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FINAL TECHNICAL MEMORANDUM PHASE 1 RESULTS AND PROPOSED PHASE 2 FIELD ACTIVITIES AT SOLID WASTE MANAGEMENT UNIT 50 NAS FORT WORTH TX

5/22/2001

HYDROGEOLOGIC

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NAVAL AIR STATION
FORT WORTH JRB
CARSWELL FIELD
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ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 581

FINAL
TECHNICAL MEMORANDUM
PHASE I RESULTS AND PROPOSED PHASE II FIELD ACTIVITIES
SWMU 50, FORMER AIRCRAFT WASH AREA NO. 2
NAS FORT WORTH JRB, TEXAS

Contract Number F41624-95-D-8005
Delivery Order No. 0029

Prepared for

U.S. Air Force Center for Environmental Excellence
Brooks AFB, Texas

Prepared by

HydroGeoLogic, Inc.
1155 Herndon Parkway, Suite 900
Herndon, VA 20170

May 22, 2001

HYDRO GeoLogic INC.

FEDERAL EXPRESS

May 22, 2001

Mr. Don Ficklen
HQ AFCEE/ERD
3207 North Road, Bldg. 532
Brooks AFB, TX 78235-5363

Re: Final Technical Memorandum
Phase I Results and Proposed Phase II Field Activities
SWMU 50, Former Aircraft Wash Area No. 2
NAS Fort Worth JRB, Texas
F41624-95-D-8005-0029

Dear Mr. Ficklen:

Please find enclosed one copy of the above referenced document. Additional copies of the report have also been sent to Mr. Michael Dodyk and Ms. Audrie Medina.

If you have any questions or comments, please call me at (703) 736-4511.

Sincerely,

Miquette E. Rochford

Miquette E. Rochford, P.G.
Project Manager

Enclosures (1 copy)
cc: Mr. Michael Dodyk (AFCEE/ERD)
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NAS Fort Worth JRB, TX 76127

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Final
Technical Memorandum
Phase I Results and Proposed Phase II Field Activities
SWMU 50, Former Aircraft Wash Area No. 2
NAS Fort Worth JRB, Texas

1.0 Introduction

HydroGeoLogic, Inc. (HydroGeoLogic) conducted Phase I soil sampling at Solid Waste Management Unit (SWMU) 50 (Aircraft Wash Area No. 2) in December 2000. Upon evaluation of validated Phase I data, it was determined that a second round of soil sampling was necessary for delineation of compounds of concern at the site. In addition, it is necessary to install and sample four monitoring wells at the site to determine if contamination of groundwater has occurred. This Technical Memorandum highlights the findings of the Phase I sampling effort and proposes Phase II sampling activities. All Phase II field activities will be conducted in accordance with the Final Work Plan Addendum utilized for the initial phase of the Limited RCRA Facility Investigation of SWMU 50, prepared by HydroGeoLogic and dated September 2000.

Validated Phase I analytical soil results, along with proposed Phase II soil and groundwater sampling locations, are presented in Figure 1.

2.0 Soil Results and Proposed Sampling

Results of the Phase I soil sampling indicate Texas Natural Resource Conservation Commission (TNRCC) risk reduction standard (RRS) 3 concentrations of lead in the subsurface soil sample collected from boring BHGLSWMU5004 (B5004). Arsenic was detected at RRS 3 concentrations in the surface soil sample collected from boring B5003 as well as various subsurface soil samples collected from borings B5001, B5002, and B5003. Chromium was detected at RRS 3 concentrations in subsurface soil samples in boring B5002.

All of the above-mentioned samples containing metals at RRS 3 concentrations have been submitted for analysis using the Synthetic Precipitation Leaching Procedure (SPLP) in order to potentially obtain site-specific medium-specific concentrations (MSCs). These results are shown on Table 1. All soil samples analyzed using SPLP resulted in extracts with concentrations below the industrial groundwater MSCs for the various compounds analyzed. Therefore, alternative site-specific MSCs for each compound have been assigned. Other metals detections included cobalt, copper, and zinc primarily in the subsurface soil samples from B5001, B5002 and B5003. These detections will be delineated in order to obtain site closure under RRS 2.

Boring B5004 contained one volatile organic compound (VOC), vinyl chloride, as well as three semi-volatile organic compounds (SVOCs), at RRS 3 concentrations in subsurface soil

samples including benzo(a)pyrene, benzo(b)fluoranthene, and bis(2-ethylhexyl)phthalate. Several other VOCs and SVOCs were detected in both surface and subsurface soil samples collected from borings B5001, B5004, and B5005 at RRS 2 concentrations. These VOCs and SVOCs include: acetone; chloromethane; cis-1,2-dichloroethene; 1,1-dichloroethene; ethylbenzene; m,p,o-xylene; 2-methylnapthalene; methyl ethyl ketone; naphthalene; pyrene; tetrachloroethene; trichloroethene; and 1,1,2-trichloroethane. Acetone was the only VOC detected in samples collected from borings B5002 and B5003, and no SVOCs were detected in samples from either boring.

Phase II activities at SWMU 50 will include advancing two delineation (B5006 and B5007) and one confirmation (B5008) soil boring as well as installing four monitoring wells, as illustrated in Figure 1. Soil samples will be collected during monitoring well installation for various compounds at specific intervals as indicated in Figure 1. Boring B5006 will be advanced to delineate RRS 2 and 3 concentrations of metals and RRS 2 concentrations of VOCs and SVOCs from borings B5001 and B5005. Boring B5007 will be advanced to delineate RRS 2 and 3 concentrations of metals and RRS 2 concentrations of acetone in boring B5003. Boring B5008 will be advanced to confirm the presence of RRS 3 concentrations of VOCs and SVOCs and perform SPLP on the constituents above RRS 3 in boring B5004. Samples from the boring for well W1 will be used to delineate RRS 3 concentrations of metals and RRS 2 concentrations of acetone in B5002. Samples collected during the installation of monitoring well W2 will be used to delineate RRS 2 and 3 concentrations of metals, and RRS 2 concentrations of VOCs and SVOCs from borings B5004 and B5005. Soil samples collected during the installation of monitoring wells W3 and W4 will be used to delineate RRS 2 and 3 concentrations of metals, VOCs, and SVOCs from borings B5003 and B5004.

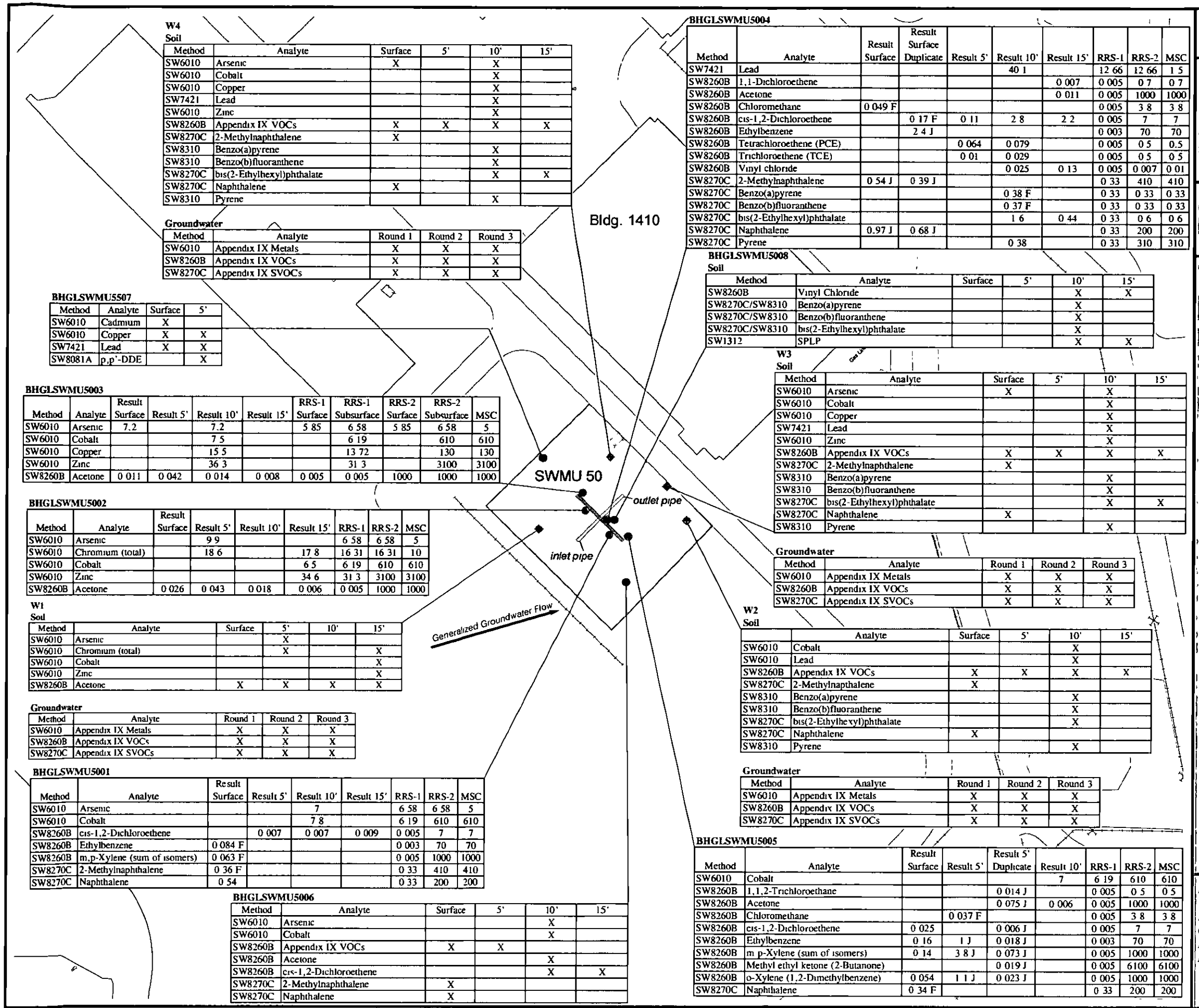
Table 1
SWMU 50 SPLP Results

Sample ID	Analyte	Original Soil Result (mg/kg)	SPLP Result (µg/L)	Industrial Groundwater MSC (µg/L)	Is SPLP result lower than Industrial Groundwater MSC? (yes/no)	Alternative Site-Specific Soil MSC (mg/kg)
BHGLSWMU5001-03	Arsenic	7	6.7 F	50	Yes	9.9
BHGLSWMU5002-02	Arsenic	9.9	ND	50	Yes	9.9
BHGLSWMU5002-02	Chromium	18.6	70.2	100	Yes	18.6
BHGLSWMU5002-04	Chromium	17.8	70.7	100	Yes	18.6
BHGLSWMU5003-01	Arsenic	7.2	17.3 F	50	Yes	9.9
BHGLSWMU5003-03	Arsenic	7.2	10.0 F	50	Yes	9.9
BHGLSWMU5004-03	Lead	40.1	ND	15	Yes	40.1

Notes:
All results are unvalidated
F = The analyte was positively identified but the numerical value is below the adjusted method quantitation limit.
ND = Not detected.

3.0 Groundwater

Four monitoring wells will be installed at the site to assess groundwater flow direction and determine if a release of hazardous constituents from SWMU 50 to groundwater has occurred. Three wells will be installed in the down gradient direction from SWMU 50 and one well will be installed in the up gradient direction. Three rounds of groundwater sampling will be performed and samples will be analyzed for Appendix IX metals, VOCs, and SVOCs.



W4
Soil

Method	Analyte	Surface	5'	10'	15'
SW6010	Arsenic	X		X	
SW6010	Cobalt			X	
SW6010	Copper			X	
SW7421	Lead			X	
SW6010	Zinc			X	
SW8260B	Appendix IX VOCs	X	X	X	X
SW8270C	2-Methylnaphthalene	X			
SW8310	Benzo(a)pyrene			X	
SW8310	Benzo(b)fluoranthene			X	
SW8270C	bis(2-Ethylhexyl)phthalate			X	X
SW8270C	Naphthalene	X			
SW8310	Pyrene			X	

Groundwater

Method	Analyte	Round 1	Round 2	Round 3
SW6010	Appendix IX Metals	X	X	X
SW8260B	Appendix IX VOCs	X	X	X
SW8270C	Appendix IX SVOCs	X	X	X

BHGLSWMU5507

Method	Analyte	Surface	5'
SW6010	Cadmium	X	
SW6010	Copper	X	X
SW7421	Lead	X	X
SW8081A	p,p'-DDE		X

BHGLSWMU5003

Method	Analyte	Result Surface	Result 5'	Result 10'	Result 15'	RRS-1 Surface	RRS-1 Subsurface	RRS-2 Surface	RRS-2 Subsurface	MSC
SW6010	Arsenic	7.2		7.2		5 85	6 58	5 85	6 58	5
SW6010	Cobalt			7 5			6 19		610	610
SW6010	Copper			15 5			13 72		130	130
SW6010	Zinc			36 3			31 3		3100	3100
SW8260B	Acetone	0 011	0 042	0 014	0 008	0 005	0 005	1000	1000	1000

BHGLSWMU5002

Method	Analyte	Result Surface	Result 5'	Result 10'	Result 15'	RRS-1	RRS-2	MSC
SW6010	Arsenic		9 9			6 58	6 58	5
SW6010	Chromium (total)		18 6		17 8	16 31	16 31	10
SW6010	Cobalt				6 5	6 19	610	610
SW6010	Zinc				34 6	31 3	3100	3100
SW8260B	Acetone	0 026	0 043	0 018	0 006	0 005	1000	1000

W1
Soil

Method	Analyte	Surface	5'	10'	15'
SW6010	Arsenic		X		
SW6010	Chromium (total)		X		X
SW6010	Cobalt				X
SW6010	Zinc				X
SW8260B	Acetone	X	X	X	X

Groundwater

Method	Analyte	Round 1	Round 2	Round 3
SW6010	Appendix IX Metals	X	X	X
SW8260B	Appendix IX VOCs	X	X	X
SW8270C	Appendix IX SVOCs	X	X	X

BHGLSWMU5001

Method	Analyte	Result Surface	Result 5'	Result 10'	Result 15'	RRS-1	RRS-2	MSC
SW6010	Arsenic			7		6 58	6 58	5
SW6010	Cobalt			7 8		6 19	610	610
SW8260B	cis-1,2-Dichloroethene		0 007	0 007	0 009	0 005	7	7
SW8260B	Ethylbenzene	0 084 F				0 003	70	70
SW8260B	m,p-Xylene (sum of isomers)	0 063 F				0 005	1000	1000
SW8270C	2-Methylnaphthalene	0 36 F				0 33	410	410
SW8270C	Naphthalene	0 54				0 33	200	200

BHGLSWMU5006

Method	Analyte	Surface	5'	10'	15'
SW6010	Arsenic			X	
SW6010	Cobalt			X	
SW8260B	Appendix IX VOCs	X	X		
SW8260B	Acetone			X	
SW8260B	cis-1,2-Dichloroethene			X	X
SW8270C	2-Methylnaphthalene	X			
SW8270C	Naphthalene	X			

BHGLSWMU5004

Method	Analyte	Result Surface	Result Surface Duplicate	Result 5'	Result 10'	Result 15'	RRS-1	RRS-2	MSC
SW7421	Lead				40 1		12 66	12 66	1 5
SW8260B	1,1-Dichloroethene					0 007	0 005	0 7	0 7
SW8260B	Acetone					0 011	0 005	1000	1000
SW8260B	Chloromethane	0 049 F					0 005	3 8	3 8
SW8260B	cis-1,2-Dichloroethene		0 17 F	0 11	2 8	2 2	0 005	7	7
SW8260B	Ethylbenzene		2 4 J				0 003	70	70
SW8260B	Tetrachloroethene (PCE)			0 064	0 079		0 005	0 5	0.5
SW8260B	Trichloroethene (TCE)			0 01	0 029		0 005	0 5	0 5
SW8260B	Vinyl chloride				0 025	0 13	0 005	0 007	0 01
SW8270C	2-Methylnaphthalene	0 54 J	0 39 J				0 33	410	410
SW8270C	Benzo(a)pyrene				0 38 F		0 33	0 33	0 33
SW8270C	Benzo(b)fluoranthene				0 37 F		0 33	0 33	0 33
SW8270C	bis(2-Ethylhexyl)phthalate				1 6	0 44	0 33	0 6	0 6
SW8270C	Naphthalene	0.97 J	0 68 J				0 33	200	200
SW8270C	Pyrene				0 38		0 33	310	310

BHGLSWMU5008
Soil

Method	Analyte	Surface	5'	10'	15'
SW8260B	Vinyl Chloride			X	X
SW8270C/SW8310	Benzo(a)pyrene			X	
SW8270C/SW8310	Benzo(b)fluoranthene			X	
SW8270C/SW8310	bis(2-Ethylhexyl)phthalate			X	
SW1312	SPLP			X	X

W3
Soil

Method	Analyte	Surface	5'	10'	15'
SW6010	Arsenic	X		X	
SW6010	Cobalt			X	
SW6010	Copper			X	
SW7421	Lead			X	
SW6010	Zinc			X	
SW8260B	Appendix IX VOCs	X	X	X	X
SW8270C	2-Methylnaphthalene	X			
SW8310	Benzo(a)pyrene			X	
SW8310	Benzo(b)fluoranthene			X	
SW8270C	bis(2-Ethylhexyl)phthalate			X	X
SW8270C	Naphthalene	X			
SW8310	Pyrene			X	

Groundwater

Method	Analyte	Round 1	Round 2	Round 3
SW6010	Appendix IX Metals	X	X	X
SW8260B	Appendix IX VOCs	X	X	X
SW8270C	Appendix IX SVOCs	X	X	X

W2
Soil

	Analyte	Surface	5'	10'	15'
SW6010	Cobalt			X	
SW6010	Lead			X	
SW8260B	Appendix IX VOCs	X	X	X	X
SW8270C	2-Methylnapthalene	X			
SW8310	Benzo(a)pyrene			X	
SW8310	Benzo(b)fluoranthene			X	
SW8270C	bis(2-Ethylhexyl)phthalate			X	
SW8270C	Naphthalene	X			
SW8310	Pyrene			X	

Groundwater

Method	Analyte	Round 1	Round 2	Round 3
SW6010	Appendix IX Metals	X	X	X
SW8260B	Appendix IX VOCs	X	X	X
SW8270C	Appendix IX SVOCs	X	X	X

BHGLSWMU5005

Method	Analyte	Result Surface	Result 5'	Result 5' Duplicate	Result 10'	RRS-1	RRS-2	MSC
SW6010	Cobalt				7	6 19	610	610
SW8260B	1,1,2-Trichloroethane			0 014 J		0 005	0 5	0 5
SW8260B	Acetone			0 075 J	0 006	0 005	1000	1000
SW8260B	Chloromethane		0 037 F			0 005	3 8	3 8
SW8260B	cis-1,2-Dichloroethene	0 025		0 006 J		0 005	7	7
SW8260B	Ethylbenzene	0 16	1 J	0 018 J		0 003	70	70
SW8260B	m p-Xylene (sum of isomers)	0 14	3 8 J	0 073 J		0 005	1000	1000
SW8260B	Methyl ethyl ketone (2-Butanone)			0 019 J		0 005	6100	6100
SW8260B	o-Xylene (1,2-Dimethylbenzene)	0 054	1 1 J	0 023 J		0 005	1000	1000
SW8270C	Naphthalene	0 34 F				0 33	200	200

HydroGeoLogic, Inc —Final Technical Memorandum
NAS Fort Worth JRB, Texas

Figure 1
Phase I Analytical Soil Results Above Background
SWMU 50
Former Aircraft Washing Area No. 2

U.S. Air Force Center for Environmental Excellence

Legend

- Proposed Monitoring Wells
- Proposed Phase II Soil Borings
- Phase I Soil Borings
- Solid Waste Management Unit
- Fence
- Drain

- Phase I Results (header)
- Phase II Proposed Analysis (header)
- Analyte detected above MSC SPLP not performed
- Analyte detected above MSC in soil and in SPLP extract
- Analyte detected above MSC in soil but detected below MSC in SPLP extract

Notes
Soil concentrations reported in mg/kg
Groundwater concentrations reported in mg/L
MSC—Medium-Specific Concentration
Revised MSC—Value based on SPLP result
RRS—Risk Reduction Standard
F—The analyte was positively identified but the associated numerical value is below the adjusted method quantitation limit
J—The analyte was positively identified, the quantitation is an estimation
Phase I Results—Only detections above RRS-1 are reported on the figure

N

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SCALE IN FEET

Filename X Afc001\29bda\Report\Final Tech Memo\ analytical_soil_results-swmu50 apr
Project AFC001-29BDA
Created 03/06/01 asp
Revised 05/18/01 jb
Map Source HydroGeoLogic, Inc GIS Database, 2001

HydroGeoLogic INC

RESPONSE TO COMMENTS
Draft – Phase I Results and Proposed Phase II Field Activities
SWMU 50, Former Aircraft Wash Area No. 2
NAS Fort Worth JRB, Texas
Dated: April 2001
By: HydroGeoLogic Inc.

Comments by Michael Dodyk

Comment 1. Please include a cover letter including project data such as the delivery order number, contract number, etc.

Response. A cover letter with the above information has been included.

Comment 2. Please date the document. Also, please include project data on the document in the event that it is separated from the cover letter. Also, please number the pages of the document.

Response. These changes have been made.

Comment 3. Page 1 Section 1.0: Please indicate whether the Work Plan referenced in the last sentence of the 1st paragraph is the work plan used in Phase I.

Response. The text has been changed to read "All Phase II field activities will be conducted in accordance with the Final Work Plan Addendum utilized for the intial phase of the Limited RCRA Facility Investigation of SWMU 50, prepared by HydroGeoLogic and dated September 2000."

Comment 4. Page 1 Section 2.0 1st and 2nd sentences: Please list the volatile and semi-volatile compounds that were found at RRS 2 and RRS 3 concentrations.

Response. The compounds have been listed.

Comment 5. Figure 1: If the pending SPLP results do not establish a new MSC for chromium, please consider either confirming the chromium hits at B5002 (5' and 15') or delineating down gradient.

Response. The SPLP results have been added to the document. A revised MSC has been established for chromium in soil and chromium is delineated downgradient by boring B5004.

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE