 | 0 | 1186 | 1530 | 2716 | 43 | 56 |
| 04/27/2014 | 75 | 23 | 6216 | 15953 | 22169 | 28 | 71 |
| 04/28/2014 | 76 | 16 | 2095 | 6699 | 8794 | 23 | 76 |
| 04/28/2014 | 77 | 41 | 11787 | 43250 | 55037 | 21 | 78 |
| 04/30/2014 | 78 | 34 | 20007 | 41709 | 61716 | 32 | 67 |
| 05/19/2014 | 79 | 25 | 3356 | 6627 | 9983 | 33 | 66 |
| 05/20/2014 | 80 | 13 | 2918 | 6750 | 9668 | 30 | 69 |
| 05/22/2014 | 81 | 62 | 9900 | 35741 | 45641 | 21 | 78 |
| 05/23/2014 | 82 | 4 | 1551 | 5268 | 6819 | 22 | 77 |
| 05/23/2014 | 83 | 4 | 2162 | 6659 | 8821 | 24 | 75 |
| 05/24/2014 | 84 | 2 | 604 | 1959 | 2563 | 23 | 76 |
| 05/29/2014 | 85 | 3 | 1368 | 3247 | 4615 | 29 | 70 |
| 06/05/2014 | 86 | 76 | 17013 | 47985 | 64998 | 26 | 73 |
| 06/17/2014 | 87 | 16 | 5837 | 15001 | 20838 | 28 | 71 |
| 07/03/2014 | 88 | 59 | 8095 | 23353 | 31448 | 25 | 74 |
| 07/05/2014 | 89 | 36 | 13729 | 29176 | 42905 | 31 | 68 |
| 07/06/2014 | 90 | 17 | 1807 | 6255 | 8062 | 22 | 77 |
| 07/29/2014 | 91 | 568 | 323584 | 341941 | 665525 | 48 | 51 |
| 10/15/2014 | 92 | 17 | 2716 | 5576 | 8292 | 32 | 67 |
| 10/15/2014 | 93 | 17 | 5877 | 11503 | 17380 | 33 | 66 |
| 11/02/2014 | 94 | 16 | 3922 | 7106 | 11028 | 35 | 64 |
| 11/03/2014 | 95 | 43 | 25518 | 10960 | 36478 | 69 | 30 |
| 11/12/2014 | 96 | 1 | 977 | 3040 | 4017 | 24 | 75 |
| 11/12/2014 | 97 | 13 | 3182 | 10209 | 13391 | 23 | 76 |
| 11/16/2014 | 98 | 27 | 10840 | 21016 | 31856 | 34 | 65 |
| 11/18/2014 | 99 | 5 | 3324 | 8890 | 12214 | 27 | 72 |
| 11/19/2014 | 100 | 3 | 2241 | 6845 | 9086 | 24 | 75 |
| 11/22/2014 | 101 | 78 | 48962 | 24578 | 73540 | 66 | 33 |
| 11/24/2014 | 102 | 20 | 6570 | 7245 | 13815 | 47 | 52 |
| 12/04/2014 | 103 | 65 | 15835 | 42695 | 58530 | 27 | 72 |
| 12/09/2014 | 104 | 34 | 34531 | 9412 | 43943 | 78 | 21 |
| 12/19/2014 | 105 | 62 | 33251 | 26884 | 60135 | 55 | 44 |
| 12/21/2014 | 106 | 143 | 90980 | 104181 | 195161 | 46 | 53 |
| - | - | - | - | - | Average: | 0 | 0 |