

**INSTALLATION RESTORATION
PROGRAM**

**REMEDIAL INVESTIGATION
REPORT ADDENDUM FOR
IRP SITE NO. 6**

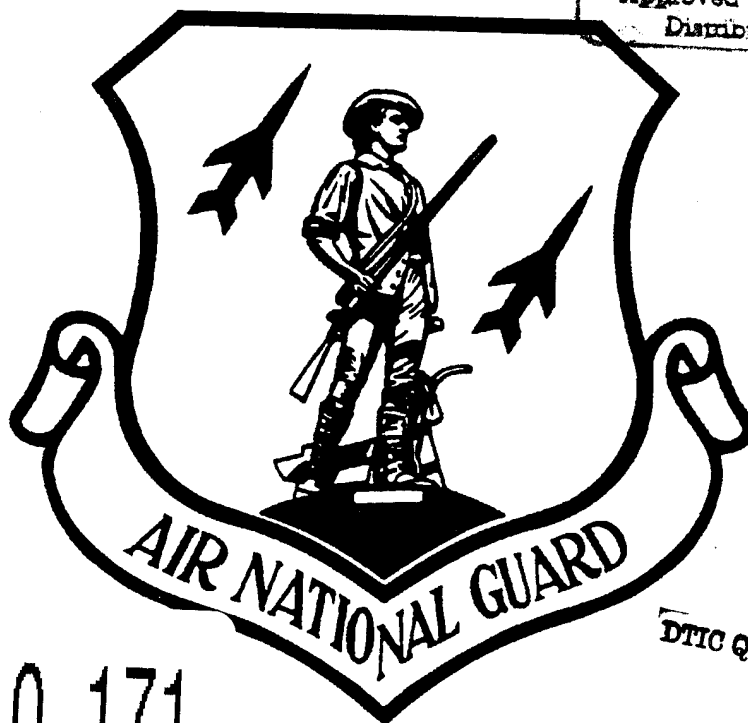
**VOLUME II
APPENDIX A-I**

**161st AIR REFUELING GROUP
ARIZONA AIR NATIONAL GUARD
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA**

MAY 1996

DISTRIBUTION STATEMENT E

**Approved for public release
Distribution Unlimited**



DTIC QUALITY INSPECTED 2

19960610 171

**HQ ANG/CEVR
ANDREWS AFB, MARYLAND**

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE MAY 1996	3. REPORT TYPE AND DATES COVERED Remedial Investigation Report
---	-----------------------------------	--

4. TITLE AND SUBTITLE Remedial Investigation Report Addendum for IRP Site No. 6, Volume II Arizona National Guard, 161st Air Refueling Group, Sky Harbor International Airport, Phoenix, Arizona	5. FUNDING NUMBERS
--	---------------------------

6. AUTHOR(S) NA	
---------------------------	--

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Operational Technologies Corp. 4100 N.W. Loop 410, Suite 230 San Antonio, TX 78229-4253	8. PERFORMING ORGANIZATION REPORT NUMBER
--	---

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) ANG/CEVR 3500 Fetchet Avenue Andrews AFB MD 20762-5157	10. SPONSORING/MONITORING AGENCY REPORT NUMBER
--	---

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited	12b. DISTRIBUTION CODE
--	-------------------------------

13. ABSTRACT (Maximum 200 words) Remedial Investigation Report Addendum for IRP Site No. 6, Arizona National Guard, 161st Air Refueling Group, Sky Harbor International Airport, Phoenix, Arizona. This is the second volume of a two volume addendum to the Remedial Investigation Report, May 1996. Site 6 - POL Facility was investigated under the Installation Restoration Program. Soil and groundwater samples were collected and analyzed. Remedial Action was recommended for both groundwater and soil associated with the site. This volume contains the analytical data, field notes, and QA/QC documentation.

14. SUBJECT TERMS Installation Restoration Program; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); Air National Guard; Remedial Investigation, Arizona Air National Guard, Phoenix, AZ	15. NUMBER OF PAGES 167
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT None
--	---	--	---

**INSTALLATION RESTORATION
PROGRAM**

**REMEDIAL INVESTIGATION
REPORT ADDENDUM
FOR IRP SITE NO. 6**

**VOLUME II
APPENDICES A-I**

**161st AIR REFUELING GROUP
ARIZONA AIR NATIONAL GUARD
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA**

MAY 1996

Prepared For

**HQ ANG/CEVR
ANDREWS AFB, MARYLAND**

Prepared By

**Operational Technologies Corporation
4100 N.W. Loop 410, Suite 230
San Antonio, Texas 78229-4253
(210) 731-0000**

APPENDIX A
BORING LOGS

SECTION A INTRODUCTION

Boring log diagrams have been compiled for each borehole and monitoring well location drilled during this study. Diagrams are presented in numerical order. The borehole identification is keyed to the borehole (BH) or monitoring well designation (MW) and number (i.e., 06-016BH or 06-018MW). The diagrams combine in one page both a verbal and graphical illustration of the lithology encountered during drilling, water level data encountered during drilling and surveyed elevation of the ground surface at the borehole location.

The sample description includes the color, texture, mineralogy, moisture and consistency for each sample collected. The proportions of sand, gravel, and fines are visually estimated and described using the following semi-quantitative adjectives:

<u>Adjective</u>	<u>Estimated Percent of Total Sample</u>
Trace	0 - 5
Few	5 - 10
Little	15 - 25
Some	30 - 45
Mostly	50 - 100

Proportional adjectives precede the lithology, such as little gravel (15 - 25% gravel) and trace of silt (0 - 5% silt).

Lithologic symbols are derived and generalized from the Unified Soil Classification System shown in Figure A.1.

In the boring logs that follow, the column headings have the following meanings:

Depth:	Depth in feet below land surface.
Blows/6 in.:	The number of blow required to drive a split-spoon sampler each of the 6-inch intervals.
Field Screening:	The reading of photoionization compounds detected in soil sample by a photoionization detector.

Sampled: The interval of sample cored below land surface.

Percent Recovery: The percentage of sample recovered in the split-spoon sampler per sampling run.

SKY HARBOR RI ADDENDUM

161st ARG, PHOENIX, ARIZONA

O P T E C H

OPERATIONAL TECHNOLOGIES CORPORATION

LOG OF BORING 06-016BH

Project No.:	1315-227	Sampling Method:	Split Spoon
Logged By:	Michael A. Giles	Depth Drilled:	55 ft.
Drilling Co.:	North American	Depth To Water:	NA
Driller:	Gabby Rodriguez	Date Measured:	NA
Date Drilled:	06/27/95	Surface Elevation:	1,115.08 ft.
Drilling Method:	Dual Wall Percussion		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING					
						PID (ppm)	ATHA (ppm)	-	-		
5					Gravel, sandy; gravel (65%) is 1/2" to 6", loose, dry, gray to reddish-brown; sand (35%) is fine-grained to coarse-grained, poorly sorted, brown.						
10											
15											
20											
25											
30											
35											
40											
45											
50											
55					Wet at 54 ft.						
60					Boring Terminated at 55 ft. Note: Grouted with bentonite cement						

SKY HARBOR RI ADDENDUM
 161st ARG, PHOENIX, ARIZONA

O P T E C H
 OPERATIONAL TECHNOLOGIES
 CORPORATION

LOG OF BORING 06-018MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	56.02 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/28/95	Surface Elevation:	1109.04 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1108.78 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
5					Gravel, sandy; gravel (70%) is 1/2" to 6", loose, poorly sorted, gray, reddish brown, and off white, dry; sand (30%) is fine-grained to coarse-grained, poorly sorted, brown.	-	-	-	-	
10										
15										
20										
25										
30										
35										
40										
45										
50										


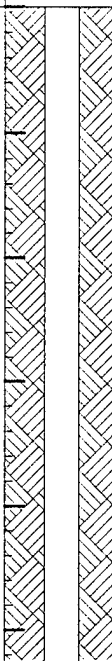
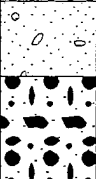


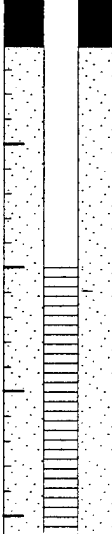
LOG OF BORING 06-018MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	56.02 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/28/95	Surface Elevation:	1109.04 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1108.78 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
55					- wet at 54 ft.					
65					Sand, gravelly; sand (60%) is medium-grained to very coarse-grained, poorly sorted, brown; gravel (40%) is 1/2" to 2", gray, loose.	-	-	-	-	
70					Gravel, sandy; gravel (70%) is 1/2" to 6", loose, gray, off-white, poorly sorted; sand (30%) is fine-grained to coarse-grained, poorly sorted, loose, brown.	-	-	-	-	
92					Boring Terminated at 92 ft.					

LOG OF BORING 06-019MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	59.41 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/28/95	Surface Elevation:	1110.01 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1111.94 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
5					Gravel, sandy; gravel (70%) is 1/2" to 6", loose, poorly sorted, gray, off-white, and reddish-brown, dry; sand (30%) is medium-grained to coarse-grained, moderately sorted, loose, brown, dry.	-	-	-	-	
20					Sand, slightly gravelly; sand (70%) is very coarse-grained to fine-grained, poorly sorted, loose, gray; gravel (30) is 1/2" to 2", loose, poorly sorted, subangular, gray to reddish-brown, dry.	-	-	-	-	
25					Gravel, sandy; gravel (70%) is 1/2" to 6", loose, poorly sorted, gray, off-white, and reddish-brown; sand (30%) is fine-grained to very coarse-grained, loose, brown, dry.					

LOG OF BORING 06-022MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	54.06 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/25/95	Surface Elevation:	1114.93 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1114.21 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
5					Sand, gravelly; sand (50%) is fine-grained to coarse-grained, loose, poorly sorted, brown, dry; gravel (50%) is 1/2" to 6", loose, gray to reddish-brown, subrounded.	-	-	-	-	
10					Gravel, sandy; gravel (70%) is 1/2" to 6", loose, reddish-brown to gray, subrounded.	-	-	-	-	
15										
20										
25										
30										
35										
40										
45										
50										

SKY HARBOR RI ADDENDUM

161st ARG, PHOENIX, ARIZONA

O P T E C H

OPERATIONAL TECHNOLOGIES
CORPORATION

LOG OF BORING 06-022MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	54.06 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/25/95	Surface Elevation:	1114.93 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1114.21 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
55					- wet at 55 ft.					
60										
65										
70										
75										
80										
85										
90										
92					Boring Terminated at 92 ft.					
95										
100										

LOG OF BORING 06-023MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	55.73 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/20/95	Surface Elevation:	1114.79 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1114.42 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
5					Sand, gravelly; sand (90%) is fine-grained to medium-grained, poorly sorted, loose, light brown, dry; gravel (10%) is 1/2" to 6", subangular to subrounded.	-	-	-	-	
10										
15					Sand, gravelly; sand (80%) is fine-grained to medium-grained, moderately sorted, loose, reddish-brown; gravel (20%) is 1/2" to 3", subangular to subrounded.	-	-	-	-	
20					Sand, gravelly; sand (90%) is fine-grained to coarse-grained, poorly sorted, loose, light brown; gravel is 1/2" to 3", subangular to subrounded.	-	-	-	-	
25					Gravel, sand; gravel (70%) is 1/2" to 6", loose, gray and reddish-brown, fragmented, subangular; sand is coarse-grained to fine-grained, poorly sorted, brown.					
30										
35										
40										
45										
50										

LOG OF BORING 06-023MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	55.73 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/20/95	Surface Elevation:	1114.79 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1114.42 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
55					- wet at 56 ft.					
75					Sand, coarse-grained, well-sorted, wet, subangular to subrounded.	-	-	-	-	
80					Gravel, sandy; gravel (60%) is 1/2" to 6", loose, gray to reddish-brown, fragmented; sand (40%) is fine-grained to coarse-grained, poorly sorted, brown.	-	-	-	-	
92					Boring Terminated at 92 ft.					

SKY HARBOR RI ADDENDUM

161st ARG, PHOENIX, ARIZONA

O P T E C H

OPERATIONAL TECHNOLOGIES CORPORATION


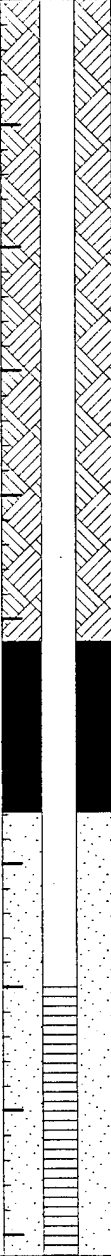


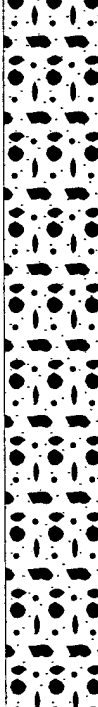
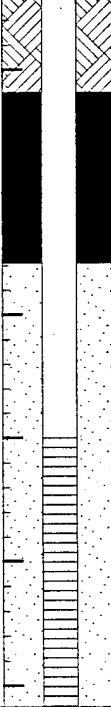
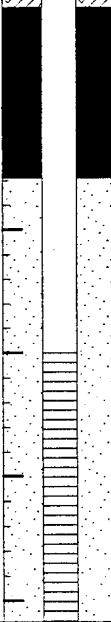
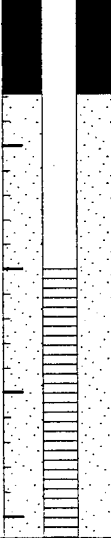
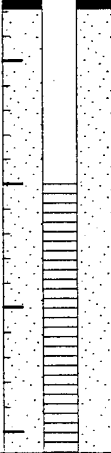
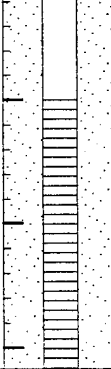
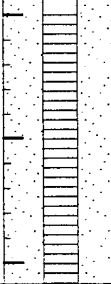
LOG OF BORING 06-024MW

Project No.:	1315-227	Sampling Method:	Split-spoon Sampler
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	55.39 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/24/95	Surface Elevation:	1115.62 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1115.12 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
5					Sand, gravelly; sand (70%) is fine-grained to coarse-grained, poorly sorted, brown, dry; gravel (30%) is 1/4" to 2", gray, red, off-white.	n/a	n/a	-	-	
10										
15					Gravel, sandy; gravel is (60%), 1/2" to 6" poorly sorted, loose, subrounded, fragmented pieces are subangular, red, green, gray, reddish-brown; sand (40%) is fine-grained to coarse-grained, poorly sorted, brown.					
20										
25										
30										
35										
40										
45										
50										




















LOG OF BORING 06-025MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	55.07 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/21/95	Surface Elevation:	1115.94 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1115.56 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
5					Gravel, sandy; gravel (60%) is 1/2" to 4", loose, dry, reddish-brown to gray, subangular; sand (40%) is fine-grained to coarse-grained, poorly sorted, brown.	-	-	-	-	
15					Sand, gravelly; sand (80%) is coarse-grained, well sorted, subangular, loose, reddish-brown, dry; gravel (20%) is 1/2" to 2", subrounded to subangular, white, reddish-brown, gray. - medium-grained sand 20 ft. to 22 ft., moderately sorted.	-	-	-	-	
25					Gravel, sandy; gravel (70%) is 1/2" to 4", poorly sorted, loose, off-white to brown, subrounded to subangular; sand (30%) is fine-grained to medium-grained, moderately sorted, brown.	-	-	-	-	
30										
35										
40										
45										
50										

LOG OF BORING 06-025MW

Project No.:	1315-227	Sampling Method:	N/A
Logged By:	Michael A. Giles	Depth Drilled:	92 ft.
Drilling Co.:	North American	Depth To Water:	55.07 ft. BTOC
Driller:	Gabby Rodriguez	Date Measured:	07/13/95
Date Drilled:	06/21/95	Surface Elevation:	1115.94 ft.
Drilling Method:	Dual Wall Percussion	TOC Elevation:	1115.56 ft.

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
55										
60					Sand, gravelly; sand (60%) is medium-grained to coarse-grained, moderately sorted, brown, subrounded; gravel (40%) is 1/2" to 2", poorly sorted, wet. - water at 55 ft. to 60 ft.	-	-	-	-	
65					Gravel, sandy; gravel (60%) is 1/2" to 3", poorly sorted, subangular, brown; sand (40%) is medium-grained to coarse-grained, moderately sorted, brown.					
70										
75										
80										
85										
90										
92					Boring Terminated at 92 ft.					
95										
100										

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

WELL CONSTRUCTION LOGS

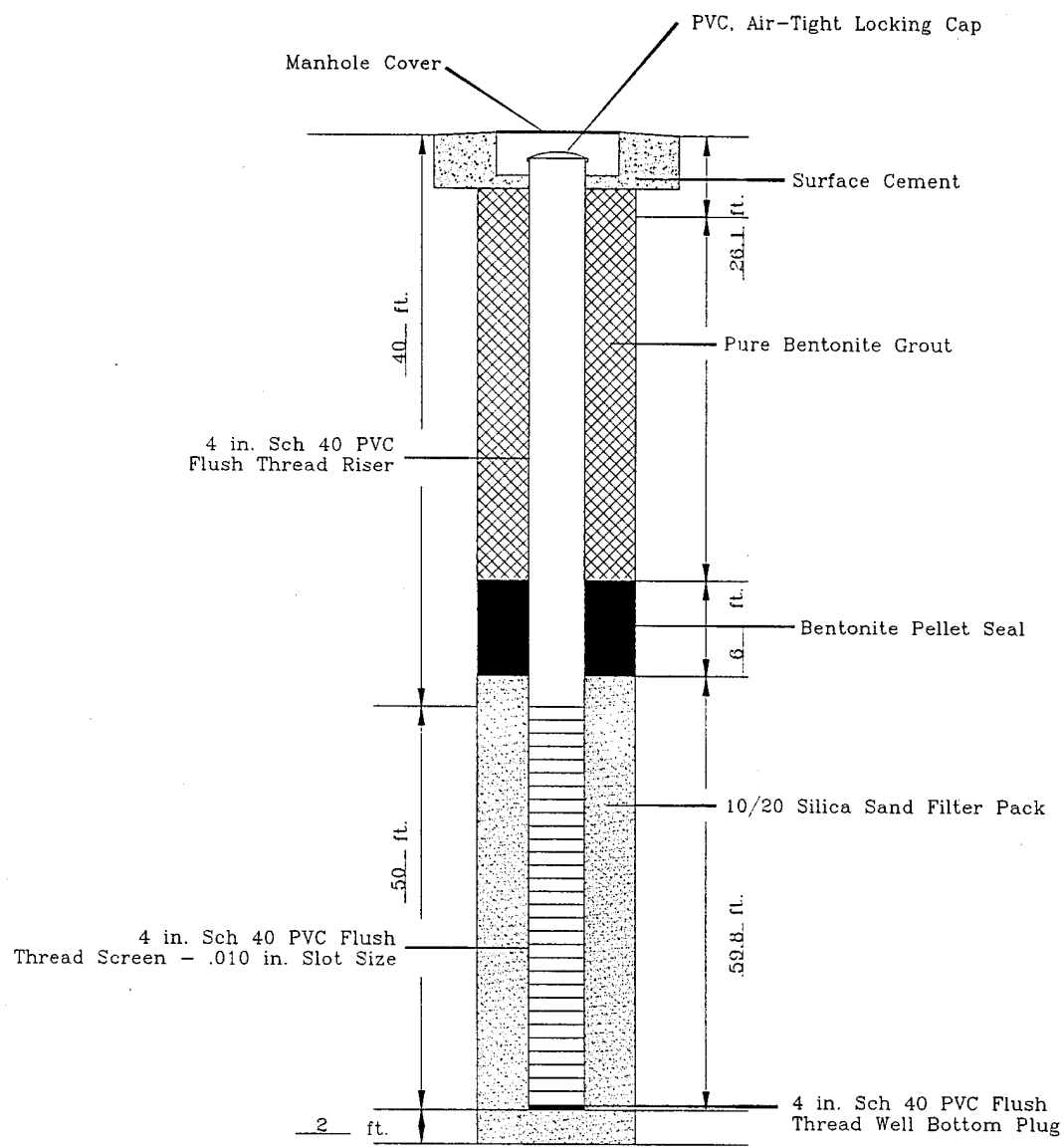
THIS PAGE INTENTIONALLY LEFT BLANK

SECTION B INTRODUCTION

Well construction logs have been completed for each monitoring well installed as part of the Remedial Investigation Addendum. Diagrams are presented in numerical order. The diagrams include water level data and well construction information for each individual well. Well construction information includes an outline of the wellbore, depth of the borehole, the screened interval, and the sand packed and bentonite seal interval.

THIS PAGE INTENTIONALLY LEFT BLANK

Project: <u>Sky Harbor RI Addendum</u>	Date Installed: <u>June 28, 1995</u>
Town/City: <u>Phoenix</u>	Drilling Contractor: <u>North American</u>
County: <u>Maricopa</u> State: <u>Arizona</u>	Drilling Method: <u>AP-1000 Percussion</u>
TOC Elev: <u>1108.78'</u>	Borehole Diameter: <u>9"</u>
Ground Elev.: <u>1109.04'</u>	Development Technique: <u>Pumping</u>
Water Level: <u>56.02 feet below TOC</u>	
Total Well Depth: <u>92'</u>	Not To Scale



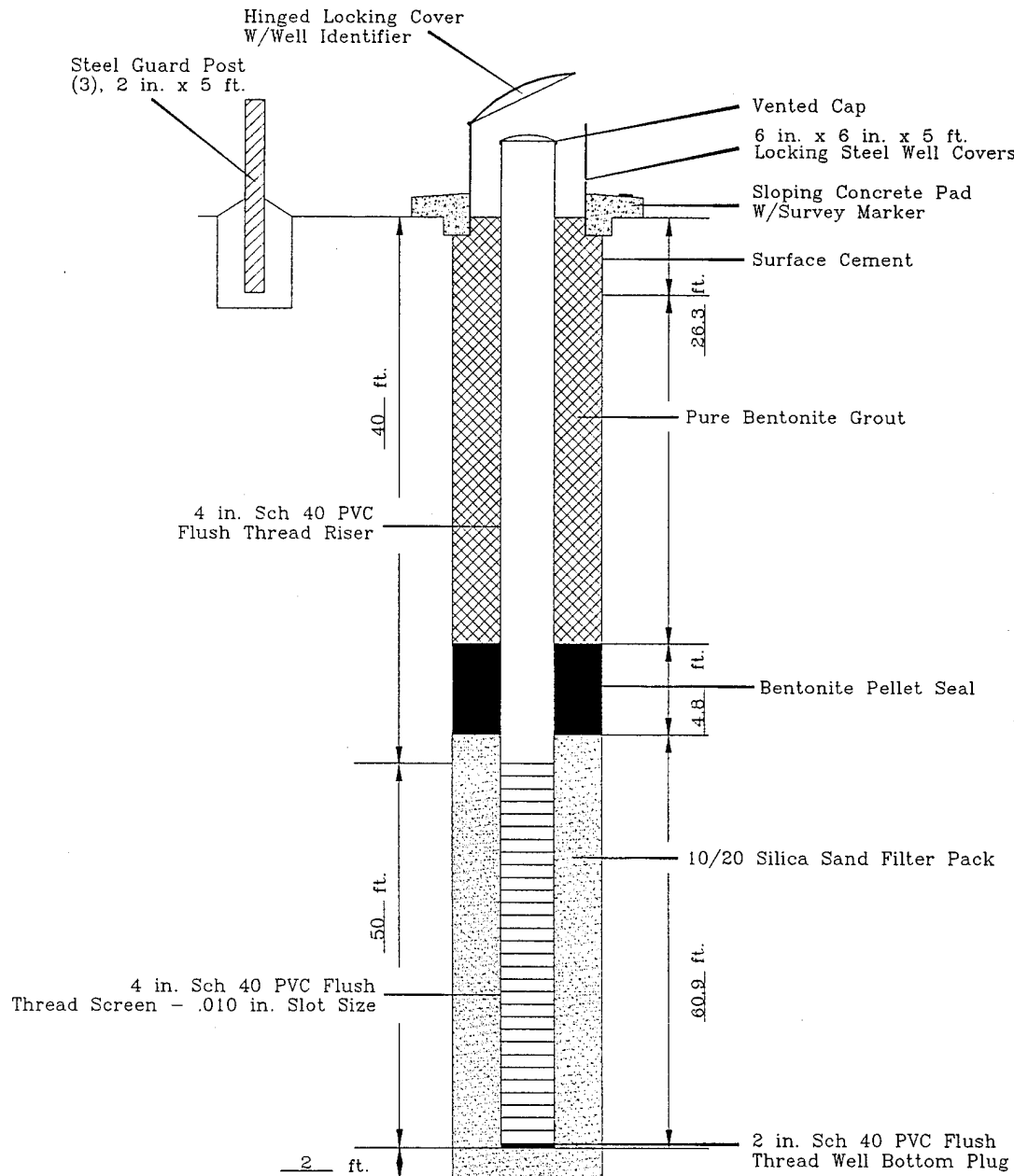
MONITORING WELL CONSTRUCTION LOG
 Well No. 06-018MW

OPTTECH
 OPERATIONAL TECHNOLOGIES
 CORPORATION

Project: Sky Harbor RI Addendum
 Town/City: Phoenix
 County: Maricopa State: Arizona
 TOC Elev.: 1111.94'
 Ground Elev.: 1110.01'
 Water Level: 59.41 feet below TOC
 Total Well Depth: 92'

Date Installed: June 28-29, 1995
 Drilling Contractor: North American
 Drilling Method: AP-1000 Percussion
 Borehole Diameter: 9"
 Development Technique: Pumping

Not To Scale



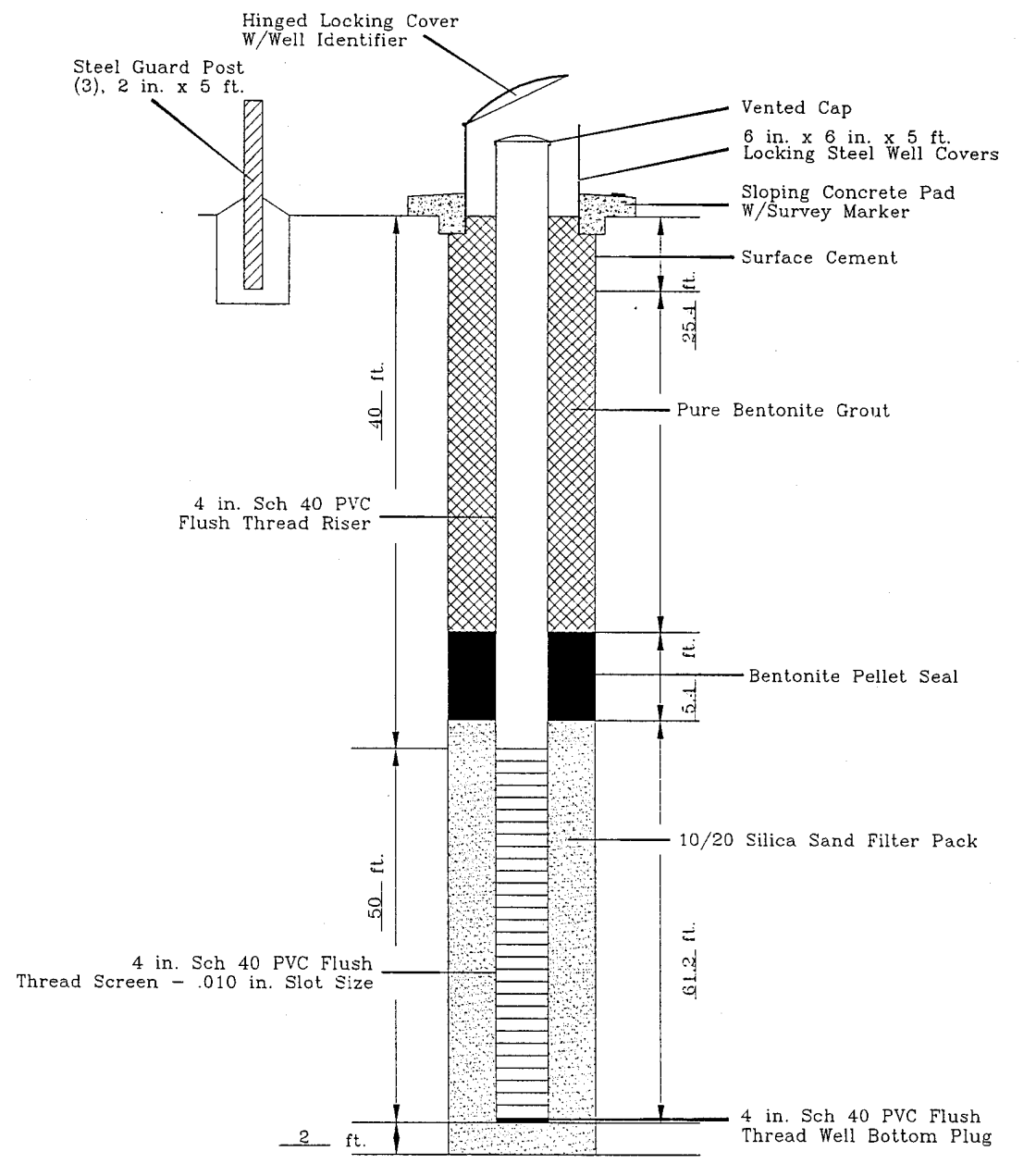
MONITORING WELL CONSTRUCTION LOG
 Well No. 06-019MW

OPTTECH
 OPERATIONAL TECHNOLOGIES
 CORPORATION

AUGUST 1995

SKYHARBOR MON-LOG

Project:	<u>Sky Harbor RI Addendum</u>	Date Installed:	<u>June 26, 1995</u>
Town/City:	<u>Phoenix</u>	Drilling Contractor:	<u>North American</u>
County:	<u>Maricopa</u> State: <u>Arizona</u>	Drilling Method:	<u>AP-1000 Percussion</u>
TOC Elev:	<u>1116.57'</u>	Borehole Diameter:	<u>9"</u>
Ground Elev.:	<u>1114.09'</u>	Development Technique:	<u>Pumping</u>
Water Level:	<u>55.5 feet below</u> TOC		
Total Well Depth:	<u>92'</u>		Not To Scale

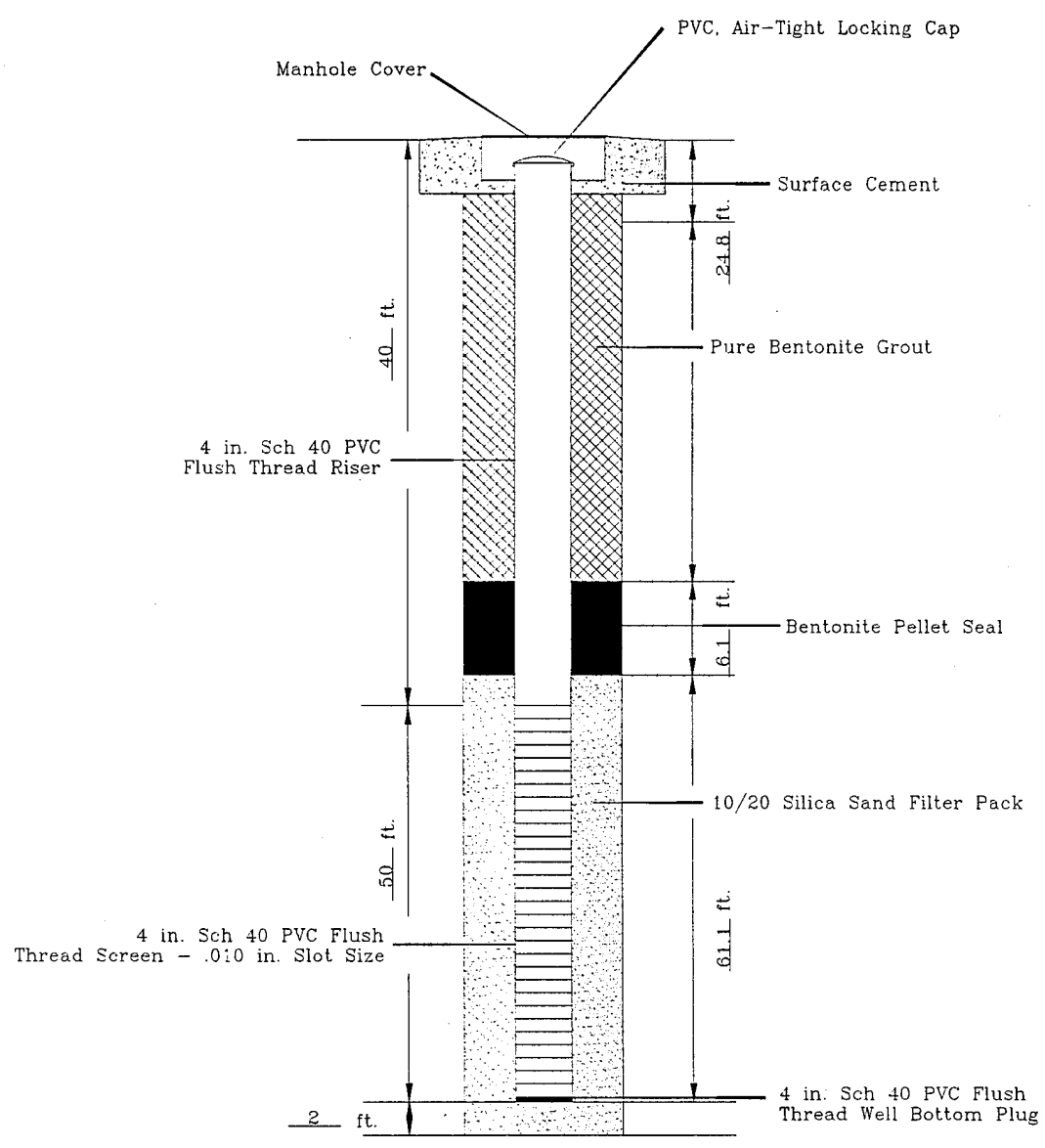


MONITORING WELL CONSTRUCTION LOG
 Well No. 06-020MW

OPTECH
 OPERATIONAL TECHNOLOGIES
 CORPORATION

AUGUST 1995 SKYHARBOR/MON-LOG

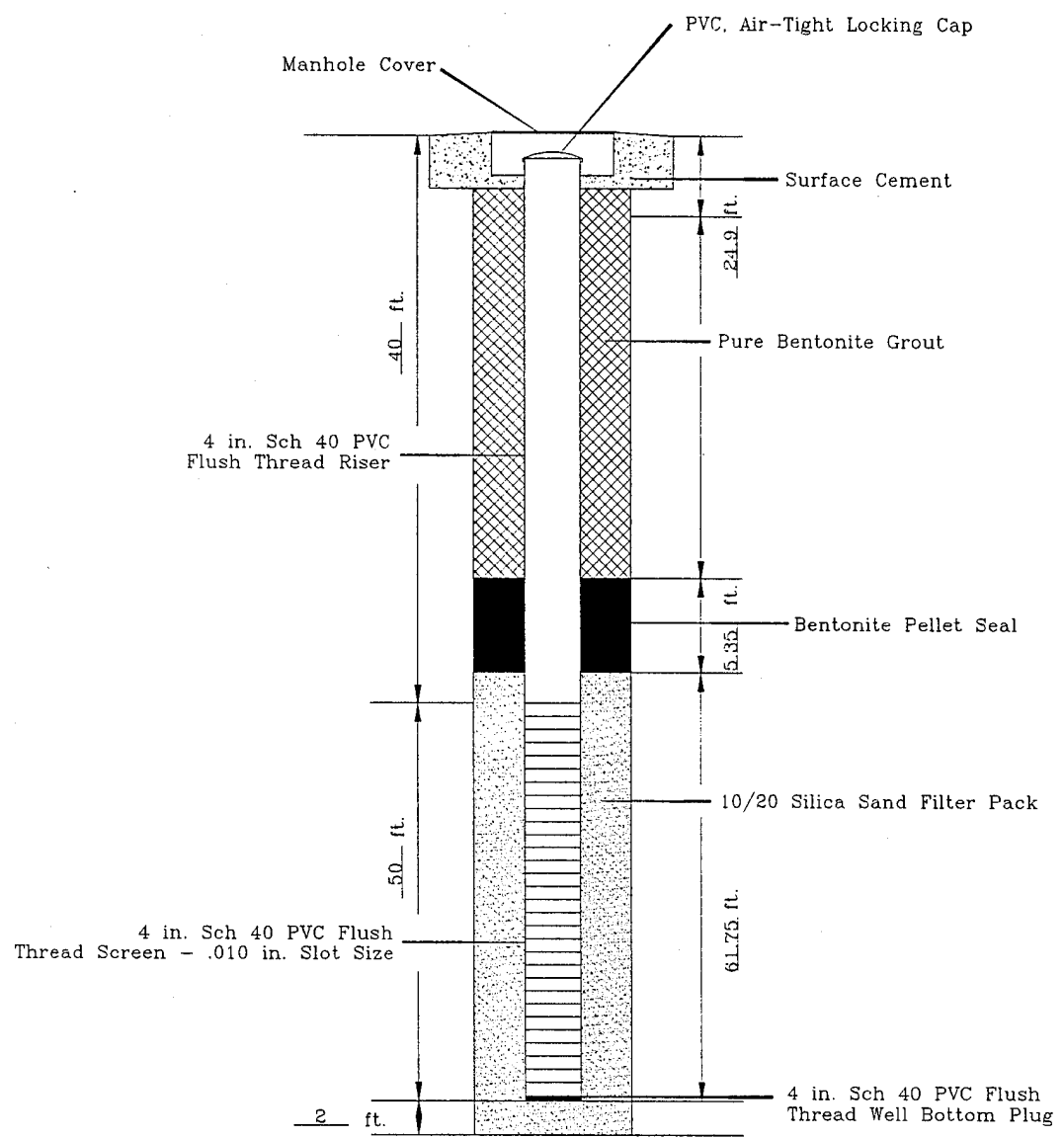
Project: <u>Sky Harbor RI Addendum</u>	Date Installed: <u>June 23, 1995</u>
Town/City: <u>Phoenix</u>	Drilling Contractor: <u>North American</u>
County: <u>Maricopa</u> State: <u>Arizona</u>	Drilling Method: <u>AP-1000 Percussion</u>
TOC Elev: <u>1114.31'</u>	Borehole Diameter: <u>9"</u>
Ground Elev.: <u>1114.52'</u>	Development Technique: <u>Pumping</u>
Water Level: <u>56.1 feet below TOC</u>	
Total Well Depth: <u>92'</u>	Not To Scale



MONITORING WELL CONSTRUCTION LOG
Well No. 06-021MW

OPTTECH
OPERATIONAL TECHNOLOGIES
CORPORATION

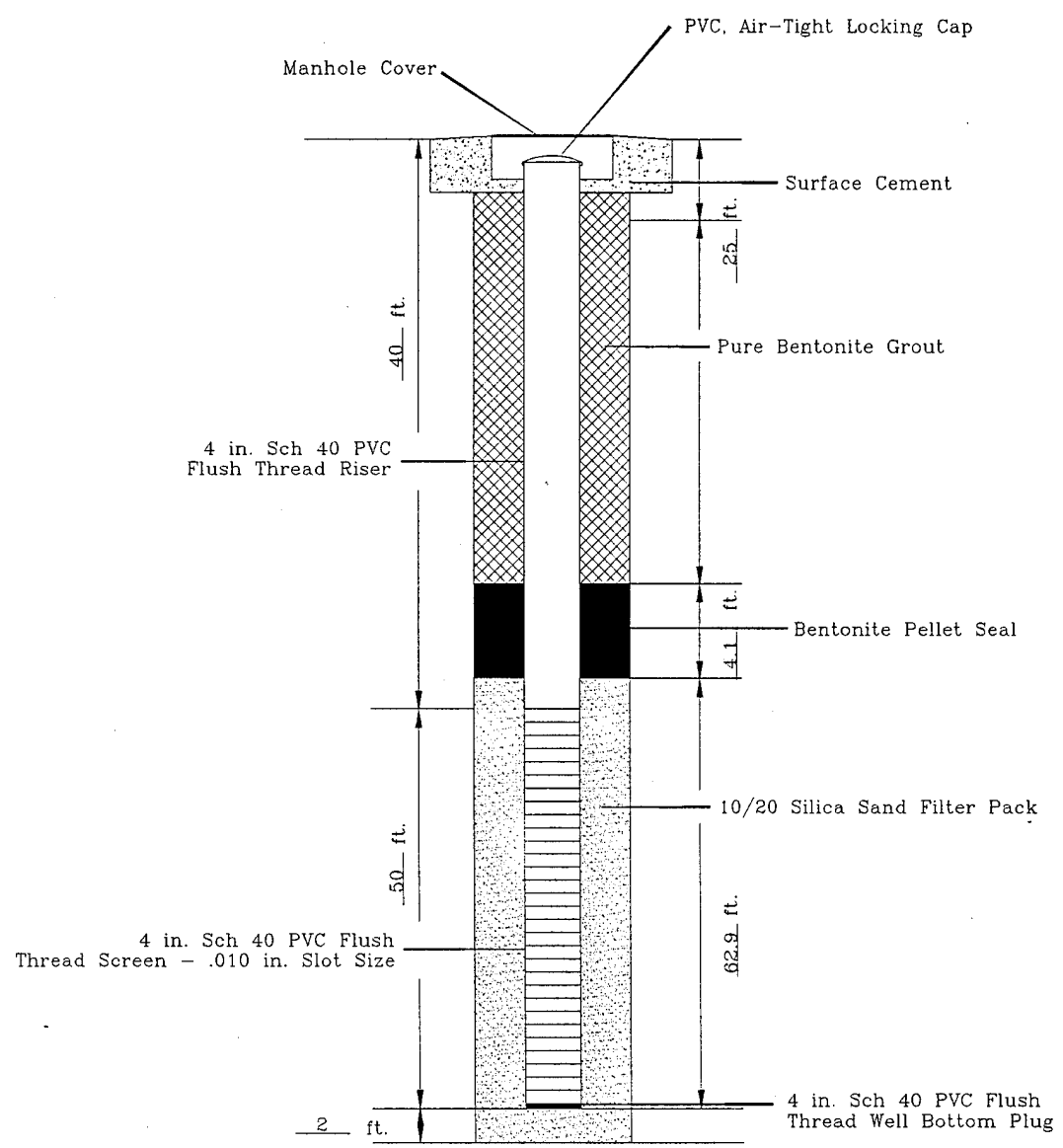
Project: <u>Sky Harbor RI Addendum</u>	Date Installed: <u>June 25-26, 1995</u>
Town/City: <u>Phoenix</u>	Drilling Contractor: <u>North American</u>
County: <u>Maricopa</u> State: <u>Arizona</u>	Drilling Method: <u>AP-1000 Percussion</u>
TOC Elev: <u>1114.21'</u>	Borehole Diameter: <u>9"</u>
Ground Elev.: <u>1114.93'</u>	Development Technique: <u>Pumping</u>
Water Level: <u>54.06 feet below</u> TOC	
Total Well Depth: <u>92'</u>	Not To Scale



MONITORING WELL CONSTRUCTION LOG
Well No. 06-022MW

OPTTECH
OPERATIONAL TECHNOLOGIES
CORPORATION

Project: <u>Sky Harbor RI Addendum</u>	Date Installed: <u>June 20, 1995</u>
Town/City: <u>Phoenix</u>	Drilling Contractor: <u>North American</u>
County: <u>Maricopa</u> State: <u>Arizona</u>	Drilling Method: <u>AP-1000 Percussion</u>
TOC Elev: <u>1114.42'</u>	Borehole Diameter: <u>9"</u>
Ground Elev.: <u>1114.79'</u>	Development Technique: <u>Pumping</u>
Water Level: <u>55.73 feet below TOC</u>	
Total Well Depth: <u>92'</u>	Not To Scale

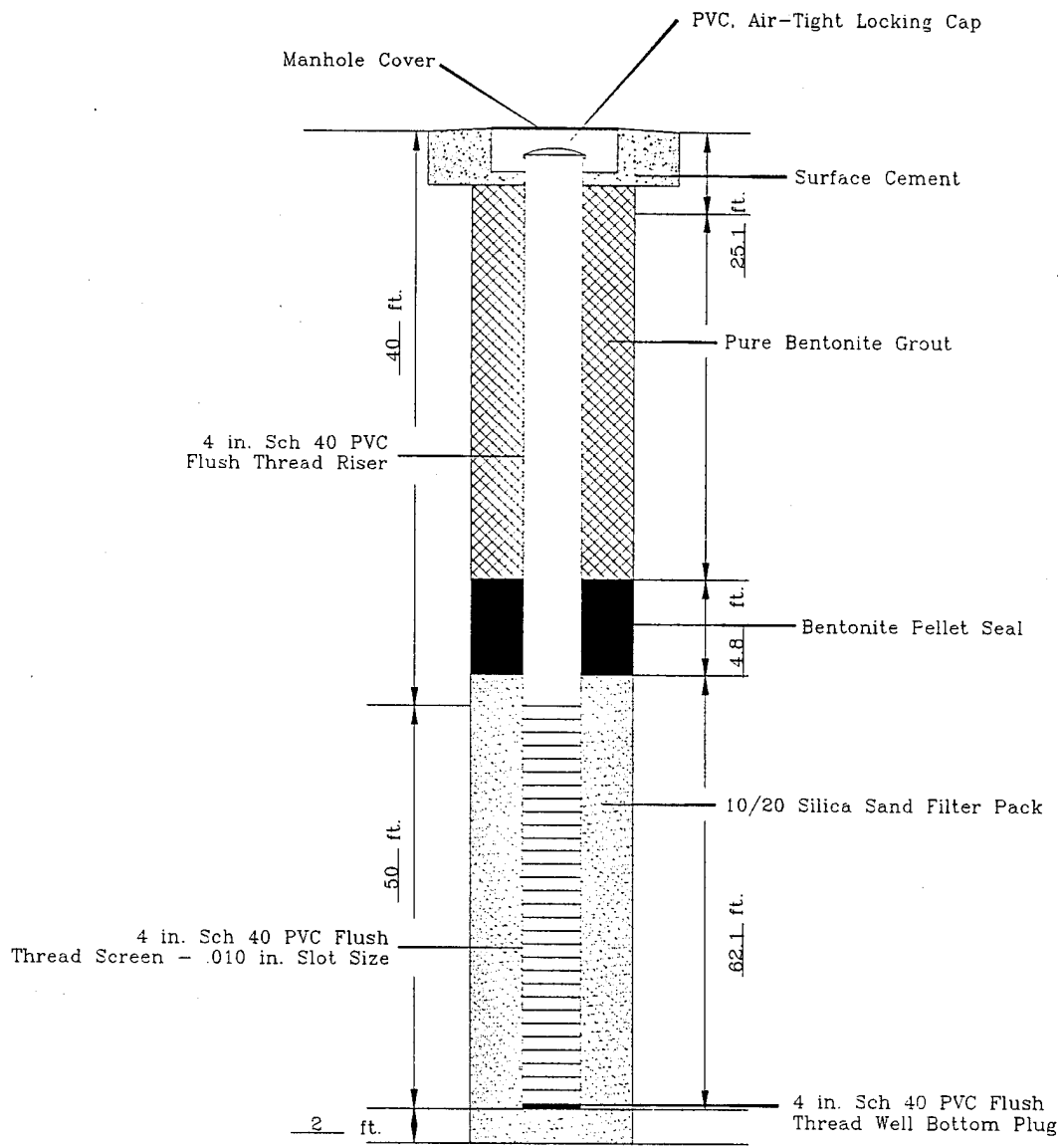


MONITORING WELL CONSTRUCTION LOG
Well No. 06-023MW

OPTTECH
OPERATIONAL TECHNOLOGIES
CORPORATION

AUGUST 1995 SKYHARBOR\FMON-LOG

Project: <u>Sky Harbor RI Addendum</u>	Date Installed: <u>June 24, 1995</u>
Town/City: <u>Phoenix</u>	Drilling Contractor: <u>North American</u>
County: <u>Maricopa</u> State: <u>Arizona</u>	Drilling Method: <u>AP-1000 Percussion</u>
TOC Elev: <u>1115.12'</u>	Borehole Diameter: <u>9"</u>
Ground Elev.: <u>1115.62'</u>	Development Technique: <u>Pumping</u>
Water Level: <u>55.39 feet below TOC</u>	
Total Well Depth: <u>92'</u>	Not To Scale



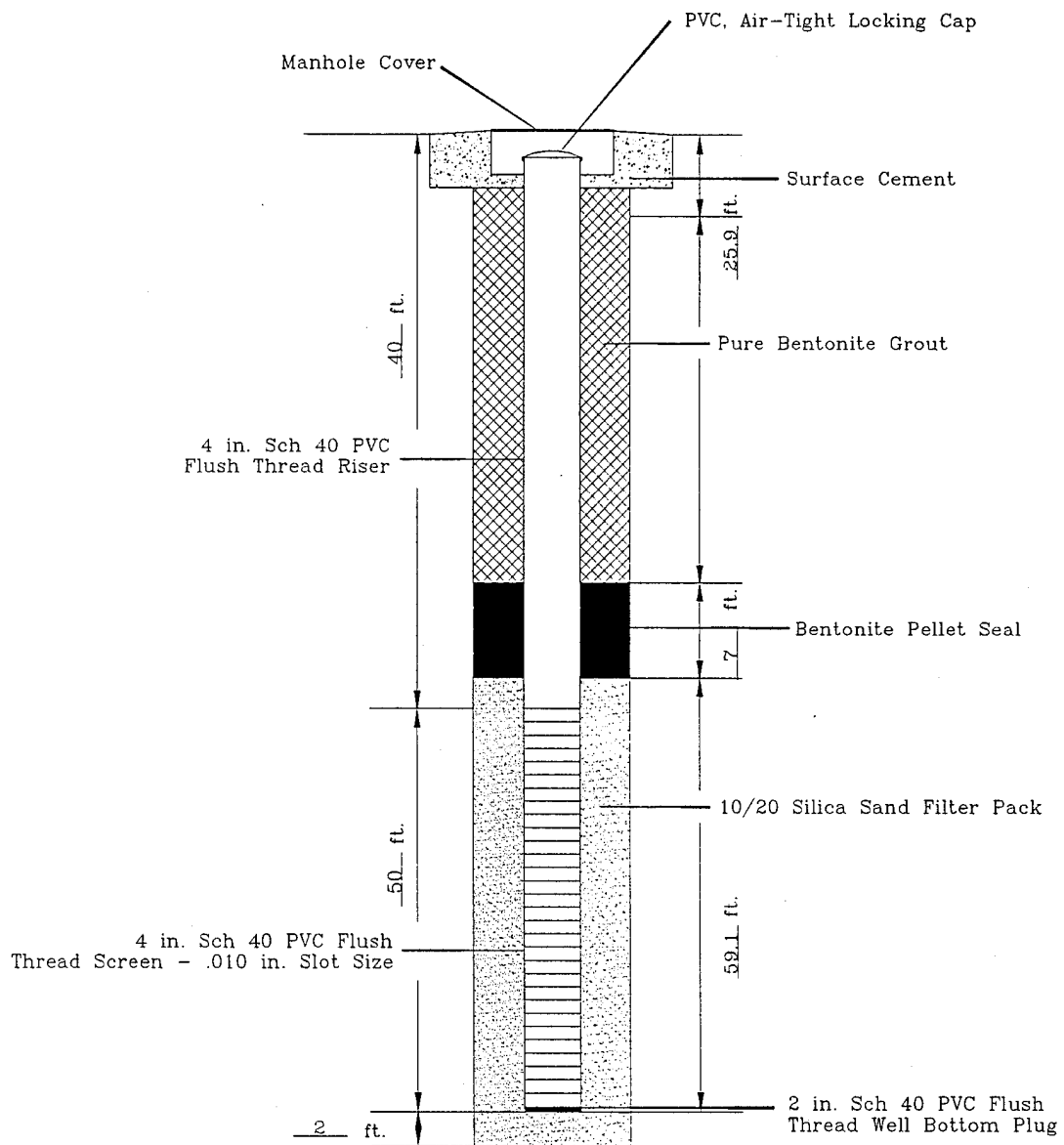
MONITORING WELL CONSTRUCTION LOG
Well No. 06-024MW

OPTTECH
OPERATIONAL TECHNOLOGIES
CORPORATION

AUGUST 1995

SKYHARBOR\FMON-LOG

Project: <u>Sky Harbor RI Addendum</u>	Date Installed: <u>June 21, 1995</u>
Town/City: <u>Phoenix</u>	Drilling Contractor: <u>North American</u>
County: <u>Maricopa</u> State: <u>Arizona</u>	Drilling Method: <u>AP-1000 Percussion</u>
TOC Elev: <u>1115.56'</u>	Borehole Diameter: <u>9"</u>
Ground Elev.: <u>1115.94'</u>	Development Technique: <u>Pumping</u>
Water Level: <u>55.07 feet below TOC</u>	
Total Well Depth: <u>92'</u>	Not To Scale



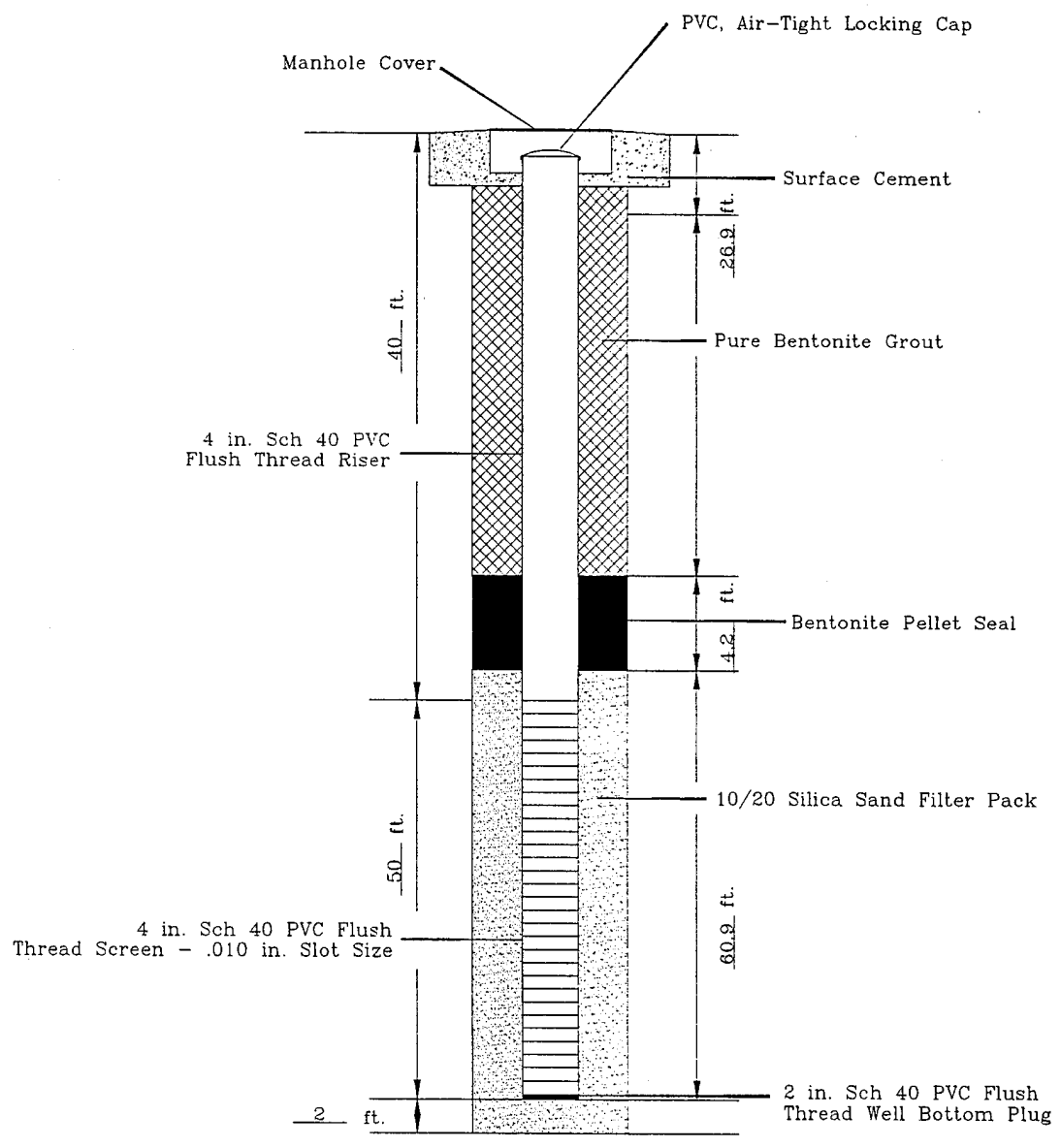
MONITORING WELL CONSTRUCTION LOG
Well No. 06-025MW

OPTTECH
OPERATIONAL TECHNOLOGIES
CORPORATION

AUGUST 1995

SKYHARBO\FMON-LOG

Project:	<u>Sky Harbor RI Addendum</u>	Date Installed:	<u>June 22, 1995</u>
Town/City:	<u>Phoenix</u>	Drilling Contractor:	<u>North American</u>
County:	<u>Maricopa</u> State: <u>Arizona</u>	Drilling Method:	<u>AP-1000 Percussion</u>
TOC Elev:	<u>1115.55'</u>	Borehole Diameter:	<u>9"</u>
Ground Elev.:	<u>1116.14'</u>	Development Technique:	<u>Pumping</u>
Water Level:	<u>55.5 feet below TOC</u>		
Total Well Depth:	<u>92'</u>		<u>Not To Scale</u>



MONITORING WELL CONSTRUCTION LOG
 Well No. 06-026MW



THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

RESULTS OF MICROBIOLOGICAL STUDIES

THIS PAGE INTENTIONALLY LEFT BLANK



Bolin Laboratories Inc.

17631 N. 25th Avenue. • Phoenix, Arizona 85023
(602) 942 8220 • FAX (602) 942 1050

24 July 1995

Mr. John Morris
Operational Technologies Inc.
4100 NW Loop 410, Suite 230
San Antonio, TX 78229

Re: Deliverables for Sky Harbor Project #1315-227

Dear John:

On June 27 1995, Bolin Laboratories received 2 soil samples to be analyzed for Heterotrophic Plate Count, Hydrocarbon Plate Count, Nitrate, Nitrite, pH, Total Kjeldahl Nitrogen, Total Phosphorous, and Moisture. The samples were analyzed on a standard turn around time of 10 working days.

Attached, please find analytical reports, quality control results, raw data from our laboratory notebooks, and a carbon copy of the original chain of custody form. No difficulties were encountered during sample analysis. All Quality Control data was within the acceptable limits. There are 12 pages in the package.

If I can be of further assistance or if you have any questions, please call me at (602) 942-8220.

Sincerely,
BOLIN LABORATORIES INC.


Jennifer MacSweeney
Director of Client Services



Bolin Laboratories Inc.

17631 N. 25th Avenue • Phoenix, Arizona 85023
(602) 942 8220 • FAX (602) 942 1050

Operational Technologies Corp.
4100 NW Loop 410, Suite 230
San Antonio, TX 78229

Received: 6/27/95
Reported: 7/13/95
Invoice No: 011819

Attn: John H. Morris

Project Name: Sky Harbor
Project No.: 1315-227

PARAMETER	METHOD	RESULTS	UNITS	PQL	DATE ANALYZED
-----------	--------	---------	-------	-----	---------------

Sample No:	9506-06109-1	Date Sampled:	6/27/95		
Sample ID:	06-016 BH 50-51	Time Sampled:	14:00		
Matrix:	Soil				

Heterotrophic Plate Count	SM 9215 B	30.	CFU/g	10	6/29/95
Hydrocarbon plate count		<10.	CFU/g		6/29/95
Nitrate in Soil	EPA 353.3	0.44	mg/kg	1	6/28/95
Nitrite in Soil	EPA 345.1	<1.	mg/kg	1.	6/28/95
pH	EPA 150.1	9.0	Std Unit	1	6/28/95
Nitrogen, Total Kjeldahl	EPA 351.3	43.1	mg/L	0.1	7/06/95
Phosphorus, Total	EPA 365.3	0.95	mg/kg	0.05	6/09/95
Moisture	EPA 160.3	1.7	%	0.5	6/29/95

NOTES:

TKN analyzed by Aerotech Labs, Phoenix, AZ. #AZ0477.

Laboratory Director
ADHS License No.: AZ0004



Bolin Laboratories Inc.

17631 N. 25th Avenue. • Phoenix, Arizona 85023
(602) 942 8220 • FAX (602) 942 1050

Operational Technologies Corp.
4100 NW Loop 410, Suite 230
San Antonio, TX 78229

Received: 6/27/95
Reported: 7/13/95
Invoice No: 011819

Attn: John H. Morris


Project Name: Sky Harbor
Project No.: 1315-227

PARAMETER	METHOD	RESULTS	UNITS	PQL	DATE ANALYZED
-----------	--------	---------	-------	-----	---------------

Sample No:	9506-06109-2				Date Sampled: 6/27/95
Sample ID:	06-016 BH 46-47.5				Time Sampled: 14:00
Matrix:	Soil				

Heterotrophic Plate Count	SM 9215 B	<10.	CFU/g	10	6/29/95
Hydrocarbon plate count		<10.	CFU/g		6/29/95
Nitrate in Soil	EPA 353.3	0.77	mg/kg	1	6/28/95
Nitrite in Soil	EPA 345.1	<1.	mg/kg	1.	6/28/95
pH	EPA 150.1	9.7	Std Unit	1	6/28/95
Nitrogen, Total Kjeldahl	EPA 351.3	73.0	mg/L	0.1	7/06/95
Phosphorus, Total	EPA 365.3	0.39	mg/kg	0.05	6/09/95
Moisture	EPA 160.3	4.9	%	0.5	6/29/95

NOTES:
TKN analyzed by Aerotech Labs, Phoenix, AZ. #AZ0477.



Laboratory Director
ADHS License No.: AZ0004



Bolin Laboratories Inc.

17631 N. 25th Avenue. • Phoenix, Arizona 85023
(602) 942 8220 • FAX (602) 942 1050

QUALITY CONTROL DATA REPORT

Client
Bolin Sample ID

Operational Technologies Corp.
9506-6109-1&2

ANALYTE	EPA	DATE	CONC. SPK	MS	MSD	RPD	BLK	CVS 1	CVS 2
	METHOD	ANALYZED	mg/kg	% REC	% REC			% REC	% REC
Nitrite in Soil	345.1	6/28/95	0.05	92	89	3.31	<0.01	92	89
Nitrate in Soil	353.3	6/28/95	0.33	84	84	0	<0.05	114	114
Moisture	160.3	6/29/95							
pH	150.1	6/28/95						101	101
Phosphorus, Total	365.3	6/29/95	0.5	97	94	3.14	<0.05	91	84

CVS is a Calibration Verification Standard.

MS is Matrix Spike

MSD is a Matrix Spike Duplicate.

RPD is Relative Percent Difference

BLK is a Blank

HETEROTROPHIC PLATE COUNT FOR SOILS

DATE: 6/29/95

SAMPLE NUMBER	1	2	3	4	5	6	7	8	9	10	PLATED BY	COUNTED BY	RESULT	MEAN	BFB LOT #
9506-6109-1A	3	1	0	0	0	0	0				MC.	QMA	30	30.	03305
B	3	0	0	0	0	0	0						30	30.	3/96
9506-6109-2A	1	0	0	0	2	0	0						10	4.10	
B	0	0	0	0	0	0	1						0		
Pipet/Dilution Blank	0														
Media Blank	0														
Air Blank	0														

Agar Temp: 42. °C

PERCENT MOISTURE LOSS

WEIGHT OF PETRI DISH	BEFORE INCUBATION		AFTER INCUBATION		% Moisture Loss
	WT. DISH + MEDIA	WT. MEDIA	WT. DISH + MEDIA	WT. MEDIA	
15.8	28.4	12.4	27.0	11.2	11.1%

1. % Moisture Loss = wt. media before incubation - wt. media after incubation / wt. media after incubation * 100

HETEROTROPHIC PLATE COUNT FOR SOILS

Hydrocarbon

DATE: 6/29/95

SAMPLE NUMBER	DILUTIONS										COUNTED BY	RESULT	MEAN	BFB LOT #
	1	2	3	4	5	6	7	8	9	10				
9506-6109-1A	0	0	0	0							Jma	0	2.10	13305
B	0	0	0	0								0		3-96
9506-6109-2A	0	0	0	0							J	0	2.10	
B	0	0	0	0								0		
Pipet/Dilution Blank	0													
Media Blank	0													
Air Blank	0													

Agar Temp: 43 °C

PERCENT MOISTURE LOSS

WEIGHT OF PETRI DISH	BEFORE INCUBATION		AFTER INCUBATION		% Moisture Loss
	WT. DISH + MEDIA	WT. MEDIA	WT. DISH + MEDIA	WT. MEDIA	
15.7	25.7	9.5	23.4	7.7	18.9

1. % Moisture Loss = $\frac{\text{wt. media before incubation} - \text{wt. media after incubation}}{\text{wt. media before incubation}} \times 100$ 2. $\text{CFU/g} = \frac{\text{CFU}}{\text{mL}} \times 25 \text{ mL}$

NITRITE (EPA 345.1)

Analyst:

Suz

Date: 6/28/95

Calibration Correlation: 0.999 (6/18/95)

SAMPLE NUMBER	QC ID/TARGET	DILUTION FACTOR	ABS READING	SAMPLE CONC. (mg/L)	QC RECOVERY
BANK			0.003	LO.01	
QC	0.15		0.510	0.13 / 0.15	93%
3506- 20ml 70-1g 10-4g 6109-1			0.004	LO.01	
6109-1			0.022	LO.01	
6109-2			0.030	LO.01	
6109-1S	0.05		0.156	0.46 / 0.05	93%
6109-1SD	0.05		0.180	0.44 / 0.05	89%
QC	0.15		0.494	0.33 / 0.15	89%

Checked by:

✓

Date:

NO2.suz

$$\frac{45\text{MA} \times 2}{50} + \frac{5\text{MA} \times 0.5}{50} = 0.05$$

7 0.05

Page No.

TOTAL KJELDAHL NITROGEN

ANALYST: <i>SB</i>	REVIEWED: <i>[Signature]</i>
DATE: <i>7/6/95</i>	DATE:
INITIAL RESULT: <i>2554-1A = 44.4</i>	SPIKE RESULT: <i>4.8</i>
DUPLICATE RESULT: <i>2554-1B = 41.8</i>	SPIKE CONC.: <i>4.4</i>
RPD: <i>6</i>	% RECOVERY: <i>92</i>
CONTROL RESULT: <i>11.8</i>	CONTROL RESULT: <i>11.6</i>
TRUE VALUE: <i>11.6</i>	TRUE VALUE: <i>11.6</i>
% RECOVERY: <i>101</i>	% RECOVERY: <i>100</i>

SAMPLE ID	mls SAMPLE	mls 0.02 N H ₂ SO ₄	INITIAL (mg/L)	TKN (mg/L)
Blank	300	0		0
Control	100	4.2		11.8
95-2414	150	25.3		47.2
2553-1	250	1.45		1.6
2554-1A	5.04g	0.8		44.4
2554-1B	5.03g	0.75		41.8
2554-2	5.18	1.35		73.0
2565-1	250	22.65		25.4
2589-1	50g	5.35		299.6
2590-1	250	1.75		2.0
2591-1		1.50		1.7
2592-1		0.65		0.7
2607-1		1.20		1.3
2606-1		19.50		21.8
Control 2	100	4.75		11.6
2553-1+100c	250	6.05		4.84

> 43.1

OOO EVENTS / COMMENTS / CALCULATIONS

PHOSPHORUS, TOTAL (EPA 365.3)

Analyst: Sean

Date: 6/29/95

Calibration Correlation: 0.997 (4/8/95)

SAMPLE NUMBER	QC ID/TARGET	DILUTION FACTOR	ABS READING	SAMPLE CONC (mg/L)	QC RECOVERY
BLANK			0.009	20.05	
QC	0.3		0.147	0.27/0.3	91%
9506-6109-1	7.502g / 50ml		0.13065	$0.099 - 0.003 = 0.096$	0.95mg
MDL 1			0.045	0.056	
2			0.046	0.058	
3			0.041	0.048	
4			0.046	0.058	
5			0.042	0.050	
6			0.039	0.044	
7			0.044	0.054	
8			0.043	0.052	
9			0.041	0.048	
6109-2	7.501g / 50ml		0.037	0.039	0.39mg/L
6109-2S	0.5		0.247	0.48/0.5	97%
6109-2SD	0.5		0.240	0.47/0.5	94%
QC	0.3		0.138	0.25/0.3	84%

Checked by: AV

Date: _____

6109-2
phos.suz $\frac{1ml \times 50}{100} + \frac{5ml \times 0.039}{100} = 0.502$

CHAIN OF CUSTODY RECORD

600-1100
 10000000
 10000000

Bolin Laboratories Inc.

17631 N. 25th Ave., Phoenix AZ 85023
 (602) 942-8220 • Fax (602) 942-1050

355 S. Euclid #107A, Tucson AZ 85719
 (602) 628-4321 • Fax (602) 792-2539



CLIENT <i>OpTeche</i>	PROJ. NAME <i>Sky Harbor</i>
ADDRESS <i>677 C Emory Valley Rd</i>	PROJ. NO. <i>1315-227</i>
CITY, STATE, ZIP <i>Oak Ridge, TN 37830</i>	PROJ. MGR. <i>John Morris</i>
PHONE <i>615-483-8020</i>	CONTACT <i>M. Giles</i>
FAX <i>615-483-2800</i>	P.O. NO.

total heterotrophs 9815
 Microorganisms 395
 coliforms 353
 coliforms 353
 coliforms 353
 coliforms 353
 coliforms 353
 coliforms 353
 coliforms 353

LABORATORY AUTHORIZATION REQUIRED FOR RUSH				REQUESTED ANALYSES	SAMPLE TYPE CODES
STD. <input checked="" type="checkbox"/> 10 DAYS	STD. UST <input type="checkbox"/> 3-5 DAYS	DATE	TIME		
RUSH <input type="checkbox"/> 5 DAYS	OTHER			COMPLIANCE	
CLIENT'S SAMPLE IDENTIFICATION		GRAB	COMPOSITE	SAMPLE TYPE	NO. OF CONTAINERS
<i>06-016 BSH 50-51</i>				<i>5 2</i>	<i>1400</i>
<i>06-016 BSH 46-47.5</i>				<i>5 3</i>	<i>1415</i>
<i>first yellow cap</i>				<i>5 1</i>	<i>1200</i>

DW = DRINKING WATER
 WW = WASTE WATER
 T = TRAVEL BLANK
 S = SOIL G = SLUDGE O = OTHER

COMMENTS (PWS/DWAR) LAB SPL. NO.
ASOLO-6109-01
L-02
03

03 - return to client - per M. Giles as well as run methods per quote - 6/28/98 - RWU

SAMPLE CONDITION ON RECEIPT		SAMPLED AND RELINQUISHED BY	
NO. OF CONTAINERS	TEMPERATURE	Signature	Date
<i>6</i>	<i>Cold</i>	<i>[Signature]</i>	<i>6/27</i>
CUSTOMY SEALS	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Printed Name	Time
SEALS INTACT	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	<i>J. Frost</i>	<i>1846</i>
PRESERVED	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	SAMPLES RECEIVED BY	
WHITE - LAB YELLOW - LAB PINK - CLIENT		Signature	Date
		Printed Name	Time
		<i>[Signature]</i>	<i>6/27/98</i>
		<i>R. Dixon</i>	<i>1846</i>
		SAMPLES RECEIVED BY	
		Signature	Date
		Printed Name	Time
		<i>[Signature]</i>	<i>6/27/98</i>
		<i>R. Dixon</i>	<i>1846</i>

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D

RESULTS OF GEOTECHNICAL AND PERCOLATION STUDIES

THIS PAGE INTENTIONALLY LEFT BLANK



CORE LABORATORIES

SOIL ANALYSIS TEST PROGRAM

FINAL REPORT

Performed for:
OPERATIONAL TECHNOLOGIES CORPORATION
677 EMORY VALLEY ROAD, SUITE C
OAK RIDGE, TN 37830

August 7, 1995

Performed by:
CORE LABORATORIES, INC.
Rock Properties Laboratory
Dallas Advanced Technology Center
1875 Monetary Drive
Carrollton, Texas 75006

File: DAL-95163



PETROLEUM SERVICES

August 7, 1995

Operational Technologies Corporation
677 Emory Valley Road, Suite C
Oak Ridge, TN 37830

Attention: Mr. Michael A. Giles

Subject: Final Report
Soil Analysis Test Program
06-023MW 39.0-40.0, 06-024MW 50.0-50.5
File: DAL-95163

Dear Mr. Giles:

A testing program to determine particle size distribution, intrinsic permeability (hydraulic conductivity), and effective porosity of the subject samples has been completed for Operational Technologies Corporation (OPTECH). This study was authorized by Mr. Michael Giles of OPTECH in a letter to Core Laboratories dated July 21, 1995. Final results of all testing are presented herein.

Two canisters identified as 06-023MW 39.0-40.0 and one canister identified as 06-024MW were received on July 24. For each sample, the soil was removed from the canister(s) and dried to a stable weight in a vacuum oven. Particle size distribution then was determined on each sample by the dry sieve method, see Page ii. Following the particle size analyses, a core plug sample was formed by placing representative portions of the supplied samples (excluding cobble-sized particles) into a metal sleeve fitted with steel end screens. Permeability to liquid measurements and effective porosity measurements were performed on the plug samples as described on Pages iii and iv.

Particle size distribution data are provided in tabular and graphic form on Pages 1 through 3. A summary of test results is presented on Page 4. Permeability to liquid and hydraulic conductivity calculations follow on Pages 5 and 6, respectively. Thank you for this opportunity to be of service. Please contact us if you have any questions concerning the enclosed information.

Very truly yours,

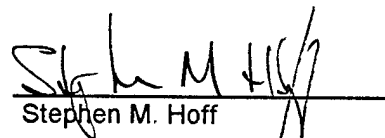
Brian E. Stevens
Rock Properties Laboratory
Dallas Advanced Technical Center

3 copies: Addressee

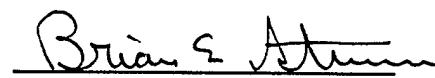
Operational Technologies Corporation
File: DAL-95163

PROJECT PARTICIPANTS

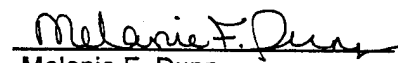
Particle Size Analyses
Permeability to Liquid


Stephen M. Hoff

Project Coordinator
Report Preparation


Brian E. Stevens

Final Review


Melanie F. Dunn

Core Laboratories

EXPERIMENTAL PROCEDURES

Particle Size Analyses

1. Total weights of the dry samples ($Wt_{initial}$) were recorded.
2. Cobble-sized particles were removed from each sample by visual inspection and their weights recorded.
3. Each sample then was successively sieved through a series of U.S. standard mesh screens corresponding to classifications of the Wentworth size scale and the weight of sample retained on each screen ($Wt_{fraction}$) recorded.
4. The final classification (silt/clay) was determined based on the weight of sample which passed through the smallest (400 mesh) screen.
5. For each sample, the weight of each fraction was summed to obtain a final dry weight (Wt_{final}).
6. Weight percentages of each classification were determined as follows:

$$(Wt_{fraction}/Wt_{final}) * 100$$

7. Analysis yield was calculated as follows:

$$(Wt_{final}/Wt_{initial}) * 100$$

Permeability to Liquid Measurement

1. The length and diameter of each sample was measured to the nearest 0.01 cm using digital calipers. Corrected length and cross-sectional area were calculated as follows:

$$L = (l - C_1)$$
$$A = ((D - C_2)/2)^2 * \pi$$

where:

- l = Gross sample length, cm
- L = Corrected sample length, cm
- A = Cross-sectional area, cm²
- D = Gross sample diameter, cm
- pi = 3.14159
- C₁ = Metal sleeve and screen length correction, cm
- C₂ = Metal sleeve diameter correction, cm

2. The samples were briefly evacuated of air and saturated with tap water. The plugs were then installed in hydrostatic coreholders and 100 psi net confining stress was applied.
3. Tap water, which had been previously evacuated of air, was injected at a constant upstream pressure. Flow pressure was monitored using a calibrated differential pressure transducer. Tap water viscosity was measured with a calibrated Canon-Fenske glass capillary viscometer. Tap water density was determined using a pycnometer.
4. The produced rate was monitored as a function of time using calibrated glassware until the relative percent difference in incremental produced rate (measured over a one minute period) was less than 10 percent over a 8 hour period.
- 5a. Permeability to liquid in millidarcys was calculated from the observed data using the following equation (Darcy's law):

$$K = (C_1 * C_2 * \mu * V L) / (P * A * T)$$

where:

- K = permeability to liquid, millidarcys
- C₁ = constant, psi/atm = 14.7
- C₂ = constant, millidarcys/darcy = 1000
- μ = viscosity of liquid, centipoise
- V = incremental produced volume, ml
- L = length, cm
- P = differential pressure, psi
- A = cross-sectional area, cm²
- T = incremental time, sec

- 5b. Permeability in cm² was calculated from this value using the conversion factor:

$$\text{cm}^2 = \text{millidarcys} \times 9.869\text{E}-12$$

- 6a. Hydraulic conductivity in meters per second was calculated from the observed data using the following equation:

$$k = (V * L) / (A * T * P)$$

where: k = Hydraulic conductivity, m/sec
V = Incremental produced volume, m³
L = Length, m
P = Differential pressure, m H₂O
A = Cross-sectional area, m²
T = Incremental time, sec

- 6b. Hydraulic conductivity in meters per year was calculated from this value using the conversion factor:

$$\text{meters per year} = \text{meters per sec} * 31,536,600$$

Effective Porosity Determination

1. Effective porosity was measured on each sample following the permeability to liquid determination.
2. Effective porosity is defined to be the fluid saturated pore volume divided by the bulk volume of the sample and is presented as percent bulk volume.
3. Bulk volume was calculated from the measured length and area of the sample as follows:

$$BV = L * A$$

where: BV = Bulk Volume, cc
L = Length, cm
A = Area, cm²

4. The fluid saturated pore volume was determined gravimetrically as follows. After permeability testing the sample was weighed and the weight recorded. The sample was dried to a constant weight in a vacuum oven at 220°F. The weight difference was used to calculate the saturated pore volume as follows:

$$PV = (W_{\text{saturated}} - W_{\text{dry}}) / \rho_{\text{fluid}}$$

where: PV = Pore volume, cc
W_{saturated} = Saturated weight, grams
W_{dry} = Dry weight, grams
ρ_{fluid} = Saturant fluid density, grams/cc

5. Effective porosity (∅) was calculated by the following equation:

$$\emptyset = PV / BV * 100$$

where: ∅ = Effective porosity, percent
PV = Pore volume, cc
BV = Bulk volume, cc

SUMMARY OF PARTICLE SIZE ANALYSES

Dry Sieve Method

Operational Technologies Corporation

File: DAL-95163

Size Class Size, mm U.S. Sieve	Particle Size Distribution, weight percent											Yield, percent
	Cobble 256-64	Pebble 64-4.0	Granule 4.0-2.0 8	V Crs Sand 2.0-1.0 16	Crs Sand 1.0-0.50 35	Med Sand 0.50-0.25 60	Fn Sand 0.25-0.125 120	V Fn Sand 0.125-0.062 230	Crs Silt 0.062-0.031 400	Silt/Clay <0.031		

06-024MW 50.0-50.5

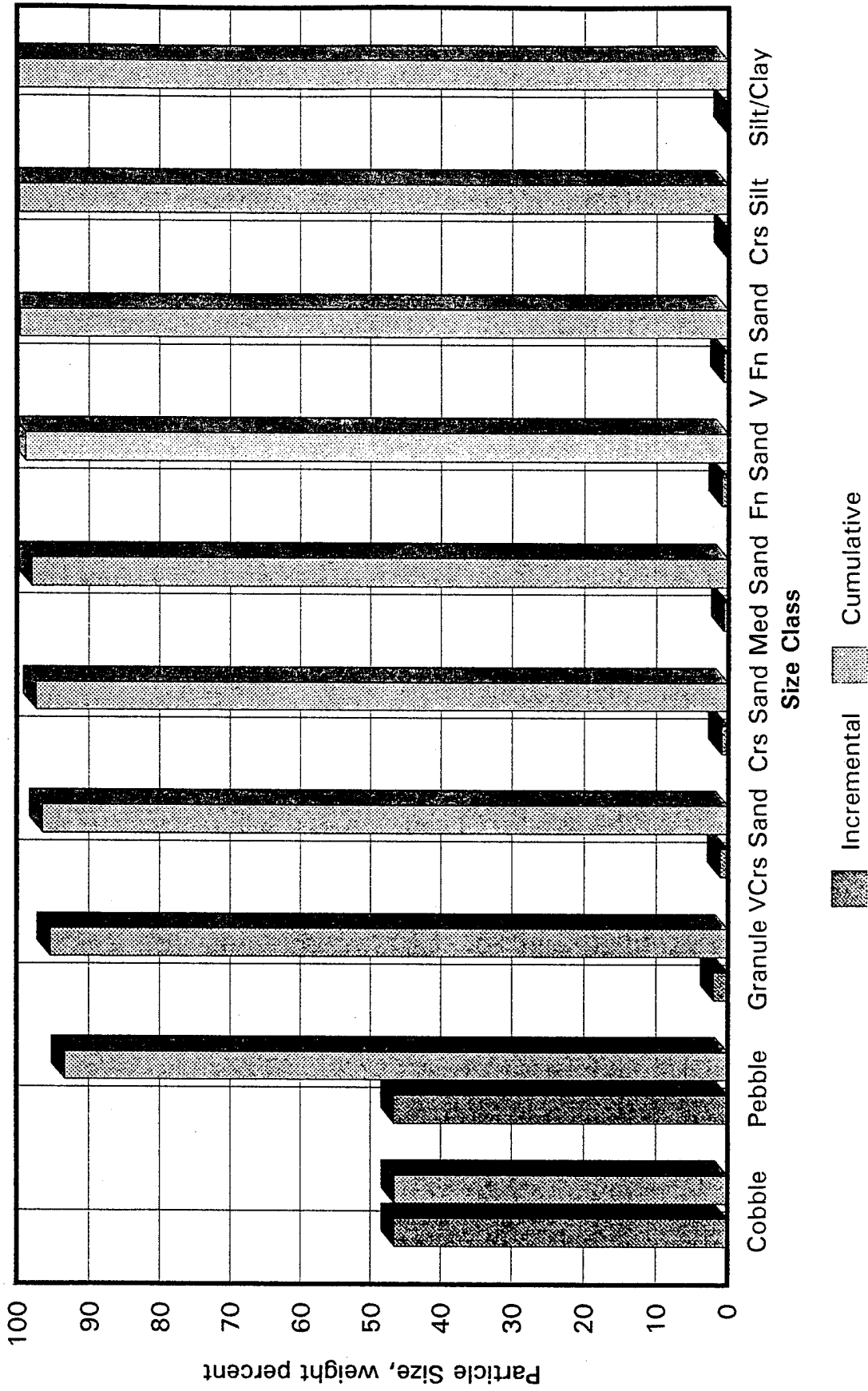
Incremental	46.6	46.7	2.0	1.1	0.9	0.6	0.9	0.7	0.2	0.3	99.7
Cumulative	46.6	93.3	95.3	96.4	97.3	97.9	98.8	99.5	99.7	100.0	-

06-023MW 39.0-40.0

Incremental	-	86.0	2.9	7.1	2.6	0.8	0.5	0.1	0.0	0.0	99.9
Cumulative	-	86.0	88.9	96.0	98.6	99.4	99.9	100.0	100.0	100.0	-

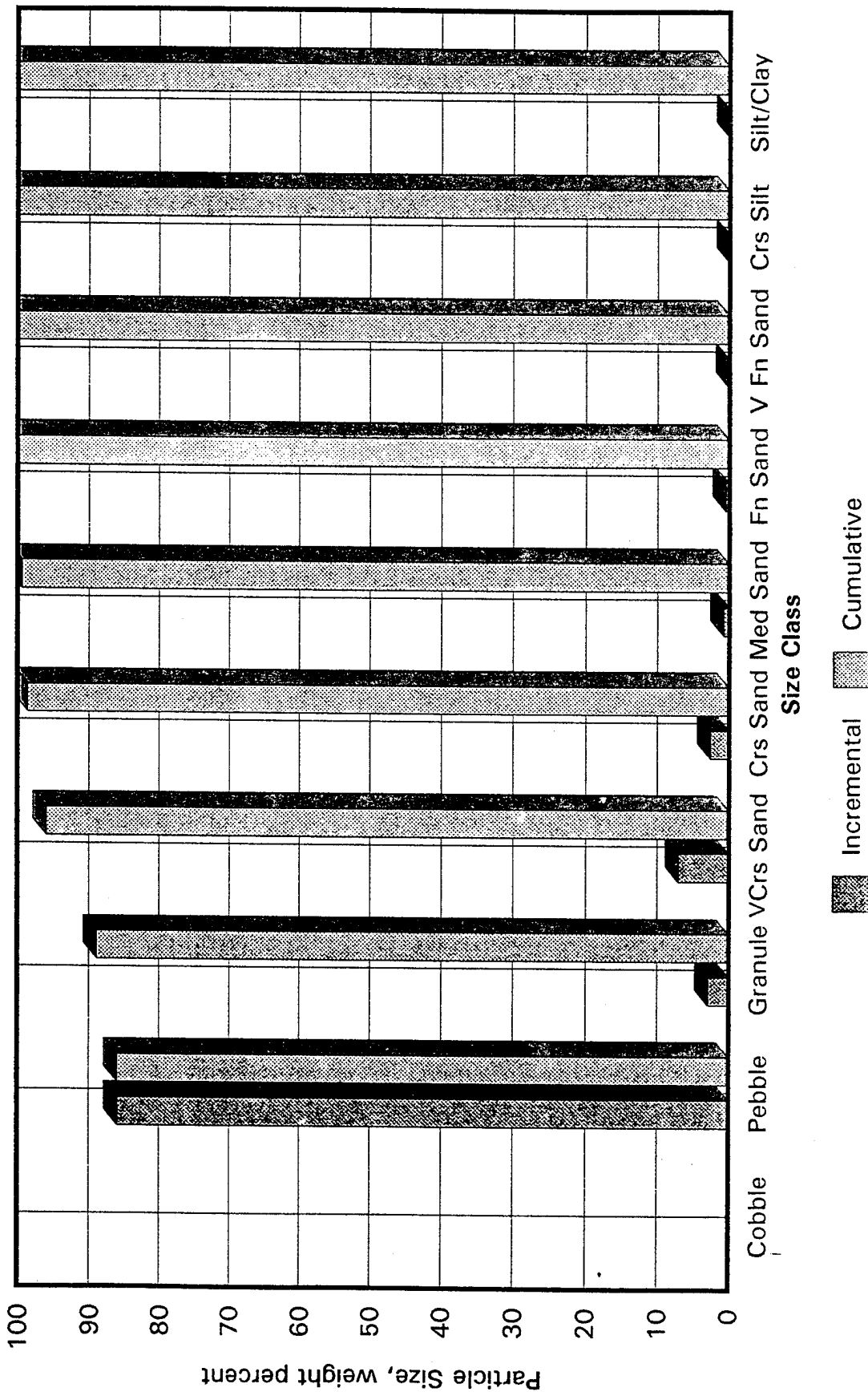
PARTICLE SIZE DISTRIBUTION

Dry Sieve Method
06-024MW 50.0-50.5



PARTICLE SIZE DISTRIBUTION

Dry Sieve Method
06-023MW 39.0-40.0



SUMMARY OF SOILS TEST PROGRAM RESULTS

Operational Technologies Corporation

File: DAL-95163

Sample I.D.	Permeability to Liquid,		Hydraulic Conductivity,		Effective Porosity, percent	Moisture Content, cc/cc	Bulk Density, g/cc	Total Organic Carbon, g/g
	millidarcys	cm ²	m/sec	m/year				
06-024MW 50.0-50.5	4.43E+00	4.37E-11	4.42E-08	1.39E+00	31.5	-	-	-
06-023MW 39.0-40.0	9.76E+00	9.63E-11	9.73E-08	3.07E+00	21.2	-	-	-

Core Laboratories

SUMMARY OF PERMEABILITY TO LIQUID TEST RESULTS

Fluid: Tap Water

File: DAL-95163

Operational Technologies Corporation

Sample I.D.	Length, cm	Area, cm ²	Viscosity, cp	Differential Pressure, psi	Incremental Volume, ml	Incremental Time, sec	Permeability to Liquid, cm ²	
							millidarcys	
06-024MW 50.0-50.5	3.43	4.08	0.97	6.0	0.133	60.	4.43E+00	4.37E-11
06-023MW 39.0-40.0	3.24	4.57	0.97	5.7	0.330	60.	9.76E+00	9.63E-11

SUMMARY OF HYDRAULIC CONDUCTIVITY CALCULATIONS

Fluid: Tap Water

File: DAL-95163

Operational Technologies Corporation

Sample I.D.	Length, m	Area, m ²	Viscosity, cp	Differential Pressure, m H ₂ O	Quantity of Flow, m ³	Incremental Time, sec	Hydraulic Conductivity, m/year	
							m/sec	m/year
06-024MW	3.43E-02	4.08E-04	9.70E-01	4.22E+00	1.33E-07	6.00E+01	4.42E-08	1.39E+00
50.0-50.5								
06-023MW	3.24E-02	4.57E-04	9.70E-01	4.01E+00	3.30E-07	6.00E+01	9.73E-08	3.07E+00
39.0-40.0								

SE1000C
Environmental Logger
06/25 07:44

Unit# 00000 Test 0

INPUT 1: Level (F) TOC

Reference 100.000
Linearity 0.050
Scale factor 10.020
Offset 0.030
Delay mSEC 50.000

Step 0 06/24 17:41:57

Elapsed Time INPUT 1

0.0000	82.041	0.2033	82.057
0.0033	82.045	0.2066	82.057
0.0066	82.045	0.2100	82.057
0.0100	82.045	0.2133	82.057
0.0133	82.045	0.2166	82.057
0.0166	82.045	0.2200	82.057
0.0200	82.045	0.2233	82.057
0.0233	82.048	0.2266	82.057
0.0266	82.048	0.2300	82.057
0.0300	82.048	0.2333	82.057
0.0333	82.048	0.2366	82.057
0.0366	82.048	0.2400	82.060
0.0400	82.048	0.2433	82.060
0.0433	82.048	0.2466	82.060
0.0466	82.051	0.2500	82.060
0.0500	82.051	0.2533	82.060
0.0533	82.051	0.2566	82.060
0.0566	82.051	0.2600	82.060
0.0600	82.051	0.2633	82.060
0.0633	82.051	0.2666	82.060
0.0666	82.051	0.2700	82.060
0.0700	82.051	0.2733	82.060
0.0733	82.051	0.2766	82.064
0.0766	82.051	0.2800	82.060
0.0800	82.051	0.2833	82.064
0.0833	82.051	0.2866	82.064
0.0866	82.051	0.2900	82.064
0.0900	82.051	0.2933	82.064
0.0933	82.051	0.2966	82.064
0.0966	82.051	0.3000	82.064
0.1000	82.048	0.3033	82.064
0.1033	82.051	0.3066	82.064
0.1066	82.051	0.3100	82.064
0.1100	82.051	0.3133	82.064
0.1133	82.051	0.3166	82.064
0.1166	82.051	0.3200	82.064
0.1200	82.051	0.3233	82.064
0.1233	82.051	0.3266	82.064
0.1266	82.051	0.3300	82.064
0.1300	82.054	0.3333	82.064
0.1333	82.054	0.3500	82.064
0.1366	82.054	0.3666	82.064
0.1400	82.054	0.3833	82.067
0.1433	82.054	0.4000	82.067
0.1466	82.054	0.4166	82.070
0.1500	82.054	0.4333	82.070
0.1533	82.054	0.4500	82.070
0.1566	82.054	0.4666	82.070
0.1600	82.057	0.4833	82.073
0.1633	82.057	0.5000	82.073
0.1666	82.057	0.5166	82.073
0.1700	82.057	0.5333	82.076
0.1733	82.057	0.5500	82.076
0.1766	82.057	0.5666	82.076
0.1800	82.057	0.5833	82.079
0.1833	82.057	0.6000	82.079
0.1866	82.057	0.6166	82.079
0.1900	82.057	0.6333	82.083
0.1933	82.057	0.6500	82.083
0.1966	82.057	0.6666	82.083
0.2000	82.057	0.6833	82.086
		0.7000	82.086
		0.7166	82.086
		0.7333	82.086
		0.7500	82.089
		0.7666	82.089
		0.7833	82.089
		0.8000	82.092
		0.8166	82.092
		0.8333	82.092
		0.8500	82.092
		0.8666	82.095
		0.8833	82.095
		0.9000	82.099
		0.9166	82.099
		0.9333	82.099
		0.9500	82.099
		0.9666	82.102
		0.9833	82.102

1.0000 82.105
 1.2000 82.115
 1.4000 82.127
 1.6000 82.137
 1.8000 82.150
 2.0000 82.162
 2.2000 82.172
 2.4000 82.185
 2.6000 82.194
 2.8000 82.207
 3.0000 82.216
 3.2000 82.229
 3.4000 82.242
 3.6000 82.255
 3.8000 82.264
 4.0000 82.277
 4.2000 82.287
 4.4000 82.299
 4.6000 82.312
 4.8000 82.322
 5.0000 82.334
 5.2000 82.347
 5.4000 82.357
 5.6000 82.369
 5.8000 82.379
 6.0000 82.392
 6.2000 82.404
 6.4000 82.414
 6.6000 82.427
 6.8000 82.436
 7.0000 82.449
 7.2000 82.459
 7.4000 82.471
 7.6000 82.481
 7.8000 82.494
 8.0000 82.506
 8.2000 82.519
 8.4000 82.529
 8.6000 82.541
 8.8000 82.551
 9.0000 82.564
 9.2000 82.576
 9.4000 82.586
 9.6000 82.596
 9.8000 82.608
 10.0000 82.621
 12.0000 82.732
 14.0000 82.850
 16.0000 82.959
 18.0000 83.070
 20.0000 83.178
 22.0000 83.287
 24.0000 83.392
 26.0000 83.497
 28.0000 83.602
 30.0000 83.707
 32.0000 83.812
 34.0000 83.917
 36.0000 84.019
 38.0000 84.121
 40.0000 84.222
 42.0000 84.324
 44.0000 84.426
 46.0000 84.525
 48.0000 84.627
 50.0000 84.725
 52.0000 84.824
 54.0000 84.922
 56.0000 85.021
 58.0000 85.117
 60.0000 85.215
 62.0000 85.314
 64.0000 85.409
 66.0000 85.508
 68.0000 85.603
 70.0000 85.699
 72.0000 85.794
 74.0000 85.889
 76.0000 85.985
 78.0000 86.077

80.0000 86.173
 82.0000 86.265
 84.0000 86.360
 86.0000 86.452
 88.0000 86.545
 90.0000 86.637
 92.0000 86.732
 94.0000 86.821
 96.0000 86.917
 98.0000 87.015
 100.000 87.114
 120.000 88.089
 140.000 89.026
 160.000 89.970
 180.000 91.027
 200.000 91.909
 220.000 92.721
 240.000 93.501
 260.000 94.255
 280.000 94.980
 300.000 95.690
 320.000 96.374
 340.000 97.032
 360.000 97.672
 380.000 98.048
 400.000 98.915
 420.000 99.513
 440.000 99.943
 460.000 99.943
 480.000 99.946
 500.000 99.949
 520.000 99.958
 540.000 99.962
 560.000 99.943
 580.000 99.943
 600.000 99.943
 620.000 99.943
 640.000 99.943
 660.000 99.943
 680.000 99.943
 700.000 99.943
 720.000 99.943
 740.000 99.946
 760.000 99.946
 780.000 99.946
 800.000 99.946

END
 Ready

APPENDIX E

**ANALYTICAL RESULTS FOR GROUNDWATER AND
COMPOSITE SOIL SAMPLES
AND
ANALYTICAL RESULTS FOR QUALITY ASSURANCE/
QUALITY CONTROL SAMPLES**

THIS PAGE INTENTIONALLY LEFT BLANK

Table E.1
Primary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	M,P-Xylenes (µg/L)	O-Xylene (µg/L)	TCE (µg/L)	DCE (µg/L)	PCE (µg/L)	Chloroform (µg/L)	THM (µg/L)	TCM (µg/L)	Dibromochloromethane (µg/L)	Styrene (µg/L)
MWS-01	1	2.3	1.6	0.7	2.3	2.4	<0.2	<0.2	<0.2	0.9	<0.2	<0.2	<0.2	<0.5
	2	91	<0.5	21J	1.4	<0.5	<0.4	<0.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.5
	3	<0.5	1.0	<0.5	2.0	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5
	4	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.03	<0.06	<0.03	<0.06	<0.03	<0.32	<0.27	<0.33	<0.15	<0.15	<0.11	<0.15	<0.08
	6	4	0.4B	8	4B	4B	<0.32	<0.27	<0.33	<0.15	<0.15	<0.11	<0.15	<0.08
	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5
	2	2.0	1.8	0.8	1.7	0.7	0.8	<0.2	1.8	<0.2	<0.2	<0.2	<0.2	<0.5
MWS-02	3	21	0.5	50	3.7	1C	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1C
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.03	<0.06	<0.03	<0.06	<0.03	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
	5	<0.03	<0.06	<0.03	<0.09	<0.09	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
	6	<0.03	<0.06	<0.03	<0.09	<0.09	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
	1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2	0.4J	1.0	0.7	1.6	1.5J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
MWS-03	3	1.6	<0.5	<0.5	0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5
	4	1.7	<0.5	2.3	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	4	2.8	<0.5	3.8	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.03	<0.06	<0.03	<0.06	<0.03	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
MWS-04	6	8	0.2B	12	2B	2B	<0.32	<0.27	<0.33	0.15	<0.11	<0.15	<0.08	<0.23
	1	15,000	<125	2,100	200	<125	<50	<50	<50	<50	<50	<50	<50	<125
06-001FD	1	21,000D	<125	2,600	260	<125	<50	<50	<50	<50	<50	<50	<50	<125
	2	17,000	<50	2,900J	200	<50	<40	<40	<40	<40	<40	<40	<40	<50
	3	7,000	<50	2,800	<50	95C	<20	<20	<20	<20	<20	<20	<20	95C
	4	15,000	<250	2,600	400	<250	<250	<250	<250	<250	<250	300	<250	<250

Table E.1 (Continued)
 Primary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	M,P-Xylenes (µg/L)	O-Xylene (µg/L)	TCE (µg/L)	DCE (µg/L)	PCE (µg/L)	Chloroform (µg/L)	THM (µg/L)	TCA (µg/L)	Dibromochloromethane (µg/L)	Styrene (µg/L)	
06-009MW	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	<1	<1	<1	<1	<1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1	
	3	2.0	<0.5	<0.5	0.6	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5
	4	0.7	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
06-010MW	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	3.7	2.3	1.7	1.7	1.1J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	
	3	1.0	<0.5	5.3	1.7	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	
	4	28	<5	69	24	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
06-011MW	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	1.3	2.7	3.1	5.0	3.9J	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<1	
	3	3100	<25	51	10	<25	<10	<10	<10	<10	<10	<10	<10	<25	
	4	980D	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
06-012MW	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	<0.5	<0.5	1.2	4.9	3.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	3	23	0.4	1.0	0.7	1.0C	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.0C	
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
5	<0.03	<0.06	<0.03	<0.06	<0.03	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23		

Table E.1 (Continued)
 Primary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	M,P-Xylenes (µg/L)	O-Xylene (µg/L)	TCE (µg/L)	DCE (µg/L)	PCE (µg/L)	Chloroform (µg/L)	THM (µg/L)	TCA (µg/L)	Dibromochloromethane (µg/L)	Styrene (µg/L)
	4	<0.5	0.7	<0.5	0.7	<0.5	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.03	<0.06	<0.03	<0.06	<0.03	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
	6	<0.03	<0.06	0.4	0.4	0.4	7	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
06-017MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	<1	<0.5	1.2	4.4	4.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1
	3	19	0.9	2.0	1.0	3C	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	3C
06-031FD	3	19	0.8	2.0	1.0	1.0C	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1C
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.03	<0.06	<0.03	<0.06	<0.03	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
06-017MW	6	0.2	<0.06	0.8	0.8B	0.8B	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.23
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-018MW	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-018MW	6	6	1	6	3	3	<0.32	0.4	<0.33	0.2	<0.11	<0.15	<0.08	<0.23
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-019MW	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-019MW	6	5	1	4	3	3	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	0.6

Table E.1 (Continued)
Primary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	M,P-Xylenes (µg/L)	O-Xylene (µg/L)	TCE (µg/L)	DCE (µg/L)	PCE (µg/L)	Chloroform (µg/L)	THM (µg/L)	TCA (µg/L)	Dibromochloromethane (µg/L)	Styrene (µg/L)
06-020MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	36	4	29	29	29	29	0.5	0.4	<0.33	0.3	<0.11	<0.15	<0.08
06-021MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	1,800	<3	750	150	150	<16	<13.5	<16.5	<7.5	<5.5	<7.5	<4	20
06-022MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	1,400	13	120	33	33	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	2
06-023MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	1,200	2	150	23	23	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	3

Table E.1 (Concluded)
Primary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	M,P-Xylenes (µg/L)	O-Xylene (µg/L)	TCE (µg/L)	DCE (µg/L)	PCE (µg/L)	Chloroform (µg/L)	THM (µg/L)	TCA (µg/L)	Dibromochloromethane (µg/L)	Styrene (µg/L)
06-024MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-024MW Dup	6	960	64	220	200	200	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.33
	6	890	63	200	180	180	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.33
06-025MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	15	1	7	4	4	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.33
06-026MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
ADEQ Cleanup Levels	6	24	1	38	13	13	<0.32	<0.27	<0.33	<0.15	<0.11	<0.15	<0.08	<0.33
	5	5	1,000	700	10,000	5	70	5	5	100	100	200	100	100

µg/L - micrograms per liter.
M,P-Xylenes - Meta, Para-Xylene (Total).
O-Xylene - Ortho-Xylene.
TCE - Trichloroethylene.
TCA - 1,1,1-Trichloroethane.
Shaded rows delineate audited data.
Dup - Duplicate.

C - Two Compounds Coelute.
J - Value is estimated and below reporting limits.
DCE - Cis-1,2-Dichloroethylene.
PCE - Tetrachloroethylene.
D - Diluted Due to High Concentrations.
THM - Bromodichloromethane.
VOCs - Volatile Organic Compounds.

IRP - Installation Restoration Program.
MWS and MW - Monitoring Well.
FD - Field Duplicate.
NS - Not Sampled.
NE - Not Existing During First Round of Sampling.
ADEQ - Arizona Department of Environmental Quality.

Table E.2
 Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane (µg/L)	Methylene Chloride (µg/L)	Isopropyl-benzene (µg/L)	N-Propyl-benzene (µg/L)	1,3,5-Trimethyl-benzene (µg/L)	1,2,4-Trimethyl-benzene (µg/L)	Tert-butyl-benzene (µg/L)	Sec-butyl benzene (µg/L)	P-Isopropyl-toluene (µg/L)	N-Butyl-benzene (µg/L)	Naphthalene (µg/L)	1,2,3-Trichloro-benzene (µg/L)
MWS-01	1	<0.2	<2	<2	<1	<1	<0.5	2.4	<0.5	<0.5	<0.5	<1	<0.5
	2	<0.4	<4	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35
	6 ¹	<0.18	<1.0	0.9	1	0.5	<0.05	<0.14	<0.06	<0.1	<0.12	2B	<0.35
MWS-02	1	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	2	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35
MWS-03	1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2	<0.2	<4	<2	<1	0.2	1.6	0.7	<0.5	<0.5	1.4	0.4J	<1
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	0.4J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35
MWS-04	1	<0.18	<1.0	1	1	<0.03	2	<0.14	<0.06	<0.1	0.3	5B	<0.35
	1	<50	<500	<500	<250	<250	<125	<125	<125	<125	<125	<250	<125
	1	<50	<500	<500	<250	<250	<125	<125	<125	<125	<125	<250	<125
	2	<40	<400	<200	<100	<100	<50	<50	<50	<50	<50	<100	<100
MWS-04	3	<20	<200	<200	<100	<100	<50	<50	<50	<50	<50	<100	<50
	4	<250	<250	<250	300	400	600	<250	1,200	<250	2,600	2,100	<250

Table E.2 (Continued)
 Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane (µg/L)	Methylene Chloride (µg/L)	Isopropyl-benzene (µg/L)	N-Propyl-benzene (µg/L)	1,3,5-Trimethyl-benzene (µg/L)	1,2,4-Trimethyl-benzene (µg/L)	Tert-butyl-benzene (µg/L)	Sec-butyl benzene (µg/L)	P-Isopropyl-toluene (µg/L)	N-Butyl-benzene (µg/L)	Naphthalene (µg/L)	1,2,3-Trichloro-benzene (µg/L)
MWS-04 Dup	5	<4.5	<25	110	130	<0.75	94	<3.5	14	<2.5	38	140	<8.75
	6	<0.18	<25	25	28	1	<0.05	<0.14	3	0.9	6	<0.12	<0.35
MW1-02	6	<0.18	<25	25	28	2	<0.05	<0.14	3	0.9	6	58B	<0.35
	1	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	2	<0.4	<4	<4	<2	<2	<1	<1	<1	<1	<1	<2	<1
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW2-02	1	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	2	<0.4	<4	<4	<2	<2	<1	<1	<1	<1	<1	<2	<1
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW3-01	1	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	2	<1	<10	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2.5
	3	<2	<20	<20	<10	<10	<5	<5	<5	<5	<5	<10	<5
	4	<25	25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW3-02	1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2	<1	<10	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2.5
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5

Table E.2 (Continued)
 Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane (µg/L)	Methylene Chloride (µg/L)	Isopropyl-benzene (µg/L)	N-Propyl-benzene (µg/L)	1,3,5-Trimethyl-benzene (µg/L)	1,2,4-Trimethyl-benzene (µg/L)	Tert-butyl-benzene (µg/L)	Sec-butyl-benzene (µg/L)	P-Isopropyl-toluene (µg/L)	N-Butyl-benzene (µg/L)	Naphthalene (µg/L)	1,2,3-Trichloro-benzene (µg/L)
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35
	6	<0.18	<1.0	<0.1	<0.04	<0.03	0.6	<0.14	<0.06	<0.1	<0.12	1	<0.35
06-005MW Dup	6	0.18	<1.0	0.3	0.3	0.2	0.7	<0.14	0.06	<0.1	<0.12	1	<0.35
06-006MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	<40	<400	<400	<200	<200	<100	<100	<100	<100	<100	<200	<100
	3	<20	<200	<200	<100	<100	<50	<50	<50	<50	<50	<100	<50
	4	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
06-007MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	<0.2	<4	1.81	<1	4.8	6.7	3.9	<0.5	<0.5	1.9	<1	1.6
	3	3.3	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	1.2	<0.5	0.5	<0.5	<0.5	1.6	<0.5	<0.5	<0.5	<0.5	0.9	<0.5
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
06-008MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	<0.4	<4	<4	<2	<2	<1	<1	<1	<1	<1	<2	<1
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	7.0	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
06-009MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	<0.4	<4	<4	<2	<2	<1	<1	<1	<1	<1	<2	<1
	3	<0.2	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5

Table E.2 (Continued)
 Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane (µg/L)	Methylene Chloride (µg/L)	Isopropyl-benzene (µg/L)	N-Propyl-benzene (µg/L)	1,3,5-Trimethyl-benzene (µg/L)	1,2,4-Trimethyl-benzene (µg/L)	Tert-butyl-benzene (µg/L)	Sec-butyl-benzene (µg/L)	P-Isopropyl-toluene (µg/L)	N-Butyl-benzene (µg/L)	Naphthalene (µg/L)	1,2,3-Trichloro-benzene (µg/L)	
06-010MW	4	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	<0.2	<4	0.7J	0.3C,J	2.3	1.2	<0.5	<0.5	<0.5	<0.5	1.3	0.5J	<1
	3	<0.2	<2	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
06-011MW	4	<5	<5	45	31	<5	22	<5	12	<5	9.0	5.0	<5	
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	<0.2	<4	1.5J	1.2C,J	5.0	2.9	<0.5	0.6	0.7	1.7	0.4J	<1	
	3	<10	<100	<100	<50	<25	<25	<25	<25	<25	<25	<25	<50	<25
06-012MW	4	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
	5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
	2	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	3	<0.2	<2	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
06-012MW QA	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35	
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.12	<0.12	<0.35	
06-012MW	6	<0.18	<1.0	3	2	0.3	<0.05	<0.14	0.3	<0.1	0.4	3B	<0.35	
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
06-013MW	2	<0.5	<2	<2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	

Table E.2 (Continued)
 Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane (µg/L)	Methylene Chloride (µg/L)	Isopropyl-benzene (µg/L)	N-Propyl-benzene (µg/L)	1,3,5-Trimethyl-benzene (µg/L)	1,2,4-Trimethyl-benzene (µg/L)	Tert-butyl-benzene (µg/L)	Sec-butyl benzene (µg/L)	P-Isopropyl-toluene (µg/L)	N-Butyl-benzene (µg/L)	Naphthalene (µg/L)	1,2,3-Trichloro-benzene (µg/L)
06-031FD	2	<0.2	<2	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	3	<0.2	<2	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	3	<0.2	<2	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.1	<0.12	<0.12
	6	<0.18	<1.0	<0.1	<0.04	<0.03	<0.05	<0.14	<0.06	<0.1	<0.1	<0.12	<0.12
06-017MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<0.18	<1.0	0.7	0.7	0.4	1	0.14	<0.06	<0.1	<0.1	0.5	2
06-019MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<0.18	<1.0	0.7	0.7	0.4	1	<0.14	<0.06	<0.1	<0.1	0.4	4
06-020MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<0.18	<1.0	2	1	2	<0.05	<0.14	0.2	0.2	0.2	1	4

Table E.2 (Continued)
 Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane ($\mu\text{g/L}$)	Methylene Chloride ($\mu\text{g/L}$)	Isopropyl-benzene ($\mu\text{g/L}$)	N-Propyl-benzene ($\mu\text{g/L}$)	1,3,5-Trimethyl-benzene ($\mu\text{g/L}$)	1,2,4-Trimethyl-benzene ($\mu\text{g/L}$)	Tert-butyl-benzene ($\mu\text{g/L}$)	Sec-butyl-benzene ($\mu\text{g/L}$)	P-Isopropyl-toluene ($\mu\text{g/L}$)	N-Butyl-benzene ($\mu\text{g/L}$)	Naphthalene ($\mu\text{g/L}$)	1,2,3-Trichloro-benzene ($\mu\text{g/L}$)
06-021MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<9	<25	51	56	15	110	<7	<3	<5	21	120	<17.5
06-022MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<0.18	<1.0	18	21	6	<0.05	<0.14	3	2	9	58	<0.35
06-023MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<0.18	<1.0	30	27	3	<0.05	<0.14	4	0.4	4	17	<0.35
06-024MW	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	6	<0.18	<1.0	22	18	15	61	<0.14	3	1	7	30	<0.35

Table E.2 (Concluded)
Secondary List of VOCs Detected in Groundwater Samples at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Sample Round	2,2-Dichloro propane ($\mu\text{g/L}$)	Methylene Chloride ($\mu\text{g/L}$)	Isopropyl-benzene ($\mu\text{g/L}$)	N-Propyl-benzene ($\mu\text{g/L}$)	1,3,5-Trimethyl-benzene ($\mu\text{g/L}$)	1,2,4-Trimethyl-benzene ($\mu\text{g/L}$)	Tert-butyl-benzene ($\mu\text{g/L}$)	Sec-butyl benzene ($\mu\text{g/L}$)	P-Isopropyl-toluene ($\mu\text{g/L}$)	N-Butyl-benzene ($\mu\text{g/L}$)	Naphthalene ($\mu\text{g/L}$)	1,2,3-Trichloro-benzene ($\mu\text{g/L}$)
06-024MW Dup	6	<0.18	<1.0	21	18	16	61	<0.14	3	1	17	27	<0.35
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-025MW	6	<0.18	<1.0	1	1	0.5	2	<0.14	2	0.3	6	2	<0.35
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
06-026MW	6	<0.18	<1.0	3	4	2	<0.05	<0.14	0.4	0.4	<0.12	6	<0.35
	1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

$\mu\text{g/L}$ - micrograms per liter.

MWS and MW - Monitoring Well.

Shaded rows delineate audited data.

VOCs - Volatile Organic Compounds.

IRP - Installation Restoration Program.

FD - Field Duplicate.

NS - Not Sampled.

NE - Not Existing During First Round of Sampling.

C - Two Compounds Coelute.

J - Value is estimated and below reporting limits.

Dup - Duplicate.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-05

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-01

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 17:00:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.5	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	4	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 0.4	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	8	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 4	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	0.9	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-05

Operational Tech

SAMPLE ID: MWS-01

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	1	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.5	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 2	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		87	

ANALYZED BY: JZL

DATE/TIME: 07/23/95 12:16:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9507438-05

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-01

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 17:00:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: SW Date: 07/25/95 12:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-06

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-02

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 17:30:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



Certificate of Analysis No. H9-9507438-06

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech

SAMPLE ID: MWS-02

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

86

ANALYZED BY: JZL

DATE/TIME: 07/23/95 01:28:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9507438-06

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-02

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 17:30:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: SW Date: 07/25/95 12:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/14/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MW5-03

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 18:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	2	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	8	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	0.2	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	12	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	2	0.09	µg/L
Styrene	0.8	0.23	µg/L
Isopropylbenzene	1	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-01

Operational Tech

SAMPLE ID: MW5-03

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	1	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	2	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.3	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	5	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

94

ANALYZED BY: JZL

DATE/TIME: 07/24/95 12:50:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/14/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: MW5-03

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 18:30:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: BV Date: 07/26/95 14:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9507478-01

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-04

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 08:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	3	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	4200	0.60	µg/L
1,2-Dichloroethane	0.4	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 2	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	500	0.60	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 19	0.09	µg/L
Styrene	3	0.23	µg/L
Isopropylbenzene	25	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-01

Operational Tech

SAMPLE ID: MWS-04

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	28	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	1	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	3	0.06	µg/L
p-Isopropyltoluene	0.9	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	6	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

96

ANALYZED BY: JZL

DATE/TIME: 07/25/95 04:23:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: MWS-04

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 08:30:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	5	0.5	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-04 Duplicate

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 08:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	3	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	4000	0.60	µg/L
1,2-Dichloroethane	0.5	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 3	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	480	0.60	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 20	0.09	µg/L
Styrene	ND	4.60	µg/L
Isopropylbenzene	25	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-02

Operational Tech

SAMPLE ID: MWS-04 Duplicate

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	28	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	2	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	3	0.06	µg/L
p-Isopropyltoluene	0.9	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	6	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 58	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

91

ANALYZED BY: JZL

DATE/TIME: 07/25/95 05:34:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MWS-04 Duplicate

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 08:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	2	0.5	mg/L
Analyzed by: BV Date: 07/26/95 14:00:00			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-09

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MW3-02

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 15:50:0
DATE RECEIVED: 07/15/95

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	1	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	0.3	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	15	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 0.4	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	16	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 3	0.09	µg/L
Styrene	0.7	0.23	µg/L
Isopropylbenzene	2	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-09

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: MW3-02

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 15:50:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/14/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: MW5-01

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 20:30:00
DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA	RESULTS	PQL*	UNITS
Dichlorodifluoromethane		ND	1.1	µg/L
Chloromethane		ND	0.15	µg/L
Vinyl chloride		ND	0.21	µg/L
Bromomethane		ND	0.17	µg/L
Chloroethane		ND	0.18	µg/L
Trichlorofluoromethane		ND	0.34	µg/L
1,1-Dichloroethene		ND	0.19	µg/L
trans-1,2-Dichloroethene		ND	0.20	µg/L
1,1-Dichloroethane		ND	0.11	µg/L
2,2-Dichloropropane		ND	0.18	µg/L
cis-1,2-Dichloroethene		ND	0.27	µg/L
Chloroform		ND	0.15	µg/L
Bromochloromethane		ND	0.11	µg/L
1,1,1-Trichloroethane		ND	0.15	µg/L
1,1-Dichloropropene		ND	0.33	µg/L
Carbon Tetrachloride		ND	0.11	µg/L
Benzene		6	0.03	µg/L
1,2-Dichloroethane		ND	0.38	µg/L
Trichloroethene		ND	0.32	µg/L
1,2-Dichloropropane		ND	0.17	µg/L
Bromodichloromethane		ND	0.11	µg/L
Dibromomethane		ND	0.12	µg/L
cis-1,3-Dichloropropene		ND	0.09	µg/L
Toluene		B 0.3	0.06	µg/L
trans-1,3-Dichloropropene		ND	0.11	µg/L
1,1,2-Trichloroethane		ND	0.21	µg/L
Tetrachloroethene		ND	0.33	µg/L
1,3-Dichloropropane		ND	0.25	µg/L
Dibromochloromethane		ND	0.08	µg/L
1,2-Dibromoethane		ND	0.06	µg/L
Chlorobenzene		ND	0.62	µg/L
Ethyl benzene		9	0.03	µg/L
1,1,1,2-Tetrachloroethane		ND	0.25	µg/L
Xylenes		B 2	0.09	µg/L
Styrene		0.6	0.23	µg/L
Isopropylbenzene		0.9	0.10	µg/L
Bromoform		ND	0.12	µg/L
1,1,2,2-Tetrachloroethane		ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-02

Operational Tech

SAMPLE ID: MW5-01

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	0.9	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	1	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 2	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene 98

ANALYZED BY: JZL

DATE/TIME: 07/23/95 16:45:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-02

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/14/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: MW5-01

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 20:30:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: BV Date: 07/26/95 14:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/14/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: MW5-01 Duplicate

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 20:30:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.4	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	7	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 0.2	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	8	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 2	0.09	µg/L
Styrene	0.4	0.23	µg/L
Isopropylbenzene	0.8	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-03

Operational Tech

SAMPLE ID: MW5-01 Duplicate

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	0.9	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	1	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 2	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		96	

ANALYZED BY: JZL

DATE/TIME: 07/23/95 17:54:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

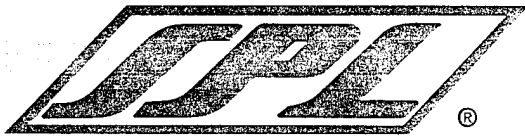
NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/14/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: MW5-01 Duplicate

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 20:30:00
 DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum extractables METHOD 418.1*	ND	0.5		mg/L
Analyzed by: BV Date: 07/26/95 14:00:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-08

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-003MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 14:30:00
DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	PQL*		
Dichlorodifluoromethane	ND	1.1	µg/L	
Chloromethane	2	0.15	µg/L	
Vinyl chloride	ND	0.21	µg/L	
Bromomethane	ND	0.17	µg/L	
Chloroethane	ND	0.18	µg/L	
Trichlorofluoromethane	ND	0.34	µg/L	
1,1-Dichloroethene	ND	0.19	µg/L	
trans-1,2-Dichloroethene	ND	0.20	µg/L	
1,1-Dichloroethane	ND	0.11	µg/L	
2,2-Dichloropropane	ND	0.18	µg/L	
cis-1,2-Dichloroethene	ND	0.27	µg/L	
Chloroform	0.2	0.15	µg/L	
Bromochloromethane	ND	0.11	µg/L	
1,1,1-Trichloroethane	ND	0.15	µg/L	
1,1-Dichloropropene	ND	0.33	µg/L	
Carbon Tetrachloride	ND	0.11	µg/L	
Benzene	19	0.03	µg/L	
1,2-Dichloroethane	ND	0.38	µg/L	
Trichloroethene	ND	0.32	µg/L	
1,2-Dichloropropane	ND	0.17	µg/L	
Bromodichloromethane	ND	0.11	µg/L	
Dibromomethane	ND	0.12	µg/L	
cis-1,3-Dichloropropene	ND	0.09	µg/L	
Toluene	B 0.5	0.06	µg/L	
trans-1,3-Dichloropropene	ND	0.11	µg/L	
1,1,2-Trichloroethane	ND	0.21	µg/L	
Tetrachloroethene	ND	0.33	µg/L	
1,3-Dichloropropane	ND	0.25	µg/L	
Dibromochloromethane	ND	0.08	µg/L	
1,2-Dibromoethane	ND	0.06	µg/L	
Chlorobenzene	ND	0.62	µg/L	
Ethyl benzene	21	0.03	µg/L	
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L	
Xylenes	B 3	0.09	µg/L	
Styrene	0.6	0.23	µg/L	
Isopropylbenzene	2	0.10	µg/L	
Bromoform	ND	0.12	µg/L	
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L	

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-08

Operational Tech

SAMPLE ID: 06-003MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	0.9	0.16	µg/L
n-Propyl benzene	2	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.3	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	0.2	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.4	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 3	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES	% RECOVERY
1-Chloro-2-Fluorobenzene	86

ANALYZED BY: JZL

DATE/TIME: 07/23/95 14:26:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-08

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-003MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 14:30:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-005MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 15:00:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.4	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	0.2	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	0.6	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	1	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 1	0.09	µg/L
Styrene	1	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



Certificate of Analysis No. H9-9507438-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech

SAMPLE ID: 06-005MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	0.6	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 1	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

86

ANALYZED BY: JZL

DATE/TIME: 07/22/95 04:05:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9507438-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-005MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 15:00:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Row 1: Petroleum extractables, ND, 0.5, mg/L. Includes sub-headers and analysis details like 'METHOD 418.1*' and 'Date: 07/25/95 12:00:00'.

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance. SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-005MW DUP

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/13/95 16:00:00
 DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	1	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	0.2	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	1	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	3	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 2	0.09	µg/L
Styrene	1	0.23	µg/L
Isopropylbenzene	0.3	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-03

Operational Tech

SAMPLE ID: 06-005MW DUP

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	0.3	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.2	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	0.7	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 1	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		85	

ANALYZED BY: JZL

DATE/TIME: 07/22/95 05:17:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-005MW DUP

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 16:00:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: SW Date: 07/25/95 12:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-07

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

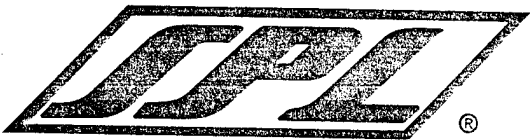
PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-012MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 13:00:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	3	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	0.2	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	29	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	0.6	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	26	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	3	0.09	µg/L
Styrene	1	0.23	µg/L
Isopropylbenzene	3	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-07

Operational Tech

SAMPLE ID: 06-012MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	2	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.3	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	0.3	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.4	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	3	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		85	

ANALYZED BY: JZL

DATE/TIME: 07/25/95 12:49:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-07

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-012MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 13:00:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-06

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-013MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 11:40:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.4	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	670	0.30	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 0.7	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	41	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 4	0.09	µg/L
Styrene	0.8	0.23	µg/L
Isopropylbenzene	18	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-06

Operational Tech

SAMPLE ID: 06-013MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	10	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.8	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	2	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	2	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 9	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

95

ANALYZED BY: JZL

DATE/TIME: 07/25/95 03:12:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

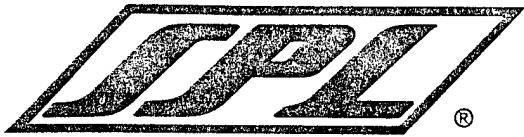
NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance. SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-06

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-013MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 11:40:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-05

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-015MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 10:15:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	2	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	0.2	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	74	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	B 0.4	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Ethyl benzene	55	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 4	0.09	µg/L
Styrene	1	0.23	µg/L
Isopropylbenzene	4	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	0.5	0.16	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-05

Operational Tech

SAMPLE ID: 06-015MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
n-Propyl benzene	4	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.5	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	0.3	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.5	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

94

ANALYZED BY: JZL

DATE/TIME: 07/24/95 23:38:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-05

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-015MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 10:15:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8860 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-016MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 15:00:00
DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	2	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	1	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	0.2	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	7	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	0.8	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	0.4	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 0.4	0.09	µg/L
Styrene	B 0.6	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-01

Operational Tech

SAMPLE ID: 06-016MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	0.3	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	0.3	0.22	µg/L
Naphthalene	2	0.12	µg/L
1,2,3-Trichlorobenzene	B ND	0.35	µg/L

SURROGATES	% RECOVERY
1-Chloro-2-Fluorobenzene	89

ANALYZED BY: JZL

DATE/TIME: 07/21/95 22:09:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in associated method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-016MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/13/95 15:00:00
 DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: SW Date: 07/25/95 12:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-017MW

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/13/95 16:30:00
 DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	0.2	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	0.8	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	B 0.8	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-04

Operational Tech

SAMPLE ID: 06-017MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	0.2	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		86	

ANALYZED BY: JZL

DATE/TIME: 07/22/95 23:05:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: 06-017MW

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 16:30:00
DATE RECEIVED: 07/14/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: SW Date: 07/25/95 12:00:00		ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9508405-01

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-018MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/09/95 08:45:00
DATE RECEIVED: 08/10/95

ANALYTICAL DATA

Table with 4 columns: PARAMETER, RESULTS, PQL*, UNITS. Lists various chemical compounds and their corresponding results and units.

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-01

Operational Tech

SAMPLE ID: 06-018MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	0.7	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.4	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	1	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.5	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 2	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		94	

ANALYZED BY: JZL

DATE/TIME: 08/10/95 17:49:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 6880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/22/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-018MW

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/09/95 08:45:00
 DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: RN Date: 08/15/95 09:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-019MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/09/95 11:00:00
DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	5	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	1	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	4	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	3	0.09	µg/L
Styrene	0.6	0.23	µg/L
Isopropylbenzene	0.7	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-02

Operational Tech

SAMPLE ID: 06-019MW

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	0.7	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	0.4	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	1	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.4	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 4	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

94

ANALYZED BY: JZL

DATE/TIME: 08/10/95 19:00:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9508405-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-019MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/09/95 11:00:00
DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: RN Date: 08/15/95 09:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8680 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/23/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-020

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/10/95 11:50:00
DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	0.4	0.27	µg/L
Chloroform	0.3	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	36	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	0.5	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	4	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	29	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	29	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	2	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-03

Operational Tech

SAMPLE ID: 06-020

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	2	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	2	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	0.2	0.06	µg/L
p-Isopropyltoluene	0.2	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	1	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 4	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene 104

ANALYZED BY: JZL

DATE/TIME: 08/12/95 08:29:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/23/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-020

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/10/95 11:50:00
 DATE RECEIVED: 08/11/95

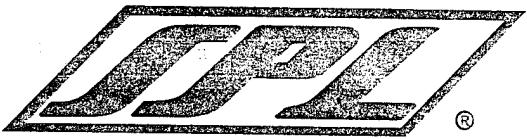
ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1*	ND	0.5	mg/L
Analyzed by: RN Date: 08/15/95 09:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-021MW

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/09/95 13:10:00
 DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	55.0	µg/L
Chloromethane	ND	7.50	µg/L
Vinyl chloride	ND	10.50	µg/L
Bromomethane	ND	8.50	µg/L
Chloroethane	ND	9.00	µg/L
Trichlorofluoromethane	ND	17.00	µg/L
1,1-Dichloroethene	ND	9.50	µg/L
Methylene Chloride	ND	50	µg/L
trans-1,2-Dichloroethene	ND	10.0	µg/L
1,1-Dichloroethane	ND	5.50	µg/L
2,2-Dichloropropane	ND	9.00	µg/L
cis-1,2-Dichloroethene	ND	13.50	µg/L
Chloroform	ND	7.50	µg/L
Bromochloromethane	ND	5.50	µg/L
1,1,1-Trichloroethane	ND	7.50	µg/L
1,1-Dichloropropene	ND	16.50	µg/L
Carbon Tetrachloride	ND	5.50	µg/L
Benzene	1800	1.50	µg/L
1,2-Dichloroethane	ND	19.00	µg/L
Trichloroethene	ND	16.00	µg/L
1,2-Dichloropropane	ND	8.50	µg/L
Bromodichloromethane	ND	5.50	µg/L
Dibromomethane	ND	6.00	µg/L
cis-1,3-Dichloropropene	ND	4.50	µg/L
Toluene	ND	3.00	µg/L
trans-1,3-Dichloropropene	ND	5.50	µg/L
1,1,2-Trichloroethane	ND	10.50	µg/L
Tetrachloroethene	ND	16.50	µg/L
1,3-Dichloropropane	ND	12.50	µg/L
Dibromochloromethane	ND	4.00	µg/L
1,2-Dibromoethane	ND	3.00	µg/L
Chlorobenzene	ND	31.00	µg/L
Ethyl benzene	750	1.50	µg/L
1,1,1,2-Tetrachloroethane	ND	12.50	µg/L
Xylenes	150	4.50	µg/L
Styrene	20	11.50	µg/L
Isopropylbenzene	51	5.0	µg/L
Bromoform	ND	6.00	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-03

Operational Tech

SAMPLE ID: 06-021MW

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	13.50	µg/L
1,2,3-Trichloropropane	ND	8.00	µg/L
n-Propyl benzene	56	2.00	µg/L
Bromobenzene	ND	11.00	µg/L
1,3,5-Trimethylbenzene	15	1.50	µg/L
2-Chlorotoluene	ND	13.00	µg/L
4-Chlorotoluene	ND	14.50	µg/L
tert-Butylbenzene	ND	7.00	µg/L
1,2,4-Trimethylbenzene	110	2.50	µg/L
sec-Butylbenzene	ND	3.00	µg/L
p-Isopropyltoluene	ND	5.0	µg/L
1,3-Dichlorobenzene	ND	13.00	µg/L
1,4-Dichlorobenzene	ND	15.0	µg/L
n-Butylbenzene	21	6.00	µg/L
1,2-Dichlorobenzene	ND	24.00	µg/L
1,2-Dibromo-3-chloropropane	ND	6.50	µg/L
1,2,4-Trichlorobenzene	ND	4.50	µg/L
Hexachlorobutadiene	ND	11.00	µg/L
Naphthalene	B 120	6.00	µg/L
1,2,3-Trichlorobenzene	ND	17.50	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

97

ANALYZED BY: JZL

DATE/TIME: 08/11/95 02:08:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/22/95

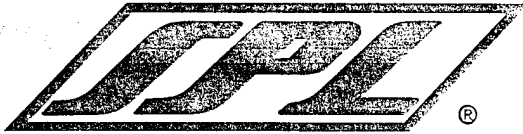
PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-021MW

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/09/95 13:10:00
 DATE RECEIVED: 08/10/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum extractables METHOD 418.1* Analyzed by: RN Date: 08/15/95 09:00:00	2	0.5		mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-022MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/08/95 14:50:00
DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	MDL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	1400	1.50	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	13	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	120	1.50	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	33	0.09	µg/L
Styrene	2	0.23	µg/L
Isopropylbenzene	18	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-02

Operational Tech

SAMPLE ID: 06-022MW

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	MDL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	21	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	6	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	3	0.06	µg/L
p-Isopropyltoluene	2	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	9	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 58	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		92	

ANALYZED BY: JZL

DATE/TIME: 08/11/95 12:57:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Method Detection Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9508337-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-022MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/08/95 14:50:00
DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: DR Date: 08/11/95 09:00:00	1	0.5	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-023MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/08/95 12:20:00
DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	MDL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	1200	1.50	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	2	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	150	1.50	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	23	0.09	µg/L
Styrene	3	0.23	µg/L
Isopropylbenzene	30	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-01

Operational Tech

SAMPLE ID: 06-023MW

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	MDL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	27	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	3	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	4	0.06	µg/L
p-Isopropyltoluene	0.4	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	4	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 17	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		101	

ANALYZED BY: JZL

DATE/TIME: 08/10/95 23:46:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Method Detection Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/22/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-023MW

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/08/95 12:20:00
 DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: DR Date: 08/11/95 09:00:00	1	0.5	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/23/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-024MW

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/10/95 08:30:00
 DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	960	1.50	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	64	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	220	1.50	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	200	4.50	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	22	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-01

Operational Tech

SAMPLE ID: 06-024MW

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	18	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	15	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	61	0.05	µg/L
sec-Butylbenzene	3	0.06	µg/L
p-Isopropyltoluene	1	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	7	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 30	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		98	

ANALYZED BY: JZL

DATE/TIME: 08/12/95 09:40:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS: B - Compound detected in method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/23/95

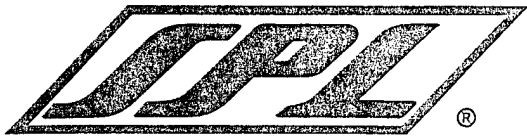
PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-024MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/10/95 08:30:00
DATE RECEIVED: 08/11/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables		0.7	0.5	mg/L
METHOD 418.1*				
Analyzed by: RN				
Date: 08/15/95 09:00:00				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

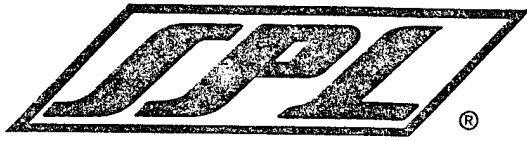
08/23/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-024MW Dup

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/10/95 08:35:00
DATE RECEIVED: 08/11/95

PARAMETER	ANALYTICAL DATA		
	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	890	1.50	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	63	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	200	1.50	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	180	4.50	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	21	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-02

Operational Tech

SAMPLE ID: 06-024MW Dup

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	18	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	16	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	61	0.05	µg/L
sec-Butylbenzene	3	0.06	µg/L
p-Isopropyltoluene	1	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	7	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 27	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		97	

ANALYZED BY: JZL

DATE/TIME: 08/12/95 13:15:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

B - Compound detected in method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9508458-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/23/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-024MW Dup

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/10/95 08:35:00
DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNIT
Petroleum extractables METHOD 418.1* Analyzed by: RN Date: 08/15/95 09:00:00	1	0.5	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-025MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/08/95 17:00:00
DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	MDL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	15	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	1	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	7	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	4	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	1	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN:- Mike Giles

DATE: 08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-025MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/08/95 17:00:00
DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: DR Date: 08/11/95 09:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: 06-026MW

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/09/95 15:50:00
DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	0.2	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	24	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	1	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	38	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	13	0.09	µg/L
Styrene	0.8	0.23	µg/L
Isopropylbenzene	3	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-04

Operational Tech

SAMPLE ID: 06-026MW

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	4	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	2	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	0.4	0.06	µg/L
p-Isopropyltoluene	0.4	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 6	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

98

ANALYZED BY: JZL

DATE/TIME: 08/10/95 20:11:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/22/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: 06-026MW

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/09/95 15:50:00
 DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: RN Date: 08/15/95 09:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-06

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/14/95

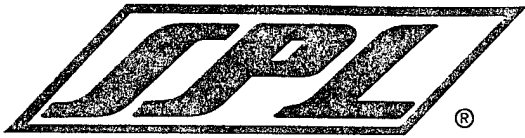
PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-016 BH

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 07/14/95 21:00:00
 DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DR Date: 07/28/95 09:00:00	39	10		mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/19/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-018 MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/28/95
DATE RECEIVED: 06/30/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-01

Operational Tech

SAMPLE ID: 06-018 MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	94	70	121
Toluene-d8	50 ug/Kg	100	84	138
4-Bromofluorobenzene	50 ug/Kg	96	59	113

ANALYZED BY: HLW

DATE/TIME: 06/30/95 12:44:00

METHOD: 8240, Volatile Organics - Soil

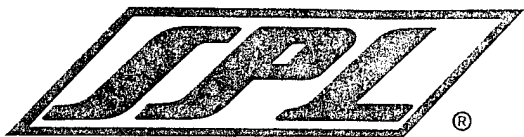
NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 07/19/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-018 MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/28/95
DATE RECEIVED: 06/30/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Moisture		10	1	wt. %
	METHOD CLP SOW Analyzed by: DSE Date: 07/11/95			
Total Petroleum Hydrocarbons		ND	20	mg/Kg
	418.1AZ Analyzed by: RS Date: 07/12/95 08:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/19/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-019 MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/28/95
DATE RECEIVED: 06/30/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-02

Operational Tech

SAMPLE ID: 06-019 MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	94	70	121
Toluene-d8	50 ug/Kg	98	84	138
4-Bromofluorobenzene	50 ug/Kg	96	59	113

ANALYZED BY: HLW

DATE/TIME: 06/30/95 13:08:00

METHOD: 8240, Volatile Organics - Soil

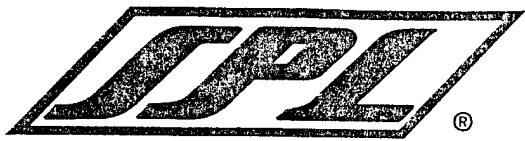
NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-02

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/19/95

PROJECT: Sky Harbor RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-019 MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/28/95
 DATE RECEIVED: 06/30/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Moisture		4	1	wt. %
METHOD CLP SOW				
Analyzed by: DSE				
Date: 07/11/95				
Total Petroleum Hydrocarbons		ND	20	mg/Kg
418.1AZ				
Analyzed by: RS				
Date: 07/12/95 08:00:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-05

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbour RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-020MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/26/95
DATE RECEIVED: 06/27/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-05

Operational Tech

SAMPLE ID: 06-020MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	96	70	121
Toluene-d8	50 ug/Kg	102	84	138
4-Bromofluorobenzene	50 ug/Kg	98	59	113

ANALYZED BY: HLW

DATE/TIME: 06/28/95 18:32:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit
 NA - Not Analyzed

ND - Not Detected

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-05

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbour RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-020MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/26/95
DATE RECEIVED: 06/27/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Moisture		10	1	wt.
METHOD CLP SOW				
Analyzed by: CM				
Date: 07/07/95				
Total Petroleum Hydrocarbons		ND	20	mg/Kg
418.1AZ				
Analyzed by: RS				
Date: 06/30/95 09:00:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbour RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-021MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/23/95
DATE RECEIVED: 06/27/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	16	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	78	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	130	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-01

Operational Tech

SAMPLE ID: 06-021MW Composite

SURROGATES	AMOUNT - SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	96	70	121
Toluene-d8	50 ug/Kg	96	84	138
4-Bromofluorobenzene	50 ug/Kg	106	59	113

ANALYZED BY: HLW

DATE/TIME: 06/28/95 16:53:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbour RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-021MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/23/95
 DATE RECEIVED: 06/27/95

PARAMETER	ANALYTICAL DATA		DETECTION LIMIT	UNITS
	RESULTS			
Moisture METHOD CLP SOW Analyzed by: CM Date: 07/07/95	19		1	wt. %
Total Petroleum Hydrocarbons 418.1AZ Analyzed by: RS Date: 06/30/95 09:00:00	ND		20	mg/Kg

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbour RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-022MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/25/95
DATE RECEIVED: 06/27/95

PARAMETER	ANALYTICAL DATA	RESULTS	PQL*	UNITS
Acetone		ND	100	ug/Kg
Benzene		82	5	ug/Kg
Bromodichloromethane		ND	5	ug/Kg
Bromoform		ND	5	ug/Kg
Bromomethane		ND	10	ug/Kg
2-Butanone		ND	20	ug/Kg
Carbon Disulfide		ND	5	ug/Kg
Carbon Tetrachloride		ND	5	ug/Kg
Chlorobenzene		ND	5	ug/Kg
Chloroethane		ND	10	ug/Kg
2-Chloroethylvinylether		ND	10	ug/Kg
Chloroform		ND	5	ug/Kg
Chloromethane		ND	10	ug/Kg
Dibromochloromethane		ND	5	ug/Kg
1,1-Dichloroethane		ND	5	ug/Kg
1,1-Dichloroethene		ND	5	ug/Kg
1,2-Dichloroethane		ND	5	ug/Kg
total-1,2-Dichloroethene		ND	5	ug/Kg
1,2-Dichloropropane		ND	5	ug/Kg
cis-1,3-Dichloropropene		ND	5	ug/Kg
trans-1,3-Dichloropropene		ND	5	ug/Kg
Ethylbenzene		100	5	ug/Kg
2-Hexanone		ND	10	ug/Kg
Methylene Chloride		ND	5	ug/Kg
4-Methyl-2-Pentanone		ND	10	ug/Kg
Styrene		ND	5	ug/Kg
1,1,2,2-Tetrachloroethane		ND	5	ug/Kg
Tetrachloroethene		ND	5	ug/Kg
Toluene		ND	5	ug/Kg
1,1,1-Trichloroethane		ND	5	ug/Kg
1,1,2-Trichloroethane		ND	5	ug/Kg
Trichloroethene		ND	5	ug/Kg
Trichlorofluoromethane		ND	5	ug/Kg
Vinyl Acetate		ND	10	ug/Kg
Vinyl Chloride		ND	10	ug/Kg
Xylenes (total)		65	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-04

Operational Tech

SAMPLE ID: 06-022MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	96	70	121
Toluene-d8	50 ug/Kg	98	84	138
4-Bromofluorobenzene	50 ug/Kg	106	59	113

ANALYZED BY: HLW

DATE/TIME: 06/28/95 18:08:00

METHOD: 8240, Volatile Organics - Soil

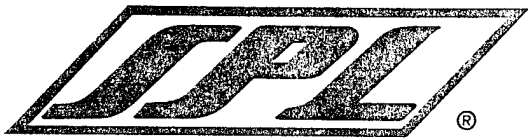
NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbour RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-022MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/25/95
 DATE RECEIVED: 06/27/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Moisture	METHOD CLP SOW Analyzed by: CM Date: 07/07/95	10	1	wt.
Total Petroleum Hydrocarbons	418.1AZ Analyzed by: RS Date: 06/30/95 09:00:00	ND	20	mg/Kg

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbour RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-023MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/25/95
DATE RECEIVED: 06/27/95

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-03

Operational Tech

SAMPLE ID: 06-023MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	96	70	121
Toluene-d8	50 ug/Kg	102	84	138
4-Bromofluorobenzene	50 ug/Kg	102	59	113

ANALYZED BY: HLW

DATE/TIME: 06/28/95 17:43:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbour RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-023MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/25/95
 DATE RECEIVED: 06/27/95

PARAMETER	ANALYTICAL DATA		DETECTION LIMIT	UNITS
	RESULTS			
Moisture METHOD CLP SOW Analyzed by: CM Date: 07/07/95	14		1	wt. %
Total Petroleum Hydrocarbons 418.1AZ Analyzed by: RS Date: 06/30/95 09:00:00	ND		20	mg/Kg

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-02

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbour RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-024MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/24/95
 DATE RECEIVED: 06/27/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	50	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	110	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	89	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	230	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
 (continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506A50-02

Operational Tech

SAMPLE ID: 06-024MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	94	70	121
Toluene-d8	50 ug/Kg	100	84	138
4-Bromofluorobenzene	50 ug/Kg	108	59	113

ANALYZED BY: HLW

DATE/TIME: 06/28/95 17:18:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 650-0901

Certificate of Analysis No. H9-9506A50-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbour RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-024MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/24/95
DATE RECEIVED: 06/27/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Moisture METHOD CLP SOW Analyzed by: CM Date: 07/07/95	23	1	wt. %
Total Petroleum Hydrocarbons 418.1AZ Analyzed by: RS Date: 06/30/95 09:00:00	ND	20	mg/Kg

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-025 MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/21/95
DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-01

Operational Tech

SAMPLE ID: 06-025 MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	94	70	121
Toluene-d8	50 ug/Kg	98	84	138
4-Bromofluorobenzene	50 ug/Kg	98	59	113

ANALYZED BY: HLW

DATE/TIME: 06/23/95 15:19:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbor RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-025 MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/21/95
 DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Moisture METHOD CLP SOW Analyzed by: DSE Date: 06/29/95	19	1	wt. %
Total Petroleum Hydrocarbons 418.1AZ Analyzed by: RS Date: 06/30/95 09:00:00	ND	20	mg/Kg

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-025 MW Composite-MS

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/21/95
DATE RECEIVED: 06/23/95

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*		UNITS
Acetone	ND	100		ug/Kg
Benzene	48	5		ug/Kg
Bromodichloromethane	46	5		ug/Kg
Bromoform	43	5		ug/Kg
Bromomethane	53	10		ug/Kg
2-Butanone	ND	20		ug/Kg
Carbon Disulfide	46	5		ug/Kg
Carbon Tetrachloride	44	5		ug/Kg
Chlorobenzene	47	5		ug/Kg
Chloroethane	51	10		ug/Kg
2-Chloroethylvinylether	48	10		ug/Kg
Chloroform	49	5		ug/Kg
Chloromethane	77	10		ug/Kg
Dibromochloromethane	45	5		ug/Kg
1,1-Dichloroethane	49	5		ug/Kg
1,1-Dichloroethene	49	5		ug/Kg
1,2-Dichloroethane	48	5		ug/Kg
total-1,2-Dichloroethene	96	5		ug/Kg
1,2-Dichloropropane	49	5		ug/Kg
cis-1,3-Dichloropropene	44	5		ug/Kg
trans-1,3-Dichloropropene	46	5		ug/Kg
Ethylbenzene	46	5		ug/Kg
2-Hexanone	16	10		ug/Kg
Methylene Chloride	52	5		ug/Kg
4-Methyl-2-Pentanone	35	10		ug/Kg
Styrene	48	5		ug/Kg
1,1,2,2-Tetrachloroethane	27	5		ug/Kg
Tetrachloroethene	42	5		ug/Kg
Toluene	49	5		ug/Kg
1,1,1-Trichloroethane	47	5		ug/Kg
1,1,2-Trichloroethane	48	5		ug/Kg
Trichloroethene	50	5		ug/Kg
Trichlorofluoromethane	49	5		ug/Kg
Vinyl Acetate	30	10		ug/Kg
Vinyl Chloride	49	10		ug/Kg
Xylenes (total)	130	5		ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-02

Operational Tech

SAMPLE ID: 06-025 MW Composite-MS

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	92	70	121
Toluene-d8	50 ug/Kg	100	84	138
4-Bromofluorobenzene	50 ug/Kg	100	59	113

ANALYZED BY: HLW

DATE/TIME: 06/23/95 15:43:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-02

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbor RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-025 MW Composite-MS

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/21/95
 DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons 418.1AZ	39	20	mg/Kg
Analyzed by: RS Date: 06/30/95 09:00:00			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8680 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-025 MW Composite-MSD

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/21/95
DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	47	5	ug/Kg
Bromodichloromethane	46	5	ug/Kg
Bromoform	47	5	ug/Kg
Bromomethane	50	10	ug/Kg
2-Butanone	22	20	ug/Kg
Carbon Disulfide	46	5	ug/Kg
Carbon Tetrachloride	45	5	ug/Kg
Chlorobenzene	47	5	ug/Kg
Chloroethane	62	10	ug/Kg
2-Chloroethylvinylether	48	10	ug/Kg
Chloroform	48	5	ug/Kg
Chloromethane	48	10	ug/Kg
Dibromochloromethane	47	5	ug/Kg
1,1-Dichloroethane	48	5	ug/Kg
1,1-Dichloroethene	48	5	ug/Kg
1,2-Dichloroethane	48	5	ug/Kg
total-1,2-Dichloroethene	93	5	ug/Kg
1,2-Dichloropropane	47	5	ug/Kg
cis-1,3-Dichloropropene	45	5	ug/Kg
trans-1,3-Dichloropropene	47	5	ug/Kg
Ethylbenzene	46	5	ug/Kg
2-Hexanone	24	10	ug/Kg
Methylene Chloride	50	5	ug/Kg
4-Methyl-2-Pentanone	40	10	ug/Kg
Styrene	48	5	ug/Kg
1,1,2,2-Tetrachloroethane	37	5	ug/Kg
Tetrachloroethene	42	5	ug/Kg
Toluene	48	5	ug/Kg
1,1,1-Trichloroethane	46	5	ug/Kg
1,1,2-Trichloroethane	49	5	ug/Kg
Trichloroethene	49	5	ug/Kg
Trichlorofluoromethane	50	5	ug/Kg
Vinyl Acetate	40	10	ug/Kg
Vinyl Chloride	48	10	ug/Kg
Xylenes (total)	140	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-03

Operational Tech

SAMPLE ID: 06-025 MW Composite-MSD

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	100	70	121
Toluene-d8	50 ug/Kg	100	84	138
4-Bromofluorobenzene	50 ug/Kg	100	59	113

ANALYZED BY: HLW

DATE/TIME: 06/23/95 16:08:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-025 MW Composite-MSD

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/21/95
DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons 418.1AZ	39	20	mg/Kg

Analyzed by: RS
Date: 06/30/95 09:00:00

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-026 MW Composite

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/22/95
DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-04

Operational Tech

SAMPLE ID: 06-026 MW Composite

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	96	70	121
Toluene-d8	50 ug/Kg	100	84	138
4-Bromofluorobenzene	50 ug/Kg	98	59	113

ANALYZED BY: HLW

DATE/TIME: 06/23/95 16:33:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbor RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-026 MW Composite

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/22/95
 DATE RECEIVED: 06/23/95

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Moisture METHOD CLP SOW Analyzed by: DSE Date: 06/29/95	19	1	wt. %	
Total Petroleum Hydrocarbons 418.1AZ Analyzed by: RS Date: 06/30/95 09:00:00	ND	20	mg/Kg	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-05

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/17/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-026 MW Composite-DUP

PROJECT NO: 1315-227
MATRIX: SOIL
DATE SAMPLED: 06/22/95
DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/Kg
Benzene	ND	5	ug/Kg
Bromodichloromethane	ND	5	ug/Kg
Bromoform	ND	5	ug/Kg
Bromomethane	ND	10	ug/Kg
2-Butanone	ND	20	ug/Kg
Carbon Disulfide	ND	5	ug/Kg
Carbon Tetrachloride	ND	5	ug/Kg
Chlorobenzene	ND	5	ug/Kg
Chloroethane	ND	10	ug/Kg
2-Chloroethylvinylether	ND	10	ug/Kg
Chloroform	ND	5	ug/Kg
Chloromethane	ND	10	ug/Kg
Dibromochloromethane	ND	5	ug/Kg
1,1-Dichloroethane	ND	5	ug/Kg
1,1-Dichloroethene	ND	5	ug/Kg
1,2-Dichloroethane	ND	5	ug/Kg
total-1,2-Dichloroethene	ND	5	ug/Kg
1,2-Dichloropropane	ND	5	ug/Kg
cis-1,3-Dichloropropene	ND	5	ug/Kg
trans-1,3-Dichloropropene	ND	5	ug/Kg
Ethylbenzene	ND	5	ug/Kg
2-Hexanone	ND	10	ug/Kg
Methylene Chloride	ND	5	ug/Kg
4-Methyl-2-Pentanone	ND	10	ug/Kg
Styrene	ND	5	ug/Kg
1,1,2,2-Tetrachloroethane	ND	5	ug/Kg
Tetrachloroethene	ND	5	ug/Kg
Toluene	ND	5	ug/Kg
1,1,1-Trichloroethane	ND	5	ug/Kg
1,1,2-Trichloroethane	ND	5	ug/Kg
Trichloroethene	ND	5	ug/Kg
Trichlorofluoromethane	ND	5	ug/Kg
Vinyl Acetate	ND	10	ug/Kg
Vinyl Chloride	ND	10	ug/Kg
Xylenes (total)	ND	5	ug/Kg

METHOD: 8240, Volatile Organics - Soil
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-05

Operational Tech

SAMPLE ID: 06-026 MW Composite-DUP

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/Kg	94	70	121
Toluene-d8	50 ug/Kg	100	84	138
4-Bromofluorobenzene	50 ug/Kg	100	59	113

ANALYZED BY: HLW

DATE/TIME: 06/23/95 16:57:00

METHOD: 8240, Volatile Organics - Soil

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506934-05

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/17/95

PROJECT: Sky Harbor RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-026 MW Composite-DUP

PROJECT NO: 1315-227
 MATRIX: SOIL
 DATE SAMPLED: 06/22/95
 DATE RECEIVED: 06/23/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons 418.1AZ	ND	20	mg/Kg
Analyzed by: RS Date: 06/30/95 09:00:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050

Table E.3
Primary List of VOCs Detected in Groundwater QA/QC Samples at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Date	Toluene (µg/L)	M,P-Xylenes (µg/L)	O-Xylene (µg/L)	Styrene (µg/L)
Trip Blank (1)	7/13/95	0.1	0.3B	0.3B	0.8B
Trip Blank (2)	7/13/95	0.1	0.3B	0.3B	0.8B
Trip Blank (3)	7/13/95	ND	0.1B	0.1B	ND
Trip Blank (4)	7/14/95	ND	ND	ND	0.8
Trip Blank (5)	7/14/95	ND	ND	ND	0.8
Trip Blank (6)	7/14/95	ND	ND	ND	ND
Trip Blank (7)	8/8/95	ND	0.2	0.2	ND
Trip Blank (8)	8/9/95	ND	0.1	0.1	ND
Trip Blank (9)	8/10/95	ND	0.1	0.1	ND
Trip Blank (10)	8/10/95	ND	ND	ND	ND
Equip Blank	7/14/95	ND	ND	ND	0.9
Equip Blank	7/14/95	ND	ND	ND	ND
Equip Blank	8/10/95	0.2	0.1	0.1	ND
Field Blank	7/14/95	ND	ND	ND	ND
Field Blank	7/14/95	ND	ND	ND	ND
Field Blank	8/10/95	0.2	0.1	0.1	ND

µg/L - micrograms per liter.
M,P-Xylenes - Meta, Para-Xylene (Total).
O-Xylene - Ortho-Xylene.

VOCs - Volatile Organic Compounds.

IRP - Installation Restoration Program.
MWS and MW - Monitoring Well.
ADEQ - Arizona Department of Environmental Quality.

Table E.4
 Secondary List of VOCs Detected in Groundwater QA/QC Samples at IRP Site No. 6
 161st ARG, Arizona ANG, Phoenix, Arizona

Sample ID Number	Date	1,2,4-Trimethyl benzene (µg/L)	N-Butyl-benzene (µg/L)	1,2-Dichlorobenzene	Naphthalene (µg/L)	Hexachlorobutadiene	1,2,3-Trichloropropane	1,2,3-Trichlorobenzene	Chloromethane
Trip Blank (1)	7/13/95	0.3	0.2	0.5	2.0B	0.6	ND	0.6	ND
Trip Blank (2)	7/13/95	0.3	0.2	0.5	2.0B	0.6	ND	0.6	ND
Trip Blank (3)	7/13/95	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank (4)	7/14/95	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank (5)	7/14/95	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank (6)	7/14/95	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank (7)	8/8/95	ND	0.2	ND	ND	ND	ND	ND	ND
Trip Blank (8)	8/9/95	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank (9)	8/10/95	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank (10)	8/10/95	ND	ND	ND	ND	ND	ND	ND	ND
Equip Blank	7/14/95	ND	ND	ND	ND	ND	ND	ND	ND
Equip Blank	7/14/95	ND	ND	ND	ND	ND	0.2	ND	ND
Equip Blank	8/10/95	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank	7/14/95	ND	ND	ND	ND	ND	0.3	ND	2
Field Blank	7/14/95	ND	ND	ND	ND	ND	0.8	ND	2
Field Blank	8/10/95	ND	ND	ND	ND	ND	ND	ND	0.5

µg/L - micrograms per liter.
 MWS and MW - Monitoring Well.
 VOCs - Volatile Organic Compounds.

IRP - Installation Restoration Program.
 Dup - Duplicate.

**SECTION E ANALYTICAL RESULTS FOR GROUNDWATER AND COMPOSITE SOIL
SAMPLES AND ANALYTICAL RESULTS FOR QUALITY ASSURANCE/
QUALITY CONTROL SAMPLES**

Low concentrations of six compounds were detected in Trip Blanks from 13 July 1995. However, with the exception of monitoring well 06-005MW, all monitoring wells sampled on 13 July 1995 were resampled in August 1995. In addition, low levels xylenes, styrenes, and naphthalene were detected in the trip blanks from 13 July 1995 and were also detected in laboratory blanks indicating these compounds were laboratory contamination. Therefore, the naphthalene and styrene detected in 06-005MW may be laboratory contamination.

Low concentrations of xylenes were detected in the trip blanks from the August 1995 resampling of monitoring wells 06-018MW through 06-026MW. The levels of xylenes detected in the trip blanks are orders of magnitude below any action levels and do not impact the sampling results. Low concentrations of xylenes, toluene, styrenes, 1,2,3-Trichlorobenzene, and chloromethane were detected in the trip blanks and equipment blanks from the August 1995 resampling of monitoring wells 06-018MW through 06-026MW. These levels detected in the equipment blanks are orders of magnitude below any action levels and do not impact the sampling results.

VOC surrogate recoveries for groundwater samples from the first round ranged from 85% to 104% for 1-chloro-2-fluorobenzene.

VOC surrogate recoveries for SOIL samples Ranged from 70% to 121% for 1,2-dichloroethane, 84% to 138% for toluene d8, and 59% to 113% for Bromofluorobenzene. ALL were in of range.

THIS PAGE INTENTIONALLY LEFT BLANK



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-09

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Provided by SPL
 SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/07/95
 DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	0.1	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-09

Operational Tech

SAMPLE ID: Trip Blank

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

85

ANALYZED BY: JZL

DATE/TIME: 07/22/95 18:20:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8680 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-08

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: Equipt Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/13/95 16:00:00
 DATE RECEIVED: 07/14/95

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	1	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-08

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: Equipt Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/13/95 16:00:00
 DATE RECEIVED: 07/14/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: SW Date: 07/25/95 12:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9507438-07

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/07/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Field Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/13/95 16:00:00
DATE RECEIVED: 07/14/95

PARAMETER	ANALYTICAL DATA		
	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.3	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-07

Operational Tech

SAMPLE ID: Field Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES	% RECOVERY
1-Chloro-2-Fluorobenzene	81

ANALYZED BY: JZL

DATE/TIME: 07/22/95 20:42:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507438-07

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/07/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: Field Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/13/95 16:00:00
 DATE RECEIVED: 07/14/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum extractables METHOD 418.1*	ND	0.5		mg/L
Analyzed by: SW Date: 07/25/95 12:00:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-07

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

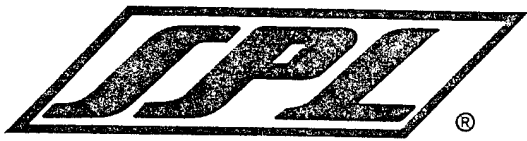
08/14/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95
DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-07

Operational Tech

SAMPLE ID: Trip Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		90	

ANALYZED BY: JZL

DATE/TIME: 07/24/95 06:53:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/14/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: Field Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 20:30:00
 DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	2	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-04

Operational Tech

SAMPLE ID: Field Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	0.3	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES	% RECOVERY
1-Chloro-2-Fluorobenzene	95

ANALYZED BY: JZL

DATE/TIME: 07/24/95 11:39:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



Certificate of Analysis No. H9-9507479-04

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/14/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Field Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 20:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-05

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/14/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Equipment Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 20:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	3	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-05

Operational Tech

SAMPLE ID: Equipment Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	0.2	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		91	

ANALYZED BY: JZL

DATE/TIME: 07/24/95 09:16:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507479-05

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/14/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: Equipment Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 20:30:00
 DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: VM Date: 07/28/95 15:00:00		ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-10

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	0.8	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-10

Operational Tech

SAMPLE ID: Trip Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		91	

ANALYZED BY: JZL

DATE/TIME: 07/24/95 04:31:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Field Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 08:30:00
DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	PQL*		
Dichlorodifluoromethane	ND	1.1	µg/L	
Chloromethane	2	0.15	µg/L	
Vinyl chloride	ND	0.21	µg/L	
Bromomethane	ND	0.17	µg/L	
Chloroethane	ND	0.18	µg/L	
Trichlorofluoromethane	ND	0.34	µg/L	
1,1-Dichloroethene	ND	0.19	µg/L	
trans-1,2-Dichloroethene	ND	0.20	µg/L	
1,1-Dichloroethane	ND	0.11	µg/L	
2,2-Dichloropropane	ND	0.18	µg/L	
cis-1,2-Dichloroethene	ND	0.27	µg/L	
Chloroform	ND	0.15	µg/L	
Bromochloromethane	ND	0.11	µg/L	
1,1,1-Trichloroethane	ND	0.15	µg/L	
1,1-Dichloropropene	ND	0.33	µg/L	
Carbon Tetrachloride	ND	0.11	µg/L	
Benzene	ND	0.03	µg/L	
1,2-Dichloroethane	ND	0.38	µg/L	
Trichloroethene	ND	0.32	µg/L	
1,2-Dichloropropane	ND	0.17	µg/L	
Bromodichloromethane	ND	0.11	µg/L	
Dibromomethane	ND	0.12	µg/L	
cis-1,3-Dichloropropene	ND	0.09	µg/L	
Toluene	ND	0.06	µg/L	
trans-1,3-Dichloropropene	ND	0.11	µg/L	
1,1,2-Trichloroethane	ND	0.21	µg/L	
Tetrachloroethene	ND	0.33	µg/L	
1,3-Dichloropropane	ND	0.25	µg/L	
Dibromochloromethane	ND	0.08	µg/L	
1,2-Dibromoethane	ND	0.06	µg/L	
Chlorobenzene	ND	0.62	µg/L	
Ethyl benzene	ND	0.03	µg/L	
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L	
Xylenes	ND	0.09	µg/L	
Styrene	ND	0.23	µg/L	
Isopropylbenzene	ND	0.10	µg/L	
Bromoform	ND	0.12	µg/L	
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L	

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-03

Operational Tech

SAMPLE ID: Field Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,2,3-Trichloropropane	0.8	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		88	

ANALYZED BY: JZL

DATE/TIME: 07/24/95 10:27:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-03

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
 SITE: Phoenix, AZ
 SAMPLED BY: Operational Technology
 SAMPLE ID: Field Blank

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 07/14/95 08:30:00
 DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00	ND	0.5		mg/l

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Equipment Blank

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 08:30:00
DATE RECEIVED: 07/15/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	2	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	0.9	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-04

Operational Tech

SAMPLE ID: Equipment Blank

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,2,3-Trichloropropane	0.5	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	2	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

84

ANALYZED BY: JZL

DATE/TIME: 07/24/95 08:05:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9507478-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

DATE: 08/10/95

PROJECT: Air National Guard
SITE: Phoenix, AZ
SAMPLED BY: Operational Technology
SAMPLE ID: Equipment Blank

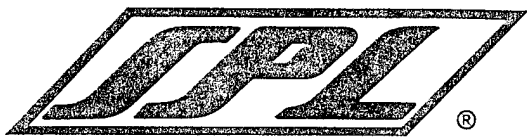
PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 07/14/95 08:30:00
DATE RECEIVED: 07/15/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: BV Date: 07/26/95 14:00:00		ND	0.5	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-05

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/22/95

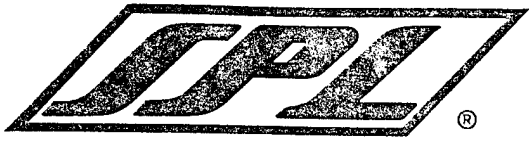
PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/04/95
DATE RECEIVED: 08/10/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	0.1	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508405-05

Operational Tech

SAMPLE ID: Trip Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES	% RECOVERY		
1-Chloro-2-Fluorobenzene	95		

ANALYZED BY: JZL

DATE/TIME: 08/10/95 15:29:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

08/22/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Provided by SPL
 SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/04/95
 DATE RECEIVED: 08/09/95

ANALYTICAL DATA

PARAMETER	RESULTS	MDL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
Methylene Chloride	ND	1.0	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	0.2	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
 (continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508337-04

Operational Tech

SAMPLE ID: Trip Blank

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	MDL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	0.2	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L
SURROGATES		% RECOVERY	
1-Chloro-2-Fluorobenzene		100	

ANALYZED BY: JZL

DATE/TIME: 08/09/95 21:41:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Method Detection Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/23/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/04/95
DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	ND	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-03

Operational Tech

SAMPLE ID: Trip Blank

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

95

ANALYZED BY: JZL

DATE/TIME: 08/12/95 03:44:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/23/95

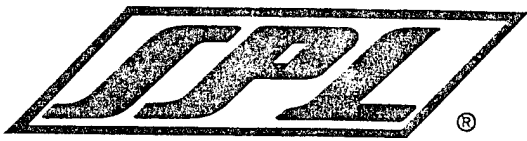
PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/04/95
DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	ND	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	ND	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	0.1	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508458-04

Operational Tech

SAMPLE ID: Trip Blank

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	B 2	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

% RECOVERY

1-Chloro-2-Fluorobenzene

87

ANALYZED BY: JZL

DATE/TIME: 08/12/95 02:32:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

B - Compound detected in method blank

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-01

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/23/95

PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: Equipment Blank

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/10/95 07:45:00
DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.6	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	0.2	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	0.1	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-01

Operational Tech

SAMPLE ID: Equipment Blank

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
1,1,2,2-Tetrachloroethane	ND	0.27	µg/L
1,2,3-Trichloropropane	ND	0.16	µg/L
n-Propyl benzene	ND	0.04	µg/L
Bromobenzene	ND	0.22	µg/L
1,3,5-Trimethylbenzene	ND	0.03	µg/L
2-Chlorotoluene	ND	0.26	µg/L
4-Chlorotoluene	ND	0.29	µg/L
tert-Butylbenzene	ND	0.14	µg/L
1,2,4-Trimethylbenzene	ND	0.05	µg/L
sec-Butylbenzene	ND	0.06	µg/L
p-Isopropyltoluene	ND	0.10	µg/L
1,3-Dichlorobenzene	ND	0.26	µg/L
1,4-Dichlorobenzene	ND	0.30	µg/L
n-Butylbenzene	ND	0.12	µg/L
1,2-Dichlorobenzene	ND	0.48	µg/L
1,2-Dibromo-3-chloropropane	ND	0.13	µg/L
1,2,4-Trichlorobenzene	ND	0.09	µg/L
Hexachlorobutadiene	ND	0.22	µg/L
Naphthalene	ND	0.12	µg/L
1,2,3-Trichlorobenzene	ND	0.35	µg/L

SURROGATES

1-Chloro-2-Fluorobenzene

% RECOVERY

86

ANALYZED BY: JZL

DATE/TIME: 08/12/95 06:06:00

EXTRACTED BY:

DATE/TIME:

METHOD: 502.2 - Drinking Water Volatiles

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-01

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/23/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: Equipment Blank

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/10/95 07:45:00
 DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum extractables METHOD 418.1* Analyzed by: RN Date: 08/15/95 09:00:00	ND	0.5	mg/l

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-02

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

08/23/95

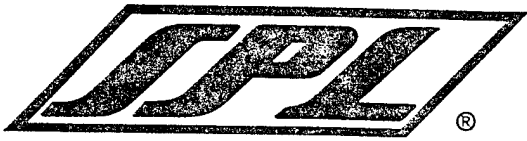
PROJECT: Sky Harbor ANG
SITE: Phoenix, AZ
SAMPLED BY: Optech
SAMPLE ID: Field Blank

PROJECT NO: 1315-227
MATRIX: LIQUID
DATE SAMPLED: 08/10/95 07:40:00
DATE RECEIVED: 08/11/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.1	µg/L
Chloromethane	0.5	0.15	µg/L
Vinyl chloride	ND	0.21	µg/L
Bromomethane	ND	0.17	µg/L
Chloroethane	ND	0.18	µg/L
Trichlorofluoromethane	ND	0.34	µg/L
1,1-Dichloroethene	ND	0.19	µg/L
trans-1,2-Dichloroethene	ND	0.20	µg/L
1,1-Dichloroethane	ND	0.11	µg/L
2,2-Dichloropropane	ND	0.18	µg/L
cis-1,2-Dichloroethene	ND	0.27	µg/L
Chloroform	ND	0.15	µg/L
Bromochloromethane	ND	0.11	µg/L
1,1,1-Trichloroethane	ND	0.15	µg/L
1,1-Dichloropropene	ND	0.33	µg/L
Carbon Tetrachloride	ND	0.11	µg/L
Benzene	ND	0.03	µg/L
1,2-Dichloroethane	ND	0.38	µg/L
Trichloroethene	ND	0.32	µg/L
1,2-Dichloropropane	ND	0.17	µg/L
Bromodichloromethane	ND	0.11	µg/L
Dibromomethane	ND	0.12	µg/L
cis-1,3-Dichloropropene	ND	0.09	µg/L
Toluene	0.2	0.06	µg/L
trans-1,3-Dichloropropene	ND	0.11	µg/L
1,1,2-Trichloroethane	ND	0.21	µg/L
Tetrachloroethene	ND	0.33	µg/L
1,3-Dichloropropane	ND	0.25	µg/L
Dibromochloromethane	ND	0.08	µg/L
1,2-Dibromoethane	ND	0.06	µg/L
Chlorobenzene	ND	0.62	µg/L
Ethyl benzene	ND	0.03	µg/L
1,1,1,2-Tetrachloroethane	ND	0.25	µg/L
Xylenes	0.1	0.09	µg/L
Styrene	ND	0.23	µg/L
Isopropylbenzene	ND	0.10	µg/L
Bromoform	ND	0.12	µg/L

METHOD: 502.2 - Drinking Water Volatiles
(continued on next page)



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9508460-02

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 08/23/95

PROJECT: Sky Harbor ANG
 SITE: Phoenix, AZ
 SAMPLED BY: Optech
 SAMPLE ID: Field Blank

PROJECT NO: 1315-227
 MATRIX: LIQUID
 DATE SAMPLED: 08/10/95 07:40:00
 DATE RECEIVED: 08/11/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum extractables METHOD 418.1* Analyzed by: RN Date: 08/15/95 09:00:00	ND	0.5		mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-03

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/19/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Provided by SPL
SAMPLE ID: 06-062 TB

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 06/16/95
DATE RECEIVED: 06/30/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/L
Benzene	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
2-Butanone	35	20	ug/L
Carbon Disulfide	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chloroethane	ND	10	ug/L
2-Chloroethylvinylether	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
total-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methylene Chloride	ND	5	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
Styrene	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L

METHOD: 8240, Volatile Organics - Water
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-03

Operational Tech

SAMPLE ID: 06-062 TB

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: GT

DATE/TIME: 07/06/95 20:07:00

METHOD: 8240, Volatile Organics - Water

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
8880 INTERCHANGE DRIV
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-04

Operational Tech
677 Emory Valley Rd. Suite C
Oak Ridge, TN 37830
ATTN: Mike Giles

07/19/95

PROJECT: Sky Harbor RI/FS Add
SITE: 161 st ARG
SAMPLED BY: Operational Technology
SAMPLE ID: 06-062 FB

PROJECT NO: 1315-227
MATRIX: WATER
DATE SAMPLED: 06/29/95
DATE RECEIVED: 06/30/95

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acetone	ND	100	ug/L
Benzene	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
2-Butanone	ND	20	ug/L
Carbon Disulfide	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chloroethane	ND	10	ug/L
2-Chloroethylvinylether	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
total-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methylene Chloride	ND	5	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
Styrene	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L

METHOD: 8240, Volatile Organics - Water
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-04

Operational Tech

SAMPLE ID: 06-062 FB

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: GT

DATE/TIME: 07/06/95 20:36:00

METHOD: 8240, Volatile Organics - Water

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL Arizona License # AZ0050



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9506C03-04

Operational Tech
 677 Emory Valley Rd. Suite C
 Oak Ridge, TN 37830
 ATTN: Mike Giles

DATE: 07/19/95

PROJECT: Sky Harbor RI/FS Add
 SITE: 161 st ARG
 SAMPLED BY: Operational Technology
 SAMPLE ID: 06-062 FB

PROJECT NO: 1315-227
 MATRIX: WATER
 DATE SAMPLED: 06/29/95
 DATE RECEIVED: 06/30/95

PARAMETER	ANALYTICAL DATA			UNITS
	RESULTS	DETECTION LIMIT		
Petroleum extractables METHOD 418.1*	ND	0.5		mg/L
Analyzed by: MF				
Date: 07/11/95 15:00:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
 SPL Arizona License # AZ0050

APPENDIX F

DRUM DISPOSAL CRITERIA

THIS PAGE INTENTIONALLY LEFT BLANK

VOC surrogate recoveries for groundwater samples from the first round ranged from 85% to 104% for 1-chloro-2-fluorobenzene.

VOC surrogate recoveries for groundwater samples from the second round ranged from 56% to 145% for 1-chloro-2-fluorobenzene (PID) and 27% to 141% for 1-chloro-2-fluorobenzene. Both were out of range for the most samples due to the re-integrated data. SVOC surrogate recoveries ranged from 80% to 92% for nitrobenzene-d5, from 74% to 89% for 2-fluorobiphenyl, 89% to 100% for terphenyl-d14, 55% to 67% for phenol-d5, 60% to 61% for 2-fluorophenol, and 74% to 85% for 2,4,6-tribromophenol.

Table F.1
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
500	06-025MW S	Non-Detect	Dispose On-Site
501	06-025MW S	Non-Detect	Dispose On-Site
502	06-025MW S	Non-Detect	Dispose On-Site
503	06-025MW S	Non-Detect	Dispose On-Site
504	06-025MW S	Non-Detect	Dispose On-Site
505	06-025MW S&W	15 µg/L Benzene	Reduce Below ARARs
506	06-025MW S&W	15 µg/L Benzene	Reduce Below ARARs
507	06-025MW S&W	15 µg/L Benzene	Reduce Below ARARs
508	06-025MW S&W	15 µg/L Benzene	Reduce Below ARARs
509	06-025MW S&W	15 µg/L Benzene	Reduce Below ARARs
510	06-025MW S&W	15 µg/L Benzene	Reduce Below ARARs
511	06-026MW S	Non-Detect	Dispose On-Site
512	06-026MW S	Non-Detect	Dispose On-Site
513	06-026MW S	Non-Detect	Dispose On-Site
514	06-026MW S	Non-Detect	Dispose On-Site
515	06-026MW S	Non-Detect	Dispose On-Site
516	06-026MW S	Non-Detect	Dispose On-Site
517	06-026MW S&W	24 µg/L Benzene	Reduce Below ARARs
518	06-026MW S&W	24 µg/L Benzene	Reduce Below ARARs
519	06-026MW S&W	24 µg/L Benzene	Reduce Below ARARs ⁱ

Table F.1 (Continued)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
520	06-026MW S&W	24 µg/L Benzene	Reduce Below ARARs
521	06-026MW S&W	24 µg/L Benzene	Reduce Below ARARs
522	06-026MW S&W	24 µg/L Benzene	Reduce Below ARARs
523	06-021MW S	16 µg/kg Benzene	Dispose On-Site
524	06-021MW S	16 µg/kg Benzene	Dispose On-Site
525	06-025MW S	16 µg/kg Benzene	Dispose On-Site
526	06-021MW S&W	1,800 µg/kg Benzene	Reduce Below ARARs
527	06-021MW S&W	1,800 µg/kg Benzene	Reduce Below ARARs
528	06-021MW S	16 µg/kg Benzene	Dispose On-Site
529	06-021MW S	16 µg/kg Benzene	Dispose On-Site
530	06-021MW S	16 µg/kg Benzene	Dispose On-Site
531	06-024MW S	50 µg/kg Benzene	Dispose On-Site
532	06-024MW S	50 µg/kg Benzene	Dispose On-Site
533	06-024MW S&W	960 µg/kg Benzene	Reduce Below ARARs
534	06-024MW S	50 µg/kg Benzene	Dispose On-Site
535	06-024MW S	50 µg/kg Benzene	Dispose On-Site
536	06-024MW S	50 µg/kg Benzene	Dispose On-Site
537	06-024MW S&W	960 µg/kg Benzene	Reduce Below ARARs
538	Empty		

Table F.1 (Continued)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
539	06-023MW S	Non-Detect	Dispose On-Site
540	06-023MW S	Non-Detect	Dispose On-Site
541	06-023MW S	Non-Detect	Dispose On-Site
542	06-023MW S	Non-Detect	Dispose On-Site
543	06-023MW S&W	1,200 µg/L Benzene	Reduce Below ARARs
544	06-023MW S&W	1,200 µg/L Benzene	Reduce Below ARARs
545	06-023MW S	Non-Detect	Dispose On-Site
546	06-023MW S	Non-Detect	Dispose On-Site
547	06-022MW S	82 µg/kg	Dispose On-Site
548	06-022MW S&W	1,400 µg/kg	Reduce Below ARARs
549	06-022MW S	82 µg/kg	Dispose On-Site
550	06-022MW S	82 µg/kg	Dispose On-Site
551	06-022MW S	82 µg/kg	Dispose On-Site
552	06-022MW S	82 µg/kg	Dispose On-Site
553	06-022MW S	82 µg/kg	Dispose On-Site
554	06-016BH S	6,000 µg/kg	Reduce Below ARARs
555	06-016BH S	6,000 µg/kg	Reduce Below ARARs
556	06-016BH S	6,000 µg/kg	Reduce Below ARARs
557	06-016BH S	6,000 µg/kg	Reduce Below ARARs

Table F.1 (Continued)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
558	06-018MW S	Non-Detect	Dispose On-Site
559	06-018MW S	Non-Detect	Dispose On-Site
560	06-018MW S	Non-Detect	Dispose On-Site
561	06-018MW S&W	6 µg/L Benzene	Reduce Below ARARs
562	06-018MW S	Non-Detect	Dispose On-Site
563	06-018MW S	Non-Detect	Dispose On-Site
564	06-018MW W	6 µg/L Benzene	Reduce Below ARARs
565	06-019MW S	Non-Detect	Dispose On-Site
566	06-019MW S	Non-Detect	Dispose On-Site
567	06-019MW S	Non-Detect	Dispose On-Site
568	06-019MW S	Non-Detect	Dispose On-Site
569	06-019MW S	Non-Detect	Dispose On-Site
570	06-019MW S&W	5 µg/L Benzene	Reduce Below ARARs
571	06-019MW S&W	5 µg/L Benzene	Reduce Below ARARs
572	06-019MW S&W	5 µg/L Benzene	Reduce Below ARARs
573	06-020MW S	Non-Detect	Dispose On-Site
574	06-020MW S	Non-Detect	Dispose On-Site
575	06-020MW S	Non-Detect	Dispose On-Site
576	06-020MW S	Non-Detect	Dispose On-Site

Table F.1 (Continued)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
577	06-020MW S	Non-Detect	Dispose On-Site
578	06-020MW S	Non-Detect	Dispose On-Site
579	06-020MW S	Non-Detect	Dispose On-Site
580	06-020MW S	Non-Detect	Dispose On-Site
581	ASPHALT		Dispose of in a Proper Landfill
582	ASPHALT		Dispose of in a Proper Landfill
583	ASPHALT		Dispose of in a Proper Landfill
584	ASPHALT		Dispose of in a Proper Landfill
585	ASPHALT		Dispose of in a Proper Landfill
586	ASPHALT		Dispose of in a Proper Landfill
587	ASPHALT		Dispose of in a Proper Landfill
588	06-018MW DW	6 µg/L Benzene	Reduce Below ARARs
589	06-018MW DW	6 µg/L Benzene	Reduce Below ARARs
590	06-019MW DW	5 µg/L Benzene	Reduce Below ARARs
591	06-019MW DW	5 µg/L Benzene	Reduce Below ARARs
592	06-022MW DW	1,400 µg/L Benzene	Reduce Below ARARs
593	06-022MW DW	1,400 µg/L Benzene	Reduce Below ARARs
594	06-024MW DW	960 µg/L Benzene	Reduce Below ARARs
595	06-024MW DW	960 µg/L Benzene	Reduce Below ARARs

Table F.1 (Continued)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
596	06-023MW DW	1,200 µg/L Benzene	Reduce Below ARARs
597	06-023MW DW	1,200 µg/L Benzene	Reduce Below ARARs
598	06-021MW DW	1,800 µg/L Benzene	Reduce Below ARARs
599	06-021MW DW	1,800 µg/L Benzene	Reduce Below ARARs
600	06-025MW DW	15 µg/L Benzene	Reduce Below ARARs
601	06-025MW DW	15 µg/L Benzene	Reduce Below ARARs
602	06-026MW DW	24 µg/L Benzene	Reduce Below ARARs
603	06-026MW DW	24 µg/L Benzene	Reduce Below ARARs
604	06-020MW DW	36 µg/L Benzene	Reduce Below ARARs
605	06-020MW DW	36 µg/L Benzene	Reduce Below ARARs
606	MWS-02 PW	Non-Detect	Dispose On-Site
607	MWS-02 PW	Non-Detect	Dispose On-Site
608	MWS-01 PW	4 µg/L Benzene	Dispose On-Site
609	MWS-01 PW	4 µg/L Benzene	Dispose On-Site
610	06-017MW PW	Non-Detect	Dispose On-Site
611	06-017MW PW	Non-Detect	Dispose On-Site
612	06-005MW PW	0.6 µg/L Benzene	Dispose On-Site
613	06-005MW PW	0.6 µg/L Benzene	Dispose On-Site
614	06-016MW PW	7 µg/L TCE	Reduce Below ARARs

Table F.1 (Continued)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
615	06-016MW PW	7 µg/L TCE	Reduce Below ARARs
616	MWS-04 PW	4,200 µg/L Benzene	Reduce Below ARARs
617	MWS-04 PW	4,200 µg/L Benzene	Reduce Below ARARs
618	06-015MW PW	74 µg/L Benzene	Reduce Below ARARs
619	06-015MW PW	74 µg/L Benzene	Reduce Below ARARs
620	06-013MW PW	60 µg/L Benzene	Reduce Below ARARs
621	06-013MW PW	60 µg/L Benzene	Reduce Below ARARs
622	06-012MW PW	29 µg/L Benzene	Reduce Below ARARs
623	06-012MW PW	29 µg/L Benzene	Reduce Below ARARs
624	06-003MW PW	19 µg/L Benzene	Reduce Below ARARs
625	06-003MW PW	19 µg/L Benzene	Reduce Below ARARs
626	MW3-02 PW	15 µg/L Benzene	Reduce Below ARARs
627	MW3-02 PW	15 µg/L Benzene	Reduce Below ARARs
628	MWS-03 PW	8 µg/L Benzene	Reduce Below ARARs
629	MWS-03 PW	8 µg/L Benzene	Reduce Below ARARs
630	MW5-01 PW	6 µg/L Benzene	Reduce Below ARARs
631	MW5-01 PW	6 µg/L Benzene	Reduce Below ARARs
632	06-023MW PW	1,200 µg/L Benzene	Reduce Below ARARs
633	06-023MW PW	1,200 µg/L Benzene	Reduce Below ARARs

Table F.1 (Concluded)
IRP Site No. 6 Drum Status
161st ARG, Arizona ANG, Phoenix, Arizona

Drum No.	Boring/MW	Highest Level of Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, Total Xylenes, or Trichloroethylene	Recommendation
634	06-022MW PW	1,400 µg/L Benzene	Reduce Below ARARs
635	06-022MW PW	1,400 µg/L Benzene	Reduce Below ARARs
636	06-025MW PW	15 µg/L Benzene	Reduce Below ARARs
637	06-025MW PW	15 µg/L Benzene	Reduce Below ARARs
638	06-018MW PW	6 µg/L Benzene	Reduce Below ARARs
639	06-018MW PW	6 µg/L Benzene	Reduce Below ARARs
640	06-019MW PW	5 µg/L Benzene	Reduce Below ARARs
641	06-019MW PW	5 µg/L Benzene	Reduce Below ARARs
642	06-021MW PW	1,800 µg/L Benzene	Reduce Below ARARs
643	06-021MW PW	1,800 µg/L Benzene	Reduce Below ARARs
644	06-026MW PW	24 µg/L Benzene	Reduce Below ARARs
645	06-026MW PW	24 µg/L Benzene	Reduce Below ARARs
646	06-024MW PW	960 µg/L Benzene	Reduce Below ARARs
647	06-024MW PW	960 µg/L Benzene	Reduce Below ARARs
648	06-020MW PW	36 µg/L Benzene	Reduce Below ARARs
649	06-020MW PW	36 µg/L Benzene	Reduce Below ARARs

MW - Monitoring Well.
S&W - Soil and Water.
S - Soil.
DW - Development Water.

PW - Purge Water.
µg/L - micrograms per Liter.
ARARs - Applicable or Relevant and Appropriate Requirement.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX G

GROUNDWATER RESULTS

THIS PAGE INTENTIONALLY LEFT BLANK

Table G.1
Groundwater Level Measurement Data at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Well Number and Elevation of TOC (feet above MSL)	Measurement Date	Depth to Water from TOC	Groundwater Elevation (MSL)
MWS-01 1,118.4	9/8/93	49.54	1,068.86
	12/9/93	52.18	1,066.22
	2/10/94	56.90	1,061.50
	4/5/94	58.80	1,059.60
	7/29/94	64.20	1,054.20
	1/12/95	62.64	1,055.76
	7/13/95	57.29	1,061.11
MWS-02 1,115.61	9/8/93	48.84	1,066.77
	12/10/93	50.15	1,065.46
	2/10/94	55.38	1,060.23
	4/8/94	57.25	1,058.36
	7/29/94	62.45	1,053.16
	1/12/95	60.86	1,054.75
	7/13/95	55.37	1,060.24
MWS-03 1,115.84	9/8/93	NM	NM
	12/18/93	51.95	1,063.89
	2/10/94	55.91	1,059.93
	4/7/94	57.65	1,058.19
	7/29/94	62.78	1,053.06
	1/12/95	60.96	1,054.88
	7/14/95	55.98	1,059.86
MWS-04 1,114.67	9/8/93	50.57	1,064.10
	12/9/93	52.64	1,062.03
	2/10/94	56.58	1,058.09
	4/7/94	58.15	1,056.55
	7/30/94	63.09	1,051.58
	1/12/95	61.85	1,052.82
	7/14/95	56.68	1,057.99
MW1-02 1,116.04	9/8/93	51.91	1,064.13
	12/9/93	54.00	1,062.04
	2/10/94	57.74	1,058.30
	4/7/94	59.45	1,056.59
	7/29/94	64.50	1,051.54
	1/13/95	62.87	1,053.17
MW2-02 1,114.20	9/8/93	50.38	1,063.82
	12/9/93	52.49	1,061.71
	2/10/94	56.14	1,058.06
	4/7/94	57.85	1,056.35
	7/28/94	62.89	1,051.31
	1/12/95	NM	NM

Table G.1 (Continued)
Groundwater Level Measurement Data at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Well Number and Elevation of TOC (feet above MSL)	Measurement Date	Depth to Water from TOC	Groundwater Elevation (MSL)
MW3-01 1,114.77	9/8/93	49.98	1,064.79
	12/10/93	52.05	1,062.72
	2/10/94	55.81	1,058.96
	4/6/94	57.50	1,057.27
	7/28/94	62.68	1,052.09
	1/12/95	NM	NM
MW3-02 1,112.14	9/8/93	NM	NM
	12/10/93	51.50	1,060.64
	2/10/94	54.89	1,057.25
	4/6/94	56.40	1,055.74
	7/28/94	61.58	1,050.56
	1/10/95	61.58	1,050.56
MW5-01 1,116.80	9/8/93	50.09	1,066.71
	12/9/93	52.20	1,064.60
	2/10/94	56.63	1,060.17
	4/8/94	58.52	1,058.28
	7/29/94	63.76	1,053.04
	1/10/95	63.02	1,053.78
PS-02 1,113.86	9/8/93	48.32	1,065.54
	12/10/93	49.10	1,064.76
	2/10/94	54.72	1,059.14
	4/7/94	57.64	1,056.22
	7/30/94	61.89	1,051.97
	1/12/95	NM	NM
06-001MW 1,115.86	12/10/93	50.45	1,064.69
	12/10/93	50.50	1,064.64
	2/9/94	54.93	1,060.21
	2/10/94	54.91	1,060.23
	4/7/94	56.75	1,058.39
	7/29/94	61.93	1,053.21
06-002MW 1,115.76	12/17/93	51.11	1,064.65
	12/18/93	55.44	1,060.32
	2/9/94	55.46	1,060.30
	2/10/93	55.44	1,060.32
	4/8/94	57.28	1,058.48
	7/29/94	62.48	1,053.28
	1/12/95	NM	NM

Table G.1 (Continued)
Groundwater Level Measurement Data at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Well Number and Elevation of TOC (feet above MSL)	Measurement Date	Depth to Water from TOC	Groundwater Elevation (MSL)
06-003MW 1,116.91	12/8/93	55.07	1,061.84
	12/9/93	55.20	1,061.71
	2/10/94	55.25	1,061.66
	4/9/94	60.80	1,056.11
	7/28/94	65.92	1,050.99
	1/10/95	64.81	1,052.10
	7/14/95	59.25	1,057.66
06-004MW 1,115.79	12/8/93	54.15	1,061.64
	12/9/93	54.18	1,061.61
	2/4/94	58.80	1,056.99
	2/8/94	57.71	1,058.08
	2/10/94	57.72	1,058.07
	4/8/94	59.50	1,056.29
	7/26/94	64.11	1,051.68
	1/12/95	NM	NM
06-005MW 1,108.46	2/2/94	55.30	1,053.16
	2/3/94	55.35	1,053.11
	2/7/93	55.45	1,053.01
	2/10/94	55.45	1,053.01
	4/5/94	56.78	1,051.68
	7/26/94	61.78	1,046.68
	1/11/95	61.74	1,046.72
	7/13/95	56.29	1,052.17
06-006MW 1,115.63	12/8/93	54.84	1,060.79
	12/9/93	54.95	1,060.68
	2/8/94	58.35	1,057.28
	2/9/94	58.55	1,057.08
	2/10/94	58.59	1,057.04
	4/8/94	60.00	1,055.63
	7/27/94	64.72	1,050.91
	1/13/95	65.40	1,050.23
06-007MW 1,115.67	12/17/93	55.65	1,060.02
	12/18/93	55.66	1,060.01
	2/8/94	59.70	1,055.97
	2/10/94	59.72	1,055.95
	4/9/94	61.40	1,054.27
	7/28/94	66.40	1,049.27
	1/12/95	NM	NM

Table G.1 (Continued)
Groundwater Level Measurement Data at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Well Number and Elevation of TOC (feet above MSL)	Measurement Date	Depth to Water from TOC	Groundwater Elevation (MSL)
06-008MW 1,116.14	12/8/93	54.04	1,062.10
	12/9/93	55.10	1,061.04
	2/2/94	58.39	1,057.75
	2/9/94	58.70	1,057.44
	2/10/94	58.69	1,057.45
	4/9/94	60.34	1,055.80
	7/27/94	65.20	1,050.94
	1/12/95	NM	NM
06-009MW 1,114.89	12/8/93	51.14	1,063.75
	12/9/93	55.56	1,059.33
	2/9/94	55.56	1,059.33
	2/10/94	55.55	1,059.34
	4/7/94	57.20	1,057.69
	7/30/94	62.50	1,052.39
	1/12/95	NM	NM
06-010MW 1,115.37	12/17/93	51.15	1,064.22
	12/18/93	51.22	1,064.15
	2/9/94	55.05	1,060.32
	2/10/94	55.07	1,060.30
	4/8/94	56.90	1,058.47
	7/26/94	62.04	1,053.33
	1/12/95	NM	NM
06-011MW 1,113.67	12/17/93	52.65	1,061.02
	12/18/93	52.71	1,060.96
	2/8/94	58.01	1,055.66
	2/9/94	58.24	1,055.43
	2/10/94	58.27	1,055.40
	4/6/94	59.64	1,054.03
	7/27/94	64.65	1,049.02
	1/12/95	NM	NM
06-012MW 1,113.87	12/18/93	52.75	1,061.12
	12/19/93	52.88	1,060.99
	2/7/94	58.14	1,055.73
	2/9/94	58.41	1,055.46
	2/10/94	58.42	1,055.45
	4/6/94	59.78	1,054.09
	7/27/94	64.85	1,049.02
	1/11/95	64.67	1,049.20
	7/14/95	58.85	1,055.02

Table G.1 (Continued)
Groundwater Level Measurement Data at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Well Number and Elevation of TOC (feet above MSL)	Measurement Date	Depth to Water from TOC	Groundwater Elevation (MSL)
06-013MW 1,113.85	12/22/93	52.98	1,060.87
	12/23/93	53.04	1,060.81
	2/8/94	57.63	1,056.22
	2/9/94	57.93	1,055.92
	2/10/94	57.98	1,055.87
	4/6/94	59.30	1,054.55
	7/27/94	64.16	1,049.69
	1/11/95	63.84	1,050.01
	7/13/95	57.87	1,055.98
06-014MW 1,112.41	2/2/94	58.02	1,054.39
	2/3/94	58.12	1,055.73
	2/7/94	58.16	1,054.25
	2/9/94	58.43	1,053.98
	2/10/94	58.45	1,053.96
	4/5/94	59.60	1,052.81
	7/27/94	64.74	1,047.67
06-015MW 1,113.46	2/2/94	59.26	1,054.20
	2/3/94	59.23	1,054.23
	2/7/94	59.33	1,054.13
	2/10/94	59.34	1,054.12
	4/5/94	60.72	1,052.74
	7/26/94	65.75	1,047.71
	1/11/95	65.56	1,047.90
	7/14/95	60.06	1,053.40
06-016MW 1,111.86	2/2/94	58.66	1,053.20
	2/3/94	58.75	1,053.11
	2/7/94	58.87	1,052.99
	2/10/94	58.90	1,052.96
	4/5/94	60.20	1,051.66
	7/26/94	65.25	1,046.61
	1/11/95	64.98	1,046.88
	7/13/95	59.6	1,052.26
06-017MW 1,111.86	2/2/94	55.30	1,056.56
	2/3/94	57.35	1,054.51
	2/7/94	57.45	1,054.41
	2/10/94	57.50	1,054.36
	4/6/94	58.97	1,052.89
	7/27/94	64.13	1,047.73
	1/11/95	64.22	1,047.64
	7/13/95	58.45	1,053.41
06-018MW 1,108.78	7/13/95	56.02	1,052.76
	8/9/95	57.58	1,051.20

Table G.1 (Concluded)
Groundwater Level Measurement Data at IRP Site No. 6
161st ARG, Arizona ANG, Phoenix, Arizona

Well Number and Elevation of TOC (feet above MSL)	Measurement Date	Depth to Water from TOC	Groundwater Elevation (MSL)
06-019MW 1,111.94	7/13/95 8/9/95	59.41 61.09	1,052.53 1,050.85
06-020MW 1,116.57	7/13/95 8/10/95	55.5 57.79	1,061.07 1,058.78
06-021MW 1,114.31	7/13/95 8/8/95	56.1 58.02	1,058.21 1,056.29
06-022MW 1,114.21	7/13/95 8/8/95	54.06 56.15	1,060.15 1,058.06
06-023MW 1,114.42	7/13/95 8/8/95	55.73 57.83	1,058.69 1,056.57
06-024MW 1,115.12	7/13/95 8/10/95	55.39 57.74	1,059.73 1,057.38
06-025MW 1,115.56	7/13/95 8/8/95	55.07 57.09	1,060.49 1,058.47
06-026MW 1,115.55	7/13/95 8/9/95	55.5 57.27	1,060.05 1,058.28

TOC - Top of casing.
MSL - Mean sea level.

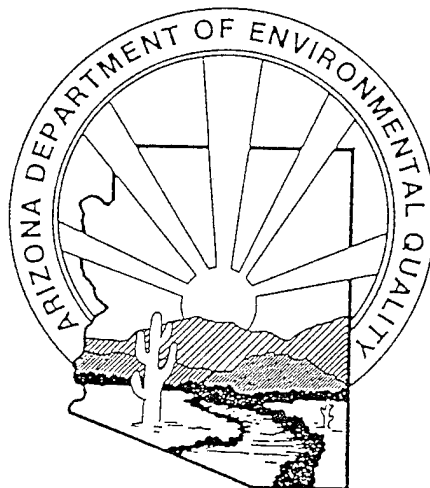
MW and MWS - Monitoring Well.

APPENDIX H

**ADEQ HUMAN HEALTH-BASED GUIDANCE LEVELS FOR THE
INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL**

THIS PAGE INTENTIONALLY LEFT BLANK

HUMAN HEALTH-BASED
GUIDANCE LEVELS FOR THE INGESTION
OF CONTAMINANTS IN
DRINKING WATER AND SOIL



Arizona Department of Environmental Quality

June 1992

NOTICE

The Health-Based Guidance Levels listed in this document are not to be construed as cleanup standards. Rather, they constitute a set of consistently derived health-based levels that may be useful for reference in environmental work.

The Arizona Department of Environmental Quality shall preserve, protect and enhance the environment and the public health and shall be a leader in the development of public policy to maintain and improve the quality of Arizona's air, land and water resources.

NOTICE

The Health-Based Guidance Levels listed in this document are not to be construed as cleanup standards. Rather, they constitute a set of consistently derived health-based levels that may be useful for reference in environmental work.

Suggestions or comments on this document may be sent to:

Charles Graf
Arizona Department of Environmental Quality
P. O. Box 600
Phoenix, AZ 85001-0600



Printed on recycled paper

KEY TO THE TABLE OF GUIDANCE LEVELS FOR THE INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

I. GENERAL INFORMATION

INTRODUCTION:

The accompanying table lists 268 chemicals for which there were sufficient data to develop health-based guidance levels (HBGLs) for drinking water. These data also served as the basis for calculating health-based guidance levels for ingestion of soils. The drinking water and soil HBGLs represent human ingestion levels that are unlikely to result in adverse health effects during long-term exposure; they are designed to protect against toxic doses of systemic toxicants and to limit to one-in-one-million (10^{-6}) the excess cancer risk level for carcinogenic compounds.

The HBGLs were developed by the Office of Risk Assessment and Investigation, Arizona Department of Health Services (ADHS), using a consistent health-risk analysis methodology which is summarized in the following paragraphs and described more thoroughly in Appendix A. The toxicological data required for each chemical using this methodology are tabulated in Appendix B. It is emphasized that the HBGLs listed in the accompanying table apply only to ingestion of drinking water and soil. They do not reflect inhalation or direct contact risks, nor are they applicable to aquatic systems and wildlife. In addition, the soil ingestion HBGLs do not take into account each chemical's capability to leach to groundwater. Most importantly, the drinking water and soil HBGLs have not been subjected to the Arizona rule-making process. They therefore have no official status with respect to enforcement as cleanup standards. Rather, the HBGLs constitute a set of consistently-derived health-based levels that may be useful for reference in environmental work. However, the HBGLs are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the State of Arizona.

The HBGLs tabulated in this document were developed by the ADHS under contract to the Arizona Department of Environmental Quality (ADEQ). The following sources provided most of the information to the ADHS for developing the HBGLs: Environmental Protection Agency (EPA) data appearing in the Federal Register, EPA Health Effects Assessment Summary Tables (HEAST), EPA Integrated Risk Information System (IRIS), National Pesticide Information Retrieval System (NPIRS) and the National Academy of Science Drinking Water and Health series.

CHANGES FROM SEPTEMBER 1990 DRAFT:

Based on comments submitted to the ADEQ and ADHS on the original draft of this document (September 1990), numerous changes have been incorporated into this revision. The following list summarizes the most significant of these improvements:

1. This HBGL list includes 268 chemicals, up 38 from the September 1990 draft. Four chemicals on the previous list - aluminum, bendiocarb, cobalt, and δ -hexachlorocyclohexane - were dropped from this list because toxicity data were judged by the ADHS to be insufficient to develop HBGLs. Many of the new chemicals on the list are polycyclic aromatic hydrocarbons (PAH). Because these specific PAH compounds (designated in the table) have been added, the generic entry included on the previous list, *Polycyclic Aromatic Hydrocarbons*, was removed from this list. HBGL values for many chemicals have changed since the September 1990 draft due to publication of more up-to-date toxicity data. Consistent with the September 1990 draft, there is no entry for Total Petroleum Hydrocarbons (TPH), because TPH is a variable mixture of chemicals having differing toxicities. However, several of the individual chemicals composing TPH are listed.
2. The description of the methodology for calculating HBGLs (Appendix A) has been greatly expanded.
3. The toxicological data necessary to calculate HBGLs for each chemical are now tabulated in this document (Appendix B).
4. More precise carcinogenicity and toxicity designations have been adopted for the *Cancer Group* column. These designations (A, B1, B2, C, etc.) are consistent with EPA use.
5. The method for calculating the Soil Ingestion HBGL has been modified. The calculations are now based on a 30-year exposure rather than a 70-year exposure (see Appendix A for details). This has resulted in Soil Ingestion HBGLs for most carcinogenic chemicals that are greater than the HBGLs indicated in the September 1990 draft and for most systemic toxicants that are less than the HBGLs indicated in the September 1990 draft.

6. In the September 1990 draft, data regarding laboratory analytical capabilities were provided in two columns, *Lab Confidence Limit* and *Lab Detection Limit*. In this document, the terminology *Laboratory Level of Quantitation (LOQ)* replaces *Lab Confidence Limit*. The second column of data, *Lab Detection Limit*, was dropped from this document. In its place, a more useful indicator of laboratory performance by Arizona laboratories is presented: *Licensed Laboratory Range*. More detailed definitions of these headings as well as the other headings appearing in the table are given below.

II. EXPLANATION OF TABULATED INFORMATION

A. GENERAL HEADINGS

CHEMICAL - Chemicals are listed by names in common use by the EPA and other agencies. Many of the chemicals have one or more synonyms or acronyms. Appendix C cross-references more common synonyms and acronyms. Standard chemical references may be needed to find less common synonyms and acronyms.

CAS NUMBER - The chemical abstract service registry number (CASRN) is provided as a means of verifying entries for chemicals having multiple names. CAS numbers can be found in standard chemistry references.

CANCER GROUP - Most chemicals in the table have been subjected to a weight-of-evidence assessment by the EPA to evaluate potential human carcinogenicity. Based on this evaluation, all chemicals have been placed in one of the following categories:

- A Human carcinogen
- B1 or B2 Probable human carcinogen
- C Possible human carcinogen
- D Not classifiable as to human carcinogenicity
- E Evidence of noncarcinogenicity in humans
- ND Evaluation not done

HBGLs for known or probable human carcinogens (A, B1 or B2) were derived from a quantitative estimate of the chemical's carcinogenic potency. The HBGLs for carcinogens were calculated so that a 70-year exposure to the contaminant in drinking water or a 30-year exposure to the contaminant in soil results in a lifetime excess cancer risk below 10^{-6} .

Chemicals in the remaining categories (C, D, E and ND) were considered systemic toxicants. HBGLs for these chemicals were derived according to EPA risk assessment methods using a reference dose, a drinking water equivalent, a safety factor, and a factor for relative source contribution. In general, an HBGL for a systemic toxicant

is an estimate of a daily exposure to the human population (including sensitive subgroups) that is unlikely to result in adverse effects during long-term exposure.

B. DRINKING WATER

INGESTION HBGL - Health-Based Guidance Level values for chemical contaminants in drinking water are expressed in $\mu\text{g/l}$ (micrograms per liter) and were developed through the risk assessment process. The values presented in this column have not been altered or adjusted to account for factors such as laboratory methodology limits, economics or offsetting health benefits. The drinking water HBGLs have not been subjected to the Arizona rule-making process and therefore have no official status with respect to enforcement as cleanup standards. Rather, they constitute a set of consistently-derived health-based levels that may be useful for reference in environmental work. However, the HBGLs are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the State of Arizona.

EPA MCL - Environmental Protection Agency Maximum Contaminant Level (MCL) values presented in this column are expressed in $\mu\text{g/l}$ and represent the current legal enforceable drinking water standards as promulgated by the EPA. MCLs are enforced in Arizona by the ADEQ. As specified by the EPA, state MCLs must be no less stringent than the MCLs established by the EPA. (To date all state-adopted MCLs are identical to EPA MCLs).

EPA MCLs listed in the table reflect consideration of certain risk management factors such as laboratory methodology limits, economics or offsetting health benefits. In some cases, the MCL may differ from the HBGL because of these factors or because the standard setting process lags behind the introduction and acceptance of new health-based data.

EPA PROPOSED MCL - Environmental Protection Agency Proposed Maximum Contaminant Level (PMCL) values presented in this column are expressed in $\mu\text{g/L}$ and were published by the EPA in the Federal Register. Some of these values will become MCLs for previously unregulated chemicals while others either reaffirm or modify existing MCLs.

STATE LAB LOQ - Laboratory Level of Quantitation values, presented for information purposes only, are expressed in $\mu\text{g/l}$ and reflect the most current data available for laboratory operating practices in the Office of Environmental and Analytical Chemistry at the State Laboratory. The LOQ is defined as the lowest level that can be reliably quantitated by the State Laboratory during routine laboratory operating conditions. Other laboratories may achieve different levels using different methods or equipment. A term similar to the LOQ is the Practical Quantitation Limit (PQL) used by the EPA. The PQL

expresses the same concept as the LOQ, but with the difference that the PQL assesses the performance of a sample of laboratories examined by the EPA. Laboratory detection levels achieved by the State Laboratory typically range from 0.1 to 1 times the LOQ. Listing of an HBGL value in this document does not imply that laboratories can or must attain corresponding levels of detection. The HBGL values are derived solely from toxicological data and do not take into account the achievability of such levels by laboratories.

LICENSED LABORATORY RANGE - This column lists the highest and lowest reporting values found in a survey of ten Arizona licensed laboratories in February, 1992. These are provided to illustrate the range of values that may be reported from several different laboratories for the same analyte. Where one value is reported, either all laboratories which perform that test used the same reporting level, or only one of the surveyed laboratories performs that test. The reporting values submitted by each surveyed laboratory may not necessarily be the same as the laboratory's corresponding LOQs.

C. SOIL

INGESTION HBGL - Ingestion Health-Based Guidance Level values for chemical contaminants in soil are expressed in mg/kg (milligrams per kilogram) and were based on an average daily ingestion of soil during a 30-year exposure. The average soil ingestion values suggested by the EPA are 0.2 g/d (grams per day) for children 1-6 years of age and 0.1 g/d for ages 7-70. The soil ingestion HBGLs for known or probable carcinogens (A, B1 or B2) are calculated so that a 30-year exposure to the contaminant in soil results in a lifetime excess cancer risk below 10^{-6} . The soil ingestion HBGLs for chemicals in the remaining categories (C, D, E and ND) are calculated to result in the same daily dose of a contaminant as would be experienced as a consequence of ingesting 2 l/d (liters per day) of water containing the contaminant at the drinking water HBGL.

It is emphasized that the soil ingestion HBGLs do not reflect inhalation or direct contact risks, nor are they applicable to aquatic systems and wildlife. In addition, the soil ingestion HBGLs do not take into account each chemical's capability to leach to groundwater. They are therefore inappropriate to use as reference levels or guidelines if leaching to groundwater is a concern.

The soil ingestion HBGLs have not been subjected to the Arizona rule-making process and therefore have no official status with respect to enforcement as cleanup standards. Rather, the HBGLs constitute a set of consistently-derived health-based levels that may be useful for reference in environmental work. However, the HBGLs are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the State of Arizona.

If a soil ingestion guidance level for the "worst possible case" is desired (involving an individual prone to eating soil, such as a child with pica), this level may be calculated by dividing the tabulated soil ingestion HBGL by 100. At this level, an individual in the 1-6 year age range eating 10 g/d of soil would receive approximately the same daily exposure from soil ingestion as by drinking 2 l/d of water containing the contaminant at the drinking water HBGL.

The use of a consistent methodology for determining the soil ingestion HBGLs has led, in a few cases, to results that are not physically possible. (For example, the soil ingestion HBGL for trichlorotrifluoroethane is listed as 3,500,000 mg/kg). Nevertheless, these results have been included in the table, without modification, in order to provide a uniform set of numbers for comparison. Such a result merely indicates that the weight of soil ingested on a daily basis, even assuming unrealistically that the soil is composed entirely of pure chemical, is still too small to produce an excess exposure.

STATE LAB LOQ - Laboratory Level of Quantitation values, presented for information purposes only, are expressed in mg/kg and reflect the most current data available for laboratory operating practices in the Office of Environmental and Analytical Chemistry at the State Laboratory. The LOQ is defined as the lowest level that can be reliably quantitated by the State Laboratory during routine laboratory operating conditions. Other laboratories may achieve different levels using different methods or equipment. A term similar to the LOQ is the Practical Quantitation Limit (PQL) used by the EPA. The PQL expresses the same concept as the LOQ, but with the difference that the PQL assesses the performance of a sample of laboratories examined by the EPA. Laboratory detection levels achieved by the State Laboratory typically range from 0.1 to 1 times the LOQ. Listing of an HBGL value in this document does not imply that laboratories can or must attain corresponding levels of detection. The HBGL values are derived solely from toxicological data and do not take into account the achievability of such levels by laboratories.

LICENSED LABORATORY RANGE - This column lists the highest and lowest reporting values found in a survey of ten Arizona licensed laboratories in February, 1992. These are provided to illustrate the range of values that may be reported from several different laboratories for the same analyte. Where one value is reported, either all laboratories which perform that test used the same reporting level, or only one of the surveyed laboratories performs that test. The reporting values submitted by each surveyed laboratory may not necessarily be the same as the laboratory's corresponding LOQs.

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLS)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION		SOIL INGESTION	
			INGESTION HBGL (µg/L)	HCL (µg/L)	EPA PHCL (µg/L)	STATE LAB LOQ (µg/L)	LIC LAB RANGE (µg/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	LIC LAB RANGE (mg/kg)
33. BORON	7440-42-8	D	630			100	10-100	11000	50	0.5-5
34. BROMACIL	314-40-9	C	91			20		1500	2.0	0.33
35. BROMODICHLOROMETHANE (THM)	75-27-4	B2	0.27	100		0.5	0.2-5.0	10	-	0.01-20
36. BROMOFORM (THM)	75-25-2	B2	4.4	100		2.0	0.2-5.0	170	-	0.01-20
37. BROMOMETHANE	74-83-9	D	9.8			0.5	0.2-10	160	-	0.01-50
38. BROXYNIL	1689-84-5	D	140					2300	-	0.66
39. BUTYL BENZYL PHTHALATE	85-68-7	C	110		100	10	5-50	1900	1.0	0.17-0.3
40. BUTYLATE	2008-41-5	D	350			5.0	20	5800	0.5	1.3
C										
41. CADMIUM	7440-43-9	D	3.5	5.0		1.0	0.2-50	58	10	0.3-10
42. CAPTAN	133-06-2	D	910			30	50	15000	6.0	0.05-3.3
43. CARBARYL	63-25-2	D	700			1.0	10	12000	20	0.33-0.66
44. CARBOFURAN	1563-66-2	E	35	40		1.0	10	580	10	0.66-1.7
45. CARBON DISULFIDE	75-15-0	D	700				10	12000	-	0.05-0.10
46. CARBON TETRACHLORIDE	56-23-5	B2	0.27	5.0		0.5	0.2-5.0	10	-	0.01-30
47. CARBOXIN	5234-68-4	D	700			10	20	12000	1.0	1.3
48. CHLORAMBEN	133-90-4	D	110			1.0+	10	1800	-	0.66
49. CHLORDANE	57-74-9	B2	0.03	2.0		0.5	0.5-1.5	1.0	0.5	0.05-0.5
50. CHLORDIMEFORM	6164-98-3	B2	0.03					1.2	-	-
51. CHLOROBENZENE	108-90-7	D	140	100		1.0	0.2-10	2300	-	0.01-40
52. CHLOROFORH (THM)	67-66-3	B2	5.7	100		0.5	0.2-25	220	0.25	0.01-50
53. CHLOROMETHANE	74-87-3	C	2.8			0.5	0.2-5.0	47	-	0.01-40
54. 2-CHLOROPHENOL	95-57-8	D	35			10	5-10	580	1.0	0.3-0.83
55. CHLOROTHALONIL	1897-45-6	B2	12			10	1.0	470	2.0	0.05
56. o-CHLOROTOLUENE	95-49-8	D	140			1.0	0.5-1.0	2300	-	0.05-0.1
57. CHLORPYRIFOS	2921-88-2	D	21			10		350	1.0	0.05-1.0
58. CHLORSULFURON	64902-72-3	D	350			*		5800	-	-
59. CHROMIUM (TOTAL)	NA	D	100 ##	100		10	10-100	1700	10	0.5-25
60. CHRYSENE (PAH)	218-01-9	B2	0.003		0.20	10	0.02-10	0.11	1.0	0.17-0.3
61. COPPER	7440-50-8	D	1300 ##	TT		10	10-100	22000	10	0.5-10
62. CRESOLS (TOTAL)	NA	D	350					5800	-	-
63. CYANAZINE	21725-46-2	D	14			10		230	1.0	-
64. CYANIDE	57-12-5	D	150		200	20	10	2600	0.2	0.5-100
65. CYROMAZINE	66215-27-8	D	53			*		880	6.0	-

NOTES: TT Treatment Technology
 NA Not Available
 ND Not Determined
 THM Trichloromethane
 PAH Polycyclic Aromatic Hydrocarbon
 * not recovered from water in lab studies
 + EPA established Limit
 - not analyzed by State Lab or the licensed labs surveyed
 ** no Rfd; HBGL based on Slope Factor
 xx no Slope Factor; HBGL based on Rfd
 ## HBGL not based on Rfd or Slope Factor
 divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLs)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER			INGESTION		SOIL INGESTION		LIC LAB RANGE (mg/kg)
			INGESTION HBGL (µg/L)	EPA MCL (µg/L)	PMCL (µg/L)	STATE LAB LOQ (µg/L)	LIC LAB RANGE (µg/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	
A										
1. ACENAPHTHYLENE (PAH)	208-96-8	D	420			10	0.3-10	7000	1.0	0.2-0.8
2. ACETATE	30560-19-1	C	2.8			*	-	47	2.0	0.6
3. ACETONE	67-64-1	D	700			10	10-100	12000	-	0.1-0.5
4. ACROLEIN	107-02-8	C	110			-	5-20	1800	-	-
5. ACRYLAMIDE	79-06-1	B2	0.008	TT		-	-	0.30	-	-
6. ACRYLONITRILE	107-13-1	B1	0.07			-	5-20	2.5	-	-
7. ALACHLOR	15972-60-8	B2	0.43	2.0		10	25	17	1.0	-
8. ALDICARB	116-06-3	E	9.1	3.0		1.0	-	150	1.0	-
9. ALDICARB SULFONE	1646-88-4	D	2.1	2.0		-	-	35	1.0	-
10. ALDICARB SULFOXIDE	1646-87-3	D	9.1	4.0		1.0	-	150	1.0	-
11. ALDRIN	309-00-2	B2	0.002			0.05	0.5-1.0	0.08	0.05	0.005-0.2
12. AMETRYN	834-12-8	D	63			10	1.0	1100	1.0	0.1-1.3
13. AMMONIUM SULFAMATE	7773-06-0	D	1400			-	-	23000	-	-
14. ANTHRACENE (PAH)	120-12-7	D	2100			10	5-10	35000	1.0	0.17-0.2
15. ANTIMONY	7440-36-0	D	2.8	5.0/10		5.0	0.5-200	47	100	0.15-20
16. ARSENIC (INORGANIC)	7440-38-2	A	50 ##	50		10	4-100	840	100	0.1-20
17. ASULAM	3337-71-1	D	350			-	-	5800	-	-
18. ATRAZINE	1912-24-9	C	3.5	3.0		10	12	58	1.0	0.1-1.3
19. AZINPHOS-METHYL	86-50-0	E	18			5.0	0.5-100	290	1.0	0.1-6.6
B										
20. BARIUM	7440-39-3	D	2000 ##	2000		100	10-1000	33000	10	0.5-100
21. BENOMYL	17804-35-2	D	350			-	-	5800	-	-
22. BENTAZON	25057-89-0	D	18			2.0+	10	290	-	0.66
23. BENZ(a)ANTHRACENE (PAH)	56-55-3	B2	0.003	0.10		10	0.01-10	0.11	1.0	0.17-0.3
24. BENZENE	71-43-2	A	1.2	5.0		1.0	0.2-50	47	0.1	0.01-20
25. BENZIDINE	92-87-5	A	0.0002			-	20-100	0.006	0.1	1.7
26. BENZO(a)PYRENE (PAH)	50-32-8	B2	0.003	0.20		10	0.01-10	0.11	1.0	0.17-0.3
27. BENZO(b)FLUORANTHENE (PAH)	205-99-2	B2	0.003	0.20		10	0.01-10	0.11	1.0	0.17-0.66
28. BENZO(k)FLUORANTHENE (PAH)	207-08-9	B2	0.003	0.20		10	0.01-10	0.11	1.0	0.17-0.3
29. BENZYL ALCOHOL	100-51-6	ND	2100			10	2-10	35000	2	0.07-0.17
30. BERYLLIUM	7440-41-7	B2	0.008	1.0		0.5	5-100	0.32	10	0.3-10
31. BIS(2-CHLOROETHYL)ETHER	111-44-4	B2	0.03			10	5-10	1.2	1.0	0.17-2.5
32. BIS(2-CHLOROISOPROPYL)ETHER	39638-32-9	ND	280			10	5-50	4700	1.0	0.17-0.3

NOTES: TT Treatment Technology * not recovered from water in lab studies ** no RfD; HBGL based on Slope Factor
 NA Not Available + EPA established Limit
 ND Not Determined - not analyzed by State Lab or the
 THM Trihalomethane (licensed labs surveyed)
 PAH Polycyclic Aromatic Hydrocarbon

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLs)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION		SOIL INGESTION			
			INGESTION HBGL (#g/L)	MCL (#g/L)	EPA PMCL (#g/L)	STATE LAB LOQ (#g/L)	LIC LAB RANGE (#g/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	LIC LAB RANGE (mg/kg)		
D												
66. 2,4-D	94-75-7	D	70	70		0.5	0.4	1200	0.5	0.4		
67. DALAPON	75-99-0	D	210		200	13+	4.0-50	3500	-	3.3		
68. DCPA	1861-32-1	D	3500			10		58000	1.0			
69. DDD	72-54-8	B2	0.15			0.1	0.1-10	5.7	0.1	0.01-0.1		
70. DDE	72-55-9	B2	0.10			0.1	0.1-10	4.0	0.1	0.01-0.2		
71. DDT	50-29-3	B2	0.10			0.1	0.1-10	4.0	0.1	0.01-0.2		
72. DDT/DDD/DDE (TOTAL)	NA	B2	0.10			0.1	0.1	4.0	0.1	0.01		
73. DIAZINON	333-41-5	E	6.3			1.0	0.5-10	110	1.0	0.1-66		
74. DIBENZ[a,h]ANTHRACENE (PAH)	53-70-3	B2	0.003		0.30	10	0.1-10	0.11	1.0	0.2-0.83		
75. DIBROMOCHLOROMETHANE (TIIM)	124-48-1	C	14	100		1.0	0.2-5	230	-	0.01-20		
76. 1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	96-12-8	B2	0.03	0.20		0.01	0.005-5	1.2	-	0.003		
77. DIBUTYL PHTHALATE	84-74-2	D	700			10	5	12000	1.0	0.3-1.6		
78. DICAMBA	1918-00-9	D	210			0.5	3.0	3500	0.5	0.04		
79. DICHLOBENIL	1194-65-6	D	3.5					58		0.05		
80. 1,2-DICHLOROBENZENE	95-50-1	D	620	600		1.0	0.5-10	10000	1.0	0.025-20		
81. 1,3-DICHLOROBENZENE	541-73-1	D	620			1.0	0.5-10	10000	1.0	0.02-20		
82. 1,4-DICHLOROBENZENE	106-46-7	C	70	75		1.0	0.5-10	1200	1.0	0.025-20		
83. 3,3'-DICHLOROBENZIDINE	91-94-1	B2	0.08			20	20	3.0	2.0	0.34		
84. DICHLOOROFLUOROMETHANE	75-71-8	D	1400			0.5	0.2-5.0	23000	-	0.010-50		
85. 1,2-DICHLOROETHANE	107-06-2	B2	0.38	5.0		0.5	0.2-5.0	15	-	0.010-20		
86. 1,1-DICHLOROETHYLENE	75-35-4	C	6.3	7.0		0.5	0.2-0.5	110	-	0.010-20		
87. cis-1,2-DICHLOROETHYLENE	156-59-2	D	70	70		0.5	0.2-0.5	1200	-	0.010-20		
88. trans-1,2-DICHLOROETHYLENE	156-60-5	D	140	100		0.5	0.2	2300	-	0.010-20		
89. 2,4-DICHLOROPHENOL	120-83-2	D	21			10	5-10	350	1.0	0.03-66		
90. 1,2-DICHLOROPROPANE	78-87-5	B2	0.51	5.0		0.5	0.2-5.0	20	-	0.01-20		
91. 1,3-DICHLOROPROPENE	542-75-6	B2	0.19			0.5	0.2-0.5	7.6	-	0.01-20		
92. DICLORAN	99-30-9	E	180			10		2900	2.0	-		
93. DICOFOL	115-32-2	C	0.08 **			20		3.1	2.0	-		
94. DIELDRIN	60-57-1	B2	0.002			0.1	0.1-10	0.09	0.1	0.01-0.2		
95. DIETHYL PHTHALATE	84-66-2	D	5600			10	5	94000	1.0	0.3-1.6		
96. DI(2-ETHYLHEXYL)ADIPATE	103-23-1	C	490			10+		8200	1.0	-		
97. DI(2-ETHYLHEXYL)PHTHALATE	117-81-7	B2	2.5	500		10	10	97	1.0	0.17		

NOTES: TT Treatment Technology
 NA Not Available
 RD Not Determined
 TIIM Trihalomethane
 PAH Polycyclic Aromatic Hydrocarbon
 * not recovered from water in lab studies
 + EPA established Limit
 - not analyzed by State Lab or the licensed labs surveyed
 ** no Rfd; HBGL based on Slope Factor
 ** no Slope Factor; HBGL based on Rfd
 # HBGL not based on Rfd or Slope Factor
 Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLS)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION		SOIL INGESTION		
			INGESTION (µg/L)	MCL (µg/L)	PMCL (µg/L)	STATE LAB LOQ (µg/L)	LIC LAB RANGE (µg/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	LIC LAB RANGE (mg/kg)	
98. DIFENZOQUAT	43222-48-6	D	560	-	-	-	-	9400	-	-	-
99. DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	D	560	-	-	-	-	9400	-	-	-
100. DIMETHOATE	60-51-5	D	1.4	10	10	20	20	23	1.0	0.13-1.3	-
101. 2,4-DINITROPHENOL	51-28-5	ND	14	50	10	10-50	10-50	230	5.0	1.67-3.3	-
102. 2,4-DINITROTOLUENE	121-14-2	B2	0.05	10	10	5-10	5-10	2.0	1.0	0.17-0.66	-
103. DINOSEB	88-85-7	D	7.0	7.0	0.5	0.2-20	0.2-20	120	-	0.05-0.66	-
104. 1,4-DIOXANE	123-91-1	B2	3.2	-	-	-	-	120	-	-	-
105. DIPHENAHID	957-51-7	D	210	10	10	20	20	3500	1.0	1.3-2.0	-
106. 1,2-DIPHENYLHYDRAZINE	122-66-7	B2	0.04	-	-	10-20	10-20	1.7	-	0.17	-
107. DIQUAT DIBROMIDE	85-00-7	D	15	20	-	-	-	260	-	-	-
108. DISULFOTON	298-04-4	E	0.28	-	-	0.5-10	0.5-10	4.7	1.0	0.1-1.0	-
109. DIURON	330-54-1	D	14	20	-	-	-	230	2.0	0.17	-
110. DPX-M6316	79277-27-3	ND	91	-	-	-	-	1500	-	-	-
E											
111. ENDOSULFAN	115-29-7	D	0.35	0.20	0.2	0.1-10	0.1-10	5.8	0.2	0.01-0.2	-
112. ENDOTHALL	145-73-3	D	140	100	*	-	-	2300	-	-	-
113. ENDRIN	72-20-8	E	2.1	2.0	0.1	0.1-10	0.1-10	35	0.1	0.01-0.2	-
114. EPICHLOROHYDRIN	106-89-8	B2	3.5	TT	-	-	-	14.0	-	-	-
115. ETHEPHON	16672-87-0	D	35	-	-	-	-	580	-	-	-
116. EPTC	759-94-4	D	180	700	10	-	-	2900	2.0	0.017	-
117. ETHYLENE DIBROMIDE (EDB)	100-41-4	D	700	700	1.0	0.5-10	0.5-10	12000	0.25	0.025-40	-
118. ETHYLENE DIBROMIDE (EDB)	106-93-4	B2	0.0004	0.05	0.01	0.005-0.01	0.005-0.01	0.02	-	0.002	-
119. ETHYLENE GLYCOL	107-21-1	D	14000	2000	2000	10	10	230000	-	0.1-0.5	-
120. ETHYLENE THIOUREA	96-45-7	B2	0.97	-	-	-	-	38	-	-	-
121. N-ETHYLTOLUENE SULFONAMIDE	26914-52-3	ND	18	-	-	-	-	290	-	-	-
F											
122. FENAMIPHOS	22224-92-6	D	1.8	10	10	100	100	29	1.0	0.66	-
123. FENARIMOL	60168-88-9	E	460	10	10	40	40	7600	1.0	2.6	-
124. FENVALERATE	51630-58-1	ND	180	10	10	-	-	2900	1.0	-	-
125. FLUOMETURON	2164-17-2	D	91	30	30	-	-	1500	3.0	-	-
126. FLUORANTHENE (PAH)	206-44-0	D	280	10	10	0.03-10	0.03-10	4700	1.0	0.17-0.3	-
127. FLUORENE (PAH)	86-73-7	D	280	10	10	0.04-10	0.04-10	4700	1.0	0.17-0.3	-
128. FLUORIDE	7782-41-4	D	420	200	200	50-200	50-200	7000	-	-	-

NOTES: TT Treatment Technology * not recovered from water in lab studies ** no RfD; HBGL based on Slope Factor
 NA Not Available + EPA established Limit xx no Slope Factor; HBGL based on RfD
 ND Not Determined - not analyzed by State Lab or the # HBGL not based on RfD or Slope Factor
 THM Trihalomethane (licensed labs surveyed)
 PAH Polycyclic Aromatic Hydrocarbon

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLs)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	-CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION		SOIL INGESTION	
			INGESTION HBGL (µg/L)	HCL (µg/L)	EPA PMCL (µg/L)	STATE LAB LOQ (µg/L)	LIC LAB RANGE (µg/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	LIC LAB RANGE (mg/kg)
129. FLURIDONE	59756-60-4	D	560			10	100	9400	1.0	6.6
130. FLUVALINATE	69409-94-5	D	70			10	-	1200	1.0	-
131. FOMFOS	944-22-9	D	14			-	-	230	-	-
132. FORMETANATE HYDROCHLORIDE	23422-53-9	E	11			-	-	180	-	-
133. FOSETYL-AL	39148-24-8	C	2100			-	-	35000	-	-
G										
134. GLYPHOSATE	1071-83-6	D	700		700	-	-	12000	-	-
H										
135. HEPTACHLOR	76-44-8	B2	0.008	0.40		0.05	0.05-10	0.30	0.05	0.005-0.05
136. HEPTACHLOR EPOXIDE	1024-57-3	B2	0.004	0.20		0.05	0.05-10	0.15	0.05	0.005-0.05
137. HEXACHLOROETHANE	67-72-1	C	0.70			10	10	12	1.0	0.17-0.2
138. HEXACHLOROBENZENE	118-74-1	B2	0.02		1.0	10	5-70	0.85	1.0	0.17-0.3
139. HEXACHLOROBUTADIENE	87-68-3	C	1.4			10	10	23	1.0	0.17-0.3
I										
140. HEXACHLOROCYCLOHEXANE (alpha-)	319-84-6	B2	0.006			0.05	-	0.22	0.05	-
141. HEXACHLOROCYCLOHEXANE (beta-)	319-85-7	C	0.02 **			0.05	-	0.76	0.05	-
142. HEXACHLOROCYCLOPENTADIENE	77-47-4	D	49		50	10	10	820	1.0	0.17-0.5
143. n-HEXANE	110-54-3	D	420			-	5	7000	-	0.05
144. HEXAZINONE	51235-04-2	D	230			5.0	8	3900	5.0	-
145. IHX	2691-41-0	D	350			-	-	5800	-	-
J										
146. INAZALIL	35554-44-0	D	91			15	-	1500	1.0	-
147. INAZAQUIN	81335-37-7	D	1800			-	-	29000	-	-
148. INDENOPYRENE (PAH)	193-39-5	B2	0.003		0.40	10	0.03-10	0.11	1.0	0.17-0.3
149. ISOPHORONE	78-59-1	C	140			10	10	2300	1.0	0.17-0.66
L										
150. LEAD	7439-92-1	B2	5.0 ##	TT		10	2-150	84	50	0.5-10
151. LINDANE	58-89-9	C	0.21	0.20		0.05	0.05-0.10	3.5	0.05	0.005-0.10
152. LINURON	330-55-2	C	1.4			50	-	23	10	0.17
M										
153. MALATHION	121-75-5	D	140			1.0	0.5-50	2300	1.0	0.1-3.3
154. MALEIC HYDRAZIDE	123-33-1	D	3500			-	-	58000	-	-
155. MARCOZEB	8018-01-7	ND	210			-	-	3500	-	-

NOTES: TT Treatment Technology * not recovered from water in lab studies ** no Rfd; HBGL based on Slope Factor
 NA Not Available + EPA established Limit xx no Slope Factor; HBGL based on Rfd
 ND Not Determined - not analyzed by State Lab or the licensed labs surveyed #HBGL not based on Rfd or Slope Factor
 THM Trihalomethane
 PAH Polycyclic Aromatic Hydrocarbon

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLs)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	LIC LAB RANGE (mg/kg)
			INGESTION HBGL (µg/L)	MCL (µg/L)	EPA PHCL (µg/L)	STATE LAB LOQ (µg/L)			
156. MANGANESE	12427-38-2	D	35						
157. MCPA	7439-96-5	D	700						
158. MEPIQUAT CHLORIDE	94-74-6	D	3.5						
159. MERCURY (INORGANIC)	24307-26-4	D	2.10						
160. METALAXYL	7439-97-6	D	2.1	2.0					
161. METHIACRIDOPHOS	57837-19-1	D	420						
162. METHIOCARB	10265-92-6	D	0.35						
163. METHOMYL	2032-65-7	E	8.8						
164. METHOXYCHLOR	16752-77-5	D	180						
165. METHYL ETHYL KETONE	72-43-5	D	35	40					
166. METHYL PARATHION	78-93-3	D	350						
167. METHYL TERT BUTYL ETHER (MTBE)	298-00-0	D	1.8						
168. METOLACHLOR	1634-04-4	D	35						
169. METIBUZIN	75-09-2	B2	4.7	5.0					
170. METSULFUROH-METHYL	51218-45-2	C	110						
171. HOLYBENUM	21087-64-9	D	180						
172. MONOCROTOPHOS	74223-64-6	D	1800						
173. MONOHURON	7439-98-7	D	7.0						
174. MSMA (AS ARSENIC)	6923-22-4	E	0.32						
175. MYCLOBUTANIL	150-68-5	ND	4.9						
176. NITRATE/NITRITE (TOTAL)	2163-80-6	A	50	50					
177. NITRILE	88671-89-0	ND	180						
178. NITROBENZENE	300-76-5	D	14						
179. NITROGUANIDINE	91-20-3	D	28						
180. NITROSO-DIPHENYLAMINE	15299-99-7	ND	700						
181. NITROSO-DIPHENYLAMINE	7440-02-0	D	140						
182. NITROSO-DIPHENYLAMINE	14797-55-8	D	11000	10000	100				
183. NITROSO-DIPHENYLAMINE	NA	D	7000	10000	100				
184. NITROSO-DIPHENYLAMINE	14797-65-0	D	700	1000	100				
185. NITROSO-DIPHENYLAMINE	98-95-3	D	3.5						
186. NITROSO-DIPHENYLAMINE	556-88-7	D	700						
187. NITROSO-DIPHENYLAMINE	86-30-6	B2	7.1						

NOTES: TT Treatment Technology
 NA Not Available
 ND Not Determined
 THM Trihalomethane
 PAH Polycyclic Aromatic Hydrocarbon

* not recovered from water in lab studies
 + EPA established Limit
 - not analyzed by State Lab or the licensed labs surveyed

** no Rfd; HBGL based on Slope Factor
 xx no Slope Factor; HBGL based on Rfd
 ## HBGL not based on Rfd or Slope Factor

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLs)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION		SOIL INGESTION		LIC LAB RANGE (mg/kg)
			HBGL (µg/L)	MCL (µg/L)	PMCL (µg/L)	STATE LAB LOQ (µg/L)	HBGL (mg/kg)	LOQ (mg/kg)	HBGL (mg/kg)	LOQ (mg/kg)	
188. N-NITROSODI-n-PROPYLAMINE	621-64-7	B2	0.005			10	0.19	1.0	0.17-0.5		
189. N-NITROSODIMETHYLAMINE	62-75-9	B2	0.0007			10	0.03	1.0	0.17-0.3		
190. N-NITROSOPYRROLIDINE	930-55-2	B2	0.02			10	0.65	-	0.17		
191. NORFLURAZON	27314-13-2	D	280			10	4700	1.0	-		
O											
192. ORYZALIN	19044-88-3	C	35			-	580	-	0.8		
193. OXAHYL	23135-22-0	E	180		200	1.0	2900	1.0	0.83		
194. OXYDEMETON-METHYL	301-12-2	D	3.5			-	58	-	-		
P											
195. PARAQUAT	1910-42-5	C	3.2			-	53	-	-		
196. PARATHION	56-38-2	C	4.2			1.0	70	1.0	0.03-0.1		
197. PENDIMETHALIN	40487-42-1	D	280			10	4700	1.0	1.0		
198. PENTACHLOROBENZENE	608-93-5	D	5.6			-	94	-	-		
199. PENTACHLOROPHENOL	87-86-5	B2	0.29	1.0		50	11	5.0	2-7.67		
200. PERMETHRIN	52645-53-1	D	350			5.0	5800	0.5	-		
201. PIENOL	108-95-2	D	4200			10	70000	1.0	0.3-500		
202. PHORATE	298-02-2	E	3.5			10	58	1.0	0.1-10		
203. PHOSMET	732-11-6	D	140			10	2300	1.0	-		
204. PHOSPHAMIDON	13171-21-6	D	1.2			10	20	2.0	-		
205. PICLORAM	1918-02-1	D	490		500	1.4+	8200	-	-		
206. POLYCHLORINATED BIPHENYLS (PCBS)	1336-36-3	B2	0.005	0.50		5.0	0.18	5.0	0.2-1.0		
207. PROFENOFOS	41198-08-7	D	0.35			-	5.8	-	-		
208. PROFLURALIN	26399-36-0	ND	42			-	700	-	0.5		
209. PROMETON	1610-18-0	D	110			5.0	1800	0.5	0.1		
210. PROMETRYN	7287-19-6	D	28			10	470	1.0	-		
211. PROXAMIDE	23950-58-5	C	53			5.0	880	0.5	0.66		
212. PROPACHLOR	1918-16-7	D	91			5.0+	1500	-	-		
213. PROPARGITE	2312-35-8	ND	140			-	2300	-	-		
214. PROPRAZINE	139-40-2	C	14			1.3+	230	-	0.1		
215. PROPIAM	122-42-9	D	140			-	2300	-	0.33		
216. PROPICONAZOLE	60207-90-1	D	91			-	1500	-	-		
217. PROPOXUR	114-26-1	C	2.8			10+	47	-	1.7		
218. PYRENE (PAH)	129-00-0	D	210			10	3500	1.0	0.17-0.3		

NOTES: TT Treatment Technology
 NA Not Available
 ND Not Determined
 THM Trihalomethane
 PAH Polycyclic Aromatic Hydrocarbon

* not recovered from water in lab studies
 + EPA established Limit
 - not analyzed by State Lab or the licensed labs surveyed

** no RfD; HBGL based on Slope Factor
 xx no Slope Factor; HBGL based on RfD
 ## HBGL not based on RfD or Slope Factor

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLS)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	INGESTION			DRINKING WATER			SOIL INGESTION	
			HBGL (µg/L)	MCL (µg/L)	EPA PMCL (µg/L)	STATE LAB LOQ (µg/L)	LIC LAB RANGE (µg/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)	LIC LAB RANGE (mg/kg)
R										
219. RDX	121-82-4	C	2.1						35	
S										
220. SELENIUM	7782-49-2	D	50 ##	50		5.0			840	200
221. SETHOXYDIM	74051-80-2	D	630			10			11000	1.0
222. SILVER	7440-22-4	D	50	50		1.0			840	10
223. SIMAZINE	122-34-9	C	1.4		1.0	10			23	2.0
224. STRONTIUM	7440-24-6	D	18000						290000	
225. STYRENE	100-42-5	C	140	100		1.0			2300	
226. SULFATE	14808-79-8	D	400000 ##	400000		10000			6700000	
227. SULPROFOS	35400-43-2	E	18			10			290	1.0
T										
228. 2,4,5-T	93-76-5	D	70		0.000005	0.5			1200	0.5
229. 2,3,7,8-TCDD	1746-01-6	B2	0.0000002						0.000009	
230. 2,4,5-TP	93-72-1	D	56	50		0.25			940	0.25
231. TEBUTHIURON	34014-18-1	D	490			30			8200	3.0
232. TERBACIL	5902-51-2	E	91			10			1500	2.0
233. TERBUFOS	13071-79-9	D	0.70			5.0			12	2.0
234. TERBUTRYN	886-50-0	ND	7.0			10			120	2.0
235. 1,2,4,5-TETRACHLOROBENZENE	95-94-3	D	2.1						35	
236. 1,1,1,2-TETRACHLOROETHANE	630-20-6	C	21			0.5			350	
237. 1,1,2,2-TETRACHLOROETHANE	79-34-5	C	0.18 **			0.5			6.8	
238. TETRACHLOROETHYLENE (PCE)	127-18-4	B2	0.70	5.0		0.5			27	0.25
239. TETRAETHYL LEAD	78-00-2	D	0.0007						0.01	
240. THALLIUM	7440-28-0	ND	0.49			5.0			8.2	1000
241. THIOPHANATE-METHYL	23564-05-8	D	560		1.0/2.0				9400	
242. THIRAM	137-26-8	D	35						580	
243. TOLUENE	108-88-3	D	1400	1000		1.0			23000	0.25
244. TOXAPHENE	8001-35-2	B2	0.03	3.0		2.0			1.2	2.0
245. TRIADIMEFON	43121-43-3	D	210			5.0			3500	0.5
246. TRICHLORFON	52-68-6	C	8.8						150	
247. 1,2,4-TRICHLOROBENZENE	120-82-1	D	9.1		9.0	1.0			150	

NOTES: TT Treatment Technology
 NA Not Available
 ND Not Determined
 THM Trihalomethane
 PAH Polycyclic Aromatic Hydrocarbon

* not recovered from water in lab studies
 + EPA established Limit
 - not analyzed by State Lab or the licensed labs surveyed

** no Rfd; HBGL based on Slope Factor
 xx no Slope Factor; HBGL based on Rfd
 ## HBGL not based on Rfd or Slope Factor

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLS)
FOR INGESTION OF CONTAMINANTS IN DRINKING WATER AND SOIL

CHEMICAL	CAS NUMBER	CANCER GROUP	DRINKING WATER				INGESTION		SOIL INGESTION		LIC LAB RANGE (mg/kg)
			INGESTION HBGL (µg/L)	MCL (µg/L)	EPA PNCCL (µg/L)	STATE LAB LOQ (µg/L)	LIC LAB RANGE (µg/L)	INGESTION HBGL (mg/kg)	STATE LAB LOQ (mg/kg)		
248. 1,1,1-TRICHLOROETHANE (TCA)	71-55-6	D	200	200	5.0	0.5	0.2-10	3300	0.25	0.01-20	
249. 1,1,2-TRICHLOROETHANE	79-00-5	C	2.8			0.5	0.2-10	47	-	0.01-20	
250. TRICHLOROETHYLENE (TCE)	79-01-6	B2	3.2	5.0		0.5	0.2-500	120	0.25	0.01-20	
251. TRICHLOROFLUOROMETHANE	75-69-4	D	2100			0.5	0.5-10	35000	0.25	0.025-20	
252. TRICLOPYR	55335-06-3	E	18			-		290	-		
253. 2,4,5-TRICHLOROPHENOL	95-95-4	D	700			50	5-50	12000	5.0	0.2-0.85	
254. 2,4,6-TRICHLOROPHENOL	88-06-2	B2	3.2			10	5-10	120	1.0	0.17-0.66	
255. 1,2,3-TRICHLOROPROPANE	96-18-4	D	42			0.5	0.5-2.5	700	-	0.05	
256. TRICHLOROTRIFLUOROETHANE	76-13-1	D	210000			0.5		3500000	0.25		
257. TRIFLURALIN	1582-09-8	C	5.3			5.0	0.05-10	88	0.5	0.005	
258. TRIFORINE	26644-46-2	D	180			-	-	2900	-	-	
259. TRIHALOMETHANES (TOTAL THM)	HA	HA	0.35	100		5.0	4	HA	-	-	
260. 2,4,6-TRINITROTOLUENE	118-96-7	C				-	-	5.8	-	-	
U											
261. URANIUM	7440-61-1	A	21	20		-	-	350	-	-	
V											
262. VANADIUM	7440-62-2	D	49			500	10-50	820	50	0.5-25	
263. VERMOLATE	1929-77-7	ND	7.0			5.0	2.0	120	2.0	-	
264. VINILOZOLIN	50471-44-8	D	180			5.0	-	2900	0.5	-	
265. VINYL CHLORIDE	75-01-4	A	0.02	2.0		0.5	0.5-10	0.72	-	0.05-40	
X											
266. XYLENES (TOTAL)	1330-20-7	D	14000	10000		3.0	0.2-10	230000	0.25	0.01-40	
Z											
267. ZINC	7440-66-6	ND	1400			50	0.5-500	23000	10	0.025-10	
268. ZINEB	12122-67-7	D	350			-	-	5800	-	-	

NOTES: TT Treatment Technology * not recovered from water in lab studies
 HA Not Available + EPA established Limit
 ND Not Determined - not analyzed by State Lab or the
 THM Trihalomethane (licensed labs surveyed)
 PAH Polycyclic Aromatic hydrocarbon

** no RfD; HBGL based on Slope Factor
 xx no Slope Factor; HBGL based on RfD
 ## HBGL not based on RfD or Slope Factor

Divide indicated soil ingestion HBGL by 100 to obtain "worst possible case" involving an individual prone to eating soil (e.g., a child with pica).

APPENDIX A

DERIVATION OF HEALTH-BASED GUIDANCE LEVELS (HBGLs)

Introduction

For the purpose of developing HBGLs, all listed chemicals were considered either systemic toxicants or carcinogens. Systemic toxicants were defined as those chemicals in cancer groups C, D, E and ND. Carcinogens were defined as those chemicals in cancer groups A, B1 and B2. The toxicological methods used to derive the HBGLs were different for each category and are detailed in subsequent sections. The data used in these calculations were obtained from various federal sources. These data are tabulated in Appendix B.

Because of special properties of several listed chemicals, the HBGLs for these chemicals were not calculated according to either of the methodologies referred to above. The HBGLs for these substances were adopted from EPA MCLs or PMCLs using unique derivations. These exceptions are clearly identified in the main table and in Appendix B.

Systemic Toxicants

The HBGL for each systemic toxicant was based on an oral reference dose (RfD) and assumed a lifetime exposure, except for a few chemicals which cause the greatest risk under conditions of acute exposure. Whenever it was possible, the RfD, or the information needed to calculate the RfD, was obtained from a documented EPA source. Only rarely was it necessary to use data from a source other than an EPA document.

The RfD is a daily exposure level which, during a lifetime of a human, appears to be without appreciable risk on the basis of all facts known at the time. The RfD (formerly called the acceptable daily intake or ADI) is derived from an appropriate study. The RfD is obtained from the no-observed-adverse-effect level (NOAEL) by dividing by a safety factor. The NOAEL is that dose of chemical at which there are no statistically or biologically significant increases in frequency or severity of adverse effect seen between the exposed population and its appropriate control. Effects may be produced at this dose, but they are not considered to be adverse. An assumption is made that the oral RfD represents 100% exposure from all sources even though the number, in almost all cases, is derived from an oral ingestion study. Typically, the RfD is expressed in milligrams per kilogram per day (mg/kg/d). The RfD is converted to water units by multiplying it by 70 kilograms (weight of a standard adult) and dividing it by 2 liters (the assumed consumption of water per day). This number is known as the drinking water equivalent level (DWEL) and still represents 100% exposure through water.

For the final drinking water HBGL, it is necessary to allocate the 100% among all sources which can contribute to the total exposure of a human. Therefore, the DWEL is multiplied by an estimate of the relative source contribution (RSC) of a contaminant in water. In most cases, the RSC is 0.2. In this document, the final drinking water HBGL is calculated using the following equation and is expressed in micrograms per liter ($\mu\text{g/l}$):

$$HBGL_{DW} = \frac{BW \times RfD}{I_w} \times RSC \times 1000 \text{ ug/mg}$$

Where:

- HBGL_{DW} = health-based ingestion guidance level for drinking water ($\mu\text{g/l}$)
- BW = body weight (70 kg)
- RfD = reference dose (mg/kg/d)
- I_w = water ingestion rate (2 l/d)
- RSC = relative source contribution

For toxicants in cancer group C, an additional safety factor of 10 was used in the development of the drinking water HBGLs. This approach was adopted from the EPA method used in deriving PMCLs and MCLs for group C chemicals and adds a margin of prudence to the drinking water HBGLs for chemicals exhibiting only limited evidence of carcinogenicity in animals. The equation used to calculate the drinking water HBGL for a systemic toxicant in group C is as follows:

$$HBGL_{DW} = \frac{BW \times RfD}{I_w} \times RSC \times 1000 \text{ ug/mg} \div 10$$

Carcinogens

In this document, HBGLs for all chemicals in cancer groups A, B1 and B2 were derived on the basis of estimated cancer-causing risk rather than on the assurance of a safe daily dose. Chemicals in groups A and B are classified as known or probable human carcinogens, respectively. Evidence of carcinogenicity in humans comes primarily from two sources - long-term animal studies and epidemiological investigations. Results from these kinds of

studies are supplemented by other information from short-term, toxicological and pharmacokinetic studies. The evidence of carcinogenicity is evaluated in the framework of a weight-of-evidence judgement by the EPA. The weighing classifications are:

- Group A - sufficient epidemiologic evidence in humans;
- Group B1 - limited epidemiologic evidence in humans and either sufficient or insufficient evidence in animals;
- Group B2 - sufficient evidence in animals but insufficient epidemiologic evidence in humans.

When sufficient data exist to support a dose-response relationship for a carcinogenic endpoint, the EPA calculates a slope factor (SF). The SF is expressed as the reciprocal of milligrams per kilogram per day [(mg/kg/d)⁻¹]. Using this value and assuming the ingestion of two liters of water per day by a 70 kilogram adult over a 70-year lifetime, the upper bound (95%) of the excess lifetime cancer risk can be calculated.

In this document, the drinking water HBGLs for carcinogens were derived by calculating the concentration in micrograms per liter (µg/l) that would result in an upper bound excess lifetime cancer risk of one in one million (10⁻⁶). The 10⁻⁶ upper bound was based on historic use in Arizona and the United States as a prudent level for protecting public health. The following equation was used in the calculations:

$$HBGL_{DW} = \frac{BW \times LRF}{SF \times I_w} \times 1000 \text{ ug/mg}$$

Where:

- HBGL_{DW} = health-based ingestion guidance level for drinking water (µg/l)
- BW = body weight (70 kg)
- LRF = lifetime risk factor (1 x 10⁻⁶)
- SF = slope factor [(mg/kg/d)⁻¹]
- I_w = water ingestion rate (2 l/d)

Soil Ingestion HBGLs

The soil ingestion HBGL for each chemical was derived in a manner that produced either an exposure dose or health risk, equivalent to that from ingesting water containing the chemical at the drinking water HBGL. The exposure dose criterion was used for systemic toxicants (cancer-groups C, D, E and ND), and the health risk (excess cancer risk) criterion was used for carcinogens (cancer groups A, B1 and B2). Both cases assumed daily ingestion of equal amounts of soil over a 30-year period. This assumption is based on accepted EPA risk assessment practice.

In the case of systemic toxicants, it was assumed that a quantity of the chemical equal to that in two liters of water at the drinking water HBGL was ingested with soil each day. Assuming this exposure to occur over a 30-year period following birth, an intake of 0.2 g/d was used for six years and 0.1 g/d for the remaining 24 years, resulting in a mean daily intake of 0.12 g/d.

In this document, the soil ingestion HBGL values for systemic toxicants were derived by calculating the concentrations in milligrams per kilogram (mg/kg) that would result in a mean daily intake equivalent to that permitted from drinking water. The following equation was used in the calculations:

$$HBGL_s = \frac{I_w \times HBGL_{DW}}{I_{30}} \times \frac{1000 \text{ g/kg}}{1000 \text{ ug/mg}}$$

Where:

- HBGL_s = health-based ingestion guidance level for soil (mg/kg)
- I_w = water ingestion rate (2 l/d)
- HBGL_{DW} = health-based ingestion guidance level for drinking water (µg/l)
- I₃₀ = soil ingestion rate during first 30 years of life (0.12 g/d)

In the case of carcinogens, it was assumed that the lifetime excess cancer risk from a chemical in soil was the result of exposure to soil containing the chemical at the soil ingestion HBGL for the first 30 years of life and exposure to soil containing none of the chemical for the remaining 40 years of life. Based on the ingestion pattern described for systemic toxicants (0.2 g/d for 6 years and 0.1 g/d for remaining years), the mean daily intake during the first 30-year period would be 0.12 g/d.

In this document, the soil ingestion HBGL values for carcinogens were derived by calculating the concentration in milligrams per kilogram (mg/kg) that would result in an upper bound excess lifetime cancer risk of 10⁻⁶. The following equation was used in the calculations:

$$HBGL_s = \frac{AT \times BW \times LRF}{I_{30} \times ED \times SF} \times 1000 \text{ mg/g}$$

Where:

- HBGL_s = health-based ingestion guidance level for soil (mg/kg)
- BW = body weight (70 kg)
- LRF = lifetime risk factor (1 x 10⁻⁶)
- SF = slope factor [(mg/kg/d)⁻¹]
- I₃₀ = soil ingestion rate during the first 30 years of life (0.12 g/d)
- AT = 70-year lifetime
- ED = 30-year exposure duration

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	Rfd (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
A						
1. ACENAPHTHYLENE (PAH)	208-96-8	D	0.06	NA	NA	0.20
2. ACEPHATE	30560-19-1	C	0.004	NA	10	0.20
3. ACETONE	67-64-1	D	0.1	NA	NA	0.20
4. ACROLEIN	107-02-8	C	0.157	NA	10	0.20
5. ACRYLAMIDE	79-06-1	B2	NA	4.5	NA	NA
6. ACRYLONITRILE	107-13-1	B1	NA	0.54	NA	NA
7. ALACHLOR	15972-60-8	B2	NA	0.081	NA	NA
8. ALDICARB	116-06-3	E	0.0013	NA	NA	0.20
9. ALDICARB SULFONE	1646-88-4	D	0.0003	NA	NA	0.20
10. ALDICARB SULFOXIDE	1646-87-3	D	0.0013	NA	NA	0.20
11. ALDRIN	309-00-2	B2	NA	17.0	NA	NA
12. AMETRYN	834-12-8	D	0.009	NA	NA	0.20
13. AMMONIUM SULFAMATE	7773-06-0	D	0.2	NA	NA	0.20
14. ANTHRACENE (PAH)	120-12-7	D	0.3	NA	NA	0.20
15. ANTIMONY	7440-36-0	D	0.0004	NA	NA	0.20
16. ARSENIC (INORGANIC)	7440-38-2	A	NA	NA	NA	NA
17. ASULAM	3337-71-1	D	0.05	NA	NA	0.20
18. ATRAZINE	1912-24-9	C	0.005	NA	10	0.20
19. AZINPHOS-METHYL	86-50-0	E	0.0025	NA	NA	0.20
B						
20. BARIUM	7440-39-3	D	NA	NA	NA	NA
21. BENOMYL	17804-35-2	D	0.05	NA	NA	0.20
22. BENTAZON	25057-89-0	D	0.0025	NA	NA	0.20
23. BENZ[a]ANTHRACENE (PAH)	56-55-3	B2	NA	12.5	NA	NA
24. BENZENE	71-43-2	A	NA	0.029	NA	NA
25. BENZIDINE	92-87-5	A	NA	230	NA	NA
26. BENZO[a]PYRENE (PAH)	50-32-8	B2	NA	12.5	NA	NA
27. BENZO[b]FLUORANTHENE (PAH)	205-99-2	B2	NA	12.5	NA	NA
28. BENZO[k]FLUORANTHENE (PAH)	207-08-9	B2	NA	12.5	NA	NA
29. BENZYL ALCOHOL	100-51-6	ND	0.3	NA	NA	0.20
30. BERYLLIUM	7440-41-7	B2	NA	4.3	NA	NA
31. BIS(2-CHLOROETHYL)ETHER	111-44-4	B2	NA	1.1	NA	NA
32. BIS(2-CHLOROISOPROPYL)ETHER	39638-32-9	ND	0.04	NA	NA	0.20

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	RfD (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
33. BORON	7440-42-8	D	0.09	NA	NA	0.20
34. BROMACIL	314-40-9	C	0.13	NA	10	0.20
35. BROMODICHLOROMETHANE (THM)	75-27-4	B2	NA	0.13	NA	NA
36. BROMOFORM (THM)	75-25-2	B2	NA	0.0079	NA	NA
37. BROMOMETHANE	74-83-9	D	0.0014	NA	NA	0.20
38. BROMOXYNIL	1689-84-5	D	0.02	NA	NA	0.20
39. BUTYL BENZYL PHTHALATE	85-68-7	C	0.16	NA	10	0.20
40. BUTYLATE	2008-41-5	D	0.05	NA	NA	0.20
C						
41. CADMIUM	7440-43-9	D	0.0005	NA	NA	0.20
42. CAPTAN	133-06-2	D	0.13	NA	NA	0.20
43. CARBARYL	63-25-2	D	0.1	NA	NA	0.20
44. CARBOFURAN	1563-66-2	E	0.005	NA	NA	0.20
45. CARBON DISULFIDE	75-15-0	D	0.1	NA	NA	0.20
46. CARBON TETRACHLORIDE	56-23-5	B2	NA	0.13	NA	NA
47. CARBOXIN	5234-68-4	D	0.1	NA	NA	0.20
48. CHLORAMBEN	133-90-4	D	0.015	NA	NA	0.20
49. CHLORDANE	57-74-9	B2	NA	1.3	NA	NA
50. CHLORDIENEFORM	6164-98-3	B2	NA	1.17	NA	NA
51. CHLOROBENZENE	108-90-7	D	0.02	NA	NA	0.20
52. CHLOROFORM (THM)	67-66-3	B2	NA	0.0061	NA	NA
53. CHLOROMETHANE	74-87-3	C	0.004	NA	10	0.20
54. 2-CHLOROPHENOL	95-57-8	D	0.005	NA	NA	0.20
55. CHLOROTHALONIL	1897-45-6	B2	NA	0.0029	NA	NA
56. o-CHLOROTOLUENE	95-49-8	D	0.02	NA	NA	0.20
57. CHLOROPYRIFOS	2921-88-2	D	0.003	NA	NA	0.20
58. CHLORSULFUOH	64902-72-3	D	0.05	NA	NA	0.20
59. CHROMIUM (TOTAL)	NA	D	NA	NA	NA	NA
60. CHRYSENE (PAH)	218-01-9	B2	NA	12.5	NA	NA
61. COPPER	7440-50-8	D	NA	NA	NA	NA
62. CRESOLS (TOTAL)	NA	D	0.05	NA	NA	0.20
63. CYANAZINE	21725-46-2	D	0.002	NA	NA	0.20
64. CYANIDE	57-12-5	D	0.022	NA	NA	0.20
65. CYROMAZINE	66215-27-8	D	0.0075	NA	NA	0.20

NA Not Available RD Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	Rfd (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
D						
66. 2,4-D	94-75-7	D	0.01	NA	NA	0.20
67. DALAPON	75-99-0	D	0.03	NA	NA	0.20
68. DCPA	1861-32-1	D	0.5	NA	NA	0.20
69. DDD	72-54-8	B2	NA	0.24	NA	NA
70. DDE	72-55-9	B2	NA	0.34	NA	NA
71. DDT	50-29-3	B2	NA	0.34	NA	NA
72. DDT/DDD/DDE (TOTAL)	NA	B2	NA	0.34	NA	NA
73. DIAZINON	333-41-5	E	0.0009	NA	NA	0.20
74. DIBENZ[a,h]ANTHRACENE (PAH)	53-70-3	B2	NA	12.5	NA	NA
75. DIBROMOCHLOROMETHANE (THM)	124-48-1	C	0.02	NA	10	0.20
76. 1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	96-12-8	B2	NA	1.17	NA	NA
77. DIBUTYL PHTHALATE	84-74-2	D	0.1	NA	NA	0.20
78. DICAMBA	1918-00-9	D	0.03	NA	NA	0.20
79. DICHLOROBENIL	1194-65-6	D	0.0005	NA	NA	0.20
80. 1,2-DICHLOROBENZENE	95-50-1	D	0.089	NA	NA	0.20
81. 1,3-DICHLOROBENZENE	541-73-1	D	0.089	NA	NA	0.20
82. 1,4-DICHLOROBENZENE	106-46-7	C	0.1	NA	10	0.20
83. 3,5'-DICHLOROBENZIDINE	91-94-1	B2	NA	0.451	NA	NA
84. DICHLORO-D-FLUOROMETHANE	75-71-8	D	0.2	NA	NA	0.20
85. 1,2-DICHLOROETHANE	107-06-2	B2	NA	0.091	NA	NA
86. 1,1-DICHLOROETHYLENE	75-35-4	C	0.009	NA	10	0.20
87. cis-1,2-DICHLOROETHYLENE	156-59-2	D	0.01	NA	NA	0.20
88. trans-1,2-DICHLOROETHYLENE	156-60-5	D	0.02	NA	NA	0.20
89. 1,2-DICHLOROPROPANE	78-87-5	B2	NA	0.068	NA	NA
90. 2,4-DICHLOROPHENOL	120-83-2	D	0.003	NA	NA	0.20
91. 1,3-DICHLOROPROPENE	542-75-6	B2	NA	0.18	NA	NA
92. DICLORAN	99-30-9	E	0.025	NA	NA	0.20
93. DICOFOL	115-32-2	C	ND	0.44	NA	NA
94. DIELDRIIN	60-57-1	B2	NA	16.0	NA	NA
95. DIETHYL PHTHALATE	84-66-2	D	0.8	NA	NA	0.20
96. DI(2-ETHYLHEXYL)ADIPATE	103-23-1	C	0.7	NA	10	0.20
97. DI(2-ETHYLHEXYL)PHTHALATE	117-81-7	B2	NA	0.014	NA	NA

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	RfD (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
98. DIFENZOQUAT	43222-48-6	D	0.08	NA	NA	0.20
99. DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	D	0.08	NA	NA	0.20
100. DIMETHOATE	60-51-5	D	0.0002	NA	NA	0.20
101. 2,4-DINITROPHENOL	51-28-5	ND	0.002	NA	NA	0.20
102. 2,4-DINITROTOLUENE	121-14-2	B2	NA	0.68	NA	NA
103. DINOSEB	88-85-7	D	0.001	NA	NA	0.20
104. 1,4-DIOXANE	123-91-1	B2	NA	0.011	NA	NA
105. DIPHENAMID	957-51-7	D	0.03	NA	NA	0.20
106. 1,2-DIPHENYLHYDRAZINE	122-66-7	B2	NA	0.8	NA	NA
107. DIQUAT DIBROMIDE	85-00-7	D	0.0022	NA	NA	0.20
108. DISULFOTON	298-04-4	E	0.00004	NA	NA	0.20
109. DIURON	330-54-1	D	0.002	NA	NA	0.20
110. DPX-M6316	79277-27-3	ND	0.013	NA	NA	0.20
E						
111. ENDOSULFAN	115-29-7	D	0.00005	NA	NA	0.20
112. ENDOTHALL	145-73-3	D	0.02	NA	NA	0.20
113. ENDRIN	72-20-8	E	0.0003	NA	NA	0.20
114. EPICHLOROHYDRIN	106-89-8	B2	NA	0.0099	NA	NA
115. ETHEPHON	16672-87-0	D	0.005	NA	NA	0.20
116. EPTC	759-94-4	D	0.025	NA	NA	0.20
117. ETHYLBENZENE	100-41-4	D	0.1	NA	NA	0.20
118. ETHYLENE DIBROMIDE (EDB)	106-93-4	B2	NA	85.0	NA	NA
119. ETHYLENE GLYCOL	107-21-1	D	2.0	NA	NA	0.20
120. ETHYLENE THIOUREA	96-45-7	B2	NA	0.036	NA	NA
121. N-ETHYLTOLUENE SULFONAMIDE	26914-52-3	ND	0.0025	NA	NA	0.20
F						
122. FENAMIPHOS	22224-92-6	D	0.00025	NA	NA	0.20
123. FENARIMOL	60168-88-9	E	0.065	NA	NA	0.20
124. FENVALERATE	51630-58-1	ND	0.025	NA	NA	0.20
125. FLUOMETURON	2164-17-2	D	0.013	NA	NA	0.20
126. FLUORANTHENE (PAH)	206-44-0	D	0.04	NA	NA	0.20
127. FLUORENE (PAH)	86-73-7	D	0.04	NA	NA	0.20
128. FLUORIDE	7782-41-4	D	0.06	NA	NA	0.20

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	RfD (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
129. FLURIDONE	59756-60-4	D	0.08	NA	NA	0.20
130. FLURALINATE	69409-94-5	D	0.01	NA	NA	0.20
131. FONOFOS	944-22-9	D	0.002	NA	NA	0.20
132. FORMETANATE HYDROCHLORIDE	23422-53-9	E	0.0015	NA	NA	0.20
133. FOSETYL-AL	39148-24-8	C	3.0	NA	10	0.20
G						
134. GLYPHOSATE	1071-83-6	D	0.1	NA	NA	0.20
H						
135. HEPTACHLOR	76-44-8	B2	NA	4.5	NA	NA
136. HEPTACHLOR EPOXIDE	1024-57-3	B2	NA	9.1	NA	NA
137. HEXACHLOROETHANE	67-72-1	C	0.001	NA	10	0.20
138. HEXACHLOROBENZENE	118-74-1	B2	NA	1.6	NA	NA
139. HEXACHLOROBUTADIENE	87-68-3	C	0.002	NA	10	0.20
140. HEXACHLOROCYCLOHEXANE (alpha-)	319-84-6	B2	NA	6.3	NA	NA
141. HEXACHLOROCYCLOHEXANE (beta-)	319-85-7	C	NA	1.8	NA	NA
142. HEXACHLOROCYCLOPENTADIENE	77-47-4	D	0.007	NA	NA	0.20
143. n-HEXANE	110-54-3	D	0.06	NA	NA	0.20
144. HEXAZINONE	51235-04-2	D	0.033	NA	NA	0.20
145. IHX	2691-41-0	D	0.05	NA	NA	0.20
I						
146. IMAZALIL	35554-44-0	D	0.013	NA	NA	0.20
147. IMAZAQUIN	81335-37-7	D	0.25	NA	NA	0.20
148. INDENOPYRENE (PAH)	193-39-5	B2	NA	12.5	NA	NA
149. ISOPHORONE	78-59-1	C	0.2	NA	10	0.20
L						
150. LEAD	7439-92-1	B2	NA	NA	NA	NA
151. LINDANE	58-89-9	C	0.0003	NA	10	0.20
152. LINURON	330-55-2	C	0.002	NA	10	0.20
M						
153. MALATHION	121-75-5	D	0.02	NA	NA	0.20
154. MALEIC HYDRAZIDE	123-33-1	D	0.5	NA	NA	0.20
155. MANCOZEB	8018-01-7	ND	0.03	NA	NA	0.20

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	Rfd (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
156. MANEB	12427-38-2	D	0.005	NA	NA	0.20
157. MANGANESE	7439-96-5	D	0.1	NA	NA	0.20
158. MCPA	94-74-6	D	0.0005	NA	NA	0.20
159. MEPIQUAT CHLORIDE	24307-26-4	D	0.03	NA	NA	0.20
160. MERCURY (INORGANIC)	7439-97-6	D	0.0003	NA	NA	0.20
161. METALAXYL	57837-19-1	D	0.06	NA	NA	0.20
162. METHAMIDPHOS	10265-92-6	D	0.00005	NA	NA	0.20
163. METHIOCARB	2032-65-7	E	0.00125	NA	NA	0.20
164. METHOMYL	16752-77-5	D	0.025	NA	NA	0.20
165. METHOXYCHLOR	72-43-5	D	0.005	NA	NA	0.20
166. METHYL ETHYL KETONE	78-93-3	D	0.05	NA	NA	0.20
167. METHYL PARATHION	298-00-0	D	0.00025	NA	NA	0.20
168. METHYL TERT BUTYL ETHER (MTBE)	1634-04-4	D	0.005	NA	NA	0.20
169. METHYLENE CHLORIDE	75-09-2	B2	NA	0.0075	NA	NA
170. METOLACHLOR	51218-45-2	C	0.15	NA	10	0.20
171. METRIBUZIN	21087-64-9	D	0.025	NA	NA	0.20
172. METSULFURON-METHYL	74223-64-6	D	0.25	NA	NA	0.20
173. MOLYBDENUM	7439-98-7	D	0.001	NA	NA	0.20
174. MONOCROTOPHOS	6923-22-4	E	0.000045	NA	NA	0.20
175. MORURON	150-68-5	ND	0.0007	NA	NA	0.20
176. MSM (AS ARSERIC)	2163-80-6	A	NA	NA	NA	NA
177. MYCLOBUTANIL	88671-89-0	ND	0.025	NA	NA	0.20
N						
178. NALED	300-76-5	D	0.002	NA	NA	0.20
179. NAPHTHALENE (PAH)	91-20-3	D	0.004	NA	NA	0.20
180. NAPROXAMIDE	15299-99-7	ND	0.1	NA	NA	0.20
181. NICKEL	7440-02-0	D	0.02	NA	NA	0.20
182. NITRATE	14797-55-8	D	1.6	NA	NA	0.20
183. NITRATE/NITRITE (TOTAL)	NA	D	1.0	NA	NA	0.20
184. NITRITE	14797-65-0	D	0.1	NA	NA	0.20
185. NITROBENZENE	98-95-3	D	0.0005	NA	NA	0.20
186. NITROGUANIDINE	556-88-7	D	0.1	NA	NA	0.20
187. N-NITROSODIPHENYLAMINE	86-30-6	B2	NA	0.0049	NA	NA

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	Rfd (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
188. N-NITROSO-D-PROPYLAMINE	621-64-7	B2	NA	7.0	NA	NA
189. N-NITROSO-DIMETHYLAMINE	62-75-9	B2	NA	51.0	NA	NA
190. N-NITROSOPYRROLIDINE	930-55-2	B2	NA	2.1	NA	NA
191. NORFLURAZON	27314-13-2	D	0.04	NA	NA	0.20
D						
192. ORYZALIN	19044-88-3	C	0.05	NA	10	0.20
193. OXAMYL	23135-22-0	E	0.025	NA	NA	0.20
194. OXYDEMETON-METHYL	301-12-2	D	0.0005	NA	NA	0.20
P						
195. PARAQUAT	1910-42-5	C	0.0045	NA	10	0.20
196. PARATHION	56-38-2	C	0.006	NA	10	0.20
197. PENDIMETHALIN	40487-42-1	D	0.04	NA	NA	0.20
198. PENTACHLOROBENZENE	608-93-5	D	0.0008	NA	NA	0.20
199. PENTACHLOROPHENOL	87-86-5	B2	NA	0.12	NA	0.20
200. PERMETHRIN						
201. PHENOL	52645-53-1	D	0.05	NA	NA	0.20
202. PHORATE	108-95-2	D	0.6	NA	NA	0.20
203. PHOSMET	298-02-2	E	0.0005	NA	NA	0.20
204. PHOSPHAMIDON	732-11-6	D	0.02	NA	NA	0.20
	13171-21-6	D	0.00017	NA	NA	0.20
205. PICLORAM						
206. POLYCHLORINATED BIPHENYLS (PCBs)	1918-02-1	D	0.07	NA	NA	0.20
207. PROFENOFOS	1336-36-3	B2	NA	7.7	NA	NA
208. PROFURALIN	41198-08-7	D	0.00005	NA	NA	0.20
209. PROMETON	26399-36-0	ND	0.006	NA	NA	0.20
	1610-18-0	D	0.015	NA	NA	0.20
210. PROMETRYN						
211. PRONAMIDE	7287-19-6	D	0.004	NA	NA	0.20
212. PROPACHLOR	23950-58-5	C	0.075	NA	10	0.20
213. PROPARGITE	1918-16-7	D	0.013	NA	NA	0.20
214. PROPRAZINE	2312-35-8	ND	0.02	NA	NA	0.20
	139-40-2	C	0.02	NA	10	0.20
215. PROPHAM						
216. PROPICONAZOLE	122-42-9	D	0.02	NA	NA	0.20
217. PROPOXUR	60207-90-1	D	0.013	NA	NA	0.20
218. PYRENE (PAH)	114-26-1	C	0.004	NA	10	0.20
	129-00-0	D	0.03	NA	NA	0.20

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	RfD (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
R						
219. RDX	121-82-4	C	0.003	NA	10	0.20
S						
220. SELENIUM	7782-49-2	D	NA	NA	NA	NA
221. SETHOXYDIM	74051-80-2	D	0.09	NA	NA	0.20
222. SILVER	7440-22-4	D	NA	NA	NA	0.20
223. SIMAZINE	122-34-9	C	0.002	NA	10	0.20
224. STRONTIUM	7440-24-6	D	2.5	NA	NA	0.20
225. STYRENE	100-42-5	C	0.2	NA	10	0.20
226. SULFATE	14808-79-8	D	NA	NA	NA	NA
227. SULPROFOS	35400-43-2	E	0.0025	NA	NA	0.20
T						
228. 2,4,5-T	93-76-5	D	0.01	NA	NA	0.20
229. 2,3,7,8-TCDD	1746-01-6	B2	NA	150000	NA	0.20
230. 2,4,5-TP	93-72-1	D	0.008	NA	NA	0.20
231. TEBUTHIURON	34014-18-1	D	0.07	NA	NA	0.20
232. TERBACIL	5902-51-2	E	0.013	NA	NA	0.20
233. TERBUFOS	13071-79-9	D	0.0001	NA	NA	0.20
234. TERBUTRYN	886-50-0	ND	0.001	NA	NA	0.20
235. 1,2,4,5-TETRACHLOROBENZENE	95-94-3	D	0.0003	NA	NA	0.20
236. 1,1,1,2-TETRACHLOROETHANE	630-20-6	C	0.03	NA	10	0.20
237. 1,1,2,2-TETRACHLOROETHANE	79-34-5	C	NA	0.2	NA	NA
238. TETRACHLOROETHYLENE (PCE)	127-18-4	B2	NA	0.05	NA	NA
239. TETRAETHYL LEAD	78-00-2	D	0.0000001	NA	NA	0.20
240. THALLIUM	7440-28-0	ND	0.00007	NA	NA	0.20
241. THIOPHANATE-METHYL	23564-05-8	D	0.08	NA	NA	0.20
242. THIRAM	137-26-8	D	0.005	NA	NA	0.20
243. TOLUENE	108-88-3	D	0.2	NA	NA	0.20
244. TOXAPHENE	8001-35-2	B2	NA	1.1	NA	NA
245. TRIADIMEFON	43121-43-3	D	0.03	NA	NA	0.20
246. TRICHLORFON	52-68-6	C	0.0125	NA	10	0.20
247. 1,2,4-TRICHLOROBENZENE	120-82-1	D	0.0013	NA	NA	0.20

NA Not Available ND Not Determined

APPENDIX B
TOXICOLOGICAL DATA FOR LISTED CHEMICALS

CHEMICAL	CAS NUMBER	CANCER GROUP	RfD (mg/kg/d)	SLOPE FACTOR 1/(mg/kg/d)	SAFETY FACTOR	RSC
248. 1,1,1-TRICHLOROETHANE (TCA)	71-55-6	D	.09	NA	NA	NA
249. 1,1,2-TRICHLOROETHANE	79-00-5	C	0.004	NA	10	0.20
250. TRICHLOROETHYLENE (TCE)	79-01-6	B2	NA	0.011	NA	NA
251. TRICHLOROFLUOROMETHANE	75-69-4	D	0.3	NA	NA	0.20
252. TRICLOPYR	55335-06-3	E	0.0025	NA	NA	0.20
253. 2,4,5-TRICHLOROPHENOL	95-95-4	D	0.1	NA	NA	0.20
254. 2,4,6-TRICHLOROPHENOL	88-06-2	B2	NA	0.011	NA	NA
255. 1,2,3-TRICHLOROPROPANE	96-18-4	D	0.006	NA	NA	0.20
256. TRICHLOROTRIFLUOROETHANE	76-13-1	D	30.0	NA	NA	0.20
257. TRIFLURALIN	1582-09-8	C	0.0075	NA	10	0.20
258. TRIFORINE	26644-46-2	D	0.025	NA	NA	0.20
259. TRIHALOMETHANES (TOTAL THM)	NA	NA	NA	NA	NA	NA
260. 2,4,6-TRINITROTOLUENE	118-96-7	C	0.0005	NA	10	0.20
U						
261. URANIUM	7440-61-1	A	0.003	ND	NA	0.20
V						
262. VANADIUM	7440-62-2	D	0.007	NA	NA	0.20
263. VERNOLATE	1929-77-7	ND	0.001	NA	NA	0.20
264. VINILOZOLIN	50471-44-8	D	0.025	NA	NA	0.20
265. VINYL CHLORIDE	75-01-4	A	NA	1.9	NA	NA
X						
266. XYLENES (TOTAL)	1330-20-7	D	2.0	NA	NA	0.20
Z						
267. ZINC	7440-66-6	ND	0.2	NA	NA	0.20
268. ZINNEB	12122-67-7	D	0.05	NA	NA	0.20

NA Not Available ND Not Determined

APPENDIX C

SELECTED SYNONYMS and ACRONYMS
FOR TABULATED CHEMICALS
(* indicates trade or brand name)

SYNONYM	NAME LISTED IN TABLE	SYNONYM	NAME LISTED IN TABLE
α-BHC	Hexachlorocyclohexane(α-)	2-Propanone	Acetone
α-HCH	Hexachlorocyclohexane(α-)	2-Propenal	Acrolein
α-Hydroxytoluene	Benzyl alcohol	2-Propenenitrile	Acrylonitrile
β-BHC	Hexachlorocyclohexane(β-)	2-(2,4,5-Trichlorophenoxy)propionic acid	2,4,5-TP
β-HCH	Hexachlorocyclohexane(β-)	2,3,7,8-Tetrachlorodibenzodioxin	2,3,7,8-TCDD
β-Trichloroethane	1,1,2-Trichloroethane	2,4-DCP	2,4-Dichlorophenol
γ-BHC	Lindane	2,4-Dichlorophenoxyacetic acid	2,4-D
γ-HCH	Lindane	2,4-DNP	2,4-Dinitrophenol
1-Methyl-2,4-dinitrobenzene	2,4-Dinitrotoluene	2,4-DNT	2,4-Dinitrotoluene
1,1-DCE	1,1-Dichloroethylene	2,4,5-TCP	2,4,5-Trichlorophenol
1,1-Dichloroethene	1,1-Dichloroethylene	2,4,5-Trichlorophenoxyacetic acid	
1,1,1-TCA	1,1,1-Trichloroethane	2,4,6-TCP	2,4,6-Trichlorophenol
1,1,2-TCA	1,1,2-Trichloroethane	3-Cresol	Cresol (Total)
1,1,2-Trichloroethene	1,1,2-Trichloroethene	3-Hydroxytoluene	Cresol (Total)
1,1,2-Trichloro-1,2,2-trifluoroethane	Trichloroethylene	3-Methylphenol	m-Methylphenol
1,1,1,2-PCA	Trichlorotrifluoroethane	AAtrex*	Atrazine
1,1,2,2-PCA	1,1,1,2-Tetrachloroethane	Accelerate*	Endothall
1,1,2,2-Tetrachloroethylene	1,1,2,2-Tetrachloroethane	Access*	Picloram
1,2-Benzacenaphthene	Tetrachloroethylene	Acephate-met	Methamidophos
1,2-DCA	Fluoranthene	Acrylaldehyde	Acrolein
1,2-Dibromoethane	1,2-Dichloroethane	Afalon*	Linuron
1,2,2-Trichloroethene	Ethylene dibromide	Alfa-Tox*	Diazinon
1,2,2-Trichloroethane	Trichloroethylene	Allisan*	Dicloran
1,2,4-TCB	1,1,2-Trichloroethane	Ally*	Metsulfuron-Methyl
1,3-DCP	1,2,4-Trichlorobenzene	alpha-BHC	Hexachlorocyclohexane(α-)
1,4-Dioxane	1,3-Dichloropropene	alpha-HCH	Hexachlorocyclohexane(α-)
2-Butanone	p-Dioxane	Amazine*	Simazine
2-Chlorotoluene	Methyl ethyl ketone	Ambush*	Permethrin
2-Cresol	o-Chlorotoluene	Amiben*	Chloramben
2-Hydroxyethanol	Cresols (Total)	Amidophos	Methamidophos
2-Hydroxytoluene	Ethylene glycol	Ammate*	Ammonium Sulfamate
2-Methoxy-2-methyl propane	Cresols (Total)	AMS	Ammonium Sulfamate
2-Methyl-4-phenoxy-acetic acid	Methyl tert butyl ether		
2-Methylphenol	MCPA		
	o-Methylphenol		

SYNONYM

Ansar*
 Anthon*
 Apron*
 Aqua 8*
 Aqualin*
 Aquatate*
 Aquazine*
 Arasan*
 Arena*
 Asana*
 Atroban*
 Avenge*
 Azodrin*
 Banish*
 Banrot*
 Basagran*
 Basudin*
 Bayer*
 Baygon*
 Bayleton*
 Benlate*
 BBP
 Benzamine
 Benz[*a*]phenanthrene
 Benz[*e*]acephenanthrylene
 Benz[*a*]anthracene
 Benz[*a*]phenanthrene
 Benz[*j*,*k*]fluorene
 beta-BHC
 beta-HCH
 beta-Trichloroethane
 Bicep*
 Bicep*
 Big 10 Dust*
 Biocide*
 Bis(2-ethylhexyl)phthalate
 Bladex*
 Bloc*
 Bolstar*
 Botran*
 Bran L Bait*
 Bravo*
 Bravo C/M*
 Bromofume*
 Bronco*
 Bullet*
 c-1,2-DCE
 Caparol*
 MSMA
 Trichlorfon
 Metalaxyl
 Parathion
 Acrolein
 Diquat Dibromide
 Simazine
 Thiram
 Alachlor
 Fenvalerate
 Permethrin
 Difenzoquat
 Monocrotophos
 Diquat Dibromide
 Thiophanate-Methyl
 Bentazon
 Diazinon
 Azinphos-Methyl
 Propoxur
 Triadimeton
 Benomyl
 Butyl benzyl phthalate
 N-Nitrosodiphenylamine
 Chrysene
 Benzo[*b*]fluoranthene
 Benz[*a*]anthracene
 Chrysene
 Fluoranthene
 Hexachlorocyclohexane (β -)
 Hexachlorocyclohexane (β -)
 1,1,2-Trichloroethane
 Atrazine
 Metolachlor
 Carbaryl
 Acrolein
 Di(2-ethylhexyl)phthalate
 Cyanazine
 Fenarimol
 Sulprofos
 Dicloran
 Methomyl
 Chlorothalonil
 Maneb
 Ethylene dibromide
 Alachlor
 Alachlor
 cis-1,2-Dichloroethylene
 Prometryn

SYNONYM

Captac*
 Carbolic acid
 Carbon bisulphide
 Carzol*
 Casoran*
 Castaway*
 Cercobin*
 CFC-11
 CFC-12
 CFC-113
 Chemathion
 Chlorodibromomethane
 Chloroethene
 Chloroethylene
 Chloromethylloxirane
 Chlorophen*
 Chlorothane*
 Chlorothene*
 Cinnamene
 cis-1,2-DCE
 cis-1,2-Dichloroethene
 cis-1,3-Dichloropropene
 cis-1,3-Dichloropropylene
 Citation*
 Coastox*
 Comite*
 Conquest*
 Conquest*
 Cotoran*
 Cotton-Pro*
 Counter*
 Cresol(o-)
 Cresol(m-)
 Cresylic acid(o-)
 Cresylic acid(m-)
 Crolean*
 Curacron*
 Curaterr*
 Cycle*
 Cyclonite
 Cyclotrimethylenetrinitramine
 Cygon*
 Cythion*
 Dacamine*
 Daconil*
 Dacthal*
 DBCP
 NAME LISTED IN TABLE
 Captan
 Phenol
 Carbon disulphide
 Formetanate Hydrochloride
 Dichlobenil
 Diquat Dibromide
 Thiophanate-Methyl
 Trichlorofluoromethane
 Dichlorodifluoromethane
 Trichlorotrifluoroethane
 Malathion
 Dibromochloromethane
 Vinyl chloride
 Vinyl chloride
 Epichlorohydrin
 Pentachlorophenol
 1,1,1-Trichloroethane
 1,1,1-Trichloroethane
 Styrene
 cis-1,2-Dichloroethylene
 cis-1,2-Dichloroethylene
 1,3-Dichloropropene
 1,3-Dichloropropene
 Cyromazine
 Carbaryl
 Propargite
 Cyanazine
 Atrazine
 Fluometuron
 Prometryn
 Terbufos
 Cresols (Total)
 Cresols (Total)
 Cresols (Total)
 Cresols (Total)
 Acrolein
 Profenofos
 Carbofuran
 Metolachlor
 RDX
 RDX
 Dimethoate
 Malathion
 2,4-D
 Chlorothalonil
 DCPA
 1,2-Dibromo-3-chloro-
 propane

SYNONYM

DBP
 DCMU
 DCNA*
 DCP
 De-Bug-1*
 DEHP
 DEP
 Depend*
 Des-l-Cate*
 Devrinol*
 Di(2-chloroethyl)ether
 Dibenzof[a,h]anthracene
 Dibenzol[b,j,k]fluorene
 Dibrom*
 Dibromochloropropane
 Dichloran
 Dichlorobromomethane
 Dichlorobenzidine
 Dichlorodiphenyldi-
 chloroethane
 Dichlorodiphenyldi-
 chloroethylene
 Dichlorodiphenyltri-
 chloroethane
 Dichloromethane
 Dichlorophenoxyacetic acid
 Difluorodichloromethane
 Dimate*
 Dimcron*
 Dimethogon*
 Dimethyl ketone
 Dimethylbenzene
 Dimethylnitrosoamine
 Dimethyl tetrachloro-
 terephthalate
 Di-n-butyl phthalate
 Dioxamyl
 Dioxin
 Diphenylnitrosamine
 Dipropylnitrosamine
 Dipterox*
 Diquat
 Disyston*
 Dithane*
 Dithon*
 Dithon 63*
 Ditraniil
 Dibutyl phthalate
 Diuron
 Dicloran
 1,3-Dichloropropene
 Carbaryl
 Di(2-ethylhexyl)phthalate
 Diethyl phthalate
 Bentazon
 Endothall
 Napropamide
 Bis(2-chloroethyl)ether
 Dibenz[a,h]anthracene
 Benzo[k]fluoranthene
 Naled
 1,2-Dibromo-3-
 chloropropane
 Dicloran
 Bromodichloromethane
 3,3-Dichlorobenzidine
 DDD
 DDE
 DDT
 Methylene chloride
 2,4-D
 Dichlorodifluoromethane
 Dimethoate
 Phosphamidon
 Dimethoate
 Acetone
 Xylene (Total)
 N-Nitrosodimethylamine
 DCPA
 Dibutyl phthalate
 Oxamyl
 2,3,7,8-TCDD
 N-Nitrosodiphenylamine
 N-Nitrosodi-n-propylamine
 Trichlorfon
 Diquat Dibromide
 Disulfoton
 Mancozeb
 Methyl Parathion
 Parathion
 Dicloran

NAME LISTED IN TABLE

DMK
 DMN or DMNA
 DNP
 DNT
 DPN or DPNA
 DPX-T6376
 Dragnet*
 Dual*
 Dursban*
 Dyfonate*
 Dylox*
 Ectiban*
 Ectrin*
 EDB
 EDC
 Endocide*
 Envy*
 Eptam*
 Eradicane*
 Ethane tetrachloride
 Ethane hexachloride
 Ethrel*
 Ethenyl benzene
 Ethyl parathion
 Ethyl dipropylthiocarbamate
 Ethylene dichloride
 Ethylene monochloride
 ETU
 Evercide
 Evital*
 Expar*
 Extrazine*
 Extrazine*
 Fenoprop
 Fluorotrichloromethane
 Forturf*
 Freon HE*
 Freon-MF*
 Freon PCA*
 Freon TF*
 Freon-11*
 Freon-12*
 Freon-113*
 Fumazone*
 Fundal*
 Funginex*
 Acetone
 N-Nitrosodimethylamine
 2,4-Dinitrophenol
 2,4-Dinitrotoluene
 N-Nitrosodi-n-propylamine
 Metsulfuron-Methyl
 Permethylin
 Metolachlor
 Chlorpyrifos
 Fonofos
 Trichlorfon
 Permethylin
 Fenvalerate
 Ethylene dibromide
 1,2-Dichloroethane
 Endosulfan
 2,4-D
 EPTC
 EPTC
 1,1,2,2-Tetrachloroethane
 Hexachloroethane
 Ethephon
 Styrene
 Parathion
 EPTC
 1,2-Dichloroethane
 Vinyl chloride
 Ethylene thiourea
 Fenvalerate
 Norflurazon
 Permethylin
 Cyanazine
 Atrazine
 2,4,5-TP
 Trichlorofluoromethane
 Chlorothalonil
 Trichlorofluoromethane
 Trichlorofluoromethane
 Trichlorotrifluoroethane
 Trichlorotrifluoroethane
 Trichlorofluoromethane
 Dichlorodifluoromethane
 Trichlorotrifluoroethane
 1,2-Dibromo-3-chloro-
 propane
 Chlordimeform
 Triflorine

SYNONYM

NAME LISTED IN TABLE

SYNONYM

Fungo*
 Furan*
 Galecron*
 gamma-HCH
 gamma-BHC
 Gamma-Mean*
 Geraslan*
 Gesagard*
 Gesapun*
 Glean*
 Gramoxone*
 Grandslam*
 Grazon*
 Guthion*
 Hard Hitter*
 Harmony*
 HCE
 Hexachlorocyclohexane(γ -)
 Hexahydro-1,3,5-trinitro-
 1,3,5-triazine
 Hexachloroethylene
 Hydrothol*
 Hydroxybenzene
 Hydroxytoluene(m-)
 Hydroxytoluene(o-)
 Hyvar*
 Image*
 Imidan*
 Indenopyren
 IP Indeno[1,2,3-cd]pyrene
 IPC Propham
 Isoacetophorone
 Karmex*
 Kelthane*
 Kerb*
 Krovar*
 Krovar*
 Lannate*
 Lasso*
 Lexone*
 LG-50*
 Lock-on*
 Lorox*
 Lorsban*
 m-Cresol
 m-Dichlorobenzene
 m-Hydroxytoluene

NAME LISTED IN TABLE

Thiophanate-Methyl
 Carbofuran
 Chlordimeform
 Lindane
 Lindane
 Lindane
 Tebuthiuron
 Prometryn
 Simazine
 Chlorsulfuron
 Paraquat
 Methiocarb
 Picloram
 Azinphos-Methyl
 Permethrin
 DPX-M6316
 Hexachloroethane
 Lindane
 RDX
 Hexachloroethane
 Endothall
 Phenol
 Cresols (Total)
 Cresols (Total)
 Bromacil
 Imazaquin
 Phosmet
 Indeno[1,2,3-cd]pyrene
 Isophorone
 Diuron
 Dicofof
 Pronamide
 Diuron
 Bromacil
 Methomyl
 Alachlor
 Metribuzin
 Diazinon
 Chlorpyrifos
 Linuron
 Chlorpyrifos
 Cresols (Total)
 Cresols (Total)
 1,3-Dichlorobenzene
 Cresols (Total)

SYNONYM

Magnacide*
 Malaspray*
 Manex*
 Manex*
 Manzate*
 Marksman*
 Marlate*
 Matadon*
 Mavrik*
 MeCl (or MeCl₂)
 MEK
 Merpan*
 Mesuroi*
 Metaspray*
 Metasystox-R*
 Methyl bromide
 Methyl chloride
 Methyl chloroform
 Methyl chlorophenoxyacetic
 acid
 Methyl tribromide
 Methyl trichloride
 Methylbenzene
 Methyltoluene
 Meturon*
 MF-4*
 MH Maleic hydrazide
 Milograd*
 Monitor*
 Monochlorobenzene
 Monochloroethylene
 Monochloromethane
 Monosodium methanearsenate
 Morpafor
 MTBE
 NDMA
 Neguvon*
 Nemacur*
 Nemagon*
 Nemex*
 N,N'-Diphenylhydrazine
 Nova*
 Nudrin*
 o-Chlorophenol
 o-Cresol
 o-Cresylic acid
 o-Dichlorobenzene

NAME LISTED IN TABLE

Acrolein
 Malathion
 Maneb
 Mancozeb
 Mancozeb
 Atrazine
 Methoxychlor
 Permethrin
 Fluvalinate
 Methylene chloride
 Methyl ethyl ketone
 Captan
 Methiocarb
 Methyl Parathion
 Oxydemeton-Methyl
 Bromomethane
 Chloromethane
 1,1,1-Trichloroethane
 MCPA
 Bromoform
 Chloroform
 Toluene
 Xylene (Total)
 Fluometuron
 Maneb
 Propazine
 Methamidophos
 Chlorobenzene
 Vinyl chloride
 Chloromethane
 MSMA
 Sulprofos
 Methyl tert butyl ether
 N-Nitrosodimethylamine
 Trichlorfon
 Fenamiphos
 1,2-Dibromo-3-chloro-
 propane
 1,3-Dichloropropene
 1,2-Diphenylhydrazine
 Myclobutanil
 Methomyl
 2-Chlorophenol
 Cresols (Total)
 Cresols (Total)
 1,2-Dichlorobenzene

SYNONYM

o-Hydroxytoluene
 OC-50*
 Octahydro-1,3,5,7-tetra-
 nitro-1,3,5,7-
 tetrazocine
 Omite*
 Orbit*
 Or-Cal*
 Ornalin*
 Ornamite*
 Orthocide*
 p-Diamodiphenyl
 p-Dichlorobenzene
 p,p'-Dichlorodiphenyl-
 dichloroethane
 p,p'-Dichlorodiphenyl-
 dichloroethylene
 p,p'-Dichlorodiphenyl-
 trichloroethane
 Pageant*
 Parawet*
 PCB
 Payze*
 PCE
 PCP
 Pennant 5G*
 Pennacap-M*
 Penncozeb*
 Penoxyalin
 Penta*
 Perc (for Perk)
 Perchloroethane
 Perchloroethylene
 Perchloromethane
 Perclene*
 Permanone*
 Phenylcarbinol
 Phenylmethanol
 Phenyl-ethylene
 Phoskil*
 Phthalophos
 Pillarfulan
 Pinnacle*
 Pix*
 Poast*
 Pounce*
 Pramitol*
 Pre-M 60 DG*

NAME LISTED IN TABLE

Cresols (Total)
 Diazinon
 HMX
 Propargite
 Propiconazole
 Lindane
 Vinclozolin
 Propargite
 Captan
 Benzidine
 1,4-Dichlorobenzene
 DDD
 DDE
 DDT
 Chlorpyrifos
 Parathion
 Polychlorinated biphenyls
 Cyanazine
 Tetrachloroethylene
 Pentachlorophenol
 Metolachlor
 Methyl Parathion
 Mancozeb
 Pendimethalin
 Pentachlorophenol
 Tetrachloroethylene
 Hexachloroethane
 Tetrachloroethylene
 Carbon tetrachloride
 Tetrachloroethylene
 Permethrin
 Benzyl alcohol
 Benzyl alcohol
 Styrene
 Parathion
 Phosmet
 Carbofuran
 DPX-M6316
 Mepiquat chloride
 Sethoxyadim
 Permethrin
 Prometon
 Pendimethalin

SYNONYM

Primatrol S*
 Princep*
 Prokil*
 Prolate
 Prolox*
 Prometryne
 Pronone*
 Propylene dichloride
 Propyzamide
 Prowl*
 Prozine*
 Prozine*
 Pydrin*
 Pyreperm*
 Rally*
 Rampart*
 Ramrod*
 Reglone*
 Ridomil*
 Ridomil*
 Ridomil Bravo 81W*
 Ronilan*
 Roundup*
 Rubigan*
 Ryzelan*
 S-Ethyl dipropyl-
 thiocarbamate
 Sarolex*
 Scepter*
 Scram*
 Selecron
 Sencor*
 Sevin*
 Silvex
 Sinbar*
 Sodium Bentazon
 Solicam*
 Sonar*
 Spectracide*
 Spike*
 Stall*
 Stand-Aid*
 Stomp*
 Strike*
 Strobane*
 Subdue*
 Sulficide*

NAME LISTED IN TABLE

Simazine
 Simazine
 Malathion
 Phosmet
 Trichlorfon
 Prometryn
 Hexazinone
 1,2-Dichloropropane
 Pronamide
 Pendimethalin
 Atrazine
 Pendimethalin
 Fenvalerate
 Permethrin
 Myclobutanil
 Phorate
 Propachlor
 Diquat Dibromide
 Mancozeb
 Metalaxyl
 Chlorothalonil
 Vinclozolin
 Glyphosate
 Fenarimol
 Oryzalin
 EPTC
 Diazinon
 Imazaquin
 Thiram
 Profenofos
 Metribuzin
 Carbaryl
 2,4,5-TP
 Terbacil
 Bentazon
 Norflurazon
 Fluridone
 Diazinon
 Tebuthiuron
 Alachlor
 Disulfoton
 Pendimethalin
 Triadimefon
 Toxaphene
 Metalaxyl
 Fenvalerate

SYNONYM

Sumicidin*
 Surfian*
 Surpass*
 Sutan*
 Swat*
 sym-Trimethylenetrinitramine
 Systec 1998*
 Systhane*
 t-1,2-DCE
 Tamaron*
 TBME
 TCA
 TCE
 TEL
 Telar*
 Telone*
 Telvar*
 Temik*
 Terraclor*
 Tetrachloroethene
 Tetrachloromethane
 Tetramethylene tetranitramine
 Thifensulfuron methyl
 Thimet*
 Thiodan*
 Thionspray*
 Thiophan*
 Thiosulfan*
 Thioxamyl
 Tilt*
 TNT
 Tolban*
 Toluol
 Topsin*
 Tordon*

NAME LISTED IN TABLE

Fenvalerate
 Oryzalin
 Vernolate
 Butylate
 Phosphamidon
 RDX
 Thiophanate-Methyl
 Myclobutanil
 trans-1,2-Dichloroethylene
 Methamidophos
 Methyl tert butyl ether
 1,1,1-Trichloroethane
 Trichloroethylene
 Tetraethyl lead
 Chlorsulfuron
 1,3-Dichloropropene
 Monuron
 Aldicarb
 Disulfoton
 Tetrachloroethylene
 Carbon tetrachloride
 HMX
 DPX-M6316
 Phorate
 Endosulfan
 Parathion
 Thiophanate-Methyl
 Endosulfan
 Oxamyl
 Propiconazole
 Trinitrotoluene
 Profluralin
 Toluene
 Thiophanate-Methyl
 Picloram

SYNONYM

trans-1,2-DCE
 trans-1,2-Dichloroethene
 trans-1,3-Dichloropropene
 trans-1,3-Dichloropropylene
 Treflan*
 Tri*
 Tri-4*
 Trichloren*
 Trichloroethene
 Trichloromethane
 Trichlorophenoxyacetic acid
 Trichlorophenoxy
 propionic acid
 Tri-clene*
 Triclopyr, butoxyethyl ester
 Trigard*
 Trilim*
 Trimethylcyclohexenone
 Trimethylenetrinitramine
 VC Vinyl chloride
 Vegetrol*
 Velpar*
 Vernam*
 Vinyl benzene
 Vinyl chloride monomer
 Vinylidene chloride
 Vitavax*
 Vydate*
 Watrol*
 Waylay*
 Weedone*
 Weedtrine*
 Xylol
 Yaltox*
 Zorial*

NAME LISTED IN TABLE

trans-1,2-Dichloroethylene
 trans-1,2-Dichloroethylene
 1,3-Dichloropropene
 1,3-Dichloropropene
 Trifluralin
 Trichloroethylene
 Trifluralin
 Trichloroethylene
 Trichloroethylene
 Chloroform
 2,4,5-T
 2,4,5-TP
 Trichloroethylene
 Triclopyr
 Cyromazine
 Trifluralin
 Isophorone
 RDX
 Diquat Dibromide
 Hexazinone
 Vernolate
 Styrene
 Vinyl chloride
 1,1-Dichloroethylene
 Carboxin
 Oxamyl
 Diquat Dibromide
 Napropamide
 2,4-D
 Diquat Dibromide
 Xylene (Total)
 Carbofuran
 Norflurazon

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX I
FIELD NOTES

THIS PAGE INTENTIONALLY LEFT BLANK

97A

North American	602 352 - 1420
Polaris	482 - 6193
"	800 - 233 - 9861
Dave Castro	602 302 - 9272
Andy Wallace (Home)	848 - 8503
SWE	861 - 2802
Bolin	924 - 8120
Pete	241 - 9274
Carl Neumann	273 - 3466
Steve	498 - 4661

16 April 95

0650 Arrive @ Base

0655 Arrive @ Cap's Pete Balgo's (EO) office

0735 Arrive @ CE meet with Dave Castro (DC) discuss activities. DC head the road out on 4 April 95

0800 Pick up supplies at Supply, arrive at Pit 1 truck here on site, Ray Charles operator. Start set up.

0815 Start cutting asphalt. Pid calibrated, BG = 0.0 ppm

0830 First slab up, top of surface is gravelly sand, brown. Pid = 4.1

0845 001 asphalt noted admit

one foot down. Layer is approx
 1 1/2" Thick, black, appears to be
 a dark brown layer of
 large piece of old asphalt below
 the layer. Pid = 0

Pit 1
 TB = 5.9' 3.6 x 4.8

0-1.3 Concrete asphalt

0.3-1.2 Sand, gravelly, sand is
 eq. to 1/4" PS, brown; gravel is
 1/4" to 2"

1.3-1.55 Clay, sandy, Sand slightly
 clayey, darker brown, Pid = 0

1.55-1.9 Asphalt

1.9-5.9 Sand, gravelly, sand is
 eq. to 1/4" PS, brown; gravel is
 1/4" to 2"

Pit 1

Handwritten signature

2 Samples @ 995

07- Pit 1 (1.2-1.5)
07- Pit 1 (2.2-2.4)

1015 Move to Pit 2 between
Building 46 and 35.

1045 07-031 EP collected

1150 Leave for lunch

1305 Back digging.

1330 Dark stain layer, black @
6'

Pit 2

0-4.8 Sand, clayey, brown
moist

4.8-6. Gravel, sandy brown,
1st 1/2' is

6.0 - Black staining
07-Pit 2 (6.0-6.2)

1340 Start Pit 3

1430 Dug to 6.8', no stain
sample @ 6.0-6.2 (07-Pit 3 (6.0-6.2))

0.0 - 5.0 Sandy, clayey, little gravel,
brown

5.0 - 6.8 Gravel, sandy, 1" to 8"

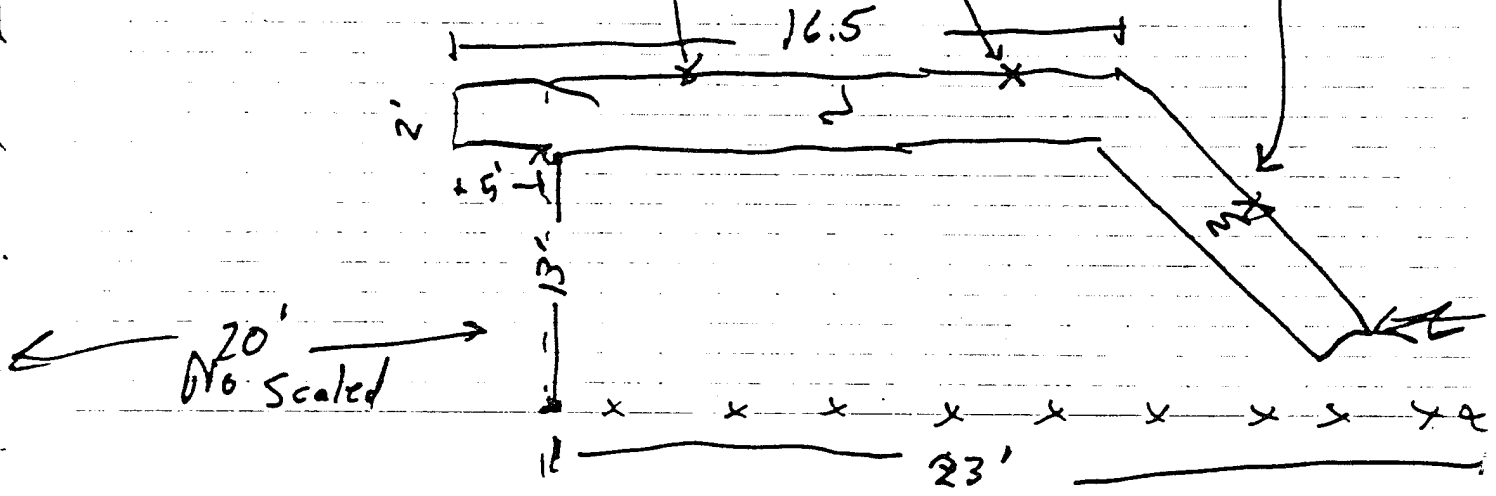
Concrete

No Sample
5' from end of
trench

14.8 from lead N-S
17.5 " " E-W

Sample 12.4' from
end of trench

7.6' from face E-W
8.4 " " N-S



20'
or 6' Scaled

2'

5'

13'

16.5

23'

7.6'

8.4'

x x x x x x x x x x

6/20/95

0600 Arrive @ Base

645 Meet with Dave Castro (DC)

650 Send Chad Frost (CF) and Jeff Blunt (JB) to get supplies

700 DC and I walk sites

730 Walk sites with JB and CF

815 Optech personnel get lodged.

1000 Start unpacking supplies,

1230 Halby Rodriguez (GR) the Miller arrive with utility cleaners.

1240 Start cleaning utilities around the Motor Pool area.

45 DC ~~arrive~~ ~~at~~ ~~base~~

equipment.

1345 - Take utility locators on airport property to learn utility. Sewer lines present that will need to be cleared by Blue State.

1430 Back at 06-023MW, rig set up and waiting on drums.

1530 Safety Brief

1545 Start drilling 06-023MW

1620 PC informs MG that the severity of the rig is interfering with the leveling of an overwell in the hangar. They request that we move to another location.

1705 Rig starts moving

1725 Leave site

21 June 95

0650 Arrive at site

0658 Drillers arrive, start getting the rig ready

0715 Safety meeting

0721 Start drilling 01-028MW

0930 Reached 50 bls, stopping to call DWR about permits

1010 Permits will be available @ 1300,

1015 Break until 1300 call office, INSITU, and Blue Stake to get them to clear utilities of sewer on airport

1300 Start drilling

1450 ID @ 911, learning out hole

1520 Screening going in the hole.

FD = 91

Screen = 90-40

10/20 sand = 91 - 34.6

fine sand = 34.6 - 32.9

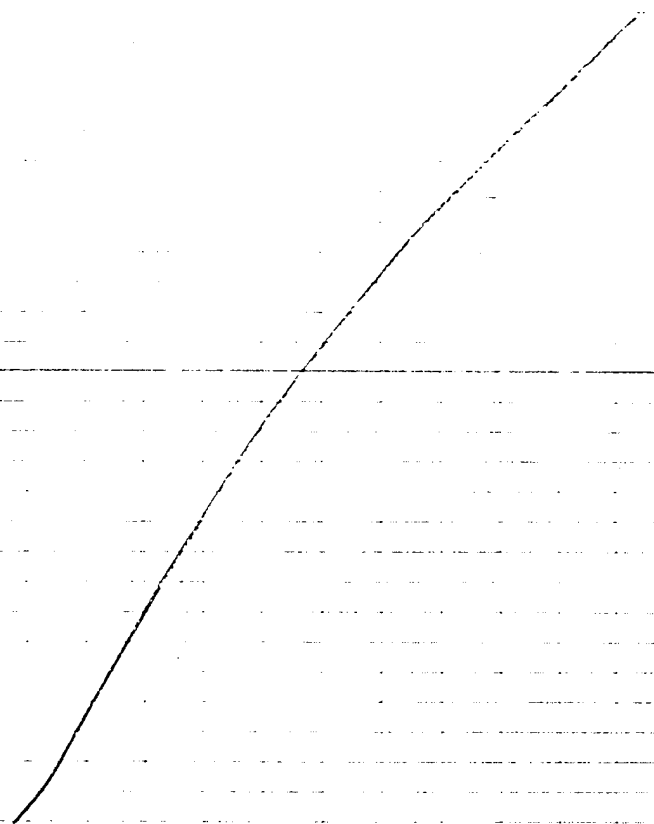
bentonit. = 32.9 - 27.9

> 20 sacks

Drums 501-510

1815 Lock gate, leave site.

Weather, sunny, hot (100°)



22 June 1995

0605 Arrive at site, driller clearing

0615 Meet with DC, get buy
and unlock has level gate

0700 JB and CF arrive, start set up
at 06-025 MW

0840 Support truck break

0907 Start 06-026 MW

1725 Screen going in the hole

FD = 92

Screen - 90-40

Case 40 - Surface

10/20 sand 92 - 24.7

fine sand 34.7 - 31.1

drums 511 - 522

1910 Leave site.

23 June 1995

0605 Arrive @ site, drillers are putting bentonite in @ 06-026 MW

bentonite 31.1 - 25.9
cement 25.9 - surface

0635 Talk to DC about getting keys to the gate for the weekend

0650 Drillers still pretty cement in 06-026 MW.

0715 Talk to security about drills over the weekend, no problem.

0725 JB and CF arrive

0900 Meet City Gas, City Sewer Telephone, City water at Capital Balza's office City Vesselman will escort us to clean vehicles on air next morning.

0950 Finish clearing utility

1005 Start drilling 01-021MW

1650 Screen goes in the hole
FD = 92

Screen = 90 - 40

Case = 40 - surface

10/20 sand = 92 - 32.1

fine sand = 32.1 - 30.9

ben tonite = 30.9 - 24.8

drums = 523 - 530

1730 MG and CF left site, JB
swill over the seam up.

Weather: Sunny, hot, breeze
in the afternoon, 105°, breeze

24 June 1995

0600 Arrive @ site, driller start
cleaning up 06-021MW

0715 Move rig over 06-024MW

0732 JB and CF arrive

0745 Safety Brief

0752 Start drilling

0835 Check depth of 06-021MW

PID = 182

TD = 90.15

1110 Screen going in the hole

TD = 92

screen	90-40
case	40-surface
16/20 sand	92 - 33.6
fine sand	33.6 - 29.9
hole	29.9 - 25.1

1330 Starting clean up.

1420 Setting up over 06-023 MW

1545 40 BLS, stop drilling, start set up
of transducer for infiltration test

1603 40 of pipe filled, test started

1630 Problem with data, rechecking test

1715 Leave site.

Weather Sunny, hot, 105+

25 June 1995

0600 Arrive @ site, drillers start
clean up and preparing for drill.

0630 Start drilling

0830 TD @ 92'

0858 screen going in

TD = 92

Screen = 89 - 39

Casing - 39 - surface

10/12 sand - 92 - 32.9

fin. sand 32.9 - 29.1

bentonite - 29.1 - 25.0

cement 25.0 - surface

Drums 539 - 545

1050 Cleaning up

1205 Setting up over

06-D22 MW

1230 Landed

1330 Drilling

TD on 06-024 MW 90.95

Pid = 130

1530 @ 65' b/s, no more drums

1600 Leave site

Weather: Sunny, hot 110+

26 June 95

0650 Arrive @ Capt Baly's office,
bring him up to speed on the
field program

0706 CF and JB arrive

0800 Drillers arrive

0815 Start drilling to finish 06-022 MW

0930 Screen going in the hole

TD = 92

Screen - 90 - 40

10/10 sand - 92 - 33.0

fine sand - 33.0 - 30.25

bentonite - 24.4 - 30.25

cement - 24.4 surfceen

drums - 546 - 553

1030 Capt Baly informs me that
~~it will be~~ Guyton Parker decided
that we will drill and make

the agreement retroactive.

1100 Talk to CP about drilling on the southeast side of the base today. She said to talk to Carl Zimmerman (CN) in Operations.

1105 Talk to CN he said come over and get a key (97A) and he would have a lock put on. I asked him if it could be done by 1300 and he said yes.

1120 Pick up key at Operations

1300 Meet operations personnel and gate to open it

1315 Rig move over

1340 Start drilling 06-020MW

1630 TD @ 92'

1640 screen going in 06-020MW

TD 92

Screen 90 - 40

Case 40 - surface

10/20 sand 92 - 34.0

fine sand 34.0 - 30.8

bentonite 30.8 - 25.4

cement 25.4 - surface

1800 leave site

Weather sunny hot, 105+, breeze in
afternoon.

27 June 1995

0530 Call Mick Frey, contractor will give us the go ahead for optional work. Told MF we may want to put in some more MW in the motor pool area. I told him I would fax him a map.

0540 Called Contractor (Caita) for verbal go ahead.

0709 Operations opens gate

0715 Call Operator to tell them we would be on site

0730 Drillers arrive

0756 CF and JB arrive

0800 I leave for CE to draw maps

1015 Setting up over OC-012BN, recovery

1130 Stand drills

1430 Problem with wire-line

1500 Start recumpler

06-016BH F16-47.5

" 50-51

TD 55

1530 Cleaning up.

Drums 554-557

Weather: Strong hot, 105°

28 June 95

0520 Talk to Dan Walty (DW) about the options MW in the motor pool area. DW said that he would try to talk to MFK.

0615 Arrive @ PB office call Operations to inform them that we are coming

0640 Leave for site T5tg Heidelberg meeting w.

0645 Arrive at 06-019 MW

0730 Harry Coffman (GC) with operations comes by to measure the distance from the runway to the reef. Distance is 730', no problem.

Sand to 12'

Grave 12-39

clay sand 39-

0935 TD@ 92'

0950 screen going in
1040

sa TD = 92

screen 90-40

casings 40-0

10/20 sand 92-35

fine sand 35-32.2

bentonite 32.2-5 surface

drums 558-564

1030 DW pages over

1045 Talk to DW, MF was thinking of not drilling the well close to the existing bar and drilling instead at the optimal location. I told DW that it was too late we had

1130 Gary Coffman comes by and recommends we have out our next crew go through the safety course so we will not have to be re-certified!

1200 Rig moved off of 06-018 MW
for decom.

1205 Back in loading

1230 Move drums of away from
06-018 MW.

1300 Dismantling and breaking for lunch.

1400 Moving over 06-019 MW.

1500 BB Packed from office, going to
call office

TE/700 Return, rig at 30' bls, (check
hydraulic line).

Sand @ 40' DLS
Puck @ 45.

1800 60' bls, stop for the day.

Weather: Sunny, hot, 105°

29 June 95

0600 Arrive @ Capt Bailey's office

0610 Call Operations to tell them
we will be on airport property

0625 Arrive @ rig 1

0658 Resume drilling 06-019MW

0805 TP 06-019MW

0823 screen going in the hole
TD = 91

screen 90-40

casing 40 - surface

10/20 sand 91 - 34.9

fine sand 34.9 - 31.1

benam 31.1 - 26.3

cream 26.3 - surface

drums 565 - 572

SALES AND FINANCIAL STATEMENTS

PERIOD: 12/31/87 TO 12/31/88

ACCOUNT	AMOUNT	TOTAL
Accounts Payable	1,111	1,111
Accounts Receivable	1,111	1,111
Inventory	1,111	1,111
Prepaid Expenses	1,111	1,111
Other Assets	1,111	1,111
Equity	1,111	1,111
Liabilities	1,111	1,111

ACCOUNT	AMOUNT	TOTAL
Revenue	1,111	1,111
Cost of Goods Sold	1,111	1,111
Operating Expenses	1,111	1,111
Interest Expense	1,111	1,111
Income Tax Expense	1,111	1,111
Net Income	1,111	1,111

ACCOUNT	AMOUNT	TOTAL
Depreciation	1,111	1,111
Amortization	1,111	1,111
Provision for Doubtful Accounts	1,111	1,111
Bad Debt Expense	1,111	1,111
Other Expenses	1,111	1,111
Net Income	1,111	1,111

NET INCOME: 1,111

ACCOUNT	AMOUNT	TOTAL
Revenue	1,111	1,111
Cost of Goods Sold	1,111	1,111
Operating Expenses	1,111	1,111
Interest Expense	1,111	1,111
Income Tax Expense	1,111	1,111
Net Income	1,111	1,111

ACCOUNT	AMOUNT	TOTAL
Revenue	1,111	1,111
Cost of Goods Sold	1,111	1,111
Operating Expenses	1,111	1,111
Interest Expense	1,111	1,111
Income Tax Expense	1,111	1,111
Net Income	1,111	1,111

ACCOUNT	AMOUNT	TOTAL
Revenue	1,111	1,111
Cost of Goods Sold	1,111	1,111
Operating Expenses	1,111	1,111
Interest Expense	1,111	1,111
Income Tax Expense	1,111	1,111
Net Income	1,111	1,111

ACCOUNT	AMOUNT	TOTAL
Revenue	1,111	1,111
Cost of Goods Sold	1,111	1,111
Operating Expenses	1,111	1,111
Interest Expense	1,111	1,111
Income Tax Expense	1,111	1,111
Net Income	1,111	1,111

Jeffrey C. Blunt
 Site Safety Officer
 Operational Technologies
 4100 NW Loop 9/10, Suite 231
 (210) 731-0000

Sky Harbor
 1315-227

THIS IS THE FIRST OF TWO PAGES OF THE REPORT. THE SECOND PAGE IS ATTACHED TO THE END OF THIS REPORT.

CONTENTS

REFERENCE

HAZCO (800) 332-0135
 Dr. Fisher (800) 634-7320
 (210) 615-2020
 Hotel (602) 957-1910
 Miller (602) 352-1420
 Burlington (210) 402-1212
 Mike Giles (615) 481-8938

DAH

110-870
25-111

Sky Harbor

Embassy Suites West
 2333 East Thomas Rd
 Phoenix, AZ 85016
 (602) 957-1910

Ship equipment to:

Optech c/o CPT Pete Balf
 161st Air Refueling Group
 2001 South 32nd Street
 Phoenix, AZ 85034

Driller Address

North American Drilling & Env. Svc.
 2631 North 33rd Ave.
 Phoenix, AZ 85009
 (602) 352-1420

Burlington Air Express will pick
 up equipment for delivery
 to Sky Harbor Airport. (The
 office there).

D

7 June 82

(2)

S. H. W. bar. 20 June 98

0640 Arrived on base.
Met Env. + Base personnel.
Procured + set up equipment.
Weather: Hot (high of 104°F).
No clouds, no chance on
precipitation. No wind.
130 set up emergency first
aid kit, fire horn, fire extinguisher
near first point.

220 TSGT Wesselman starts
that heat stress Index
is 75 - no action reqd.

Flag near flight line will
be raised if heat index
above 85. (10-50 ~~near~~
work)

1230 hrs - Calibrate PDD+LEL

(see calibration logs,

1420 signing safety plan

Compliance agreement

Health + Safety briefing

as per the back of this
book. (1310)

1545 on flying operations

(2)

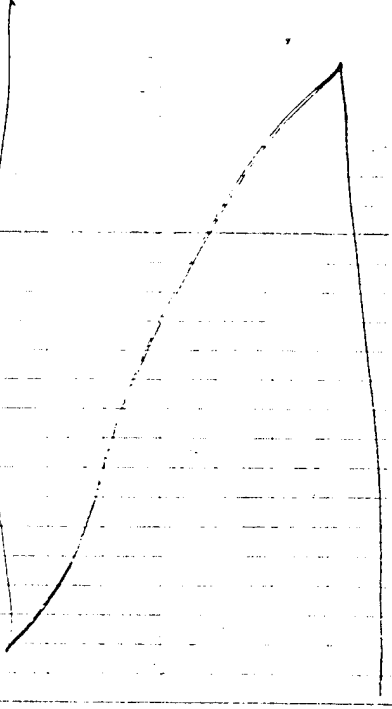
S. H. 20 June 98

1315-227

commence. Initial IAH
reading - 0.0 ppm. Initial
LEL = 0% LEL. O₂ = 21.2%
PDD/LEL readings will
be taken every 10 minutes,
with deviations from the
background noted.

Note: Sniffers did not have
safety vests. They borrowed
some of ours. They will have
them tomorrow.

1600 brief burst of wind
now to the west. No
heat flag up. Heat
stress index is still < 85.



2213

6/21/95

S.A.
0550 calibrated PID/LEL

0645 ambient on site.
0720 Conducted Health & Safety briefing. Heat stress index 75 (level 1). Temp. 80° (High). Today will be 102°. No flag flying. Light breeze to North. Set up

South of Rig. Initial PID/LEL readings negative. (Topics covered in Health & Safety briefing are given on the field pass of this field book.

0805 06-0025 MW - PID reading occasionally hits 1-2 ppm - probably from exhaust from truck / drill - soil cuttings give off no organics (0.0 ppm). 0830 similar PID read / LEL still negative. Rig is giving off a lot of

Sdy Harbor
1315-225

6/21/95

burned oil (puffs of smoke) when hammer strikes. This probably accounts for the low levels detected (along w/ exhaust from the frame and the generator). Monitoring more frequently now since mike files stated that we are now at the left of the suspected contamination plume. 0838 Weather is still mild. Temp low for w/ mild breeze blowing to the north. No real heat injury threat at this time.

0900 Labeling drums using pre-printed Optech Unclassified Waste Labels. (SEE Pgs). Also numbering drums with a paint pencil. Starting with number 501.

6/21/95

⑥

Sky Harbor
1315-227

21 June 1995

0800 Chad has gone (left a few minutes ago) on a supply run.
0903 Pulling up pipe - we have hit soft and do not yet have a permit to drill into the ground water.
0906 strike the last paragraph - were not quite there yet.
1030 Break til 1300 - waiting for permits. Getting supplies + going to lunch.

1300 Arrive on site
1310 Begin drilling. Mike Giles not on site. Gabby stated that Mike told him to start at 1300 hrs.
1315 Chad has an upset stomach. Condition is not related to drilling (he has had it previously over the past couple of months). Says he feels better now than an hour ago. He has not been going in the

Sky Harbor
1315-227

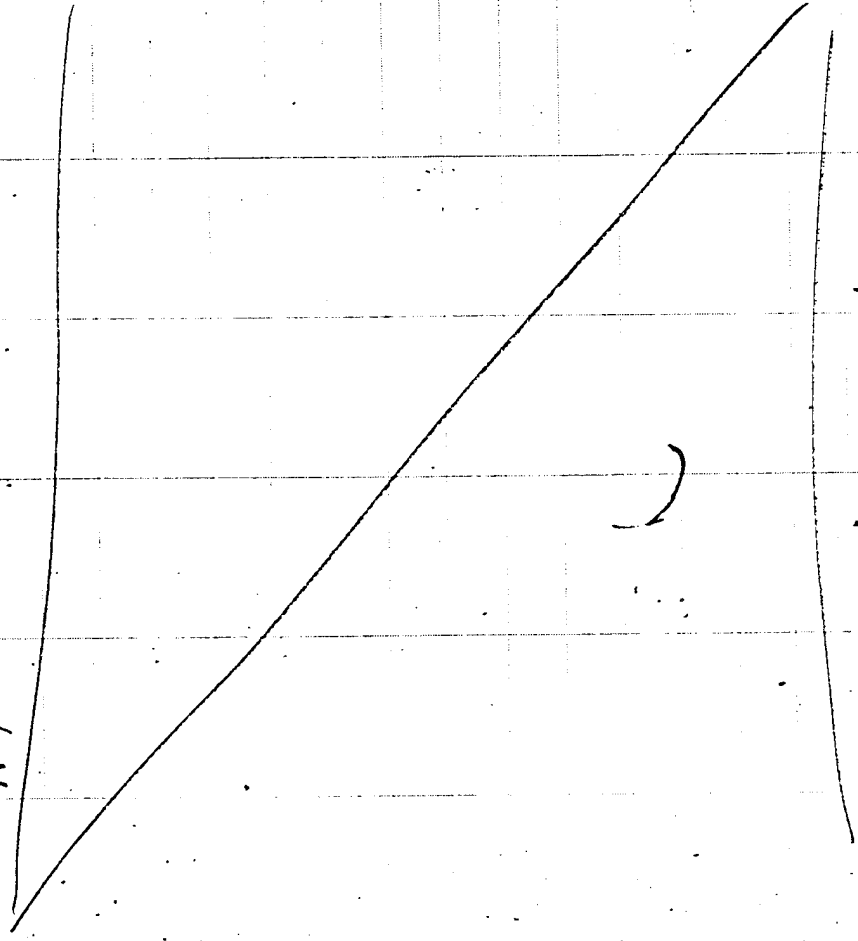
21 June 95

exclusion zone and has simply been observing for training purposes since there is no reason to be done with/ we start taking split grain samples. He will keep me apprised of the situation. PTD PTEL readings are negligible at well, breathing zone, and fly cuttings. No heat warning tags are flying.
1317 Soil is coarse sand w/ some small rocks. Dark-brown + reddish in color, No odor.
1320 Temp 74 (rad) + no wind.

1321 Mike Returns. Told him about Chad
1339 We hit ground water - PTD readings LEL readings still negative
1445 Chad feeling better. Jim making since he drinks water + cools down in truck

8

Sky Harbor 1315-227 21 June 1995.
 occasionally in case problems
 are heat related.
 1500 Calibrated 2nd PID (NO.
 5804-35403-250) + took
 original out of svc. - Heat
 seems to be draining the
 battery + affecting the
 readout - hard to read.
 1630 Supply Run



S. H. 1315-227 21 June 95
 0550 Calibrated both PFDs + LEL.
 PID 35403-250 will be re-done
 in the field (head 20.3 ppm).
 0710 Re-calibrated PID - mentioned above.
 0725 Temp 74°. Expected to reach
 1040 today. Clear + Sunny.
 Light breeze to southeast.
 0735 Rigs moving into place
 for drilling MW 06-026.
 0740 Ambient PID + LEL readings
 are negative.
 0900 - Conducted health +
 safety briefing.
 0920 Taking PID readings
 of all split spans as they
 are brought up + opened.
 Positive readings will be
 recorded.
 1100 Break/s - no recovery
 of 561/4 no PFD/LEL
 readings.
 1130 Temp = 95° (rad 10)
 1430 Temp = 101° (rad 10)
 1535 Temp = 120° (the remainder)?

⑩
23 June 95

8A:

1315-227

0715 Calibrated PID / LEL.

0720 Conducted Safety + Health

Briefing.

0940. Drillers move into position (PCL Area) after decon procedures.

0955 Drilling commences (06-02/MW)

1203 Noted PCL odors. PID reading

in cuttings drum went to

10.2 ppm. BZ was 0.0 ppm.

1600 After 2+ hour break (lunch +

breakdown), soil PID reads 19 ppm.

BZ is 0.0 ppm LEL 0%

1610 PID readings again

to zero

11
24 June 95

5A:

1315-227

0750 Begin drilling 06-024 MW

1005 PID reading ranging from

8.2 to 38.5 in soil in

drums. BZ measurements

are negative.

1005 H2S briefing was

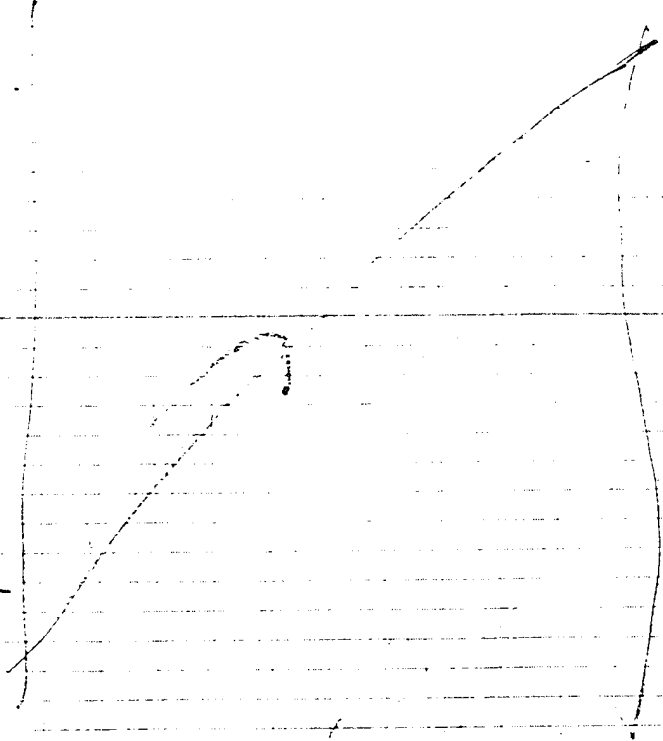
but not recorded.

1040 PID reading in soil

again negative.

1530 depart site.

Conducted at 020



Shy Harbor
1315-227

25 June '75

0530 Calibrated PPOs & LEL.
0600 Arrived on site
0700 Conducted H₂S bn' gng -
Same crew, same format.
0900 Radio states temps will
go to ~105° today w/ little
or no wind (eg same as
yesterday).

1530 Temp is 107, but its a
dry heat. Drinking more fluids.

No heat + bugs flying!
1530 Some PPO readings in drums
(soil), but none in BZ.

JLB

26 June '75

1315-227

0800 PPO (11,2) + LEL calibrated.
0800 Drilling commences (SHT in at 0750).
0817 PPO readings up to 10ppm
in soil in drums. BZ PPO
+ LEL readings are

1.9 at/bv.
0830 Temp at 82°, expected
to go to 104°. No wind at this

time.
0850 An approx 80ft - high PPO
reading on drummed soil (up
to 166 ppm) BZ fluctuated
from 0.10 to 5.2 (chiefly). LEL

Negative.
0900 New soil readings at 1.0 ppm.
BZ is negative.
1400 Temp is 90°. Finishing 06-ozonem.

JLB

(19)

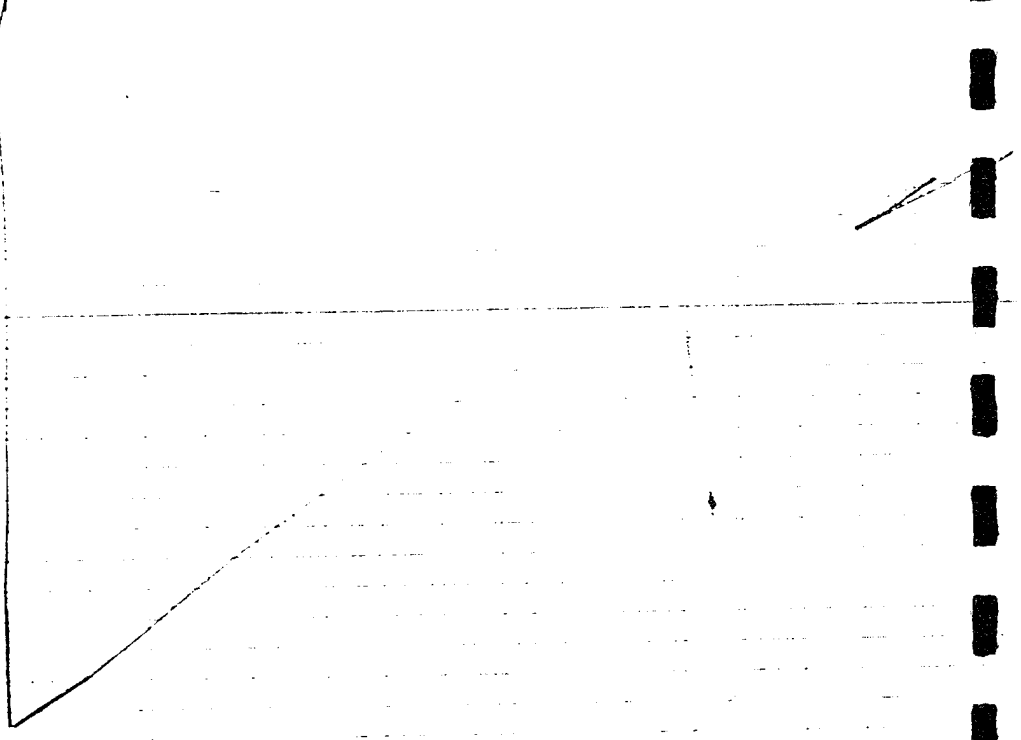
28 June '88

SH

1315-227

0600 in. at LEL.

0630 SH Boering, including
onions on working along
the flight line.



(18)

27 June '88

SH

1315-227

0700 PTD/EL Calibration

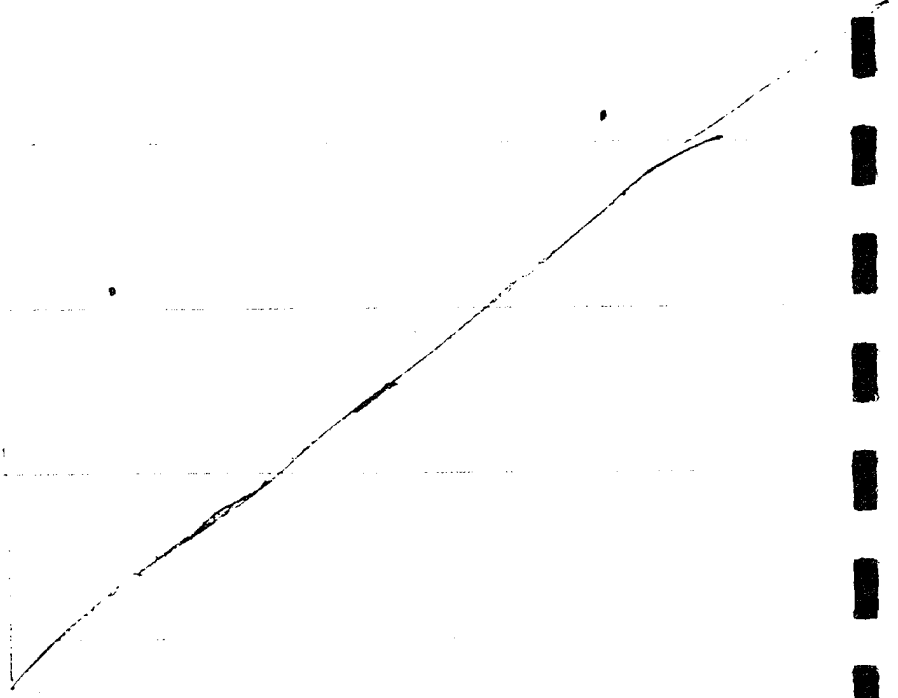
0900 SH Boering

1120 drilling borehole in Pol yard.

(Temp to go to 107° today)

1600 Boing Pone

1820 Deposed site



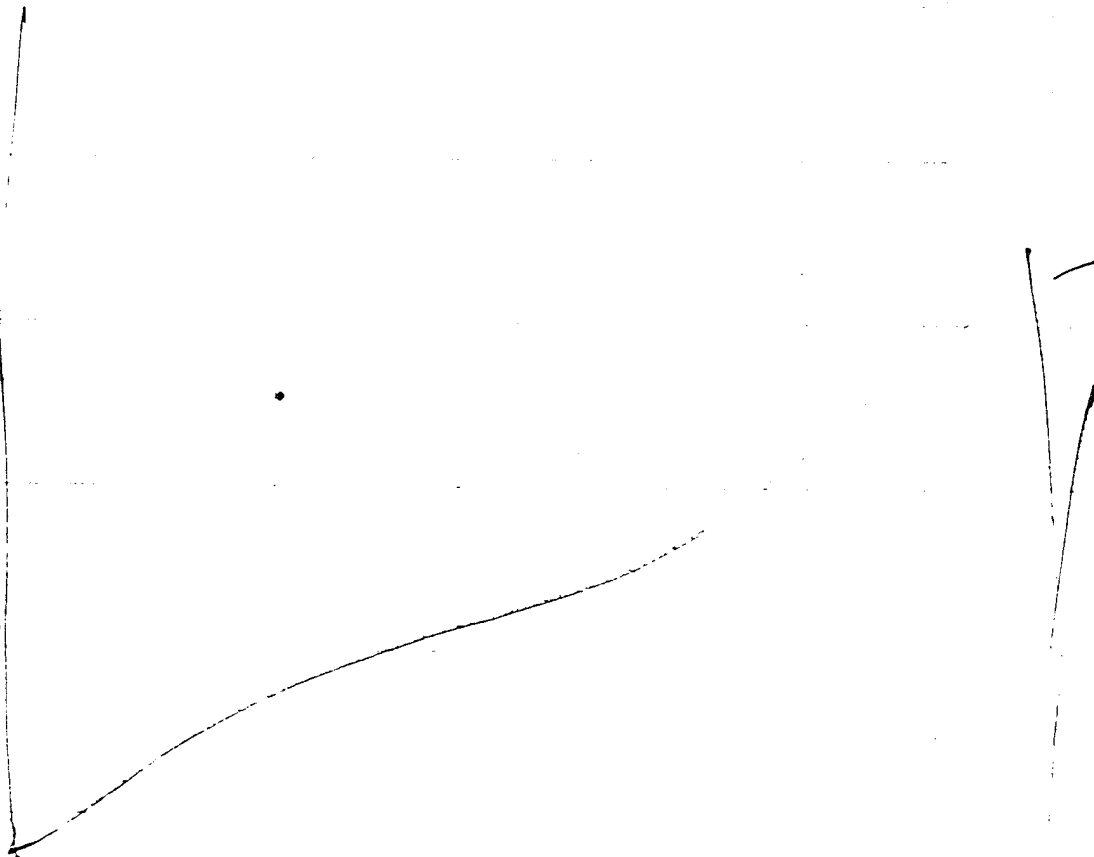
5th

1315-227

0520 calibrated P.D. + L.E.

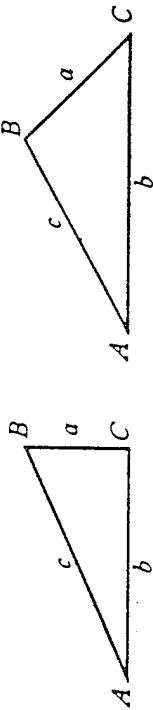
0640 drilling last well.

1300 clean-up.



(10)
9/22/95

FORMULAE FOR SOLVING RIGHT TRIANGLES



$$\begin{aligned} \sin A &= \frac{a}{c} = \cos B & \cot A &= \frac{b}{a} = \tan B \\ \cos A &= \frac{b}{c} = \sin B & \sec A &= \frac{c}{b} = \operatorname{cosec} B \\ \tan A &= \frac{a}{b} = \cot B & \operatorname{cosec} A &= \frac{c}{a} = \sec B \end{aligned}$$

Given	Required	Solution
A, c	B, a, b	$B = 90^\circ - A, a = C \sin A, b = C \cos A.$
A, b	B, a, c	$B = 90^\circ - A, a = b \tan A, C = \frac{b}{\cos A}.$
A, a	B, b, c	$B = 90^\circ - A, b = a \cot A, C = \frac{a}{\sin A}.$
a, c	A, B, b	$\sin A = \frac{a}{c}, \cos B = \frac{a}{c}, b = \sqrt{(c+a)(c-a)}$
a, b	A, B, c	$\tan A = \frac{a}{b}, \cot B = \frac{a}{b}, c = \sqrt{a^2 + b^2}$

FORMULAE FOR SOLVING OBLIQUE TRIANGLES

Given	Required	Solution
A, a, b	B, c	$\sin B = \frac{b \sin A}{a}, c = \frac{a \sin C}{\sin A}$
A, B, a	b	$b = \frac{a \sin B}{\sin A}$
a, b, C	A, c	$A + B = 180^\circ - C, C = \frac{a \sin C}{\sin A}$
a, b, c	Area	side $\frac{a+b+c}{2}$, area $= \sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	area $= \frac{bc \sin A}{2}$
A, B, C, a	Area	area $= \frac{a^2 \sin B \sin C}{2 \sin A}$

SKY Harbor - AUG. (1)
1315 - 227

8/17/95 Arrived @ Phoenix Airport
@ 1845 Phoenix Time.
Checked in To Hotel @ (1930)

NOTE: All Equipment to arrive in
Phoenix on 8/8/95 @ 0800

8/7/73

(2)

0545) Spoke with MG about taking
 * ~~FA~~, EB, FB, F-Dup from 06-024 MW
 & placing vac's in Ziploc Bag.
 0630 Met Russ III for Breakfast

0730 - Arrived SKY Harbor AWG.
 Spoke with Steve out of Capt Balza's
 office. Discussed out Plan for
 the Day

0745 - I phoned Faye Atrosi to
 coordinate split sampling of 06 018 MW
 she said she would not require a split.

0845 - All Equipt Arrives via Burlington
 Air Express. PID. Interface via
 Fed Ex.

0900 -> Went through all equipment
 1000 - to make sure everything is functioning.
 Calibrated Hydac PID

1015 - Russ. Myself went over site
 Safety Plan and importance of watching
 each other throughout duration of

PC.

8/8/95

(3)

1035) Field Activities commence on Base.

06-023 MW. (Strange odor this time) sewer
PID reading 514 / No PSH

DTW - 57.55

TD - 88.31

water Ht' 30.44 X .65 = 19.80 = 1 vol

1 vol

2 vol

3 vol

PH - 7.85

7.87

cond - 10.52

10.66

Temp - 80.5°

80.3°

7.89

10.72

81°

Water sandy @ First Becoming Clear / vary
gray water through out purge -
1155) - stopped purge (75 Gals purged)

Drum numbers # 9506-632 ; 9506-633

1220) Sample Time (Teflon Bucket used)

MDTW - 58.03

PH 7.89

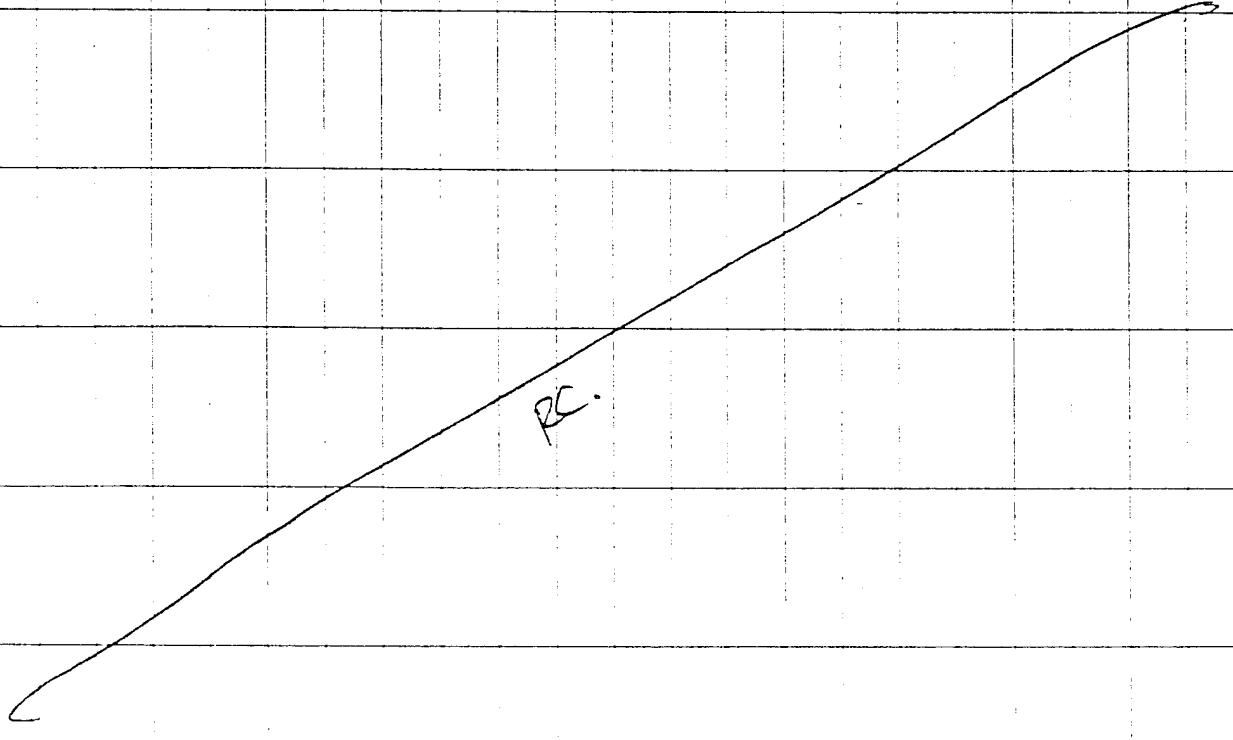
cond 10.69

Temp 82.9°

Photo

Taken

3 vials



8/8/95

1315) Set up R 06-022 MW

PID = 160 ppm
(Sweet + odd odor)

DTW - 56.15
TD - 89.79

Water Height - 33.64 x .65 = 21.87 = 10.1

PH -	8.00	2 vol	3 vol
cond -	14.09	8.02	7.98
Temp -	80.5°	13.95	13.97
		81.2°	81.2°

Purge completed @ 1435 (75 Gals) of slightly cloudy H₂O. PID @ end 43 ppm

Drum numbers # 9506 - 634 & 9504 - 635

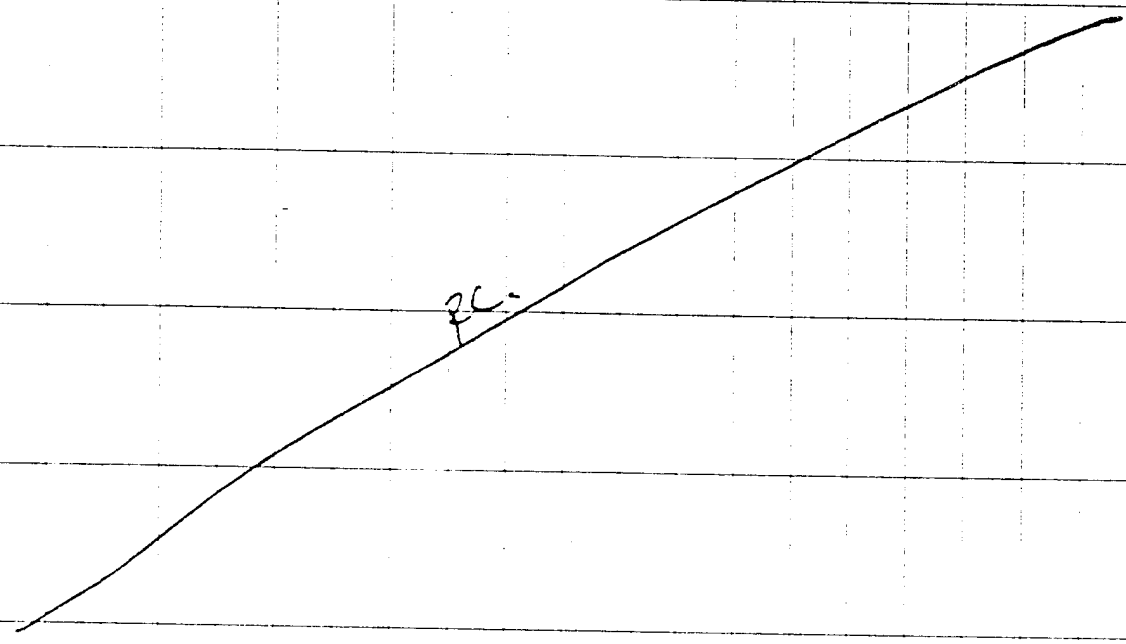
NDTW - 56.72
PH 7.98
cond - 13.85
Temp. 83.3

(Teflon Boiler used)
1 liter
3 vials
Photocel

Sampled @ 1450

NOTE: vials placed in Zip-Loc Bags.

Departed for Decon



1515) Set-up @ well 06-025 MW
 DTW - 57.09
 TD - 88.57
 Water Height - 31.48' X.45 = 20.47 Gal = 1 vol
 PID / 7 ppm

1530) Start Purge

	1 vol	2 vol	3 vol
PH	8.05	8.04	8.03
Cond	9.05	8.98	8.95
Temp	82.5°	82.4°	82.7°

Clear water Turning Slightly Cloudy
 Slight sewer odor

Stopped - Purge @ 1645 (70 total Gals)

Took Sampling Measurements

NDTW - 57.82 Sample Time - 1700

PH - 8.03

Cond - 8.93

Temp. 84.6°

1 liter } Picture
 3 vols } Taken

Broke Down For De-Con
 Preparation For Shipment.

RC

8/8/95

1750) Samples rechecked: Properly wrapped
; Stored with plenty of ICE.

Sent out via Fed Ex # 53975 92211

1830) Departed For Hotel.

Re.

8/9/45

(7)

0600) Arrived @ ANG. Met with Steve & Craig @ Capt Balzas office. Discussed our schedule & how we would need three escort for 018 & 019 near Flight Line / De-Coned Egypt.

0700) Calibrated PID & Hydac Rm. Went over Safety Topics for Today. Circ. Plenty of Fluids & Shade & must.

0730) Set up @ 06-018 MW (PID-ND)

DTW - 57.58'

TD - 89.86'

Water Height - 32.28' X .65 = 20.98 = 1.02'

PH 7.95

2 vol 7.96

3 vol 7.95

Cond 7.02

7.05

Temp 82.3°

82.1°

Water slightly silty / to clear

Purge stopped @ 0630 with 70 Gals purged

Drum Numbers # 9506-638, 9506-639

Prepared for Sampling

R

8/9/95

Took Measurements For Sampling

NDTW - 57.83'

PH - 7.93

Cond - 7.05

Temp - 83.4°

(0845) Started Sampling.

(0905)

Prepared For Decon - Pump; Hose

1 liter Picture
3 vials Taken

Next Page.

RL

8/9/95

0930) Set-up Around well 06-019 MW
Took Measurements PID / ND

DTW - 61.09

TD - 93.39

Water Height - 32.21 x .65 = 20.94 = 10.1

20.1 / 30.1

PH - 8.26

cond - 6.75

Temp - 81.4

8.28

6.71

81.3

(1000) - Ray Departs to pickup Truck w/ Lift Gate.
Clear H₂O sipped purge @ 1045
70 Gals purged.

Drums Labeled 9506-640 & 9506-641
Prepared to Sample Teflon Bailers

NDTW - 61.17

PH - 8.26

cond - 6.60

Temp. 80.8

Simple Time 11:00

1 liter

3 vials

{ Picture
Taken }

1130 De-gassed

RC.

1145) Setup Around 06-021 MW

Took Measurement / PID 38.7 ppm
initially
1.02 of PSH

ATP - 58.03
DTW - 58.05
TD - 89.73

31.68 water H₂O. 1.65 = 20.60 = 1.00 l
observed well
purge Far away from frames

1 vol
2 vol
3 vol
7.80 (PID-204) 7.87 (PID-113)

PH 7.82
cond 8.65
Temp 79.9

cloudy turning a/most clear obvious
odor
8.70 8.67
80.1 80.9

Stopped purge @ 1245 w/70 Gals purged

Drum # { 9506-642 }
Prepared to Sample { 9506-643 }

NDTW - 58.33 (Screen only)

PH - 7.84
cond - 8.80
Temp - 80.7

(Sample Time 1310)
1 liter
3 vials
picture
Taken

De-Cont Equip.

RC

8/9/95

De-aired Equipt.

1335 - Took Break - From Heat

1345 - Ray moved yesterday's Generated Drums

1435 - Ross I. Set-up as well 06-026 MI

Took measurements
PID - 183 ppm
odd odor solvent like.

DTW - 57.27

TD - 87.48

Water H₂O = 30.21 x .65 = 19.64 = 1001

1001

PH - 8.82

Cond - 6.94

Temp - 80.7°

3001

8.90 PID = 35 ppm 8.79

6.96 PID. 12ppm 6.98

81.3° 81.4°

Purge - Terminated @ 1545 w/70 Gals.
clear to slightly cloudy H₂O

Drums #rd (9506-644 ; 9506-645)

Prepared for Sampling: (1550)

NDTW 57.33

PH 8.81

Cond 6.95

Temp. 80.4°

1 liter } Taken

3 vials } Photocod

RC.

Drums

1630 (Completed Cleaning all our gear)

1700 (Ross prepares Ice-chest w/ samples
Ray moves all Drums Generated Today)

1735 (Samples ready to ship)

All equip put away For tomorrow
Drums in Proper Area

1800 (Dropped off Samples @ Fed Ex.
via bill# 539759222)

1830 Arrived @ Hotel

1900 Checked messages / From MG.
discussing 72 hr. Turn-around required
on Samples.

RC.

(B)

8/10/95

0600 / Phoned Karen @ SPL making sure site knew about 72 hr. Turn around requested on samples

0640 / Arrived @ AUC / Capt Balza's office closed for day. Gathered all our gear.

0700 / Ross & myself Tail Gate Saturday morning Calibrated Egypt.

0730 Set-up around 06-024 MW

Took Measurements / PID: 93 ppm

~~PH~~ Fridge PID readings

Taken consistently.

around 85 ppm

DTW - 57.74

TD - 90.24

Water HH - 32.50 x.68 = 21.12 = 1 vol

	1 vol	2 vol	3 vol
PH	7.65	7.70	7.70
cond	8.85	8.80	8.85
Temp	80.4°	80.7°	80.5°

very clear H2° obvious odor

Purge stopped @ 0830 Preparation for

Sample:

NDTW - 57.55
1 liter } obtained
3 liters }

PH - 7.76
cond - 8.82

Temp - 80.5°

RC.

1330) Arrived Back @ AUC.



Prepared all our Equipt
For Shipment to SAT.

3:30 Completed Water Sample packing

1600 Shipped Every thing out

1630 Filled Rental Truck & Prepared
For our Flight out @ 1730

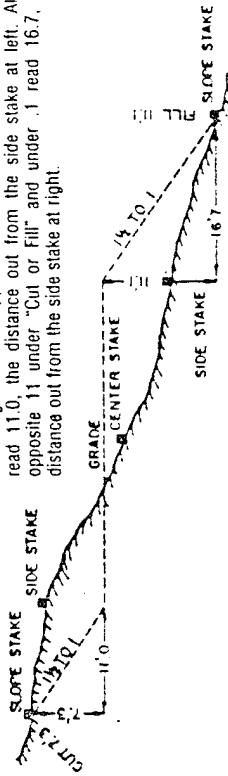
2130 Arrived @ SAT.

NOTE: The only odd occurrence
of anything significant was a couple
of wells that had more odor than before
showing up on PID. 06-023 MW
especially.

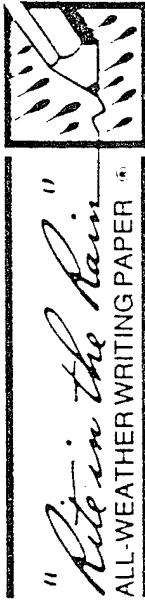
PC.

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING Roadway of any Width, Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake											
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	1.1
0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.4	1.4	1.4
1.1	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	2.9	2.9	2.9
2.2	3.0	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.4	4.4	4.4
3.3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	5.9	5.9
4.4	6.0	6.2	6.3	6.5	6.6	6.8	7.1	7.2	7.4	7.4	7.4	7.4
5.5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	8.9	8.9
6.6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	10.4	10.4
7.7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	11.9	11.9
8.8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	13.4	13.4
9.9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	14.9	14.9
11.0	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	16.4	16.4
12.1	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	17.9	17.9
13.2	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	19.4	19.4
14.3	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	20.9	20.9
15.4	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	22.4	22.4
16.5	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	23.9	23.9
17.6	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	25.4	25.4
18.7	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	26.9	26.9
19.8	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	28.4	28.4
20.9	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	29.9	29.9
22.0	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	31.4	31.4
23.1	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	32.9	32.9
24.2	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	34.4	34.4
25.3	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	35.9	35.9
26.4	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	37.4	37.4
27.5	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	38.9	38.9
28.6	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	40.4	40.4
29.7	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	41.9	41.9
30.8	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	43.4	43.4
31.9	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	44.9	44.9
33.0	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	46.4	46.4
34.1	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	47.9	47.9
35.2	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	49.4	49.4
36.3	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	50.9	50.9
37.4	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	52.4	52.4
38.5	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	53.9	53.9
39.6	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	55.4	55.4
40.7	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	56.9	56.9
41.8	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	58.4	58.4



Name Operational Technologies Corp.

Address 4100 NW Loop 410

Phone 210 (731-0000)

Project SKY Harbor AUG

1315-227

G.W. Event 07/09/95 thru 07/15/95

Capt. Pedro Balza (Coordinator)

"Rite in the Rain"—a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

a product of

J.J. DARLING CORPORATION
TACOMA, WA 98421-3698 USA

7/10/95

1300 Arranged Equip and materials
for Tomorrow's activities
Capt. Balza Let us work out
of His storage room for Haz. Waste.

1400 Spoke with Mike Giles who faxed
IRP Log of Drums accumulated,
1450 Meet with Capt. Balza and discussed
preliminary schedule of Field
activities

1500 Staged drums along every well
we would be working on Tomorrow
our schedule is to work on all
new wells circled on Site Plan
Provided by MG.

1600 Discussed with Pete our needs
as far as his personnel we would
be requiring as escort,
1700 Departed for Hotel.

Ross : Myself (10 hrs)
(c.o.d) on

Site Plan

Page

7/10/95

(4)

7/11/95

0630

Calibrated PID, CEL, & O₂ meters.
Calibrated Hydric PH & Conductivity
meters. For use on Today's activities

0700

Safety Meeting (Ross & Myself discussion
Heat stress / Heat Exhaustion / Intake
of Fluids, Protective Equipt. What to
do in the event of emergency.

0730

Set-up around Well # 06-018 MW
Flush mount well 4" PVC with
Compression Cap / PID reading = ND
DTW - 55.65 (Good condition)
BOH - 88.94 (No Product)

0800

Wt. Height - 33.09 x .65 = 21.51 = 1 vol.
(70 tot. Gals) Developed / Last well
Volume Clear, Some Sediment No odor.
Equipt. - PFA system / 100' Hose & Pump /
Face Probe
PH - 7.73 7.70 7.71

x 100

Cond. 9.090 7.120 9.095

Temp

81.6° 81.2° 81.7°

0930

De-coned Equipt.

1000

Set-up around Well # 06-019 MW

Stick up well 4" PVC with Compression
Cap. PID reading. ND

skip Page 7/10/95 RC.

7/11/95

DTW - 59.31

Bolt - 93.36

WT Height - 34.05 x .65

22.3 Gals = 1 volume

(75 total Gals) Developed No Product

No odor Same Sediment

1 vol	7.31	7.26	7.34
2 vol			
3 vol			

x100 Cond = 9.65 9.63 9.67

Temp = 82.3° 82.9° 83.1°

Well developed to Clear H2"

Completed

Re-Coiled Equipment

Well # 06-21 MW

Set-up around well 4" PVC Compression

Flush mount well (No Lock) (PID) reading 404 ppm

Strong Fresh Fuel Odor (We will

stay away from Well during Pumping.

DTW - 55.95' WT. Height - 33.88

BOH - 89.83' X .65 = 22.02 = 101

(Inter Face) DTP - 55.64' (75 actual Gals removed

Fill Flow Clear

1 vol	9.55	9.64	9.65
2 vol	6.88	6.85	6.87
3 vol			

PH 9.55 9.64 9.65

Cond 82.20 82.16 82.20

Temp 110 110 110

Skip Page RC.

7/11/95

(6)

De-conned Equip. RMIII:

RC. Recalibrates PID & Hydrc

Set-up Around MW 06-23 MW

Flush Mount well 4" PVC casing

Slight Hydrocarbon odor when we opened well / PID = ND (interesting)

DTW = 53.95 (No PSH)

BOH = 89.82

WT height 35.87 x .65 23.52 = 10.1

Development starts / Good Flow

very little sediment H₂ Fuel Some H₂ Soot

PH 6.69 6.67 6.69

Cond 12.90 13.09 12.99

Temp - 82° 82.5° 82.1°

Complete Development of Well

De-conned Equip

Set-up around Well # 06-23 MW

Flush mount well 4" PVC casing

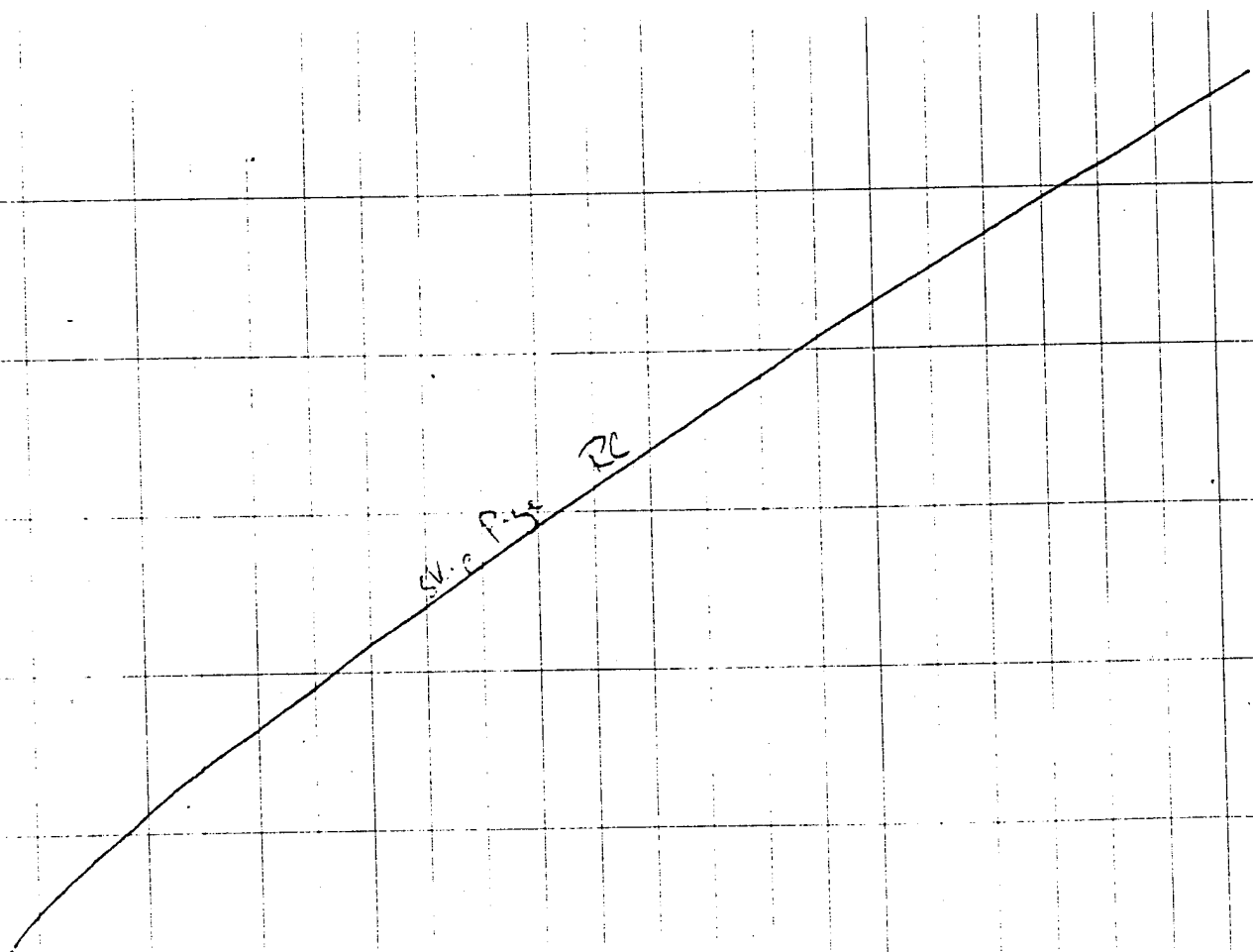
PID reading - ND No PSH

DTW 55.60

BOH 88.06'

water Ht. 32.41' x .65 = 21.10 10.1

H₂ very silky No odor / cleaned



St. P. 22

7

7/11/95

cont

(1 well) (2 well) (3 well)
PH - 7.10 7.09 7.09

Cond 12.09 12.13 12.09

Temp: 83.1 83.6 83.6°

Completed Development

Decanned Equipmt

Well # 06-24 MW

Set-up around

Flush mount well 4" PVC casing
with compression Cap. PID reading MD
although there is a diesel like odor

DTW - 55.62'

BoH - 90.25'

water HT' 34.63' x .65 = 22.51 is 100'

PH 7.10 7.11 7.13

Cond 7.23 7.33 7.38

Temp 80.1 81.1 80.9°

Water to Clear Development

(85 actual Gals removed)

Decanned Equipmt

Well # 06-20 MW

Set-up around

Stick-up well / compression cap
No odor from well (PID reading non-detect)

DTW - 55.53

BoH - 92.37

water HT' 36.84 x .45 = 23.95 = 100'

No Pump PC 7/11/95

7/11/70

(8)

(1001) (2 vol) (3 vol)

Time Taken

7:45

1940

PH - 7.43

7.46

7.42

7.39

Temp - 80.7° 81.1° 81.6°

1945 (75 Actual Gals Developed)

1750 Decomed Equipt.

2000 Set-up around Well # 06-25 MW

Flush mount well 4" Dia casing Compression Cap. Master Link very good construction (no odor) (PID ND)

2010 DIW - 55.17'

BOH - 88.56'

Water Ht' 33.39' x .65 = 21.71 Gals 1 vol

A lot of Sediment at first captured

4P Very well

3 vol

771 7:24

Time Taken

7:24

X 100 Grad 9.72

9.68

9.70

2048

Temp 82.2°

81.1°

82.0°

2100 Sealed Drums Decomed & Stored Equipment.

NOTE: End of Tschys activities, Very Hot throughout the Day Plenty of Fluids Ingested, Capt Balza aware of air safe activity.

13

SKIP PAGE RC

7/11/75

9

7/11/95

Periodic Breaks were taken -
 through out the day usually
 while the pump was running
 where each of us could take
 cover from the sun, these
 Breaks allowed us to work
 these type of hrs. and stay healthy
 (Spoke with Mike Giles) this
 evening informed him of hard
 work. MG. very supportive obtained
 Phone #s how to reach him through-out
 work week.

and

Ray.

2 of 9 new wells installed were
 developed today.

SHIP PAGES

BE

7/11/95

7/12/95

(10)

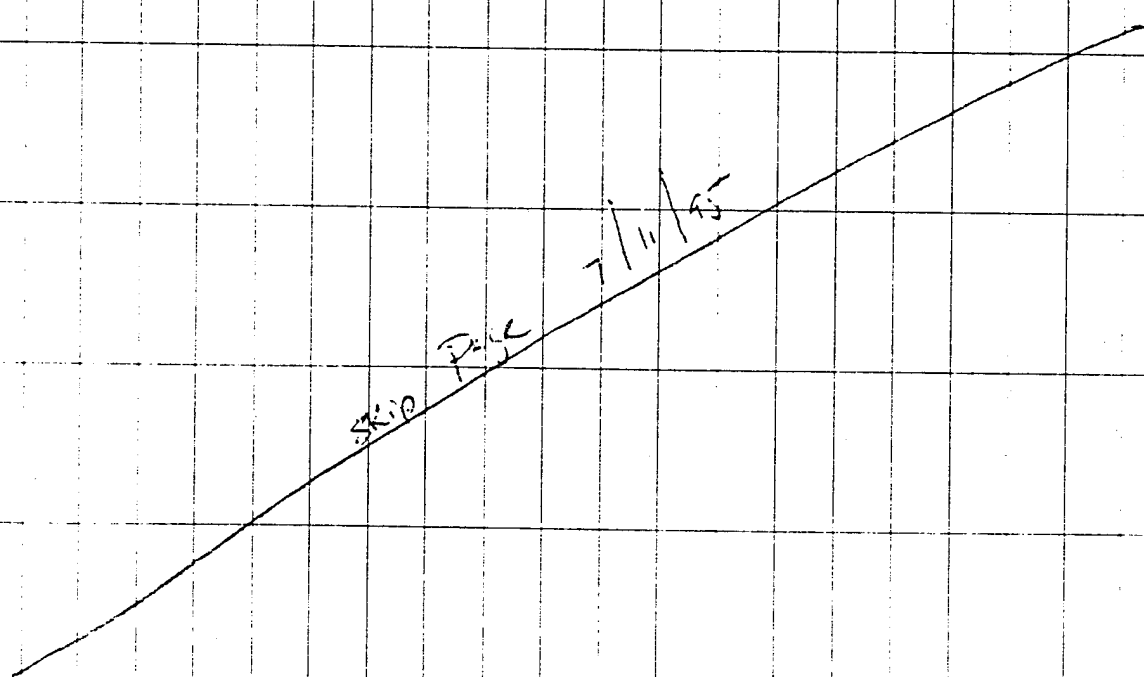
Arrived @ Base @ 5:00 Calibrated PID!
 0530 Set up around Well # 06-26MN / Hydraulic
 After De Conting Pump & hoses
 0545 Tail Gate meeting Ross & myself
 We agreed to Eat while we wait
 today Plenty of ice, water
 i Confide on Hand @ all times

0600	DTW - 55.26'	PID / ND
	BoH - 87.40	NO / Product encountered
	Water HT - 32.14'	1.45' = 20.84' = 10.1
	Water	Dark Brown / Vary Silty
	Clearing MP	10.21
	PH	7.22
	Temp	77.9°
	Cond	10.21
	Temp	77.8°

0755 Completed Development of well
 75 Gals of H₂O Developed.
 0810 Designed all equipment (Problem w/ Pump
 settings)
 0815 I commenced moving Drawings (Logal
 accumulated during Development
 after I set Ross up around →

Well # 06-016 MW

0830	PTW - 59.51	PID / van Detect
	BoH - 92.14	



0920
 92.14
 20.84
 20.84
 20.84

7/12/95

Water slightly salty/clear
 2.051
 PH: 6.80 6.83 6.81
 Cond: 6.75 6.80 6.77
 Temp: 80.5 80.9 81.1

(70 Gals of Toilet water removed.)

MW developed very well
 We will let this well fill all wells purged today set fill tomorrow for sampling so we can have a bulk shipment.

0925

Setup Egiptol Co. Decora Station

1035

(Pump keeps picking up little rocks & pic cutting)
 Completed Decora (Not Good)

1045

Setup around

1050

Well# 06-005 MW

It was decided that we would

Take our Duplicate Sample, Field Blank & Egiptol Blank During our Sampling Round Tomorrow. From this well

1100

PT00 - 54.22 PID (Non Detect)

Bot - 90.27 In. to base probe no P3H

Water Ht

34.05 x .65 = 22.13 = 100'

PH:

7.02 7.00 6.99

Temp:

81.5 82.0 81.7

Cond:

7.10 7.20 7.15

X100

SKIP PIPE DC.

~~SKIP PAGE 22 7/11/95~~

(12)

7/12/95

1245

Developed problem with pump
Boss: I Dismantled pump to find
PVC cuttings jammed in bases
Pump cleaned out. (Phone calls)

1300

Met with Capt Balza and informed
him of our status.

1400

Moved Drums (6)

1455

Spoke with John Morris about
our status. Will need to fix
Copiers. C.O.C.'s when Samples
taken. John to fix Copy of
Permit/Int. Work Plan.

1530

Break

1630

Discussion on what needed to
get done. Plenty of Drums to
be moved. Worker

1840

Moved Drums with Lift Gate/Cables
Checked 5 Drum tops marked also
using Paint Marker.

1900

Broke down for the Day/ equipment
check & fueled

1930

Departed (ANG)



7/13/95

0530am Arrived @ Anis / went directly to storage to set up sample kits bottles kbles etc. Ross handling IT.

0630 Met with Pete Balza. Discussed our Sampling Program Today

0730 Ross had most of our Sample Bottles labeled appropriately.

0800 Met Faye Troise Site of Az. she wants split samples VOC containers 2 vials for ~~her~~

0815 Well # 06-18MW (PID ND)

NDTW - 56.02

PH - 7.65

Y100 Cond - 8985

Temp - 76.5°

Condition water / Clear / Photo Taken

Samples Split with Faye

0855 Completed Sampling Faye Departed

Sgt. Zinkir (Steve) was with us also

0910 Prepared to Sample

Well # 06-19MW

SRP Page R.

(14)

7/13/95

cont

0915 NDTW 59.41' PID reading ND
 PH 7.40
 Cond 77^{EC} 9.55
 Temp 17.7°
 Condition of Water / Pretty Clear / no spon
 or odor

0930 Sampled Well 1 liter 3 new photos
 Taken Samples on Ice
 0940 Decanned Bailer & Interface Probe
 0955 Set up Around well 06-21 MW
 Sample Kit Ready

1000 NDTW 56.1'
 PH 6.95
 Cond 12.38

Temp 7.7°
 Condition of Water / Clear
 1015 Sample well 2 liter 2 wms
 Photo taken

1030 Samples Chilled / Well secured
 1040 Decanned Bailer & Interface
 1050 Set-up around Well # 06-22 MW
 Kit Ready
 1055 NDTW 54.06 PID - 2 ppm
 PH 6.76

Cond 12.90
 Temp 7.74
 1 liter spon

Strip Page PC 7/13/95

15

7/13/95

Sampled Well / collected 1 liter 3 way

1100

Photo Taken

Decanned Bailler in Inter-Face

Set-up around Well # 06-23 MW

NDTW - 55.73 PID - ND

PH - 7.05

COND: 2.20

condition of water / Clear / a touch of silt when checked with Bailler.

1155 I took in for free probe & Sample

Steve (scr) Kit for 06-005 MW

Pass/1200 Gathered Samples for MW-06-23

1215 Set up around 06-016 - MW

(Measurements) NDTW PH cond Temp

1230 (sample) 59.60 7.02 6.99 80.5°

Ray 1205 Set up around 06-005 MW

Took Measurements Inter face - PID - ND

Wells next NDTW PH Cond Temp

to each other 56.29 7.25 7.60 79.7°

Ross takes Instruments for his well

We have to break up/wire next to

(Ray)

1220 Sample Well 06-005 Duplicate

Actual Sample

ER & IR were prepared here.

Skip Page RC. 7-13-95

7/13/95

NOTE: The reason we had to rush ~~to~~ to complete 06-016 is 06-005 were to stay close to 24 hr. purge time as possible.

~~to~~

12. Made some Calls to office

* Ray runs Mike with Surveyors around new wells & Discussed who he needed Get with for access. Since things had changed

(16)

7/13/95

(1240) Ross & I tried Set-up around Well # 06-24 MW Measurements Taken

NOTE: Steve & Ross are using Truck of AMG I am carrying the Pump & some Kits, 2 vehicles in use Ross to complete sampling of new wells I'll Go Back Forth while I continue to Purge on

MW-024	NDTW	PH	COND	Temp
55.39	7.05	7.40	81.1°	Aug.
1255	Samples Taken			
1305	↑ 1.1 liter 3000s			
1315	Ray Set up @ Well 06-017 MW to Purge			
	Ross sets up @ 06-020 MW			

(06-017 MW)	DTW	58.45	(PID - ND)
1320	BoH	92.34	
	Water Height	33.89	22 Gals 1001
	Moderate Purge	2001	3.001
	PH	7.24	7.24
	Cond.	1035	907

7/13/95

1420 water clear no 70 Gals purged
Complete Purge / Ross to follow? Samp

1315 Ross Takes Measurements; Samples
[06-020 MW]

NDT# 5550 PID ND

PH 7.52

cond 7.39

Temp 81.4°

1400 condition / Clear H2O / completes

Sampling

1410 Ross Sets up around [Well 0625M]

For Sampling / Measurements taken

NDT# 55507 7:30 9:75 cond Temp 80.9°

1420 Sampling Complete

1430 Ray Decans Eqpmt.

1445 Setup to Purge [MWS=01]

1450 Measurements Taken

DTW- 57.29 PID ND

Both - 99.78

Height 42.49

27.62 Gals = 100 l

PH 7.96

2.001 3 v. 1 7.95

Cond 63.04 62.90 63.00

Temp 81.1° 81.1° 82.2°

Water Slightly Silty Very clear

1555 85 Gals Purged

RC

7/13/95

(1415) Ross Break

1435 Takes Measurements of

MW 06-26-11W

NDTW-55.50 PID/ND

BMA-7.20

Cond 10.05

Temp 81.9°

1500 Take Samples & Chilled

1500 Ross Picked up more Ice Brought me back Fuel

1530 Returned & Met me @ MWS at & Watched Pump fill I was done

1555 Purge Finished

1600 Deconed Equipt

1620 Completed DeCon

1630 I set-up equiptment around MWS-02

Ross went to Set up to sample 06-017 MW

waiting Interface after I get

RC

7/13/95

Well # MWS-02

DTW - 55.37 PID / ND

BOH - 100.03

Water HT' - 44.8 x .65

29.03 14.01

1.001 2.001 3.001

PH 7.47 7.42 7.44

Cond 8.67 8.73 8.70

Temp 81.3 82.4 82.5°

Water slightly silty / Purging well is clear.

17/40 ^{bits} 90 Cals purged

Sampled MW 06-017 MW

1640 Ross to Cont. Samplings up to my Purged well.

NDTW 56.94

PH 7.29 PID / ND

Cond 9.35

Temp 82.7° Photo/Taken

1 liter 3 vials Collected

1650 Ross Sets up to Sample

MWS-01

SKIP Page PC.

7/13/95

1655 Well MWS-01

NDTW 57.01 PID/ND

PH 7.93

Cond 63.07

Temp. 83.1°

1 liter 3 vials / Samples Clear

1720 Ross meets me @ my well (02)

Got his liter i 3 vials

i Helped me finish Purse

1730 Pump removed; Placed in Truck

I moved drums while Ross

Prepared to Sample Well I

Just Completed Taring

1740 MWS-02

NDTW - 58.22 PID/ND

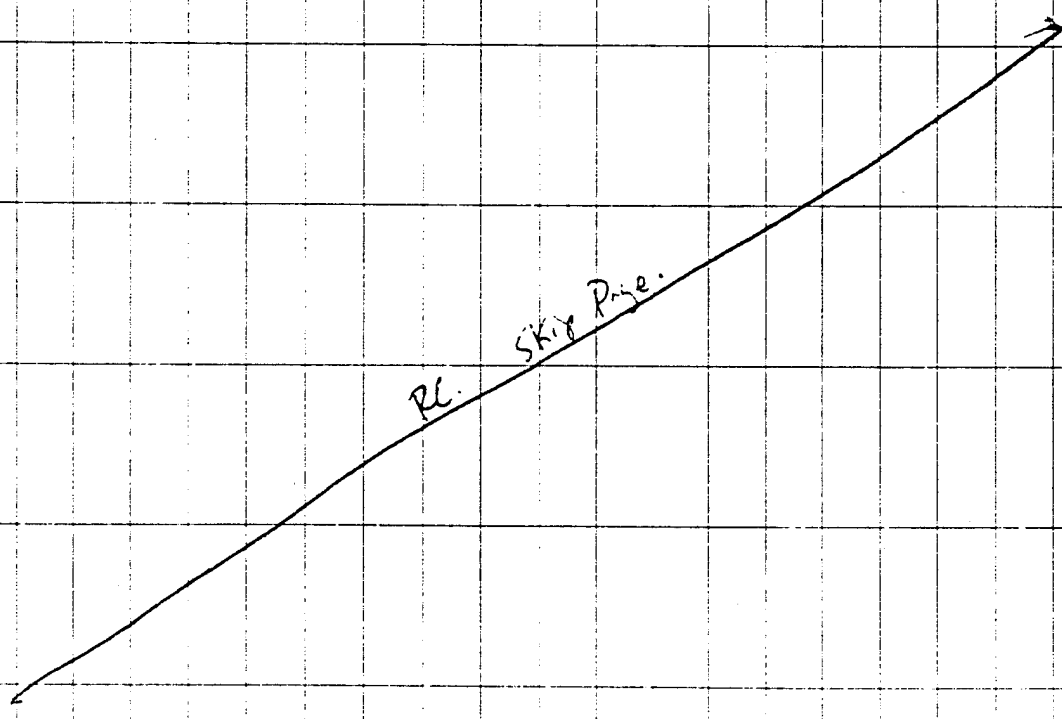
PH 7.49

Cond 81.80

Temp 82.3°

1 liter 3 vials

1755 Ross Broke down for Day



(21)

7/13/95

1845 Samples Sealed & Shipped

1900 Returned to Airc. / Ross had
Equip changed & Shipped
1930 Departed AWC.

(13 hrs.)
End of
Billable
Time.

NOTE: Evening Calls MG & Jim
Mike Trying to help me
Get Flight to HRC if we
Completed our Tasks soon enough.

2045 Ross & I Labk Kits
For Tomorrow's activities.
Made arrangements with (Hoy) and Air
Remaining Wells will be } if needed
Purged & Sampled right after
Stabilization Tomorrow.

NOTE: Slow Phase is very effective
Pump Can almost Pump 2 Gals

0500 Purchased Ice Plenty 1200 Gals
0530 Calibrated Instruments PID

(22)

Hydric Discussed (Site. Sally)
0600 Met with Capt. Balza Filled
Him in on our Plan to Finish
Today. No Matter how Late.

(We told him As many wells
as we can sample will be delivered @ 1800
to Airport & The rest will
be shipped over the Counter Later
in evening He said Good Luck.

0645 Ross & myself agreed It will
be tough well stay as cool as
Possible & Eat while we work
(Rough Coach) Gathered Gear.

0700 Set up around [Well MWS-04]

PID 2MS ppm

DTP - Sheen not measurable

DTW - 56.68

Bolt - 99.83

Water HT' - 43.15 X .65 = 28.05 = 100
100 200 300
PH: 7.43 7.47 7.45

100 Cond 12.57 12.40 12.42

Temp 76.9 76.4 76.5

Strom Pack
Water

7/14/95

(2.3)

Completed Purge (I Reported For Decan
Bottles & was ready / Ross to Samp

PID - 114 ppm

NDTW 58.73

PSH ND - shan very light

PH 7.45 (EB, FB, DP here)

Concl 12.38 } 1 liter chilled

Temp 81.5° } 3 vials

Steve Picks up Ross & Proceeds
to 06-015 Where I want to

Set-up (2 vehicles again today)

Well # 06-015

0845 DTW 60.04' Ross takes measurements

TD 92.25' I move drums from
previous well this night

Water HT' 32.19' X .45 = 20.92 100'

PH 7.44 7.54 7.67

Concl 9.34 9.07 9.15 (64 Gals Total)

Temp 83.7 83.5 84.1

1000 Completed Purge Departed For Decan
Ross Set up for Samples

NDTW 61.50'

PH 7.66

Concl 9.20

Temp 84.1°
1 liter 3 vials (chilled)

RC

7/14/95

(24)

Set up around "Well" 06-013 MW

Ross moves to this well w/ STEUR

1020

DTW 57.87 PID - 22 ppm

BH 92.20 Organic
water small

Height 34.33 x .65 = 22.3 = 10.1

Ross watches Pump / Ray moves

1001 2404 3001

Downs from

Previous well

1030

PH 7.88 7.82 7.80

cond 10.25 10.73 10.71

Temp 84.0 83.6 82.2

(1049) (Ray Samples 96-004 MW with Boiling) (Par. MC)
Water Dirty / Grey! Cloudy Leaky

1135 clearing up real well / Ray Departs
Purging complete / For Decon

1140 Ross Samples Well } Slight

NDTW 58.04 PID 4 ppm } Small

PH 7.98

Cond 10.66

Temp 83.4

Water Clear / Photo Taken

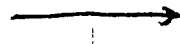
(1 liter 300ms) chilled

1150 Ray Sets up @ Next well

06-012 MW

1155 Ross drives up

RC



177 1977 95

(25)

1200 Well # 06-012 MW

PTW - 58.85 PID / ND

TD - 93.03

water HT - 34.18 x .65 = 22.22 = 16.01

1210 (Ross watches Pump) Ray moves Percuss Drums

PH 7.9 8.13 7.8

Cond 8.1 8.0 8.17

Temp 80.8 81.1° 81.4°

1230 Ray meets Ross back @ well

Kit ready / water was clear

Ross said it was dirty @ first

1255 Filter completed 75 Gals purged

Ross Realized for Sampling

Ray Brecks down eqipt. Moves to Decan.

1305 Sampling Begins Well # 06-012 MW

NDTW - 60.01

PH - 7.75

Cond - 8.48

Temp 83.1°

Sample Clear / 1 liter 3 ways / chilled

Photo Taken

Drums Sealed; # seal

1315 Ray Sets up @ 06-003 MW

Ross; Steve arrive. Ray memo

cc.

(26)

7/14/95

1325 Well # 06-003 MW PID / ND
DTW - 59.25
BoH - 93.19

WT Height 33.94 X .65 = 22.06 = 1 vol
1335 Ray returns with Lunch (Ranch coach)

1 vol	2 vol	3 vol
PH 7.90	7.83	7.87
cond 8.40	8.43	8.39
Temp 89.9	83.7	83.6

1420 (75 Gals purged) Ray Takes Equip to Down
Purging Complete
Ross prepares for Sampling Steve
wants to assist / Its going well

1430 06-003 MW

NDTW 60.27	PID / ND
PH 7.85	H2° very clear
cond 8.50	Photo Taken
Temp. 84.4°	

1440 Ray moves to MW3-02 & Ross
to Follow w/ Steve

1445 Well # MW3-02
DTW - 55.50 PID / ND

BoH - 99.71
WT HT - 44.21 X .65 = 28.74

R

(27)

7/14/95

1450 Commenced Rinsed / Ray Gaus
to ship out Boxes for Joe Byrd.
This is the 1st well on Airport
side All Drums are gone except
these last two Drums.

1001 2001 3001

PH 7.65 7.70 7.63

Cond 10.90 10.78 10.75

Temp 83.7° 83.5° 83.1°

(Purge complete) (84 Gals purged)

1540 Ray Returns / Ross: Skive almost
Done Sample Jars Prepared for
Sample / Drums Labeled

MW 3-02

PID / ND

NDTW 56.33

PH 7.68

H2° clear no odor

Cond 10.79

1 liter 3 x 5

Temp 84.3° chilled

(1600) Ross completes Sampling i

Starts to Pick Samples

I prepared C.O.C.S.

(1640) Ray moves Last Drums

R.

7/14/95

(28)

(1700) Ray Departs to Store For

More Ice & Complete Shipment
Two Ice Chests There are two

wells left / these will be shipped
Via Continental Quick Pick.

(1715) →

Ross sets up around

MWS-03

Well MWS-03

DTW 55.98

PID ND

BoH 99.015

Water HT' 43.03 X .245 = 28 Gals. = 1001

Well very dirty / really needs to
have a man hole on it lots of
Gravel has to fall in well.

(1720) Begin Phase I Pump get clogged
a couple of times but Ross
handled it.

1 vol 2 vol 3 vol

PH - 7.45 7.47 7.47

Cond - 8.72 8.65 8.77

Temp - 83.0 82.4 82.7

8865

RC

29

7/19/95

1830 Ray ships out remainder of Ice Chests (also) a total of 9 Ice Chest
 Upon my arrival Ross was preparing to Sample Well.

1830 MWS-03

NDTW - 56.77 PID ND
 PH - 7.46
 Cond - 8.46 1 liter 3 runs
 Temp - 83.9° chilled

1845 One Ice Chest Left for Shipment.
 Ray Takes Egypt to De Con Area Ross Picks Samples

1905 We set up @ Well MWS-01

Took measurements PID/ND

DTW - 57.12

TD - 99.81

Water HT' 42.69 X .065 = 27.75 = 1001

1001 2001 3001

PH - 7.75 7.78 7.81

X.100 Cond - 8.22 8.17 8.19

Temp - 83° 82.5° 82.5°

RC.

7/14/85

I went to Drums containing
Cutting for 06-016 MW's Tank
a composite of soil for Mike Giles.
Water very clear but its getting

1900

Dark in Evening
During this Time Ross prepared
EB's Field Blank.
Purge Complete / Drums labeled & sent
Prepared for Samples.

2020

MWS-01 P10 ND

2030

NDTW 58.03

PH 7.75⁺

Cond. 4.27

Temp. 82.9°

(Time Measurement) Went well

Departed Base For Hotel

2100

2130

Spike with Mike Giles & How I
had set up Shipment of Samples

MWS-03, MWS-01 & extras

1 soil Sample 06-014 & Get them
Del. by 1000 Am

2200

Sent Samples

2300

2400

2500

2600

2700

2800

2900

3000

3100

3200

3300

3400

3500

3600

3700

3800

3900

4000

4100

4200

4300

4400

4500

4600

4700

4800

4900

5000

5100

5200

5300

5400

5500

5600

5700

5800

5900

6000

6100

6200

6300

6400

6500

6600

6700

6800

6900

7000

7100

7200

7300

7400

7500

7600

7700

7800

7900

8000

8100

8200

8300

8400

8500

8600

8700

8800

8900

9000

9100

9200

9300

9400

9500

9600

9700

9800

9900

10000

(31)

7/15/95

~~at 10:00 AM~~ RC

0600 Arrived @ AVG Met with
Pete Balza Gave him Keys!
JRP Drove Log. Sheets

0700 Packed up remaining Gear
Loaded on Truck

0800 Del Freight to Burlington
End Day!
Check out of Hotel

0900 Went to Airport

1000 Called Lab rec'd Samples
@ 1000 D. Brown

Arrived @ my Dest. 1545 HRL.

7hrs

RC.