| Sample Location | Depth | Type | Aluminum (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Beryllium (mg/kg) | Boron (mg/kg) | Cadmium (mg/kg) | Calcium (mg/kg) | Chromium (mg/kg) | Cobalt (mg/kg) | Copper (mg/kg) | Iron (mg/kg) | Lead (mg/kg) | Magnesium (mg/kg) | Manganese (mg/kg) | Mercury (mg/kg) | Molybdenum (mg/kg) | Nickel (mg/kg) | Potassium (mg/kg) | Radium-226 (pci/g) | Radium-228 (pci/g) | Selenium (mg/kg) | Silver (mg/kg) | Sodium (mg/kg) | Thallium (mg/kg) | Thorium (mg/kg) | Uranium (mg/kg) | Vanadium (mg/kg) | Zinc (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sub Area A-2 Background Conc.** | | | **25436** | **1.8** | **17** | **310** | **1.3** | **21** | **0.35** | **46625** | **19** | **15** | **285** | **28465** | **13** | **9889** | **729** | **0.05** | **3.3** | **18** | **5229** | **2.44** | **2.13** | **0.87** | **0.58** | **2407** | **0.6** | **19** | **4.1** | **65** | **62** |
| **Area 4 - Solution Tanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PA-FF3 | 0.5-2.5 ft | N | 2300 | 0.3 J | 20 | 350 | 0.047 J | <0.0054 | 0.55 | 760 | 21 | 10 | 430 | 38000 | 170 | 890 | 21 | 11 J | 2.1 | 30 | 490 J | 13.7 J | 5.5 J | 110 | 0.46 | 71 | 1.5 | 40.2 | 6.5 | 9.4 | 44 |
| | 0.5-2.5 ft | FD | 1900 | | 24 | 290 | 0.061 | <0.0054 | 0.49 | 620 | 15 | 7.1 | 360 | 24000 | 190 | 810 | 21 | 23 J | 2.4 | 20 | 920 J | 6.5 J | 3.3 J | 81 | 0.36 | 87 | 2.2 | 25.4 | 4.2 | 8.8 | 43 |
| | 4.0-5.0 ft | N | 5800 | | 20 | 32 | 0.052 J | 3.7 J | 0.11 | 1900 | 2.1 | 0.96 | 390 | 19000 | 2.5 | 2200 | 29 | 0.019 | 0.69 | 1.4 | 2700 | 1.1 | 1.7 | 4.4 | 0.054 J | 270 | 4.7 | 10.4 | 1.1 | 18 | 15 |
| | 8.5-10.0 ft | N | 5000 | | 9.3 | 47 | 0.11 | 3.6 J | 0.21 | 1400 | 16 | 2.6 | 500 | 16000 | 3.4 | 2700 | 80 | 0.011 | 0.21 J | 4.1 | 1300 | 1.3 | 1.4 | 2.1 | 0.05 J | 170 | 0.11 J | 7.1 | 1.3 | 26 | 45 |
| PA-FF4 | 0.5-2.5 ft | N | 7700 | | 3.5 | 71 | 0.49 | 3.8 J | 0.43 | 15000 | 3.2 | 13 | 3500 | 10000 | 3 | 3500 | 290 | 0.028 | 0.5 | 13 | 1000 | | | 1.8 | 0.049 J | 150 | 0.031 J | | | 12 | 64 |
| | 4.0-5.0 ft | N | 6500 | | 3.5 | 32 | 0.3 | <1.3 UJ | 0.2 | 7700 | 2.9 | 11 | 1100 | 7300 | 2.4 | 3000 | 260 | 0.0015 J | 0.19 J | 10 | 1200 | | | 0.96 J | 0.037 J | 110 | 0.023 J | | | 11 | 38 |
| | 9.0-10.0 ft | N | 5300 | | 3.3 | 42 | 0.32 | 2.4 J | 0.18 | 7900 | 3.3 | 2.9 | 50 | 8300 | 2.8 | 3000 | 180 | <0.00014 | 0.21 J | 4.7 | 1300 | | | 0.38 J | 0.043 J | 140 | 0.029 J | | | 12 | 14 |
| | 14.0-15.0 ft | N | 5700 | | 4.3 | 46 | 0.36 | 3.3 J | 0.22 | 4000 | 3 | 2.2 | 730 | 8000 | 3 | 2200 | 96 | <0.00015 | 0.35 | 3.2 | 910 | | | 0.33 J | 0.047 J | 170 | 0.028 J | | | 11 | 17 |
| | 19.0-20.0 ft | N | 3600 | | 3.4 | 50 | 0.26 | <1.8 UJ | 0.23 | 3700 | 3.6 | 4.3 | 690 | 7300 | 2.8 | 2300 | 180 | <0.00014 | 0.62 | 5.4 | 780 | | | 0.17 J | 0.039 J | 130 | 0.029 J | | | 11 | 25 |
| PA-DD10 | 0.5-1.0 ft | N | 7600 | 2.2 J | 20 | 140 | 0.33 | 6.9 | 0.85 | 10000 | 17 | 7.4 | 3200 | 37000 | 340 | 3600 | 140 | 4 | 2.1 | 14 | 1500 | 4.3 | 1.9 | 20 | 0.26 | 720 | 1.2 | 19.5 | 11 | 22 | 90 |

| | Depth | Cu | As | Cd | Fe | Pb | Ni | Ra-226 | Ra-228 | Se | Th | U | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PA-FF3 | 1.5 | 430 | 20 | 0.55 | 38000 | 170 | 30 | 13.7 | 5.5 | 110 | 40.2 | 6.5 | |
| | 1.5 | 360 | 24 | 0.49 | 24000 | 190 | 20 | 6.5 | 3.3 | 81 | 25.4 | 4.2 | |
| | 4.5 | 390 | 20 | 0.11 | 19000 | 2.5 | 1.4 | 1.1 | 1.7 | 4.4 | 10.4 | 1.1 | |
| | 9.25 | 500 | 9.3 | 0.21 | 16000 | 3.4 | 4.1 | 1.3 | 1.4 | 2.1 | 7.1 | 1.3 | |
| PA-FF4 | 1.5 | 3500 | 3.5 | 0.43 | 10000 | 3 | 13 | | | 1.8 | | | |
| | 4.24 | 1100 | 3.5 | 0.2 | 7300 | 2.4 | 10 | | | 0.96 | | | |
| | 9.25 | 50 | 3.3 | 0.18 | 8300 | 2.8 | 4.7 | | | 0.38 | | | |
| | 14.25 | 730 | 4.3 | 0.22 | 8000 | 3 | 3.2 | | | 0.33 | | | |
| | 19.25 | 690 | 3.4 | 0.23 | 7300 | 2.8 | 5.4 | | | 0.17 | | | |
| PA-DD10 | 0.75 | 3200 | 20 | 0.85 | 37000 | 340 | 14 | 4.3 | 1.9 | 20 | 19.5 | 11 | |
| | 0 | **285** | **17** | **0.35** | **28465** | **13** | **18** | **2.44** | **2.13** | **0.87** | **19** | **4.1** | |
| | 20 | **285** | **17** | **0.35** | **28465** | **13** | **18** | **2.44** | **2.13** | **0.87** | **19** | **4.1** | |

| Sample Location | Depth | Type | Aluminum (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Beryllium (mg/kg) | Boron (mg/kg) | Cadmium (mg/kg) | Calcium (mg/kg) | Chromium (mg/kg) | Cobalt (mg/kg) | Copper (mg/kg) | Iron (mg/kg) | Lead (mg/kg) | Magnesium (mg/kg) | Manganese (mg/kg) | Mercury (mg/kg) | Molybdenum (mg/kg) | Nickel (mg/kg) | Potassium (mg/kg) | Radium-226 (pci/g) | Radium-228 (pci/g) | Selenium (mg/kg) | Silver (mg/kg) | Sodium (mg/kg) | Thallium (mg/kg) | Thorium (mg/kg) | Uranium (mg/kg) | Vanadium (mg/kg) | Zinc (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sub Area A-2 Background** | | | **25436** | **1.8** | **17** | **310** | **1.3** | **21** | **0.35** | **46625** | **19** | **15** | **285** | **28465** | **13** | **9889** | **729** | **0.05** | **3.3** | **18** | **5229** | **2.44** | **2.13** | **0.87** | **0.58** | **2407** | **0.6** | **19** | **4.1** | **65** | **62** |
| **Area 5 - Precipitation Plant** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PA-EE19 | 1.0-2.0 ft | N | 5500 | | 3.7 | 46 | 0.21 | <1.8 UJ | 0.34 | 4700 | 4 | 3 | 1100 | 11000 | 7.9 J | 3400 | 110 | 0.035 | <0.55 UJ | 4.5 | 850 | 3.7 | 2 | 1 | 0.074 J | 280 | 0.088 J | 6.3 | 1.4 | 15 | 18 |
| | 1.0-2.0 ft | FD | 4400 | | 4.3 | 44 | 0.23 | <2 UJ | 0.38 | 4700 | 3.8 | 3.5 | 1100 | 9800 | 4.2 J | 2800 | 120 | 0.049 | <0.6 UJ | 4.8 | 920 | 2.9 | 1.6 | 1 J | 0.065 J | 230 | 0.081 J | 6 | 1.6 | 17 | 19 |
| | 4.5-5.5 ft | N | 5800 | | 5.6 | 50 | 0.26 | 4.2 | 0.39 | 4500 | 4.6 | 3.8 | 56 | 9200 | 2.9 | 3400 | 190 | <0.00014 | <0.32 UJ | 5.3 | 1400 | 1.5 | 1.8 | <0.17 | 0.061 J | 440 | 0.061 J | 8.5 | 1.7 | 19 | 16 |
| | 19.5-20.5 ft | N | 3200 | | 4.3 | 39 | 0.074 | <1.2 UJ | 0.26 | 2800 | 5.7 | 1.5 | 50 | 13000 | 2.7 | 1600 | 62 | <0.00014 | <0.43 UJ | 2.1 | 660 | 1.7 | 2.9 | <0.16 | 0.042 J | 200 | <0.035 UJ | 9 | 1.4 | 22 | 10 |
| | 24.5-25.5 ft | N | 8100 | | 5.6 | 100 | 0.36 | <1.6 UJ | 0.57 | 6600 | 11 | 3.8 | 200 | 17000 | 5.7 | 3500 | 140 | <0.00015 | <0.31 UJ | 6 | 1600 | 1.9 | 2.4 | 0.26 J | 0.093 J | 270 | 0.1 J | 14.9 | 3.2 | 21 | 28 |
| | 29.5-30.5 ft | N | 14000 | | 6.3 | 85 | 0.62 | <2.5 UJ | 1.1 | 10000 | 8.7 | 6.3 | 340 | 16000 | 6.7 | 5300 | 160 | <0.00016 | <0.34 UJ | 10 | 2000 | 2.2 | 2.7 | 0.3 J | 0.16 | 220 | 0.15 J | 10.5 | 12.1 | 23 | 43 |
| PA-EE7 | 0.5-1.5 ft | N | 6900 | | 7 | 48 | 0.24 | <1.1 UJ | 0.15 | 3900 | 5.6 | 3.2 | 660 | 16000 | 8.8 | 5900 | 62 | 0.23 | 1.6 | 6.2 | 1300 | 4 | 1.2 | 2.5 | 0.074 J | 190 | 0.14 J | 7.8 | 3.3 | 21 | 31 |

| | Depth | Cu | Cd | Ra-226 | Ra-228 | Se | U |
|---|---|---|---|---|---|---|---|
| PA-EE19 | 1.5 | 1100 | 0.34 | 3.7 | 2 | 1 | 1.4 |
| | 1.5 | 1100 | 0.38 | 2.9 | 1.6 | 1 | 1.6 |
| | 5 | 56 | 0.39 | 1.5 | 1.8 | 0.09 | 1.7 |
| | 20 | 50 | 0.26 | 1.7 | 2.9 | 0.08 | 1.4 |
| | 25 | 200 | 0.57 | 1.9 | 2.4 | 0.26 | 3.2 |
| | 30 | 340 | 1.1 | 2.2 | 2.7 | 0.3 | 12.1 |
| PA-EE7 | 1 | 660 | 0.15 | 4 | 1.2 | 2.5 | 3.3 |
| | 0 | **285** | **0.35** | **2.44** | **2.13** | **0.87** | **4.1** |
| | 30 | **285** | **0.35** | **2.44** | **2.13** | **0.87** | **4.1** |

Brown AND Caldwell

Date: August 2010

Atlantic Richfield Company

Project: 138554

Explanation

COC concentrations that exceed Background Concentration Limits

**Area 4 & Area 5 Chemical Data**

Aug 18, 2010 - 10:45am rhunt
P:\Arco-Yerington\Process Areas\138554 - Year 2010 Files\CAD\Drawings\Vadose Zone Work Plan\Appendix E - Soils Chem Concent-Depth PArea 4 & 5 - Chemical Data.dwg