



DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBP HH, HAWAII 96860-5101

Scanned
MAY 16 2014

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5090
Ser N45/373
May 14, 2014

CERTIFIED NO: 7011 0110 0002 1803 7998

Mr. Richard Takaba
Hawaii State Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Underground Storage Tank Section
919 Ala Moana Boulevard, Room 212
Honolulu, HI 96814

Dear Mr. Takaba:

SUBJECT: RED HILL TANK COMPLEX
SOIL VAPOR SAMPLING RESULTS FOR MAY 8, 2014
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 990051, 010011, 020028, AND 140010

Soil vapor samples were collected from beneath Red Hill Tanks 2 through 10 on May 8, 2014.

Soil vapor samples were analyzed in the field for VOC concentrations using a photo-ionization detector. The soil vapor sampling results are being submitted as Enclosure 1.

A conservative approach is to assess the integrity of the associated tank system if VOC concentrations exceed 280,000 ppbv in soil vapor monitoring points (SVMPs) beneath tanks containing JP-5 or JP-8, or 14,000 ppbv in soil vapor monitoring probes beneath tanks containing marine diesel fuel. These values are 50 percent of the calculated vapor concentration from fuel-saturated water.

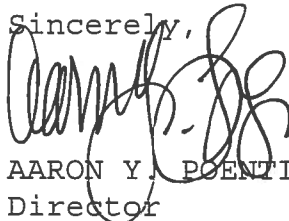
Concentrations of VOCs detected during this soil vapor sampling event slightly decreased in every SVMP except SV07M since the last events on April 22 and May 1, 2014. Concentrations of VOCs detected in the front, middle, and outer edge soil vapor monitoring probes at Tank 5 were 130,000 ppbv, 377,000 ppbv, and 327,000 ppbv, respectively.

The next soil vapor sampling event is tentatively scheduled for May 15, 2014, and will include collecting samples from soil vapor monitoring probes beneath Tanks 5, 6, 7, and 8.

5090
Ser N45/373
May 14, 2014

If there are any questions regarding this matter, or if more information is needed, please contact Ms. Raelynn Kishaba at (808) 471-1171, extension 233.

Sincerely,



AARON Y. POENTIS

Director

Regional Environmental Department

By direction of the

Commander

Enclosure: 1. Summary of Soil Vapor Sampling Results for Tanks
2 through 10 through May 8, 2014 (18 pages)

Copy to: LCDR Angela Watson, NAVSUP FLC Pearl Harbor
Mr. Walter Riddlehoover, DLA Energy Pacific

Table 1
Soil Vapor Results for SV02
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV02S | SV02M | SV02D |
|------------|-------|-------|-------|
| 3/24/2008 | NC | NC | NC |
| 5/6/2008 | 129 | 252 | 157 |
| 5/29/2008 | 1785 | 1217 | 657 |
| 7/3/2008 | 1090 | 984 | 525 |
| 7/31/2008 | 728 | 677 | 437 |
| 9/2/2008 | 754 | 693 | 434 |
| 9/29/2008 | 520 | 553 | 456 |
| 10/23/2008 | 493 | 555 | 413 |
| 11/25/2008 | 3396 | 1762 | 2792 |
| 1/14/2009 | 89 | 329 | 312 |
| 2/5/2009 | 188 | 264 | 202 |
| 2/26/2009 | 1912 | 348 | 184 |
| 4/1/2009 | 169 | 195 | 102 |
| 4/20/2009 | 704 | 557 | 504 |
| 5/27/2009 | 1473 | 835 | 799 |
| 6/29/2009 | 2141 | 659 | 511 |
| 7/20/2009 | 1360 | 628 | 544 |
| 8/28/2009 | 564 | 318 | 258 |
| 9/24/2009 | 488 | 294 | 241 |
| 10/29/2009 | 999 | 425 | 533 |
| 11/19/2009 | 305 | 283 | 241 |
| 12/16/2009 | 356 | 284 | 238 |
| 1/28/2010 | 684 | 283 | 299 |
| 2/22/2010 | 364 | 159 | 135 |
| 3/25/2010 | 394 | 340 | 277 |
| 4/28/2010 | 385 | 282 | 209 |
| 5/26/2010 | 374 | 252 | 294 |
| 6/28/2010 | 400 | 253 | 223 |
| 7/28/2010 | 332 | 232 | 205 |
| 9/29/2010 | 224 | 217 | 207 |
| 10/18/2010 | 525 | 577 | 565 |
| 11/16/2010 | 303 | 424 | 338 |
| 12/14/2010 | 313 | 416 | 330 |
| 1/14/2011 | 494 | 357 | 651 |
| 2/15/2011 | 280 | 298 | 283 |
| 3/15/2011 | 221 | 208 | 217 |
| 4/18/2011 | 327 | 270 | 305 |
| 5/18/2011 | 980 | 562 | 755 |

| Date | SV02S | SV02M | SV02D |
|------------|-------|-------|-------|
| 6/22/2011 | 184 | 205 | 162 |
| 7/27/2011 | 101 | 83 | 86 |
| 9/22/2011 | 318 | 268 | 313 |
| 10/27/2011 | 270 | 241 | 211 |
| 11/22/2011 | 235 | 226 | 183 |
| 12/16/2011 | 408 | 333 | 397 |
| 1/20/2012 | 103 | 111 | 239 |
| 2/23/2012 | 132 | 167 | 161 |
| 3/13/2012 | 222 | 155 | 58 |
| 4/16/2012 | 115 | 92 | 149 |
| 5/15/2012 | 146 | 145 | 131 |
| 6/19/2012 | 292 | 276 | 230 |
| 7/10/2012 | 206 | 184 | 194 |
| 8/14/2012 | 389 | 362 | 348 |
| 10/24/2012 | 166 | 139 | 144 |
| 11/26/2012 | 101 | 72 | 110 |
| 12/18/2012 | 106 | 83 | 97 |
| 1/31/2013 | 546 | 914 | 966 |
| 2/28/2013 | 47 | 26 | 18 |
| 3/28/2013 | 12 | 12 | 5 |
| 4/25/2013 | 13 | 15 | 18 |
| 5/30/2013 | 204 | 153 | 176 |
| 6/27/2013 | 13 | 15 | 15 |
| 7/25/2013 | 258 | 252 | 316 |
| 8/29/2013 | 165 | 28 | 11 |
| 9/26/2013 | 304 | 263 | 306 |
| 10/24/2013 | 281 | 271 | 285 |
| 11/21/2013 | 186 | 172 | 140 |
| 12/23/2013 | 21 | 33 | 61 |
| 1/30/2014 | 11 | 11 | 8 |
| 2/24/2014 | 135 | 51 | 82 |
| 3/5/2014 | 1 | 0 | 0 |
| 3/10/2014 | 1 | 11 | 1 |
| 3/25/2014 | 146 | 19 | 47 |
| 4/7/2014 | 575 | 342 | 308 |
| 4/22/2014 | 739 | 610 | 662 |
| 5/8/2014 | 481 | 308 | 333 |

ppbv: parts per billion by volume
 NC: Not collected

Figure 1
Soil Vapor Measurements
SV02

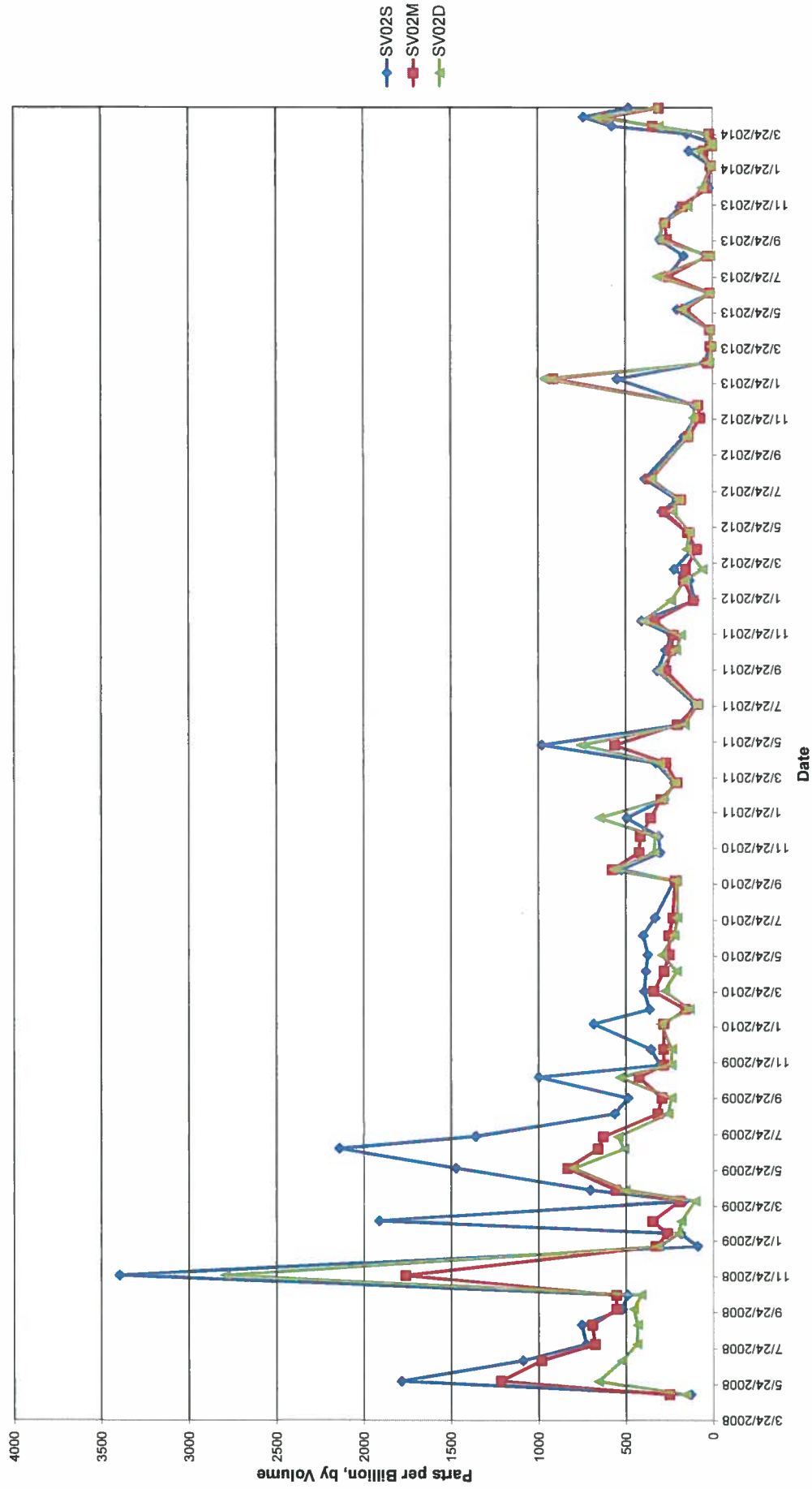


Table 2
Soil Vapor Results for SV03
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV03S | SV03M | SV03D |
|------------|-------|-------|-------|
| 3/24/2008 | 458 | 248 | 579 |
| 5/6/2008 | 668 | 521 | 328 |
| 5/29/2008 | 652 | 685 | 458 |
| 7/3/2008 | 1504 | 1044 | 1024 |
| 7/31/2008 | 1313 | 1245 | 951 |
| 9/2/2008 | 1645 | 1458 | 1237 |
| 9/29/2008 | 4425 | 3982 | 1804 |
| 10/23/2008 | 1423 | 1261 | 1058 |
| 11/25/2008 | 1060 | 1417 | 742 |
| 1/14/2009 | 4658 | 1593 | 1635 |
| 2/5/2009 | 710 | 1756 | 1470 |
| 2/26/2009 | 2616 | 1486 | 822 |
| 4/1/2009 | 407 | 611 | 571 |
| 4/20/2009 | 419 | 573 | 546 |
| 5/27/2009 | 568 | 528 | 481 |
| 6/29/2009 | 592 | 665 | 662 |
| 7/20/2009 | 1000 | 971 | 1272 |
| 8/28/2009 | 615 | 703 | 587 |
| 9/24/2009 | 658 | 838 | 860 |
| 10/29/2009 | 782 | 816 | 902 |
| 11/19/2009 | 697 | 707 | 740 |
| 12/16/2009 | 553 | 800 | 632 |
| 1/28/2010 | 531 | 569 | 575 |
| 2/22/2010 | 469 | 641 | 457 |
| 3/25/2010 | 410 | 919 | 750 |
| 4/28/2010 | 478 | 733 | 642 |
| 5/26/2010 | 467 | 470 | 621 |
| 6/28/2010 | 540 | 645 | 582 |
| 6/28/2010 | 540 | 645 | 582 |
| 7/28/2010 | 504 | 528 | 520 |
| 9/29/2010 | 242 | 257 | 259 |
| 10/18/2010 | 876 | 691 | 863 |
| 11/16/2010 | 492 | 367 | 581 |
| 12/14/2010 | 178 | 463 | 732 |
| 1/14/2011 | 436 | 555 | 627 |
| 2/15/2011 | 438 | 474 | 542 |
| 3/15/2011 | 272 | 300 | 350 |
| 4/18/2011 | 354 | 316 | 401 |
| 5/18/2011 | 565 | 672 | 840 |

| Date | SV03S | SV03M | SV03D |
|------------|-------|-------|--------|
| 6/22/2011 | 386 | 268 | 328 |
| 7/27/2011 | 126 | 115 | 127 |
| 8/26/2011 | 108 | 94 | 146 |
| 9/22/2011 | 318 | 309 | 346 |
| 10/27/2011 | 246 | 294 | 269 |
| 11/22/2011 | 265 | 265 | 338 |
| 12/16/2011 | 274 | 218 | 161 |
| 1/20/2012 | 223 | 101 | 151 |
| 2/23/2012 | 150 | 174 | 190 |
| 3/13/2012 | 173 | 341 | 104 |
| 4/16/2012 | 230 | 100 | 131 |
| 5/15/2012 | 166 | 162 | 196 |
| 6/19/2012 | 329 | 422 | 402 |
| 7/10/2012 | 245 | 246 | 265 |
| 8/14/2012 | 356 | 365 | 410 |
| 10/24/2012 | 246 | 178 | 168 |
| 11/26/2012 | 108 | 136 | 139 |
| 12/18/2012 | 109 | 79 | 78 |
| 1/31/2013 | 17 | 12 | 54 |
| 2/28/2013 | 215 | 104 | 127 |
| 3/28/2013 | 52 | 15 | 42 |
| 4/25/2013 | 27 | 34 | 39 |
| 5/30/2013 | 145 | 160 | 141 |
| 6/27/2013 | 25 | 35 | 35 |
| 7/25/2013 | 179 | 146 | 145 |
| 8/29/2013 | 8 | 2 | 13 |
| 9/26/2013 | 49 | 27 | 35 |
| 10/24/2013 | 277 | 277 | 277 |
| 11/21/2013 | 128 | 150 | 129 |
| 12/23/2013 | 8 | 6 | 17 |
| 1/30/2014 | 41 | 46 | 9444 |
| 2/24/2014 | 70 | 162 | 5290 |
| 3/5/2014 | 20 | 17 | 26800 |
| 3/10/2014 | 8 | 27 | 5922 |
| 3/25/2014 | 87 | 385 | 274000 |
| 4/7/2014 | 676 | 1054 | 12300 |
| 4/22/2014 | 1056 | 1266 | 2442 |
| 5/8/2014 | 877 | 1096 | 1525 |

ppbv: parts per billion by volume

Figure 2
Soil Vapor Measurements
SV03

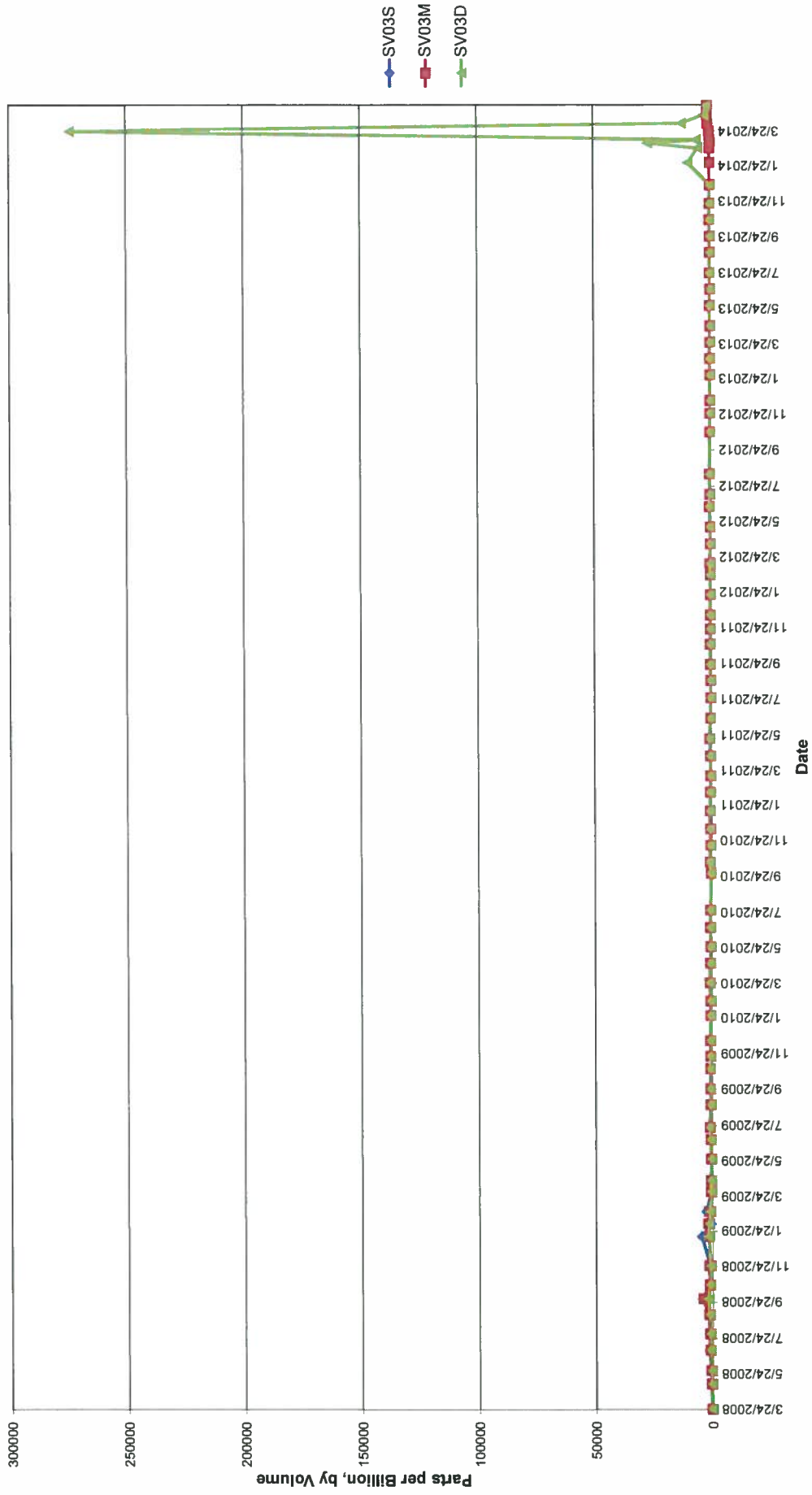


Table 3
Soil Vapor Results for SV04
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV04S | SV04M | SV04D |
|------------|-------|-------|-------|
| 3/24/2008 | 468 | 641 | 827 |
| 5/6/2008 | 1076 | 1235 | 1228 |
| 5/29/2008 | 613 | 634 | 681 |
| 7/3/2008 | 696 | 898 | 806 |
| 7/31/2008 | 836 | 1009 | 1144 |
| 9/2/2008 | 972 | 1270 | 1233 |
| 9/29/2008 | 941 | 1454 | 1436 |
| 10/23/2008 | 802 | 1192 | 1321 |
| 11/25/2008 | 460 | 799 | 893 |
| 1/14/2009 | 72 | 1081 | 1138 |
| 2/5/2009 | 136 | 561 | 746 |
| 2/26/2009 | 1920 | 1147 | 847 |
| 4/1/2009 | 365 | 586 | 608 |
| 4/20/2009 | 465 | 662 | 695 |
| 5/27/2009 | 489 | 627 | 740 |
| 6/29/2009 | 526 | 714 | 796 |
| 7/20/2009 | 603 | 1354 | 1010 |
| 8/28/2009 | 511 | 647 | 751 |
| 9/24/2009 | 609 | 734 | 846 |
| 10/29/2009 | 682 | 931 | 881 |
| 11/19/2009 | 569 | 739 | 788 |
| 12/16/2009 | 464 | 655 | 726 |
| 1/28/2010 | 448 | 592 | 616 |
| 2/22/2010 | 381 | 555 | 713 |
| 3/25/2010 | 539 | 761 | 656 |
| 4/28/2010 | 505 | 627 | 683 |
| 5/26/2010 | 463 | 618 | 600 |
| 6/28/2010 | 460 | 582 | 626 |
| 7/28/2010 | 449 | 566 | 588 |
| 9/29/2010 | 297 | 306 | 318 |
| 10/18/2010 | 715 | 843 | 788 |
| 11/16/2010 | 422 | 644 | 440 |
| 12/14/2010 | 335 | 306 | 270 |
| 1/14/2011 | 568 | 555 | 633 |
| 2/15/2011 | 501 | 609 | 609 |
| 3/15/2011 | 292 | 375 | 471 |
| 4/18/2011 | 394 | 475 | 394 |
| 5/18/2011 | 652 | 983 | 978 |
| 6/22/2011 | 356 | 339 | 317 |

| Date | SV04S | SV04M | SV04D |
|------------|-------|-------|-------|
| 7/27/2011 | 102 | 187 | 162 |
| 8/26/2011 | 137 | 205 | 162 |
| 9/22/2011 | 359 | 373 | 363 |
| 10/27/2011 | 236 | 281 | 238 |
| 11/22/2011 | 337 | 356 | 345 |
| 12/16/2011 | 709 | 799 | 652 |
| 1/20/2012 | 104 | 121 | 141 |
| 2/23/2012 | 175 | 209 | 436 |
| 3/13/2012 | 146 | 139 | 114 |
| 4/16/2012 | 241 | 141 | 116 |
| 5/15/2012 | 224 | 228 | 253 |
| 6/19/2012 | 360 | 464 | 404 |
| 7/10/2012 | 276 | 287 | 289 |
| 8/14/2012 | 340 | 351 | 358 |
| 10/24/2012 | 221 | 162 | 155 |
| 11/26/2012 | 138 | 187 | 159 |
| 12/18/2012 | 85 | 99 | 66 |
| 1/31/2013 | 38 | 54 | 423 |
| 2/28/2013 | 87 | 79 | 51 |
| 3/28/2013 | 12 | 24 | 24 |
| 4/25/2013 | 28 | 39 | 36 |
| 5/30/2013 | 117 | 131 | 135 |
| 6/27/2013 | 16 | 23 | 26 |
| 7/25/2013 | 115 | 130 | 123 |
| 8/29/2013 | 121 | 192 | 190 |
| 9/26/2013 | 5 | 18 | 11 |
| 10/24/2013 | 295 | 285 | 254 |
| 11/21/2013 | 98 | 129 | 159 |
| 12/23/2013 | 4 | 14 | 11 |
| 1/30/2014 | 132 | 165 | 135 |
| 2/24/2014 | 163 | 149 | 138 |
| 3/5/2014 | 536 | 493 | 520 |
| 3/10/2014 | 116 | 51 | 72 |
| 3/25/2014 | 9682 | 11800 | 9134 |
| 4/7/2014 | 1382 | 1217 | 1035 |
| 4/22/2014 | 769 | 948 | 870 |
| 5/8/2014 | 658 | 721 | 748 |

ppbv: parts per billion by volume

Figure 3
Soil Vapor Measurements
SV04

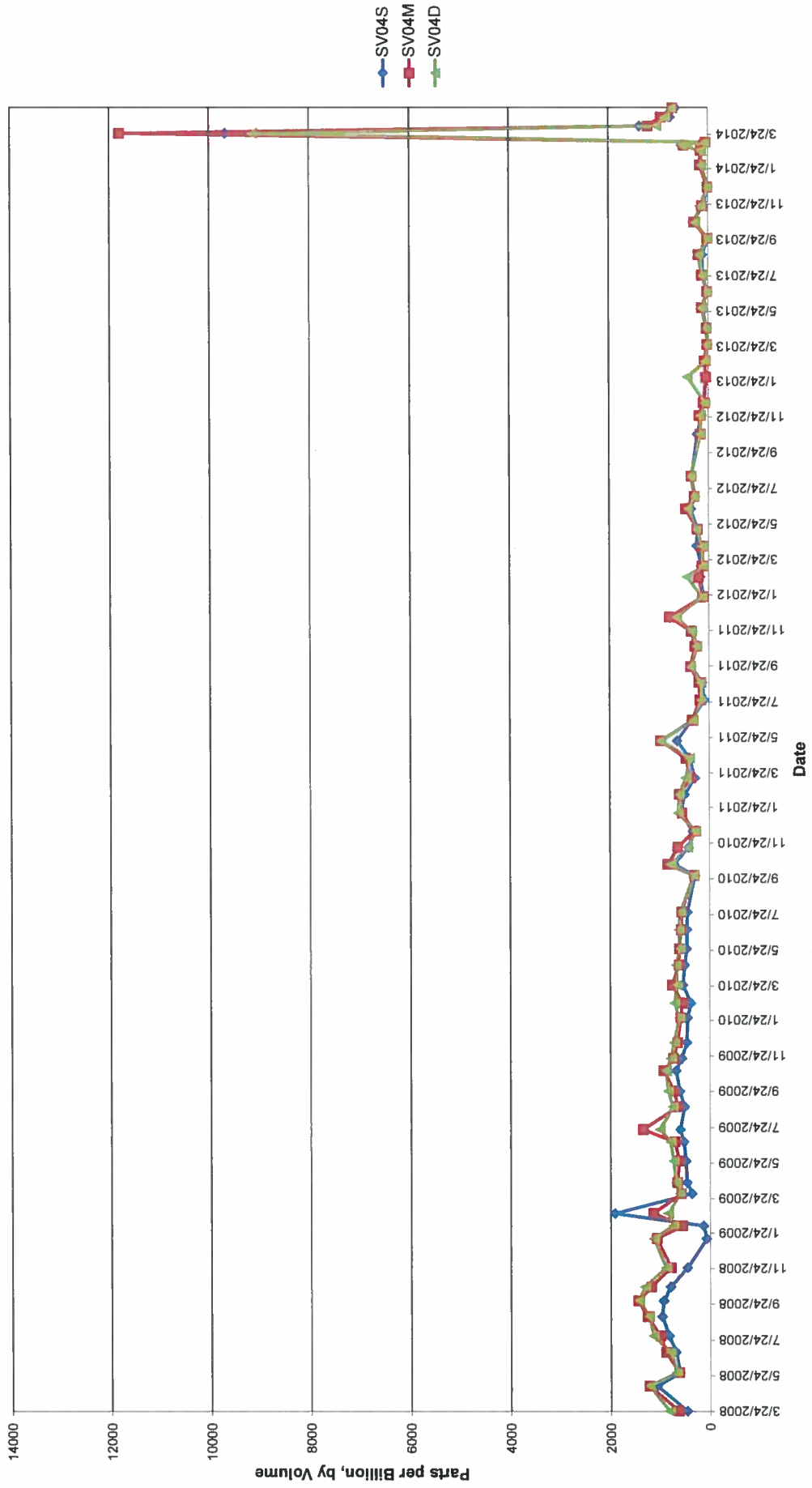


Table 4
Soil Vapor Results for SV05
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV05S | SV05M | SV05D |
|------------|-----------------|-----------------|-----------------|
| 3/24/2008 | 1295 | 716 | 697 |
| 5/6/2008 | 5441 | 4214 | 4012 |
| 5/29/2008 | 6523 | 4636 | 3984 |
| 7/3/2008 | 5195 | 4218 | 3957 |
| 7/31/2008 | 5190 | 3785 | 2894 |
| 9/2/2008 | 6905 | 5581 | 3681 |
| 9/29/2008 | 7149 | 6405 | 3960 |
| 10/23/2008 | 3497 | 3690 | 2518 |
| 11/25/2008 | 3750 | 5221 | 3741 |
| 1/14/2009 | 9519 | 20567 | 12473 |
| 2/5/2009 | 1744 | 1824 | 1638 |
| 2/26/2009 | 7015 | 2820 | 1616 |
| 4/1/2009 | 1178 | 996 | 1179 |
| 4/20/2009 | 1209 | 1146 | 1326 |
| 5/27/2009 | 1120 | 1054 | 1123 |
| 6/29/2009 | 1055 | 1061 | 1131 |
| 7/20/2009 | 1237 | 1296 | 1582 |
| 8/28/2009 | 1776 | 1314 | 1457 |
| 9/24/2009 | 1901 | 1722 | 1906 |
| 10/29/2009 | 1430 | 1507 | 1724 |
| 11/19/2009 | 780 | 2100 | 2715 |
| 12/16/2009 | 210 | 2068 | 3418 |
| 1/28/2010 | 818 | 976 | 1227 |
| 2/22/2010 | 487 | 1453 | 2234 |
| 3/25/2010 | 1028 | 1473 | 1484 |
| 4/28/2010 | 398 | 1417 | 1532 |
| 5/26/2010 | 1002 | 980 | 1147 |
| 6/28/2010 | 64900 | 42100 | 25600 |
| 7/28/2010 | 38167 | 46633 | 59433 |
| 9/29/2010 | NC ₁ | NC ₁ | NC ₁ |
| 10/18/2010 | NC ₁ | NC ₁ | NC ₁ |
| 11/16/2010 | NC ₁ | NC ₁ | NC ₁ |
| 12/14/2010 | NC ₁ | NC ₁ | NC ₁ |
| 1/13/2011 | NC ₁ | NC ₁ | NC ₁ |
| 2/15/2011 | NC ₁ | NC ₁ | NC ₁ |
| 3/15/2011 | NC ₁ | NC ₁ | NC ₁ |
| 4/18/2011 | NC ₁ | NC ₁ | NC ₁ |
| 5/18/2011 | NC ₁ | NC ₁ | NC ₁ |
| 6/22/2011 | NC ₁ | NC ₁ | NC ₁ |
| 7/27/2011 | NC ₁ | NC ₁ | NC ₁ |
| 8/26/2011 | NC ₁ | NC ₁ | NC ₁ |
| 9/22/2011 | NC ₁ | NC ₁ | NC ₁ |

| Date | SV05S | SV05M | SV05D |
|------------|-----------------|-----------------|-----------------|
| 10/27/2011 | NC ₁ | NC ₁ | NC ₁ |
| 11/22/2011 | NC ₁ | NC ₁ | NC ₁ |
| 12/16/2011 | NC ₁ | NC ₁ | NC ₁ |
| 1/20/2012 | NC ₁ | NC ₁ | NC ₁ |
| 2/23/2012 | NC ₁ | NC ₁ | NC ₁ |
| 3/13/2012 | NC ₁ | NC ₁ | NC ₁ |
| 4/16/2012 | NC ₁ | NC ₁ | NC ₁ |
| 5/15/2012 | NC ₁ | NC ₁ | NC ₁ |
| 6/19/2012 | NC ₁ | NC ₁ | NC ₁ |
| 7/10/2012 | NC ₁ | NC ₁ | NC ₁ |
| 8/14/2012 | NC ₁ | NC ₁ | NC ₁ |
| 10/24/2012 | NC ₁ | NC ₁ | NC ₁ |
| 11/26/2012 | NC ₁ | NC ₁ | NC ₁ |
| 12/18/2012 | NC ₁ | NC ₁ | NC ₁ |
| 1/31/2013 | NC ₁ | NC ₁ | NC ₁ |
| 2/28/2013 | NC ₁ | NC ₁ | NC ₁ |
| 3/28/2013 | NC ₁ | NC ₁ | NC ₁ |
| 4/25/2013 | NC ₁ | NC ₁ | NC ₁ |
| 5/30/2013 | 215 | 221 | 184 |
| 6/27/2013 | 115 | 233 | 232 |
| 7/25/2013 | 208 | 218 | 322 |
| 8/29/2013 | 63 | 68 | 161 |
| 9/26/2013 | 14 | 29 | 114 |
| 10/24/2013 | 229 | 250 | 201 |
| 11/21/2013 | 94 | 120 | 109 |
| 12/23/2013 | 50 | 622 | 794 |
| 1/15/2014 | 96 | 225000 | 204000 |
| 1/30/2014 | 818 | 150000 | 176000 |
| 2/24/2014 | 597 | 68200 | 100000 |
| 3/5/2014 | 492 | 96600 | 217000 |
| 3/10/2014 | 308 | 111000 | 204000 |
| 3/21/2014 | 593 | 99600 | 182000 |
| 3/25/2014 | 3144 | 271000 | 209000 |
| 4/3/2014 | 43700 | 384000 | 426000 |
| 4/7/2014 | 76100 | 413000 | 401000 |
| 4/16/2014 | 106000 | 437000 | 398000 |
| 4/22/2014 | 105000 | 383000 | 381000 |
| 5/1/2014 | 159000 | 450000 | 426000 |
| 5/8/2014 | 130000 | 377000 | 327000 |

ppbv: parts per billion by volume
NC₁: Not collected due to maintenance work

Figure 4
Soil Vapor Measurements
SV05

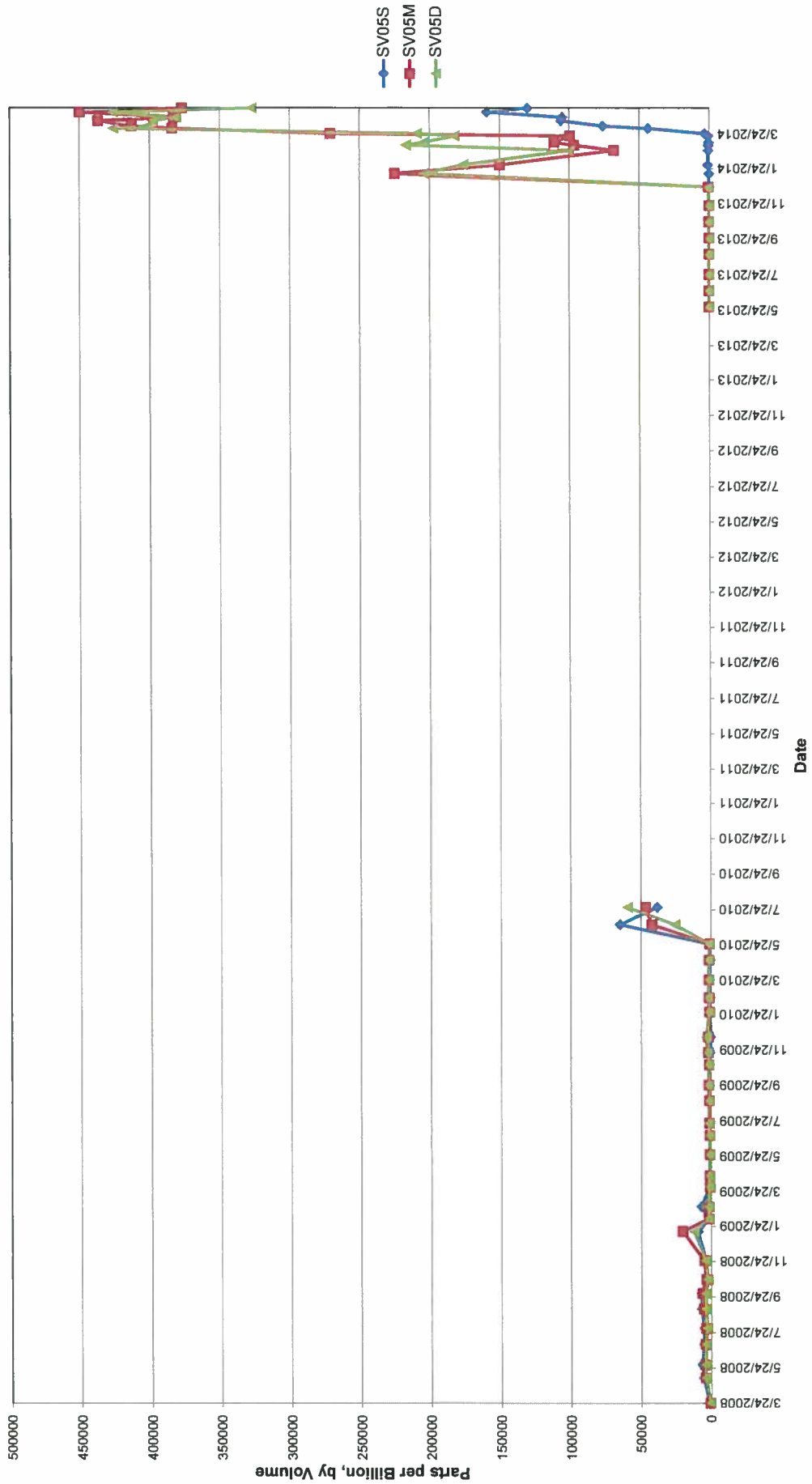


Table 5
Soil Vapor Results for SV06
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV06S | SV06M |
|------------|-------|-------|
| 3/24/2008 | 18567 | 8861 |
| 5/6/2008 | 13733 | 9828 |
| 5/29/2008 | 13333 | 6932 |
| 7/3/2008 | 10560 | 5075 |
| 7/31/2008 | 10502 | 3373 |
| 9/2/2008 | 11416 | 3030 |
| 9/29/2008 | 10456 | 2772 |
| 10/23/2008 | 8337 | 2255 |
| 11/25/2008 | 10683 | 2143 |
| 1/14/2009 | 32867 | 13533 |
| 2/5/2009 | 7624 | 1128 |
| 2/26/2009 | 7936 | 1160 |
| 4/1/2009 | 6857 | 688 |
| 4/20/2009 | 6872 | 692 |
| 5/27/2009 | 6940 | 535 |
| 6/29/2009 | 6161 | 584 |
| 7/20/2009 | 7120 | 860 |
| 8/28/2009 | 5901 | 1075 |
| 9/24/2009 | 6917 | 1417 |
| 10/29/2009 | 5430 | 1027 |
| 11/19/2009 | 6129 | 2937 |
| 12/16/2009 | 5549 | 2673 |
| 1/28/2010 | 5721 | 559 |
| 2/22/2010 | 4841 | 2775 |
| 3/25/2010 | 5709 | 1043 |
| 4/28/2010 | 5905 | 1997 |
| 5/26/2010 | 4483 | 1261 |
| 6/28/2010 | 4800 | 1539 |
| 7/28/2010 | 4347 | 1693 |
| 9/29/2010 | 1090 | 457 |
| 10/18/2010 | 675 | 1084 |
| 11/16/2010 | 1142 | 413 |
| 12/14/2010 | 2043 | 646 |
| 1/14/2011 | 566 | 1282 |
| 2/15/2011 | 2245 | 352 |
| 3/15/2011 | 2542 | 173 |
| 4/18/2011 | 2412 | 484 |
| 5/18/2011 | 2343 | 613 |
| 6/22/2011 | 221 | 1558 |
| 7/27/2011 | 100 | 909 |
| 8/26/2011 | 210 | 924 |
| 9/22/2011 | 380 | 1385 |

| Date | SV06S | SV06M |
|------------|-----------------|-----------------|
| 10/27/2011 | 189 | 1155 |
| 11/22/2011 | 200 | 1098 |
| 12/16/2011 | 621 | 651 |
| 1/20/2012 | 342 | 537 |
| 2/23/2012 | 943 | 348 |
| 3/13/2012 | 330 | 816 |
| 4/16/2012 | 357 | 756 |
| 5/15/2012 | 699 | 462 |
| 6/19/2012 | 384 | 498 |
| 7/10/2012 | 305 | 373 |
| 8/14/2012 | 476 | 417 |
| 10/24/2012 | 225 | 474 |
| 11/26/2012 | NC ₁ | NC ₁ |
| 12/18/2012 | NC ₁ | NC ₁ |
| 1/31/2013 | NC ₁ | NC ₁ |
| 2/28/2013 | NC ₁ | NC ₁ |
| 3/28/2013 | NC ₁ | NC ₁ |
| 4/25/2013 | NC ₁ | NC ₁ |
| 5/30/2013 | NC ₁ | NC ₁ |
| 6/27/2013 | 143 | 378 |
| 7/25/2013 | 280 | 742 |
| 8/29/2013 | 131 | 1066 |
| 9/26/2013 | 9 | 566 |
| 10/24/2013 | 1291 | 1485 |
| 11/21/2013 | 160 | 322 |
| 12/23/2013 | 3 | 39 |
| 1/30/2014 | 6424 | 4097 |
| 2/24/2014 | 3046 | 1457 |
| 3/5/2014 | 6165 | 2033 |
| 3/10/2014 | 7204 | 1644 |
| 3/21/2014 | 195 | 605 |
| 3/25/2014 | 2169 | 551 |
| 4/3/2014 | 32000 | 18600 |
| 4/7/2014 | 23100 | 18800 |
| 4/16/2014 | 31000 | 14900 |
| 4/22/2014 | 31100 | 27300 |
| 5/1/2014 | 35500 | 21400 |
| 5/8/2014 | 23900 | 15900 |

ppbv: parts per billion by volume
 NC₁: Not collected due to
 maintenance work

Figure 5
Soil Vapor Measurements
SV06

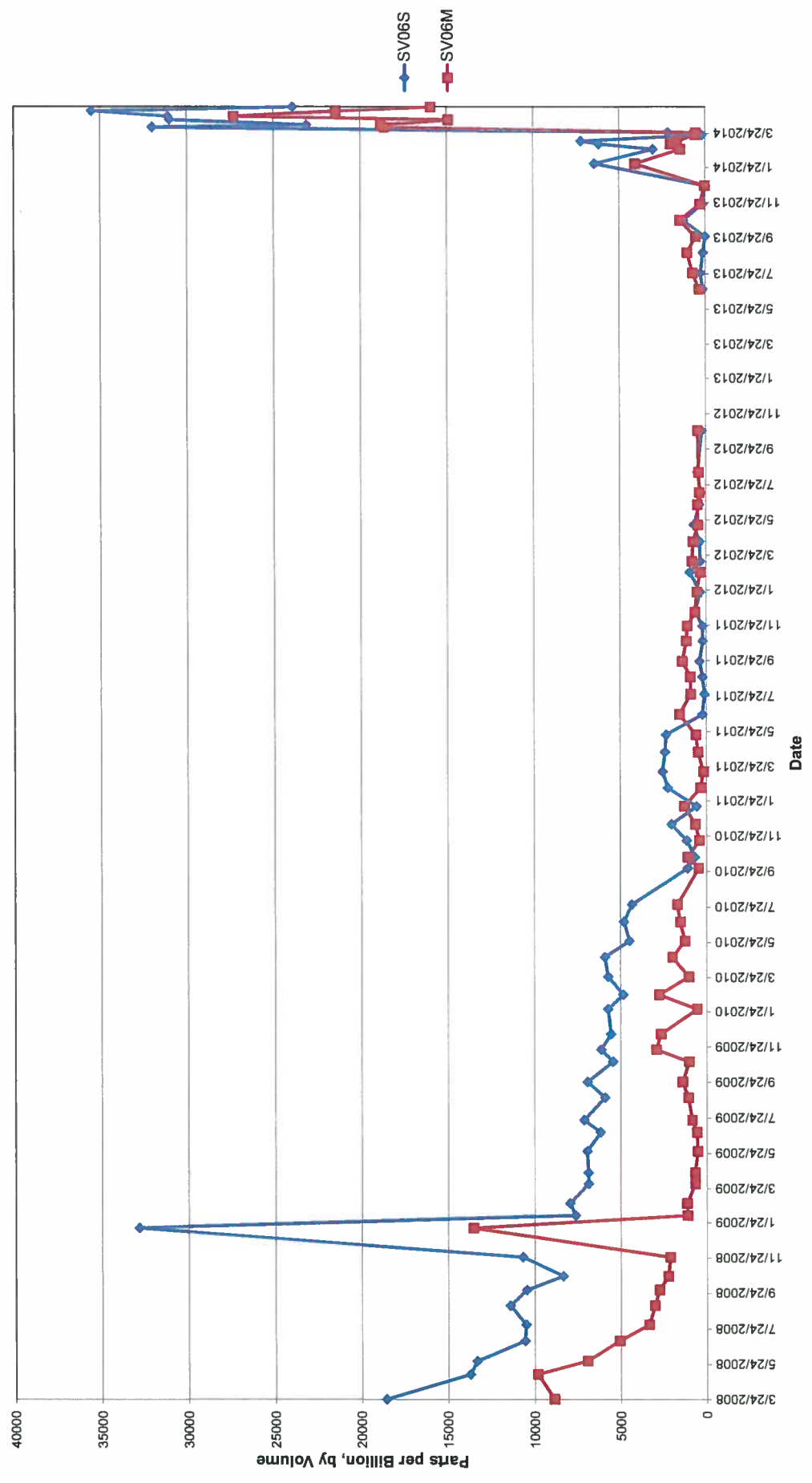


Table 6
Soil Vapor Results for SV07
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV07S | SV07M | SV07D |
|------------|-------|-------|-------|
| 3/24/2008 | 981 | 1966 | 21667 |
| 5/6/2008 | 5331 | 9047 | 12433 |
| 5/29/2008 | NC | 8698 | 12867 |
| 7/3/2008 | 6074 | 8759 | 16000 |
| 7/31/2008 | 4572 | 6737 | 20367 |
| 9/2/2008 | 4852 | 7576 | 21067 |
| 9/29/2008 | 4786 | 8620 | 22100 |
| 10/23/2008 | 3224 | 5459 | 21733 |
| 11/25/2008 | 1894 | 4069 | 12867 |
| 1/14/2009 | 2707 | 2567 | 10667 |
| 2/5/2009 | 1208 | 1780 | 7718 |
| 2/26/2009 | 7846 | 3623 | 9532 |
| 4/1/2009 | 1227 | 1268 | 12033 |
| 4/20/2009 | 1334 | 1434 | 12700 |
| 5/27/2009 | 1144 | 1353 | 18233 |
| 6/29/2009 | 1107 | 1184 | 9743 |
| 7/20/2009 | 1660 | 1595 | 11667 |
| 8/28/2009 | 1550 | 1207 | 3078 |
| 9/24/2009 | 1716 | 1481 | 2213 |
| 10/29/2009 | 1042 | 1214 | 6121 |
| 11/19/2009 | 657 | 1210 | 5342 |
| 12/16/2009 | 599 | 875 | 12633 |
| 1/28/2010 | 1032 | 872 | 4079 |
| 2/22/2010 | 444 | 728 | 3519 |
| 3/25/2010 | 762 | 886 | 16200 |
| 4/28/2010 | 288 | 689 | 2365 |
| 5/26/2010 | 782 | 731 | 3244 |
| 6/28/2010 | 629 | 628 | 1786 |
| 7/28/2010 | 703 | 801 | 6775 |
| 9/29/2010 | 344 | 363 | 372 |
| 10/18/2010 | 839 | 685 | 712 |
| 11/16/2010 | 701 | 288 | 356 |
| 12/14/2010 | 369 | 335 | 323 |
| 1/13/2011 | 210 | 283 | 451 |
| 2/15/2011 | 550 | 351 | 364 |
| 3/15/2011 | 267 | 255 | 296 |
| 4/18/2011 | 321 | 326 | 333 |
| 5/18/2011 | 851 | 871 | 900 |
| 6/22/2011 | 279 | 475 | 274 |
| 7/27/2011 | 137 | 342 | 166 |
| 8/26/2011 | 96 | 132 | 135 |

| Date | SV07S | SV07M | SV07D |
|------------|-----------------|-----------------|-----------------|
| 9/22/2011 | 298 | 443 | 361 |
| 10/27/2011 | 310 | 537 | 351 |
| 11/22/2011 | 249 | 431 | 311 |
| 12/16/2011 | 424 | 157 | 114 |
| 1/20/2012 | 96 | 356 | 133 |
| 2/23/2012 | 153 | 213 | 148 |
| 3/13/2012 | 68 | 782 | 144 |
| 4/16/2012 | 258 | 708 | 385 |
| 5/15/2012 | 148 | 1877 | 394 |
| 6/19/2012 | 421 | 686 | 483 |
| 7/10/2012 | 288 | 638 | 388 |
| 8/14/2012 | 348 | 680 | 477 |
| 10/24/2012 | 232 | 552 | 278 |
| 11/26/2012 | 88 | 87 | 100 |
| 12/18/2012 | NC ₁ | NC ₁ | NC ₁ |
| 1/31/2013 | NC ₁ | NC ₁ | NC ₁ |
| 2/28/2013 | NC ₁ | NC ₁ | NC ₁ |
| 3/28/2013 | NC ₁ | NC ₁ | NC ₁ |
| 4/25/2013 | NC ₁ | NC ₁ | NC ₁ |
| 5/30/2013 | NC ₁ | NC ₁ | NC ₁ |
| 6/27/2013 | 234 | 676 | 273 |
| 7/25/2013 | 164 | 583 | 232 |
| 8/29/2013 | 173 | 104 | 38 |
| 9/26/2013 | 7 | 253 | 7 |
| 10/24/2013 | 281 | 396 | 228 |
| 11/21/2013 | 122 | 122 | 191 |
| 12/23/2013 | 2 | 8 | 5 |
| 1/30/2014 | 6350 | 6539 | 5180 |
| 2/24/2014 | 1187 | 849 | 690 |
| 3/5/2014 | 4406 | 3890 | 4119 |
| 3/10/2014 | 4287 | 3687 | 3654 |
| 3/21/2014 | 102 | 512 | 170 |
| 3/25/2014 | 17300 | 15000 | 13900 |
| 4/3/2014 | 33700 | 32900 | 31700 |
| 4/7/2014 | 26100 | 29400 | 27700 |
| 4/16/2014 | 32900 | 34400 | 29200 |
| 4/22/2014 | 31700 | 33500 | 31900 |
| 5/1/2014 | 39700 | 34000 | 33800 |
| 5/8/2014 | 38000 | 41800 | 25600 |

ppbv: parts per billion by volume
 NC₁: Not collected due to maintenance work

Figure 6
Soil Vapor Measurements
SV07

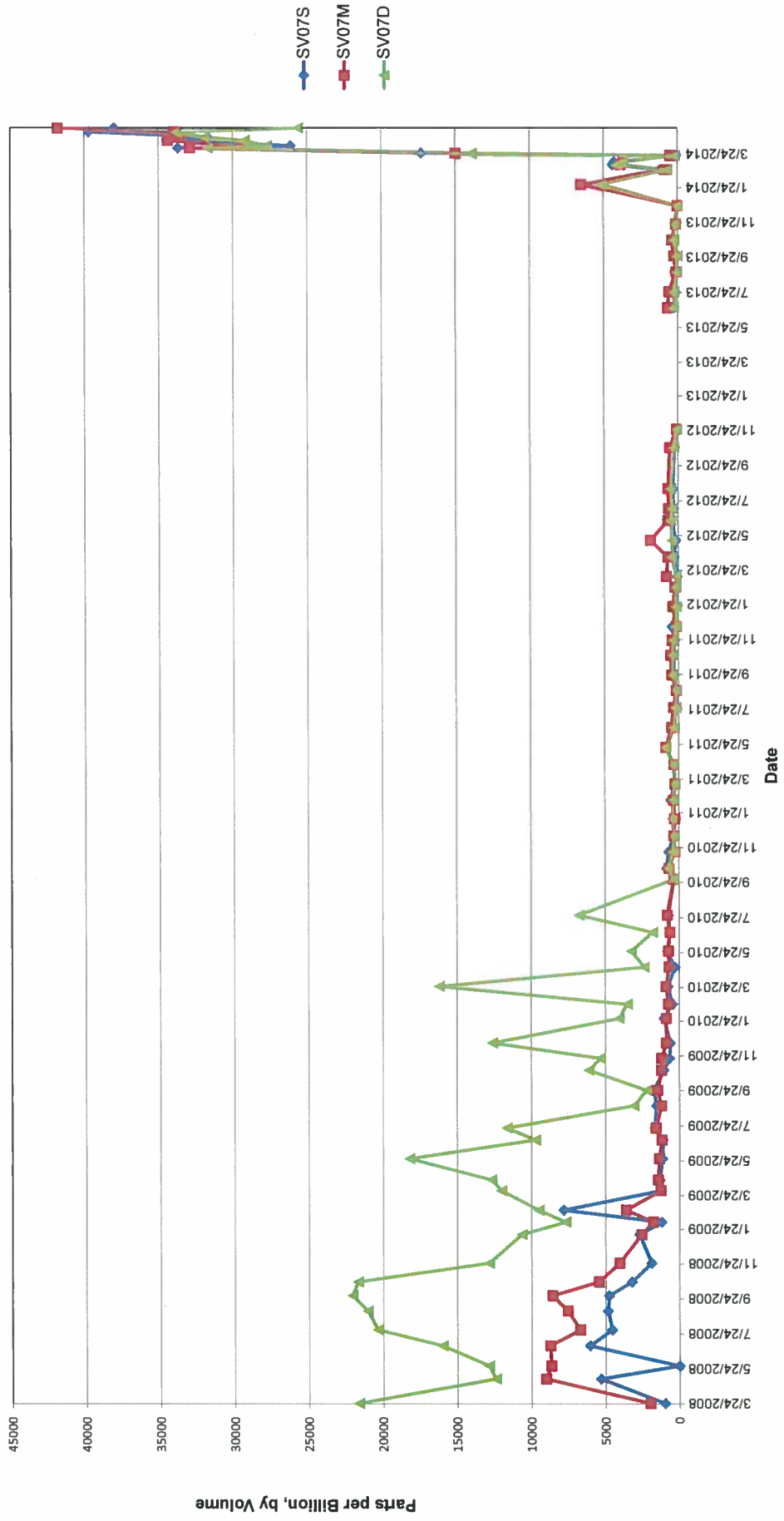


Table 7
Soil Vapor Results for SV08
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV08S | SV08M | SV08D |
|------------|-------|-------|-------|
| 3/24/2008 | 324 | 353 | 428 |
| 5/6/2008 | 4266 | 3274 | 2286 |
| 5/29/2008 | 541 | 607 | 482 |
| 7/3/2008 | 1764 | 1730 | 1397 |
| 7/31/2008 | 602 | 804 | 684 |
| 9/2/2008 | 1463 | 1605 | 1051 |
| 9/29/2008 | 2397 | 1859 | 1152 |
| 10/23/2008 | 1358 | 1119 | 866 |
| 11/25/2008 | 2780 | 2166 | 1393 |
| 1/14/2009 | 7153 | 6517 | 4762 |
| 2/5/2009 | 1211 | 1263 | 797 |
| 2/26/2009 | 1289 | 1019 | 669 |
| 4/1/2009 | 310 | 416 | 367 |
| 4/20/2009 | 400 | 484 | 454 |
| 5/27/2009 | 258 | 367 | 358 |
| 6/29/2009 | 464 | 491 | 474 |
| 7/20/2009 | 612 | 690 | 727 |
| 8/28/2009 | 450 | 546 | 563 |
| 9/24/2009 | 627 | 726 | 752 |
| 10/29/2009 | 617 | 697 | 762 |
| 11/19/2009 | 779 | 860 | 877 |
| 12/16/2009 | 1157 | 1247 | 1382 |
| 1/28/2010 | 508 | 579 | 621 |
| 2/22/2010 | 690 | 727 | 840 |
| 3/25/2010 | 555 | 573 | 612 |
| 4/28/2010 | 688 | 742 | 756 |
| 5/26/2010 | 477 | 560 | 553 |
| 6/28/2010 | 525 | 607 | 609 |
| 7/28/2010 | 515 | 539 | 610 |
| 9/29/2010 | 295 | 345 | 352 |
| 10/18/2010 | 582 | 1221 | 988 |
| 11/16/2010 | 629 | 612 | 740 |
| 12/14/2010 | 488 | 657 | 471 |
| 1/13/2011 | 556 | 796 | 862 |
| 2/15/2011 | 431 | 485 | 541 |
| 3/15/2011 | 169 | 284 | 304 |
| 4/18/2011 | 364 | 456 | 489 |
| 5/18/2011 | 909 | 1222 | 1263 |
| 6/22/2011 | 172 | 412 | 266 |
| 7/27/2011 | 99 | 139 | 320 |
| 8/26/2011 | 84 | 157 | 180 |

| Date | SV08S | SV08M | SV08D |
|------------|-----------------|-----------------|-----------------|
| 9/22/2011 | 277 | 301 | 309 |
| 10/27/2011 | 250 | 338 | 309 |
| 11/22/2011 | 177 | 268 | 355 |
| 12/16/2011 | 67 | 211 | 162 |
| 1/20/2012 | 169 | 105 | 340 |
| 2/23/2012 | 222 | 222 | 129 |
| 3/13/2012 | 85 | 134 | 391 |
| 4/16/2012 | 485 | 204 | 377 |
| 5/15/2012 | 106 | 157 | 153 |
| 6/19/2012 | 428 | 466 | 418 |
| 7/10/2012 | 291 | 325 | 290 |
| 8/14/2012 | 296 | 285 | 285 |
| 10/24/2012 | 214 | 216 | 400 |
| 11/26/2012 | 53 | 76 | 51 |
| 12/18/2012 | NC ₁ | NC ₁ | NC ₁ |
| 1/31/2013 | NC ₁ | NC ₁ | NC ₁ |
| 2/28/2013 | NC ₁ | NC ₁ | NC ₁ |
| 3/28/2013 | NC ₁ | NC ₁ | NC ₁ |
| 4/25/2013 | NC ₁ | NC ₁ | NC ₁ |
| 5/30/2013 | NC ₁ | NC ₁ | NC ₁ |
| 6/27/2013 | 224 | 235 | 402 |
| 7/25/2013 | 133 | 176 | 132 |
| 8/29/2013 | 16 | 28 | 19 |
| 9/26/2013 | 15 | 2 | 2 |
| 10/24/2013 | 207 | 2013 | 197 |
| 11/21/2013 | 76 | 73 | 88 |
| 12/23/2013 | 4 | 2 | 6 |
| 1/30/2014 | 2170 | 2698 | 2952 |
| 2/24/2014 | 601 | 423 | 428 |
| 3/5/2014 | 1814 | 2492 | 3097 |
| 3/10/2014 | 1819 | 2348 | 2274 |
| 3/21/2014 | 102 | 469 | 354 |
| 3/25/2014 | 6152 | 7880 | 7474 |
| 4/3/2014 | 12800 | 17100 | 18100 |
| 4/7/2014 | 13500 | 14300 | 17300 |
| 4/16/2014 | 12900 | 15600 | 15800 |
| 4/22/2014 | 16600 | 19300 | 21000 |
| 5/1/2014 | 15600 | 19200 | 20100 |
| 5/8/2014 | 11800 | 14100 | 13300 |

ppbv: parts per billion by volume
NC₁: Not collected due to maintenance work

Figure 7
Soil Vapor Measurements
SV08

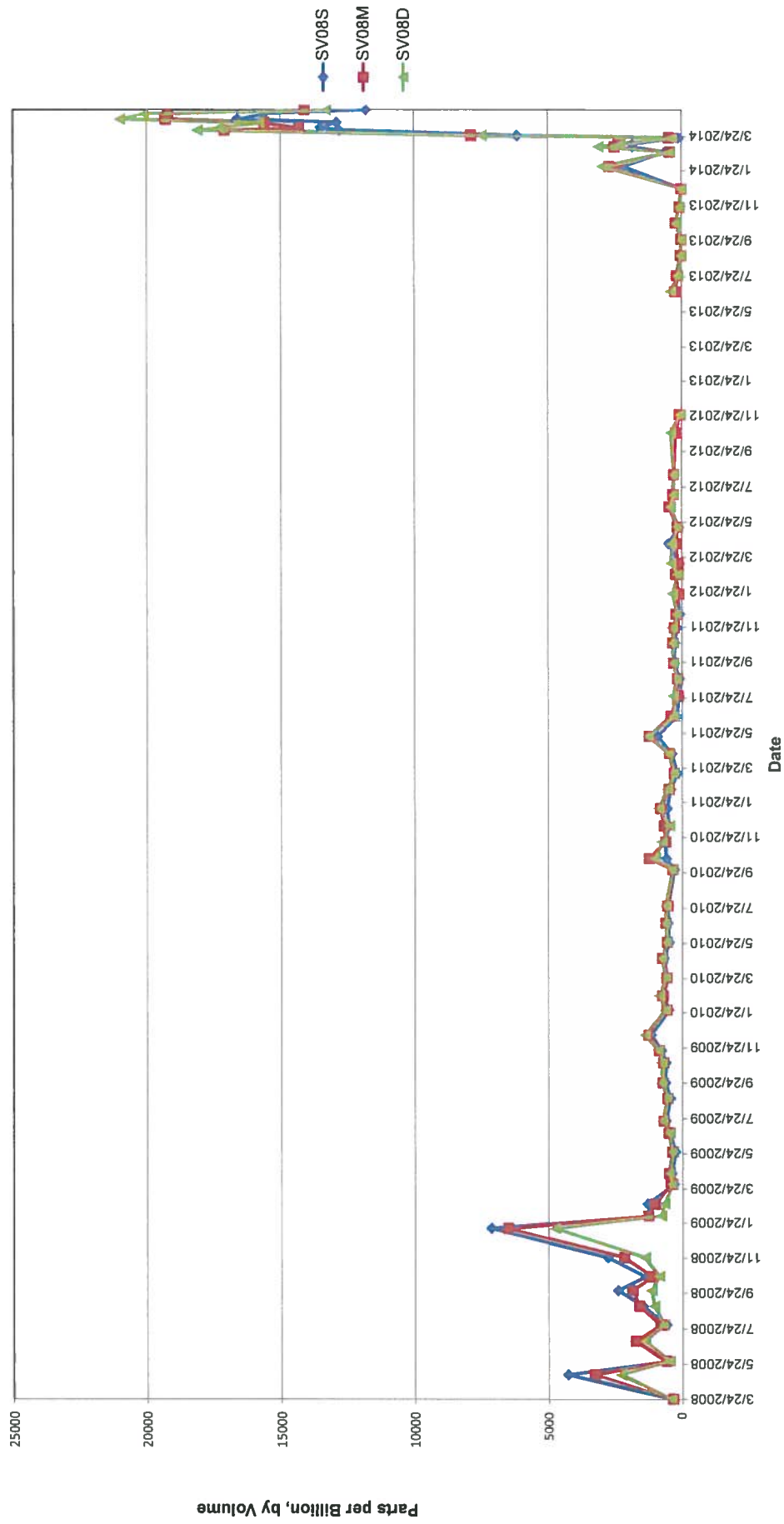


Table 8
Soil Vapor Results for SV09
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV08S | SV08M | SV08D |
|------------|-------|-------|-----------------|
| 3/24/2008 | 309 | 405 | NC |
| 5/6/2008 | 6462 | 7644 | 654 |
| 5/29/2008 | 878 | 825 | 451 |
| 7/3/2008 | 4190 | 4238 | 2301 |
| 7/31/2008 | 1024 | 961 | 646 |
| 9/2/2008 | 1949 | 1616 | 1047 |
| 9/29/2008 | 2714 | 2058 | 1232 |
| 10/23/2008 | 1458 | 1114 | 673 |
| 11/25/2008 | 2142 | 1855 | 1134 |
| 1/14/2009 | 4851 | 3250 | NC |
| 2/5/2009 | 786 | 457 | NC |
| 2/26/2009 | 930 | 503 | NC |
| 4/1/2009 | 241 | 233 | NC |
| 4/20/2009 | 329 | 361 | NC |
| 5/27/2009 | 234 | 326 | 183 |
| 6/29/2009 | 400 | 425 | 342 |
| 7/20/2009 | 566 | 645 | 704 |
| 8/28/2009 | 434 | 515 | 512 |
| 9/24/2009 | 663 | 708 | 630 |
| 10/29/2009 | 689 | 710 | 709 |
| 11/19/2009 | 861 | 898 | 928 |
| 12/16/2009 | 1084 | 1176 | 1410 |
| 1/28/2010 | 421 | 473 | 510 |
| 2/22/2010 | 659 | 716 | 877 |
| 3/25/2010 | 555 | 625 | 670 |
| 4/28/2010 | 575 | 743 | 858 |
| 5/26/2010 | 461 | 519 | 543 |
| 6/28/2010 | 531 | 590 | 627 |
| 7/28/2010 | 455 | 549 | 630 |
| 9/29/2010 | 304 | 357 | 377 |
| 10/18/2010 | 592 | 700 | 923 |
| 11/16/2010 | 488 | 567 | 607 |
| 12/14/2010 | 437 | 495 | 633 |
| 1/13/2011 | 574 | 572 | 668 |
| 2/15/2011 | 407 | 405 | 586 |
| 3/15/2011 | 261 | 312 | NC ₂ |
| 4/18/2011 | 320 | 365 | NC ₂ |
| 5/18/2011 | 918 | 1102 | NC ₂ |
| 6/22/2011 | 223 | 141 | NC ₂ |

| Date | SV08S | SV08M | SV08D |
|------------|-------|-------|-----------------|
| 7/27/2011 | 181 | 158 | NC ₂ |
| 8/26/2011 | 122 | 100 | NC ₂ |
| 9/22/2011 | 302 | 296 | NC ₂ |
| 10/27/2011 | 270 | 271 | NC ₂ |
| 11/22/2011 | 180 | 243 | NC ₂ |
| 12/16/2011 | 170 | 80 | 379 |
| 1/20/2012 | 80 | 148 | NC ₂ |
| 2/23/2012 | 130 | 135 | 110 |
| 3/13/2012 | 73 | 360 | NC ₂ |
| 4/16/2012 | 344 | 1212 | NC ₂ |
| 5/15/2012 | 137 | 122 | NC ₂ |
| 6/19/2012 | 626 | 518 | NC ₂ |
| 7/10/2012 | 325 | 298 | NC ₂ |
| 8/14/2012 | 339 | 350 | NC ₂ |
| 10/24/2012 | 204 | 335 | 208 |
| 11/26/2012 | 72 | 60 | 78 |
| 12/18/2012 | 63 | 83 | 87 |
| 1/31/2013 | 16 | 13 | 66 |
| 2/28/2013 | 58 | 20 | 133 |
| 3/28/2013 | 47 | 37 | 14 |
| 4/25/2013 | 42 | 42 | 59 |
| 5/30/2013 | 226 | 189 | 184 |
| 6/27/2013 | 38 | 39 | 47 |
| 7/25/2013 | 110 | 119 | 184 |
| 8/29/2013 | 8 | 39 | 23 |
| 9/26/2013 | 0 | 3 | 2 |
| 10/24/2013 | 200 | 170 | 167 |
| 11/21/2013 | 89 | 127 | 133 |
| 12/23/2013 | 13 | 8 | 2 |
| 1/30/2014 | 1488 | 1963 | 2408 |
| 2/24/2014 | 307 | 330 | 319 |
| 3/5/2014 | 915 | 1474 | 1614 |
| 3/10/2014 | 777 | 1569 | 1656 |
| 3/25/2014 | 2629 | 4246 | 5465 |
| 4/7/2014 | 5750 | 9329 | 10400 |
| 4/22/2014 | 7038 | 12600 | 12200 |
| 5/8/2014 | 6407 | 10100 | 10400 |

ppbv: parts per billion by volume
 NC: Not collected
 NC₂: Not collected due to an obstruction in the vapor line

Figure 8
Soil Vapor Measurements
SV09

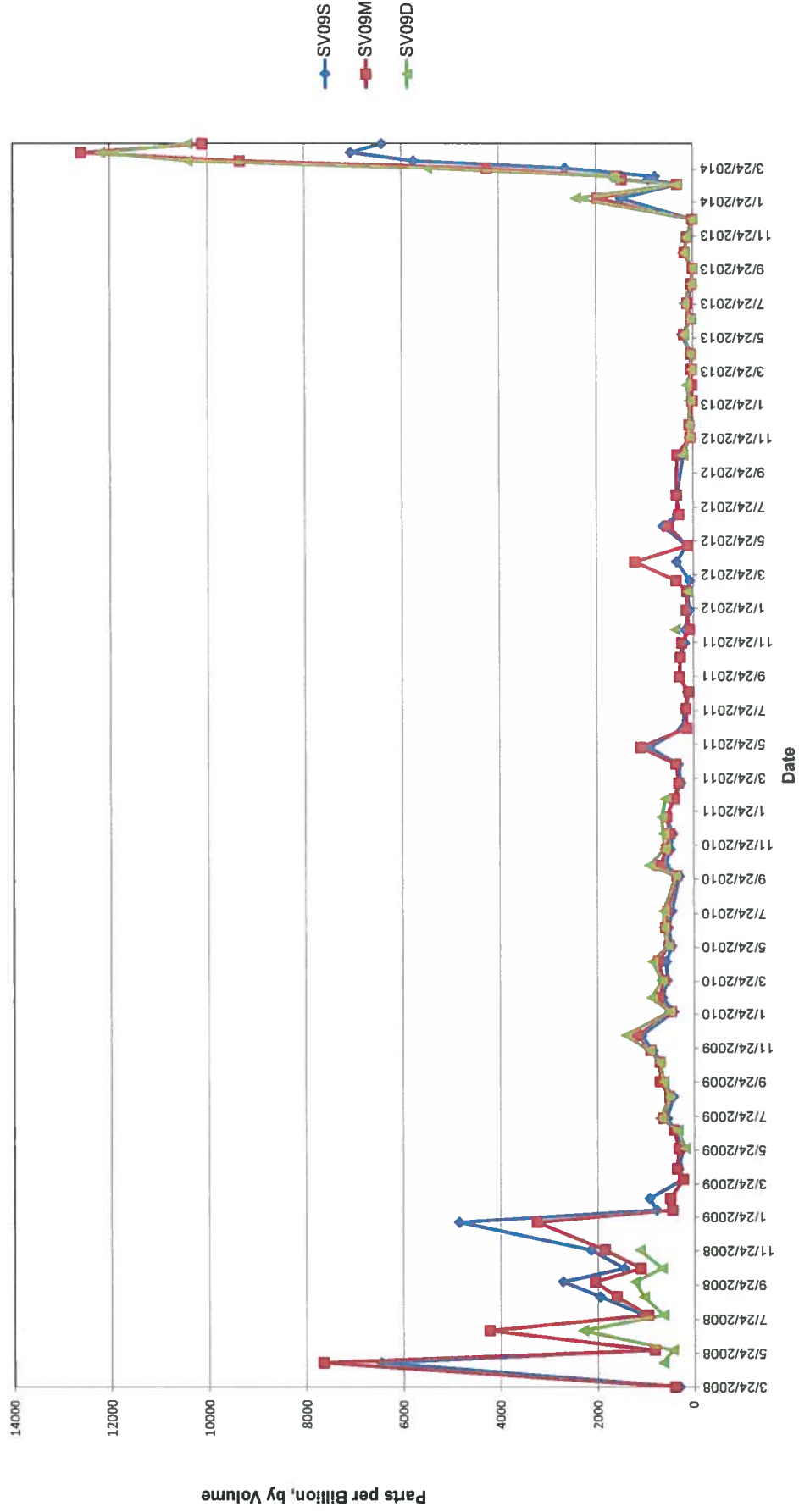


Table 9
Soil Vapor Results for SV10
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

| Date | SV10S | SV10D |
|------------|-------|-------|
| 3/24/2008 | 246 | 158 |
| 5/6/2008 | 5368 | 3713 |
| 5/29/2008 | 521 | 316 |
| 7/3/2008 | 3212 | 1677 |
| 7/31/2008 | 855 | 443 |
| 9/2/2008 | 1410 | 848 |
| 9/29/2008 | 2266 | 1205 |
| 10/23/2008 | 1043 | 646 |
| 11/25/2008 | 1825 | 860 |
| 1/14/2009 | 5568 | 2867 |
| 2/5/2009 | 957 | 423 |
| 2/26/2009 | 798 | 270 |
| 4/1/2009 | 194 | 135 |
| 4/20/2009 | 241 | 174 |
| 5/27/2009 | 194 | 110 |
| 6/29/2009 | 312 | 258 |
| 7/20/2009 | 340 | 424 |
| 8/28/2009 | 352 | 302 |
| 9/24/2009 | 539 | 479 |
| 10/29/2009 | 546 | 496 |
| 11/19/2009 | 751 | 604 |
| 12/16/2009 | 1093 | 1141 |
| 1/28/2010 | 356 | 333 |
| 2/22/2010 | 711 | 708 |
| 3/25/2010 | 521 | 815 |
| 4/28/2010 | 662 | 695 |
| 5/26/2010 | 420 | 337 |
| 6/28/2010 | 440 | 402 |
| 7/28/2010 | 417 | 994 |
| 9/29/2010 | 288 | 273 |
| 10/18/2010 | 639 | 686 |
| 11/16/2010 | 454 | 625 |
| 12/14/2010 | 385 | 335 |
| 1/13/2011 | 467 | 501 |
| 2/15/2011 | 310 | 302 |
| 3/15/2011 | 222 | 246 |
| 4/18/2011 | 288 | 297 |
| 5/18/2011 | 979 | 1077 |
| 6/22/2011 | 103 | 216 |
| 7/27/2011 | 82 | 88 |

| Date | SV10S | SV10D |
|------------|-------|-------|
| 8/26/2011 | 64 | 97 |
| 9/22/2011 | 260 | 301 |
| 10/27/2011 | 245 | 204 |
| 11/22/2011 | 189 | 195 |
| 12/16/2011 | 141 | 92 |
| 1/20/2012 | 224 | 196 |
| 2/23/2012 | 139 | 112 |
| 3/13/2012 | 387 | 283 |
| 4/16/2012 | 323 | 201 |
| 5/15/2012 | 75 | 87 |
| 6/19/2012 | 319 | 306 |
| 7/10/2012 | 288 | 353 |
| 8/14/2012 | 220 | 225 |
| 10/24/2012 | 164 | 130 |
| 11/26/2012 | 51 | 41 |
| 12/18/2012 | 16 | 36 |
| 1/31/2013 | 11 | 2 |
| 2/28/2013 | 91 | 83 |
| 3/28/2013 | 23 | 20 |
| 4/25/2013 | 31 | 40 |
| 5/30/2013 | 91 | 301 |
| 6/27/2013 | 137 | 301 |
| 7/25/2013 | 100 | 61 |
| 8/29/2013 | 529 | 1621 |
| 9/26/2013 | 0 | 3 |
| 10/24/2013 | 191 | 167 |
| 11/21/2013 | 69 | 76 |
| 12/23/2013 | 7 | 12 |
| 1/30/2014 | 483 | 358 |
| 2/24/2014 | 165 | 147 |
| 3/5/2014 | 365 | 45 |
| 3/10/2014 | 280 | 73 |
| 3/10/2014 | 280 | 73 |
| 3/25/2014 | 1148 | 493 |
| 4/7/2014 | 3364 | 2393 |
| 4/22/2014 | 3381 | 3335 |
| 5/8/2014 | 2876 | 3278 |

ppbv: parts per billion by volume

Figure 9
Soil Vapor Measurements
SV10

