

Wastewater data from three small wineries over a 12 month period

| | | pH | | | Electrical conductivity (mS/m) | | | Total Suspended Solids (mg/L) | | | BOD (mg/L) | | |
|---------------------------|---------------------------|------------|------------|------------|--------------------------------|------------|------------|-------------------------------|------------|------------|-------------|-------------|-------------|
| | | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 |
| Vintage | 29/02/2008 | 4.5 | 4.4 | 4.2 | 224 | 99.2 | 156.4 | 277 | 175 | 113 | 2230 | 1370 | 3000 |
| | 5/03/2008 | 4.5 | 5.4 | 4.3 | 144.3 | 150.7 | 192.4 | 120 | 363 | 800 | 1585 | 1375 | 2765 |
| | 12/03/2008 | 4.5 | 5.3 | 4.4 | 127.5 | 140.5 | 196.5 | 106 | 104 | 996 | 1650 | 570 | 2890 |
| | 20/03/2008 | 4.8 | 6.4 | 4.9 | 332 | 133.2 | 184.4 | 377 | 88 | 497 | 2920 | 870 | 4220 |
| | 26/03/2008 | 4.9 | 4.8 | 4.9 | 236 | 108.5 | 175 | 440 | 173 | 120 | 1110 | 410 | 2730 |
| | 2/04/2008 | 5.1 | 4.7 | 4 | 373 | 217 | 224 | 570 | 108 | 575 | 2490 | 1180 | 7000 |
| | 9/04/2009 | 4.7 | 6.8 | 4.1 | 349 | 237 | 176.4 | 620 | 500 | 2235 | 2380 | 581 | 5260 |
| | 16/04/2008 | 4.5 | 6.1 | 4.4 | 401 | 331 | 243 | 2475 | 2347 | 395 | 4400 | 2150 | 4000 |
| | 30/04/2008 | 5.1 | 6.9 | 4.9 | 455 | 237 | 194.3 | 740 | 650 | 365 | 2865 | 1890 | 6220 |
| | 14/05/2008 | 4.8 | 4.9 | 4.9 | 390 | 264 | 142 | 1775 | 1155 | 365 | 9100 | 1960 | 2450 |
| | Mean | 4.7 | 5.6 | 4.5 | 3 | 192 | 188 | 750 | 566 | 646 | 3073 | 1235 | 4053 |
| | Minimum | 4.5 | 4.4 | 4 | 127.5 | 99.2 | 142.1 | 106 | 88 | 113 | 1110 | 410 | 2450 |
| | Maximum | 5.1 | 6.9 | 4.9 | 455 | 331 | 243 | 2475 | 2347 | 2235 | 9100 | 2150 | 7000 |
| | Standard deviation | 0.24 | 0.91 | 0.36 | 112 | 76 | 29 | 770 | 709 | 621 | 2303 | 625 | 1609 |
| Non-vintage | 20/02/2008 | | 6.6 | 4.4 | | 170.6 | 168.3 | | 293 | 117 | | 210 | 870 |
| | 29/05/2008 | 4.9 | 4.9 | 4.8 | 221 | 262 | 194.7 | 209 | 510 | 830 | 1235 | 2800 | 3255 |
| | 11/06/2008 | 4.4 | 6.1 | 4.7 | 321 | 247 | 95.1 | 405 | 445 | 360 | 5437 | 1855 | 3195 |
| | 25/06/2008 | 4.9 | 5.5 | 5.1 | 229 | 221 | 128.6 | 81 | 198 | 208 | 1280 | 855 | 1440 |
| | 23/07/2008 | 4.8 | 7.2 | 4.9 | 412 | 298 | 130.5 | 258 | 590 | 45 | 2958 | 4403 | 2413 |
| | 6/08/2008 | 4.7 | 5.8 | 6.2 | 304 | 359 | 326 | 86 | 153 | 41 | 1720 | 2495 | 123 |
| | 22/08/2008 | 4.7 | 6 | 5.1 | 171.4 | 137.8 | 84.8 | 42 | 89 | 43 | 610 | 347 | 280 |
| | 3/09/2008 | 4.4 | 6.5 | 5 | 266 | 128.5 | 359 | 244 | 78 | 118 | 2350 | 440 | 2700 |
| | 17/09/2008 | 4.5 | 6.7 | 4.8 | 297 | 149.5 | 295 | 193 | 50 | 73 | 2815 | 264 | 6405 |
| | 2/10/2008 | 4.7 | 6.8 | 5.1 | 150.8 | 182.5 | 163.6 | 59 | 68 | 116 | 820 | 383 | 1660 |
| | 29/10/2008 | 4.9 | 6.9 | 4.8 | 174.5 | 209 | 87.5 | 69 | 72 | 51 | 1050 | 251 | 1550 |
| | 19/11/2008 | 4.8 | 7.1 | 4.5 | 208 | 330 | 113.6 | 168 | 134 | 91 | 1635 | 732 | 2725 |
| | 10/12/2008 | 4.7 | 6.6 | 4.9 | 159.7 | 183.7 | 269 | 508 | 54 | 560 | 565 | 464 | 6565 |
| | 7/01/2009 | 4.6 | 6.6 | | 188.4 | 154 | | 436 | 160 | | 2700 | 880 | |
| | 4/02/2009 | 4.5 | 5.2 | 4.9 | 271 | 183.5 | 185.7 | 210 | 228 | 164 | 4885 | 2515 | 4805 |
| | 18/02/2009 | 4.1 | 6.3 | 4.5 | 286 | 222 | 167.7 | 196 | 60 | 185 | 3745 | 1977 | 2300 |
| | 4/03/2009 | 4.4 | 4.7 | 4.1 | 155.6 | 140 | 240 | 190 | 166 | 232 | 2340 | 1800 | 1362 |
| | Mean | 4.6 | 6.2 | 4.8 | 238 | 210 | 188 | 209 | 196 | 202 | 2259 | 1333 | 2603 |
| | Minimum | 4.1 | 4.7 | 4.1 | 150.8 | 128.5 | 84.8 | 42 | 50 | 41 | 565 | 210 | 123 |
| Maximum | 4.9 | 7.2 | 6.2 | 412 | 359 | 359 | 508 | 590 | 830 | 5437 | 4403 | 6565 | |
| Standard deviation | 0.2 | 0.75 | 0.45 | 73 | 68 | 86 | 138 | 167 | 215 | 1461 | 1199 | 1921 | |

| | | TKN (mg/L) | | | TP (mg/L) | | | Calcium (mg/L) | | | Magnesium (mg/L) | | |
|--------------------|------------|------------|----------|----------|-----------|----------|----------|----------------|----------|----------|------------------|----------|----------|
| | | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 |
| Vintage | 29/02/2008 | 24.38 | 20.08 | 22.93 | 3.37 | 4.72 | 6.7 | 52 | 29 | 16 | 20 | 13 | 15 |
| | 5/03/2008 | 17.18 | 33.44 | 36.94 | 5.36 | 6.59 | 8.24 | 96 | 28 | 54 | 10 | 7.9 | 14 |
| | 12/03/2008 | 9.35 | 60.22 | 36.72 | 5.43 | 12.21 | 11.88 | 38 | 24 | 62 | 15 | 7.7 | 15 |
| | 20/03/2008 | 51.9 | 20.13 | 25.99 | 12.96 | 6.33 | 11.28 | 48 | 25 | 46 | 19 | 12 | 20 |
| | 26/03/2008 | 60.75 | 88.12 | 78.46 | 12.66 | 9.57 | 9.97 | 24 | 17 | 37 | 11 | 7.3 | 16 |
| | 2/04/2008 | 151.55 | 19.33 | 63.82 | 21.55 | 4.7 | 16.32 | 45 | 18 | 42 | 15 | 12 | 21 |
| | 9/04/2009 | 146.9 | 51.01 | 23.66 | 19.94 | 10.31 | 23.27 | 50 | 14 | 54 | 17 | 8.2 | 16 |
| | 16/04/2008 | 317.85 | 180.14 | 28.78 | 34.55 | 22.64 | 14.45 | 54 | 15 | 48 | 19 | 8.7 | 16 |
| | 30/04/2008 | 155.5 | 92.7 | 83.35 | 20.41 | 14.02 | 16.93 | 39 | 10 | 44 | 15 | 7.6 | 11 |
| | 14/05/2008 | 111.48 | 203.3 | 36.59 | 36.49 | 33.11 | 16.52 | 29 | 29 | 43 | 13 | 7.7 | 10 |
| | Mean | 104 | 76.8 | 43.7 | 17.2 | 12.4 | 13.5 | 47.5 | 20.9 | 44.6 | 15.4 | 9.21 | 15.4 |
| | Minimum | 9.3 | 19.3 | 22.9 | 3.3 | 4.7 | 6.7 | 24 | 10 | 16 | 10 | 7.3 | 10 |
| | Maximum | 317.8 | 203.3 | 83.3 | 36.4 | 33.1 | 23.2 | 96 | 29 | 62 | 20 | 13 | 21 |
| Standard deviation | 94 | 66 | 22 | 11 | 9 | 4.9 | 19 | 6.9 | 12 | 3.4 | 2.2 | 3.4 | |
| Non-vintage | 20/02/2008 | | 19.1 | 11.78 | | 5.95 | 7.51 | | 21 | 38 | | 8.3 | 12 |
| | 29/05/2008 | 46.46 | 38.68 | 133.95 | 15.67 | 23.94 | 23.82 | 43 | 22 | 40 | 9 | 7.7 | 8.3 |
| | 11/06/2008 | 62.8 | 119.2 | 15.14 | 13.98 | 20.48 | 11.27 | 50 | 25 | 45 | 21 | 7.1 | 6.9 |
| | 25/06/2008 | 51.74 | 125 | 19.65 | 12.17 | 21.79 | 11.36 | 43 | 23 | 36 | 16 | 6.8 | 9 |
| | 23/07/2008 | 123.15 | 103.05 | 28.76 | 15.51 | 17.47 | 3.8 | 45 | 10 | 40 | 13 | 4.9 | 11 |
| | 6/08/2008 | 306.77 | 224.02 | 60.25 | 14.07 | 15.84 | 0.05 | 44 | 18 | 26 | 12 | 6 | 2.9 |
| | 22/08/2008 | 23.69 | 37.39 | 16.6 | 16.45 | 23.17 | 2.47 | 49 | 31 | 61 | 11 | 5 | 6.7 |
| | 3/09/2008 | 41.24 | 70.7 | 21.11 | 14.27 | 15.24 | 11.71 | 76 | 18 | 72 | 16 | 4.9 | 12 |
| | 17/09/2008 | 30.21 | 67.97 | 18.45 | 10.89 | 18.33 | 19.76 | 55 | 15 | 54 | 14 | 5 | 14 |
| | 2/10/2008 | 32.79 | 121.5 | 8.93 | 8.59 | 20.06 | 14.43 | 54 | 27 | 49 | 13 | 6.2 | 9.4 |
| | 29/10/2008 | 34.27 | 124.02 | 9.55 | 11.41 | 23.23 | 15.37 | 48 | 20 | 26 | 12 | 5.5 | 7.3 |
| | 19/11/2008 | 35.05 | 97.2 | 13.16 | 15.22 | 20.38 | 14.77 | 54 | 69 | 49 | 10 | 7.8 | 9.2 |
| | 10/12/2008 | 9.35 | 16.65 | 15.21 | 19.44 | 9.64 | 21.45 | 49 | 49 | 72 | 9.9 | 6.3 | 16 |
| | 7/01/2009 | 15.9 | 30.1 | | 9.94 | 11.1 | | 71 | 29 | | 13 | 6.7 | |
| | 4/02/2009 | 18.68 | 56.45 | 5.85 | 13.16 | 12.89 | 9.79 | 74 | 27 | 50 | 15 | 10 | 13 |
| | 18/02/2009 | 4.15 | 3.77 | 2.37 | 18.29 | 6.04 | 17.99 | 80 | 54 | 69 | 21 | 10 | 18 |
| | 4/03/2009 | 3.26 | 1.44 | 2.54 | 8.66 | 7.45 | 17.92 | 32 | 22 | 42 | 12 | 7.8 | 13 |
| | Mean | 52.4 | 73.8 | 23.9 | 13.6 | 16 | 12.7 | 54.1 | 28.2 | 48 | 13.6 | 6.8 | 10.5 |
| Minimum | 3.26 | 1.44 | 2.37 | 8.59 | 5.9 | 0.05 | 32 | 10 | 26 | 9 | 4.9 | 2.9 | |
| Maximum | 306.7 | 73.8 | 23.9 | 19.4 | 23.9 | 23.8 | 80 | 69 | 72 | 21 | 10 | 18 | |
| Standard deviation | 73 | 58 | 32 | 3.2 | 6.2 | 6.8 | 13.8 | 15.2 | 14.5 | 3.5 | 1.6 | 3.8 | |

| | | Sodium (mg/L) | | | SAR | | |
|--------------------|------------|---------------|------------|------------|-------------|-------------|------------|
| | | Winery 1 | Winery 2 | Winery 3 | Winery 1 | Winery 2 | Winery 3 |
| Vintage | 29/02/2008 | 430 | 120 | 78 | 13 | 4.7 | 2.2 |
| | 5/03/2008 | 160 | 200 | 180 | 4.2 | 8.6 | 5.6 |
| | 12/03/2008 | 210 | 160 | 170 | 7.3 | 7.3 | 5 |
| | 20/03/2008 | 360 | 210 | 140 | 11.1 | 8.6 | 4.3 |
| | 26/03/2008 | 230 | 170 | 190 | 9.7 | 8.7 | 6.6 |
| | 2/04/2008 | 480 | 320 | 140 | 15.8 | 14.3 | 4.4 |
| | 9/04/2009 | 300 | 470 | 60 | 6.7 | 24.6 | 1.8 |
| | 16/04/2008 | 510 | 650 | 150 | 15.2 | 32.9 | 4.8 |
| | 30/04/2008 | 400 | 460 | 91 | 13.8 | 26.6 | 3.9 |
| | 14/05/2008 | 420 | 310 | 150 | 16.2 | 13.2 | 5.3 |
| | Mean | 350 | 307 | 135 | 11.3 | 14.9 | 4.4 |
| | Minimum | 160 | 120 | 60 | 4.2 | 4.7 | 1.8 |
| Maximum | 510 | 650 | 190 | 16.2 | 32.9 | 6.6 | |
| Standard deviation | 119 | 171 | 44 | 4.2 | 9.6 | 1.4 | |
| Non-vintage | 20/02/2008 | | 230 | 190 | | 10.7 | 6.9 |
| | 29/05/2008 | 160 | 400 | 120 | 5.8 | 18.6 | 4.5 |
| | 11/06/2008 | 300 | 350 | 42 | 8.9 | 25.2 | 2.3 |
| | 25/06/2008 | 180 | 280 | 46 | 5.9 | 13.2 | 1.8 |
| | 23/07/2008 | 280 | 850 | 110 | 9.4 | 54.9 | 4 |
| | 6/08/2008 | 230 | 820 | 12 | 7.9 | 42.6 | 0.6 |
| | 22/08/2008 | 150 | 150 | 38 | 5 | 6.6 | 1.2 |
| | 3/09/2008 | 180 | 110 | 120 | 4.9 | 5.9 | 3.5 |
| | 17/09/2008 | 290 | 110 | 86 | 9 | 6.3 | 2.7 |
| | 2/10/2008 | 150 | 100 | 60 | 4.8 | 4.5 | 2.1 |
| | 29/10/2008 | 180 | 100 | 45 | 6 | 5.1 | 2 |
| | 19/11/2008 | 220 | 90 | 93 | 7.2 | 2.7 | 3.2 |
| | 10/12/2008 | 150 | 110 | 190 | 5.1 | 3.9 | 5.2 |
| | 7/01/2009 | 220 | 140 | | 6.3 | 6.1 | |
| | 4/02/2009 | 440 | 220 | 82 | 12.2 | 9.2 | 2.7 |
| | 18/02/2009 | 390 | 200 | 150 | 10 | 6.6 | 4.2 |
| | 4/03/2009 | 240 | 240 | 110 | 9.2 | 11.2 | 3.8 |
| | Mean | 235 | 264 | 93 | 7.3 | 13.7 | 3.1 |
| Minimum | 150 | 90 | 12 | 4.8 | 2.7 | 0.6 | |
| Maximum | 440 | 850 | 190 | 12.2 | 54.9 | 6.9 | |
| Standard deviation | 86 | 233 | 52 | 2.2 | 14.5 | 1.5 | |

Notes

1. Wineries 1 and 2 exclusively used caustic soda for cleaning. Winery 3 used both caustic soda and a potassium-based cleaning agent.
2. During the sampling period the volume of grapes crushed by each winery was:

Winery 1: 250 tonnes
Winery 2: 120 tonnes
Winery 3: 300 tonnes
3. Lees and first rinses were disposed of to the wastewater system at all three wineries.
4. Stormwater was excluded from the wastewater systems at Wineries 1 and 2. At Winery 3 stormwater was included in the wastewater stream.