HWB - CAFB - 01-003

Parallax INC.

U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-HA (Tom Zink)
215 North 17th Street
Omaha, NE 68102-4978

ATL-01-147

June 26, 2001

Reference: Contract No. DACA45-99-D-0015
Delivery Order No. 002

Subject: Final Annual Monitoring Report Calendar Year 2000 Long-Term Monitoring Landfill No. 3 (MW-O), Landfill No. 4 (MW-N), and Landfill No. 25 (MW-R)
Cannon Air Force Base, New Mexico

Dear Mr. Zink,

Enclosed are four copies of the subject final report that incorporates the agreed responses to USACE comments on the draft report. A MS DOS formatted diskette with the text of this report in MS Word is included. This report constitutes the final technical deliverable on this delivery order. The original data packages and logbooks will be transmitted under separate cover, and the June Monthly Report will be the final submittal.

Parallax appreciates the opportunity to have supported the USACE Omaha District and Cannon Air Force Base on this project. Please contact me at 770-955-2008 if you have any questions or require further information.

Sincerely,
Parallax, Inc.

William O. Keefer

David Keefer
Program Manager

cc: John Pike - 27 CES/CEV, 8 copies
USACE Chemical QA Lab, 1 copy
File, 1 copy
Russ Shannon - HQ ACC/CEVR-W, 2 copies
Debbie Molinary – Parallax, 1 copy

ANNUAL MONITORING REPORT
CALENDAR YEAR 2000
LONG-TERM MONITORING
LANDFILL NO. 3 (MW-O), LANDFILL NO. 4 (MW-N), AND LANDFILL NO. 25 (MW-R)
CANNON AIR FORCE BASE, CLOVIS, NEW MEXICO
EPA ID Number NM7572124454

JUNE 2001

Submitted to:
U. S. Army Corps of Engineers
Omaha District

Submitted by:
Parallax, Inc.
340 Interstate North Prkwy
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Atlanta, GA 30339

Contract No.
DACA45-99-D-0015
Delivery Order No. 002

Parallax INC.

CAFB 01-003

FINAL

ANNUAL MONITORING REPORT
CALENDAR YEAR 2000

LONG-TERM MONITORING
LANDFILL NO. 3 (MW-O)
LANDFILL NO.4 (MW- N)
LANDFILL NO. 25 (MW-R)

CANNON AIR FORCE BASE
Clovis, New Mexico
EPA ID Number NM7572124454

HWB- CAFB-01-003

U.S. Army Corps of Engineers
Omaha District
Contract No. DACA45-99-D-0015
Delivery Order No. 2

June 2001

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List of Acronyms

BTOC	Below the Top of Casing
CAFB	Cannon Air Force Base
CCV	Continuing Calibration Verification
CVAA	Cold Vapor AA
EPA	Environmental Protection Agency
GC/ECD	Electron Capture Detectors
gpm	Gallons per minute
ICB/CCB	Initial and Continuing Calibration Blanks
ICV/CCV	Initial and Continuing Calibration Verifications
ICV	Initial Calibration Verification
LCSs	Laboratory Control Samples
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
LTMP	Long-Term Monitoring Program
MCAWW	Methods for the Chemical Analysis of Waters and Wastes
MCLs	Maximum Contaminant Levels
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW-N	Monitoring Well N at Landfill No.4
MW-O	Monitoring Well O at Landfill No.3
MW-R	Monitoring Well R at Landfill No.25
NMED	New Mexico Environmental Department
NTU	Nephelometric Turbidity Unit
PCBs	Polychlorinated Biphenyls
PID	Photoionization Detector
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
RSDs	Relative Standard Deviations
SAP	Sampling and Analysis Plan
SVOCs	Semi-Volatile Organic Compounds
TICs	Tentatively Identified Compounds
USACE	U.S. Army Corps of Engineers
VOC	Volatile Organic Compound
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

This report summarizes data obtained during the 2000 annual sampling event of monitoring wells MW-O (Landfill No. 3), MW-N (Landfill No. 4), and MW-R (Landfill No. 25) at Cannon Air Force Base (CAFB) near Clovis, New Mexico, EPA ID Number NM7572124454 (Figure 1). The results of the semi-annual sampling event for MW-R (Landfill No. 25) are also incorporated in this report as Appendix A.4. These monitoring wells are located down-gradient of the respective landfills, and serve as the points of compliance for long term monitoring of these units (Figure 2). The January 2001 sampling event represents the annual sampling event for Landfills No. 3 and No. 4, and the second semi-annual sampling event for Landfill 25. This work was performed by Parallax, Inc. under contract number DACA45-99-D-0015, Delivery Order No. 2, to the Omaha District of the U.S. Army Corps of Engineers (USACE).

Field activities began on January 8, 2001 following completion of routine maintenance activities by CAFB in the area during late December 2000. After the field team mobilized to Amarillo, Texas and conducted the Contractor Chemical Quality Control Preparatory Phase meeting, the Pre-Entry Safety and Health Training, and verified receipt of necessary equipment and supplies, the field team arrived at CAFB at 1315. The field team met with the base representative at the Environmental Flight office to obtain well keys and proceeded to Landfills No. 3, No. 4, and No. 25. Air monitoring (MiniRae 2000 PID) and field water quality parameter (Horiba U-22 Water Checker) instruments were calibrated on site, and the field team set up to begin well purging.

Monitoring well MW-O at Landfill No. 3 was purged first. The well was opened and the headspace was monitored with the PID producing a transient reading of 0.01 ppm. The well was sounded with a depth to water of 292.96 ft below the top of casing (BTOC). Based on a total well depth of 304 ft and a nominal well diameter of 4 in, the standing water volume was calculated to be approximately 7.2 gallons. The well was purged using a dedicated Bennett pump operating at approximately 1.8 gallons per minute (gpm). Approximately 21.6 gallons were removed (3 well volumes) to a dedicated purge tank adjacent to the well. Six measurements of water quality parameters were recorded with final stable parameters of temperature 14.8° C, specific conductivity 1.53 umhos/cm, pH 7.20, and turbidity of 0 NTUs. Instruments were then cleaned, and the well was closed and locked pending sampling.

Monitoring well MW-N at Landfill No. 4 was purged second. The well was opened and the headspace was monitored with the PID producing a transient reading of 0.2 ppm. The well was sounded with a depth to water of 283.49 ft BTOC. Based on a total well depth of 300 ft and a nominal well diameter of 4 in, the standing water volume was calculated to be approximately 10.8 gallons. The well was purged using a dedicated Bennett pump operating at approximately 1.1 gallons per minute (gpm). Approximately 32.4 gallons were removed (3 well volumes) to a dedicated purge tank adjacent to the well. Seven measurements of water quality parameters were recorded with final stable parameters of temperature 16.51° C, specific conductivity 0.876 umhos/cm, pH 7.66, and turbidity of 4.0 NTUs. Instruments were then cleaned, and the well was closed and locked pending sampling.

Monitoring well MW-R at Landfill No. 25 was purged last. The well was opened and the headspace was monitored with the PID producing a transient reading of 0.2 ppm. The well was sounded with a depth to water of 288.02 ft below the top of casing (BTOC). Based on a total well depth of 304 ft and a nominal well diameter of 6 in, the standing water volume was calculated to be approximately 23.6 gallons. The well was purged using a dedicated Bennett pump operating at approximately 1.3 gallons per minute (gpm). Approximately 70.8 gallons were removed (3 well volumes) to a dedicated purge tank adjacent to the well. Seven measurements of water quality parameters were recorded with final stable parameters of temperature 15.95° C, specific conductivity 0.844 umhos/cm, pH 7.76, and turbidity of 2.1 NTUs. Instruments were then cleaned, and the well was closed and locked pending sampling.

Well sampling activities were begun at 0705 on January 9, 2001. The field team set up at MW-O to collect the first sample. Four additional gallons of groundwater were purged to the dedicated tank to remove any stagnant volume and clear the sample tubing. Sample CAFB0109MWO was collected at 0735 directly into pre-cleaned and pre-preserved sample containers provided by Paragon Analytics. Sample volume was collected for analysis of volatile organic compounds, semi-volatile organic compounds, organochlorine pesticides, polychlorinated biphenyls, organophosphorous pesticides, herbicides, total metals, inorganic anions, and phenols. The sample was placed into a cooler at $4^{\circ} \pm 2^{\circ}$ C with trip blank CAFB0109MWO-T (prepared by the laboratory) under custody of the field team. Sampling was completed, and the well was closed and locked.

Monitoring well MW-N was sampled next. Four additional gallons of groundwater were purged to the dedicated tank to remove any stagnant volume and clear the sample tubing. Sample CAFB0109MWN was collected at 0815 directly into pre-cleaned and pre-preserved sample containers provided by Paragon Analytics. Sample volume was collected for analysis of the same parameters as MW-O. The sample containers for analysis of volatile organic compounds (VOC) were placed in the same cooler as the trip blank and the VOC sample from MW-O. The remaining sample volume was placed into a cooler at $4^{\circ} \pm 2^{\circ}$ C under custody of the field team. Sampling was completed, and the well was closed and locked.

Monitoring well MW-R was sampled last. Four additional gallons of groundwater were purged to the dedicated tank to remove any stagnant volume and clear the sample tubing. Sample CAFB0109MWR, quality control (QC) duplicate sample CAFB0109MWR-D, and QC split sample CAFB0109MWR-S were collected at 0855 directly into pre-cleaned and pre-preserved sample containers provided by Paragon Analytics. The sample volume for each analytical parameter of the environmental and QC samples was collected simultaneously to ensure comparability and replicate precision. The samples were collected for analysis of the same parameters as MW-O and MW-N. The environmental and QC duplicate sample containers for analysis of VOC were placed in the same cooler as the trip blank and the VOC samples from MW-O and MW-N. The remaining sample volume was placed into coolers at $4^{\circ} \pm 2^{\circ}$ C under custody of the field team. The QC split sample, with another trip blank CAFB0109MWR-ST (prepared by the laboratory), was placed in a separate cooler for shipment to the QC laboratory (USACE Omaha District). Sampling was completed, and the well was closed and locked.

The field team ensured that work area around Landfills No. 3, No. 4 and No. 25 was secure, and packed the samples for shipment to the respective laboratories via Federal Express. Five coolers were shipped to Paragon Analytics under chain-of-custody number CAFBLTM1-9-01 with airbill numbers 823704103503, 823704103514, 823704103536, 823704103547 and 823704103558, and one cooler was shipped to USACE Omaha District under chain-of-custody number LIMS6052 with airbill number 823704103499. The field team returned the well keys to the base representative and demobilized from CAFB at 1330.

Both analytical laboratories (Stewart Environmental performed analysis of Phenols as a subcontractor to Peragon Analytics) verified receipt of samples in good condition on January 10, 2001. The samples were properly logged in and prepared for analysis. The environmental and QC samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
- Phenols, SW-846 Method 8270C

Analytical results are summarized on Table 1 (nine pages). The New Mexico Environmental Department (NMED) Annual Assessment Monitoring Reports for the January 2001 sampling event are provided within Appendix A. Field forms completed for the January 2001 sampling event are presented as Appendix B. Analytical results and associated quality control (QC) data, as reported and submitted by Paragon Analytics, are presented in Appendix C. A data quality assessment summary for the sample analytical results, containing a discussion of QC criteria that were evaluated, is included as Appendix D.

During February 2001, Paragon Analytics laboratory delivered the analytical results for the annual sampling event to the Parallax, Inc. office in Atlanta, Georgia. A review of the case narratives provided by Paragon Analytics for each analytical method performed demonstrates that all laboratory QC was properly implemented and met applicable acceptance criteria. The analytical results are considered valid and suitable for their intended use. Review of the environmental and associated QC sample analytical results indicated that all organic compound (VOC, SVOC, PCB, pesticides, and herbicides) concentrations were below method detection limits. Some metals and major cations were detected above method detection limits, however all results are consistent with previous monitoring events.

New Mexico and U.S. EPA groundwater standards form the basis of comparison for detected analytical results, and any constituent exceeding the most stringent of these is considered an exceedance of relevant groundwater standards. Specifically, ten metals and three anions were detected in the sample and duplicate from MW-R above detection limits, and four of the metals slightly exceeded the relevant groundwater standards (chromium, iron, nickel, and sodium). In both MW-O and MW-N, six metals and three anions were detected in the samples above analytical detection limits. Sodium and vanadium slightly exceeded the relevant groundwater standards in MW-N, and sodium and chloride were above groundwater standards in MW-O.

As previously reported, the elevated metals found in MW-R, with the exception of sodium, are considered to be the result of degradation or corrosion of the stainless steel well screen and casing. Preliminary transport modeling performed by USACE indicates that Landfill No. 25 is not the source of the metals. Retardation factors calculated for the metals detected and the distance of over 100 feet to groundwater indicate that the metals could not have migrated to the water table in the time since the landfill has been in existence. The elevated sodium in this well is also found in wells MW-N and MW-O, indicating that this may reflect ambient conditions in the aquifer. The sodium results for all three wells are consistent with previous sampling, and the concentrations are decreasing over time. The slightly elevated vanadium (exceeds EPA Health Advisory value by 0.002 ppm) detected in MW-N is consistent with previous sampling. Chloride detected in MW-O exceeded relevant groundwater standards by 20 ppm, or approximately 8% above the allowable limit. This result also is consistent with previous sampling and reflects a 4 ppm increase since the last sampling event. In summary, the results of the 2000 long term monitoring sampling event provide no indication that any release from Landfills No. 3, 4 and 25 has impacted groundwater.

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Polychlorinated Biphenyl Compounds (Method 8082)											
Arclor-1016	ug/L	0.97	U	0.97	U	0.97	U	0.94	U	N/A	N/A
Arclor-1221	ug/L	1.9	U	1.9	U	1.9	U	1.9	U	N/A	N/A
Arclor-1232	ug/L	0.97	U	0.97	U	0.97	U	0.94	U	N/A	N/A
Arclor-1242	ug/L	0.97	U	0.97	U	0.97	U	0.94	U	N/A	N/A
Arclor-1248	ug/L	0.97	U	0.97	U	0.97	U	0.94	U	N/A	N/A
Arclor-1254	ug/L	0.97	U	0.97	U	0.97	U	0.94	U	N/A	N/A
Arclor-1260	ug/L	0.97	U	0.97	U	0.97	U	0.94	U	N/A	N/A
Common Anions (Method 300.0A)											
Chloride	mg/L	96	U	98	U	54	U	270	U	N/A	N/A
Nitrate	mg/L	6.1	U	6	U	2.1	U	9.2	U	N/A	N/A
Sulfate	mg/L	140	U	140	U	100	U	140	U	N/A	N/A
Chlorinated Herbicides (Method 8151A)											
Dalapon	ug/L	3.9	U	3.9	U	3.8	U	3.8	U	N/A	N/A
Dicamba	ug/L	0.2	U	0.19	U	0.19	U	0.19	U	N/A	N/A
MCPP	ug/L	98	U	97	U	94	U	94	U	N/A	N/A
MCPA	ug/L	98	U	97	U	94	U	94	U	N/A	N/A
Dichloroprop	ug/L	0.98	U	0.97	U	0.94	U	0.94	U	N/A	N/A
2,4-D	ug/L	0.98	U	0.97	U	0.94	U	0.94	U	N/A	N/A
Silvex	ug/L	0.098	U	0.097	U	0.094	U	0.094	U	N/A	N/A
2,4,5-T	ug/L	0.098	U	0.097	U	0.094	U	0.094	U	N/A	N/A
Dinoseb	ug/L	0.98	U	0.97	U	0.94	U	0.94	U	N/A	N/A
2,4-DB	ug/L	0.98	U	0.97	U	0.94	U	0.94	U	N/A	N/A
Organochlorine Pesticides (Method 8481A)											
Alpha-bhc	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB19MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Gamma-bhc	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Heptachlor	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Aldrin	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Beta-bhc	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Delta-bhc	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Heptachlor epoxide	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Endosulfan I	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Gamma-chlordane	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
Alpha-chlordane	ug/L	0.048	U	0.047	U	0.048	U	0.048	U	N/A	N/A
4,4'-DDE	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Dieldrin	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Endrin	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
4-4'-DDD	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Endosulfan II	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
4,4DDT	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Endrin aldehyde	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Methoxychlor	ug/L	0.48	U	0.47	U	0.48	U	0.48	U	N/A	N/A
Endosulphan sulfate	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Endrin ketone	ug/L	0.097	U	0.094	U	0.096	U	0.096	U	N/A	N/A
Toxaphene	ug/L	4.8	U	4.7	U	4.8	U	4.8	U	N/A	N/A
Volatile Organic Compounds (Method 8260B)											
Dichlorodifluoromethane	ug/L	10	U	10	U	10	U	10	U	10	U
Chloromethane	ug/L	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride	ug/L	10	U	10	U	10	U	10	U	10	U
Bromomethane	ug/L	10	U	10	U	10	U	10	U	10	U
Chloroethane	ug/L	10	U	10	U	10	U	10	U	10	U
Trichlorofloroethane	ug/L	5	U	5	U	5	U	5	U	5	U

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
1,1-dichloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
Trichlorofloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
Acetone	ug/L	20	U	12	U	20	U	20	U	15	U
Iodomethane	ug/L	5	U	5	U	5	U	5	U	5	U
Carbon disulfide	ug/L	5	U	5	U	5	U	5	U	5	U
Methylene chloride	ug/L	5	U	5	U	5	U	5	U	5	U
Trans-1,2-dichloroethene	ug/L	5	U	5	U	5	U	5	U	5	U
Methyl tertiary butyl ether	ug/L	5	U	5	U	5	U	5	U	5	U
1,1-dichloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
Vinyl acetate	ug/L	20	U	20	U	20	U	20	U	20	U
Cis-1,2-dichloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
2-butanone	ug/L	20	U	20	U	20	U	20	U	20	U
Bromochloromethane	ug/L	5	U	5	U	5	U	5	U	5	U
Chloroform	ug/L	5	U	5	U	5	U	5	U	5	U
1,1,1-trichloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
2,2-dichloropropene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2-dichloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/L	5	U	5	U	5	U	5	U	5	U
1,1-dichlopropene	ug/L	5	U	5	U	5	U	5	U	5	U
Benzene	ug/L	5	U	5	U	5	U	5	U	5	U
Trichloroethene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2-dichloropropane	ug/L	5	U	5	U	5	U	5	U	5	U
Dibromomethane	ug/L	5	U	5	U	5	U	5	U	5	U
Cis-1,2-dichloropropene	ug/L	5	U	5	U	5	U	5	U	5	U
4-methly-2-pentanone	ug/L	20	U	20	U	20	U	20	U	20	U
Toluene	ug/L	5	U	5	U	5	U	5	U	5	U
Trans-1,3-dichloropropene	ug/L	5	U	5	U	5	U	5	U	5	U
1,1,2-trichloroethane	ug/L	5	U	5	U	5	U	5	U	5	U

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
2-hexanone	ug/L	20	U	20	U	20	U	20	U	20	U
Tetrachloroethene	ug/L	5	U	5	U	5	U	5	U	5	U
1,3-dichloropropene	ug/L	5	U	5	U	5	U	5	U	5	U
1,1,2-trichloroethanee	ug/L	5	U	5	U	5	U	5	U	5	U
2-hexnone	ug/L	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2,dichloropropane	ug/L	5	U	5	U	5	U	5	U	5	U
Dibromochloromethane	ug/L	5	U	5	U	5	U	5	U	5	U
1,2-dibromoethane	ug/L	5	U	5	U	5	U	5	U	5	U
1-chlorohezane	ug/L	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	ug/L	5	U	5	U	5	U	5	U	5	U
1,1,1,2-tetrachloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
Ethlybenzene	ug/L	5	U	5	U	5	U	5	U	5	U
m-p-xylene	ug/L	5	U	5	U	5	U	5	U	5	U
0-xylene	ug/L	5	U	5	U	5	U	5	U	5	U
Styrene	ug/L	5	U	5	U	5	U	5	U	5	U
Bromoform	ug/L	5	U	5	U	5	U	5	U	5	U
Isopropylbenzene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2,3-trichloropropane	ug/L	5	U	5	U	5	U	5	U	5	U
1,1,2,2-tetrachloroethane	ug/L	5	U	5	U	5	U	5	U	5	U
Bromebenzene	ug/L	5	U	5	U	5	U	5	U	5	U
2-chlorotoluene	ug/L	5	U	5	U	5	U	5	U	5	U
1,3,5-trimethlybenzene	ug/L	5	U	5	U	5	U	5	U	5	U
4-clhorotoluene	ug/L	5	U	5	U	5	U	5	U	5	U
Tetra-butylbenzene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2,4-trimethylbenzene	ug/L	5	U	5	U	5	U	5	U	5	U
Sec-butylbenzene	ug/L	5	U	5	U	5	U	5	U	5	U
1,3-dichlorobenzene	ug/L	5	U	5	U	5	U	5	U	5	U

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB019MWR)		MW-R (Duplicate) (CAFB019MWR-D)		MW-N (CAFB019MWN)		MW-O (CAFB019MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
P-isopropyltoluene	ug/L	5	U	5	U	5	U	5	U	5	U
1,4-dichlorobenzene	ug/L	5	U	5	U	5	U	5	U	5	U
N-butylbenzene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2-dichlorobenzene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2-dibromo-3-chloropropane	ug/L	10	U	10	U	10	U	10	U	10	U
1,2,4-trichlorobenzene	ug/L	5	U	5	U	5	U	5	U	5	U
Hexachlorobutadiene	ug/L	5	U	5	U	5	U	5	U	5	U
Naphthalene	ug/L	5	U	5	U	5	U	5	U	5	U
1,2,3-trichlorobenzene	ug/L	5	U	5	U	5	U	5	U	5	U
Semi-Volatile Organic Compounds (Method 8270C)											
Pyridine	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
N-nitrosodmethylamine	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Aniline	ug/L	24	U	25	U	25	U	24	U	N/A	N/A
Phenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Bis(2-chloroethyl)ether	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2-chlorophenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
1,3-dichlorobenzene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
1,4-dichlorobenzene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
1,2-dichlorobenzene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzyl alcohol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Bis(2-chloroisopropyl)ether	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2-methylphenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
N-nitro-di-n-propylamine	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4-methylphenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Hexachloroethane	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Isophorone	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2-nitrophenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
2,4-dimethylphenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Bis(2-chloroethoxy)methane	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,4-dichlorophenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzoic acid	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
1,2,4-trichlorobezene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Naphthalene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4-chloroaniline	ug/L	24	U	25	U	25	U	24	U	N/A	N/A
Hexachlorobutadiene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4-chloro-3-methylphenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2-methylnaphthalene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Hexachlorocyclopentadiene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,4,6-trichlorophenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,5,6-trichlorophenol	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2-chloronaphthalene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2-nitroaniline	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
Dimethyl phthalate	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,6-dinitrotoluene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Acenaphthylene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
3-nitroaniline	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
Acenaphthene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,4-dinitrophenol	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
4-nitrophenol	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
Dibenzofuran	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,4-dinitrotoluene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Diethyl phthalate	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Flourene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4-chlorophenyl phenyl ether	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4-nitroanaline	ug/L	48	U	49	U	49	U	48	U	N/A	N/A

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB019MWR)		MW-R (Duplicate) (CAFB019MWR-D)		MW-N (CAFB019MWN)		MW-O (CAFB019MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Azobenzene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4,6-dinitro-2-methylphenol	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
N-nitrosodiphenylamine	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
4-bromophenyl phenyl ether	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Hexachlorobenzene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
2,3,4,6-tetrachlorophenol	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
Pentachlorophenol	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
Phenantrene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Anthrancene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Carbazole	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Di-n-butyl phthalate	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Flouranthene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Pyrene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Butyl benzyl phthalate	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzo (A) anthracene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
3,3'-dichlorobenzidine	ug/L	48	U	49	U	49	U	48	U	N/A	N/A
Chrysene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Bis(2ethylhexyl)phthalate	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzo(b)fluoranthene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzo(k)flouranthene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzo(a)pyrene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Indeno(1,2,3-cd)pyrene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Dibenzo(a,h)anthracene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Benzo(g,h,I)perylene	ug/L	9.7	U	9.8	U	9.9	U	9.5	U	N/A	N/A
Organophosphorus Pesticides Method 8141)											
Dichlorvos	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Mevinphos	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB019MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Demeton O + S	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Ethoprop	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Naled	ug/L	2.9	U	2.9	U	2.9	U	2.9	U	N/A	N/A
Phorate	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Diazinon	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Disulfoton	ug/L	3.9	U	3.9	U	3.8	U	3.9	U	N/A	N/A
Methyl parathion	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Ronnel	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Fenthion	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Chlorpyrifos	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Trichloronate	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Merphos A+B	ug/L	1.9	U	2	U	1.9	U	1.9	U	N/A	N/A
Tetrachlorvinphos	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Tokuthion	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Fensulfothion	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Sulprofos	ug/L	0.97	U	0.98	U	0.96	U	0.97	U	N/A	N/A
Methyl azinphos	ug/L	1.9	U	2	U	1.9	U	1.9	U	N/A	N/A
Coumaphos	ug/L	1.9	U	2	U	1.9	U	1.9	U	N/A	N/A
Metals (Method 6010B-7000 Series)											
Aluminum	mg/L	0.2	U	0.2	U	0.2	U	0.2	U	N/A	N/A
Antimony	mg/L	0.02	U	0.02	U	0.02	U	0.02	U	N/A	N/A
Arsenic	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	N/A	N/A
Barium	mg/L	0.1	U	0.1	U	0.1	U	0.1	U	N/A	N/A
Beryllium	mg/L	0.005	U	0.005	U	0.005	U	0.005	U	N/A	N/A
Cadmium	mg/L	0.005	U	0.005	U	0.005	U	0.005	U	N/A	N/A
Calcium	mg/L	51		52		40		69		N/A	N/A
Chromium	mg/L	0.28		0.083		0.01	U	0.01	U	N/A	N/A

Table 1. Summary of Analytical Results
Calendar Year 2000 Annual Sampling Event (01/09/01)

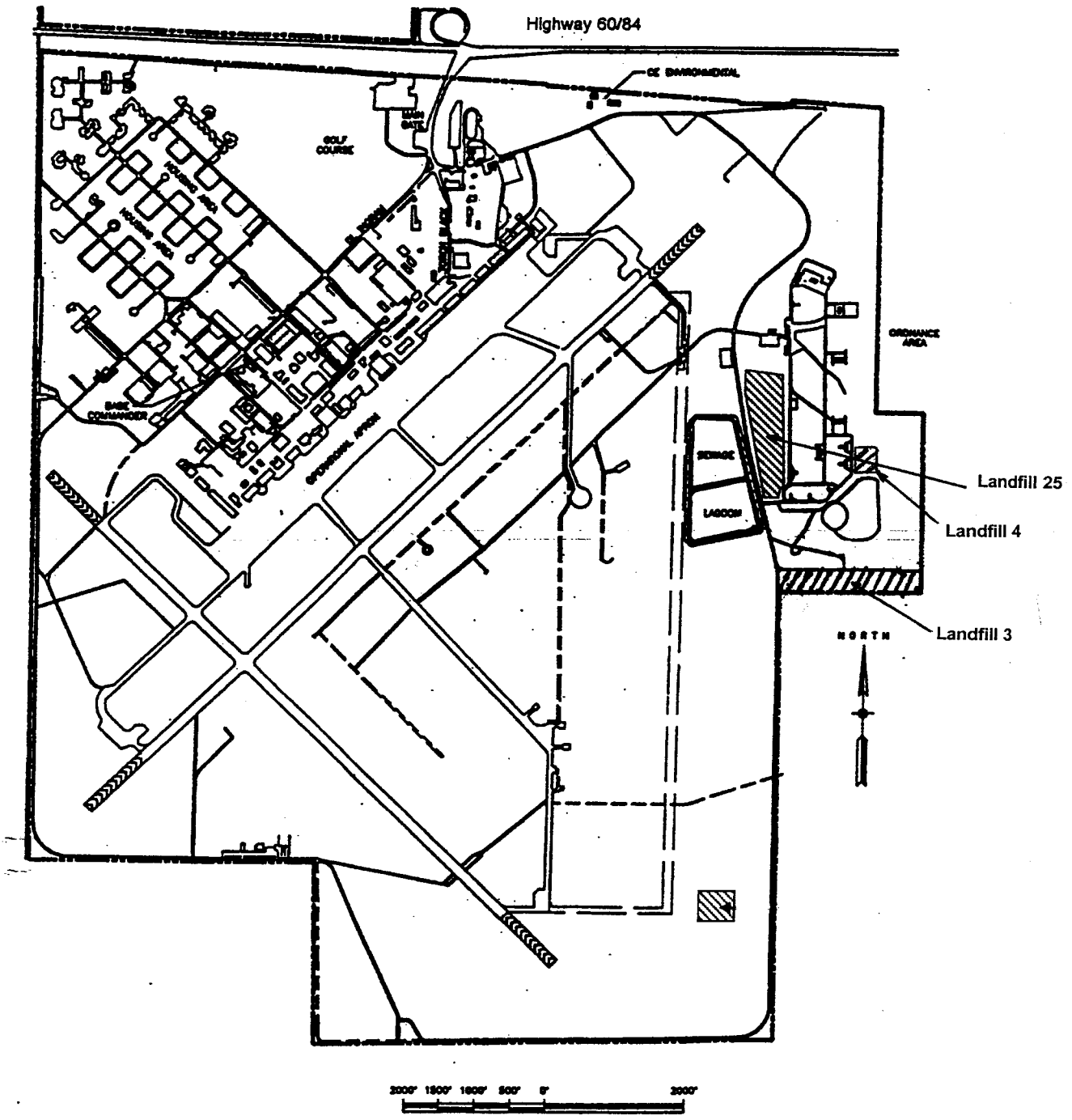
		MW-R (CAFB0109MWR)		MW-R (Duplicate) (CAFB0109MWR-D)		MW-N (CAFB0109MWN)		MW-O (CAFB0109MWO)		Trip Blank (CAFB0109MWO-T)	
Parameter	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Cobalt	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	N/A	N/A
Copper	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	N/A	N/A
Iron	mg/L	1.1		0.79		0.1	U	0.1	U	N/A	N/A
Lead	mg/L	0.003	U	0.003	U	0.003	U	0.003	U	N/A	N/A
Magnesium	mg/L	52		53		38		60		N/A	N/A
Manganese	mg/L	0.044		0.028		0.1	U	0.01	U	N/A	N/A
Nickel	mg/L	0.37		0.34		0.02	U	0.02	U	N/A	N/A
Potassium	mg/L	8.5		8.6		7.9		11		N/A	N/A
Selenium	mg/L	0.011		0.0095		0.01		0.0063		N/A	N/A
Silver	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	N/A	N/A
Sodium	mg/L	33		34		31		140		N/A	N/A
Thallium	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	N/A	N/A
Vanadium	mg/L	0.014		0.013		0.022		0.016		N/A	N/A
Zinc	mg/L	0.02	U	0.02	U	0.02	U	0.02	U	N/A	N/A
Mercury	mg/L	0.0002	U	0.0002	U	0.0002	U	0.0002	U	N/A	N/A

N/A – Not Analyzed
U- Non Detect
mg/L – milligrams per liter
ug/L – micrograms per liter

Table 2. Comparison of CAFB LTM Groundwater Analytical Results for Calendar Year 2000 to Applicable Regulatory Standards

	New Mexico Groundwater Standards (mg/L)	MW-R (CAFB0109MWR)	MW-R (Duplicate) (CAFB0109MWR-D)	MW-N (CAFB0109MWN)	MW-O (CAFB0109MWO)
Metals					
Calcium	---	51	52	40	69
Chromium	0.05/0.1[a]	**0.28**	**0.083**	0.01U	0.01U
Iron	1.0[d]/0.3[a]	**1.1**	**0.79**	0.1U	0.01U
Magnesium	---	52	53	38	60
Manganese	0.2/0.05[a]	0.044	0.028	0.1U	0.01U
Nickel	0.2/0.1[a]	**0.37**	**0.34**	0.02U	0.02U
Potassium	---	8.5	8.6	7.9	11
Selenium	0.05	0.011	0.0095	0.01	0.0063
Sodium	20[e]	**33**	**34**	**31**	**140**
Vanadium	0.02[e]	0.014	0.013	**0.022**	0.016
Common Anions					
Chloride EPA 300.0A	250	96	98	54	**270**
Nitrate EPA 300.0A	10	6.1	4	2.1	9.2
Sulfate EPA 300.0A	600/400[c]	140	140	100	140

U – below detection limit
[a]- EPA MCL
[b]- Irrigation Use
[c]- Maximum Contaminant Level Goal (MCLG)
[d]- Domestic Water Supply
[e]- EPA Health Advisory
Bold – exceeds most stringent standard



Scale in Feet is Approximate

ANNUAL MONITORING REPORT

Cannon Air Force Base, New Mexico

U.S. Army Corps of Engineers, Omaha District

Figure 1

Site Location Map

Figure 2.
Location of Monitoring Wells MW-N (Landfill No. 4), MW-O (Landfill No. 3), and MW-R (Landfill No. 25) Cannon Air Force Base, Clovis, New Mexico

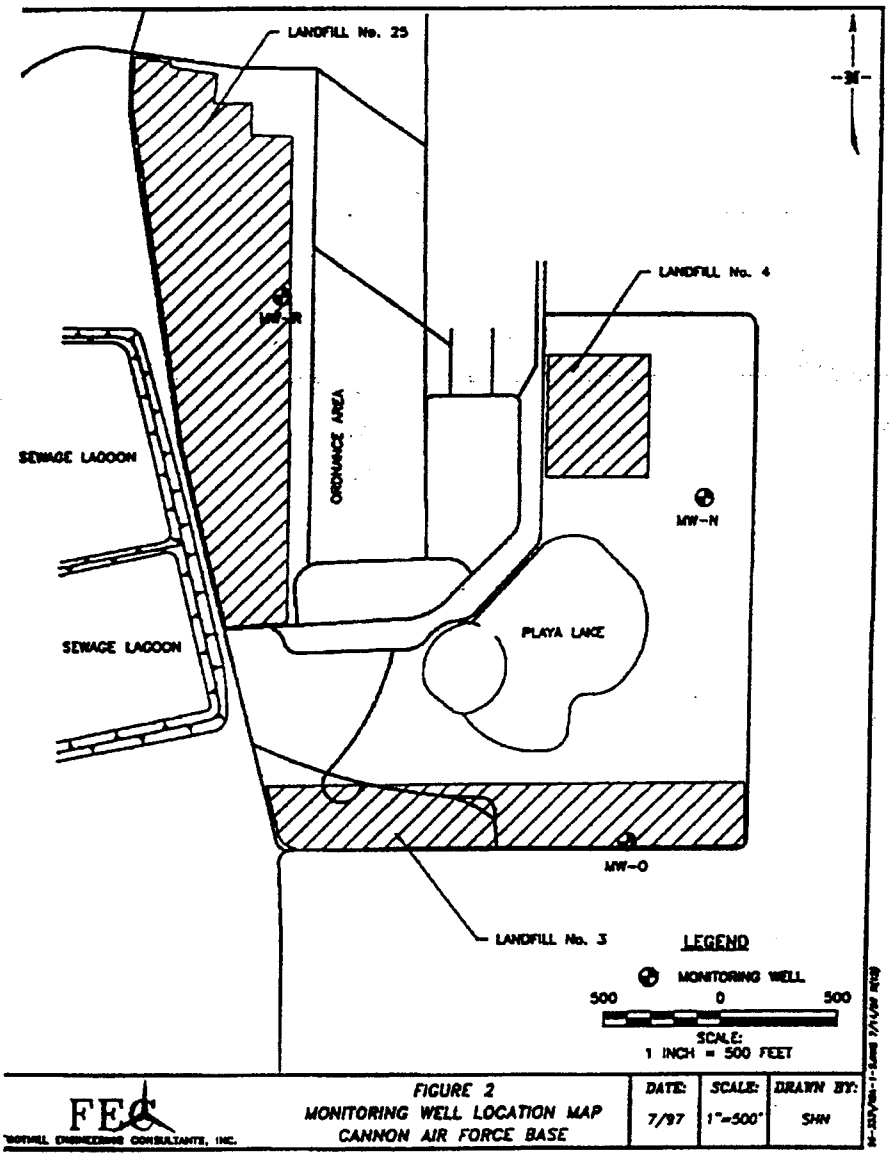
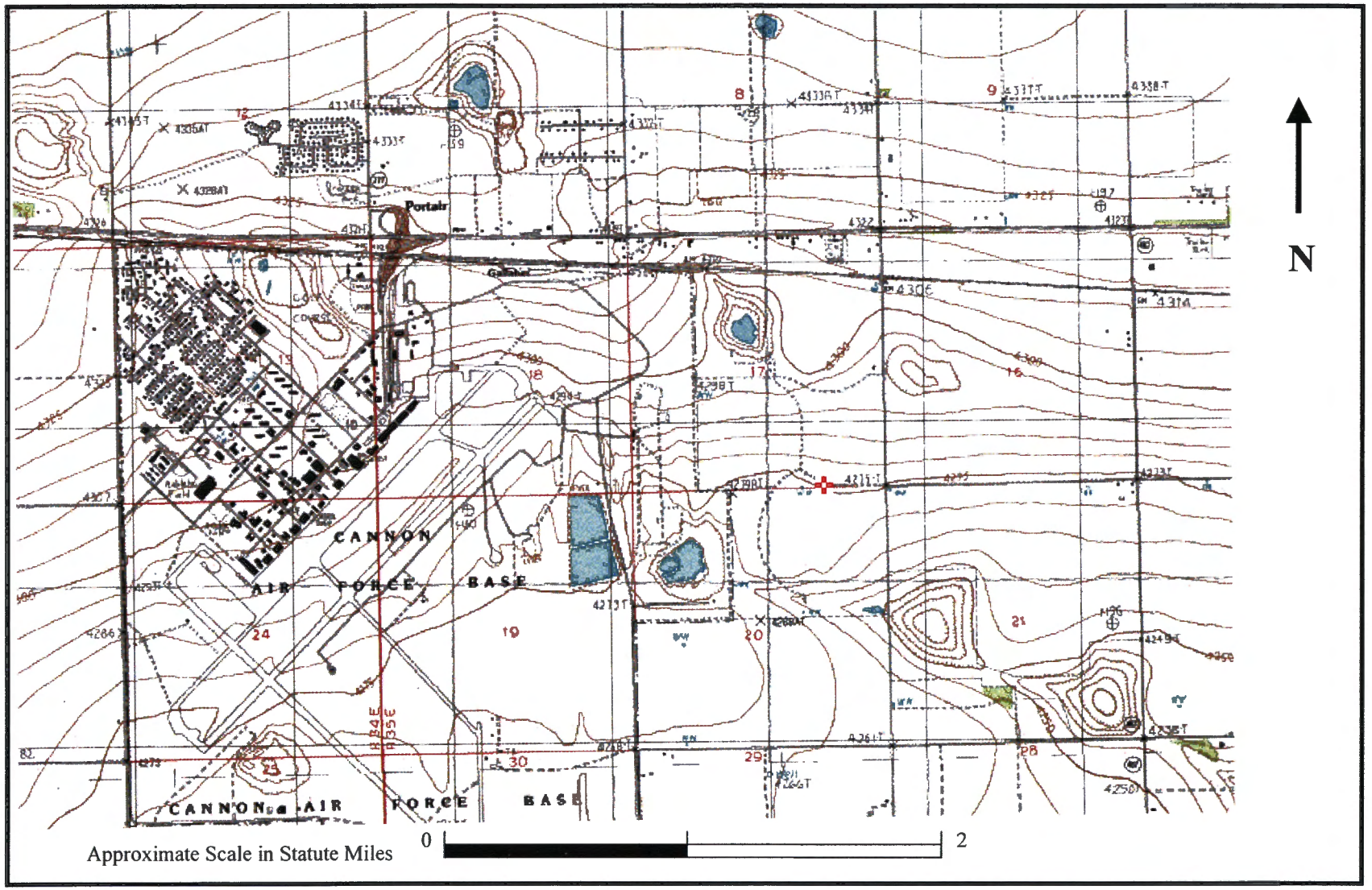


Figure 2A - Topographic Map



Cannon Air Force Base, Curry County, New Mexico

Based on USGS Portair Quadrangle (34.392°N 103.323°W)

APPENDIX A

NMED ASSESSMENT MONITORING REPORTS

(Calendar Year 2000 Annual - January 2001)

APPENDIX A.1

LANDFILL NO. 3/SWMU 105 (MW-O)
2000 ANNUAL ASSESSMENT REPORT

A.1-1.0 INTRODUCTION

This report summarizes the data obtained during the January 2001 annual sampling event for the long-term monitoring program of Landfill No. 3/SWMU 105 at Cannon Air Force Base (CAFB) near Clovis, New Mexico, EPA ID No. NM7572124454. Monitoring well MW-O is located downgradient of Landfill No. 3, and is the point of compliance for groundwater monitoring at this unit. The scope of this report is an annual sampling event that is coincident with sampling of nearby monitoring wells MW-N and MW-R at Landfills No. 4 and No. 25, respectively, for long term monitoring.

A.1-2.0 SCOPE OF SERVICES

Field activities began on January 8, 2001 following completion of routine maintenance activities by CAFB in the area during late December 2000. After the field team mobilized to Amarillo, Texas and conducted the Contractor Chemical Quality Control Preparatory Phase meeting, the Pre-Entry Safety and Health Training, and verified receipt of necessary equipment and supplies, the field team arrived at CAFB at 1315. The field team met with the base representative at the Environmental Flight office to obtain well keys and proceeded to Landfills No. 3, No. 4, and No. 25. Air monitoring (MiniRae 2000 PID) and field water quality parameter (Horiba U-22 Water Checker) instruments were calibrated on site, and the field team set up to begin well purging.

Monitoring well MW-O at Landfill No. 3 was purged prior to sampling. The well was opened and the headspace was monitored with the PID producing a transient reading of 0.01 ppm. The well was sounded with a depth to water of 292.96 ft below the top of casing (BTOC). Based on a total well depth of 304 ft and a nominal well diameter of 4 in, the standing water volume was calculated to be approximately 7.2 gallons. The well was purged using a dedicated Bennett pump operating at approximately 1.8 gallons per minute (gpm). Approximately 21.6 gallons were removed (3 well volumes) to a dedicated purge tank adjacent to the well. Six measurements of water quality parameters were recorded with final stable parameters of temperature 14.8° C, specific conductivity 1.53 umhos/cm, pH 7.20, and turbidity of 0 NTUs. Instruments were then cleaned, and the well was closed and locked pending sampling.

Well sampling activities were begun at 0705 on January 9, 2001. The field team set up at MW-O to collect the first sample. Four additional gallons of groundwater were purged to the dedicated tank to remove any stagnant volume and clear the sample tubing. Sample CAFB0109MWO was collected at 0735 directly into pre-cleaned and pre-preserved sample containers provided by Paragon Analytics. Sample volume was collected for analysis of volatile organic compounds, semi-volatile organic compounds,

organochlorine pesticides, polychlorinated biphenyls, organophosphorous pesticides, herbicides, total metals, inorganic anions, and phenols. The sample was placed into a cooler at $4^{\circ} \pm 2^{\circ}$ C with trip blank CAFB0109MWO-T (prepared by the laboratory) under custody of the field team. Sampling was completed, and the well was closed and locked.

The field team ensured that work area around Landfills No. 3, No. 4 and No. 25 was secure, and packed the samples for shipment to the respective laboratories via Federal Express. Five coolers were shipped to Paragon Analytics under chain-of-custody number CAFBLTM1-9-01 with airbill numbers 823704103503, 823704103514, 823704103536, 823704103547 and 823704103558, and one cooler was shipped to USACE Omaha District under chain-of-custody number LIMS6052 with airbill number 823704103499. The field team returned the well keys to the base representative and demobilized from CAFB at 1330.

The analytical laboratory verified receipt of the samples in good condition on January 10, 2001. The samples were properly logged in and prepared for analysis. The environmental and QC samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
- Phenols, SW-846 Method 8270C

Field forms completed for the January 2001 sampling event are presented as Appendix B. Analytical results and associated quality control (QC) data, as reported and submitted by Paragon Analytics, are presented in Appendix C. A data quality assessment summary for the sample analytical results, containing a discussion of QC criteria that were evaluated, is included as Appendix D.

During February 2001, Paragon Analytics laboratory delivered the analytical results for the annual sampling event to the Parallax, Inc. office in Atlanta, Georgia. A review of the case narratives provided by Paragon Analytics for each analytical method performed demonstrates that all laboratory QC was properly implemented and met applicable acceptance criteria. The analytical results are considered valid and suitable for their intended use. Review of the environmental and associated QC sample analytical results indicated that all organic compound (VOC, SVOC, PCB, pesticides, and herbicides) concentrations were below method detection limits. Some metals and major cations were detected above method detection limits, however all results are consistent with previous monitoring events.

A.1-3.0 REGULATORY CRITERIA

This report of the long-term monitoring of groundwater at Landfill No. 3/SWMU 105 was performed in accordance with the requirements of the Cannon Air Force Base Hazardous and Solid Waste Amendments Permit. The New Mexico Environmental Department is the lead agency overseeing the project.

The New Mexico Environmental Department (NMED) groundwater standards were used to determine if constituents detected in monitoring well MW-O exceeded applicable groundwater standards. If no NMED standard for a particular constituent was available, then the U.S. Environmental Protection Agency's (EPA) groundwater Maximum Contaminant Levels (MCLs) or EPA Health Advisories were applied. In cases where NMED and EPA have established separate and different standards for the same constituent, the most stringent standard was applied for purposes of comparison.

A.1-4.0 GROUNDWATER MONITORING RESULTS

Purging and sampling was performed on well MW-O on January 8 and 9, 2001. Table A.1-4-1 lists the final measured field parameters. The water level measured prior to purging was 292.96 feet BTOC. Historic data indicates a general downward trend in water table elevation for this well. Only one well is currently monitored at Landfill No. 3/SWMU 105, and groundwater flow direction for the unit could not be determined. However, Figure 3 is included from water levels measured January-February 1982 to illustrate the general potentiometric surface and groundwater flow direction at the site.

Table A.1-4-1
Groundwater Parameters

Pump Rate (gpm)	Volume (gallons)	PH	Conductivity (umhos/cm)	Turbidity (NTU)	Temperature (C^0)
1.8	21.6	7.20	1.53	0	14.8

A.1-5.0 GROUNDWATER CHEMICAL ANALYTICAL DATA

Parallax, Inc. collected one environmental sample (CAFB0109MWO) of groundwater from monitoring well MW-O on January 9, 2001 at 0735. This environmental sample was associated with a separate trip blank quality control sample (CAFB0109MWO-Trip) prepared by the analytical laboratory. The trip blank was included to validate the absence of cross-contamination of the sample by volatile organic compounds, and was submitted for analysis of volatile organic compounds only. Analytical results from the trip blank were all below detection limits indicating no cross contamination. Table A.1-5-1 provides analytical results for the MW-O environmental sample along with applicable regulatory standards. The following analytical methods were used:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
- Phenols, SW-846 Method 8270C

New Mexico and U.S. EPA groundwater standards form the basis of comparison for detected analytical results, and any constituent exceeding the most stringent of these is considered an exceedance of relevant groundwater standards. Specifically, six metals and three anions were detected in the sample above analytical detection limits (calcium, magnesium, potassium, selenium, sodium, vanadium, chloride, nitrate, and sulfate). Calcium, magnesium and potassium are essential nutrients with no corresponding groundwater standard, and are common naturally occurring constituents of groundwater. Selenium and vanadium are common trace metals in groundwater, and nitrate and sulfate also are common constituents of groundwater. These constituents are present below applicable groundwater standards. Sodium and chloride were detected above groundwater standards in MW-O. Table A.1-5-1 presents the range of historical analytical results from long term monitoring of MW-O at Landfill No. 3/SWMU 105.

Table A.1-5-1. Comparison for Groundwater Analytical Results to Historical Groundwater Sample Results
Monitoring Well MW-O
Cannon Air Force Base, Clovis, New Mexico

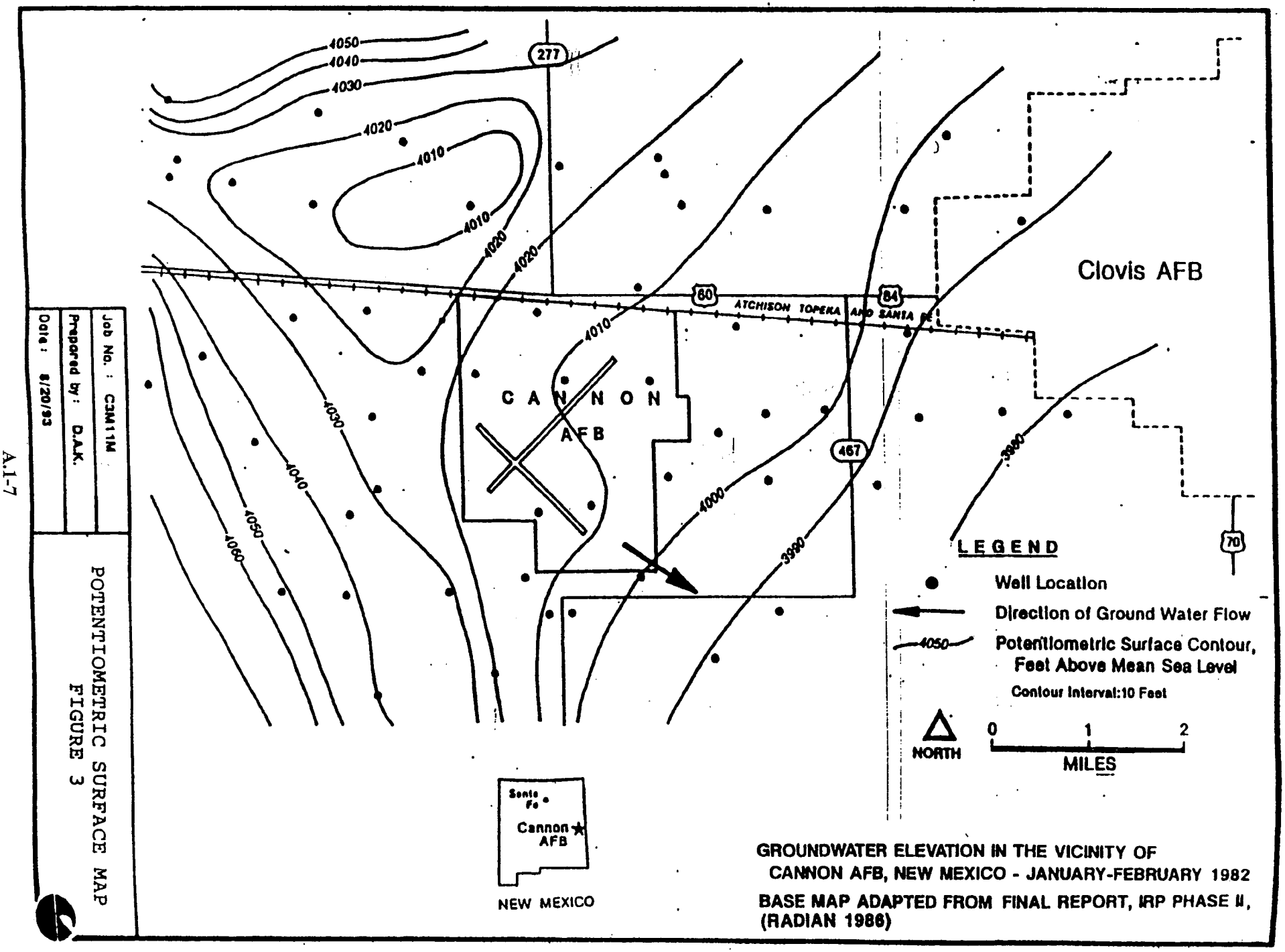
Analyte	Range of Historical Results[1] (mg/L)	MW-O (CAFB0109MWO) 1/9/01 (mg/L)	New Mexico Groundwater Standards (mg/L)
Metals			
Aluminum	NA	0.2U	5/0.05[a]
Antimony	NA	0.02U	0.006[a]
Arsenic	ND-0.0028J	0.01U	0.1/0.05[a]
Barium	0.0403-0.064	0.1U	1.0/2[a]
Beryllium	NA	0.005U	0.004[a]
Cadmium	ND	0.005U	0.01/0.005[a]
Calcium	ND-72.1	69	--
Chromium	ND	0.01U	0.05/0.1[a]

Cobalt	ND	0.01U	0.05
Copper	ND-0.0136	0.01U	1.3[a]
Iron	ND-0.0313J	0.1U	1.0/0.3[a]
Lead	ND-0.0014J	0.003U	0.05/0.015[a]
Magnesium	ND-66.0	60	--
Manganese	ND	0.01U	0.2/0.05[a]
Mercury	ND	0.0002U	0.002
Nickel	ND	0.02U	0.2/0.1[a]
Potassium	7.18-8.510	11	--
Selenium	ND-0.0058	0.0063	0.05
Silver	NA	0.01U	0.05/0.1[a]
Sodium	174.8-189.0	140	20[b]
Thallium	ND	0.01U	0.002[c]
Tin	ND	NA	--
Vanadium	0.0092J-0.0194	0.016	0.02[b]
Zinc	ND-0.023J	0.02U	10.0/5[a]
Common Anions			
Nitrate	0.0084UJ-8.3	9.2	10
Chloride	257.0-266.0	270	250
Sulfate	129B-145.0	140	600/400[c]
Volatile Organic Compounds			
Carbon Tetrachloride	ND-0.00051J	ND	--
Chloroform	ND-0.0039J	ND	0.1
Methylene Chloride	ND-0.0014	ND	0.001/0.002[a]
Trichloroethene	ND-0.00017J	ND	0.1/0.005[a]
Other Constituents			
Semivolatile Organic Compounds	ND	ND	--
Phenols	ND	ND	--
Chlorinated Herbicides	ND	ND	--
Polychlorinated Biphenyl Compounds	ND	ND	--
Organochlorine Pesticides	ND	ND	--
Organophosophorous Pesticides	ND	ND	--

[1] – LTM data 1996 through 1999
ND – Not Detected
J – Estimated Value
U – Nondetect
NA – Not Analyzed
a – EPA MCL
b – EPA Health Advisory
c – EPA MCLG

A.1-6.0 SUMMARY

The 2000 annual sampling of Monitoring Well MW-O, downgradient of Landfill No. 3 was conducted in January 2001. The elevated sodium detected in this well is also found in wells MW-N and MW-R, indicating that this may reflect ambient conditions in the aquifer. The sodium results for all three wells are consistent with previous sampling, and the concentrations are decreasing over time. Chloride exceeded relevant groundwater standards by 20 mg/L (analytical result 270 mg/L and groundwater standard 250 mg/L), or approximately 8% above the allowable limit. This result is consistent with previous sampling and reflects a 4 ppm increase since the last sampling event. Further, the USACE has performed preliminary transport modeling of metals for Landfill No. 25, and this indicates that the metals could not have migrated to the water table in the time since the landfill has been in existence. This is due to retardation factors for a vadose zone greater than 100 ft in thickness, and these same calculations are likely comparable for constituents at Landfill No. 3. In summary, the results of the 2000 long term monitoring sampling event provide no indication that any release from Landfill No. 3/SWMU 105 has impacted groundwater.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277
60
84
467
70
ATCHISON TOPEKA AND SANTA FE
CANNON AFB
Clovis AFB
LEGEND
Well Location
Direction of Ground Water Flow
4050
Potentiometric Surface Contour, Feet Above Mean Sea Level
Contour Interval:10 Feet
NORTH
0
1
2
MILES
Santa Fe
Cannon AFB
NEW MEXICO
Job No. : C3M11M
Prepared by: D.A.K.
Date: 8/20/93
POTENTIOMETRIC SURFACE MAP
FIGURE 3
GROUNDWATER ELEVATION IN THE VICINITY OF CANNON AFB, NEW MEXICO - JANUARY-FEBRUARY 1982
BASE MAP ADAPTED FROM FINAL REPORT, IRP PHASE II, (RADIAN 1986)

APPENDIX A.2

LANDFILL NO. 4/SWMU 104 (MW-N)
2000 ANNUAL ASSESSMENT REPORT

A.2-1.0 INTRODUCTION

This report summarizes the data obtained during the January 2001 annual sampling event for the long-term monitoring program of Landfill No. 4/SWMU 104 at Cannon Air Force Base (CAFB) near Clovis, New Mexico, EPA ID No. NM7572124454. Monitoring well MW-N is located downgradient of Landfill No. 4, and is the point of compliance for groundwater monitoring at this unit. The scope of this report is an annual sampling event that is coincident with sampling of nearby monitoring wells MW-O and MW-R at Landfills No. 3 and No. 25, respectively, for long term monitoring.

A.2-2.0 SCOPE OF SERVICES

Field activities began on January 8, 2001 following completion of routine maintenance activities by CAFB in the area during late December 2000. After the field team mobilized to Amarillo, Texas and conducted the Contractor Chemical Quality Control Preparatory Phase meeting, the Pre-Entry Safety and Health Training, and verified receipt of necessary equipment and supplies, the field team arrived at CAFB at 1315. The field team met with the base representative at the Environmental Flight office to obtain well keys and proceeded to Landfills No. 3, No. 4, and No. 25. Air monitoring (MiniRae 2000 PID) and field water quality parameter (Horiba U-22 Water Checker) instruments were calibrated on site, and the field team set up to begin well purging.

Monitoring well MW-N at Landfill No. 4 was purged after monitoring well MW-O. The well was opened and the headspace was monitored with the PID producing a transient reading of 0.2 ppm. The well was sounded with a depth to water of 283.49 ft BTOC. Based on a total well depth of 300 ft and a nominal well diameter of 4 in, the standing water volume was calculated to be approximately 10.8 gallons. The well was purged using a dedicated Bennett pump operating at approximately 1.1 gallons per minute (gpm). Approximately 32.4 gallons were removed (3 well volumes) to a dedicated purge tank adjacent to the well. Seven measurements of water quality parameters were recorded with final stable parameters of temperature 16.51° C, specific conductivity 0.876 umhos/cm, pH 7.66, and turbidity of 4.0 NTUs. Instruments were then cleaned, and the well was closed and locked pending sampling.

Monitoring well MW-N was sampled on January 9, 2001. Four additional gallons of groundwater were purged to the dedicated tank to remove any stagnant volume and clear the sample tubing. Sample CAFB0109MWN was collected at 0815 directly into pre-cleaned and pre-preserved sample containers provided by Paragon Analytics. Sample volume was collected for analysis of volatile organic compounds, semi-volatile organic

compounds, organochlorine pesticides, polychlorinated biphenyls, organophosphorous pesticides, herbicides, total metals, inorganic anions, and phenols. The sample containers for analysis of volatile organic compounds (VOC) were placed in the same cooler as the trip blank and the VOC sample from MW-O. The remaining sample volume was placed into a cooler at $4^{o} \pm 2^{o}$ C under custody of the field team. Sampling was completed, and the well was closed and locked.

The field team ensured that work area around Landfills No. 3, No. 4 and No. 25 was secure, and packed the samples for shipment to the respective laboratories via Federal Express. Five coolers were shipped to Paragon Analytics under chain-of-custody number CAFBLTM1-9-01 with airbill numbers 823704103503, 823704103514, 823704103536, 823704103547 and 823704103558, and one cooler was shipped to USACE Omaha District under chain-of-custody number LIMS6052 with airbill number 823704103499. The field team returned the well keys to the base representative and demobilized from CAFB at 1330.

The analytical laboratory verified receipt of the samples in good condition on January 10, 2001. The samples were properly logged in and prepared for analysis. The environmental and QC samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
- Phenols, SW-846 Method 8270C

Field forms completed for the January 2001 sampling event are presented as Appendix B. Analytical results and associated quality control (QC) data, as reported and submitted by Paragon Analytics, are presented in Appendix C. A data quality assessment summary for the sample analytical results, containing a discussion of QC criteria that were evaluated, is included as Appendix D.

During February 2001, Paragon Analytics laboratory delivered the analytical results for the annual sampling event to the Parallax, Inc. office in Atlanta, Georgia. A review of the case narratives provided by Paragon Analytics for each analytical method performed demonstrates that all laboratory QC was properly implemented and met applicable acceptance criteria. The analytical results are considered valid and suitable for their intended use. Review of the environmental and associated QC sample analytical results indicated that all organic compound (VOC, SVOC, PCB, pesticides, and herbicides)

concentrations were below method detection limits. Some metals and major cations were detected above method detection limits, however all results are consistent with previous monitoring events.

A.2-3.0 REGULATORY CRITERIA

This report of the long-term monitoring of groundwater at Landfill No. 4/SWMU 104 was performed in accordance with the requirements of the Cannon Air Force Base Hazardous and Solid Waste Amendments Permit. The New Mexico Environmental Department is the lead agency overseeing the project.

The New Mexico Environmental Department (NMED) groundwater standards were used to determine if constituents detected in monitoring well MW-N exceeded applicable groundwater standards. If no NMED standard for a particular constituent was available, then the U.S. Environmental Protection Agency's (EPA) groundwater Maximum Contaminant Levels (MCLs) or EPA Health Advisories were applied. In cases where NMED and EPA have established separate and different standards for the same constituent, the most stringent standard was applied for purposes of comparison.

A.2-4.0 GROUNDWATER MONITORING RESULTS

Purging and sampling was performed on well MW-N on January 8 and 9, 2001. Table A.2-4-1 lists the final measured field parameters. The water level measured prior to purging was 283.49 feet BTOC. Historic data indicates a general downward trend in water table elevation for this well. Only one well is currently monitored at Landfill No. 4/SWMU 104, and groundwater flow direction for the unit could not be determined. However, Figure 4 is included from water levels measured January-February 1982 to illustrate the general potentiometric surface and groundwater flow direction at the site.

Table A.2-4-1
MW-N January 2001 Groundwater Parameters

Pump Rate (gpm)	Volume (gallons)	PH	Conductivity (umhos/cm)	Turbidity (NTU)	Temperature (C°)
1.5	32.4	7.66	0.876	4.0	16.51

A.2-5.0 GROUNDWATER CHEMICAL ANALYTICAL DATA

Parallax, Inc. collected one environmental sample (CAFB0109MWN) of groundwater from monitoring well MW-N on January 9, 2001 at 0815. The volatile organic compound sample containers for this environmental sample were stored with a separate trip blank quality control sample (CAFB0109MWO-Trip) prepared by the analytical laboratory. The trip blank was included to validate the absence of cross-contamination of the sample by volatile organic compounds, and was submitted for analysis of volatile organic compounds only. Analytical results from the trip blank were all below detection

limits indicting no cross contamination. Table A.2-5-1 provides analytical results for the MW-N environmental sample along with applicable regulatory standards. The analytical results for the trip blank indicated no detectable levels of volatile organic compounds. The following analytical methods were used:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
  Phenols, SW-846 Method 8270C

Table A.2-5-1. Comparison for Groundwater Analytical Results to Historical Groundwater Sample Results Monitoring Well MW-N at Landfill No. 4

Analyte	Range of Historical Results[1] (mg/L)	MW-N (CAFB0109MWN) 1/9/01 (mg/L)	New Mexico Groundwater Standards (mg/L)
Metals			
Aluminum	NA	0.2U	5/0.05[a]
Antimony	NA	0.02U	0.006[a]
Arsenic	ND-0.0087J	0.01U	0.1/0.05[a]
Barium	0.0542-0.086	0.1U	1.0/2[a]
Calcium	43-48.3	40	--
Cadmium	ND	0.005U	0.01/0.005[a]
Chromium	ND	0.01U	0.05/0.1[a]
Cobalt	ND-0.0054J	0.01U	0.05
Copper	ND	0.01U	1.3[a]
Iron	ND-0.0073J	0.1U	1.0/0.3[a]
Lead	ND-0.013	0.003U	0.05/0.015[a]
Magnesium	43.7-47.9	38	--
Manganese	ND	0.01U	0.2/0.05[a]
Mercury	ND	0.0002U	0.002
Nickel	ND	0.02U	0.2/0.1[a]
Potassium	7.2-8.02	7.9	--
Selenium	0.0012-0.015-	0.01	0.05

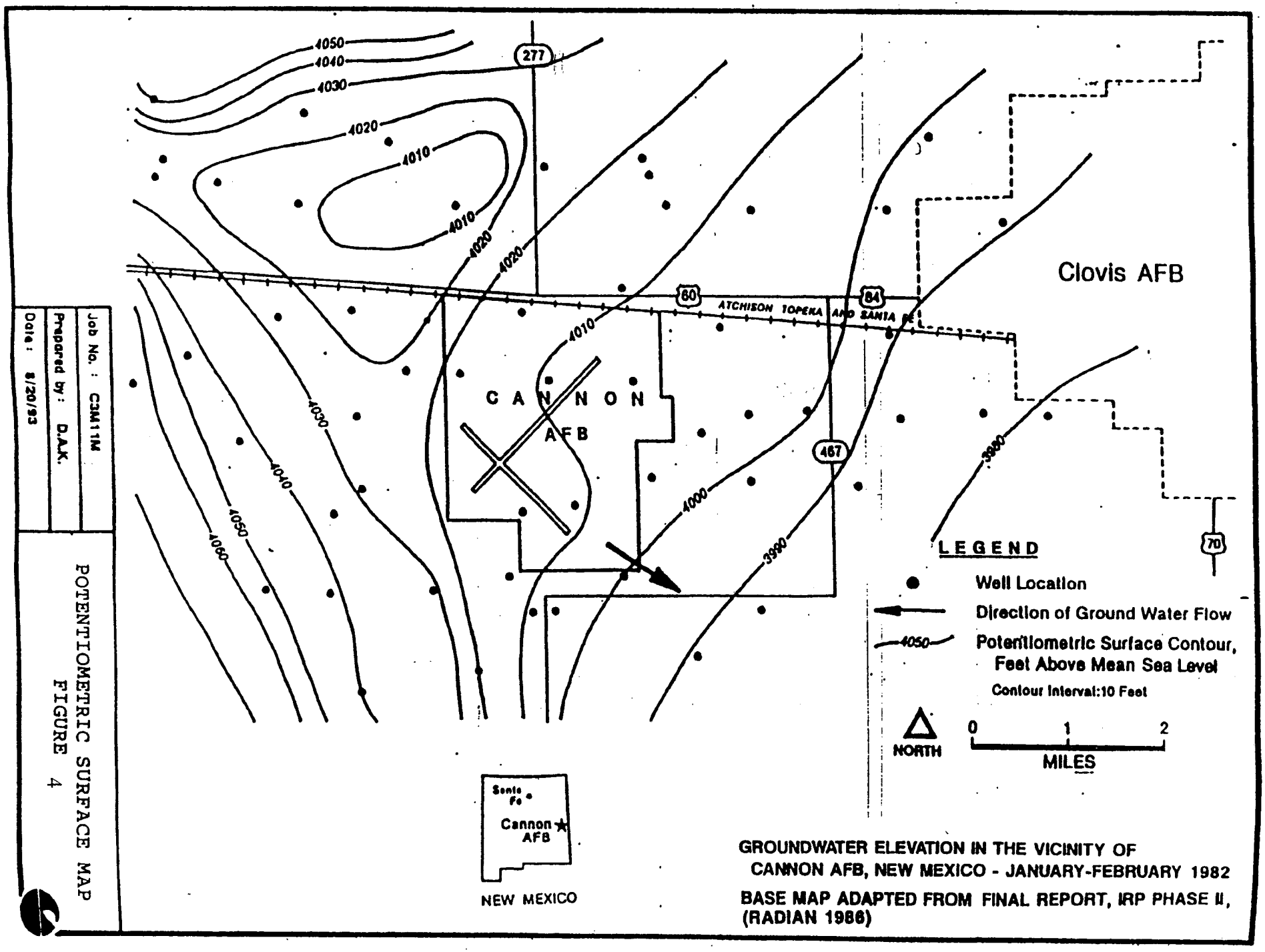
Analyte	Range of Historical Results[1] (mg/L)	MW-N (CAFB0109MWN) 1/9/01 (mg/L)	New Mexico Groundwater Standards (mg/L)
Silver	NA	0.01U	0.05/0.1[a]
Sodium	35.5-37.8	31	20[b]
Thallium	ND	0.01U	0.002[a,c]
Tin	ND	NA	--
Vanadium	0.012-0.0232	0.022	0.02[b]
Zinc	ND-0.0464	0.02U	10.0/5[a]
Common Anions			
Nitrate	2.3-2.6	2.1	10
Chloride	70.9-85.6	54	250
Sulfate	93.7B-148.0	100	600/400[c]
Volatile Organic Compounds			
Methylene Chloride	ND-0.001	ND	0.001/0.002[a]
Other Constituents			
Semivolatile Organic Compounds	ND	ND	--
Phenols	ND	ND	--
Chlorinated Herbicides	ND	ND	--
Polychlorinated Biphenyl Compounds	ND	ND	--
Organochlorine Pesticides	ND	ND	--
Organophosophorous Pesticides	ND	ND	--

[1] – LTM data 1996 through 1999
ND – Not Detected
J – Estimated Value
U – Nondetect
NA – Not Analyzed
a – EPA MCL
b – EPA Health Advisory
c – EPA MCLG

New Mexico and U.S. EPA groundwater standards form the basis of comparison for detected analytical results, and any constituent exceeding the most stringent of these is considered an exceedance of relevant groundwater standards. Specifically, six metals and three anions were detected in the sample above analytical detection limits (calcium, magnesium, potassium, selenium, sodium, vanadium, chloride, nitrate, and sulfate). Calcium, magnesium and potassium are essential nutrients with no corresponding groundwater standard, and are common naturally occurring constituents of groundwater. Selenium, chloride, nitrate and sulfate also are common constituents of groundwater, and are present below applicable groundwater standards. Sodium and vanadium were detected above groundwater standards in MW-O. Table A.2-5-2 presents the range of historical analytical results from long term monitoring of MW-N at Landfill No. 4/SWMU 104.

A.2-6.0 SUMMARY

The 2000 annual sampling of Monitoring Well MW-N, downgradient of Landfill No. 4 was conducted in January 2001. The elevated sodium detected in this well is also found in wells MW-O and MW-R, indicating that this may reflect ambient conditions in the aquifer. The sodium results for all three wells are consistent with previous sampling, and the concentrations are decreasing over time. The slightly elevated vanadium (exceeds EPA Health Advisory value by 0.002 ppm) detected in MW-N is consistent with previous sampling. Further, the USACE has performed preliminary transport modeling of metals for Landfill No. 25, and this indicates that the metals could not have migrated to the water table in the time since the landfill has been in existence. This is due to retardation factors for a vadose zone greater than 100 ft in thickness, and these same calculations are likely comparable for constituents at Landfill No. 4. In summary, the results of the 2000 long term monitoring sampling event provide no indication that any release from Landfill No. 4/SWMU 104 has impacted groundwater.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277
60
84
467
70
ATCHISON TOPEKA AND SANTA FE
CANNON AFB
Clovis AFB
LEGEND
Well Location
Direction of Ground Water Flow
4050
Potentiometric Surface Contour, Feet Above Mean Sea Level
Contour Interval:10 Feet
NORTH
0
1
2
MILES
Santa Fe
Cannon AFB
NEW MEXICO
GROUNDWATER ELEVATION IN THE VICINITY OF CANNON AFB, NEW MEXICO - JANUARY-FEBRUARY 1982
BASE MAP ADAPTED FROM FINAL REPORT, IRP PHASE II, (RADIAN 1986)
Job No. : C3M11M
Prepared by: D.A.K.
Date : 8/20/93
POTENTIOMETRIC SURFACE MAP
FIGURE 4

APPENDIX A.3

LANDFILL NO. 25/SWMU 97 (MW-R)
2000 ANNUAL ASSESSMENT REPORT

A.3-1.0 INTRODUCTION

This report summarizes the data obtained during the January 2001 annual sampling event for the long-term monitoring program of Landfill No. 25/SWMU 97 at Cannon Air Force Base (CAFB) near Clovis, New Mexico, EPA ID No. NM7572124454. The results of the semi-annual sampling event for this well are presented in Appendix A.4. Monitoring well MW-R is located downgradient of Landfill No. 25, and is the point of compliance for groundwater monitoring at this unit. The scope of this report is an annual sampling event that is coincident with sampling of nearby monitoring wells MW-N and MW-O at Landfills No. 4 and No. 3, respectively. Monitoring well MW-R is sampled semi-annually for long term monitoring, and was last sampled in August 2000.

A.3-2.0 SCOPE OF SERVICES

Field activities began on January 8, 2001 following completion of routine maintenance activities by CAFB in the area during late December 2000. After the field team mobilized to Amarillo, Texas and conducted the Contractor Chemical Quality Control Preparatory Phase meeting, the Pre-Entry Safety and Health Training, and verified receipt of necessary equipment and supplies, the field team arrived at CAFB at 1315. The field team met with the base representative at the Environmental Flight office to obtain well keys and proceeded to Landfills No. 3, No. 4, and No. 25. Air monitoring (MiniRae 2000 PID) and field water quality parameter (Horiba U-22 Water Checker) instruments were calibrated on site, and the field team set up to begin well purging.

Monitoring well MW-R at Landfill No. 25 was purged on January 8, 2001. The well was opened and the headspace was monitored with the PID producing a transient reading of 0.2 ppm. The well was sounded with a depth to water of 288.02 ft below the top of casing (BTOC). Based on a total well depth of 304 ft and a nominal well diameter of 6 in, the standing water volume was calculated to be approximately 23.6 gallons. The well was purged using a dedicated Bennett pump operating at approximately 1.3 gallons per minute (gpm). Approximately 70.8 gallons were removed (3 well volumes) to a dedicated purge tank adjacent to the well. Seven measurements of water quality parameters were recorded with final stable parameters of temperature 15.95° C, specific conductivity 0.844 umhos/cm, pH 7.76, and turbidity of 2.1 NTUs. Instruments were then cleaned, and the well was closed and locked pending sampling.

Well sampling activities were begun at 0855 on January 9, 2001. Four additional gallons of groundwater were purged to the dedicated tank to remove any stagnant volume and clear the sample tubing. Sample CAFB0109MWR, quality control (QC) duplicate sample CAFB0109MWR-D, and QC split sample CAFB0109MWR-S were collected directly into pre-cleaned and pre-preserved sample containers provided by Paragon

Analytics. The sample volume for each analytical parameter of the environmental and QC samples was collected simultaneously to ensure comparability and replicate precision. The samples were collected for analysis of volatile organic compounds, semi-volatile organic compounds, organochlorine pesticides, polychlorinated biphenyls, organophosphorous pesticides, herbicides, total metals, inorganic anions, and phenols. The environmental and QC duplicate sample containers for analysis of volatile organic compounds were placed in the same cooler as the trip blank and the volatile organic compound samples from MW-O and MW-N. The remaining sample volume was placed into coolers at $4^{\circ} \pm 2^{\circ}$ C under custody of the field team. The QC split sample, with another trip blank CAFB0109MWR-ST (prepared by the laboratory), was placed in a separate cooler for shipment to the QC laboratory (USACE Omaha District). Sampling was completed, and the well was closed and locked.

The field team ensured that work area around Landfills No. 3, No. 4 and No. 25 was secure, and packed the samples for shipment to the respective laboratories via Federal Express. Five coolers were shipped to Paragon Analytics under chain-of-custody number CAFBLTM1-9-01 with airbill numbers 823704103503, 823704103514, 823704103536, 823704103547 and 823704103558, and one cooler was shipped to USACE Omaha District under chain-of-custody number LIMS6052 with airbill number 823704103499. The field team returned the well keys to the base representative and demobilized from CAFB at 1330.

The analytical laboratories verified receipt of the samples in good condition on January 10, 2001. The samples were properly logged in and prepared for analysis. The environmental and QC samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
- Phenols, SW-846 Method 8270C

Field forms completed for the January 2001 sampling event are presented as Appendix B. Analytical results and associated quality control (QC) data, as reported and submitted by Paragon Analytics, are presented in Appendix C. A data quality assessment summary for the sample analytical results, containing a discussion of QC criteria that were evaluated, is included as Appendix D.

During February 2001, Paragon Analytics laboratory delivered the analytical results for the annual sampling event to the Parallax, Inc. office in Atlanta, Georgia. A review of the case narratives provided by Paragon Analytics for each analytical method performed demonstrates that all laboratory QC was properly implemented and met applicable acceptance criteria. The analytical results are considered valid and suitable for their intended use. Review of the environmental and associated QC sample analytical results indicated that all organic compound (VOC, SVOC, PCB, pesticides, and herbicides) concentrations were below method detection limits. Some metals and major cations were detected above method detection limits, however all results are consistent with previous monitoring events.

A.3-3.0 REGULATORY CRITERIA

This report of the long-term monitoring of groundwater at Landfill No. 25/SWMU 97 was performed in accordance with the requirements of the Cannon Air Force Base Hazardous and Solid Waste Amendments Permit. The New Mexico Environmental Department is the lead agency overseeing the project.

The New Mexico Environmental Department (NMED) groundwater standards were used to determine if constituents detected in monitoring well MW-O exceeded applicable groundwater standards. If no NMED standard for a particular constituent was available, then the U.S. Environmental Protection Agency's (EPA) groundwater Maximum Contaminant Levels (MCLs) or EPA Health Advisories were applied. In cases where NMED and EPA have established separate and different standards for the same constituent, the most stringent standard was applied for purposes of comparison.

A.3-4.0 GROUNDWATER MONITORING RESULTS

Purging and sampling was performed on well MW-R on January 8 and 9, 2001. Table A.3-4-1 lists the final measured field parameters. The water level measured prior to purging was 288.02 feet BTOC. Historic data indicates a general downward trend in water table elevation for this well. Only one well is currently monitored at Landfill No. 25/SWMU 97, and groundwater flow direction for the unit could not be determined. However, Figure 5 is included from water levels measured January-February 1982 to illustrate the general potentiometric surface and groundwater flow direction at the site.

Table A.3-4-1
Groundwater Parameters

Pump Rate (gpm)	Volume (gallons)	PH	Conductivity (umhos/cm)	Turbidity (NTU)	Temperature (C°)
1.3	70.8	7.76	0.844	3.0	15.95

A.3-5.0 GROUNDWATER CHEMICAL ANALYTICAL DATA

Parallax, Inc. collected one environmental sample (CAFB0109MWR) of groundwater from monitoring well MW-R on January 9, 2001 at 0855. This environmental sample was associated with a separate trip blank quality control sample (CAFB0109MWO-Trip) prepared by the analytical laboratory. The volatile organic compound sample containers for this environmental sample were stored with a separate trip blank quality control sample (CAFBMWO0109-Trip) prepared by the analytical laboratory. The trip blank was included to validate the absence of cross-contamination of the sample by volatile organic compounds, and was submitted for analysis of volatile organic compounds only. Analytical results from the trip blank were all below detection limits indicting no cross contamination. Additionally, a quality control duplicate (CAFB0109MWR-D) and a quality control split sample (CAFB0109MWR-S) were collected simultaneously to ensure comparability and replicate precision. The duplicate sample was submitted to Paragon Analytics for analysis of the same parameters as the environmental sample. The split sample was submitted to the U.S. Army Corps of Engineers Omaha District laboratory along with a separate trip blank (CAFBMWR-ST) to validate the results presented in this report. Table A.3-5-1 provides analytical results for the MW-R environmental sample along with applicable regulatory standards. The following analytical methods were used:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
  Phenols, SW-846 Method 8270C

Table A.3-5-1
Comparison for Groundwater Analytical Results to Historical Groundwater Sample Results
Monitoring Well MW-R
at Landfill No. 25

Analyte	Range of Historical Results[1] (mg/L)	MW-R[2] (CAFB0109MWR) 1/9/01 (mg/L)	New Mexico Groundwater Standards (mg/L)
Metals			

Analyte	Range of Historical Results[1] (mg/L)	MW-R2 (CAFB0109MWR) 1/9/01 (mg/L)	New Mexico Groundwater Standards (mg/L)
Aluminum	NA	0.2U	5/0.05[a]
Antimony	NA	0.02U	0.006[a]
Arsenic	ND-0.0036	0.01U	0.1/0.05[a]
Barium	ND-0.091	0.1U	1.0/2[a]
Calcium	51-59.3	51/52	--
Cadmium	ND	0.005U	0.01/0.005[a]
Chromium	ND-0.7	0.28/0.083	0.05/0.1[a]
Cobalt	ND-0.0048J	0.01U	0.05
Copper	ND-0.0111B	0.01U	1.3[a]
Iron	0.594-1.48	1.1/0.79	1.0/0.3[a]
Lead	ND-0.003	0.003U	0.05/0.015[a]
Magnesium	54.0-62.9	52/53	--
Manganese	0.0342-0.0998	0.044/0.028	0.2/0.05[a]
Mercury	ND-0.000071	0.0002U	0.002
Nickel	0.042-0.52	0.37/0.34	0.2/0.1[a]
Potassium	7.6-8.59	8.5/8.6	--
Selenium	ND-0.011	0.011/0.0095	0.05
Silver	NA	0.01U	0.05/0.1[a]
Sodium	35.0-43.9B	33/34	20[b]
Thallium	ND-0.000064	0.01U	0.002[c]
Tin	ND-0.071B	NA	--
Vanadium	0.0073J-0.019	0.014/0.013	0.02[b]
Zinc	ND-0.0039J	0.02U	10.0/5[a]
Common Anions			
Nitrate	ND-5.5	6.1/4	10
Chloride	97.0-125.0	96/98	250
Sulfate	116.0B-150.0	140	600/400[c]
Volatile Organic Compounds			
Chloroform	ND-0.18	ND	0.1/0.1[a]
Methylene Chloride	ND-0.0013	ND	0.1/0.005[a]
Trichloroethene	ND-0.00023J	ND	0.1/0.005[a]
Semivolatile Organic Compounds			
Bis (2-ethylhexyl) phthalate	ND-0.023	ND	0.006[a]
Other Constituents			
Phenols	ND	ND	--
Chlorinated Herbicides	ND	ND	--
Polychlorinated Biphenyl Compounds	ND	ND	--
Organochlorine Pesticides	ND	ND	--

Analyte	Range of Historical Results[1] (mg/L)	MW-R[2] (CAFB0109MWR) 1/9/01 (mg/L)	New Mexico Groundwater Standards (mg/L)
Organophosophorous Pesticides	ND	ND	--

[1] – LTM data 1996 through 2000 (mid-year)
[2] – Duplicate results are presented second where they differ with sample results
ND – Not Detected
J – Estimated Value
U – Nondetect
NA – Not Analyzed
a – EPA MCL
b – EPA Health Advisory
c – EPA MCLG

New Mexico and U.S. EPA groundwater standards form the basis of comparison for detected analytical results, and any constituent exceeding the most stringent of these is considered an exceedance of relevant groundwater standards. Specifically, ten metals and three anions were detected in the sample and associated duplicate above analytical detection limits (calcium, chromium, iron, magnesium, manganese, nickel, potassium, selenium, sodium, vanadium, chloride, nitrate, and sulfate). Calcium, magnesium and potassium are essential nutrients with no corresponding groundwater standard, and are common naturally occurring constituents of groundwater. Manganese, selenium and vanadium are common trace metals in groundwater, and chloride, nitrate and sulfate also are common constituents of groundwater. All of these constituents are present below applicable groundwater standards.

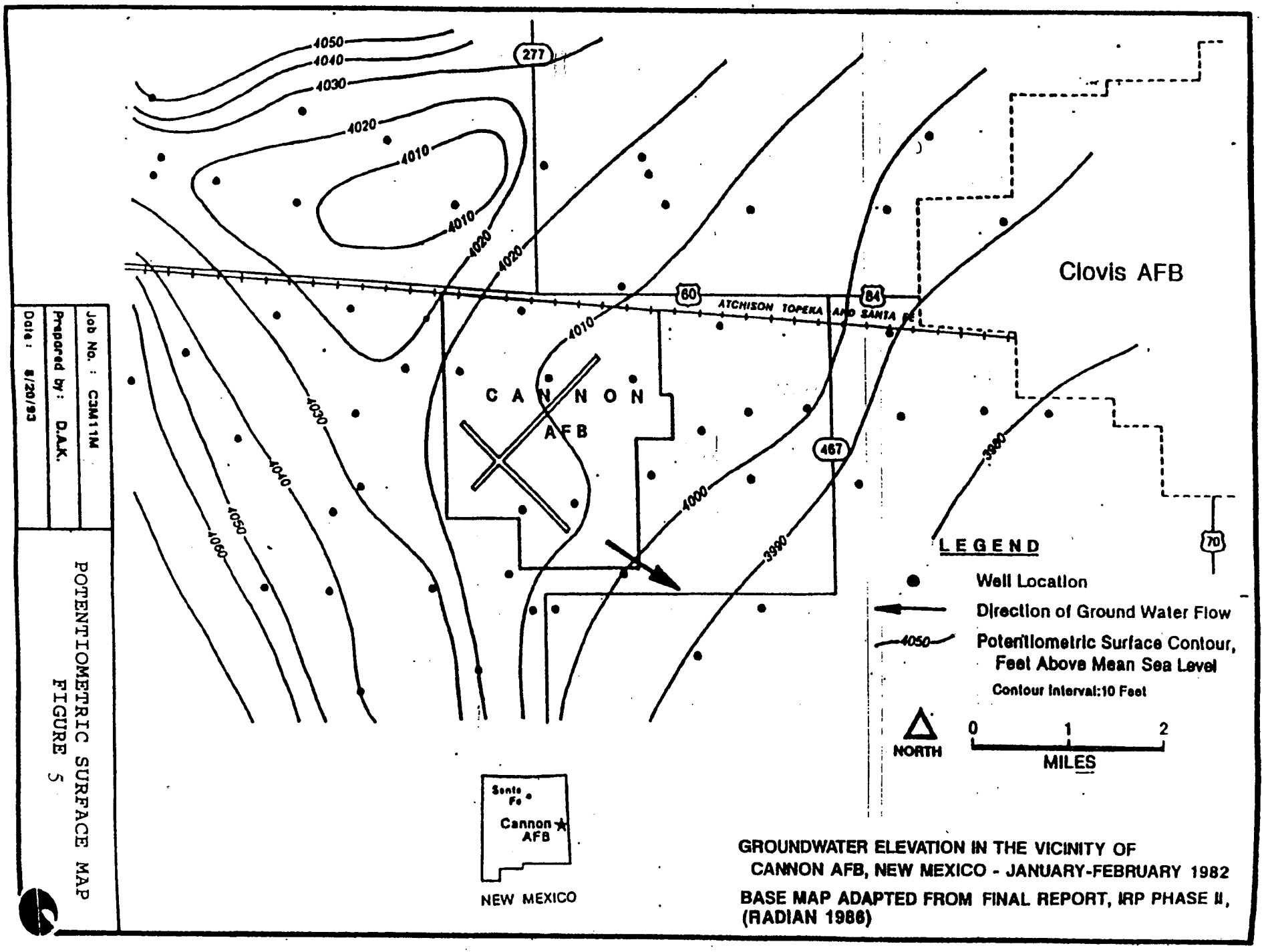
Chromium, iron and nickel were detected above applicable groundwater standards in MW-R and its associated duplicate. The presence of these metals in MW-R is attributed to degradation and/or corrosion of the stainless steel well screen and casing, as discussed below. Sodium also was detected above groundwater standards in MW-R and its associated duplicate. Table A.3-5-2 presents the range of historical analytical results from long term monitoring of MW-R at Landfill No. 25/SWMU 97.

A.3-6.0 SUMMARY

The 2000 annual sampling of Monitoring Well MW-R, downgradient of Landfill No. 25 was conducted in January 2001. The elevated chromium, iron and nickel detected in this well is attributed to degradation or corrosion of the stainless steel well screen and casing, rather than to contaminants reaching the water table from the landfill. Similar problems have been reported for other stainless steel wells in the vicinity (i.e., the DOE Pantex Plant near Amarillo, TX). Additionally, USACE Omaha District has performed preliminary transport modeling of metals for Landfill No. 25, and this indicates that the metals could not have migrated to the water table in the time since the landfill has been in existence. This is due to retardation factors for a vadose zone greater than 100 ft in

thickness. The concentrations of these constituents are consistent with previous sampling of MW-R.

The elevated sodium detected in this well is also found in wells MW-N and MW-O, indicating that this may reflect ambient conditions in the aquifer. The sodium results for all three wells are consistent with previous sampling, and the concentrations are decreasing over time. In summary, the results of the 2000 long term monitoring sampling events provide no indication that any release from Landfill No. 25/SWMU 97 has impacted groundwater.


4050
4040
4030
4020
4010
4010
4020
4020
4010
4030
4040
4050
4060
4000
3990
3980
277
60
84
467
70
ATCHISON TOPEKA AND SANTA FE
CANNON AFB
Clovis AFB
LEGEND
Well Location
Direction of Ground Water Flow
4050
Potentiometric Surface Contour, Feet Above Mean Sea Level
Contour Interval:10 Feet
NORTH
0
1
2
MILES
Santa Fe
Cannon AFB
NEW MEXICO
GROUNDWATER ELEVATION IN THE VICINITY OF CANNON AFB, NEW MEXICO - JANUARY-FEBRUARY 1982
BASE MAP ADAPTED FROM FINAL REPORT, IRP PHASE II, (RADIAN 1986)
Job No. : C3M11M
Prepared by : D.A.K.
Date : 8/20/93
POTENTIOMETRIC SURFACE MAP
FIGURE 5

APPENDIX A.4

SEMI-ANNUAL MONITORING REPORT
AUGUST 2000 SAMPLING EVENT
LONG-TERM MONITORING
LANDFILL NO. 25 (MW-R)

FINAL

SEMI-ANNUAL MONITORING REPORT
AUGUST 2000 SAMPLING EVENT

LONG-TERM MONITORING
LANDFILL NO. 25 (MW-R)

CANNON AIR FORCE BASE
Clovis, New Mexico
EPA ID Number NM7572124454

U.S. Army Corps of Engineers
Omaha District
Contract No. DACA45-99-D-0015
Delivery Order No. 2

November 2000

Cannon Air Force Base
Clovis, New Mexico
June 2001

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EXECUTIVE SUMMARY

This report summarizes data obtained during the 2000 semi-annual sampling event of monitoring well R (Landfill 25) at the Cannon Air Force Base (CAFB) near Clovis, New Mexico, EPA ID Number NM7572124454 (Figure 1). Monitoring well R (MW-R) is located down-gradient of Landfill 25 (Figure 2). The August 2000 sample event represents the first of two semi-annual sample events planned under contract number DACA45-99-D-0015, Delivery Order No. 2 to the Omaha District of the U.S. Army Corps of Engineers (USACE).

The field activities began on August 17, 2000 after the field team mobilized to Amarillo, Texas and conducted the Contractor Chemical Quality Control Preparatory Phase meeting, the Pre-Entry Safety and Health Training, and verified receipt of necessary equipment and supplies. The field team arrived at Cannon Air Force Base at 0645 on August 18, 2000, met with the base representative and proceeded to Landfill 25. Following air monitoring at the well head and water level measurement, the pump was removed from monitoring well MW-R. Visual inspection of the support cable, hoses and pump indicated the equipment was in good condition and that the pump body had remained above the water table. Inspection of the drop tube and filter body indicated significant iron staining and sediment in the filter assembly. A rinsate sample of the pump body was collected, packed and shipped to Paragon Analytics via Federal Express for metals analysis. The pump was delivered to Bennett Pumps, Inc. for cleaning, inspection and rebuilding. Bennett Pumps indicated that the pump would be repaired by August 23, 2000.

Field activities resumed on August 24, 2000 when the rebuilt pump was returned from Bennett Pumps, Inc. Inspection of the pump by Bennett during rebuilding indicated no signs of internal corrosion or excessive wear. Further, Bennett indicated that the Department of Energy Pantex Facility had performed a previous rebuilding task on a similar pump and concluded that the elevated metal concentrations in groundwater were the result of corrosion from the stainless steel well screens. A new Teflon® drop tube and filter assembly were replaced on the pump and another rinsate sample was collected for metals analysis. The static water level in well MW-R was measured (287.39 ft below top of casing), and the rebuilt pump, hoses and support cable were re-installed in the well. During re-installation, it was noted that the male connector for the regulator hose had been damaged by the well cover and was replaced. The pump support cable was adjusted to prevent recurrence.

Prior to sampling, 81 gallons of groundwater, approximately 3 well volumes (24.92 gallons per well volume) were purged and discharged to the permanent holding tank maintained by Cannon AFB. Groundwater field parameters stabilized with a pH of 7.47, conductivity of 0.790 uS/cm^2, turbidity of 6 NTU, and temperature of 19.3 ^{0}C. Environmental and QC split groundwater samples were collected for volatile organic

compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, pesticides, polychlorinated biphenyls (PCBs), and water quality parameters. The samples were packed on ice and transported to Amarillo, Texas for shipment. The samples were shipped on August 25, 2000 via Federal Express for priority Saturday delivery. Both Paragon Analytics and the USACE QA laboratory were notified to receive samples on Saturday. The first semi-annual sampling event demobilized on August 25, 2000.

The water samples collected were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151
- TAL Metals, SW-846 Method 6010B
- Mercury, SW-846 Method 7470A
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A

Analytical results are summarized on Table 1. The New Mexico Environmental Department (NMED) Semi-Annual Assessment Monitoring Report for the August 2000 sample event is provided as Appendix A. Field forms completed for the August 2000 sampling event are presented as Appendix B. Analytical results and associated quality control (QC) data, as reported and submitted by Paragon Analytics laboratory, are presented in Appendix C. A data quality assessment summary for groundwater sample MW-R, containing a discussion of QC criteria that were evaluated, is included as Appendix D.

During September 2000, Paragon Analytics laboratory delivered the results of the first semi-annual sampling event to the Parallax, Inc. office in Atlanta, Georgia. Analysis of sample CAFB0824MWR indicated that polychlorinated biphenyl compounds, pesticides, herbicides, volatile organic compounds and semi volatile organic compounds were below detection limits in the ground water sample. Metals and major cations were detected at levels consistent with previous monitoring results.

Metals analysis for sample CAFB0824MWR showed slightly elevated levels of calcium, chromium, copper, iron, magnesium, manganese, nickel, potassium, selenium, sodium and vandium. Sample results for rinsate one, CAFB0818MER-R1, had detectable levels of chromium, copper iron, manganese, and zinc. Sample results for rinsate two, CAFB0824MWR-R2, indicated no elevated levels of metals. During the inspection of the well pump apparatus, Bennett Pump technicians confirmed that the corrosion of stainless steel parts had not occurred. This suggests that the well pump did not contribute to the

metals detected during previous sampling events. However, the metals detected in the groundwater sample and the first rinsate do correspond with constituents found in stainless steel. However, due to the geochemistry of the aquifer, the groundwater potentially reacted with the stainless steel well screen releasing trace amounts of metals into solution. This most likely is a function of the pH of the groundwater. As a result, the U.S. Army Corps of Engineers has performed preliminary modeling to show that the landfill is not the source of the metals. Retardation factors calculated for the metals detected and the distance of over 100 feet to groundwater indicate the metals could not have migrated to the water table in the time since the landfill has been in existence. Therefore the source of the metals is not considered to be the landfill.

Table 1
Summary of Analytical Results

Sample Location / Sample Number		MW-R (CAFB0824MWR)	
Parameter	Units	Result	Qualifier
PCBs			
Arclor-1016	ug/L	0.98	U
Arclor-1221	ug/L	2	U
Arclor-1232	ug/L	0.98	U
Arclor-1242	ug/L	0.98	U
Arclor-1248	ug/L	0.98	U
Arclor-1254	ug/L	0.98	U
Arclor-1260	ug/L	0.98	U
Ion Chromatography			
Chloride	mg/L	97	
Nitrate	mg/L	5.5	
Sulfate	mg/L	130	
Chlorinated Herbicides			
Dalapon	ug/L	2	U
Dicamba	ug/L	0.1	U
MCPP	ug/L	50	U
MCPA	ug/L	50	U
Dichloroprop	ug/L	0.5	U
2,4-D	ug/L	0.5	U
Silvex	ug/L	0.05	U
2,4,5-T	ug/L	0.05	U
Dinoseb	ug/L	0.25	U
2,4-DB	ug/L	0.5	U

Sample Location Sample Number		MW-R (CAFB0824MWR)	
Parameter	Units	Result	Qualifier
Organochlorine Pesticides			
Alpha-bhc	ug/L	0.047	U
Gamma-bhc	ug/L	0.047	U
Heptachlor	ug/L	0.047	U
Aldrin	ug/L	0.047	U
Beta-bhc	ug/L	0.047	U
Delta-bhc	ug/L	0.047	U
Heptachlor epoxide	ug/L	0.047	U
endosulfan I	ug/L	0.047	U
Gamma-chlordane	ug/L	0.047	U
Alpha-chlordane	ug/L	0.047	U
4,4'-DDE	ug/L	0.095	U
Dieldrin	ug/L	0.095	U
Endrin	ug/L	0.095	U
4-4'-DDD	ug/L	0.095	U
Endosulfan II	ug/L	0.095	U
4,4'DDT	ug/L	0.095	U
Endrin aldehyde	ug/L	0.095	U
Methoxychlor	ug/L	0.47	U
Endosulphan sulfate	ug/L	0.095	U
Endrin ketone	ug/L	0.095	U
Toxaphene	ug/L	4.7	U

Sample Location		MW-R		Trip Blank	
Sample Number		(CAFB0824MWR)		(CAFB0824MWR-TB)	
Parameter	Unit	Result	Qualifier	Result	Qualifier
Volatiles					
Dichlorodifluoromethane	ug/L	10	U	10	U
Chloromethane	ug/L	10	U	10	U
Vinyl Chloride	ug/L	10	U	10	U
Bromomethane	ug/L	10	U	10	U
Chloroethane	ug/L	10	U	10	U
Trichlorofloromethane	ug/L	5	U	5	U
1,1-Dichloroethane	ug/L	5	U	5	U
Trichlorofloroethane	ug/L	5	U	5	U
Acetone	ug/L	20	U	12	J
Iodomethane	ug/L	5	U	5	U
Carbon disulfide	ug/L	5	U	5	U
Methylene chloride	ug/L	7.7	B	7.8	B
Trans-1,2-dichloroethene	ug/L	5	U	5	U
Methyl tertiary butyl ether	ug/L	5	U	5	U
1,1-dichloroethane	ug/L	5	U	5	U
Vinyl acetate	ug/L	20	U	20	U
Cis-1,2-dichloroethane	ug/L	5	U	5	U
2-butanone	ug/L	20	U	20	U
Bromochloromethane	ug/L	5	U	5	U
Chloroform	ug/L	5	U	5	U
1,1,1-trichloroethane	ug/L	5	U	5	U
2,2-dichloropropane	ug/L	5	U	5	U
Carbon tetrachloride	ug/L	5	U	5	U
1,1-dichloropropene	ug/L	5	U	5	U
1,2-dichloroethane	ug/L	5	U	5	U
Benzene	ug/L	5	U	5	U
Trichloroethene	ug/L	5	U	5	U

Sample Location / Sample Number		MW-R (CAFB0824MWR)		Trip Blank (CAFB0824MWR-TB)	
Parameter	Unit	Result	Qualifier	Result	Qualifier
Volatiles Continued					
1,2-dichloropropane	ug/L	5	U	5	U
Dibromomethane	ug/L	5	U	5	U
Bromodichloromethane	ug/L	5	U	5	U
Cis-1,2-dichloropropene	ug/L	5	U	5	U
4-methyl-2-pentanone	ug/L	20	U	20	U
Toluene	ug/L	5	U	5	U
Trans-1,3-dichloropropene	ug/L	5	U	5	U
1,1,2-trichloroethane	ug/L	5	U	5	U
2-hexanone	ug/L	20	U	20	U
Tetrachloroethene	ug/L	5	U	5	U
1,3-dichloropropane	ug/L	5	U	5	U
Dibromochloromethane	ug/L	5	U	5	U
1,2-dibromoethane	ug/L	5	U	5	U
1-chlorohexane	ug/L	5	U	5	U
Chlorobenzene	ug/L	5	U	5	U
1,1,1,2-tetrachloroethane	ug/L	5	U	5	U
Ethylbenzene	ug/L	5	U	5	U
m-p-xylene	ug/L	5	U	5	U
o-xylene	ug/L	5	U	5	U
Styrene	ug/L	5	U	5	U
Bromoform	ug/L	5	U	5	U
Isopropylbenzene	ug/L	5	U	5	U
1,2,3-trichloropropane	ug/L	5	U	5	U
1,1,2,2-tetrachloroethane	ug/L	5	U	5	U
Bromobenzene	ug/L	5	U	5	U
N-propylbenzene	ug/L	5	U	5	U
2-chlorotoluene	ug/L	5	U	5	U

Sample Location / Sample Number		MW-R (CAFB0824MWR)		Trip Blank (CAFB0824MWR-TB)	
Parameter	Unit	Result	Qualifier	Result	Qualifier
Volatiles Continued					
1,3,5-trimethylbenzene	ug/L	5	U	5	U
4-chlorotoluene	ug/L	5	U	5	U
Tetra-butylbenzene	ug/L	5	U	5	U
1,2,4-trimethylbenzene	ug/L	5	U	5	U
Sec-butylbenzene	ug/L	5	U	5	U
1,3-dichlorobenzene	ug/L	5	U	5	U
P-isopropyltoluene	ug/L	5	U	5	U
1,4-dichlorobenzene	ug/L	5	U	5	U
N-butylbenzene	ug/L	5	U	5	U
1,2-dichlorobenzene	ug/L	5	U	5	U
1,2-dibromo-3-chloropropane	ug/L	10	U	10	U
1,2,4-trichlorobenzene	ug/L	5	U	5	U
Hexachlorobutadiene	ug/L	5	U	5	U
Naphthalene	ug/L	5	U	5	U
1,2,3-trichlorobenzene	ug/L	5	U	5	U
Semi-Volatiles					
Pyridine	ug/L	9.4	U		
N-nitrosodmethylamine	ug/L	9.4	U		
Aniline	ug/L	24	U		
Phenol	ug/L	9.4	U		
Bis(2-chloroethyl)ether	ug/L	9.4	U		
2-chlorophenol	ug/L	9.4	U		
1,3-dichlorobenzene	ug/L	9.4	U		
1,4-dichlorobenzene	ug/L	9.4	U		
1,2-dichlorobenzene	ug/L	9.4	U		
Benzyl alcohol	ug/L	9.4	U		
Bis(2-chloroisopropyl)ether	ug/L	9.4	U		

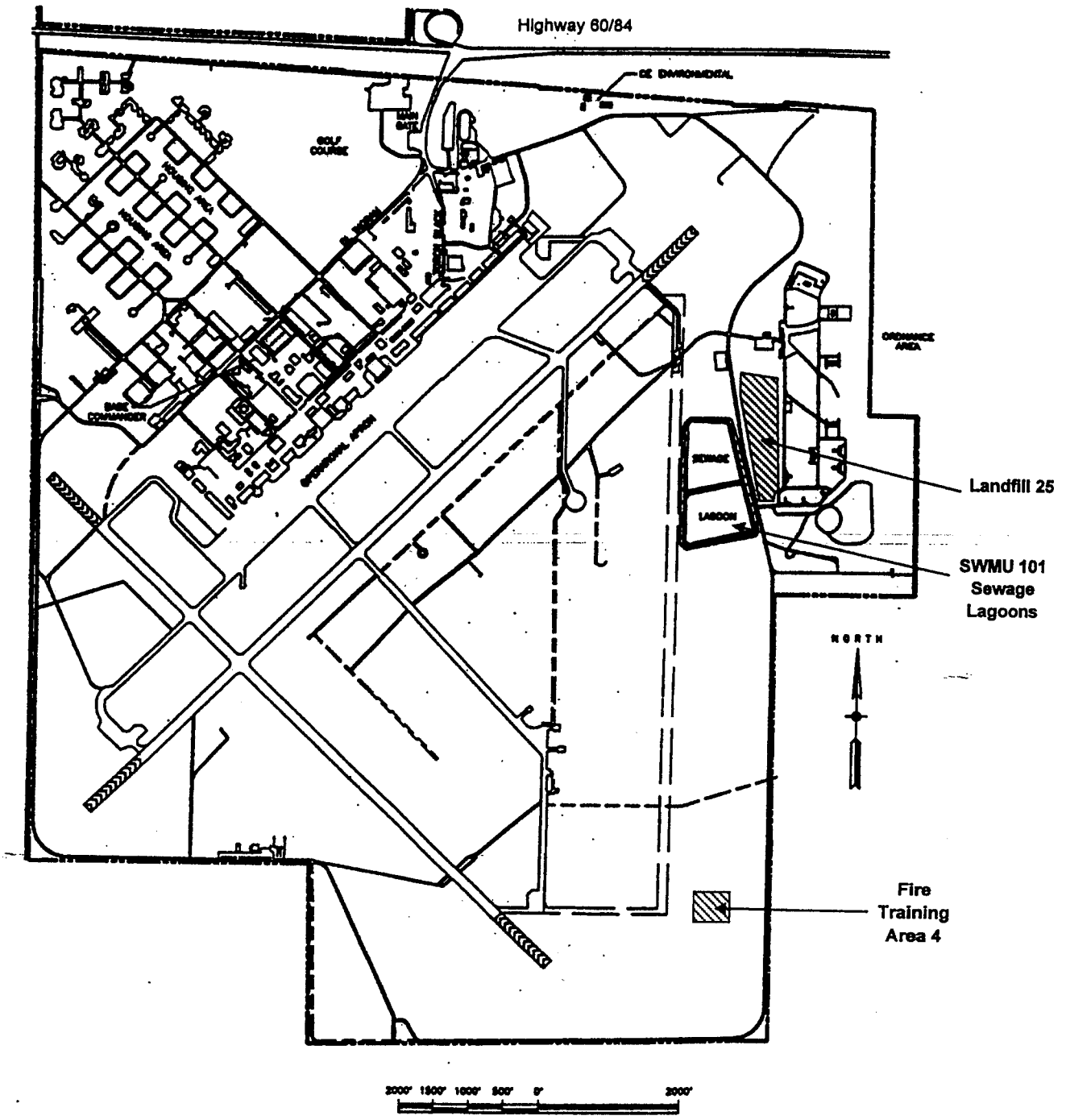
Sample Location Sample Number		MW-R (CAFB0824MWR)	
Parameter	Unit	Result	Qualifier
Semi-Volatiles Continued			
2-methylphenol	ug/L	9.4	U
N-nitroso-di-n-propylamine	ug/L	9.4	U
4-methylphenol	ug/L	9.4	U
Hexachloroethane	ug/L	9.4	U
Isophorone	ug/L	9.4	U
2-nitrophenol	ug/L	9.4	U
2,4-dimethylphenol	ug/L	9.4	U
Bis(2-chloroethoxy)methane	ug/L	9.4	U
2,4-dichlorophenol	ug/L	9.4	U
Benzoic Acid	ug/L	47	U
1,2,4-trichlorobenzene	ug/L	9.4	U
Naphthalene	ug/L	9.4	U
4-chloroaniline	ug/L	9.4	U
Hexachlorobutadiene	ug/L	24	U
4-chloro-3-methylphenol	ug/L	9.4	U
2-methylnaphthalene	ug/L	9.4	U
Hexachlorocyclopentadiene	ug/L	9.4	U
2,4,6-trichlorophenol	ug/L	9.4	U
2,5,6-trichlorophenol	ug/L	9.4	U
2-chloronaphthalene	ug/L	9.4	U
2-nitroaniline	ug/L	47	U
Dimethyl phthalate	ug/L	9.4	U
2,6-dinitrotoluene	ug/L	9.4	U
Acenaphthylene	ug/L	9.4	U
3-nitroaniline	ug/L	47	U
Acenaphthene	ug/L	9.4	U
2,4-dinitrophenol	ug/L	47	U

Sample Location Sample Number		MW-R (CAFB0824MWR)	
Parameter	Unit	Result	Qualifier
Semi-Volatiles Continued			
4-nitrophenol	ug/L	47	U
Dibenzofuran	ug/L	9.4	U
2,4-dinitrotoluene	ug/L	9.4	U
Diethyl phthalate	ug/L	9.4	U
Flourene	ug/L	9.4	U
4-chlorophenyl phenyl ether	ug/L	9.4	U
4-nitroanaline	ug/L	47	U
Azobenzene	ug/L	9.4	U
4,6-dinitro-2-methylphenol	ug/L	47	U
N-nitrosodiphenylamine	ug/L	9.4	U
4-bromophenyl phenyl ether	ug/L	9.4	U
Hexachlorobenzene	ug/L	9.4	U
2,3,4,6-tetrachlorophenol	ug/L	47	U
Pentachlorophenol	ug/L	47	U
Phenantrene	ug/L	9.4	U
Anthrancene	ug/L	9.4	U
Carbazole	ug/L	9.4	U
Di-n-butyl phthalate	ug/L	9.4	U
Flouranthene	ug/L	9.4	U
Pyrene	ug/L	9.4	U
Butyl benzyl phthalate	ug/L	9.4	U
Benzo (A) anthracene	ug/L	9.4	U
3,3'-dichlorobenzidine	ug/L	47	U
Chrysene	ug/L	9.4	U
Bis(2ethylhexyl)phthalate	ug/L	9.4	U
Benzo(b)fluoranthene	ug/L	9.4	U
Benzo(k)flouranthene	ug/L	9.4	U

Sample Location Sample Number		MW-R (CAFB0824MWR)	
Parameter	Unit	Result	Qualifier
Semi-Volatiles Continued			
Benzo(a)pyrene	ug/L	9.4	U
Indeno(1,2,3-cd)pyrene	ug/L	9.4	U
Dibenzo(a,h)anthracene	ug/L	9.4	U
Benzo(g,h,i)perylene	ug/L	9.4	U
Organophosphorus Pesticides			
Dichlorvos	ug/L	0.98	U
Mevinphos	ug/L	0.98	U
Demeton O + S	ug/L	0.98	U
Ethoprop	ug/L	0.98	U
Naled	ug/L	2.9	U
Phorate	ug/L	0.98	U
Diazinon	ug/L	0.98	U
Disulfoton	ug/L	3.9	U
Methyl parathion	ug/L	0.98	U
Ronnel	ug/L	0.98	U
Fenthion	ug/L	0.98	U
Chlorpyrifos	ug/L	0.98	U
Trichloronate	ug/L	0.98	U
Merphos A+B	ug/L	2	U
Tetrachlorvinphos	ug/L	0.98	U
Tokuthion	ug/L	0.98	U
Fensulfothion	ug/L	0.98	U
Sulprofos	ug/L	0.98	U
Methyl azinphos	ug/L	2	U
Coumaphos	ug/L	2	U

Sample Location / Sample Number		MW-R (CAFB0824MWR)		Rinsate1 (CAFB0824MWR-R1)		Rinsate2 (CAFB0824MWR-R2)	
Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier
Metals							
Aluminum	mg/L	0.2	U	0.2	U	0.2	U
Antimony	mg/L	0.02	U	0.02	U	0.02	U
Arsenic	mg/L	0.01	U	0.01	U	0.01	U
Barium	mg/L	0.1	U	0.1	U	0.1	U
Beryllium	mg/L	0.005	U	0.005	U	0.005	U
Cadmium	mg/L	0.005	U	0.005	U	0.005	U
Calcium	mg/L	51		1	U	1	U
Chromium	mg/L	0.7		0.013	U	0.01	U
Cobalt	mg/L	0.01	U	0.01	U	0.01	U
Copper	mg/L	0.01		0.023	U	0.01	U
Iron	mg/L	2.3		0.12		0.1	U
Lead	mg/L	0.003	U	0.003	U	0.003	U
Magnesium	mg/L	54		1	U	1	U
Manganese	mg/L	0.05		0.013		0.01	U
Nickel	mg/L	0.37		0.02	U	0.02	U
Potassium	mg/L	8.2		1	U	1	U
Selenium	mg/L	0.0079		0.005	U	0.005	U
Silver	mg/L	0.01	U	0.01	U	0.01	U
Sodium	mg/L	35		1	U	1	U
Thallium	mg/L	0.01	U	0.01	U	0.01	U
Vanadium	mg/L	0.019		0.01	U	0.01	U
Zinc	mg/L	0.02	U	0.047		0.02	U
Total Recoverable Mercury	mg/L	0.002	U	0.002	U	0.002	U

U-Non Detect
J-Estimated Value
B-Compound was detected in the Method Blank



Scale in Feet is Approximate

SEMI-ANNUAL MONITORING REPORT

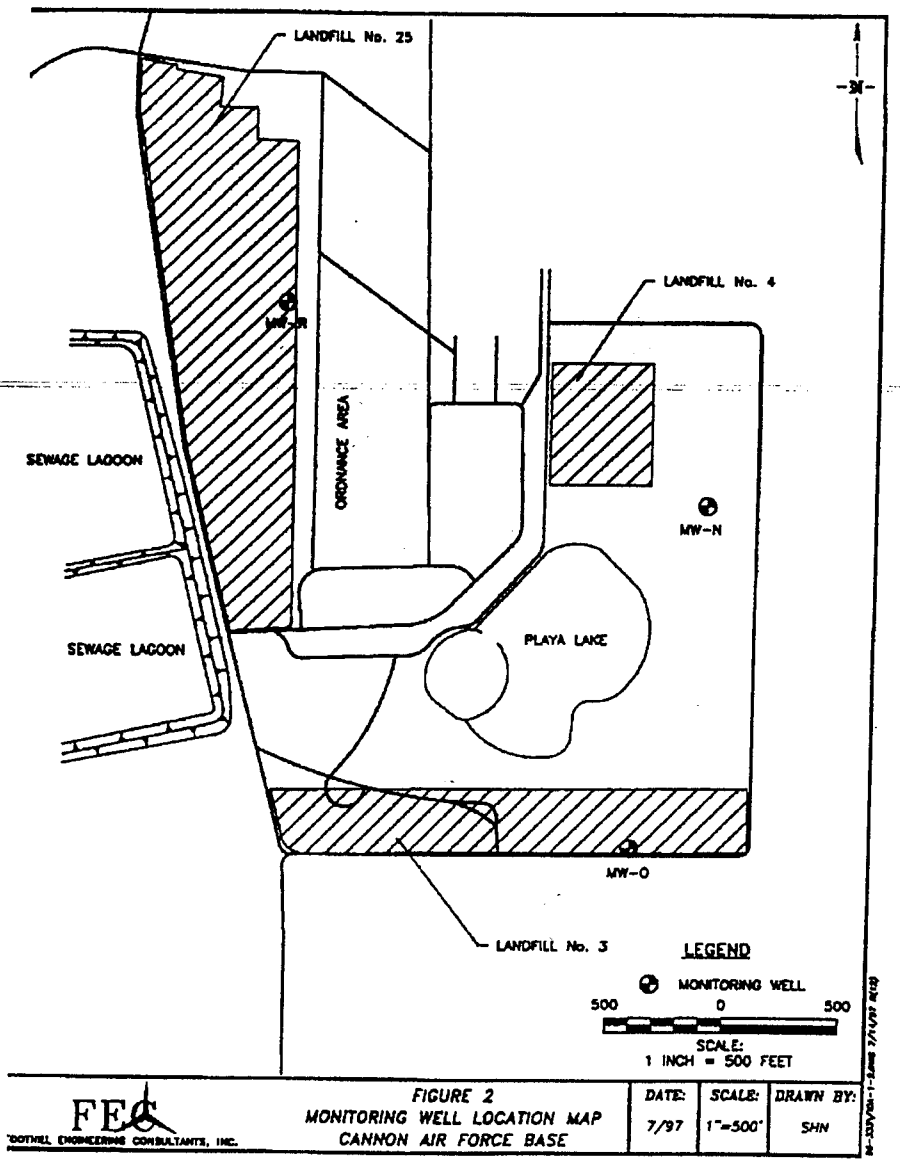
Cannon Air Force Base, New Mexico

U.S. Army Corps of Engineers, Omaha District

Figure 1

Site Location Map

Figure 2
Location of Landfill 2,4 and 25
Cannon Air Force Base, Clovis, New Mexico



APPENDIX A

NMED ASSESSMENT MONITORING REPORT

(Semi-Annual August 2000)

1.0 INTRODUCTION

This report summarizes the data obtained during the August 2000 semi-annual sampling event for the long-term monitoring program of Monitoring Well R (Landfill 25) at the Cannon Air Force Base (CAFB) near Clovis, New Mexico, EPA ID No. NM7572124454. Monitoring Well R is located downgradient of Landfill 25. The scope includes a semi-annual sampling event (August 2000) for MW-R and an annual sampling event, that includes monitoring wells MW-N and MW-O (December 2000) at Landfill 4 and 3 respectively.

2.0 SCOPE OF SERVICES

Parallax, Inc. mobilized to Amarillo, Texas on August 17, 2000, conducted a Preparatory Phase meeting, a Pre-Entry Safety and Health briefing, and verified receipt of necessary equipment and supplies. The field team arrived at Cannon Air Force Base on August 18, 2000 to begin work.

The work performed consisted of removal and inspection of the dedicated pump in Monitoring Well R at Landfill 25, pump maintenance and rebuilding, a pre and post maintenance pump rinsate sample, and collection of a groundwater sample from MW-R. Bennett Pumps, Inc performed the dedicated pump cleaning, inspection, and rebuilding. Pump reinstallation and groundwater sampling was performed on August 24, 2000.

Prior to sampling, 81 gallons of groundwater were purged to the permanent holding tank maintained by Cannon AFB. Field parameters of pH, conductivity, turbidity, and temperature were measured during purging and used to determine stabilization prior to sampling. Additional field parameters for dissolved oxygen (DO) and salinity were also measured. One groundwater sample and a QC split were collected and analyzed for VOCs, SVOCs, herbicides, pesticides, PCBs, and metals. The two rinsate samples were only analyzed for metals. Analyses were performed by Paragon Analytics.

3.0 REGULATORY CRITERIA

This report of the long-term monitoring was performed in accordance with the requirements of the Cannon Air Force Base Hazardous and Solid Waste Amendments Permit. The New Mexico Environmental Department is the lead agency overseeing the project.

The New Mexico Environmental Department (NMED) groundwater standards were used as guidance to determine if constituents that were detected in monitoring well MW-R exceeded applicable groundwater standards. If no NMED standard for a particular constituent existed, then the U.S. Environmental Protection Agency's (EPA) groundwater Maximum Contaminant Levels (MCLs) or EPA Health Advisories were applied.

4.0 GROUNDWATER MONITORING RESULTS

Purging and sampling was performed on well MW-R on August 24, 2000. Table 4-1 lists the measured field parameters and water level data. Only one well was sampled during this sampling event and groundwater flow direction was not determined. However, Figure 3 is included from water levels measured January-February 1982 to illustrate the general potentiometric surface and groundwater flow direction at the site.

Table 4-1
Groundwater Parameters

WL[1]	Rate[2]	Volume[3]	pH	Cond[4]	Turb[5]	DO[6]	Temp[7]	Sal[8]
287.39	1.8	Initial	6.37	0.94	76	8.65	23.2	0.04
289.46	1.8	18	7.21	0.776	63	10.15	20.8	0.03
289.46	1.8	27	7.29	0.779	40	10.41	19.7	0.03
290.51	1.8	36	7.37	0.784	28	10.66	19.4	0.03
291.02	1.8	45	7.42	0.786	23	10.79	19.4	0.03
291.60	1.8	54	7.43	0.787	21	10.92	19.4	0.03
292.91	1.8	63	7.46	0.788	17	10.91	19.3	0.03
293.95	1.8	72	7.47	0.789	11	10.98	19.3	0.03
294.67	1.8	81	7.47	0.790	6	10.97	19.3	0.03

[1]WL – water level measured below top of casing (btc)
[2]Rate – gallons per minute (gpm)
[3]Volume – gallons (gal)
[4]Cond – Conductivity measured in micro siemens per centimeter squared (uS/cm[2])
[5]Turb – turbidity measured in Nephelometric Turbidity Units (NTUs)
[6]DO – Dissolved Oxygen measured in milligrams per liter (mg/l)
[7]Temp – temperature measured in degrees Centigrade (^{0}C)
[8]Sal – Salinity measured in parts per thousand (ppt)

5.0 GROUNDWATER CHEMICAL ANALYTICAL DATA

Parallax, Inc. collected one rinsate sample from the dedicated pump in MW-R on August 18, 2000. This rinsate sample was collected prior to having this pump serviced. A second rinsate sample, after pump servicing and prior to reinstallation, and a groundwater sample from MW-R were collected on August 24, 2000. A duplicate groundwater sample was collected from MW-R and sent to the USACE QA laboratory. Problems were encountered with the shipping of the duplicate sample and the sample was out of holding time and above the acceptable temperature range when it reached the USACE QA laboratory. The USACE QA laboratory made the decision not to analyze this sample and determined that the duplicate sample collected during the December sampling event would provide necessary Quality Assurance/Quality Control. Table 5-1 provides analytical results for the MW-R sample along with regulatory limits. Table 5-2 presents the metal analyses results for the two rinsate samples. Table 5-3 presents historical results along with the June 1999 Summary of Semiannual Groundwater Results.

Table 5-1
Groundwater Analytical Results for MW-R (August 2000) at Landfill 25

Sample ID Analyte	Well R (CAFB0824MWR) August 2000 (mg/L)	New Mexico Groundwater Standards (mg/L)
Metals SW-846 6010B; Mercury SW-846 7470A		
Aluminum	0.2U	0.05[1]
Antimony	0.02U	0.006[1]
Arsenic	0.01U	0.1
Barium	0.1U	1.0
Beryllium	0.005U	0.004[1]
Cadmium	0.005U	0.005[1]
Calcium	51	
Chromium	**0.7**	0.05
Cobalt	0.01U	0.05[2]
Copper	0.01	1.3[3]
Iron	**2.3**	1.0[4]/0.3[1]
Lead	0.003U	0.05
Magnesium	54	
Manganese	0.05	0.05[1]
Nickel	**0.37**	0.1[1]
Potassium	8.2	
Selenium	0.0079	0.05
Silver	0.01U	0.05
Sodium	35	20*
Thallium	0.01U	0.002[1]
Vanadium	0.019	0.02[5]
Zinc	0.02U	5.0[1]
Total Recoverable Mercury	0.002U	0.002
General Chemistry		
Chloride EPA 300.0A	97	250.0
Nitrate EPA 300.0A	5.5	10.0
Sulfate EPA 300.0A	130	400.0[1]

Table 5-1
(continued)

Other Constituents		
SVOCs SW-846 8270C	ND	
Chlorinated Herbicides SW-846 8151A	ND	
Organochlorine Pesticides SW-846 3520C	ND	
Organophosphorus Pesticides SW-846 3520B	ND	
PCBs SW-846 3520C/3665	ND	0.001

U – detection limit
ND – No analytes were detected above the detection limit
[1] – EPA MCL
[2] – Irrigation Use
[3] – Maximum Contaminant Level Goal (MCLG)
[4] – Domestic Water Supply
[5] – EPA Health Advisory

TABLE 5-2
Rinsate Analytical Results for MW-R (August 2000) at Landfill 25

ANALYTE Metals SW-846 6010B; Mercury 7470A	RINSATE 1 (CAFB0818MWR-R1) August 18 2000 (mg/L)	RINSATE 2 (CAFB0824MW-R2) August 24 2000 (mg/L)
Aluminum	0.2U	0.2U
Antimony	0.02U	0.02U
Arsenic	0.01U	0.01U
Barium	0.1U	0.1U
Beryllium	0.005U	0.005U
Cadium	0.005U	0.005U
Calcium	1U	1U
Chromium	0.013	0.01U
Cobalt	0.01U	0.01U
Copper	0.023	0.01U
Iron	0.12	0.1U
Lead	0.003U	0.003U
Magnesium	1U	1U
Manganese	0.013	0.01U
Nickel	0.02U	0.02U
Potassium	1U	1U
Selenium	0.005U	0.005U
Silver	0.01U	0.01U
Sodium	1U	1U
Thallium	0.01U	0.01U
Vanadium	0.01U	0.01U
Zinc	0.047	0.02U
Total Recoverable Mercury	0.002U	0.002U

Table 5-3. Historical Groundwater Sample Results Summary
Monitoring Well R
Cannon Air Force Base, Clovis, New Mexico

Analyte and Method	Range of Historical Results (mg/L)	MW-R (June 1999) (mg/L)	MW-X (June 1999) (Duplicate) (mg/L)	EPA MCLs (total) (mg/L)	New Mexico State Standards (dissolved) (mg/L)
Volatile Organic Compounds SW846 8260B					
Chloroform	ND-0.00018J	**0.18**	**0.18**	0.1	0.1
Methylene Chloride	ND-0.00012J	ND	ND	0.005	0.1
Trichloroethene	ND-0.00011J	ND	ND	0.005	0.1
TAL Metals (total) SW846 6010B					
Barium	0.058-0.091	0.052B	0.0483B	2	1
Calcium	58–59.3	55.7	52.4		
Chromium	ND-0.021	**0.333**	**0.0497**	0.1	0.05
Copper	ND- 0.0053J	0.0049	0.0014	1.3[3]/1.0[1]	1.0[4]
Iron	0.594-1.01	**1.48**	**0.948**	0.3[1]	1.0[4]
Lead	ND	0.003	0.001	0.015[3]	0.05
Magnesium	59.4-62.9	58.2	54.9		
Manganese	0.0756-0.0998	0.0543	0.0526	0.05[1]	0.2[4]
Nickel	0.042-0.52	**0.371**	**0.353**	0.1	0.2[5]
Potassium	7.66-8.59	8.19	8.42		
Selenium	ND-0.011	0.0096	0.0075	0.05	0.05
Sodium	42.9-43.6	42.4B	43.9B		
Vanadium	0.0073J-0.013	0.0152	0.0126		
TAL Metals (dissolved) SW846 6010B					
Barium	NA	0.0547	0.052		1.0
Cadmium	NA	0.0011	ND		0.01
Calcium	NA	56.8	56		
Magnesium	NA	60.3	59.4		
Manganese	NA	0.046	0.0513		0.2[4]
Nickel	NA	**0.302**	**0.322**		0.2[5]

Table 5-3. Historical Groundwater Sample Results Summary
Monitoring Well R
Cannon Air Force Base, Clovis, New Mexico (continued)

Analyte and Method	Range of Historical Results (mg/L)	MW-R (June 1999) (mg/L)	MW-X (June 1999) (Duplicate) (mg/L)	EPA MCLs (total) (mg/L)	New Mexico State Standards (dissolved) (mg/L)
TAL Metals (dissolved) SW846 6010B					
Potassium	NA	8.03	7.61		
Selenium	NA	0.0096	0.0068		0.05
Sodium	NA	43.1	42.3		
Vanadium	NA	0.013	0.0112		
Zinc	NA	0.0051	0.0034		10[4]
General Chemistry					
Nitrate EPA 300.0A	ND-5.2	5.1	5.2	10	10
Chloride EPA 300.0A	NA	125	119	250[1]	250
Sulfate S EPA 300.0A	NA	134	133	500[1]	600[4]
Other Constituents					
Semi-Volatile Organic Compounds SW-846 8270C	ND	ND	ND		
Herbicides- SW-846 8150	ND	ND	ND		
Organophosphorous Pesticides SW-846 8140	ND	ND	ND		
Organochlorine Pesticides SW-846 8081A	ND	ND	ND		
Phenols EPA 420.2	NA	ND	ND		0.005[4]
PCBs SW-846 8082	ND	ND	ND		

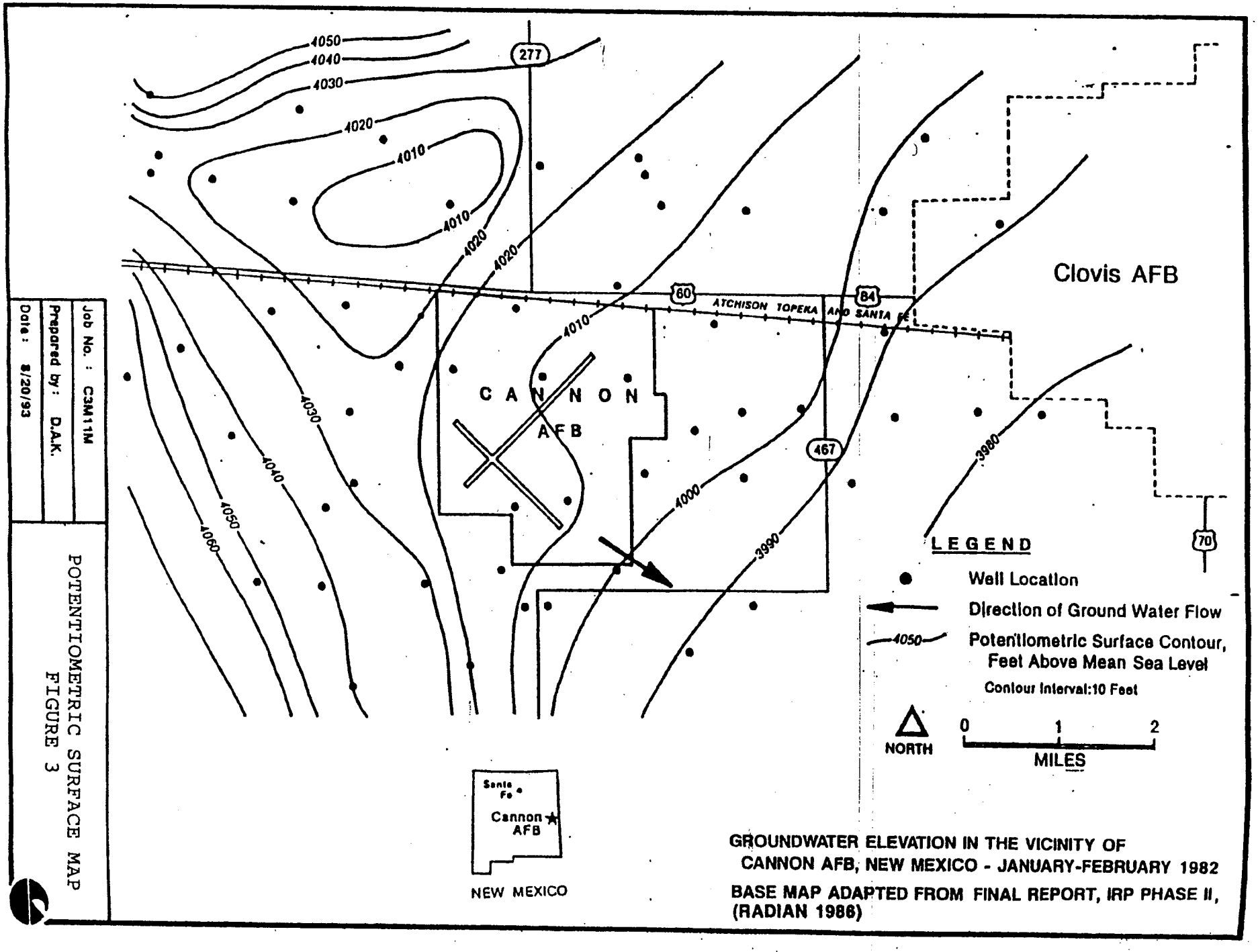
[1] Secondary Maximum Contaminant Level (SMCL)
[2] Maximum Contaminate Level Goal (MCLG)
[3] EPA Action Level
[4] Domestic Water Supply
[5] Irrigation Use

J = result is below the reporting limit; value is an estimated quantity
J1 = estimated concentration detected between method detection limit and reporting limit
MCL = maximum contaminant level
mg/L = milligrams per Liter
ND = analytes not detected above reporting limits
UB = not detected, result associated with blank contamination

Note: All samples collected on December 8, 1998; see Appendix II for reporting limits and method detection limits for all analytes.

6.0 SUMMARY

The semi-annual sampling of Monitoring Well R, downgradient of Landfill 25 was conducted in August 2000. Metals analysis for sample MW-R showed slightly elevated levels of calcium, chromium, copper, iron, magnesium, manganese, nickel, potassium, selenium, sodium and vandium. The results for chromium and iron exceeded New Mexico Groundwater Standards. Sample results for the first rinsate sample had detectable levels of chromium, copper, iron, manganese, and zinc. Sample results for the second rinsate sample had no elevated levels of metals. The metals detected in the groundwater sample and the first rinsate correspond with constituents found in stainless steel. However, due to the geochemistry of the aquifer, the groundwater potentially reacted with the stainless steel well screen releasing trace amounts of metals into solution. This most likely is a function of the pH of the groundwater. As a result, the U.S. Army Corps of Engineers has performed preliminary modeling to show that the landfill is not the source of the metals. Retardation factors calculated for the metal constituents detected and the distance of over 100 feet to groundwater indicate the metals could not have migrated to the water table in the time since the landfill has been in existence. Therefore the source of the metals is not considered to be the landfill.



Job No. : C3M11M
Prepared by: D.A.K.
Date: 8/20/93

POTENTIOMETRIC SURFACE MAP
FIGURE 3

APPENDIX B

Field Methods and Forms

FIELD METHODS

Field measurements collected during the semi-annual sampling included water level, health and safety monitoring and water quality parameters. The water level in MW-R was measured with an electrical water level indicator. Health and safety monitoring was performed using a Photoionization Detector (PID) for organic vapor measurements and an LEL meter for explosive atmosphere measurements. Water quality parameters were measured using a Horiba water quality meter.

Decontamination of the instrument probes and the pump body were performed during this sampling event. Monitoring Well R was purged prior to sampling using a dedicated pump. Purge water was pumped to a permanent holding tank maintained by Cannon Air Force Base. The dedicated pump installed in MW-R was used to collect the groundwater samples. The water samples were immediately placed on ice upon collection. Once the sampling was finished, chain-of-custody forms and air bills were completed, coolers were repacked and ice added if necessary, custody seals were attached to the coolers and the coolers were shipped to the laboratories for overnight delivery. Field forms and chain-of-custody records are included in Appendix B.

PAGE 1 OF 2

DATE: 8/17/00

TIME: 2238

MEETING LOCATION: Airport

DEFINABLE WORK FEATURE ADDRESSED: CAFB LTM SAMPLING EVENT

CQC REPRESENTATIVE: PHILLIP CUMMINGS

SUMMARY OF MEETING ACTIVITIES: CHRONOLOGY OF SAMPLING EVENT 18 AUG 00.

1. PULL PUMP TAKE FIRST RINSATE
2. PUMP OVERHAUL AT BENNETT PUMPS INC.
3. SECOND RINSATE
4. SAMPLE EVENT W/ SPLIT
5. FEDEX CLOSES AT 1900

Phil
17 Aug 00

THE FOLLOWING INDIVIDUALS ATTENDED THE CCQC PREPARATORY PHASE MEETING:

NAME	SIGNATURE	COMPANY
PHILLIP CUMMINGS		PARALLAX
Gary L Vaughn		P25

RECORDED BY: [signature] 17 Aug 00
(Signature and Date)

QA CHECK BY: Greg Schenk 10/24/00
(Signature and Date)

PAGE 2 OF 2

SUMMARY OF MEETING ACTIVITIES (Continued): INTENTIONALLY LEFT BLANK

19 Aug 00

RECORDED BY: [signature] 17 Aug 00
(Signature and Date)

QA CHECK BY: Greg Schenk 10/24/00
(Signature and Date)

DATE 8/18/00

DAY	S	M	T	W	TH	F	S
					X	

DAILY QUALITY CONTROL REPORT

WEATHER	Bright Sun	Clear	Overcast	Rain	Snow
	X				

TEMP	To 32°	32-30°	30-70°	70-85°	85° up
				X	

WIND	Still	Moder.	High	Report No.
	X		1

HUMIDITY	Dry	Moder.	Humid
X		

COE PROJECT MANAGER Zink
PROJECT Cannon AFB - LTM
JOB NO. Del. Order #003
CONTRACT NO. DACA45-99-D-0015

SUB-CONTRACTORS ON SITE: Gary L. Vaughn (P25)

EQUIPMENT ON SITE: Bennett Pump and hardware,

WORK PERFORMED (INCLUDING SAMPLING):

0600 Equipment Calibration - see QC activities
0630 Depart Amarello, Tx
0645 Arrive Cannon AFB - Clovis N.M.
0700 H+S tailgate while waiting for Visitors Center to open
0730 Visit. Cent open and receive pass
0745 Meet Sanford Hutsell and move to Landfill 2 MW-R. Well open on arrival.
0855 Water level 287.28 feet BTOC
TD=300 ft BTOC
PID headspace reading 0.0 ppm
Bz = 0.0 ppm
LEL = 0%
0915 Begin pulling pump - cable and hose onto new tarp (plastic).
0949 Pump, 285 ft of hose (3) & cable, and 15 ft tail hose & filter removed to plastic
1000 Cover pump and go buy proper tools to unscrew pump from hoses and cable.
1055 Return, remove pump, lable fittings, bag pump, and return hoses and cable to well casing (above waters surface).
1100 Due to wind and dust did not preform QA rinse sample at well site, Will pump in lab.

(Continuation Sheet)

PROJECT Cannon AFB LTM
JOB NO. Del Order #003

REPORT NO. 01
DATE: 8/18/00

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS): See cal section

1300 Returned to Amarillo TX - traffic heavy.
1315 Collect sample CAFB 0818 MW8 Rensita
1400 Take pump to Bennett Pumps Inc.
1515 Remove tail and filter to return (heavy Fe staining)
1630 Pack sample to ship ~~8/17/00~~ 8/18 clean and pack equipment
1730 Fed Ex sample
2000 Transfer equipment to Dr Gary Baker.
2100 Off

HEALTH AND SAFETY LEVELS AND ACTIVITIES:

H+S Tailgate before entering site - a
No reportable PID or LEL reading above Background
PID reading of 0.02 ppm not repeated after 5 min.
of open well cap.

PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:

Did not have tools to unhook pump from liner.
Action measured and purchased 2 open end wrenches
Pump repair turnaround time 8/22/00. None
Heavy traffic - None

SPECIAL NOTES: ~~None~~ 8/18/00 Heavy Fe staining was on hose and filter tail that hangs below pump into water table. Only mild discoloration on steel pump housing. Pump not in water table.

TOMORROW'S EXPECTATIONS: Travel

By: [signature] 8/16/00
(Signature and date)

QA Check by: Greg Schenk 10/24/00
(Signature and date)

DATE 8/24/99

DAY | S | M | T | W | TH | F | S | (TH marked X)

DAILY QUALITY CONTROL REPORT

WEATHER: Bright Sun X | Clear | Overcast | Rain | Snow

TEMP: To 32° | 32-30° | 30-70° | 70-85° | 85° up 82

WIND: Still | Moder. X | High | Report No. 2

HUMIDITY: Dry X | Moder. | Humid

COE PROJECT MANAGER Zink

PROJECT Cannon AFB - WTM

JOB NO. Del Order #0023

CONTRACT NO. DACA45-99-D-0015

SUB-CONTRACTORS ON SITE: Gary L. Vaughn - ProSource (PS)

~~Arthur Davis~~

EQUIPMENT ON SITE: Bennett Pump, PID, LEL, Horiba U-10, and 200 ft water level.

WORK PERFORMED (INCLUDING SAMPLING): 0630 - H+S meeting and calibra
Horiba-U10, Microtip HL-2000, and DIG-IFW-AM2000.
0748 Arrive Bennett Pumps. (see contact report)
0825 Leave Amarillo TX to Cannon AFB-Clovis NM.
1125 Arrive Landfill 25 - MW-R ft.38 ft BTOC-TD,
Water level 287.39 ft BTOC, 16.61 ft-Water Column.
MW-R is 6" stainless c.38 ft screened interval.
6" = 1.5 gal/linear ft or 24.92 gal (25) per purge volum
1155 Pull hose setup from well and install pump & ho
1238 Universal coupling (male side) is bent off-center
and will not receive high pressure hose from flow
regulator.
1248 Call local hardware for replacement - told I must
go to irrigation pump shop in Hereford TX (±65 miles
1355 Return from Hereford TX c part and install. (±65 miles)
1354 Begin purge of MW-R - 1 purge vol. = 25 gal.
3 purge vol = 75 gal or 1.8 gal/min for 42 min.

Purge Record

Time	Wtr.	Rate	Vol.	pH	Cond.	Turb.	DO2	Temp	Sal
1125	1400	287.39	1.8	Init.	6.37	0.94	76	8.65	23.2	.04
1235	1440	289.46		18	7.21	.776	63	10.15	20.8	.05
1345	1445	~~289.46~~		27	7.29	.779	48	10.41	19.7	.05
1345	8/24/1420	290.51		36	7.37	.784	28	10.[illegible]	19.4	.05
1425		291.[illegible]		45	7.42	.786	23	10.79	19.4	.05
1430		291.60		54	7.43	.787	21	10.92	19.4	.05

GW 8/24/99

Page 4 of 5

DATE 8/24/00

DAY | S | M | T | W | TH | F | S |

DAILY QUALITY CONTROL REPORT

WEATHER	Bright Sun	Clear	Overcast	Rain	Snow
TEMP	To 32°	32-30°	30-70°	70-85°	85° up
WIND	Still	Moder.	High	Report No.	
HUMIDITY	Dry	Moder.	Humid		

COE PROJECT MANAGER _____

PROJECT _____

JOB NO. _____ BEI

CONTRACT NO. 8/24/00

SUB-CONTRACTORS ON SITE:

EQUIPMENT ON SITE:

WORK PERFORMED (INCLUDING SAMPLING):

1435 292.91 1.8 63 7.46 .788 17 18c98 19.3 .8
1440 293.95 22 7.47 .789 11 18c98 19.3 .8
1445 294.67 81 7.47 .798 6 18c97 19.3 .8
1446 Purge complete 81 gal. or 3.24 vol removed
1449 Collect sample and split S-CAFB0824MWR and CAFB0824MWS.
VOC - 3-40ml c HCl Vials
SemiVOC - 2/1Lt Amber @ 4°C
TAL Metals - 1/500ml poly c HNO3
Herbicides 2/1Lt Amber @ 4°C
Pest 8081A - 2/1Lt Amber @ 4°C
PCB - 2/1Lt Amber @ 4°C
Pest(8140) - 2/1Lt Amber @ 4°C
WPP(3580) - 1/500ml @ 4°C
1520 Depart site after load up.
1540 Walmart for cooler, ice, and pack samples
1655 Leave for FedEx in Amarillo, TX
1730 Heavy traffic in Clovis call lab for instructions if FedEx missed. See contact report.
1850 Arrive FedEx close @ 1858 will ship 8am 8/25/00
2330 Repack samples with 98lbs ice.
8/25 0800 Ship FedEx
0830 Return tanks and regulator to Bennett's

pages of

(Continuation Sheet)

PROJECT Cannon AFB - LTM
JOB NO. Del Order #003

REPORT NO. 2
DATE: 8/25/00

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

Collect - Rinsate sample on pump and tail internal area ~~of~~ CAFB 024 mw8
2 trip blanks collected before sample & well.
Calibrate in - Horiba U-10, LEL, and PID

HEALTH AND SAFETY LEVELS AND ACTIVITIES:

	PID	LEL reading
Background	0.0	0%
BZ	0.0	0%
at Trap & casing	BZ	0%

Gloves, safety glasses, and steel toe boots. (Level C)

PROBLEMS ENCOUNTERED/CORRECTION ACTION TAKEN:

1. Workplan did not have sample chart - called Paragon Labs for bottle info.
2. Make universal coupling beat by well cover - replace and cover rubber lid.
3. Hard / cooler - replace.
4. Ship sample to lab on Friday - OK from CAE lab - Elena scheduled from week before.

SPECIAL NOTES: None

8/28/00 SV

TOMORROW'S EXPECTATIONS: Ship samples and return equipment to Bennett Pumps

8/28/00 SV

By: [signature] 8/29/00 (Signature and date)

QA Check by: [signature] 10/26/00 (Signature and date)

INDIVIDUAL CONTACTED, TITLE, PHONE:
SANFORD HUTSELL 505 784-6378

ORIGINATOR:
PHILLIP CUMMINGS

ORGANIZATION:
BASE CIVIL ENGINEERING (ENVIRONMENTAL BR)

DATE CONTACTED: 10 AUG 00

ADDRESS: 506 NORTH DL. INGRAM BLVD CITY: CANNON AFB STATE: NM ZIP: 88103

Telecon: ☒ Visit: ☐

SUBJECT: LONG TERM MONITORING OF LANDFILLS 3, 4 & 25 CANNON AFB, NM

DISCUSSION: TALKED ABOUT WASTE LABLING PROCEDURES ON THE WELL PURGE TANKS, MR HUTSELL STATED THERE IS NO NEED TO PUT LABLES ON THE TANKS THE BASE HAS NO REQUIREMENT TO DO SO. TALKED ABOUT WHAT TO SAMPLE TEST ON RINSATE SAMPLES, MR HUTSELL STATED THAT THE TWO RINSATE SAMPLES SHOULD ONLY BE TESTED FOR METALS ONLY.

COMMENTS, ACTION, DATES

INDIVIDUAL CONTACTED, TITLE, PHONE: owner 8/24/00
Evan Bennett (806) 352 0264

ORIGINATOR:
Gary Vaughn

ORGANIZATION:
Bennett Env. Pumps

DATE CONTACTED:

ADDRESS: Starr St CITY: Amarillo STATE: Tx ZIP: 79114

Telecon: ☐ Visit: ☒

SUBJECT: Pickup pumps & Nitrogen gas bottles and QA/QC samples

DISCUSSION:

(1) Inspect use of gas bottles and proper regulator hook-up.
(2) Graft pump flow rate from 285 pt. (1.8 gal/min).
(3) Install new 15 ft teflon drop tube & filter.
(4) Flush rinsate sample through internal filter, tube and pump.

COMMENTS, ACTION, DATES

Worked with Evan Bennett the pump + builder.

Arrived: 0740

Depart: 0825

[redacted]

INDIVIDUAL CONTACTED, TITLE, PHONE: L. Percifield

ORIGINATOR: Gary Vaughn

ORGANIZATION: CQAB Lab

DATE CONTACTED:

ADDRESS: 428 So 18th St CITY: Omaha STATE: NE ZIP: 68102

Telecon: ☒ Visit: ☐

SUBJECT: Split sample shipment

DISCUSSION: Split sample arrival Sat. 8/26/00 AM.

COMMENTS, ACTION, DATES: Request OKed

402-444-4314

INDIVIDUAL CONTACTED, TITLE, PHONE: Ken Campbell

ORIGINATOR: Gary Vaughn

ORGANIZATION: Paragon Analytics Inc.

DATE CONTACTED:

ADDRESS: 225 Commerce Dr CITY: Ft. Collins STATE: CO ZIP: 80524

Telecon: ☒ Visit: ☐

SUBJECT: CAPB 0824 MW's and split shipment

DISCUSSION: Sample to arrive Sat. AM.

COMMENTS, ACTION, DATES: Request on voice mail.

CALIBRATION STANDARD

PROJECT NAME: Common AFB - AFB

INCLUSIVE DATES FOR CALIBRATION MATERIAL USAGE	INSTRUMENT DESCRIPTION	CALIBRATION MATERIAL *	Psi/BOTTLE	LOT # AND MANUFACTURER	PERSON (INITIALS)
Start: 8/18/00 Finish:	Heron 3000H type	Cal check and in place		4277	
8/16/00-8/00 —	Honeywell Q # 803015	Auto-Calibrated	N/A	2200 Exp 4/6/02	
8/18/00	MicroTip HL - 2000 #PAG1062 8	100 ppm Iso Butylene	400 psi	LTF150CM	
8/18/00 LEL	DIGIFLAM 2000 #8800004470	methane 2.5% Ea 1570	240 psi	LTF-140CM	
8/18/00 % by Vol	DIGIFLAM 2000	methane 50% Ea Air	240 psi	LTF-139 CM	
8/24/00 Same as 8/18/00	no change in equipment or gas.				

10/24/00

* INCLUDE EXPIRATION DATES FOR STANDARD SOLUTIONS

QA CHECKED BY: Greg Schank 10/24/00
(Signature and Date)

PROJECT NAME: Cannon AFB – Z Tank

EQUIPMENT CALIBRATION

CATEGORY 1

M & TE CALIBRATION LOG

IDENTIFIER	ITEM	CALIBRATION MEASUREMENT PRE	CALIBRATION MEASUREMENT ADJUSTMENT	CALIBRATION MEASUREMENT POST	BACKGROUND CHECK	RESPONSE CHECK	NAME	DATE
.EL 088000478	DIGIFLAM 2000	3%	-.5%	2.5%	0.0	None	[illegible]	8/18/00
OID PA918628	MiniRae Tip HL 2000	182ppm	-2ppm	180ppm	0.0	37.5ppm	[illegible]	8/18/00
Vater 803815	Horiba U10	— Auto-cal complete			—	—	[illegible]	8/18/00
Water 803815	Horiba U10	— Auto-cal complete			—	—	[illegible]	8/24/00
.EL 088000478	DIGIFLAM 2000	2%	+.5%	2.5%	0.0	None	[illegible]	8/24/00
OID PA918628	MiniRae Tip HL 2000	183ppm	-3ppm	180ppm	0.0	46.6ppm	[illegible]	8/24/00
				AS 10/24/00				

QA CHECK BY: Greg Schenk 10/24/00
(Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Cannon AFB - FT

WELL NUMBER	DATE	TIME	DEPTH TO WATER * BTOC	INSTRUMENT	SERIAL NO.	REMARKS
MW-R	8/18/00	0855	287.28	Heron	4277	300 ft tape (dipper-T)
MW-R	8/24/00	1125	287.39	Heron	4277	Before purge
MW-R	8/24/00	1445	294.67	Heron	4277	Post purge @ sampling
				AS 10/24/00		

* All measurements from V-notch top of casing

RECORDED BY: Gary Hughes 8/24/00
(Signature and Date)

QA CHECK BY: Ann Schenk 10/24/00
(Signature and Date)

TYPE/NAME OF REAGENT: QA FB 8/18 MW R Rinsate

SUMMARY OF REAGENT CONTAINER LABEL INFORMATION: Metals IAL
8/18 @ 1315 1-500ml ~~grab~~ by 8/18 c Nitric Acid
Used Type II DI water over a pump effluve
U-108 Red Bird Service - DI and Barnstead filtered
Grade II Lot #48626, Mfg. 6/26/00, Exp. 6/26/02

TYPE/NAME OF REAGENT: Nitric Acid

SUMMARY OF REAGENT CONTAINER LABEL INFORMATION: VOCs and Metals IAL
Preserve c Nitric Acid and cool 4°C.
for groundwater sample and rinsate.

TYPE/NAME OF REAGENT:

SUMMARY OF REAGENT CONTAINER LABEL INFORMATION:

TYPE/NAME OF REAGENT:

SUMMARY OF REAGENT CONTAINER LABEL INFORMATION:

RECORDED BY: [signature] 8/18/00
(Signature & Date)

QA CHECK BY: Greg Schenk 10/24/00
(Signature & Date)

PROJECT NAME: Lawrence Livermore

COOLER SHIPPING LOG SHEET

DATE	AIR BILL NUMBER	RADIOLOGICAL	CLASS 3 FLAMMABLE LIQUID	CLASS 6, DIV. 6.1 POISONOUS MATERIAL	CLASS 7 RADIOACTIVE MATERIAL	CLASS 9 MISC. HAZARDOUS MATERIAL	EPA HAZARDOUS WASTE/ SUBSTANCE	DANGEROUS GOODS	ENVIRONMENTAL	SHIPPER
	820802									814286457469
8/18/00	759992	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	FedEx 776
8/25/00	820802									
	759981	No	No	No	No	No	No	No	Yes	825
	820595									
	782519									745
	820593									
	782495									845
	820802									
	759992									New

10/24/00

	CONTRACTOR LABORATORY					GOVERNMENT LABORATORY			REQUESTED LABORATORY ANALYSES						
	SAMPLE LOCATION	SAMPLE TYPE	SAMPLE NUMBER	ASSOCIATED QC DUPLICATE NUMBER	ASSOCIATED QC RINSATE NUMBER	ASSOCIATED QC TRIP BLANK NUMBER	SAMPLE NUMBER	ASSOCIATED QA SPLIT NUMBER	ASSOCIATED QA TRIP BLANK NUMBER	TAL Metals	VOA	Semi VOA	Herb	PCB	Pest (2)
1	MW-R	Rinsate	CAFB0818MWR-Rinsate			1-500ml Nitric Acid			X		pre-rinse				
2	MW-R	Rinsate	CAFB0824MWR-Rinsate						X		pre-rinse				
3	MW-R	Trip Blk	CAFB0824MWR	Sue Lines #2						X					
4	MWR	Trip Blk	CAFB0824MWS					CAFB0824MWS			X				
5	MW-R	Grab	CAFB0824MWR	—	Same	CAFB0824	—	CAFB0824MWS	—	X	X	X	X	X	X
6	MW-R	Grab - Split	—	—	—	CAFB0824MWS	CAFB0824MWS	Same	CAFB0824MWS	X	X	X	X	X	X

Canon AFB - LTM Del Order #5

[redacted]

DATE: 8/18/00 TIME: 0700

MEETING LOCATION: Cannon AFB – Visitor's Center Parking Area

SITE SAFETY & HEALTH OFFICER: Gary L. Vaughn

SUMMARY OF MEETING ACTIVITIES: Waiting Center to oper@730

1. Heavy lifting at well head on pump@300#.
2. Need to stay hydrated.
3. Biota threats.
4. Hospital location
5. Inventory – PID, LEL, Safety glasses, work gloves, nit. gloves, and check tools.
6. Sample preserving procedures.

8/18/00

THE FOLLOWING INDIVIDUALS ATTENDED THE PRE-ENTRY SAFETY & HEALTH TRAINING MEETING:

NAME	SIGNATURE	COMPANY
Gary L Vaughn		PZS
PHILLIP CUMMINGS		PARALLAX

RECORDED BY: 8/18/00 (Signature and Date)

QA CHECK BY: 10/24/00 (Signature and Date)

2 of 2

[redacted]

NAME: Caryl Vaughn DATE: 8/18/00 TIME: 1900

M Tu W Th F Sa Su

TASKS PERFORMED: 1. Pull pump from MW-R in landfill 25. Take Rise sample on pump body and skids.
1900 8/18/00
Turn over all equipment and sample bottles to Dr. Gary Baker to complete task after pump is overhauled.

8/18/00

OFF-NORMAL EVENTS: None

[redacted]

NAME: GARY L. Vaughn DATE: 8/24/00 TIME: 0630

M Tu W Th F Sa Su

TASKS PERFORMED:

1. Pick up equipment and Coolers
2. Pickup pumps and grab-samples.
3. Install pump in MW-5
4. Purge well
5. Sample & split samples
6. Ship samples and return equipment to Eagle.

GVV 8/24/00

OFF-NORMAL EVENTS: None that would involve health or safety.

GVV 8/24/00

[redacted]

REPORTING PERIOD: 8/17/00 to 8/25/00

SSHO NAME: Gary Vaughn

SUMMARY OF INJURIES: None

SUMMARY OF ACCIDENTS: None

SUMMARY OF NEAR ACCIDENTS: None

INTERPRETATIONS OF THE PROJECT SSHP/REGULATIONS: None

SUMMARY OF INTERACTIONS WITH AUDITORS/REGULATORS/USACE PERSONNEL: None

SUMMARY OF OFF-NORMAL EVENTS: None

RECORDED BY: Gary L Vaughn (Signature) DATE: 8/25/00

APPENDIX C

Analytical Results/Quality Control Data

APPENDIX C

Analytical Results/Quality Control Data

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Field ID: CAFB0824MWR
Lab ID: 0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 01-Sep-00
Date Analyzed: 01-Sep-00

Prep Batch: VL000901-1
QCBatchID: VL000901-1-1
Run ID: VL000901-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A11720

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	20	20	U	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	7.7	5	B	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

Data Package ID: *VL0008165-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Field ID: CAFB0824MWR
Lab ID: 0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 01-Sep-00
Date Analyzed: 01-Sep-00

Prep Batch: VL000901-1
QCBatchID: VL000901-1-1
Run ID: VL000901-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A11720

75-27-4	BROMODICHLOROMETHANE	1	5	5	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U	
108-88-3	TOLUENE	1	5	5	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U	
591-78-6	2-HEXANONE	1	20	20	U	
127-18-4	TETRACHLOROETHENE	1	5	5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	U	
544-10-5	1-CHLOROHEXANE	1	5	5	U	
108-90-7	CHLOROBENZENE	1	5	5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U	
100-41-4	ETHYLBENZENE	1	5	5	U	
136777-61-2	M+P-XYLENE	1	5	5	U	
95-47-6	O-XYLENE	1	5	5	U	
100-42-5	STYRENE	1	5	5	U	
75-25-2	BROMOFORM	1	5	5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U	
108-86-1	BROMOBENZENE	1	5	5	U	
103-65-1	N-PROPYLBENZENE	1	5	5	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U	
135-98-8	SEC-BUTYLBENZENE	1	5	5	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U	

Data Package ID: *VL0008165-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

[illegible]	CAFB0824MWR
[illegible]	0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 01-Sep-00
Date Analyzed: 01-Sep-00

Prep Batch: VL000901-1
QCBatchID: VL000901-1-1
Run ID: VL000901-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A11720

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	42.7		50	85	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	43.7		50	87	75 - 127
2037-26-5	TOLUENE-D8	52.3		50	105	89 - 116

Data Package ID: *VL0008165-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Field ID: CAFB0824MWR-TB
Lab ID: 0008165-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 01-Sep-00
Date Analyzed: 01-Sep-00

Prep Batch: VL000901-1
QCBatchID: VL000901-1-1
Run ID: VL000901-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A11721

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	12	20	J	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	7.8	5	B	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

Data Package ID: *VL0008165-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Field ID:	CAFB0824MWR-TB
Lab ID:	0008165-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 01-Sep-00
Date Analyzed: 01-Sep-00

Prep Batch: VL000901-1
QCBatchID: VL000901-1-1
Run ID: VL000901-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A11721

75-27-4	BROMODICHLOROMETHANE	1	5	5	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U	
108-88-3	TOLUENE	1	5	5	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U	
591-78-6	2-HEXANONE	1	20	20	U	
127-18-4	TETRACHLOROETHENE	1	5	5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	U	
544-10-5	1-CHLOROHEXANE	1	5	5	U	
108-90-7	CHLOROBENZENE	1	5	5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U	
100-41-4	ETHYLBENZENE	1	5	5	U	
136777-61-2	M+P-XYLENE	1	5	5	U	
95-47-6	O-XYLENE	1	5	5	U	
100-42-5	STYRENE	1	5	5	U	
75-25-2	BROMOFORM	1	5	5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U	
108-86-1	BROMOBENZENE	1	5	5	U	
103-65-1	N-PROPYLBENZENE	1	5	5	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U	
135-98-8	SEC-BUTYLBENZENE	1	5	5	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U	

Data Package ID: *VL0008165-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Client ID:	CAFB0824MWR-TB
Lab ID:	0008165-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 01-Sep-00
Date Analyzed: 01-Sep-00

Prep Batch: VL000901-1
QCBatchID: VL000901-1-1
Run ID: VL000901-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A11721

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	44.5		50	89	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	46.5		50	93	75 - 127
2037-26-5	TOLUENE-D8	51.3		50	103	89 - 116

Data Package ID: *VL0008165-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0824MWR	
0008165-2	

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 28-Aug-00
Date Analyzed: 01-Sep-00

Prep Batch: EX000828-9
QCBatchID: EX000828-9-1
Run ID: SV000901-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1060 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: P9363

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	9.4	9.4	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	9.4	9.4	U	
62-53-3	ANILINE	1	24	24	U	
108-95-2	PHENOL	1	9.4	9.4	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	9.4	9.4	U	
95-57-8	2-CHLOROPHENOL	1	9.4	9.4	U	
541-73-1	1,3-DICHLOROBENZENE	1	9.4	9.4	U	
106-46-7	1,4-DICHLOROBENZENE	1	9.4	9.4	U	
95-50-1	1,2-DICHLOROBENZENE	1	9.4	9.4	U	
100-51-6	BENZYL ALCOHOL	1	9.4	9.4	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	9.4	9.4	U	
95-48-7	2-METHYLPHENOL	1	9.4	9.4	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	9.4	9.4	U	
106-44-5	4-METHYLPHENOL	1	9.4	9.4	U	
67-72-1	HEXACHLOROETHANE	1	9.4	9.4	U	
98-95-3	NITROBENZENE	1	9.4	9.4	U	
78-59-1	ISOPHORONE	1	9.4	9.4	U	
88-75-5	2-NITROPHENOL	1	9.4	9.4	U	
105-67-9	2,4-DIMETHYLPHENOL	1	9.4	9.4	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	9.4	9.4	U	
120-83-2	2,4-DICHLOROPHENOL	1	9.4	9.4	U	
65-85-0	BENZOIC ACID	1	47	47	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	9.4	9.4	U	
91-20-3	NAPHTHALENE	1	9.4	9.4	U	
106-47-8	4-CHLOROANILINE	1	24	24	U	
87-68-3	HEXACHLOROBUTADIENE	1	9.4	9.4	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	9.4	9.4	U	
91-57-6	2-METHYLNAPHTHALENE	1	9.4	9.4	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	1	9.4	9.4	U	

Data Package ID: *SV0008165-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0824MWR
0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 28-Aug-00
Date Analyzed: 01-Sep-00

Prep Batch: EX000828-9
QCBatchID: EX000828-9-1
Run ID: SV000901-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1060 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: P9363

88-06-2	2,4,6-TRICHLOROPHENOL	1	9.4	9.4	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	9.4	9.4	U	
91-58-7	2-CHLORONAPHTHALENE	1	9.4	9.4	U	
88-74-4	2-NITROANILINE	1	47	47	U	
131-11-3	DIMETHYL PHTHALATE	1	9.4	9.4	U	
606-20-2	2,6-DINITROTOLUENE	1	9.4	9.4	U	
208-96-8	ACENAPHTHYLENE	1	9.4	9.4	U	
99-09-2	3-NITROANILINE	1	47	47	U	
83-32-9	ACENAPHTHENE	1	9.4	9.4	U	
51-28-5	2,4-DINITROPHENOL	1	47	47	U	
100-02-7	4-NITROPHENOL	1	47	47	U	
132-64-9	DIBENZOFURAN	1	9.4	9.4	U	
121-14-2	2,4-DINITROTOLUENE	1	9.4	9.4	U	
84-66-2	DIETHYL PHTHALATE	1	9.4	9.4	U	
86-73-7	FLUORENE	1	9.4	9.4	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	9.4	9.4	U	
100-01-6	4-NITROANILINE	1	47	47	U	
103-33-3	AZOBENZENE	1	9.4	9.4	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	47	47	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	9.4	9.4	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	9.4	9.4	U	
118-74-1	HEXACHLOROBENZENE	1	9.4	9.4	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	47	47	U	
87-86-5	PENTACHLOROPHENOL	1	47	47	U	
85-01-8	PHENANTHRENE	1	9.4	9.4	U	
120-12-7	ANTHRACENE	1	9.4	9.4	U	
86-74-8	CARBAZOLE	1	9.4	9.4	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	9.4	9.4	U	
206-44-0	FLUORANTHENE	1	9.4	9.4	U	
129-00-0	PYRENE	1	9.4	9.4	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	9.4	9.4	U	
56-55-3	BENZO(A)ANTHRACENE	1	9.4	9.4	U	

Data Package ID: *SV0008165-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0824MWR	
0008165-2	

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 28-Aug-00
Date Analyzed: 01-Sep-00

Prep Batch: EX000828-9
QCBatchID: EX000828-9-1
Run ID: SV000901-2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1060 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: P9363

91-94-1	3,3'-DICHLOROBENZIDINE	1	47	47	U	
218-01-9	CHRYSENE	1	9.4	9.4	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	9.4	9.4	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	9.4	9.4	U	
205-99-2	BENZO(B)FLUORANTHENE	1	9.4	9.4	U	
207-08-9	BENZO(K)FLUORANTHENE	1	9.4	9.4	U	
50-32-8	BENZO(A)PYRENE	1	9.4	9.4	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	9.4	9.4	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	9.4	9.4	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	9.4	9.4	U	

Surrogate Recovery

GASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	47.8		70.8	68	23 - 100
321-60-8	2-FLUOROBIPHENYL	29.4		47.2	62	21 - 106
367-12-4	2-FLUOROPHENOL	41.1		70.8	58	21 - 100
4165-60-0	NITROBENZENE-D5	30.8		47.2	65	34 - 111
4165-62-2	PHENOL-D5	48.3		70.8	68	15 - 104
1718-51-0	TERPHENYL-D14	39.7		47.2	84	33 - 111

Data Package ID: *SV0008165-1*

Organophosphorus Pesticides

Method SW8141

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

[redacted]	CAFB0824MWR
[redacted]	0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 29-Aug-00
Date Analyzed: 01-Sep-00

Prep Batch: EX000829-3
QCBatchID: EX000829-3-1
Run ID: PT000901-7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: 0901FA12

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
62-73-7	DICHLORVOS	1	0.98	0.98	U	
7786-34-7	MEVINPHOS	1	0.98	0.98	U	
8065-48-3	DEMETON O + S	1	0.98	0.98	U	
13194-48-4	ETHOPROP	1	0.98	0.98	U	
300-76-5	NALED	1	2.9	2.9	U	
298-02-2	PHORATE	1	0.98	0.98	U	
333-41-5	DIAZINON	1	0.98	0.98	U	
298-04-4	DISULFOTON	1	3.9	3.9	U	
298-00-0	METHYL PARATHION	1	0.98	0.98	U	
299-84-3	RONNEL	1	0.98	0.98	U	
55-38-9	FENTHION	1	0.98	0.98	U	
2921-88-2	CHLORPYRIFOS	1	0.98	0.98	U	
327-98-0	TRICHLORONATE	1	0.98	0.98	U	
150-50-5	MERPHOS A + B	1	2	2	U	
22248-79-9	TETRACHLORVINPHOS	1	0.98	0.98	U	
34643-46-4	TOKUTHION	1	0.98	0.98	U	
115-90-2	FENSULFOTHION	1	0.98	0.98	U	
35400-43-2	SULPROFOS	1	0.98	0.98	U	
86-50-0	METHYL AZINPHOS	1	2	2	U	
56-72-4	COUMAPHOS	1	2	2	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
115-86-6	TRIPHENYLPHOSPHATE	1.32		1.96	68	39 - 130

Data Package ID: *PT0008165-3*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0824MWR	
0008165-2	

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 29-Aug-00
Date Analyzed: 08-Sep-00

Prep Batch: EX000829-5
QCBatchID: EX000829-5-1
Run ID: PT000908-1
Cleanup: SW3665
Basis: As Received

Sample Aliquot: 1025 ML
Final Volume: 10 ML
Result Units: UG/L

File Name: EA001315

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.98	0.98	U	
11104-28-2	AROCLOR-1221	1	2	2	U	
11141-16-5	AROCLOR-1232	1	0.98	0.98	U	
53469-21-9	AROCLOR-1242	1	0.98	0.98	U	
12672-29-6	AROCLOR-1248	1	0.98	0.98	U	
11097-69-1	AROCLOR-1254	1	0.98	0.98	U	
11096-82-5	AROCLOR-1260	1	0.98	0.98	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.23	*	0.488	47	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.428		0.488	88	44 - 131

Data Package ID: *PT0008165-2*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Client ID:	CAFB0818MWR-R1
Lab ID:	0008165-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 18-Aug-00
Date Extracted: 30-Aug-00
Date Analyzed: 30-Aug-00

Prep Batch: IP000830-2
QCBatchID: IP000830-2-3
Run ID: IT000830-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 ML
Result Units: MG/L

File Name: TS00830

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	1	1	U	
7440-47-3	CHROMIUM	1	0.013	0.01		
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.023	0.01		
7439-89-6	IRON	1	0.12	0.1		
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	1	1	U	
7439-96-5	MANGANESE	1	0.013	0.01		
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	1	1	U	
7782-49-2	SELENIUM	1	0.005	0.005	U	
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	1	1	1	U	
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.01	0.01	U	
7440-66-6	ZINC	1	0.047	0.02		

Data Package ID: *IT0008165-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Client ID: CAFB0824MWR
Lab ID: 0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 30-Aug-00
Date Analyzed: 30-Aug-00

Prep Batch: IP000830-2
QCBatchID: IP000830-2-3
Run ID: IT000830-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 ML
Result Units: MG/L
File Name: TS00830

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	51	1		
7440-47-3	CHROMIUM	1	0.7	0.01		
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01		
7439-89-6	IRON	1	2.3	0.1		
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	54	1		
7439-96-5	MANGANESE	1	0.05	0.01		
7440-02-0	NICKEL	1	0.37	0.02		
7440-09-7	POTASSIUM	1	8.2	1		
7782-49-2	SELENIUM	1	0.0079	0.005		
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	1	35	1		
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.019	0.01		
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: *IT0008165-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

Field ID:	CAFB0824MWR-R2
Lab ID:	0008165-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 30-Aug-00
Date Analyzed: 30-Aug-00

Prep Batch: IP000830-2
QCBatchID: IP000830-2-3
Run ID: IT000830-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 ML
Result Units: MG/L

File Name: TS00830

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	1	1	U	
7440-47-3	CHROMIUM	1	0.01	0.01	U	
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	0.1	0.1	U	
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	1	1	U	
7439-96-5	MANGANESE	1	0.01	0.01	U	
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	1	1	U	
7782-49-2	SELENIUM	1	0.005	0.005	U	
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	1	1	1	U	
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.01	0.01	U	
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: *IT0008165-1*

Total Recoverable MERCURY

Method SW7470

Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: Parallax, Inc.
Client Project ID: Cannon AFB - LTM
Work Order Number: 0008165
Reporting Basis: As Received

Final Volume: 20 G
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
CAFB0818MWR-R1	0008165-1	8/18/2000	8/30/2000	08/31/2000	N/A	1	0.0002	0.0002	U	20 G
CAFB0824MWR	0008165-2	8/24/2000	8/30/2000	08/31/2000	N/A	1	0.0002	0.0002	U	20 G
CAFB0824MWR-R2	0008165-4	8/24/2000	8/30/2000	08/31/2000	N/A	1	0.0002	0.0002	U	20 G

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *HG0008165-1*

Organochlorine Pesticides

Method SW8081

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0824MWR
0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 29-Aug-00
Date Analyzed: 06-Sep-00

Prep Batch: EX000829-4
QCBatchID: EX000829-4-1
Run ID: PT000905-1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1055 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EB002586

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
319-84-6	ALPHA-BHC	1	0.047	0.047	U	
58-89-9	GAMMA-BHC (LINDANE)	1	0.047	0.047	U	
76-44-8	HEPTACHLOR	1	0.047	0.047	U	
309-00-2	ALDRIN	1	0.047	0.047	U	
319-85-7	BETA-BHC	1	0.047	0.047	U	
319-86-8	DELTA-BHC	1	0.047	0.047	U	
1024-57-3	HEPTACHLOR EPOXIDE	1	0.047	0.047	U	
959-98-8	ENDOSULFAN I	1	0.047	0.047	U	
5103-74-2	GAMMA-CHLORDANE	1	0.047	0.047	U	
5103-71-9	ALPHA-CHLORDANE	1	0.047	0.047	U	
72-55-9	4,4'-DDE	1	0.095	0.095	U	
60-57-1	DIELDRIN	1	0.095	0.095	U	
72-20-8	ENDRIN	1	0.095	0.095	U	
72-54-8	4,4'-DDD	1	0.095	0.095	U	
33213-65-9	ENDOSULFAN II	1	0.095	0.095	U	
50-29-3	4,4'-DDT	1	0.095	0.095	U	
7421-93-4	ENDRIN ALDEHYDE	1	0.095	0.095	U	
72-43-5	METHOXYCHLOR	1	0.47	0.47	U	
1031-07-8	ENDOSULFAN SULFATE	1	0.095	0.095	U	
53494-70-5	ENDRIN KETONE	1	0.095	0.095	U	
8001-35-2	TOXAPHENE	1	4.7	4.7	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.211	*	0.474	45	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.48		0.474	101	44 - 131

Data Package ID: *PT0008165-1*

Chlorinated Herbicides by GC/ECD

Method SW8151

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0824MWR
0008165-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 29-Aug-00
Date Analyzed: 20-Sep-00

Prep Batch: EX000829-9
QCBatchID: EX000829-9-1
Run ID: PT000919-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 990 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EC000696

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	2	2	U	
1918-00-9	DICAMBA	1	0.1	0.1	U	
93-65-2	MCPP	1	51	51	U	
94-74-6	MCPA	1	51	51	U	
120-36-5	DICHLOROPROP	1	0.51	0.51	U	
94-75-7	2,4-D	1	0.51	0.51	U	
93-72-1	SILVEX	1	0.051	0.051	U	
93-76-5	2,4,5-T	1	0.051	0.051	U	
94-82-6	2,4-DB	1	0.51	0.51	U	
88-85-7	DINOSEB	1	0.25	0.25	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.65		2.02	82	47 - 154

Data Package ID: *PT0008165-4*

Ion Chromatography

Method EPA300.0

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0008165
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM

CAFB0624MWR	
0008165-2	

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 24-Aug-00
Date Extracted: 26-Aug-00
Date Analyzed: 26-Aug-00

Prep Batch: IC000826-2
QCBatchID: IC000826-2-1
Run ID: IC000826-1B
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
File Name: aug26_039.

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16887-00-6	CHLORIDE	10	97	2		
14797-55-8	NITRATE	1	5.5	0.2		
14808-79-8	SULFATE	10	130	10		

Data Package ID: *IC0008165-1*

Paragon Analytics, Inc.

GC/MS Volatiles Case Narrative

Parallax, Inc.

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of 2 water samples. The samples were received cool and intact by Paragon on 8/26/2000. All aqueous samples were free of head space prior to analysis.

2. These samples were prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the samples were prepared by purging 5 mls using purge and trap procedures based on Method 5030.

3. The samples were analyzed using GC/MS with a RTX-624 capillary column according to protocols based on SW-846 Method 8260B utilizing Paragon SOP 525 Rev 4. All positive results were quantitated with the average response of the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria for SPCC's and CCC's were met. Method 8260B states that the average response factor may be used for quantitation for all analytes if the mean of the RSD values for all analytes is less than or equal to 15%. The initial calibration had a mean RSD value of less than 15%.

5. All continuing calibration criteria were met.

6. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, Paragon has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, conditioned air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds. The method blank had methylene chloride detected below the

reporting limit. This compound was detected in the samples, so the data were flagged.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. A matrix spike and matrix spike duplicate were performed on an in house sample not provided by the client. The data have not been provided in this package.

9. The samples were analyzed within the established holding times.

10. All surrogate recoveries were within acceptable limits with the following exceptions:

Surrogate	Sample	Direction
4-Bromofluorobenzene	VL000901-1MB, -1LCS, -1LCSD	low

All target recoveries in the LCS and LCSD were within limits. The low 4-Bromofluorobenzene recovery in the method blank suggests that target recoveries in this retention time range are biased low. However, all surrogate recoveries in the samples were within control limits, and no target compounds were detected in the retention time range of 4-Bromofluorobenzene. No further action was taken.

11. All internal standard recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Joe Kostelnik
Organic Chemist

September 19, 2000
Date

JN
Reviewer's Initials

9-18-00
Date

Paragon Analytics, Inc.

GC/MS Semivolatiles Case Narrative

Parallax, Inc.

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of one water sample. The sample was received cool and intact on August 26, 2000.

2. The sample was prepared and analyzed according to SW-846, 3rd Edition protocol utilizing Paragon Standard Operating Procedures. Specifically, it was extracted using continuous liquid-liquid extractors, according to SW-846 Method 3520 utilizing Paragon Standard Operating Procedure 617.

3. The sample was analyzed using GC/MS with a DB-5.625 capillary column according to Paragon Standard Operating Procedure 506 Revision 8 based on SW-846 Method 8270C. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria were met. Method 8270C states that if the average of the percent relative standard deviations (RSDs) is less than 15, the average response factors may be used for quantitation. We quantitated these compounds using the average responses.

5. All continuing calibration criteria were met.

6. There were no target compounds detected in the method blank.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. Matrix spikes and matrix spike duplicates were not designated for this sample delivery group. A laboratory control spike and laboratory control spike duplicate were performed instead.

9. The sample was extracted and analyzed within the established holding times.

10. All surrogate recoveries were within acceptance criteria.

11. All internal standard recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Cheryl Jones — 9-20-2000

Cheryl Jones
Organic Chemist

Date

JWD — 09/19/00

Reviewer's Initials

Date

Paragon Analytics, Inc.

Pesticides Case Narrative

Parallax, Inc,

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of 1 water sample received by Paragon on 8/26/2000.

2. This sample was extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using continuous liquid-liquid extractors, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520C.

3. The extract was then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides column capillary column according to Paragon Analytics, Inc. Standard Operations Procedure 402 Revision 5 based on Method 8081A. All positive results were then confirmed on a RTX-CLPesticides II column. The quantitation of each analyte is the lower of the concentrations obtained from each column. This minimizes the chances of reporting elevated results based on interferences.

4. The breakdown for endrin and 4,4'-DDT met acceptance criteria.

5. All initial and continuing calibration criteria were within acceptance criteria.

6. The method blank associated with this project was below the reporting limits for all analytes.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

9. All samples were extracted and analyzed within the established holding times.

10. All surrogate recoveries were within acceptable limits with the following exceptions:

Surrogate	Sample	Direction
Decachlorobiphenyl	EX000829-4LCS, -4LCSD and -2	low

The method states that one surrogate may be outside control limits without further action.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 9-21-00
Dan Sheneman, GC Analyst — Date

PAG — 21 Sept 2000
Reviewer's Initials — Date

Paragon Analytics, Inc.

Pesticides Case Narrative

Parallax, Inc,

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of 1 water sample received by Paragon on 8/26/2000.

2. This sample was extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using continuous liquid-liquid extractors, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520C.

3. The extract was then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides column capillary column according to Paragon Analytics, Inc. Standard Operations Procedure 402 Revision 5 based on Method 8081A. All positive results were then confirmed on a RTX-CLPesticides II column. The quantitation of each analyte is the lower of the concentrations obtained from each column. This minimizes the chances of reporting elevated results based on interferences.

4. The breakdown for endrin and 4,4'-DDT met acceptance criteria.

5. All initial and continuing calibration criteria were within acceptance criteria.

6. The method blank associated with this project was below the reporting limits for all analytes.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

9. All samples were extracted and analyzed within the established holding times.

10. All surrogate recoveries were within acceptable limits with the following exceptions:

Surrogate	Sample	Direction
Decachlorobiphenyl	EX000829-4LCS, -4LCSD and -2	low

The method states that one surrogate may be outside control limits without further action.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 9-21-00
Dan Sheneman, GC Analyst — Date

PAG — 21 Sept 2000
Reviewer's Initials — Date

Paragon Analytics, Inc.

PCBs Case Narrative

Parallax, Inc.

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of 1 water sample received by Paragon on 8/26/2000.

2. This sample was extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using continuous liquid-liquid extractors, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520C. The extract was then processed using sulfuric acid cleanup according to Paragon Analytics Standard Operating Procedure 651 Revision 4 based on Method 3665 in an attempt to remove potential interferences.

3. The extract was then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to Paragon Analytics Standard Operating Protocol 409 Revision 0 based on SW-846 Method 8082. All positive results were then confirmed on a RTX-CLPesticidesII column. The quantitation of each analyte is the lower of the concentrations obtained from each column. This minimizes the chances of reporting elevated results based on interferences.

4. All initial and continuing calibration criteria were within acceptance criteria.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were extracted and analyzed within the established holding times.

9. All surrogate recoveries were within acceptable limits with the following exceptions:

Surrogate	Sample	Direction
decachlorobiphenyl	EX000829-5MB and -2	low

The method states that one surrogate may be outside control limits without further action.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 9-25-00

Dan Sheneman
GC Analyst

Date

PAG — 25 Sept 2000

Reviewer's Initials

Date

Paragon Analytics, Inc.

TOTAL RECOVERABLE METALS
CASE NARRATIVE

Parallax, Inc.

Cannon AFB - LTM

Order Number - 0008165

TABLE OF CONTENTS:

Section 1: Case Narrative

1.1 This report consists of 3 water samples.

1.2 The samples were received cool and intact on 08/19/00 and 8/26/00.

1.3 PAI sample IDs 0008165-2 and -4 had been preserved for the requested analyses. PAI sample ID 0008165-1 had not been preserved for the requested analyses. PAI sample ID 0008165-1 was preserved with nitric acid to a pH less than two prior to analysis.

1.4 The samples were prepared for analysis based on SW-846, 3rd Edition procedures.

For analysis by Trace ICP, the samples were digested following method 3005A and PAI SOP 806 Rev. 5.

For analysis by Cold Vapor AA (CVAA), the samples were digested following method 7470A and PAI SOP 812 Rev. 6.

1.5 The samples were analyzed following SW-846 3rd Edition procedures.

Analysis by Trace ICP followed method 6010B and PAI SOP 807 Rev. 4.

The relationship between intensity and concentration for each element is established using at least four standards, one of which is a blank solution. The equation which relates intensity to concentration is:

$$I = A_0 + (A_1 * c^n) + (A_2 * c^{2n})$$

where: I = intensity
c = concentration
A_0 = offset coefficient
A_1 = gain coefficient
A_2 = curvature coefficient
n = exponent coefficient

During sample analysis concentrations are computed by the software and the results are printed in mg/L. The instrument software does not provide a printout which gives both intensity and concentration. The validity of the calibration equation is tested by analyzing the following solutions: a blank, a low level check solution with concentrations near the reporting limit, an Initial Calibration Verification (ICV) standard from a 2nd source standard solution with concentrations near the middle of the analytical range, a Continuing Calibration Verification (CCV) standard with concentrations at two times those in the ICV, and a readback of the highest calibration standard.

These solutions provide verification that the calibration equations are functioning properly throughout the analytical range of the instrument. During sample analysis dilutions are made for analytes found at concentrations above the highest calibration standard. No results are taken from extrapolations beyond the highest standard.

Analysis by CVAA followed method 7470A and PAI SOP 812 Rev. 6.

The relationship between intensity and concentration is determined daily, prior to sample analysis. At least five standards and a blank solution are analyzed to establish the calibration curve. The instrument software performs a linear regression to fit the calibration data to a curve of the form:

$$conc. = B * I + C$$

where: conc. = concentration
B = slope coefficient
I = intensity
C = intercept coefficient

A printout summarizing the calibration data supplies the calibration curve and correlation coefficient. During sample analysis both intensity and concentration values are printed. Dilutions are made for concentrations above the highest calibration standard. No results are taken from extrapolations above the highest standard.

1.6 All standards and solutions are NIST traceable and were used within their recommended shelf life.

1.7 The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

1.8 General quality control procedures.

- A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch. There were not more than 20 samples in each digestion batch.
- The preparation (method) blank results associated with each batch were below the practical quantitation limits for the requested analytes.
- The laboratory control sample associated with each batch was within the acceptance limits. This indicates complete digestion according to the method.
- All initial and continuing calibration blanks associated with each batch were below the practical quantitation limits for the requested analytes.
- All initial and continuing calibration verifications associated with each batch were within the acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- The interference check samples, and high standard readbacks associated with Method 6010B analyses were within acceptance criteria.

1.9 Matrix specific quality control procedures.

PAI sample ID 0008214-21 was designated as the quality control sample for the ICP analyses. PAI sample ID 0008220-12 was designated as the quality control sample for the mercury analysis.

- A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.
- A sample duplicate and spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.
- A serial dilution was analyzed with the ICP batch. All acceptance criteria were met.

1.10 Sample dilutions were not required for the requested analyses.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Ross E. Miller — 9/21/00
Ross E. Miller
Senior Inorganic Chemist
Date

SW — 9/21/00
Reviewer's Initials
Date

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Paragon Analytics, Inc.

OP Pesticides Case Narrative

Parallax, Inc.

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of data for 1 water sample received by Paragon on 08/26/2000.

2. This sample was extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using a continuous liquid-liquid extractor, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520B.

3. The extract was analyzed using GC/FPD with a RTx-1 capillary column according to Paragon Analytics, Inc. Standard Operating Procedure 407 Revision 4 based on SW-846 Method 8141A. All positive results were then confirmed on a RTx-OPPesticides column. For each analyte the concentration reported represents the lower of the quantitations obtained from each column. This minimizes the possibility of reporting results that are elevated because of interference.

4. All inital and continuing calibration criteria were met with the following exceptions:

   Initial calibration verification ICV-9/01 : Dichlorvos quantitated high on column-1. Naled quantitated high on column-2. Total Merphos and Fensulfothion quantitated low on column-2.

   The water solubility of Dichlorvos is 10g/L at 20 degrees C, and recovery is poor from aqueous solution. Naled can be converted to Dichlorvos on column by debromination. This reaction may also occur during sample preparation. The extent of debromination will depend on the nature of the matrix being analyzed. Therefore, Dichlorvos may be detected in samples which contain Naled.

   Demeton is a mixture of two compounds; Demeton-O and Demeton-S. Two peaks are observed in all the chromatograms corresponding to these two isomers. Quantitation is based on the sum of both peaks.

Merphos is a single-component pesticide that is readily oxidized to merphos oxone. Chromatographic analysis of merphos usually results in two peaks. Since the extent of merphos oxidation in the calibration standards is not likely to be the same as that in the samples (if merphos is found), quantitation based on the sum of both peaks is appropriate.

None of the target compounds that exceeded calibration in the ICV were detected in the sample. All reporting limits can be supported.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria. However, Demeton and Disulfoton can exhibit poor recoveries by this method.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were analyzed within the established holding times.

9. All surrogate recoveries were within acceptable limits.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Robert Jump
Chemist

9/26/00
Date

Reviewer's Initials

26 Sept 2000
Date

Paragon Analytics, Inc.

Herbicides Case Narrative

Parallax, Inc.

Cannon AFB - LTM

Order Number - 0008165

1. This report consists of 1 water sample received by Paragon on 8/26/2000.

2. This sample was extracted according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted based on Method 8151A protocols using a separatory funnel. The sample was also processed through washing procedures to reduce interferences using the protocols listed in the method. The extract was then derivitized using the diazomethane procedure contained in the method.

3. The extract was then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to Paragon Analytics, Inc. Standard Operating Procedure 434 Revision 3 based on SW-846 Method 8151A. All positive results were then confirmed on a RTX-CLPesticides II column. The quantitation of each analyte is the lower of the concentrations obtained from each column. This minimizes the chances of reporting elevated results based on interferences.

4. All initial and continuing calibration criteria were within acceptance criteria.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were analyzed within the established holding times.

4.

9. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 9-25-06
Dan Sheneman — Date
GC Analyst

PHC — 25 Sept 2006
Reviewer's Initials — Date

Paragon Analytics, Inc.
Data Qualifier Flags
Chromatography and Mass Spectrometry

U or ND: This flag indicates that the compound was analyzed for but not detected.

J: This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); and (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL.

B: This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.

E: This flag identifies compounds whose concentration exceeds the upper level of the calibration range.

***:** This flag indicates that a spike recovery is equal to or outside the control criteria used. (This flag appears when a spike recovery is equal to, and therefore within, the control criteria due to a limitation in the current PAI LIMS system.)

+: This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria. (This flag appears when the RPD is equal to, and therefore within, the control criteria due to a limitation in the current PAI LIMS system.)

Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

  M - Duplicate injection precision was not met.

  N - Spiked sample recovery not within control limits. A post spike is analyzed for all 6010B analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

  * - Duplicate analysis (relative percent difference) not within control limits.

Paragon Analytics, Inc.

GC/MS Volatiles Case Narrative

Parallax

Cannon AFB-LTM -- 2829-220

Order Number - 0101045

1. This report consists of 5 water samples. The samples were received cool and intact by Paragon on January 10, 2001. The vial for sample 2 contained head space prior to analysis because a previous aliquot was removed from the vial for analysis.

2. These samples were prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water samples were prepared by purging 5 mls using purge and trap procedures based on Method 5030.

3. The samples were analyzed using GC/MS with a RTX-624 capillary column according to protocols based on SW-846 Method 8260B utilizing Paragon SOP 525 Rev 4. All positive results were quantitated with the average response of the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria for SPCC's and CCC's were met. Method 8260B states that the average response factor may be used for quantitation for all analytes if the mean of the RSD values for all analytes is less than or equal to 15%. The initial calibrations had a mean RSD value of less than 15%.

5. All continuing calibration criteria were met.

6. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, Paragon has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, conditioned air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds.

The method blanks had methylene chloride detected below the reporting limit. This compound was not detected in the samples.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. A matrix spike and matrix spike duplicate were performed on an in house sample not provided by the client. The data have not been provided in this package.

9. The samples were analyzed within the established holding times.

10. All surrogate recoveries were within acceptance criteria.

11. All internal standard recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Joel Nolte
Organic Chemist

1-28-01
Date

Reviewer's Initials

1-26-01
Date

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO-T
Lab ID: 0101045-5

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7438

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	50.1		50	100	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	46.2		50	92	75 - 127
2037-26-5	TOLUENE-D8	52.9		50	106	89 - 116

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO-T
Lab ID: 0101045-5

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7438

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	15	20	J	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO-T
Lab ID: 0101045-5

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7438

75-27-4	BROMODICHLOROMETHANE	1	5	5	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U	
108-88-3	TOLUENE	1	5	5	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U	
591-78-6	2-HEXANONE	1	20	20	U	
127-18-4	TETRACHLOROETHENE	1	5	5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	U	
544-10-5	1-CHLOROHEXANE	1	5	5	U	
108-90-7	CHLOROBENZENE	1	5	5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U	
100-41-4	ETHYLBENZENE	1	5	5	U	
136777-61-	M+P-XYLENE	1	5	5	U	
95-47-6	O-XYLENE	1	5	5	U	
100-42-5	STYRENE	1	5	5	U	
75-25-2	BROMOFORM	1	5	5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U	
108-86-1	BROMOBENZENE	1	5	5	U	
103-65-1	N-PROPYLBENZENE	1	5	5	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U	
135-98-8	SEC-BUTYLBENZENE	1	5	5	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7440

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	49.4		50	99	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	48.5		50	97	75 - 127
2037-26-5	TOLUENE-D8	50.9		50	102	89 - 116

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L

File Name: C7440

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	20	20	U	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7440

75-27-4	BROMODICHLOROMETHANE	1	5	5	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U	
108-88-3	TOLUENE	1	5	5	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U	
591-78-6	2-HEXANONE	1	20	20	U	
127-18-4	TETRACHLOROETHENE	1	5	5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	U	
544-10-5	1-CHLOROHEXANE	1	5	5	U	
108-90-7	CHLOROBENZENE	1	5	5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U	
100-41-4	ETHYLBENZENE	1	5	5	U	
136777-61-	M+P-XYLENE	1	5	5	U	
95-47-6	O-XYLENE	1	5	5	U	
100-42-5	STYRENE	1	5	5	U	
75-25-2	BROMOFORM	1	5	5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U	
108-86-1	BROMOBENZENE	1	5	5	U	
103-65-1	N-PROPYLBENZENE	1	5	5	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U	
135-98-8	SEC-BUTYLBENZENE	1	5	5	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7443

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	44.3		50	89	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	45.5		50	91	75 - 127
2037-26-5	TOLUENE-D8	49.7		50	99	89 - 116

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L

File Name: C7443

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	12	20	J	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7443

75-27-4	BROMODICHLOROMETHANE	1	5	5	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U	
108-88-3	TOLUENE	1	5	5	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U	
591-78-6	2-HEXANONE	1	20	20	U	
127-18-4	TETRACHLOROETHENE	1	5	5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	U	
544-10-5	1-CHLOROHEXANE	1	5	5	U	
108-90-7	CHLOROBENZENE	1	5	5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U	
100-41-4	ETHYLBENZENE	1	5	5	U	
136777-61-	M+P-XYLENE	1	5	5	U	
95-47-6	O-XYLENE	1	5	5	U	
100-42-5	STYRENE	1	5	5	U	
75-25-2	BROMOFORM	1	5	5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U	
108-86-1	BROMOBENZENE	1	5	5	U	
103-65-1	N-PROPYLBENZENE	1	5	5	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U	
135-98-8	SEC-BUTYLBENZENE	1	5	5	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 16-Jan-01
Date Analyzed: 16-Jan-01

Prep Batch: VL010116-1
QCBatchID: VL010116-1-1
Run ID: VL010116-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A13469

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	20	20	U	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 16-Jan-01
Date Analyzed: 16-Jan-01

Prep Batch: VL010116-1
QCBatchID: VL010116-1-1
Run ID: VL010116-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A13469

75-27-4	BROMODICHLOROMETHANE	1	5	5	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U
108-88-3	TOLUENE	1	5	5	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U
591-78-6	2-HEXANONE	1	20	20	U
127-18-4	TETRACHLOROETHENE	1	5	5	U
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U
106-93-4	1,2-DIBROMOETHANE	1	5	5	U
544-10-5	1-CHLOROHEXANE	1	5	5	U
108-90-7	CHLOROBENZENE	1	5	5	U
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U
100-41-4	ETHYLBENZENE	1	5	5	U
136777-61-	M+P-XYLENE	1	5	5	U
95-47-6	O-XYLENE	1	5	5	U
100-42-5	STYRENE	1	5	5	U
75-25-2	BROMOFORM	1	5	5	U
98-82-8	ISOPROPYLBENZENE	1	5	5	U
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U
108-86-1	BROMOBENZENE	1	5	5	U
103-65-1	N-PROPYLBENZENE	1	5	5	U
95-49-8	2-CHLOROTOLUENE	1	5	5	U
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U
106-43-4	4-CHLOROTOLUENE	1	5	5	U
98-06-6	TERT-BUTYLBENZENE	1	5	5	U
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U
135-98-8	SEC-BUTYLBENZENE	1	5	5	U
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 16-Jan-01
Date Analyzed: 16-Jan-01

Prep Batch: VL010116-1
QCBatchID: VL010116-1-1
Run ID: VL010116-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: A13469

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.3		50	95	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	45.1		50	90	75 - 127
2037-26-5	TOLUENE-D8	48.3		50	97	89 - 116

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L

File Name: C7442

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	10	10	U	
74-87-3	CHLOROMETHANE	1	10	10	U	
75-01-4	VINYL CHLORIDE	1	10	10	U	
74-83-9	BROMOMETHANE	1	10	10	U	
75-00-3	CHLOROETHANE	1	10	10	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	5	5	U	
75-35-4	1,1-DICHLOROETHENE	1	5	5	U	
76-13-1	TRICHLOROTRIFLUOROETHANE	1	5	5	U	
67-64-1	ACETONE	1	20	20	U	
74-88-4	IODOMETHANE	1	5	5	U	
75-15-0	CARBON DISULFIDE	1	5	5	U	
75-09-2	METHYLENE CHLORIDE	1	5	5	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	5	5	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	5	5	U	
75-34-3	1,1-DICHLOROETHANE	1	5	5	U	
108-05-4	VINYL ACETATE	1	20	20	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	5	5	U	
78-93-3	2-BUTANONE	1	20	20	U	
74-97-5	BROMOCHLOROMETHANE	1	5	5	U	
67-66-3	CHLOROFORM	1	5	5	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	5	5	U	
594-20-7	2,2-DICHLOROPROPANE	1	5	5	U	
56-23-5	CARBON TETRACHLORIDE	1	5	5	U	
563-58-6	1,1-DICHLOROPROPENE	1	5	5	U	
107-06-2	1,2-DICHLOROETHANE	1	5	5	U	
71-43-2	BENZENE	1	5	5	U	
79-01-6	TRICHLOROETHENE	1	5	5	U	
78-87-5	1,2-DICHLOROPROPANE	1	5	5	U	
74-95-3	DIBROMOMETHANE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7442

75-27-4	BROMODICHLOROMETHANE	1	5	5	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	5	5	U	
108-10-1	4-METHYL-2-PENTANONE	1	20	20	U	
108-88-3	TOLUENE	1	5	5	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	5	5	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	5	5	U	
591-78-6	2-HEXANONE	1	20	20	U	
127-18-4	TETRACHLOROETHENE	1	5	5	U	
142-28-9	1,3-DICHLOROPROPANE	1	5	5	U	
124-48-1	DIBROMOCHLOROMETHANE	1	5	5	U	
106-93-4	1,2-DIBROMOETHANE	1	5	5	U	
544-10-5	1-CHLOROHEXANE	1	5	5	U	
108-90-7	CHLOROBENZENE	1	5	5	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	5	5	U	
100-41-4	ETHYLBENZENE	1	5	5	U	
136777-61-	M+P-XYLENE	1	5	5	U	
95-47-6	O-XYLENE	1	5	5	U	
100-42-5	STYRENE	1	5	5	U	
75-25-2	BROMOFORM	1	5	5	U	
98-82-8	ISOPROPYLBENZENE	1	5	5	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	5	5	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	5	5	U	
108-86-1	BROMOBENZENE	1	5	5	U	
103-65-1	N-PROPYLBENZENE	1	5	5	U	
95-49-8	2-CHLOROTOLUENE	1	5	5	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	5	5	U	
106-43-4	4-CHLOROTOLUENE	1	5	5	U	
98-06-6	TERT-BUTYLBENZENE	1	5	5	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	5	5	U	
135-98-8	SEC-BUTYLBENZENE	1	5	5	U	
541-73-1	1,3-DICHLOROBENZENE	1	5	5	U	
99-87-6	P-ISOPROPYLTOLUENE	1	5	5	U	

Data Package ID: *VL0101045-1*

GC/MS Volatiles

Method SW8260

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 11-Jan-01

Prep Batch: VL010111-3
QCBatchID: VL010111-3-1
Run ID: VL010111-3A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: UG/L
File Name: C7442

106-46-7	1,4-DICHLOROBENZENE	1	5	5	U	
104-51-8	N-BUTYLBENZENE	1	5	5	U	
95-50-1	1,2-DICHLOROBENZENE	1	5	5	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	10	10	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	5	5	U	
87-68-3	HEXACHLOROBUTADIENE	1	5	5	U	
91-20-3	NAPHTHALENE	1	5	5	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	5	5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	47.6		50	95	82 - 123
1868-53-7	DIBROMOFLUOROMETHANE	47.3		50	95	75 - 127
2037-26-5	TOLUENE-D8	50		50	100	89 - 116

Paragon Analytics, Inc.

GC/MS Semivolatiles Case Narrative

Parralax

Cannon AFB-LTM -- 2829-002

Order Number - 0101045

1. This report consists of 4 water samples. These samples were received cool and intact on 01/10/01.

2. These samples were prepared and analyzed according to SW-846, 3rd Edition protocol utilizing Paragon Standard Operating Procedures. Specifically, the water samples were extracted using continuous liquid-liquid extractors, according to SW-846 Method 3520 utilizing Paragon Standard Operating Procedure 617.

3. The samples were analyzed using GC/MS with a DB-5.625 capillary column according to Paragon Standard Operating Procedure 506 Revision 8 based on SW-846 Method 8270C. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria were met. Method 8270C states that if the average of the percent relative standard deviations (RSDs) is less than 15, the average response factors may be used for quantitation. We quantitated these compounds using the average responses.

5. All continuing calibration criteria were met.

6. There were no target compounds detected in the method blank.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. Matrix spikes and matrix spike duplicates were not designated for this sample delivery group. A laboratory control spike and laboratory control spike duplicate were performed instead.

9. The samples were extracted and analyzed within the established holding times.

10. All surrogate recoveries were within acceptance criteria.

11. All internal standard recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Gayle Cheng — 01-29-01
Gayle Cheng, Date
Organic Chemist

SL — 1-27-01
Reviewer's Initials, Date

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1035 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: R0427

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	9.7	9.7	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	9.7	9.7	U	
62-53-3	ANILINE	1	24	24	U	
108-95-2	PHENOL	1	9.7	9.7	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	9.7	9.7	U	
95-57-8	2-CHLOROPHENOL	1	9.7	9.7	U	
541-73-1	1,3-DICHLOROBENZENE	1	9.7	9.7	U	
106-46-7	1,4-DICHLOROBENZENE	1	9.7	9.7	U	
95-50-1	1,2-DICHLOROBENZENE	1	9.7	9.7	U	
100-51-6	BENZYL ALCOHOL	1	9.7	9.7	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	9.7	9.7	U	
95-48-7	2-METHYLPHENOL	1	9.7	9.7	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	9.7	9.7	U	
106-44-5	4-METHYLPHENOL	1	9.7	9.7	U	
67-72-1	HEXACHLOROETHANE	1	9.7	9.7	U	
98-95-3	NITROBENZENE	1	9.7	9.7	U	
78-59-1	ISOPHORONE	1	9.7	9.7	U	
88-75-5	2-NITROPHENOL	1	9.7	9.7	U	
105-67-9	2,4-DIMETHYLPHENOL	1	9.7	9.7	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	9.7	9.7	U	
120-83-2	2,4-DICHLOROPHENOL	1	9.7	9.7	U	
65-85-0	BENZOIC ACID	1	48	48	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	9.7	9.7	U	
91-20-3	NAPHTHALENE	1	9.7	9.7	U	
106-47-8	4-CHLOROANILINE	1	24	24	U	
87-68-3	HEXACHLOROBUTADIENE	1	9.7	9.7	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	9.7	9.7	U	
91-57-6	2-METHYLNAPHTHALENE	1	9.7	9.7	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	1	9.7	9.7	U	

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1035 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: R0427

88-06-2	2,4,6-TRICHLOROPHENOL	1	9.7	9.7	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	9.7	9.7	U	
91-58-7	2-CHLORONAPHTHALENE	1	9.7	9.7	U	
88-74-4	2-NITROANILINE	1	48	48	U	
131-11-3	DIMETHYL PHTHALATE	1	9.7	9.7	U	
606-20-2	2,6-DINITROTOLUENE	1	9.7	9.7	U	
208-96-8	ACENAPHTHYLENE	1	9.7	9.7	U	
99-09-2	3-NITROANILINE	1	48	48	U	
83-32-9	ACENAPHTHENE	1	9.7	9.7	U	
51-28-5	2,4-DINITROPHENOL	1	48	48	U	
100-02-7	4-NITROPHENOL	1	48	48	U	
132-64-9	DIBENZOFURAN	1	9.7	9.7	U	
121-14-2	2,4-DINITROTOLUENE	1	9.7	9.7	U	
84-66-2	DIETHYL PHTHALATE	1	9.7	9.7	U	
86-73-7	FLUORENE	1	9.7	9.7	U	
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	9.7	9.7	U	
100-01-6	4-NITROANILINE	1	48	48	U	
103-33-3	AZOBENZENE	1	9.7	9.7	U	
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	48	48	U	
86-30-6	N-NITROSODIPHENYLAMINE	1	9.7	9.7	U	
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	9.7	9.7	U	
118-74-1	HEXACHLOROBENZENE	1	9.7	9.7	U	
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	48	48	U	
87-86-5	PENTACHLOROPHENOL	1	48	48	U	
85-01-8	PHENANTHRENE	1	9.7	9.7	U	
120-12-7	ANTHRACENE	1	9.7	9.7	U	
86-74-8	CARBAZOLE	1	9.7	9.7	U	
84-74-2	DI-N-BUTYL PHTHALATE	1	9.7	9.7	U	
206-44-0	FLUORANTHENE	1	9.7	9.7	U	
129-00-0	PYRENE	1	9.7	9.7	U	
85-68-7	BUTYL BENZYL PHTHALATE	1	9.7	9.7	U	
56-55-3	BENZO(A)ANTHRACENE	1	9.7	9.7	U	

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1035 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: R0427

91-94-1	3,3'-DICHLOROBENZIDINE	1	48	48	U	
218-01-9	CHRYSENE	1	9.7	9.7	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	9.7	9.7	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	9.7	9.7	U	
205-99-2	BENZO(B)FLUORANTHENE	1	9.7	9.7	U	
207-08-9	BENZO(K)FLUORANTHENE	1	9.7	9.7	U	
50-32-8	BENZO(A)PYRENE	1	9.7	9.7	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	9.7	9.7	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	9.7	9.7	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	9.7	9.7	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	59.2		72.5	82	23 - 100
321-60-8	2-FLUOROBIPHENYL	37.7		48.3	78	21 - 106
367-12-4	2-FLUOROPHENOL	49.2		72.5	68	21 - 100
4165-60-0	NITROBENZENE-D5	38.6		48.3	80	34 - 111
4165-62-2	PHENOL-D5	54.7		72.5	76	15 - 104
1718-51-0	TERPHENYL-D14	48.3		48.3	100	33 - 111

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: R0428

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	9.8	9.8	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	9.8	9.8	U	
62-53-3	ANILINE	1	25	25	U	
108-95-2	PHENOL	1	9.8	9.8	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	9.8	9.8	U	
95-57-8	2-CHLOROPHENOL	1	9.8	9.8	U	
541-73-1	1,3-DICHLOROBENZENE	1	9.8	9.8	U	
106-46-7	1,4-DICHLOROBENZENE	1	9.8	9.8	U	
95-50-1	1,2-DICHLOROBENZENE	1	9.8	9.8	U	
100-51-6	BENZYL ALCOHOL	1	9.8	9.8	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	9.8	9.8	U	
95-48-7	2-METHYLPHENOL	1	9.8	9.8	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	9.8	9.8	U	
106-44-5	4-METHYLPHENOL	1	9.8	9.8	U	
67-72-1	HEXACHLOROETHANE	1	9.8	9.8	U	
98-95-3	NITROBENZENE	1	9.8	9.8	U	
78-59-1	ISOPHORONE	1	9.8	9.8	U	
88-75-5	2-NITROPHENOL	1	9.8	9.8	U	
105-67-9	2,4-DIMETHYLPHENOL	1	9.8	9.8	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	9.8	9.8	U	
120-83-2	2,4-DICHLOROPHENOL	1	9.8	9.8	U	
65-85-0	BENZOIC ACID	1	49	49	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	9.8	9.8	U	
91-20-3	NAPHTHALENE	1	9.8	9.8	U	
106-47-8	4-CHLOROANILINE	1	25	25	U	
87-68-3	HEXACHLOROBUTADIENE	1	9.8	9.8	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	9.8	9.8	U	
91-57-6	2-METHYLNAPHTHALENE	1	9.8	9.8	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	1	9.8	9.8	U	

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 0101045

Client Name: Parallax, Inc.

ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: R0428

88-06-2	2,4,6-TRICHLOROPHENOL	1	9.8	9.8	U
95-95-4	2,4,5-TRICHLOROPHENOL	1	9.8	9.8	U
91-58-7	2-CHLORONAPHTHALENE	1	9.8	9.8	U
88-74-4	2-NITROANILINE	1	49	49	U
131-11-3	DIMETHYL PHTHALATE	1	9.8	9.8	U
606-20-2	2,6-DINITROTOLUENE	1	9.8	9.8	U
208-96-8	ACENAPHTHYLENE	1	9.8	9.8	U
99-09-2	3-NITROANILINE	1	49	49	U
83-32-9	ACENAPHTHENE	1	9.8	9.8	U
51-28-5	2,4-DINITROPHENOL	1	49	49	U
100-02-7	4-NITROPHENOL	1	49	49	U
132-64-9	DIBENZOFURAN	1	9.8	9.8	U
121-14-2	2,4-DINITROTOLUENE	1	9.8	9.8	U
84-66-2	DIETHYL PHTHALATE	1	9.8	9.8	U
86-73-7	FLUORENE	1	9.8	9.8	U
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	9.8	9.8	U
100-01-6	4-NITROANILINE	1	49	49	U
103-33-3	AZOBENZENE	1	9.8	9.8	U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	49	49	U
86-30-6	N-NITROSODIPHENYLAMINE	1	9.8	9.8	U
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	9.8	9.8	U
118-74-1	HEXACHLOROBENZENE	1	9.8	9.8	U
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	49	49	U
87-86-5	PENTACHLOROPHENOL	1	49	49	U
85-01-8	PHENANTHRENE	1	9.8	9.8	U
120-12-7	ANTHRACENE	1	9.8	9.8	U
86-74-8	CARBAZOLE	1	9.8	9.8	U
84-74-2	DI-N-BUTYL PHTHALATE	1	9.8	9.8	U
206-44-0	FLUORANTHENE	1	9.8	9.8	U
129-00-0	PYRENE	1	9.8	9.8	U
85-68-7	BUTYL BENZYL PHTHALATE	1	9.8	9.8	U
56-55-3	BENZO(A)ANTHRACENE	1	9.8	9.8	U

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: R0428

91-94-1	3,3'-DICHLOROBENZIDINE	1	49	49	U	
218-01-9	CHRYSENE	1	9.8	9.8	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	9.8	9.8	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	9.8	9.8	U	
205-99-2	BENZO(B)FLUORANTHENE	1	9.8	9.8	U	
207-08-9	BENZO(K)FLUORANTHENE	1	9.8	9.8	U	
50-32-8	BENZO(A)PYRENE	1	9.8	9.8	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	9.8	9.8	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	9.8	9.8	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	9.8	9.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	62.4		73.5	85	23 - 100
321-60-8	2-FLUOROBIPHENYL	39.3		49	80	21 - 106
367-12-4	2-FLUOROPHENOL	52.5		73.5	71	21 - 100
4165-60-0	NITROBENZENE-D5	39		49	79	34 - 111
4165-62-2	PHENOL-D5	56.9		73.5	77	15 - 104
1718-51-0	TERPHENYL-D14	52.9		49	108	33 - 111

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1015 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: R0426

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	9.9	9.9	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	9.9	9.9	U	
62-53-3	ANILINE	1	25	25	U	
108-95-2	PHENOL	1	9.9	9.9	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	9.9	9.9	U	
95-57-8	2-CHLOROPHENOL	1	9.9	9.9	U	
541-73-1	1,3-DICHLOROBENZENE	1	9.9	9.9	U	
106-46-7	1,4-DICHLOROBENZENE	1	9.9	9.9	U	
95-50-1	1,2-DICHLOROBENZENE	1	9.9	9.9	U	
100-51-6	BENZYL ALCOHOL	1	9.9	9.9	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	9.9	9.9	U	
95-48-7	2-METHYLPHENOL	1	9.9	9.9	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	9.9	9.9	U	
106-44-5	4-METHYLPHENOL	1	9.9	9.9	U	
67-72-1	HEXACHLOROETHANE	1	9.9	9.9	U	
98-95-3	NITROBENZENE	1	9.9	9.9	U	
78-59-1	ISOPHORONE	1	9.9	9.9	U	
88-75-5	2-NITROPHENOL	1	9.9	9.9	U	
105-67-9	2,4-DIMETHYLPHENOL	1	9.9	9.9	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	9.9	9.9	U	
120-83-2	2,4-DICHLOROPHENOL	1	9.9	9.9	U	
65-85-0	BENZOIC ACID	1	49	49	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	9.9	9.9	U	
91-20-3	NAPHTHALENE	1	9.9	9.9	U	
106-47-8	4-CHLOROANILINE	1	25	25	U	
87-68-3	HEXACHLOROBUTADIENE	1	9.9	9.9	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	9.9	9.9	U	
91-57-6	2-METHYLNAPHTHALENE	1	9.9	9.9	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	1	9.9	9.9	U	

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1015 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: R0426

88-06-2	2,4,6-TRICHLOROPHENOL	1	9.9	9.9	U
95-95-4	2,4,5-TRICHLOROPHENOL	1	9.9	9.9	U
91-58-7	2-CHLORONAPHTHALENE	1	9.9	9.9	U
88-74-4	2-NITROANILINE	1	49	49	U
131-11-3	DIMETHYL PHTHALATE	1	9.9	9.9	U
606-20-2	2,6-DINITROTOLUENE	1	9.9	9.9	U
208-96-8	ACENAPHTHYLENE	1	9.9	9.9	U
99-09-2	3-NITROANILINE	1	49	49	U
83-32-9	ACENAPHTHENE	1	9.9	9.9	U
51-28-5	2,4-DINITROPHENOL	1	49	49	U
100-02-7	4-NITROPHENOL	1	49	49	U
132-64-9	DIBENZOFURAN	1	9.9	9.9	U
121-14-2	2,4-DINITROTOLUENE	1	9.9	9.9	U
84-66-2	DIETHYL PHTHALATE	1	9.9	9.9	U
86-73-7	FLUORENE	1	9.9	9.9	U
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	9.9	9.9	U
100-01-6	4-NITROANILINE	1	49	49	U
103-33-3	AZOBENZENE	1	9.9	9.9	U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	49	49	U
86-30-6	N-NITROSODIPHENYLAMINE	1	9.9	9.9	U
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	9.9	9.9	U
118-74-1	HEXACHLOROBENZENE	1	9.9	9.9	U
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	49	49	U
87-86-5	PENTACHLOROPHENOL	1	49	49	U
85-01-8	PHENANTHRENE	1	9.9	9.9	U
120-12-7	ANTHRACENE	1	9.9	9.9	U
86-74-8	CARBAZOLE	1	9.9	9.9	U
84-74-2	DI-N-BUTYL PHTHALATE	1	9.9	9.9	U
206-44-0	FLUORANTHENE	1	9.9	9.9	U
129-00-0	PYRENE	1	9.9	9.9	U
85-68-7	BUTYL BENZYL PHTHALATE	1	9.9	9.9	U
56-55-3	BENZO(A)ANTHRACENE	1	9.9	9.9	U

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1015 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: R0426

91-94-1	3,3'-DICHLOROBENZIDINE	1	49	49	U
218-01-9	CHRYSENE	1	9.9	9.9	U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	9.9	9.9	U
117-84-0	DI-N-OCTYL PHTHALATE	1	9.9	9.9	U
205-99-2	BENZO(B)FLUORANTHENE	1	9.9	9.9	U
207-08-9	BENZO(K)FLUORANTHENE	1	9.9	9.9	U
50-32-8	BENZO(A)PYRENE	1	9.9	9.9	U
193-39-5	INDENO(1,2,3-CD)PYRENE	1	9.9	9.9	U
53-70-3	DIBENZO(A,H)ANTHRACENE	1	9.9	9.9	U
191-24-2	BENZO(G,H,I)PERYLENE	1	9.9	9.9	U

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	55.3		73.9	75	23 - 100
321-60-8	2-FLUOROBIPHENYL	32.1		49.3	65	21 - 106
367-12-4	2-FLUOROPHENOL	39		73.9	53	21 - 100
4165-60-0	NITROBENZENE-D5	32		49.3	65	34 - 111
4165-62-2	PHENOL-D5	44.5		73.9	60	15 - 104
1718-51-0	TERPHENYL-D14	52.6		49.3	107	33 - 111

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1050 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: R0425

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	9.5	9.5	U	
62-75-9	N-NITROSODIMETHYLAMINE	1	9.5	9.5	U	
62-53-3	ANILINE	1	24	24	U	
108-95-2	PHENOL	1	9.5	9.5	U	
111-44-4	BIS(2-CHLOROETHYL)ETHER	1	9.5	9.5	U	
95-57-8	2-CHLOROPHENOL	1	9.5	9.5	U	
541-73-1	1,3-DICHLOROBENZENE	1	9.5	9.5	U	
106-46-7	1,4-DICHLOROBENZENE	1	9.5	9.5	U	
95-50-1	1,2-DICHLOROBENZENE	1	9.5	9.5	U	
100-51-6	BENZYL ALCOHOL	1	9.5	9.5	U	
108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	1	9.5	9.5	U	
95-48-7	2-METHYLPHENOL	1	9.5	9.5	U	
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1	9.5	9.5	U	
106-44-5	4-METHYLPHENOL	1	9.5	9.5	U	
67-72-1	HEXACHLOROETHANE	1	9.5	9.5	U	
98-95-3	NITROBENZENE	1	9.5	9.5	U	
78-59-1	ISOPHORONE	1	9.5	9.5	U	
88-75-5	2-NITROPHENOL	1	9.5	9.5	U	
105-67-9	2,4-DIMETHYLPHENOL	1	9.5	9.5	U	
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1	9.5	9.5	U	
120-83-2	2,4-DICHLOROPHENOL	1	9.5	9.5	U	
65-85-0	BENZOIC ACID	1	48	48	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	9.5	9.5	U	
91-20-3	NAPHTHALENE	1	9.5	9.5	U	
106-47-8	4-CHLOROANILINE	1	24	24	U	
87-68-3	HEXACHLOROBUTADIENE	1	9.5	9.5	U	
59-50-7	4-CHLORO-3-METHYLPHENOL	1	9.5	9.5	U	
91-57-6	2-METHYLNAPHTHALENE	1	9.5	9.5	U	
77-47-4	HEXACHLOROCYCLOPENTADIENE	1	9.5	9.5	U	

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1050 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: R0425

88-06-2	2,4,6-TRICHLOROPHENOL	1	9.5	9.5	U
95-95-4	2,4,5-TRICHLOROPHENOL	1	9.5	9.5	U
91-58-7	2-CHLORONAPHTHALENE	1	9.5	9.5	U
88-74-4	2-NITROANILINE	1	48	48	U
131-11-3	DIMETHYL PHTHALATE	1	9.5	9.5	U
606-20-2	2,6-DINITROTOLUENE	1	9.5	9.5	U
208-96-8	ACENAPHTHYLENE	1	9.5	9.5	U
99-09-2	3-NITROANILINE	1	48	48	U
83-32-9	ACENAPHTHENE	1	9.5	9.5	U
51-28-5	2,4-DINITROPHENOL	1	48	48	U
100-02-7	4-NITROPHENOL	1	48	48	U
132-64-9	DIBENZOFURAN	1	9.5	9.5	U
121-14-2	2,4-DINITROTOLUENE	1	9.5	9.5	U
84-66-2	DIETHYL PHTHALATE	1	9.5	9.5	U
86-73-7	FLUORENE	1	9.5	9.5	U
7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1	9.5	9.5	U
100-01-6	4-NITROANILINE	1	48	48	U
103-33-3	AZOBENZENE	1	9.5	9.5	U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1	48	48	U
86-30-6	N-NITROSODIPHENYLAMINE	1	9.5	9.5	U
101-55-3	4-BROMOPHENYL PHENYL ETHER	1	9.5	9.5	U
118-74-1	HEXACHLOROBENZENE	1	9.5	9.5	U
58-90-2	2,3,4,6-TETRACHLOROPHENOL	1	48	48	U
87-86-5	PENTACHLOROPHENOL	1	48	48	U
85-01-8	PHENANTHRENE	1	9.5	9.5	U
120-12-7	ANTHRACENE	1	9.5	9.5	U
86-74-8	CARBAZOLE	1	9.5	9.5	U
84-74-2	DI-N-BUTYL PHTHALATE	1	9.5	9.5	U
206-44-0	FLUORANTHENE	1	9.5	9.5	U
129-00-0	PYRENE	1	9.5	9.5	U
85-68-7	BUTYL BENZYL PHTHALATE	1	9.5	9.5	U
56-55-3	BENZO(A)ANTHRACENE	1	9.5	9.5	U

Data Package ID: *SV0101045-1*

GC/MS Semi-volatiles

Method SW8270

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 14-Jan-01
Date Analyzed: 19-Jan-01

Prep Batch: EX010114-1
QCBatchID: EX010114-1-1
Run ID: SV010119-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1050 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: R0425

91-94-1	3,3'-DICHLOROBENZIDINE	1	48	48	U	
218-01-9	CHRYSENE	1	9.5	9.5	U	
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1	9.5	9.5	U	
117-84-0	DI-N-OCTYL PHTHALATE	1	9.5	9.5	U	
205-99-2	BENZO(B)FLUORANTHENE	1	9.5	9.5	U	
207-08-9	BENZO(K)FLUORANTHENE	1	9.5	9.5	U	
50-32-8	BENZO(A)PYRENE	1	9.5	9.5	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	9.5	9.5	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	9.5	9.5	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	9.5	9.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	58.8		71.4	82	23 - 100
321-60-8	2-FLUOROBIPHENYL	33.1		47.6	69	21 - 106
367-12-4	2-FLUOROPHENOL	42.5		71.4	59	21 - 100
4165-60-0	NITROBENZENE-D5	34.1		47.6	72	34 - 111
4165-62-2	PHENOL-D5	47.5		71.4	66	15 - 104
1718-51-0	TERPHENYL-D14	46.5		47.6	98	33 - 111

Data Package ID: *SV0101045-1*

Paragon Analytics, Inc.

Pesticides Case Narrative

Parallax, Inc.

Cannon AFB - LTM -- 2829-002

Order Number - 0101045

1. This report consists of 4 water samples received by Paragon on 1/10/2001.

2. These samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water samples were extracted using continuous liquid-liquid extractors, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520C.

3. The extracts were then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to Paragon Analytics, Inc. Standard Operations Procedure 402 Revision 5 based on Method 8081A. All positive results were then confirmed on a RTX-CLPesticides II column. The quantitation of each analyte is the lower of the concentrations obtained from each column which met initial and continuing calibration criteria. This minimizes the chances of reporting elevated results based on interferences.

4. The breakdown for endrin and 4,4'-DDT met acceptance criteria.

5. All initial and continuing calibration criteria were met with the following exceptions:

   Initial calibration verification - methoxychlor was out low on column 1 and decachlorobiphenyl was out low on column 2.
   Continuing calibration 011601-2CCV - methoxychlor was out low on column 1. Tetrachloromxylene, heptachlor, aldrin, heptachlor epoxide, endosulfan I, gamma-chlordane, alpha-chlordane, endosulfan II, endrin aldehyde, endrin ketone, and decachlorobiphenyl were out low on column 2.
   Continuing calibration 011601-3CCV - methoxychlor was out low on column 1. delta-BHC, heptachlor epoxide, alpha-chlordane, and endrin aldehyde were out low on column 2.

Quantitation for each analyte was reported from the column that passed initial and continuing calibration criteria.

6. The method blank associated with this project was below the reporting limits for all analytes.

7. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

8. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

9. All samples were extracted and analyzed within the established holding times.

10. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 01-22-01
Dan Sheneman — Date
GC Analyst

CK — 1-22-01
Reviewer's Initials — Date

Organochlorine Pesticides

Method SW8081

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-1
QCBatchID: EX010112-1-1
Run ID: PT010116-1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1040 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EB002803

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
319-84-6	ALPHA-BHC	1	0.048	0.048	U	
58-89-9	GAMMA-BHC (LINDANE)	1	0.048	0.048	U	
76-44-8	HEPTACHLOR	1	0.048	0.048	U	
309-00-2	ALDRIN	1	0.048	0.048	U	
319-85-7	BETA-BHC	1	0.048	0.048	U	
319-86-8	DELTA-BHC	1	0.048	0.048	U	
1024-57-3	HEPTACHLOR EPOXIDE	1	0.048	0.048	U	
959-98-8	ENDOSULFAN I	1	0.048	0.048	U	
5103-74-2	GAMMA-CHLORDANE	1	0.048	0.048	U	
5103-71-9	ALPHA-CHLORDANE	1	0.048	0.048	U	
72-55-9	4,4'-DDE	1	0.096	0.096	U	
60-57-1	DIELDRIN	1	0.096	0.096	U	
72-20-8	ENDRIN	1	0.096	0.096	U	
72-54-8	4,4'-DDD	1	0.096	0.096	U	
33213-65-9	ENDOSULFAN II	1	0.096	0.096	U	
50-29-3	4,4'-DDT	1	0.096	0.096	U	
7421-93-4	ENDRIN ALDEHYDE	1	0.096	0.096	U	
72-43-5	METHOXYCHLOR	1	0.48	0.48	U	
1031-07-8	ENDOSULFAN SULFATE	1	0.096	0.096	U	
53494-70-5	ENDRIN KETONE	1	0.096	0.096	U	
8001-35-2	TOXAPHENE	1	4.8	4.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.357		0.481	74	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.415		0.481	86	44 - 131

Data Package ID: *PT0101045-1*

Organochlorine Pesticides

Method SW8081

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-1
QCBatchID: EX010112-1-1
Run ID: PT010116-1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1035 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EB002805

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
319-84-6	ALPHA-BHC	1	0.048	0.048	U	
58-89-9	GAMMA-BHC (LINDANE)	1	0.048	0.048	U	
76-44-8	HEPTACHLOR	1	0.048	0.048	U	
309-00-2	ALDRIN	1	0.048	0.048	U	
319-85-7	BETA-BHC	1	0.048	0.048	U	
319-86-8	DELTA-BHC	1	0.048	0.048	U	
1024-57-3	HEPTACHLOR EPOXIDE	1	0.048	0.048	U	
959-98-8	ENDOSULFAN I	1	0.048	0.048	U	
5103-74-2	GAMMA-CHLORDANE	1	0.048	0.048	U	
5103-71-9	ALPHA-CHLORDANE	1	0.048	0.048	U	
72-55-9	4,4'-DDE	1	0.097	0.097	U	
60-57-1	DIELDRIN	1	0.097	0.097	U	
72-20-8	ENDRIN	1	0.097	0.097	U	
72-54-8	4,4'-DDD	1	0.097	0.097	U	
33213-65-9	ENDOSULFAN II	1	0.097	0.097	U	
50-29-3	4,4'-DDT	1	0.097	0.097	U	
7421-93-4	ENDRIN ALDEHYDE	1	0.097	0.097	U	
72-43-5	METHOXYCHLOR	1	0.48	0.48	U	
1031-07-8	ENDOSULFAN SULFATE	1	0.097	0.097	U	
53494-70-5	ENDRIN KETONE	1	0.097	0.097	U	
8001-35-2	TOXAPHENE	1	4.8	4.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.396		0.483	82	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.42		0.483	87	44 - 131

Data Package ID: *PT0101045-1*

Organochlorine Pesticides

Method SW8081

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-1
QCBatchID: EX010112-1-1
Run ID: PT010116-1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1065 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EB002806

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
319-84-6	ALPHA-BHC	1	0.047	0.047	U	
58-89-9	GAMMA-BHC (LINDANE)	1	0.047	0.047	U	
76-44-8	HEPTACHLOR	1	0.047	0.047	U	
309-00-2	ALDRIN	1	0.047	0.047	U	
319-85-7	BETA-BHC	1	0.047	0.047	U	
319-86-8	DELTA-BHC	1	0.047	0.047	U	
1024-57-3	HEPTACHLOR EPOXIDE	1	0.047	0.047	U	
959-98-8	ENDOSULFAN I	1	0.047	0.047	U	
5103-74-2	GAMMA-CHLORDANE	1	0.047	0.047	U	
5103-71-9	ALPHA-CHLORDANE	1	0.047	0.047	U	
72-55-9	4,4'-DDE	1	0.094	0.094	U	
60-57-1	DIELDRIN	1	0.094	0.094	U	
72-20-8	ENDRIN	1	0.094	0.094	U	
72-54-8	4,4'-DDD	1	0.094	0.094	U	
33213-65-9	ENDOSULFAN II	1	0.094	0.094	U	
50-29-3	4,4'-DDT	1	0.094	0.094	U	
7421-93-4	ENDRIN ALDEHYDE	1	0.094	0.094	U	
72-43-5	METHOXYCHLOR	1	0.47	0.47	U	
1031-07-8	ENDOSULFAN SULFATE	1	0.094	0.094	U	
53494-70-5	ENDRIN KETONE	1	0.094	0.094	U	
8001-35-2	TOXAPHENE	1	4.7	4.7	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.375		0.469	80	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.411		0.469	88	44 - 131

Data Package ID: *PT0101045-1*

Organochlorine Pesticides

Method SW8081

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-1
QCBatchID: EX010112-1-1
Run ID: PT010116-1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1045 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EB002804

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
319-84-6	ALPHA-BHC	1	0.048	0.048	U	
58-89-9	GAMMA-BHC (LINDANE)	1	0.048	0.048	U	
76-44-8	HEPTACHLOR	1	0.048	0.048	U	
309-00-2	ALDRIN	1	0.048	0.048	U	
319-85-7	BETA-BHC	1	0.048	0.048	U	
319-86-8	DELTA-BHC	1	0.048	0.048	U	
1024-57-3	HEPTACHLOR EPOXIDE	1	0.048	0.048	U	
959-98-8	ENDOSULFAN I	1	0.048	0.048	U	
5103-74-2	GAMMA-CHLORDANE	1	0.048	0.048	U	
5103-71-9	ALPHA-CHLORDANE	1	0.048	0.048	U	
72-55-9	4,4'-DDE	1	0.096	0.096	U	
60-57-1	DIELDRIN	1	0.096	0.096	U	
72-20-8	ENDRIN	1	0.096	0.096	U	
72-54-8	4,4'-DDD	1	0.096	0.096	U	
33213-65-9	ENDOSULFAN II	1	0.096	0.096	U	
50-29-3	4,4'-DDT	1	0.096	0.096	U	
7421-93-4	ENDRIN ALDEHYDE	1	0.096	0.096	U	
72-43-5	METHOXYCHLOR	1	0.48	0.48	U	
1031-07-8	ENDOSULFAN SULFATE	1	0.096	0.096	U	
53494-70-5	ENDRIN KETONE	1	0.096	0.096	U	
8001-35-2	TOXAPHENE	1	4.8	4.8	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.406		0.478	85	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.414		0.478	87	44 - 131

Data Package ID: *PT0101045-1*

Paragon Analytics, Inc.

PCBs Case Narrative

Parallax, Inc.

Cannon AFB - LTM -- 2829-002

Order Number - 0101045

1. This report consists of 4 water samples received by Paragon on 1/10/2001.

2. These samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water samples were extracted using continuous liquid-liquid extractors, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520C. The extracts were then processed using sulfuric acid cleanup according to Paragon Analytics Standard Operating Procedure 651 Revision 4 based on Method 3665 in an attempt to remove potential interferences.

3. The extracts were then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to Paragon Analytics Standard Operating Protocol 409 Revision 0 based on SW-846 Method 8082. All positive results were then confirmed on a RTX-CLPesticidesII column. The quantitation of each analyte is the lower of the concentrations obtained from each column. This minimizes the chances of reporting elevated results based on interferences.

4. All initial and continuing calibration criteria were within acceptance criteria.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were extracted and analyzed within the established holding times.

9. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 01/26/01
Dan Sheneman, GC Analyst — Date

EK — 1-26-01
Reviewer's Initials — Date

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-2
QCBatchID: EX010112-2-1
Run ID: PT010117-1
Cleanup: SW3665
Basis: As Received

Sample Aliquot: 1035 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: EA002987

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.97	0.97	U	
11104-28-2	AROCLOR-1221	1	1.9	1.9	U	
11141-16-5	AROCLOR-1232	1	0.97	0.97	U	
53469-21-9	AROCLOR-1242	1	0.97	0.97	U	
12672-29-6	AROCLOR-1248	1	0.97	0.97	U	
11097-69-1	AROCLOR-1254	1	0.97	0.97	U	
11096-82-5	AROCLOR-1260	1	0.97	0.97	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.493		0.483	102	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.467		0.483	97	44 - 131

Data Package ID: *PT0101045-3*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-2
QCBatchID: EX010112-2-1
Run ID: PT010117-1
Cleanup: SW3665
Basis: As Received

Sample Aliquot: 1030 ML
Final Volume: 10 ML
Result Units: UG/L

File Name: EA002988

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.97	0.97	U	
11104-28-2	AROCLOR-1221	1	1.9	1.9	U	
11141-16-5	AROCLOR-1232	1	0.97	0.97	U	
53469-21-9	AROCLOR-1242	1	0.97	0.97	U	
12672-29-6	AROCLOR-1248	1	0.97	0.97	U	
11097-69-1	AROCLOR-1254	1	0.97	0.97	U	
11096-82-5	AROCLOR-1260	1	0.97	0.97	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.45		0.485	93	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.464		0.485	96	44 - 131

Data Package ID: *PT0101045-3*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-2
QCBatchID: EX010112-2-1
Run ID: PT010117-1
Cleanup: SW3665
Basis: As Received

Sample Aliquot: 1065 ML
Final Volume: 10 ML
Result Units: UG/L

File Name: EA002985

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.94	0.94	U	
11104-28-2	AROCLOR-1221	1	1.9	1.9	U	
11141-16-5	AROCLOR-1232	1	0.94	0.94	U	
53469-21-9	AROCLOR-1242	1	0.94	0.94	U	
12672-29-6	AROCLOR-1248	1	0.94	0.94	U	
11097-69-1	AROCLOR-1254	1	0.94	0.94	U	
11096-82-5	AROCLOR-1260	1	0.94	0.94	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.448		0.469	96	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.452		0.469	96	44 - 131

Data Package ID: *PT0101045-3*

PCBs

Method SW8082

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 12-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010112-2
QCBatchID: EX010112-2-1
Run ID: PT010117-1
Cleanup: SW3665
Basis: As Received

Sample Aliquot: 1030 ML
Final Volume: 10 ML
Result Units: UG/L

File Name: EA002986

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	0.97	0.97	U	
11104-28-2	AROCLOR-1221	1	1.9	1.9	U	
11141-16-5	AROCLOR-1232	1	0.97	0.97	U	
53469-21-9	AROCLOR-1242	1	0.97	0.97	U	
12672-29-6	AROCLOR-1248	1	0.97	0.97	U	
11097-69-1	AROCLOR-1254	1	0.97	0.97	U	
11096-82-5	AROCLOR-1260	1	0.97	0.97	U	

Surrogate Recovery

GASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.525		0.485	108	48 - 143
877-09-8	TETRACHLORO-M-XYLENE	0.45		0.485	93	44 - 131

Data Package ID: *PT0101045-3*

Paragon Analytics, Inc.

TOTAL RECOVERABLE METALS
CASE NARRATIVE

Parallax, Inc.

Cannon AFB - LTM -- 2829-002

Order Number - 0101045

1. This report consists of four water samples.
2. The samples were received cool on 1/10/01. Two bottles were received broken, which were one each of PAI sample IDs 0101045-1 and -2.
3. The samples had been preserved for the requested analyses.
4. The samples were prepared for analysis based on SW-846, 3rd Edition procedures.

   For analysis by Trace ICP, the samples were digested following method 3005A and PAI SOP 806 Rev. 5.

   For analysis by Cold Vapor AA (CVAA), the samples were digested following method 7470A and PAI SOP 812 Rev. 6.
5. The samples were analyzed following SW-846 3rd Edition procedures.

   Analysis by Trace ICP followed method 6010B and PAI SOP 807 Rev. 4.

   The relationship between intensity and concentration for each element is established using at least four standards, one of which is a blank solution. The equation which relates intensity to concentration is:

$$I = A_0 + (A_1 * c^n) + (A_2 * c^{2n})$$

where: I = intensity

c = concentration

A_0 = offset coefficient

A_1 = gain coefficient

A_2 = curvature coefficient

n = exponent coefficient

During sample analysis concentrations are computed by the software and the results are printed in mg/L. The instrument software does not provide a printout which gives both intensity and concentration. The validity of the calibration equation is tested by analyzing the following solutions: a blank, a low level check solution with concentrations near the reporting limit, an Initial Calibration Verification (ICV) standard from a 2nd source standard solution with concentrations near the middle of the analytical range, a Continuing Calibration Verification (CCV) standard with concentrations at two times those in the ICV, and a readback of the highest calibration standard.

These solutions provide verification that the calibration equations are functioning properly throughout the analytical range of the instrument. During sample analysis dilutions are made for analytes found at concentrations above the highest calibration standard. No results are taken from extrapolations beyond the highest standard.

Analysis by CVAA followed method 7470A and PAI SOP 812 Rev. 6.

The relationship between intensity and concentration is determined daily, prior to sample analysis. At least five standards and a blank solution are analyzed to establish the calibration curve. The instrument software performs a linear regression to fit the calibration data to a curve of the form:

$$conc. = B * I + C$$

where: conc. = concentration

B = slope coefficient

I = intensity

C = intercept coefficient

A printout summarizing the calibration data supplies the calibration curve and correlation coefficient. During sample analysis both intensity and concentration values are printed. Dilutions are made for concentrations above the highest calibration standard. No results are taken from extrapolations above the highest standard.

6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

8. General quality control procedures.
   - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch. There were not more than 20 samples in each digestion batch.
   - The preparation (method) blank results associated with each digestion batch were below the practical quantitation limits for the requested analytes.

- The laboratory control sample associated with each digestion batch was within the acceptance limits. This indicates complete digestion according to the method.
- All initial and continuing calibration blanks associated with each analytical batch were below the practical quantitation limits for the requested analytes.
- All initial and continuing calibration verifications associated with each analytical batch were within the acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- The interference check samples and high standard readbacks associated with Method 6010B analyses were within acceptance criteria.

9. Matrix specific quality control procedures.

   PAI sample ID 0101045-1 was designated as the quality control sample for the Trace ICP analyses. PAI sample ID 0101066-2 was designated as the quality control sample for the CVAA analysis.

   - A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.
   - A sample duplicate and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.
   - A serial dilution was analyzed with the ICP batch. All acceptance criteria were met.

10. PAI sample ID 0101045-1 required a dilution to bring sodium into the analytical range of the Trace ICP.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Melissa Grytdal — 2/1/01

Melissa Grytdal
Data Reporting Specialist
Date

REM — 02/01/01

Reviewer's Initials
Date

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 25-Jan-01
Date Analyzed: 26-Jan-01

Prep Batch: IP010125-1
QCBatchID: IP010125-1-1
Run ID: IT010126-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
File Name: TS10126

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	52	1		
7440-47-3	CHROMIUM	1	0.083	0.01		
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	0.79	0.1		
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	53	1		
7439-96-5	MANGANESE	1	0.028	0.01		
7440-02-0	NICKEL	1	0.34	0.02		
7440-09-7	POTASSIUM	1	8.6	1		
7782-49-2	SELENIUM	1	0.0095	0.005		
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	1	34	1		
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.013	0.01		
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: *IT0101045-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 25-Jan-01
Date Analyzed: 26-Jan-01

Prep Batch: IP010125-1
QCBatchID: IP010125-1-1
Run ID: IT010126-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
File Name: TS10126

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	51	1		
7440-47-3	CHROMIUM	1	0.28	0.01		
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	1.1	0.1		
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	52	1		
7439-96-5	MANGANESE	1	0.044	0.01		
7440-02-0	NICKEL	1	0.37	0.02		
7440-09-7	POTASSIUM	1	8.5	1		
7782-49-2	SELENIUM	1	0.011	0.005		
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	1	33	1		
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.014	0.01		
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: *IT0101045-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 25-Jan-01
Date Analyzed: 26-Jan-01

Prep Batch: IP010125-1
QCBatchID: IP010125-1-1
Run ID: IT010126-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
File Name: TS10126

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	40	1		
7440-47-3	CHROMIUM	1	0.01	0.01	U	
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	0.1	0.1	U	
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	38	1		
7439-96-5	MANGANESE	1	0.01	0.01	U	
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	7.9	1		
7782-49-2	SELENIUM	1	0.01	0.005		
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	1	31	1		
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.022	0.01		
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: *IT0101045-1*

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 25-Jan-01
Date Analyzed: 26-Jan-01

Prep Batch: IP010125-1
QCBatchID: IP010125-1-1
Run ID: IT010126-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L
File Name: TS10126

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	1	0.2	0.2	U	
7440-36-0	ANTIMONY	1	0.02	0.02	U	
7440-38-2	ARSENIC	1	0.01	0.01	U	
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.005	0.005	U	
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-70-2	CALCIUM	1	69	1		
7440-47-3	CHROMIUM	1	0.01	0.01	U	
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	0.1	0.1	U	
7439-92-1	LEAD	1	0.003	0.003	U	
7439-95-4	MAGNESIUM	1	60	1		
7439-96-5	MANGANESE	1	0.01	0.01	U	
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	11	1		
7782-49-2	SELENIUM	1	0.0063	0.005		
7440-22-4	SILVER	1	0.01	0.01	U	
7440-23-5	SODIUM	5	140	5		
7440-28-0	THALLIUM	1	0.01	0.01	U	
7440-62-2	VANADIUM	1	0.016	0.01		
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: *IT0101045-1*

Total Recoverable MERCURY

Method SW7470

Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: Parallax, Inc.
Client Project ID: Cannon AFB - LTM 2829-002
Work Order Number: 0101045
Reporting Basis: As Received

Final Volume: 20 G
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
CAFB0109MWO	0101045-1	1/9/2001	1/16/2001	01/17/2001	N/A	1	0.0002	0.0002	U	20 G
CAFB0109MWN	0101045-2	1/9/2001	1/16/2001	01/17/2001	N/A	1	0.0002	0.0002	U	20 G
CAFB0109MWR	0101045-3	1/9/2001	1/16/2001	01/17/2001	N/A	1	0.0002	0.0002	U	20 G
CAFB0109MWR-D	0101045-4	1/9/2001	1/16/2001	01/17/2001	N/A	1	0.0002	0.0002	U	20 G

Comments:

1. ND or U = Not Detected at or above the client requested detection limit

Data Package ID: *HG0101045-1*

Paragon Analytics, Inc.

OP Pesticides Case Narrative

Parallax, Inc.

Cannon AFB - LTM -- 2829-002

Order Number - 0101045

1. This report consists of data for 4 water samples received by Paragon on 01/10/01.

2. The samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water samples were extracted by continuous liquid-liquid extraction, according to Paragon Analytics, Inc. Standard Operating Procedure 617 Revision 6 based on Method 3520B.

3. The extracts were analyzed using GC/FPD with a RTx-1 capillary column according to Paragon Analytics, Inc. Standard Operating Procedure 407 Revision 4 based on SW-846 Method 8141A. All positive results were confirmed on a RTx-OPPesticides capillary column. The concentration reported for each analyte was calculated from the lower of the quantitations obtained from each column. This minimizes the possibility of reporting results that are biased high because of interference.

4. All initial and continuing calibration criteria were met with the following exceptions:
Continuing calibration CCV-1: Numerous compounds quantified high on both columns. The surrogate compound, triphenylphosphate was within calibration on both columns.
Continuing calibration CCV-2: Naled was within calibration on column-2 but quantitated low on column-1.
Continuing calibration CCV-3: Naled quantitated low on column-1. Total Demeton, fensulfothion., triphenylphosphate (surrogate), methyl azinphos and coumaphos were low column-2.
Samples EX010113-2MB, 0101045-1, 0101045-2, 0101045-3, and 0101045-4 were bracketed by the ICV and CCV-1. All reporting limits can be supported. None of the target compounds that exceeded calibration were detected in these samples.
Samples EX010113-2LCS and EX010113-2LCSD were bracketed by continuing calibrations CCV-2 and CCV-3. All reporting limits can be supported.

The recovery of Dichlorvos from aqueous solution can be low because of the high water solubility of this compound (10 g/L at 20 degrees C). Naled can be converted to Dichlorvos on column by debromination. This reaction may also occur during sample preparation. The extent of debromination will depend on the nature of the matrix being analyzed. Therefore, Dichlorvos may be detected in samples which contain Naled.
Demeton is a mixture of two compounds; Demeton-O and Demeton-S. Two peaks are observed in all the chromatograms corresponding to these two isomers. Quantitation is based on the sum of both peaks.
Merphos is a single-component pesticide that is readily oxidized to merphos oxone. Chromatographic analysis of merphos usually results in two peaks. Since the extent of merphos oxidation in the calibration standards is not likely to be the same as that in the samples (if merphos is found), quantitation is based on the sum of both peaks.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) recoveries and RPDs were within the acceptance criteria. However, Demeton and Disulfoton have exhibited poor recoveries by this method

7. It was not possible to prepare a matrix spike (MS) and a matrix spike duplicate (MSD) because of limited sample volume. Therefore, LCS and LCSD samples were prepared and analyzed instead.

8. All samples were prepared and analyzed within the established holding times.

9. All surrogate recoveries were within acceptable limits.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Robert Jump — 1/24/01
Robert Jump, Chemist — Date

PAG — 25 Jan 01
Reviewer's Initials — Date

Organophosphorus Pesticides

Method SW8141

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 13-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010113-2
QCBatchID: EX010113-2-2
Run ID: PT010116-7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1030 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: 0116FA29

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
62-73-7	DICHLORVOS	1	0.97	0.97	U	
7786-34-7	MEVINPHOS	1	0.97	0.97	U	
8065-48-3	DEMETON O + S	1	0.97	0.97	U	
13194-48-4	ETHOPROP	1	0.97	0.97	U	
300-76-5	NALED	1	2.9	2.9	U	
298-02-2	PHORATE	1	0.97	0.97	U	
333-41-5	DIAZINON	1	0.97	0.97	U	
298-04-4	DISULFOTON	1	3.9	3.9	U	
298-00-0	METHYL PARATHION	1	0.97	0.97	U	
299-84-3	RONNEL	1	0.97	0.97	U	
55-38-9	FENTHION	1	0.97	0.97	U	
2921-88-2	CHLORPYRIFOS	1	0.97	0.97	U	
327-98-0	TRICHLORONATE	1	0.97	0.97	U	
150-50-5	MERPHOS A + B	1	1.9	1.9	U	
22248-79-9	TETRACHLORVINPHOS	1	0.97	0.97	U	
34643-46-4	TOKUTHION	1	0.97	0.97	U	
115-90-2	FENSULFOTHION	1	0.97	0.97	U	
35400-43-2	SULPROFOS	1	0.97	0.97	U	
86-50-0	METHYL AZINPHOS	1	1.9	1.9	U	
56-72-4	COUMAPHOS	1	1.9	1.9	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
115-86-6	TRIPHENYLPHOSPHATE	1.26		1.94	65	39 - 130

Data Package ID: *PT0101045-2*

Organophosphorus Pesticides

Method SW8141

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 13-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010113-2
QCBatchID: EX010113-2-2
Run ID: PT010116-7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 1 ML
Result Units: UG/L

File Name: 0116FA30

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
62-73-7	DICHLORVOS	1	0.98	0.98	U	
7786-34-7	MEVINPHOS	1	0.98	0.98	U	
8065-48-3	DEMETON O + S	1	0.98	0.98	U	
13194-48-4	ETHOPROP	1	0.98	0.98	U	
300-76-5	NALED	1	2.9	2.9	U	
298-02-2	PHORATE	1	0.98	0.98	U	
333-41-5	DIAZINON	1	0.98	0.98	U	
298-04-4	DISULFOTON	1	3.9	3.9	U	
298-00-0	METHYL PARATHION	1	0.98	0.98	U	
299-84-3	RONNEL	1	0.98	0.98	U	
55-38-9	FENTHION	1	0.98	0.98	U	
2921-88-2	CHLORPYRIFOS	1	0.98	0.98	U	
327-98-0	TRICHLORONATE	1	0.98	0.98	U	
150-50-5	MERPHOS A + B	1	2	2	U	
22248-79-9	TETRACHLORVINPHOS	1	0.98	0.98	U	
34643-46-4	TOKUTHION	1	0.98	0.98	U	
115-90-2	FENSULFOTHION	1	0.98	0.98	U	
35400-43-2	SULPROFOS	1	0.98	0.98	U	
86-50-0	METHYL AZINPHOS	1	2	2	U	
56-72-4	COUMAPHOS	1	2	2	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
115-86-6	TRIPHENYLPHOSPHATE	1.24		1.96	63	39 - 130

Data Package ID: *PT0101045-2*

Organophosphorus Pesticides

Method SW8141

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 13-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010113-2
QCBatchID: EX010113-2-2
Run ID: PT010116-7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1040 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: 0116FA28

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
62-73-7	DICHLORVOS	1	0.96	0.96	U	
7786-34-7	MEVINPHOS	1	0.96	0.96	U	
8065-48-3	DEMETON O + S	1	0.96	0.96	U	
13194-48-4	ETHOPROP	1	0.96	0.96	U	
300-76-5	NALED	1	2.9	2.9	U	
298-02-2	PHORATE	1	0.96	0.96	U	
333-41-5	DIAZINON	1	0.96	0.96	U	
298-04-4	DISULFOTON	1	3.8	3.8	U	
298-00-0	METHYL PARATHION	1	0.96	0.96	U	
299-84-3	RONNEL	1	0.96	0.96	U	
55-38-9	FENTHION	1	0.96	0.96	U	
2921-88-2	CHLORPYRIFOS	1	0.96	0.96	U	
327-98-0	TRICHLORONATE	1	0.96	0.96	U	
150-50-5	MERPHOS A + B	1	1.9	1.9	U	
22248-79-9	TETRACHLORVINPHOS	1	0.96	0.96	U	
34643-46-4	TOKUTHION	1	0.96	0.96	U	
115-90-2	FENSULFOTHION	1	0.96	0.96	U	
35400-43-2	SULPROFOS	1	0.96	0.96	U	
86-50-0	METHYL AZINPHOS	1	1.9	1.9	U	
56-72-4	COUMAPHOS	1	1.9	1.9	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
115-86-6	TRIPHENYLPHOSPHATE	1.69		1.92	88	39 - 130

Data Package ID: *PT0101045-2*

Organophosphorus Pesticides

Method SW8141

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 13-Jan-01
Date Analyzed: 17-Jan-01

Prep Batch: EX010113-2
QCBatchID: EX010113-2-2
Run ID: PT010116-7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1030 ML
Final Volume: 1 ML
Result Units: UG/L
File Name: 0116FA27

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
62-73-7	DICHLORVOS	1	0.97	0.97	U	
7786-34-7	MEVINPHOS	1	0.97	0.97	U	
8065-48-3	DEMETON O + S	1	0.97	0.97	U	
13194-48-4	ETHOPROP	1	0.97	0.97	U	
300-76-5	NALED	1	2.9	2.9	U	
298-02-2	PHORATE	1	0.97	0.97	U	
333-41-5	DIAZINON	1	0.97	0.97	U	
298-04-4	DISULFOTON	1	3.9	3.9	U	
298-00-0	METHYL PARATHION	1	0.97	0.97	U	
299-84-3	RONNEL	1	0.97	0.97	U	
55-38-9	FENTHION	1	0.97	0.97	U	
2921-88-2	CHLORPYRIFOS	1	0.97	0.97	U	
327-98-0	TRICHLORONATE	1	0.97	0.97	U	
150-50-5	MERPHOS A + B	1	1.9	1.9	U	
22248-79-9	TETRACHLORVINPHOS	1	0.97	0.97	U	
34643-46-4	TOKUTHION	1	0.97	0.97	U	
115-90-2	FENSULFOTHION	1	0.97	0.97	U	
35400-43-2	SULPROFOS	1	0.97	0.97	U	
86-50-0	METHYL AZINPHOS	1	1.9	1.9	U	
56-72-4	COUMAPHOS	1	1.9	1.9	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
115-86-6	TRIPHENYLPHOSPHATE	1.57		1.94	81	39 - 130

Data Package ID: *PT0101045-2*

Paragon Analytics, Inc.

Herbicides Case Narrative

Parallax, Inc.

Cannon AFB - LTM -- 2829-002

Order Number - 0101045

1. This report consists of 4 water samples received by Paragon on 01/10/ 2001.

2. These samples were extracted according to SW-846, 3rd Edition procedures. Specifically, the water samples were extracted based on Method 8151A protocols using separatory funnels. The samples were also processed through washing procedures to reduce interferences using the protocols listed in the method. The extracts were then derivitized using the diazomethane procedure contained in the method.

3. The extracts were then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to Paragon Analytics, Inc. Standard Operating Procedure 434 Revision 3 based on SW-846 Method 8151A. All positive results were then confirmed on a RTX-CLPesticides II column. The quantitation of each analyte is the lower of the concentrations obtained from each column which met initial and continuing calibration criteria. This minimizes the chances of reporting elevated results based on interferences.

4. All initial and continuing calibration criteria were met with the following exceptions;

   Initial calibration verification - dalapon and dinoseb were out high on both columns. Because the sensitivity of the instrument increased and no target compounds were detected, no further action was taken. Reporting limits are supported.

5. The method blank associated with this project was below the reporting limits for all analytes.

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

8. All samples were analyzed within the established holding times.

9. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dan Sheneman — 2-01-01
Dan Sheneman
GC Analyst
Date

CK — 2-01-01
Reviewer's Initials
Date

Chlorinated Herbicides by GC/ECD

Method SW8151

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Lab ID: EX010111-2MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 01/11/2001
Date Analyzed: 01/26/2001

Prep Batch: EX010111-2
QCBatchID: EX010111-2-1
Run ID: PT010126-3
Cleanup: NONE
Basis: N/A

Sample Aliquot: 1000 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: HB000920

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	4	4	U	
1918-00-9	DICAMBA	1	0.2	0.2	U	
93-65-2	MCPP	1	100	100	U	
94-74-6	MCPA	1	100	100	U	
120-36-5	DICHLOROPROP	1	1	1	U	
94-75-7	2,4-D	1	1	1	U	
93-72-1	SILVEX	1	0.1	0.1	U	
93-76-5	2,4,5-T	1	0.1	0.1	U	
94-82-6	2,4-DB	1	1	1	U	
88-85-7	DINOSEB	1	1	1	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.97		2	99	47 - 154

Data Package ID: *PT0101045-4*

Chlorinated Herbicides by GC/ECD

Method SW8151

Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Lab ID: EX010113-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 01/13/2001
Date Analyzed: 01/27/2001

Prep Batch: EX010113-1
QCBatchID: EX010113-1-1
Run ID: PT010126-3
Cleanup: NONE
Basis: N/A

Sample Aliquot: 1000 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: HB000926

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	4	4	U	
1918-00-9	DICAMBA	1	0.2	0.2	U	
93-65-2	MCPP	1	100	100	U	
94-74-6	MCPA	1	100	100	U	
120-36-5	DICHLOROPROP	1	1	1	U	
94-75-7	2,4-D	1	1	1	U	
93-72-1	SILVEX	1	0.1	0.1	U	
93-76-5	2,4,5-T	1	0.1	0.1	U	
94-82-6	2,4-DB	1	1	1	U	
88-85-7	DINOSEB	1	1	1	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.97		2	98	47 - 154

Data Package ID: *PT0101045-5*

Chlorinated Herbicides by GC/ECD

Method SW8151

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 26-Jan-01

Prep Batch: EX010111-2
QCBatchID: EX010111-2-1
Run ID: PT010126-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1060 ML
Final Volume: 10 ML
Result Units: UG/L

File Name: HB000923

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	3.8	3.8	U	
1918-00-9	DICAMBA	1	0.19	0.19	U	
93-65-2	MCPP	1	94	94	U	
94-74-6	MCPA	1	94	94	U	
120-36-5	DICHLOROPROP	1	0.94	0.94	U	
94-75-7	2,4-D	1	0.94	0.94	U	
93-72-1	SILVEX	1	0.094	0.094	U	
93-76-5	2,4,5-T	1	0.094	0.094	U	
94-82-6	2,4-DB	1	0.94	0.94	U	
88-85-7	DINOSEB	1	0.94	0.94	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.79		1.89	95	47 - 154

Data Package ID: *PT0101045-4*

Chlorinated Herbicides by GC/ECD

Method SW8151

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 27-Jan-01

Prep Batch: EX010111-2
QCBatchID: EX010111-2-1
Run ID: PT010126-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1020 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: HB000925

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	3.9	3.9	U	
1918-00-9	DICAMBA	1	0.2	0.2	U	
93-65-2	MCPP	1	98	98	U	
94-74-6	MCPA	1	98	98	U	
120-36-5	DICHLOROPROP	1	0.98	0.98	U	
94-75-7	2,4-D	1	0.98	0.98	U	
93-72-1	SILVEX	1	0.098	0.098	U	
93-76-5	2,4,5-T	1	0.098	0.098	U	
94-82-6	2,4-DB	1	0.98	0.98	U	
88-85-7	DINOSEB	1	0.98	0.98	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.86		1.96	95	47 - 154

Data Package ID: *PT0101045-4*

Chlorinated Herbicides by GC/ECD

Method SW8151

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 13-Jan-01
Date Analyzed: 27-Jan-01

Prep Batch: EX010113-1
QCBatchID: EX010113-1-1
Run ID: PT010126-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1035 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: HB000929

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	3.9	3.9	U	
1918-00-9	DICAMBA	1	0.19	0.19	U	
93-65-2	MCPP	1	97	97	U	
94-74-6	MCPA	1	97	97	U	
120-36-5	DICHLOROPROP	1	0.97	0.97	U	
94-75-7	2,4-D	1	0.97	0.97	U	
93-72-1	SILVEX	1	0.097	0.097	U	
93-76-5	2,4,5-T	1	0.097	0.097	U	
94-82-6	2,4-DB	1	0.97	0.97	U	
88-85-7	DINOSEB	1	0.97	0.97	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.89		1.93	98	47 - 154

Data Package ID: *PT0101045-5*

Chlorinated Herbicides by GC/ECD

Method SW8151

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 11-Jan-01
Date Analyzed: 26-Jan-01

Prep Batch: EX010111-2
QCBatchID: EX010111-2-1
Run ID: PT010126-3
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1060 ML
Final Volume: 10 ML
Result Units: UG/L
File Name: HB000924

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
75-99-0	DALAPON	1	3.8	3.8	U	
1918-00-9	DICAMBA	1	0.19	0.19	U	
93-65-2	MCPP	1	94	94	U	
94-74-6	MCPA	1	94	94	U	
120-36-5	DICHLOROPROP	1	0.94	0.94	U	
94-75-7	2,4-D	1	0.94	0.94	U	
93-72-1	SILVEX	1	0.094	0.094	U	
93-76-5	2,4,5-T	1	0.094	0.094	U	
94-82-6	2,4-DB	1	0.94	0.94	U	
88-85-7	DINOSEB	1	0.94	0.94	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
	2,4-DICHLOROPHENYLACETIC ACID	1.78		1.89	94	47 - 154

Data Package ID: *PT0101045-4*

Paragon Analytics, Inc.

INORGANICS CASE NARRATIVE

Parallax, Inc.

Cannon AFB - LTM -- 2829-002

Order Number - 0101045

TABLE OF CONTENTS:

Case Narrative

1. This report consists of data for four water samples.
2. The samples were received cool and intact on 01/10/01.
3. The samples had been correctly preserved for the requested analyses.
4. The samples were prepared for analysis based on Methods for the Chemical Analysis of Waters and Wastes (MCAWW), May 1994 procedures.
5. The samples were analyzed following MCAWW procedures for the following methods:

Analyte	Method	SOP #
Chloride	300.0	1113 Rev 0
Nitrate as N	300.0	1113 Rev 0
Sulfate	300.0	1113 Rev 0

6. All standards and solutions were used within their recommended shelf life.

7. The samples were prepared and analyzed within the established hold times for all analyses.

All in house quality control procedures were followed, as described below.

8. General quality control procedures.

   - A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in this preparation batch. There were not more than 20 samples in this preparation batch.
   - The method blank associated with this batch were below the reporting limits for the requested analytes. This indicates that no contaminants were introduced to the samples during preparation and analysis.
   - The LCS was within the acceptance limits for these analytes.
   - All initial and continuing calibration blanks (ICB/CCB) associated with each batch were below the reporting limits for the requested analytes.
   - All initial and continuing calibration verifications (ICV/CCV) associated with each batch were within the acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.

9. Matrix specific quality control procedures.

   PAI sample ID 0101038-6 was designated as the quality control sample for the IC batch.

   - A matrix spike (MS) and matrix spike duplicate (MSD) were prepared and analyzed with the IC batch. All guidance criteria for precision and accuracy were met with the following exceptions.

Analyte	Sample ID
Chloride	0101038-6 MS & MSD
Sulfate	0101038-6 MS & MSD

   The chloride and sulfate concentrations in the native sample were above the analytical range of these analytes on the ion chromatograph; therefore accurate quantitation of MS/MSD recoveries for chloride and sulfate were not possible as the spike added was small relative to the unspiked sample concentrations. The MS/MSD results were within acceptance limits for all other associated analyses. The Laboratory Control Sample indicates that the procedure was in control.

10. It was necessary to dilute the samples in order to bring the chloride and sulfate concentrations into the analytical range of these analytes on the ion chromatograph.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Tony Briney — 1/26/01
Tony Briney, Date
Inorganic Chemist

Reviewer's Initials — 1/26/01
Reviewer's Initials, Date

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Ion Chromatography

Method EPA300.0

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWO
Lab ID: 0101045-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 10-Jan-01
Date Analyzed: 13-Jan-01

Prep Batch: IC010110-1
QCBatchID: IC010110-1-3
Run ID: IC010113-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
File Name: jan13_013.

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16887-00-6	CHLORIDE	50	270	10		
14797-55-8	NITRATE	1	9.2	0.2		
14808-79-8	SULFATE	5	140	5		

Data Package ID: *IC0101045-1*

Ion Chromatography

Method EPA300.0

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR
Lab ID: 0101045-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 10-Jan-01
Date Analyzed: 10-Jan-01

Prep Batch: IC010110-1
QCBatchID: IC010110-1-3
Run ID: IC010110-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
File Name: jan10_052.

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16887-00-6	CHLORIDE	5	96	1		
14797-55-8	NITRATE	1	6.1	0.2		
14808-79-8	SULFATE	5	140	5		

Data Package ID: *IC0101045-1*

Ion Chromatography

Method EPA300.0

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWR-D
Lab ID: 0101045-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 10-Jan-01
Date Analyzed: 10-Jan-01

Prep Batch: IC010110-1
QCBatchID: IC010110-1-3
Run ID: IC010110-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
File Name: jan10_053.

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16887-00-6	CHLORIDE	5	98	1		
14797-55-8	NITRATE	1	6	0.2		
14808-79-8	SULFATE	5	140	5		

Data Package ID: *IC0101045-1*

Ion Chromatography

Method EPA300.0

Sample Results

Lab Name: Paragon Analytics, Inc.
Work Order Number: 0101045
Client Name: Parallax, Inc.
ClientProject ID: Cannon AFB - LTM 2829-002

Field ID: CAFB0109MWN
Lab ID: 0101045-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Jan-01
Date Extracted: 10-Jan-01
Date Analyzed: 10-Jan-01

Prep Batch: IC010110-1
QCBatchID: IC010110-1-3
Run ID: IC010110-1A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ML
Final Volume: 5 ML
Result Units: MG/L
File Name: jan10_051.

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16887-00-6	CHLORIDE	5	54	1		
14797-55-8	NITRATE	1	2.1	0.2		
14808-79-8	SULFATE	5	100	5		

Data Package ID: *IC0101045-1*

STEWART ENVIRONMENTAL CONSULTANTS, INC.
Consulting Engineers and Scientists

Office & Laboratory:
3801 Automation Way, Suite 200
Fort Collins, Colorado 80525
(970) 226-5500
FAX (970) 226-4946
stewart@webaccess.net

January 25, 2001

Mr. Ken Campbell
Paragon Analytics, Inc.
225 Commerce Drive
Fort Collins, Colorado 80524

Subject: Laboratory Testing Results
Job No.: 720-026

Dear Mr. Campbell:

Please find enclosed laboratory testing results for the samples received at our laboratory on January 11, 2001.

We appreciate the opportunity to provide these analytical services and look forward to working with you in the future. If you have any questions regarding this report, do not hesitate to contact us.

Sincerely,

STEWART ENVIRONMENTAL CONSULTANTS, INC.

Richard G. Patterson, PE
Operations Manager

Enc.

CHAIN-OF-CUSTODY RECORD

STEWART ENVIRONMENTAL CONSULTANTS, INC.
3801 AUTOMATION WAY, SUITE 200, FORT COLLINS, CO 80525

PHONE: (970) 226-5500
FACSIMILE: (970) 226-4946

PAGE ___ OF ___

CLIENT NO.

CLIENT NAME: PARAGON ANALYTICS

SEC Sample No.	2000 Date	Time Sample Collected	Sample Matrix Comp/Grab	SAMPLE IDENTIFICATION	Field Information pH, TINU etc.	METALS	INORGANIC	ORGANIC	VOC	CYANIDE	OTHER	Total # of Cont.	SAMPLER (Name, Signature) / ANALYSIS REQUESTED
	1/9	0735		CAFBØ1Ø9MWO (0101045-1)								1	Phenol (420.1)
	↓	0815		CAFBØ1Ø9MWN 2								1	↓
		0855		CAFBØ1Ø9MWR 3								1	
		0855		CAFBØ1Ø9MWR-D 4								1	
				* Please include all raw data with report.									
				FAX DUE ON OR BEFORE →									

RELINQUISHED	DATE/TIME	RECEIVED
[signature]	1-11-01 1100	[signature]
RELINQUISHED	DATE/TIME	RECEIVED
RELINQUISHED	DATE/TIME	RECEIVED
RELINQUISHED	DATE/TIME	RECEIVED
ENTERED BY:	DATE/TIME	RECEIVED

Requested Date of Completion: 1/25/01

SAMPLE MATRIX
Groundwater
(Water)
Solid
Liquid
Soil
Sludge

CDH Reporting Required ____

SAMPLE KIT SENT ____

Report to: Ken Campbell Phone: 490-1511
Client: Paragon Analytics
Address: 225 Commerce Dr.
City/State/Zip: Ft. Collins, CO 80524
Invoice to: Same
Address:
City/State/Zip:

RESULTS FOR PHENOLS-COLORIMETRIC

Client Name: Paragon Analytics, Inc.
Project No.: 720-026
Date Received: 01/11/01
Analyst: CVB
Method No.: 420.1/1

SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE NUMBER	TESTED VALUE	DETECT LIMIT	DATE OF ANALYSIS
CAFB0109MW0, 0101045-1	01/09/01	100279	ND	0.1	01/23/01
CAFB0109MWN, 0101045-2	01/09/01	100280	ND	0.1	01/23/01
CAFB0109MWR, 0101045-3	01/09/01	100281	ND	0.1	01/23/01
CAFB0109MWR-D, 0101045-4	01/09/01	100282	ND	0.1	01/23/01

Values are reported in parts per million (ppm) unless otherwise noted.
ND = Not Detected

/1 Methods for Chemical Analysis of Water and Wastes, March 1993, EPA

STEWART ENVIRONMENTAL CONSULTANTS, INC.
LABORATORY QUALITY CONTROL REPORT

Phenols
EPA 420.1

Client Name	Paragon Analytics, Inc.
Client Project Number	0101045
Sample Date	January 9, 2001
Date Received	January 11, 2001
Lab Sample Numbers	100279 - 100282
Date of Analysis	January 23, 2001
Sample Matrix	Water
Dilution Factor	1
Standard Range	0.10 - 2.0 ppm
Detection Limit	0.10 ppm

Blank

Tested Values (ppm)	QC Acceptance Limit
< 0.10	< 0.10

Duplicate

Tested Values (ppm)		RPD	QC Acceptance Limit RPD
< 0.10-100279	< 0.10	N/C	< 20

* - Stewart Sample Number

Independent Reference Material

Tested Value (ppm)	Reference Value (ppm)	Confidence Interval (ppm)
0.45	0.475	0.43 - 0.52

Spike

Spike Amount	Percent Recovery	QC Acceptance Limits
1.0	108.0	80 - 120

APPENDIX D

DATA QUALITY ASSESSMENT SUMMARY

Cannon Air Force Base
Clovis, New Mexico
June 2001

DATA QUALITY ASSESSMENT SUMMARY

D.1.0 INTRODUCTION

Three groundwater samples, one QC duplicate and one QC trip blank sample were collected and submitted for analysis to the primary laboratory (Paragon Analytics) during the January 2001 (year 2000 annual monitoring) sampling event at CAFB. Additionally, one QC split sample with a separate QC trip blank was collected and submitted for analysis to the USACE Omaha District laboratory during this same sampling event. The groundwater samples from monitoring wells MW-N, MW-O and MW-R were collected downgradient of Landfills No. 3/SWMU 105, No. 4/SWMU 104, and No. 25/SWMU 97, respectively. These samples were collected as part of the long-term monitoring program (LTMP) for these sites.

Paragon Analytics, Inc. located in Fort Collins, Colorado performed laboratory analysis of the primary groundwater samples except for phenols, which were analyzed by Stewart Environmental. Samples were analyzed by the following methods:

- Volatile Organic Compounds (VOCs), SW-846 Method 8260B, with specific target list of Appendix IX compounds
- Semi-Volatile Organic Compounds (SVOCs), SW-846 Method 8270C
- Polychlorinated Biphenyls (PCBs), SW-846 Method 8082
- Herbicides, SW-846 Method 8151A
- Total Metals, SW-846 Method 6010B-7000 Series
- Total Recoverable Mercury, SW-846 Method 7470
- Pesticides Organophosphorus, SW-846 Method 8140
- Pesticides Organochlorine, SW-846 Method 8081A
- Common Anions (chlorides, nitrates, sulfates), EPA Method 300.0A
- Phenols, SW-846 Method 8270C

A data review and validation was performed by applying the QC limits as defined in the quality assurance project plan (QAPP). The data validation consisted of a review of holding times, method blanks, field blanks, field duplicates, surrogate spikes, matrix spike/matrix spike duplicates (MS/MSDs), laboratory control samples (LCSs), and a case narrative review including sample receipt forms and custody. The validation guidelines are based upon the National Functional Guidelines for Organic Data Review (EPA, 1994a) and the National Functional Guidelines for Inorganic Data Review (EPA, 1994b).

D.1.1 QUALITY ASSESSMENT SUMMARY

The data quality assessment review found that accuracy and precision are in control and are considered acceptable. Samples were collected and analyzed as specified in the QAPP and the sampling and analysis plan (SAP). Sampling procedures and laboratory analytical methods are comparable with previous investigations. Analytical results from trip blank samples indicate that no detectable cross-contamination of the samples by volatile organic compounds occurred. Comparison of the environmental sample and associated duplicate from MW-R indicates that a very high replicate precision was achieved by the sampling method employed, and the relative percent difference for these samples is well within established limits (except for chromium which had a relative percent difference greater than 50%).

D.1.2 SW8260, VOLATILE ORGANIC COMPOUNDS (VOCs)

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. All initial calibration criteria for the instruments were met. The mean response factor for all analytes had a value of less than 15% as required by SW-846 Method 8260B. All continuing calibration criteria were met. The method blanks had methylene chloride detected below the reporting limit, but this was not detected in the samples. All laboratory control sample recoveries were within acceptance criteria. All surrogate and internal standard recoveries also were within acceptance criteria. None of the VOC results were qualified, and these data are fully usable for project purposes.

D.1.3 SW8270C, SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. All initial calibration criteria for the instruments were met. The percent relative standard deviations of the average response factor for all analytes had a value of less than 15% as required by SW-846 Method 8270C. All continuing calibration criteria were met. No target compounds were detected in the method blank. All laboratory control sample recoveries were within acceptance criteria. All surrogate and internal standard recoveries also were within acceptance criteria. None of the SVOC results were qualified, and these data are fully usable for project purposes.

D.1.4 SW8081, ORGANOCHLORINE PESTICIDES

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. The breakdown for endrin and 4,4' DDT met acceptance criteria. Analysis was performed using a 2 column system (primary and confirmatory). All initial and continuing calibration criteria for the instruments were met with exceptions of some compounds out

low on one column or the other (see Appendix C). In no case was an analyte out of calibration range on both columns. No target compounds were detected in the method blank. All laboratory control sample recoveries were within acceptance criteria. All surrogate recoveries also were within acceptance criteria. None of the organochlorine pesticide results were qualified, and these data are fully usable for project purposes.

D.1.5 SW8082, POLYCHLORINATED BIPHENYLS (PCBs)

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. Analysis was performed using a 2 column system (primary and confirmatory). All initial and continuing calibration criteria for the instruments were within acceptance criteria. No target compounds were detected in the method blank. All laboratory control sample recoveries were within acceptance criteria. All surrogate recoveries also were within acceptance criteria. None of the PCB results were qualified, and these data are fully usable for project purposes.

D.1.6 SW6010B, METALS and SW7470A, MERCURY

Sufficient sample volume was received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. Initial and continuing calibration validity was verified using blank, low level check, initial calibration verification and continuing calibration verification standard solutions. All initial and continuing calibration testing was within acceptance criteria. Interference check sample results were within acceptance criteria. Matrix spike, matrix spike duplicate, and serial dilution samples met acceptance criteria for accuracy and precision. No target compounds were detected in the method blank. Analysis for sodium required a single dilution to bring the results into calibration range. None of the metals or mercury results were qualified, and these data are fully usable for project purposes.

D.1.7 SW8140, ORGANPHOSPHORUS PESTICIDES

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. Analysis was performed using a 2 column system (primary and confirmatory). All initial and continuing calibration criteria for the instruments were met with exceptions of some compounds out on one column or the other (see Appendix C). All reporting limits are supportable, and none of the target compounds that exceeded calibration were detected in the samples. No target compounds were detected in the method blank. All laboratory control sample recoveries were within acceptance criteria. All surrogate recoveries also were within acceptance criteria. None of the organophosphorous pesticide results were qualified, and these data are fully usable for project purposes.

D.1.8 SW8150, HERBICIDES

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. Analysis was performed using a 2 column system (primary and confirmatory). All initial and continuing calibration criteria for the instruments were met with the exceptions of dalapon and dinoseb that were out high on both columns. Because instrument sensitivity increased and no target compounds were detected, the reporting limits are supportable. No target compounds were detected in the method blank. All laboratory control sample recoveries were within acceptance criteria. All surrogate recoveries also were within acceptance criteria. None of the herbicide results were qualified, and these data are fully usable for project purposes.

D.1.9 E300.0, COMMON ANIONS

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. Initial and continuing calibration blank and verification criteria were within acceptance criteria. No target compounds were detected in the method blank. All laboratory control sample recoveries were within acceptance criteria. The matrix spike and matrix spike duplicate samples met all guidance criteria, however the chloride and sulfate results exceeded the instrument calibration range due to the concentration in the native sample. The laboratory control samples demonstrate that the analysis was in control. Sample dilution was required to bring chloride and sulfate concentrations into the analytical range. None of the common anion results were qualified, and these data are fully usable for project purposes.

D.1.10 EPA 420.1, PHENOLS

All samples were received by the laboratory in good condition, within the proper temperature range, under custody, and were analyzed within holding times. All blanks, duplicates, independent reference materials, and spikes were within quality control acceptance limits. None of the phenol results were qualified, and these data are fully usable for project purposes.

COMMENT RESPONSE SUMMARY
Draft Annual Monitoring Report (March, 2001)
Long-Term Monitoring for Landfills No. 3, 4 and 25 (MW-O, N and R)
Cannon Air Force Base

Reviewer/ Comment Number	Page Section Paragraph	Comment	Response
COMMENTS BY Kim Mulhern – USACE Omaha District (17April01)			
1	Table of Contents	A List of Acronyms needs to follow the Lists of Tables and Lists of Figures. Please generate and include.	A List of Acronyms will be added to the final report.
2	Exec.Sum/ES-1	The sampling procedures used for this project do not meet the requirements of the USACE General Geology Scope of Services. This guidance requires that sampling occur immediately upon completion of purging the well. It is unacceptable to delay the sampling event unless there is insufficient recharge at the well to collect the sample at that point in time. This was not the case. However, the work plans for this project were not reviewed and approved by a USACE geologist and the work was performed in accordance with the work plans. In the future, groundwater sampling must be completed in accordance with the USACE requirements.	Any future work plans that require groundwater sampling will be developed in accordance with the USACE General Geology Scope of Services, and sampling will be performed in accordance with the approved work plan. The rationale for the less than 24 hour delay between purging and sampling was as follows: 1) analysis for common anions has a very short holding time; 2) Clovis, NM is relatively remote and the latest overnight delivery pick-up is 3:30 p.m.; and 3) it was expected that the initial purging would remove any stagnant or stratified groundwater volume, and that the 4 additional gallons removed from each well immediately prior to sampling would clear the pump and sample tubing.
3	Exec.Sum/ES-2	Since this is an ANNUAL summary report, the results from the August 2000 sampling event at MW-R (LF-25) need to be included in this report as well as in Appendix A.3. That is the purpose of an annual report. Please revise the report to include these results.	The results of the semi-annual monitoring have been included as part of the historical range of results for MW-R in the applicable tables. The final Semi-Annual Monitoring Report August 2000 Sampling Event Long-Term Monitoring, Landfill No. 25 (MW-R) will be appended. References to that report will be updated to refer to the appendix.
4	Table 2/ES-13	Since you have already generated Table 1 which includes all results, not just hits, please revise this table to just include those concentrations not U-qualified (i.e., a hits table). It is unnecessary to have an Other Constituents category if the results were all ND.	This table will be changed as indicated. The purpose of including the ND values in the summary table was to be consistent with reporting from previous years, and to ease review of the analytical results..
5	Appendix A	It is unclear whether or not this appendix complies with the "General Reporting Requirements for Routine Groundwater Monitoring at RCRA Sites" Position Paper prepared by the New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, Dated 16 March 2000. It would appear that each appendix should have a Title Page, Executive Summary, and Table of Contents.	The referenced Position Paper and previous annual monitoring reports for these sites were used as the basis for development of this report. Specifically, the use of a single Title Page, Executive Summary and Table of Contents has been established as the accepted format for reporting from these adjacent sites at CAFB.

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Cannon Air Force Base

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		Please see comment #3 above regarding annual summary report for MW-R at LF-25 and see that the August 2000 results are incorporated into Appendix A.3. The following deficiencies have been noted for all three appendices (A.1, A.2 and A.3): • Groundwater Monitoring Results Sections – The measured depth to groundwater and the screened interval of the well need to be included in the text for this section. This information needs to be compared to previously measured depths. Please indicate the general trend for the water level in this well and, based on that trend, calculate the approximate remaining useful life for this monitoring well (i.e., when will it no longer be possible to collect groundwater samples from this well). This section has a table (A.1-4-1) of Groundwater Quality Field Parameters as required by the guidance, however, it should only include the last measured value before water sampling (even if it was measured the day before). The table should also include these field parameters measured during previous sampling events to indicate any trend in this data. • Groundwater Chemical Analytical Data Sections – This section requires the inclusion of the analytical methods (as was done in the Scope Section). Please include that information in this section as required by the guidance. Please combine Tables A.1-5-1 and A.1-5-2 (in other words, please delete the Trip Blank Column and replace with the Range of Historical Results Column from the second table). If you feel the need to mention the ND in the trip blank, include this as an asterisk or alphabet letter after the ND in the MW-O column for VOCs and footnote at the bottom of the table. This way, all of the information is presented in one easy-to-read table. • Summary. Please include the concentration for current	See response to comment #3. The semi-annual monitoring results are incorporated, and the previous report will be appended. The text will be revised to include the measured depth to water as reported in the appended field notes. Construction details were not available for these wells. Also, the wells do not have measuring points marked on the casings (the North side of the casing was used by default), making comparison to historic water levels potentially inaccurate. A general downward trend in water table elevation can be inferred from historic data, and this will be included in the text of the report. Reporting of all field water quality measurements was included to demonstrate stabilization of these parameters, however, these will be removed as indicated. At this time, the only historic field water quality data available is from last year, limiting the usefulness of trend analysis. Text changes will be made as indicated. Specific chloride concentration values will be added to the

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Cannon Air Force Base

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		round of sampling for Chloride, as well as the standard being used for comparison. Please change "ppm" to "mg/L" which is the correct unit of measure. • Figures. I don't have a complete list of the figures required, however, it is clear that a couple of the figures are missing. A topographic map is required but not included. A figure showing off-site well locations is also required but the figure used does not clearly indicate locations for off-site wells. Please see that these figures are included. Please check the guidance document to ensure that all required figures are included in each appendix.	text, and the unit of measure will be changed from the general "ppm" to the specific "mg/L. The figures included are based on available information and are consistent with previous reporting for these sites at CAFB. A topographic map of the area will be included based on publicly available USGS coverage. However, an off-site well survey was not part of the scope of services for this delivery order. In consultation with the COTR, we will determine whether this information is available from other sources at CAFB that can be included in this report.
3 (sic. 6)	Calibration	It appears that the field equipment was not recalibrated on 09 January 2001. Is this correct? If so, was the equipment used at all on 09 January 2001?	That is correct. The monitoring equipment was not used on 09 January 2001. Based on the air monitoring results from 08 January 2001, the historical concentrations of VOCs encountered in these wells, the sampling method (dedicated equipment requiring minimal handling), and the steady moderate breeze at the site, the SHSO determined that continued air monitoring was not necessary. Since well purging was complete, additional measurement of field water quality parameters was not required.
4 (sic. 7)	Well Volume Calculations	The Well Purge Record should include an area of all measurements and the calculation of one and three well volumes. The formula should include the following: Design/Measured Depth of Bottom of Well (in ft TOC) = 306.40' Measured Depth to Water (in ft TOC) = 292.96' Height (h) of Water Column in Well (in feet) = 13.44' Volume = $\pi r^2 h$ = (3.14)(0.167')^2(13.44')(7.48 gal/ft^3 = 8.8 gal X 3 well volumes = 26.4 gal r for 4-inch well = 0.167' r for 6-inch well = 0.25' Accurate well volumes need to be calculated on the form to ensure that the correct values are used during purge. Purge	The Well Purge Record form will be revised to include a calculation area for any future groundwater sampling for USACE. This is the formula used to calculate the purge volume as documented on the DQCR included with the field forms in Appendix B. All calculations were double-checked in the field. It is agreed that low-flow sampling (and purging) is the

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		rate should be adjusted as low as possible when VOC sampling will be occurring. Ideal purge rate is 0.1 L/min with minimal drawdown. Purge rates for these wells are too high.	preferable methodology for groundwater sampling. However, the dedicated Bennett pumps installed in these wells seem to be limited in the minimum pump rate that will sustain flow at the surface, and that rate is well above 0.1 L/min. Since these wells have dedicated purge tanks and the purge water, reportedly, has always been suitable for unregulated discharge, the impetus to change to a low flow system may be limited.
COMMENTS BY: Paula Peters – USACE Omaha District (18April01)			
1	Pg. ES-3 – top of page	Phenols were analyzed by Stewart Environmental, not Paragon Analytics. This needs to be added to the text.	The text will be amended as indicated.
2	Pg. ES-5, Table 1	a. The dates that the samples were taken needs to be added. b. Include the heading "Table 1, Summary of Analytical Results…" to each of the pages of the table. c. Number each of the pages of Table 1, i.e. page _ of _. d. mg/l and ug/l need to be added to the footnotes. e. Change the footnote "NA – Not Analyzed" to "N/A – Not Analyzed".	This will be added to the table heading. This will be repeated on each page. The table is embedded in the text, but a page count will be added to the callout. Units will be added. Text will be revised as indicated.
2 (sic. 3)	Appendix C	Parallax should complete a separate "Condition of Sample Upon Receipt Form" for <u>each cooler</u>. The form shown in this appendix includes 5 coolers, which is not acceptable.	Paragon Analytics, a USACE approved laboratory, performed inspection of the condition of the samples upon receipt, and documented this on a single form in accordance with their protocols. Parallax will notify Paragon Analytics of this USACE requirement for future sample analysis. No additional sample receipt forms are available for this project.
3 (sic. 4)	Appendix D	a. Phenols were analyzed by Stewart Environmental and should be indicated as such in Section 1.0 on page D-1. b. pg.D-2, top paragraph, Quality Assurance Summary – "Comparison of the environmental sample and associated duplicate from MW-R indicates that a very high replicate precision was achieved by the sampling method employed, and the relative percent difference for these samples is well within established limits" I do not agree with this statement since chromium was detected in MW-R at 0.28 mg/l and in the duplicate of MW-R at 0.083 mg/l. This is a huge discrepancy with a very large	The text will be amended as indicated. The discussion of the comparison of the environmental and duplicate samples presents an aggregate comparison across all methods and analytes. In this context, the statements are considered representative of the data set. However, text will be added to clarify this point and to highlight specific analytes with an RPD exceeding $\pm$ 50% (i.e., chromium).

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		relative percent difference.	