



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-87

Date Hole Started: 6/16/97 Date Hole Finished: 6/16/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: North Arroyo

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10.5 inch

Total Depth Drilled (ft): 13.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 12 Feet
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Surface Casing Used?	Y	8 - inch steel	+2 - 2 feet
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Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	3.5 - 13.5
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Sand Pack?	Y	12-20 CSSI	2.5 - 13.5
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Annular Seal?	Y	Bentonite Chips	1.0 - 2.5
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Surface Seal?	Y	Grout	0 - 1 feet
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DEVELOPMENT/SAMPLING

Well Developed?	Y	Submersible Pump	3.5 - 13.5 Feet
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: Dry

Surface Casing Height (ft): 2.0

Date: 5/98

Riser Height (ft): 1.5

MP Description: Top of PVC

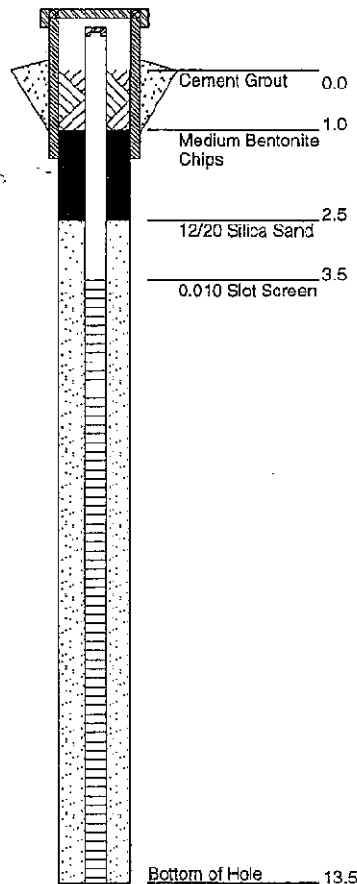
Ground Surface Elevation (ft): 3816.67

MP Height Above or Below Ground (ft): 1.5

MP Elevation (ft): 3818.17

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 1.0'

Gravel

Ground Surface covered w/ gravel/cobbles/boulders, loose

1.0 - 7.5'

Gravelly Sand

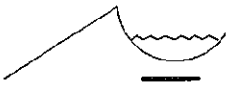
-fine to coarse, med. dense, gap graded, moderate moist (due to >1" rain 6/14/6/15) aqua @ 4 psi

7.5 - 12.5'

Gravelly Silty Sand

-fine to coarse gap graded, loose too, wet to detor plast, very pale orange, 10 YR 8/2 WET

Turning dry @ 9' - 6" Auger refusal 12' TD=13.5, measured H2O from g.s.=5.21



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-88

Date Hole Started: 6/17/97 Date Hole Finished: 6/17/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: North of Pond #6

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 40

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 40 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	25 - 40
Sand Pack?	Y	12-20 GSSI	22.6 - 40
Annular Seal?	Y	Bentonite Chips	6.5 - 22.6
Surface Seal?	Y	Grout	0 - 6.5 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	25 - 40 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 28.53

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

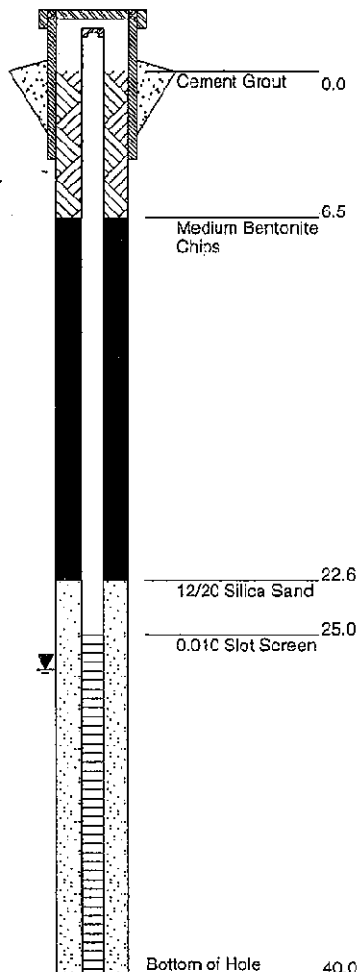
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3774.54

MP Elevation (ft): 3776.54

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 8.0'	Gravelly SAND -fine to coarse, loose, gap graded, dark yellow brown 10YR 4/2, DRY, gravel composed of SLAG, Qtzite, LS, and, other volcanics, decreasing SLAG Gravel w/ Depth [Alluvium]
8.0 - 10.3'	Gravelly SAND -fine to coarse 5% silt, gap graded med dense, mod. yellow brown 10 YR 5/4 dry [Alluvium]
10.3 - 12.5'	Silty SAND -fine grains of dense uniform, MYB 10 YR 5/4, dry poor to med. plasticity [Alluvium]
12.5 - 40.0'	Gravelly SAND -fine to coarse, gap, loose to med dense, pale yellow brown 10YR 6/2 and gravel/boulders ls, and, Qtz @ 15' increasing fines at 18 boulders again moist (78) water at 30.5' TD=40', 15 screen [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-89

Date Hole Started: 6/18/97 Date Hole Finished: 6/18/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Abandoned guard shack

Recorded By: Harold Kutz

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 40

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 40 Feet
Surface Casing Used?	Y	8 - inch steel	+3.0 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	20 - 40
Sand Pack?	Y	12-20 CSSI	18 - 40
Annular Seal?	Y	Bentonite Chips	10 - 18
Surface Seal?	Y	Grout	0 - 10 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	20 - 40 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 15.01

Surface Casing Height (ft): 3.0

Date: 5/98

Riser Height (ft): 2.5

MP Description: Top of PVC

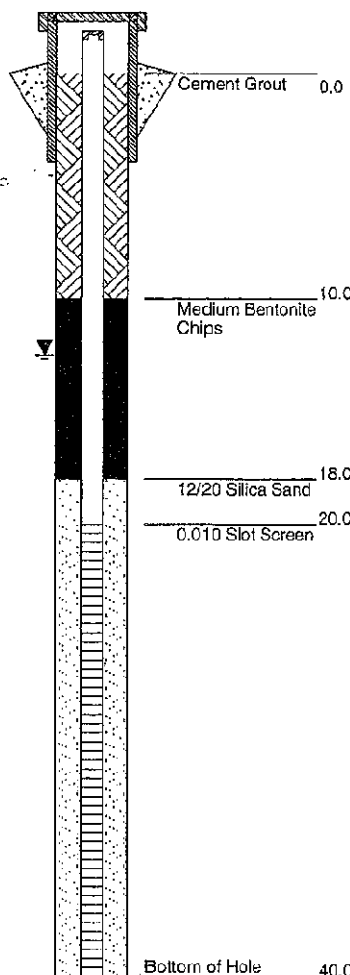
Ground Surface Elevation (ft): 3732.23

MP Height Above or Below Ground (ft): 2.5

MP Elevation (ft): 3734.73

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 0.2'	SLAG -Landscape rock [Slag Fill]
0.2 - 2.0'	SLAG -fine grained to med. grained, silty, black, dense, moist (stained railroad balled) [Alluvium]
2.0 - 8.0'	SLAG -fine grained to med. grained, silty, brown, med. dense, moist [Alluvium]
8.0 - 20.0'	GRAVEL -fine to coarse, sandy, silty, brown, very dense with cobbles, hard drills between 13 ft. [Alluvium]
20.0 - 35.0'	SLAG -fine growth to med. grained, clayey gravelly, dry, brown with some calcareous modules, moist at 211 = zone, 23 - H2O? [Alluvium]
35.0 - 40.0'	SLAG -Resumed H2O 18', sand, fine grained to coarse, bwn - multicolored, poorly, graded, wet with gravel, H2O measured, 6/20/97 = 12.81 [Alluvium]



Hole Name: EP-90

Date Hole Started: 12/8/97 Date Hole Finished: 12/8/97

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc.
Legal Description: Asarco Plant
Descriptive Location: Lead Works

Total Depth Drilled (ft): 72

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0-72 Feet
Surface Casing Used?	Y	8 - inch steel	+2 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	52 - 72 Feet
Sand Pack?	Y	12-20 CSSI	50 - 72 Feet
Annular Seal?	Y	Bentonite Chips	10 - 50
Surface Seal?	Y	Grout	0 - 10 feet

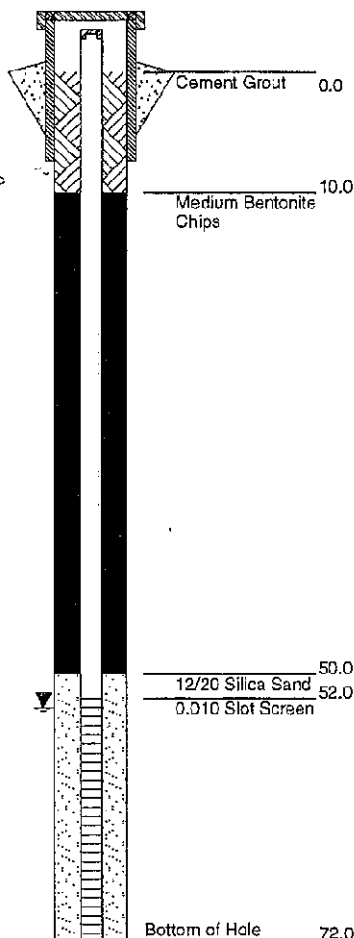
Well Developed? N
Water Samples Taken? N
Boring Samples Taken? N

MP Height Above or Below Ground (ft): -0.25

MP Elevation (ft): 3777.83

Remarks:

GRAPHICS



GEOLOGICAL DESCRIPTION

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Sheet 1 of 1



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-70

Date Hole Started: 5/30/97 Date Hole Finished: 5/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: North West of Rubber Lake

Recorded By: Wally Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 55

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 50 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2.5 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	40 - 50 Feet
Sand Pack?	Y	12-20 CSSI	38 - 50 Feet
Annular Seal?	Y	Bentonite Chips	10 - 38
Surface Seal?	Y	Grout	0 - 10 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	Y XRF
	5 foot intervals

Static Water Level Below MP: Dry

Date:

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft): 2.5

Riser Height (ft):

Ground Surface Elevation (ft): 3775

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples. Borehole only.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
5							0.0 - 13.0' Slag SLAG, 2.5yr 2.5/0 Black, angular vesicular gravel sizes, fragments of poured slag [Fill]
10							
15		SS	50/2	0.50	13.0 - 15.0'		13.0 - 22.0' Sand SAND, 10yr, dark yellow brown, Gn-Med, med sorted; gravel fine rounder 10%, fines < 5%, medium dense, moist [Alluvium]
20	EP-70A	SS	80/2	1.50	20.0 - 22.0'		
25	EP-70B	SS	86/2	1.00	25.0 - 27.0'		22.0 - 25.0' Gravelly Sand Gravelly SAND with clay, dark yellow brown sand, fine -medium, gravel 20 %, fine-medium rounded max 1/2 inch, clay 15 % slightly plastic, medium dense, moist [Alluvium]
30	EP-70C	SS	95/1.5	1.50	30.0 - 32.0'		25.0 - 27.0' Sandy Clay Sand CLAY, brown, clay stiff, moderately plastic, 6yr, sand 40% fine -medium; medium dense, moist [Alluvium]
35	EP-70D	SS	57/1	0.70	35.0 - 37.0'		27.0 - 55.0' Gravelly Sand Gravelly SAND, Sand fine-coarse, gravel fine-coarse max. 1-1/2 inches, subround-round, fines 5% medium dense to dense, moist [Alluvium]
40	EP-70E	SS	100/1.5	1.20	40.0 - 42.0'		
45	EP-70F	SS	90/1	0.70	45.0 - 47.0'		
50	EP-70G	SS	50/2	0.00	50.0 - 52.0'		
55	EP-70H		50/0	0.00	55.0 - 57.0'		
60							

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HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-71

Date Hole Started: 5/31/97 Date Hole Finished: 5/31/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Central Rail Yard

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Coluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 33

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 33 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2.5 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	22 - 32 Feet
Sand Pack?	Y	12-20 CSSI	20 - 32 Feet
Annular Seal?	Y	Bentonite Chips	10 - 20
Surface Seal?	Y	Grout	0 - 10 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	N

Static Water Level Below MP: Dry

Date:

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft): 2.5

Riser Height (ft):

Ground Surface Elevation (ft): 3758.11

MP Elevation (ft):

Remarks: Borehole only.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
0.0	EP-71A	GRAB	"	1.00	0.0 - 1.0' "		0.0 - 11.0' Gravelly SAND with Clay 30% gravel, 5% clay, 65% sand/Pale brown (10YR 6/3), sand fine to coarse; gravel fine to coarse, subrounded to rounded (max. 1.5"), clay medium dense, moist [Alluvium]
5.0	EP-71B	SS	26/1; 40/1	1.00	5.0 - 7.0' "		
10.0	EP-71C	SS	11/1; 29/1	1.20	10.0 - 12.0' "		
15.0	EP-71D	SS	28/1; 50/0	0.80	15.0 - 17.0' "		11.0 - 18.0' CLAY Very pale brown (10YR 7/3), lense, medium plasticity, firm (probable water at 20')
20.0	EP-71"	SS	50/1	0.00	20.0 - 22.0' "		18.0 - 31.0' Gravelly SAND with Clay 40% gravel, 10% clay, 55% sand/Yellow brown (10YR 5/4), fine to coarse, subrounded to rounded (gravel max. 1.5"); clay dense, moist [Alluvium]
25.0	EP-71E	SS	48/1; 50/0	0.70	25.0 - 27.0' "		
31.0							31.0 - 33.0' Quartzite Boulders

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HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-72

Date Hole Started: 5/31/97 Date Hole Finished: 6/1/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: E Central Storage Yard

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 55

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 54 feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4' Sch 40 PVC FT 20 slot	44 - 54 Feet
Sand Pack?	Y	12-20 CSSI	42 - 54 Feet
Annular Seal?	Y	Bentonite Chips	10 - 42
Surface Seal?	Y	Grout	0 - 10 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	Y XRF
	5 foot intervals

Static Water Level Below MP: Dry

Date:

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft): 2.5

Riser Height (ft):

Ground Surface Elevation (ft): 3773.83

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples. Borehole only.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
5							0.0 - 15.0' SLAG
10							
15	EP-72A	SS	45/2	0.50	15.0 - 17.0' Slag sluff in sample		
20	EP-72B	SS	86/1.5	0.80	20.0 - 22.0' Slag sluff in sample		15.0 - 22.0' GRAVELLY SAND -(10yr5/3) brown, Sand fine-coarse, gravel 30 % fine-coarse, subrounded-rounded, max. 1-1/2 inches, medium dense, moist [Alluvium]
25	EP-72C	SS	86/1.5	1.00	25.0 - 27.0' Duplicate C2 0730		22.0 - 25.0' SAND -(10yr5/3), sand fine-medium, gravel 10% fine-medium, rounded, max. 1 inch, medium dense, moist, [Alluvium] probable water at 25 feet
30	EP-72D	SS	95/1.5	0.80	30.0 - 32.0'		25.0 - 55.0' GRAVELLY CLAYEY SAND -(10yr5/3) brown, sand fine medium, gravel 20%, subrounded-subangular, max. 1 inch, clay 10%-15%, medium dense, moist Cobbles of Quartzite, Andesite, Limestone at 47 feet
35	EP-72E	SS	85/1	0.60	35.0 - 37.0'		
40	EP-72F	SS	100/1	0.80	40.0 - 42.0'		
45	EP-72G	SS	59/6	0.10	45.0 - 47.0' Quartzite plugging spoon shoe no sample		
50							
55							
60							

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: AB-01

Date Hole Started: 10/28/96 Date Hole Finished: 10/29/96

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: West of acid plant,
adjacent to Paisano Dr.

Recorded By: L Johnson

Drilling Company: Layne

Driller:

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Sample to Groundwater

Target Aquifer: Shallow Alluvial

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 13

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	N
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Static Water Level Below MP: 12

Date: 10/96

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
							0.0 - 3.0' Slag - railroad and plant (Slag Fill)
5	AB-1-3-5	SS		2.00	3.0 - 5.0'		3.0 - 6.0' Sand - fine to medium grained, some gravel -3/4, gap graded loose, moderate brown, 5 YR 4/4, dry, no odor [Alluvium]
	AB-1-5-7	SS		2.00	5.0 - 7.0'		6.0 - 7.0' Sand - fine to medium grained, well graded, loose, moderate yellow-brown 10 YR 5/4, dry, no odor [Alluvium]
10	AB-1-7-9	SS		2.00	7.0 - 9.0'		7.0 - 13.0' Sand - fine grained, loose uniform, some interbedded silty sand, overall pale yellow brown 10 YR 6/2, dark yellow brown 10 yr. 4/2 dry, no odor [Alluvium]
	AB-1-9-11	SS		2.00	9.0 - 11.0'		Groundwater @ 12'
	AB-1-11-12	SS		2.00	11.0 - 12.0'		

GEOTECH 0734R1.GPJ HYD-TUC.GDT 9/14/96



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: AB-02

Date Hole Started: 10/28/96 Date Hole Finished: 10/29/96

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: West of acid plant,
adjacent to Paisano Dr.

Recorded By: L Johnson

Drilling Company: Layne

Driller:

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Sample to Groundwater

Target Aquifer: Shallow Alluvial

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 13

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 12

Date: 10/96

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

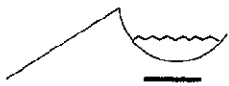
Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
							0.0 - 3.0' Slag, Gravel [Slag Fill]
5	AB-2-3-5	SS		2.00	3.0 - 5.0'		3.0 - 5.5' Sand - fine grained, uniform loose (pale yellow brown, 10 YR 6/2), some silty sand, dark yellow-brown, 10 YR 4/2. Dry no odor [Alluvium]
	AB-2-5-7	SS		2.00	5.0 - 7.0'		5.5 - 8.8' Silty Sand - change to Silty Sand, fine grained some plasticity, medium dense, dark yellow brown 10 YR. 4/2. Dry no odor [Alluvium]
10	AB-2-7-9	SS		2.00	7.0 - 9.0'		8.8 - 13.0' Sand - fine grained, loose, uniform, pale yellow-brown 10 YR. 8/2. Dry no odor [Alluvium]
	AB-2-9-11	SS		1.50	9.0 - 11.0'		Groundwater @ 12'
	AB-2-11-13	SS		2.00	11.0 - 13.0'		

GEOTECH 0734R/GPJ HYD-TUC-GDT 9/14/98



HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: AB-03

Date Hole Started: 10/28/96 Date Hole Finished: 10/29/96

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: West of acid plant,
adjacent to Palsano Dr.

Recorded By: L Johnson

Drilling Company: Layne

Driller:

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Sample to Groundwater

Target Aquifer: Shallow Alluvial

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 13

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: 12

Date: 10/96

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
							0.0 - 3.0' Slag, Gravel - >2" [Slag Fill]
5	AB-3-3-5	SS		2.00	3.0 - 5.0'		
	AB-3-5-7	SS		2.00	5.0 - 7.0'		4.0 - 6.8' Sand - fine to coarse, gap graded, loose, pale yellow brown 10 YR. 6/2 Dry no odor [Alluvium]
	AB-3-7-9	SS		2.00	7.0 - 9.0'		6.8 - 7.3' Silty Sand - fine grained, some plasticity, medium dense, dark yellow-brown, 10 YR 4/2. Dry no odor [Alluvium]
10	AB-3-9-11	SS		1.75	9.0 - 11.0'		7.3 - 11.0' Sand - fine to coarse gap-graded, loose pale yellow-brown 10 YR. 6/2 Dry no odor [Alluvium]
	AB-3-11-13	SS		2.00	11.0 - 13.0'		Some Andesitic Gravel at water level then gone
15							
20							
25							
30							
35							
40							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: AB-04

Date Hole Started: 10/28/96 Date Hole Finished: 10/29/96

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: West of acid plant,
adjacent to Paisano Dr.

Recorded By: L. Johnson

Drilling Company: Layne

Driller:

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Sample to Groundwater

Target Aquifer: Shallow Alluvial

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 12

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	N
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Static Water Level Below MP: 12

Date: 10/96

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

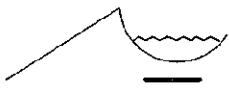
Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
							0.0 - 3.0' Slag, Gravel ->2" [Slag Fill]
5	AB-4-3-5	SS		2.00	3.0 - 5.0'		3.0 - 6.3' Sand - fine grained, loose, uniform, pale yellow-brown 10 YR. 6/2. [Alluvium]
	AB-4-5-7	SS		2.00	5.0 - 7.0'		6.3 - 7.3' Silty Sand - fine grained, some plasticity, medium dense, dark yellow-brown 10 YR. 4/2. Dry no odor [Alluvium]
10	AB-4-7-9	SS		2.00	7.0 - 9.0'		7.3 - 12.0' Sand - fine to coarse gap-graded, loose pale yellow-brown 10 YR. 6/2. Dry no odor [Alluvium]
	AB-4-9-11	SS		1.75	9.0 - 11.0'		Gravel at water level, strong diesel/acid odor
	AB-4-11-13	SS		2.00	11.0 - 13.0'		
15							
20							
25							
30							
35							
40							

GEOTECH 0734RLGPJ HYD TUC.GDT 9/14/98



HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: AB-05

Date Hole Started: 10/28/96 Date Hole Finished: 10/29/96

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: West of acid plant,
adjacent to Paisano Dr.

Recorded By: L Johnson

Drilling Company: Layne

Driller:

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Sample to Groundwater

Target Aquifer: Shallow Alluvial

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 12

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	N
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Static Water Level Below MP: 12

Date: 10/96

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

GEOTECH 0734RIGPJ HYD-TUC.GDT 9/14/98

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
							0.0 - 4.0' Slag, Gravel ->2" [Slag Fill]
5	AB-5-4-5	SS		1.00	4.0 - 5.0'		4.0 - 7.0' Sand - fine grained, loose uniform, pale yellow-brown 10 YR. 6/2. Dry no odor [Alluvium]
	AB-5-5-7	SS		2.00	5.0 - 7.0'		7.0 - 9.0' Sand - fine grained, uniform, loose, some interbedded silty sand, overall pale yellow-brown 10YR. 6/2, Silty Sand dark yellow-brown 10YR 4/2. Dry no odors [Alluvium]
	AB-5-7-9	SS		2.00	7.0 - 9.0'		9.0 - 11.0' Sandy Gravel - Gr ->2". Sampler refusal, fine to coarse pale yellow-brown, gap graded. No odor [Alluvium]
10		SS		0.00	9.0 - 11.0'		Groundwater @ 12'
15							
20							
25							
30							
35							
40							



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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA1-1

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hand Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): NA

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP:

Surface Casing Height (ft):

Date:

Riser Height (ft):

MP Description:

Ground Surface Elevation (ft): 3784.81

MP Height Above or Below Ground (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-1-1-A	GRAB			0.0 - 0.2'		0.0 - 0.2' ASPHALT
							0.2 - 1.0' Silty SAND Brown to black, fine to medium, moist, with fine gravel.
	SSIA-1-1-B	SS			1.5 - 2.5'		
	SSIA-1-1-C	GRAB			3.0 - 4.0'		
	SSIA-1-1-D	GRAB			4.0 - 5.0'		

GEOTECH 0734RI.GPJ HYD-TUC.GDT 7/16/98



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA-1-2

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne

Driller: Jorge Herald

Drilling Method: Hand Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): NA

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF
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Static Water Level Below MP:

Surface Casing Height (ft):

Date:

Riser Height (ft):

MP Description:

Ground Surface Elevation (ft): 3774.04

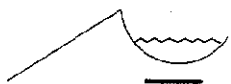
MP Height Above or Below Ground (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-1-2-A	GRAB			0.0 - 0.2'		0.0 - 0.1' ASPHALT 0.1 - 0.3' CONCRETE 0.3 - 5.0' Clayey Gravelly SAND Brown, fine to medium, moist, with occasional slag gravel
	SSIA-1-2-B	SS			1.5 - 2.5'		
	SSIA-1-2-C	SS			3.0 - 4.0'		
	SSIA-1-2-D	SS			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA-1-3

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne

Driller: Jorge Herald

Drilling Method: Hand Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): NA

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP:

Date:

MP Description:

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-1-3-A	GRAB			0.0 - 0.2'		0.0 - 0.2' ASPHALT
							0.2 - 0.5' FILL
							Base coarse 0.5 - 2.5' Clayey Gravelly SAND Brown, fine to medium, dry, with some gravel
	SSIA-1-3-B	SS			1.5 - 2.5'		
	SSIA-1-3-C	GRAB			3.0 - 4.0'		2.5 - 5.0' SLAG Sandy
	SSIA-1-3-D	GRAB			4.0 - 5.0'		
5							

GEOTECH 0734RLGPJ HYD-TUC.GDT 7/16/98



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA-1-4

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne

Driller: Jorge Herald

Drilling Method: Hand Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): NA

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF	5 foot Intervals
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Static Water Level Below MP:

Surface Casing Height (ft):

Date:

Riser Height (ft):

MP Description:

Ground Surface Elevation (ft): 3774.56

MP Height Above or Below Ground (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-1-4-A				0.0 - 0.2'		0.0 - 0.2' ASPHALT
							0.2 - 5.0' Gravelly Silty SAND Brown to black, fine to medium, cry; red brick debris at 4.5 feet.
	SSIA-1-4-B				1.5 - 2.5'		
	SSIA-1-4-C				3.0 - 4.0'		
	SSIA-1-4-D				4.0 - 5.0'		



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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA-1-5

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne

Driller: Jorge Herald

Drilling Method: Hand Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): NA

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	
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5 foot intervals

Static Water Level Below MP:

Date:

MP Description:

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3775.50

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-1-5-A2	GRAB			0.0 - 0.2'		0.0 - 0.1' ASPHALT
							0.1 - 5.0' Clayey SAND Brown, fine to medium, moist, with some fine gravel
	SSIA-1-5-B	SS			1.5 - 2.5'		
	SSIA-1-5-C	SS			3.0 - 4.0'		
	SSIA-1-5-D	SS			4.0 - 5.0'		

GEOTECH 0724RIGPJ HYD-TUC.GDT 7/16/98



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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA2-1

Date Hole Started: 7/14/97 Date Hole Finished: 7/14/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hand Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): NA

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF 5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3768.13

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-2-2-A	GRAB			0.0 - 0.2'		0.0 - 5.0' Silty SAND Olive black (5YR 2/1), fine, medium dense, moist, maybe some clay.
	SSIA-2-2-B2	SS			1.5 - 2.5'		
	SSIA-2-2-C	SS			3.0 - 4.0'		
	SSIA-2-2-D	SS			4.0 - 5.0'		
5							

GEOTECH 0734RLGPJ HYD-TUC.GDT 7/16/98



HYDROMETRICS INC.
Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA2-2

Date Hole Started: 7/14/97 Date Hole Finished: 7/14/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 4

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
----------------------	--

Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3804.94

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA2-2A	G			0.0 - 0.2'		0.0 - 1.5' Gravelly SAND Pale yellow brown (10YR 6/2), fine to coarse, loose, gap graded, gravelly slag, limestone, quartz, dry. [Fill]
	SSIA2-2B	SS		0.00	1.5 - 3.0' Sampler Refusal		1.5 - 4.0' SLAG
	SSIA2-2C	SS	50/6	0.30	3.0 - 4.0' Slag in Shoe		
	SSIA2-2D	SS			4.0 - 5.0' Sampler Refusal		

GEOTECH 0734RLGPJ HYD-TUC.GDT 7/16/93



HYDROMETRICS INC.
Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA3-1

Date Hole Started: 7/14/97 Date Hole Finished: 7/14/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 4

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3786.39

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-1A	G			0.0 - 0.2'		0.0 - 2.0' GRAVEL Road base
							1.2 - 2.0' SLAG
	SSIA3-1B	SS			1.5 - 3.0' Auger/Sampler Refusal		2.0 - 1.2' Gravelly SAND Pale yellow brown (10YR 6/2), fine to coarse, loose, gap graded, dry, NAILS.



HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA3-2

Date Hole Started: 7/14/97 Date Hole Finished: 7/14/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 4

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
-----------------	-----	-------------	----------

Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
---------------	---	--	--

DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

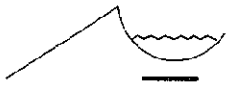
Ground Surface Elevation (ft): 3785.60

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-2A	G			0.0 - 0.2'		0.0 - 0.7' Landscape GRAVEL Very pale orange (10 YR 8/2), fine to coarse, grained crushed aggregate w/ fines, dry.
							0.7 - 4.0' SAND Pale yellow brown (10YR 6/2), fine to coarse, medium dense, gap graded, slag, limestone, quartz, gravel.
	SSIA3-2B	SS	47/1.5	1.00	1.5 - 3.0'		
	SSIA3-2C	SS	40/1	0.60	3.0 - 4.0' RIS		
							4.0 - 5.0' SLAG Refusal

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Tucson, Arizona

Soil Boring Log

Hole Name: SSI A3-3

Date Hole Started: 7/14/97 Date Hole Finished: 7/14/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3785.39

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-3A	G			0.0 - 0.2'		0.0 - 5.0' Landscape GRAVEL Crushed aggregate w/ fines
	SSIA3-3B	SS	47/1.5	1.50	1.5 - 3.0'		
	SSIA3-3C	SS	31/1	1.00	3.0 - 4.0'		
	SSIA3-3D	SS	27/1	1.00	4.0 - 5.0'		

GEOTECH 0734RLGPJ ILYD-TUC.GDT 7/16/98

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA3-4

Date Hole Started: 7/14/97 Date Hole Finished: 7/14/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI .

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 2.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal?	N
---------------	---

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF

5 foot intervals

Static Water Level Below MP: NA

Surface Casing Height (ft):

Date: NA

Riser Height (ft):

MP Description: Ground Surface

Ground Surface Elevation (ft): 3786.31

MP Height Above or Below Ground (ft): 0

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-4A	SP			0.0 - 2.0'		0.0 - 1.0' Gravelly SAND Pale yellow brown (10 YR 6/2), "crushed aggregate w/ fines" fine to coarse, gap graded, medium dense, yellow staining whit precipitation.
	SSIA3-4B	SS			1.5 - 3.0'		1.0 - 2.5' SLAG Refusal

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Tucson, Arizona

Soil Boring Log

Hole Name: SSI A3-5

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 1.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N
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Surface Casing Used? N

Screen/Perforations? N

Sand Pack?	N
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Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed?	N
Yes	10
No	10
Total	20

Water Samples Taken? N

Boring Samples Taken? Y XRF 5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3786.55

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-5A	G			0.0 - 0.2'		0.0 - 0.2' GRAVEL Brown
							0.2 - 1.5' SLAG Coarse, fractured, sandy (hole caving in and getting wider).
	SSIA3-5B	G			1.5 - 1.8'		



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Soil Boring Log

Hole Name: SSIA3-6

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF 5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3787.21

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-6A	G			0.0 - 0.2'		0.0 - 2.0' Silty SAND Brown, fine to medium, dry.
	SSIA3-6B	SS			1.5 - 2.5'		
							2.0 - 5.0' SLAG
	SSIA3-6C	G			3.0 - 4.0'		
	SSIA3-6D	G			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA3-7

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3785.99

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-7A	G			0.0 - 0.2'		0.0 - 0.2' ASPHALT
							0.2 - 2.0' Silty SAND Brown, fine to medium, dry.
	SSIA3-7B	SS			1.5 - 2.5'		
							2.0 - 5.0' SLAG Sandy
	SSIA3-7C	G			3.0 - 4.0'		
	SSIA3-7D	G			4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA3-8

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF

INTERVAL

5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3786.53

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-8A	G			0.0 - 0.2'		0.0 - 4.5' Silty SAND Brown, fine to medium, dry with some fine gravel closest to the surface.
	SSIA3-8B	SS			1.5 - 2.5'		
	SSIA3-8C	SS			3.0 - 4.0'		
	SSIA3-8D	G			4.0 - 5.0'		
5							4.5 - 5.0' SLAG Sandy

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSI A3-9

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3788.94

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-9A	G			0.0 - 0.2'		0.0 - 5.0' Silty SAND Brown, fine to medium, dry, slag bouncing not recovered in same plan.
	SSIA3-9B	SS			1.5 - 2.5'		
	SSIA3-9C	SS			3.0 - 4.0'		
	SSIA3-9D	SS			4.0 - 5.0'		
5							

GEOTECH 0734RIGPJ HYD-TUC.GDT 7/16/98



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA3-10

Date Hole Started: 7/15/97 Date Hole Finished: 7/15/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Dave Hogan

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF

5 foot Intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3785.83

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA3-10A	G			0.0 - 0.2'		0.0 - 0.2' ASPHALT
							0.2 - 1.0' Silty SAND Brown, fine to medium, dry.
	SSIA3-10B	SS			1.5 - 2.5'		1.0 - 5.0' SLAG Sandy
	SSIA3-10C	G			3.0 - 4.0'		
	SSIA3-10D	G			4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-1

Date Hole Started: 10/27/97 Date Hole Finished: 10/27/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: LJ

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
-----------------	-----	-------------	----------

Well Installed?	N		
-----------------	---	--	--

Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
-----------------------	---	-----	------------------

Static Water Level Below MP:

Surface Casing Height (ft):

Date:

Riser Height (ft):

MP Description:

Ground Surface Elevation (ft): 3728.8

MP Height Above or Below Ground (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-1A	GRAB			0.0 - 0.2'		0.0 - 1.7' Gravelly SAND Sandy gravel - mix SLAG and wind blown sand
	SSIA4-1B	GRAB			1.5 - 3.0' sampler refusal		1.7 - 3.3' SAND Fine to coarse, uniform, loose, moderate yellow brown 10YR 5/4, dry
	SSIA4-1C	SS			3.0 - 4.0'		3.3 - 5.0' Sandy GRAVEL Fine to coarse, gap graded, loose moderate yellowish brown 10YR 5/4 dry
	SSIA4-1D	SS			4.0 - 5.0'		
5							

GEOTECH 0734RIGPJ IND-TUC.GDT 7/16/98



HYDROMETRICS INC.
Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-2

Date Hole Started: 10/27/97 Date Hole Finished: 10/27/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: LJ

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF

5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3729.3

MP Elevation (ft):

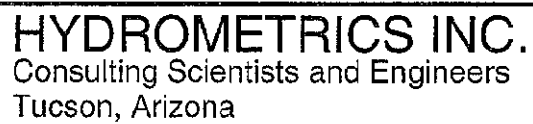
Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-2A SSIA4-2A2	GRAB GRAB			0.0 - 0.2' 0.0 - 0.2'		0.0 - 3.3' Gravelly SAND Sand fine to coarse, gap graded, loose, pale yellow brown 10YR 6/2, dry
	SSIA4-2B	SS		1.00	1.5 - 3.0'		
	SSIA4-2C	SS		0.70	3.0 - 4.0' RIS		
	SSIA4-2D	SS			4.0 - 5.5'		3.3 - 5.0' Gravelly SAND Sand fine to coarse, gap graded, loose, pale yellowish brown 10YR 6/2, dry
5							

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Sheet 1 of 2



Hole Name: SSIA4-2

Date Hole Started: 10/27/97 Date Hole Finished: 10/27/97

(Continued)

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
10							



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Soil Boring Log

Hole Name: SSIA4-3

Date Hole Started: 10/27/97 Date Hole Finished: 10/27/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: LJ

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Surface Casing Height (ft):

Date: NA

Riser Height (ft):

MP Description: Ground Surface

Ground Surface Elevation (ft): 3728.8

MP Height Above or Below Ground (ft): 0

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-3A	GRAB			0.0 - 0.2'		0.0 - 1.5' SAND fine to medium, loose pale yellowish brown, 10YR 6/2, dry
	SSIA4-3B	SS		1.00	1.5 - 3.0'		1.5 - 4.8' Silty SAND Fine to coarse, medium dense, gap graded, dark yellow brown 10YR 4/2 dry
	SSIA4-3C	SS		0.70	3.0 - 4.0'		
	SSIA4-3D	SS		0.90	4.0 - 5.0'		
5							SAND

GEOTECH 0734RIGPJ HYD-TUC.GDT 7/16/98

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Sheet 1 of 2

(Continued)

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
							Fine to coarse, loose, uniform pale yellow brown 10YR 6/2 dry/moist



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Soil Boring Log

Hole Name: SSIA4-4

Date Hole Started: 10/28/97 Date Hole Finished: 10/29/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-4A	GRAB			0.0 - 3.2'		0.0 - 2.0' Fill Sand Fine to medium grained, Silty, Loose, pale yellowish brown 6/2, dry with some fine gravel
	SSIA4-4B	SS		1.00	1.5 - 3.0'		2.0 - 2.5' SLAG Black angular, Sandy
	SSIA4-4C	SS		0.67	3.0 - 4.0'		2.5 - 5.0' SAND Fine to medium grained, loose, silty, pale yellowish orange, 10YR 8/6 to pale yellowish brown YR 6/2
	SSIA4-4D	SS		0.67	4.0 - 5.0'		

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Soil Boring Log

Hole Name: SSIA4-5

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-Inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

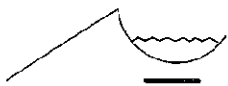
Ground Surface Elevation (ft): 3728.1

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-5A	GRAB		0.0 - 0.2'			0.0 - 0.3'
	SSIA4-5A2	GRAB		0.0 - 0.2'			SLAG Black angular, sandy dusky yellowish brown 10YR 2/2 drv
							0.3 - 4.0'
							Gravelly SAND with Silt Fine to medium grained, Silty, with some fine gravel, Dusky yellowish brown 10YR 2/2, dry
	SSIA4-5B	SS		1.00	1.5 - 3.0'		
	SSIA4-5C	SS		0.56	3.0 - 4.0'		
	SSIA4-5D	SS		0.87	4.0 - 5.0'		
							4.0 - 4.5'
							GRAVEL Fine to coarse gravel, dusky yellowish brown 10YR 2/2 Dry
							4.5 - 5.0'
							SAND Fine grained, loose, moderate yellowish brown, 10YR 5/4

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Soil Boring Log

Hole Name: SSIA4-6

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3725.8

MP Elevation (ft):

Remarks:

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DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-6A	GRAB			0.0 - 0.2'		0.0 - 3.0' Silty SAND Fine to medium grained, Silty, loose dark yellowish brown 12YR 4/2 Dry
	SSIA4-6B	SS		1.00	1.5 - 3.0'		
	SSIA4-6C	SS		1.00	3.0 - 4.0'		3.0 - 5.0' SAND Fine to medium grained, loose dark yellowish orange 10YR 6/6 Dry
	SSIA4-6D	SS		0.50	4.0 - 5.0'		
5							



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Soil Boring Log

Hole Name: SSIA4-7

Date Hole Started: 10/26/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF 5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3723.8

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-7A	GRAB		0.40	0.0 - 0.2'		0.0 - 3.0'
	SSIA4-7A2	GRAB		0.40	0.0 - 0.2'		Silty SAND Fine to medium grained, Silty Dark yellowish brown 10YR 4/2, with orange material closest to surface, green precipitation ~2.5' lenses moist below 2.5', dusky yellowish brown 10YR 2/2 below 2.5'
	SSIA4-7B	SS		1.50	1.5 - 3.0'		
	SSIA4-7C	SS		1.00	3.0 - 4.0'		3.0 - 5.0'
	SSIA4-7D	SS		0.50	4.0 - 5.0'		Clayey SAND Fine grained, clayey, dusky yellowish brown 10YR 2/2, moist
5							

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Soil Boring Log

Hole Name: SSI A4-8

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
-----------------	-----	-------------	----------

Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
-----------------	---	--	--

Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0



Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3727.1

MP Elevation (ft):

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-8A	GRAB		0.17	0.0 - 0.2'		0.0 - 0.3' SLAG Black angular, Ballast
							0.3 - 5.0' SAND with Silt Fine to medium grained, dry loose, Silty, Dark Yellowish brown 10YR 4/2, Dark yellowish orange 10YR 6/6 below 2.5'
	SSIA4-8B	SS		0.50	1.5 - 3.0'		
	SSIA4-8C	SS		0.33	3.0 - 4.0'		
	SSIA4-8D	SS		0.50	4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-9

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	N
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.2

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-9A	GRAB		0.17	0.0 - 0.2'		0.0 - 0.3' SLAG Black Angular
							0.3 - 5.0' Gravelly SAND with Silt Fine to medium grained, Silty with some gravel, loose, Dusky yellowish brown 10YR 2/2, moderate yellowish brown 10YR 5/4 below 2.5'
	SSIA4-9B	SS		0.17	1.5 - 3.0'		
	SSIA4-9C	SS		0.50	3.0 - 4.0'		
	SSIA4-9D	SS		0.50	4.0 - 5.0'		
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-10

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
-----------------	---	--	--

Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-10A	GRAB		0.17	0.0 - 0.2'		0.0 - 0.2'
	SSIA4-10A2	GRAB		0.17	0.0 - 2.0'		GRAVEL Grey to black ballast 0.2 - 5.0'
							Gravelly SAND with Silt Fine to medium grained, Silty, moderate yellowish brown, dry, loose with some fine gravel 10YR 5/4
	SSIA4-10B	SS		0.17	1.5 - 3.0'		
	SSIA4-10C	SS		0.83	3.0 - 4.0'		
	SSIA4-10D	SS		1.00	4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-11

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
---------------	---	--	--

Surface Seal?	N		
---------------	---	--	--

DEVELOPMENT/SAMPLING

Well Developed?	N		
-----------------	---	--	--

Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

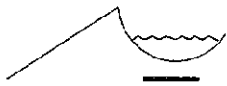
Ground Surface Elevation (ft): 3725.6

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-11A	GRAB			0.0 - 0.2'		0.0 - 0.3' GRAVEL grey to black ballast 0.3 - 5.0' Silty SAND Fine to medium grained, Silty moderate yellowish brown 10YR 5/4 dry loose, black cinder layer at 2' ~ .33' thick
	SSIA4-11B	SS		0.50	1.5 - 3.0'		
	SSIA4-11C	SS		0.67	3.0 - 4.0'		
	SSIA4-11D	SS		0.67	4.0 - 5.0'		
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-12

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used:

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
----------------------	--

Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.3

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-12A	GRAB			0.0 - 0.2'		0.0 - 0.5' DEBRIS Bricks (refractory)
							0.5 - 1.5' Silty SAND fine to medium grained, Silty, pale yellowish brown 10YR 6/2
	SSIA4-12B	SS	.1		1.5 - 3.0'		1.5 - 5.0' SLAG Black angular
	SSIA4-12C	SS	NR		3.0 - 4.0'		
	SSIA4-12D	SS	NR		4.0 - 5.0'		
5							

GEOTECH 0734RLGPJ HYD-TUC.GDT 7/16/98



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-13

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.1

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-13A	GRAB			0.0 - 0.2'		0.0 - 4.0' Silty SAND Fine to medium grained, Silty loose, moderate yellowish brown 10YR 5/4 dry
	SSIA4-13B	SS		1.00	1.5 - 3.0'		
	SSIA4-13C	SS		0.50	3.0 - 4.0'		
	SSIA4-13D	SS			4.0 - 5.0' No Recovery		4.0 - 5.0' SLAG Black angular
5							

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HYDROMETRICS INC.
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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-14

Date Hole Started: 10/28/97 Date Hole Finished: 10/28/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-Inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF

INTERVAL

5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3725.9

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-14A	GRAB		0.0 - 0.2'			0.0 - 0.3'
	SSIA4-14A2	GRAB		0.0 - 0.2'			GRAVEL grey to black ballast
							0.3 - 5.0'
							Silty SAND Fine to medium grained, Silty, dark yellowish brown 10YR 4/2, dry
	SSIA4-14B	SS		0.50	1.5 - 3.0'		
	SSIA4-14C	GRAB			3.0 - 4.0'		
	SSIA4-14D	GRAB			4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-15

Date Hole Started: 10/28/98 Date Hole Finished: 10/28/98

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF 5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.9

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-15A	GRAB		0.0 - 0.2'			0.0 - 0.3' GRAVEL grey to black ballast
							0.3 - 5.0' Silty SAND with Gravels Fine to medium, Silty, with Fine gravels, moderate yellowish brown, 10YF 5/4
	SSIA4-15B	GRAB		1.5 - 3.0'			
	SSIA4-15C	SS		3.0 - 4.0'			
	SSIA4-15D	SS		4.0 - 5.0'			
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-16

Date Hole Started: 10/28/98 Date Hole Finished: 10/30/98

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Surface Casing Height (ft):

Date: NA

Riser Height (ft):

MP Description: Ground Surface

Ground Surface Elevation (ft): 3726.4

MP Height Above or Below Ground (ft): 0

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-16A	GRAB			0.0 - 0.2'		0.0 - 0.3' GRAVEL grey to black ballast
							0.3 - 5.0' Gravelly SAND with Silt Fine to medium grained, Silty with some fine Gravel, moderate yellowish brown, 10YR 5/4, dry loose
	SSIA4-16B	SS		1.00	1.5 - 3.0'		
	SSIA4-16C	SS		1.00	3.0 - 4.0'		
	SSIA4-16D	SS		0.50	4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-17

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.3

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-17A	GRAB		0.0 - 0.2'			0.0 - 0.2'
	SSIA4-17A2	GRAB		0.0 - 0.2'			GRAVEL gray to black ballast 0.2 - 4.0'
							Gravelly SAND with Silt Fine to medium grained, Silty, Gravelly, moderate yellowish brown, 10 YR 5/4, dry dense
	SSIA4-17B	GRAB		1.5 - 3.0'			
	SSIA4-17C	SS		0.50	3.0 - 4.0'		
	SSIA4-17D	SS		0.50	4.0 - 5.0'		4.0 - 5.0'
							Silty Sandy GRAVEL Fine to coarse, Silty, Sandy, moderate yellowish brown 10 YR 5/4, dry dense

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-18

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING	
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Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	Y	XRF
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.5

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-18A	GRAB			0.0 - 0.2'		0.0 - 0.3' GRAVEL grey to black ballast 0.3 - 5.0' Gravelly SAND with Silt Fine to medium grained, Silty, Gravelly, moderate yellowish brown, 10YR 5/4 dry dense weathered andisite
	SSIA4-18B	GRAB			1.5 - 3.0'		
	SSIA4-18C	SS		1.00	3.0 - 4.0'		
	SSIA4-18D	SS		0.67	4.0 - 5.0'		
5							

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-19

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	
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5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.6

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-19A	GRAB			0.0 - 0.2'		0.0 - 0.3' GRAVEL grey to black ballast
							0.3 - 2.0' Silty SAND Medium grained, Silty, dark yellowish orange, 10YR 6/6, dry medium dense
	SSIA4-19B	SS		0.67	1.5 - 3.0'		
							2.0 - 5.0' Gravelly SAND with Silt Fine to medium grained, Silty, Gravelly, pale yellowish orange 10YR 8/6 dry dense weathered andisite
	SSIA4-19C	SS		0.67	3.0 - 4.0'		
	SSIA4-19D	SS		0.50	4.0 - 5.0'		

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Tucson, Arizona

Soil Boring Log

Hole Name: SSI A4-20

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	Y	XRF	5 foot intervals
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.4

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-20A SSIA4-20A2	GRAB GRAB			0.0 - 0.2' 0.0 - 0.2' duplicate		0.0 - 1.5' Gravelly SAND with Silt Fine to medium grained, Silty with some fine Gravel, moderate yellowish brown, 10YR 5/4 dry, medium dense
	SSIA4-20B	SS		0.83	1.5 - 3.0'		1.5 - 5.0' Gravelly SAND with Silt Fine to medium grained, Gravelly, Silty, pale yellowish orange, 10YR 8/6, dry dense weathered andisite
	SSIA4-20C	SS		0.67	3.0 - 4.0'		
	SSIA4-20D	GRAB			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-21

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION Y/N DESCRIPTION INTERVAL

Well Installed? N

Surface Casing Used? N

Screen/Perforations? N

Sand Pack? N

Annular Seal? N

Surface Seal? N

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? Y XRF 5 foot intervals

Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3725.9

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-21A	GRAB			0.0 - 0.2'		0.0 - 0.3' GRAVEL grey to black ballast
							0.3 - 1.0' Gravelly SAND with Silt fine to medium grained, Silty, Gravelly, moderately yellowish brown, 10YR 5/4 dry dense
	SSIA4-21B	GRAB			1.5 - 3.0'		1.0 - 5.0' Sandy Silty GRAVEL Fine to coarse, Sandy, Silty, pale yellowish orange 10YR 8/6 dry dense, weathered andisite
	SSIA4-21C	GRAB			3.0 - 4.0'		
	SSIA4-21D	GRAB			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-22

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.4

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-22A	GRAB			0.0 - 0.2'		0.0 - 0.3' GRAVEL grey to black ballast 0.3 - 5.0' Gravelly SAND with Silt Fine to coarse, Sandy, Silty, pale yellowish orange, 10YR 8/6, dry dense weathered andisite
	SSIA4-22B	SS		0.67	1.5 - 3.0'		
	SSIA4-22C	SS		0.50	3.0 - 4.0'		
	SSIA4-22D	GRAB			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

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Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-23

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.2

MP Elevation (ft):

Remarks:

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DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-23A	GRAB		0.0 - 0.2'			0.0 - 0.3'
	SSIA4-23A2	GRAB		0.0 - 0.2'			GRAVEL grey to black ballast 0.3 - 5.0'
							Silty SAND with Gravel Fine to medium grained, Silty, Gravelly, moderate yellowish brown, 10YR 5/4, dry dense, weathered andesite
	SSIA4-23B	SS		1.5 - 3.0'			
	SSIA4-23C	SS		3.0 - 3.9'			
	SSIA4-23D	GRAB		4.0 - 4.9'			
5							



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Tucson, Arizona

Soil Boring Log

Hole Name: SSI A4-24

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N
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Water Samples Taken?	N
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Boring Samples Taken?	N
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3725.2

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-24A	GRAB			0.0 - 0.2'		0.0 - 1.5' Gravelly SAND with Silt Fine to medium grained, Silty, moderately yellowish brown, 10YR 5/4, dry with some Gravel
	SSIA4-24B	SS		0.87	1.5 - 3.0'		1.5 - 5.0' Silty GRAVEL with Sand Fine to coarse, Silty, Sancy, pale yellowish orange, dry dense weathered andesite
	SSIA4-24C	GRAB			3.0 - 4.5'		
	SSIA4-24D	GRAB			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-25

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3723.5

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-25A	GRAB		0.0	0.0 - 0.2'		0.0 - 5.0' Silty SAND with Gravel Fine to medium grained Sand, Silty with some fine Gravel, pale yellowish brown, 10YR 6/2, dry and loose, brack discoloration at tip of last interval 4.5 - 5.0
	SSIA4-25B	SS		0.50	1.5 - 3.0'		
	SSIA4-25C	SS		0.50	3.0 - 4.0'		
	SSIA4-25D	SS		0.67	4.0 - 5.0'		
5							



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-26

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3725.8

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA-26A SSIA-26A2	GRAB GRAB			0.0 - 0.2' 0.0 - 0.2' duplicate		0.0 - 0.3' GRAVEL grey to black ballast 0.3 - 2.0' Gravelly SAND with Silt Fine to medium grained, Silty, Gravelly, moderate yellowish brown, 10YR 5/4, dry, dense
	SSIA-26B	SS		0.67	1.5 - 3.0'		
	SSIA-26C	GRAB			3.0 - 4.0'		2.0 - 5.0' GRAVEL with Silts and Sands fine to large, silty sandy with cobbles, pale yellowish orange, 10YR 8/6, dry very dense weathered andisite
	SSIA-26D	GRAB			4.0 - 5.0'		
5							

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HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-27

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 2.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3725.3

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-27A	GRAB			0.0 - 0.2'		0.0 - 0.2' GRAVEL grey to black ballast
							0.2 - 2.0' Silty SAND fine to medium grained, Silty, dusky yellowish brown, 10YR 2/2, dry dense
	SSIA4-27B	SS		0.33	1.5 - 3.0'		
							2.0 - 2.5' Gravelly SAND with Silt Fine to medium grained, Silty, Gravelly, very pale orange, 10 YR 8/2, dry, very dense
					3.0 - 4.0' no recovery		
					4.0 - 5.0' no recovery		

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HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Soil Boring Log

Hole Name: SSIA4-28

Date Hole Started: 10/30/97 Date Hole Finished: 10/30/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: HDK

Drilling Company: Layne Christensen Co.

Driller: Jorge

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Soil Samples

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 2.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	N		
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Surface Casing Used?	N		
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Screen/Perforations?	N		
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Sand Pack?	N		
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Annular Seal?	N		
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Surface Seal?	N		
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DEVELOPMENT/SAMPLING

Well Developed?	N		
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Water Samples Taken?	N		
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Boring Samples Taken?	N		
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Static Water Level Below MP: NA

Date: NA

MP Description: Ground Surface

MP Height Above or Below Ground (ft): 0

Surface Casing Height (ft):

Riser Height (ft):

Ground Surface Elevation (ft): 3726.0

MP Elevation (ft):

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	BLOW COUNT	RECOVERY (feet)	DRILLING AND GEOTECHNICAL NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	SSIA4-28A	GRAB		0.0 - 0.2'			0.0 - 0.3' GRAVEL grey to black ballast
							0.3 - 2.5' Gravelly SAND with Silt Fine to medium grained, Silty, Gravelly, dark yellowish brown, 10YR 4/2, dry, dense with cobbles
	SSIA4-28B	SS		0.50	1.5 - 3.0'		