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NAS CECIL FIELD, FL
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SAMPLING AND ANALYSIS REPORT FOR BUILDING 824A OIL-WATER SEPARATOR 824A-
OW BASE REALIGNMENT AND CLOSURE NAS CECIL FIELD FL
3/13/2000
TETRA TECH NUS INC

Sampling and Analysis Report
for
Building 824A, Oil-Water Separator
824A-OW
Base Realignment and Closure

Naval Air Station Cecil Field
Jacksonville, Florida



Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0078

March 2000

**SAMPLING AND ANALYSIS REPORT
FOR
BUILDING 824A, OIL-WATER SEPARATOR 824A-OW
BASE REALIGNMENT AND CLOSURE**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT N62467-89-D-0088**

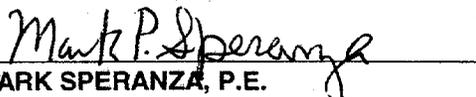
**Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406**

**Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220**

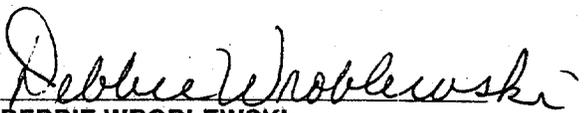
**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0078**

MARCH 2000

PREPARED UNDER THE SUPERVISION OF:


**MARK SPERANZA, P.E.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

APPROVED FOR SUBMITTAL BY:


**DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**



The professional opinions rendered in this decision document identified as Sampling and Analysis Report for Building 824A, Oil-Water Separator 824A-OW, Naval Air Station Cecil Field, Jacksonville, Florida were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. Decision documents are based on information obtained from others and under the supervision of the signing engineer. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on this project described in this report.

Mark Speranza
Mark Speranza, P.E.
Professional Engineer No. PE0050304

Date: 7/31/00

Mark Speranza



CERTIFICATION OF TECHNICAL
DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete and accurate and comply with all requirements of this contract.

DATE: March 13, 2000

NAME AND TITLE OF CERTIFYING OFFICAL:

Mark Speranza, P.E.
Task Order Manager

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ACRONYMS

BRAC	Base Realignment and Closure
CSR	Confirmatory Sampling Report
CTO	Contract Task Order
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Cleanup Target Level
HLA	Harding Lawson Associates
NAS	Naval Air Station
PAHs	Polynuclear aromatic hydrocarbons
PRE	Preliminary Risk Evaluation
SAO	Sample and Analysis Outline
SCTL	Soil Cleanup Target Level
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
TtNUS	Tetra Tech NUS, Inc.

1.0 INTRODUCTION

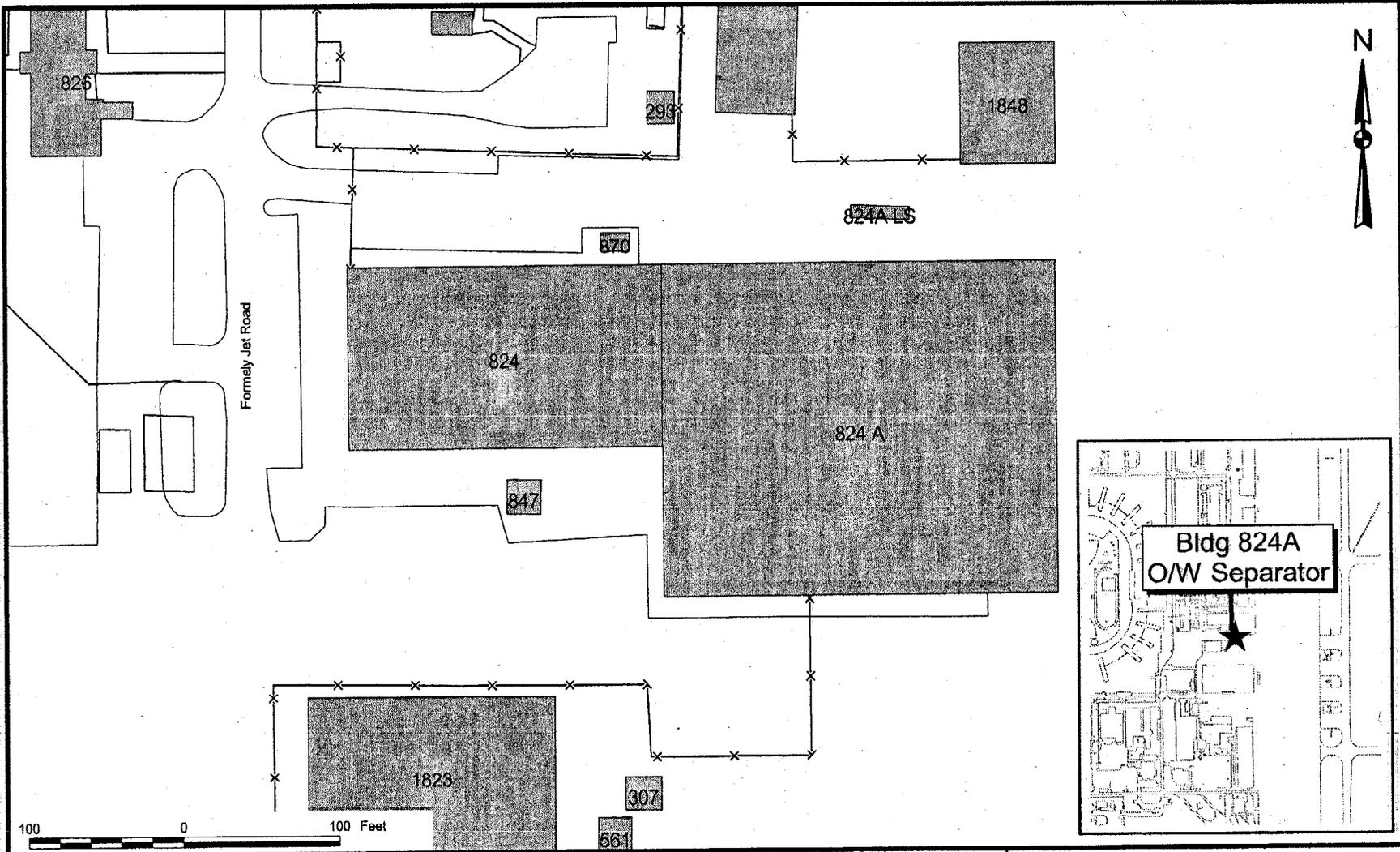
Tetra Tech NUS, Inc. (TtNUS), under contract to Southern Division, Naval Facilities Engineering Command, has completed the Base Realignment and Closure (BRAC) Phase II Sampling and Analysis Program for Building 824A, Oil-Water Separator 824A-OW at Naval Air Station (NAS) Cecil Field. This program was conducted under Contract Number N62467-94-D-088, Contract Task Order (CTO) 0078. This report summarizes the related field operations, results, conclusions, and recommendation of the Phase II investigation.

Building 824A is located in the Main Base area, west of the north-south runway, and the oil-water separator 824A-OW is located on the south side of the building (see Figure 1-1). According to the Confirmatory Sampling Report (CSR) for this site [Harding Lawson Associates (HLA), 1999], the installation date and size of the oil-water separator are unknown.

In the CSR investigation, four borings for field screening were advanced, one monitoring well (CEF-824A-1S) was installed, and one subsurface soil sample was collected and analyzed for used oil group parameters. In the subsurface soil sample, no contaminants were detected at concentrations in excess of Florida Department of Environmental Protection (FDEP) soil cleanup target levels (SCTLs). In the groundwater sample, lead was detected in excess of the FDEP groundwater cleanup target level (GTCL) in the unfiltered, but not the filtered sample. No other contaminants were detected in groundwater at concentrations in excess of GCTLs, however, the method detection limits for polynuclear aromatic hydrocarbons (PAHs) were greater than associated FDEP GCTLs.

A Sampling and Analysis Outline (SAO) for the assessment of this site was prepared by TtNUS and approved by the BRAC Cleanup Team (BCT) (TtNUS, 2000).

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DRAWN BY	DATE
MJJ	28Jan00
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE LOCATION MAP
 BUILDING 824 A, OIL WATER SEPARATOR
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0039	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1-1	REV 0

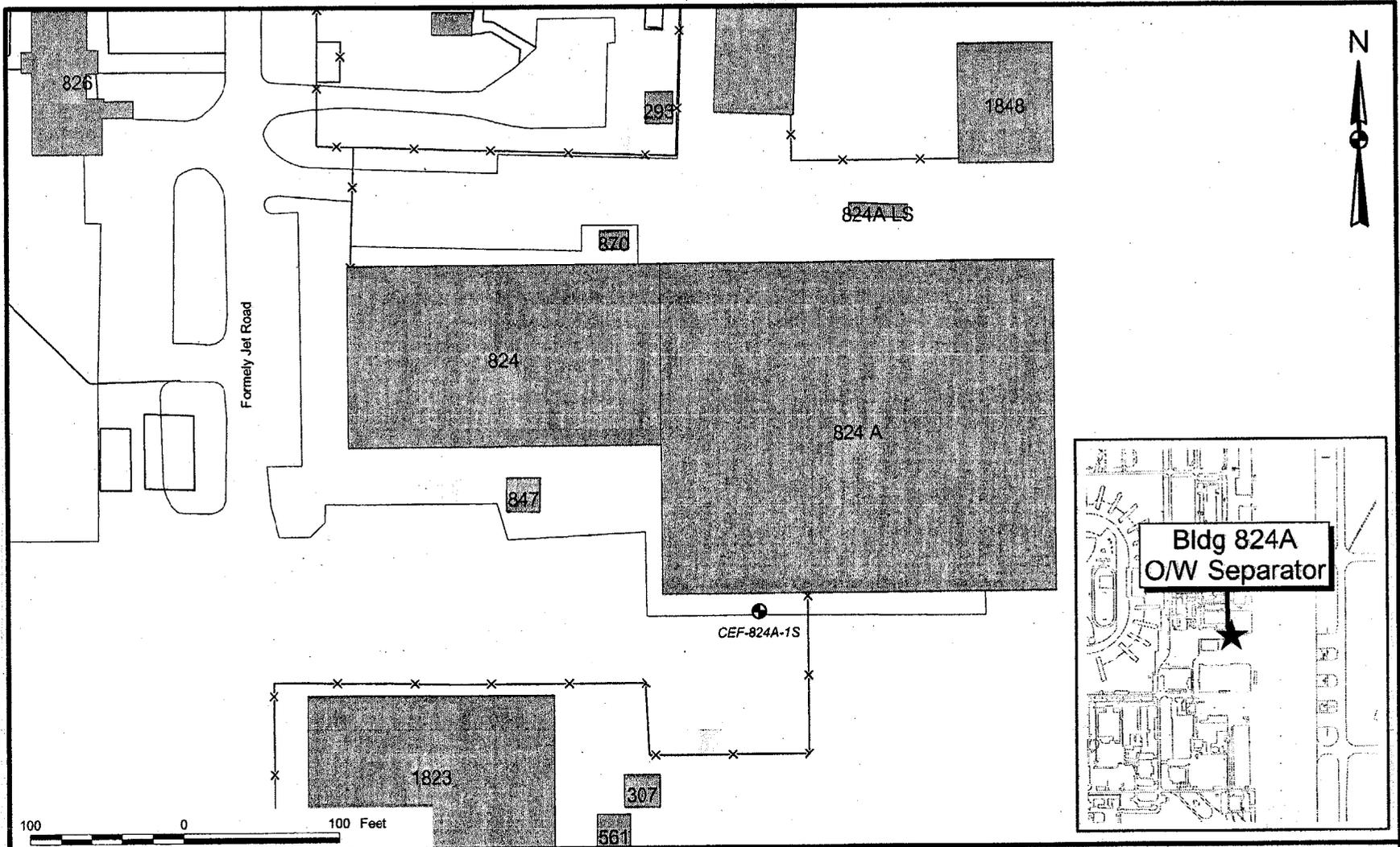
2.0 PHASE II INVESTIGATION

The Phase II investigation included the collection of one groundwater sample from existing well CEF-824-1S to address the elevated total lead concentration and elevated PAH detection limits identified in the CSR. Field activities were conducted in general conformance with the Base-Wide Generic Work Plan and the United States Environmental Protection Agency (U.S. EPA) Region IV Environmental Investigation Standard Operating Procedures and Quality Assurance Manual (EISPOQAM) (TtNUS, 1998 and U.S. EPA, 1996). A site plan indicating the location of the existing monitoring wells is presented as Figure 2-1. Analytical results are provided in Appendix A.

The groundwater sample from the existing well (CEF-824A-GW-01S-01) was collected using low-flow techniques on March 4, 2000 and analyzed for total and dissolved lead and PAHs (by U.S. EPA Method 8310). The dissolved lead sample was passed through a 0.1 micron filter prior to analysis.

In the sample from existing well CEF-824A-01S, PAHs were not detected, and concentrations of lead in filtered and unfiltered samples were less than the FDEP GTCL.

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DRAWN BY MJJ	DATE 28Jan00
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SAMPLE LOCATION MAP
 BUILDING 824 A, OIL WATER SEPARATOR
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0039	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-1	REV 0

3.0 PRELIMINARY RISK EVALUATION

PAHs were not detected, and total and dissolved lead concentrations were less than FDEP GCTLs in the sample from existing well CEF-824A-01S. Based on this information, a human health preliminary risk evaluation (PRE) is not required for Oil-Water Separator 824A-OW.

In addition, because soil was not a concern based on previous sampling data (HLA, 1999), an ecological risk assessment is not required.

4.0 CONCLUSIONS AND RECOMMENDATION

Lead detected in groundwater collected from existing well CEF-824A-01S, located near Oil-Water Separator 824A-OW, does not represent a risk to human health or the environment at the detected concentrations. PAHs were not detected. No other environmental concerns have been identified for this site.

Based on the findings of this evaluation, the color code for Building 824A, Oil-Water Separator 824A-OW should be reclassified to Light Green. No remedial action of further evaluation is recommended.

REFERENCES

Harding Lawson Associates (HLA), 1999. Confirmatory Sampling Report, Building 824A, Oil-Water Separator 824A-OW, NAS Cecil Field, Jacksonville, Florida. April.

Florida Department of Environmental Protection (FDEP), 1999. Contaminant Target Cleanup Levels, Florida Administrative Code (F.A.C.) Chapter 62-777. August.

Tetra Tech NUS, Inc. (TtNUS), 2000. Sampling and Analysis Outline, Building 824A, Oil-Water Separator 824A-OW, Naval Air Station Cecil Field, Jacksonville, Florida. January.

TtNUS, 1998. Base-Wide Generic Work Plan, Naval Air Station Cecil Field, Jacksonville, Florida.

United States Environmental Protection Agency (U.S. EPA), 1996. Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM). May.

APPENDIX A

LABORATORY ANALYTICAL DATA

MEMO TO: M. SPERANZA - PAGE 2
DATE: MARCH 8, 2000

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels for lead were qualified, "U", as a result of blank contamination.

Executive Summary

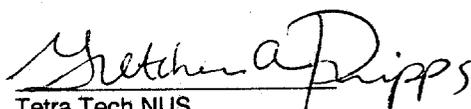
Laboratory Performance: Lead was present in the laboratory blanks.

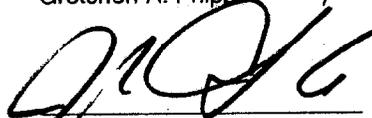
Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy Installation Restoration Laboratory Quality Assurance Guide." (NFESC 2/96).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."


Tetra Tech NUS
Gretchen A. Phipps


Tetra Tech NUS
Joseph A. Samchuck
Quality Control Officer

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

CTO078 - NAS CECIL FIELD

WATER DATA

Accutest, NJ

SDG: F5829

SAMPLE NUMBER:	CEF-824A-GF-01S-01	CEF-824A-GW-01S-01		
SAMPLE DATE:	02/04/00	02/04/00	//	//
LABORATORY ID:	F5829-2	F5829-1		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	0.0 %	0.0 %	100.0 %	100.0 %
UNITS:	UG/L	UG/L		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
INORGANICS												
LEAD	2	U	A	3.1	U	A						

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
- D = MS/MSD Noncompliance
- E = LCS/LCSD Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = GFAA PDS - GFAA MSA's $r < 0.995$
- K = ICP Interference - include ICSAB % R's
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation
- N = Internal Standard Noncompliance
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = Pest/PCD% between columns for positive results
- V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
- W = EMPC result
- X = Signal to noise response drop

Report of Analysis

Page 1 of 1

Client Sample ID: CEF-824A-GW-01S-01	Date Sampled: 02/04/00
Lab Sample ID: F5829-1	Date Received: 02/07/00
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: NAS Cecil Field	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method
Lead	3.1 B	5.0	ug/l	1	02/10/00	02/17/00 JK	SW846 6010A

RL = Reporting Limit

008

Report of Analysis

Client Sample ID: CEF-824A-GF-01S-01 <i>F</i>	Date Sampled: 02/04/00
Lab Sample ID: F5829-2	Date Received: 02/07/00
Matrix: AQ - Groundwater Filtered	Percent Solids: n/a
Project: NAS Cecil Field	

GAP 3-8-00

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method
Lead	2.0 B	5.0	ug/l	1	02/10/00	02/17/00 JK	SW846 6010A

RL = Reporting Limit

APPENDIX C
SUPPORT DOCUMENTATION



PROJECT NO: N0039 **SITE NAME:** Cecil Field **Bldg 824, 915**

PROJECT MANAGER AND PHONE NUMBER: Joe Logan 412 921 7231

LABORATORY NAME AND CONTACT: Accutest Southeast

SAMPLERS (SIGNATURE): [Signatures] **FIELD OPERATIONS LEADER AND PHONE NUMBER:** Merr Dale 904 281 4443

ADDRESS: 4405 Vineland Rd. Ste C-15

CARRIER/WAYBILL NUMBER: Fedex 8184 0179 1163 **CITY, STATE:** Orlando, FL 32811

STANDARD TAT: 24 hr. 48 hr. 72 hr. 7 day 14 day

CONTAINER TYPE: PLASTIC (P) or GLASS (G) **PRESERVATIVE USED:** HNO₃, HNO₂, none

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS			COMMENTS
2/4	1008	CEF-824A-GW-015-01	GW	G	3	1	2	FS829-1	cool to 4°C
2/4	1008	CEF-824A-GF-015-01	GW	G	1	1		-2 g/dm ³	

RECEIVED BY: Abby Wilson

RECEIVED BY: [Signature]

RECEIVED BY: [Signature]

COMMENTS: N0039 . DSO-058-05P520

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE)

YELLOW (FIELD COPY)

PINK (FILE COPY)

F5829

HOLDING TIME

03/07/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	CEF-824A-GW-01S-01	F5829-1	NORMAL	F5829	M	02/04/00	02/10/00	02/17/00	6	7	13
UG/L	CEF-824A-GF-01S-01	F5829-2	NORMAL	F5829	MF	02/04/00	02/10/00	02/17/00	6	7	13
UG/L	CEF-824A-GW-01S-01	F5829-1	NORMAL	F5829	PAH	02/04/00	02/11/00	02/25/00	7	14	21

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: F5829
 Account: TETRPAPT - Tetra Tech, NUS
 Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0217M2.ASC
 QC Limits: result < RL

Date Analyzed: 02/17/00
 Run ID: MA1751

Methods: SW846 6010A
 Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	anr							
Barium	200	.39	anr							
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	anr							
Calcium	1000	19.5	anr							
Chromium	10	.637	anr							
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	2.1	<5.0	3.0	<5.0	2.7	<5.0	1.9	<5.0
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68	anr							
Nickel	40	1	anr							
Potassium	5000	28.2	anr							
Selenium	10	2	anr							
Silver	10	.96	anr							
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2	anr							
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
 (anr) Analyte not requested

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: F5829
 Account: TETRPAPT - Tetra Tech, NUS
 Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0217M2.ASC
 QC Limits: result < RL

Date Analyzed: 02/17/00
 Run ID: MA1751

Methods: SW846 6010A
 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	anr							
Barium	200	.39	anr							
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	anr							
Calcium	1000	19.5	anr							
Chromium	10	.637	anr							
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	2.8	<5.0	3.5	<5.0B	2.9	<5.0	4.7	<5.0B
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68	anr							
Nickel	40	1	anr							
Potassium	5000	28.2	anr							
Selenium	10	2	anr							
Silver	10	.96	anr							
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2	anr							
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
 (anr) Analyte not requested

BLANK RESULTS SUMMARY
 Part 1 - Initial and Continuing Calibration Blanks

Login Number: F5829
 Account: TETRPAPT - Tetra Tech, NUS
 Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0217M2.ASC
 QC Limits: result < RL

Date Analyzed: 02/17/00
 Run ID: MA1751

Methods: SW846 6010A
 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final
Aluminum	200	30	anr			
Antimony	5.0	2.39	anr			
Arsenic	10	3.4	anr			
Barium	200	.39	anr			
Beryllium	5.0	.36	anr			
Cadmium	5.0	.33	anr			
Calcium	1000	19.5	anr			
Chromium	10	.637	anr			
Cobalt	50	.797	anr			
Copper	25	.747	anr			
Iron	300	32	anr			
Lead	5.0	1.59	3.4	<5.0B	2.4	<5.0B
Magnesium	5000	17.6	anr			
Manganese	15	.16	anr			
Molybdenum	50	.68	anr			
Nickel	40	1	anr			
Potassium	5000	28.2	anr			
Selenium	10	2	anr			
Silver	10	.96	anr			
Sodium	5000	153	anr			
Thallium	10	2.69	anr			
Tin	50	2.2	anr			
Vanadium	50	.717	anr			
Zinc	20	.83	anr			

(*) Outside of QC limits
 (anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IRO211M1.ASC
QC Limits: result < RL

Date Analyzed: 02/11/00
Run ID: MA1749

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	14.6	<200	16.8	<200	42.3	<200	22.2	<200
Antimony	5.0	2.39	0.93	<5.0	2.8	<5.0	3.1	<5.0	2.3	<5.0
Arsenic	10	3.4	-0.33	<10	1.6	<10	-0.14	<10	1.5	<10.0
Barium	200	.39	0.58	<200	0.59	<200	0.72	<200	0.70	<200B
Beryllium	5.0	.36	0.79	<5.0	0.72	<5.0	1.1	<5.0	1.0	<5.0B
Cadmium	5.0	.33	0.56	<5.0	0.51	<5.0	0.66	<5.0	0.70	<5.0B
Calcium	1000	19.5	10.6	<1000	8.2	<1000	34.5	<1000	16.9	<1000
Chromium	10	.637	0.54	<10	0.64	<10	0.62	<10	0.80	<10.0B
Cobalt	50	.797	0.56	<50	0.93	<50	0.87	<50	1.1	<50.0B
Copper	25	.747	0.31	<25	0.43	<25	0.39	<25	0.80	<25.0B
Iron	300	32	12.9	<300	16.8	<300	25.5	<300	21.4	<300
Lead	5.0	1.59	1.7	<5.0	2.1	<5.0	1.8	<5.0	1.8	<5.0B
Magnesium	5000	17.6	15.6	<5000	13.6	<5000	37.7	<5000	16.3	<5000
Manganese	15	.16	0.59	<15	0.51	<15	0.73	<15	0.80	<15.0B
Molybdenum	50	.68	5.0	<50	4.3	<50	6.4	<50	8.2	<50.0B
Nickel	40	1	0.54	<40	0.80	<40	0.60	<40	0.90	<40.0
Potassium	5000	28.2	85.4	<5000	96.3	<5000	91.1	<5000	88.3	<5000B
Selenium	10	2	2.2	<10	1.1	<10	3.0	<10	1.7	<10.0
Silver	10	.96	0.16	<10	0.67	<10	0.35	<10	0	<10.0
Sodium	5000	153	-120	<5000	-58	<5000	-200	<5000	-136	<5000
Thallium	10	2.69	3.2	<10	3.7	<10	3.0	<10	3.1	<10.0B
Tin	50	2.2	0.81	<50	1.6	<50	2.8	<50	2.2	<50.0
Vanadium	50	.717	0.70	<50	0.58	<50	0.63	<50	0.80	<50.0B
Zinc	20	.83	0.52	<20	0.65	<20	0.90	<20	0.80	<20.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0211M1.ASC
QC Limits: result < RL

Date Analyzed: 02/11/00
Run ID: MA1749

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	14.6	<200	22.9	<200	29.6	<200	47.5	<200
Antimony	5.0	2.39	2.4	<5.0	1.2	<5.0	2.1	<5.0	3.2	<5.0
Arsenic	10	3.4	0.57	<10	0.30	<10.0	0.75	<10	1.1	<10
Barium	200	.39	0.66	<200	0.80	<200B	1.1	<200	1.1	<200
Beryllium	5.0	.36	0.60	<5.0	1.1	<5.0B	1.5	<5.0	2.2	<5.0
Cadmium	5.0	.33	0.62	<5.0	0.60	<5.0B	0.71	<5.0	0.90	<5.0
Calcium	1000	19.5	13.3	<1000	14.6	<1000	12.4	<1000	15.6	<1000
Chromium	10	.637	0.62	<10	0.80	<10.0B	0.74	<10	1.2	<10
Cobalt	50	.797	0.89	<50	1.1	<50.0B	1.0	<50	1.2	<50
Copper	25	.747	1.0	<25	0.50	<25.0	-0.39	<25	-0.53	<25
Iron	300	32	14.2	<300	24.2	<300	22.5	<300	32.0	<300
Lead	5.0	1.59	1.7	<5.0	2.9	<5.0B	1.6	<5.0	2.0	<5.0
Magnesium	5000	17.6	16.6	<5000	16.8	<5000	16.8	<5000	21.4	<5000
Manganese	15	.16	0.64	<15	0.70	<15.0B	0.79	<15	1.0	<15
Molybdenum	50	.68	5.2	<50	4.4	<50.0B	4.9	<50	6.3	<50
Nickel	40	1	0.80	<40	1.0	<40.0	1.0	<40	1.4	<40
Potassium	5000	28.2	84.0	<5000	91.8	<5000B	93.1	<5000	90.3	<5000
Selenium	10	2	1.0	<10	4.0	<10.0B	2.6	<10	2.0	<10
Silver	10	.96	-0.24	<10	0	<10.0	0.67	<10	0.97	<10
Sodium	5000	153	-130	<5000	-41.8	<5000	-91	<5000	-130	<5000
Thallium	10	2.69	3.6	<10	3.3	<10.0B	6.1	<10	5.2	<10
Tin	50	2.2	1.8	<50	1.9	<50.0	2.2	<50	3.4	<50
Vanadium	50	.717	0.50	<50	1.1	<50.0B	0.82	<50	1.0	<50
Zinc	20	.83	0.52	<20	0.80	<20.0	0.57	<20	0.82	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

QC Batch ID: MP2481
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 02/10/00

Metal	RL	IDL	MB raw	final
Aluminum	200	30	anr	
Antimony	5.0	2.39	anr	
Arsenic	10	3.45	anr	
Barium	200	.39	anr	
Beryllium	5.0	.363	anr	
Cadmium	5.0	.33	anr	
Calcium	1000	19.5	anr	
Chromium	10	.637	anr	
Cobalt	50	.797	anr	
Copper	25	.747	anr	
Iron	300	32	anr	
Lead	5.0	1.59	1.2	<5.0
Magnesium	5000	17.6	anr	
Manganese	15	.16	anr	
Molybdenum	50	.68	anr	
Nickel	40	1	anr	
Potassium	5000	28.2	anr	
Selenium	10	2.04	anr	
Silver	10	.963	anr	
Sodium	5000	153	anr	
Thallium	10	2.69	anr	
Tin	50	2.23	anr	
Vanadium	50	.717	anr	
Zinc	20	.83	anr	

Associated samples MP2481: F5829-1, F5829-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MP 2481

Metals Digestion Log: Water

Method Of Digestion: CP 3010A Temp: 95 Thermometer ID#: 33

Added:	<u>HNO₃</u>	<u>HCl</u>	<u>H₂O₂</u>
Mfg:	<u>Fisher</u>	<u>Fisher</u>	<u> </u>
Lot #:	<u>119040</u>	<u>419000</u>	<u> </u>

Sample #	Init. Vol / Wt	Final Vol / Wt	Date	Comments
F5837.1 -DUP	50	50	2.10.00	
F5837.1 -MS				spiked w/1.0ml acc 103 + 0.5ml AN 949 + 0.25ml acc 149
1- F5837.1 MSD				same as MS
2- F5837.1				
3- F5835.2				
4- F5855.1				
5- F5818.3A				
6- F5818.4A				
7- F5818.5A				
8- F5819.4				
9- F5826.1B				
10- F5829.1				
11- F5829.2	✓	✓	✓	
12-				
13-				
14-				
15-				
16-				
17-				
18-				
19-				
20-				
MB/SB	50	50	2.10.00	
MB/SB				same as MS

Analyst's Signature: Steve Lee Date: 2.10.00

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0217M2.ASC
Analyst: JK
Parameters: Pb

Date Analyzed: 02/17/00 Methods: SW846 6010A
Run ID: MA1751

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:26	MA1751-ICV1	1		
08:32	MA1751-ICB1	1		
08:37	MA1751-CCV1	1		
08:42	MA1751-CCB1	1		
08:48	MA1751-CRI1	1		
08:53	MA1751-CRIA1	1		
08:59	MA1751-ICSA1	1		Data not used.
09:06	MA1751-ICSA2	1		
09:11	MA1751-ICSAB1	1		
09:16	MA1751-CCV2	1		
09:22	MA1751-CCB2	1		
09:28	MP2489-MB1	1		
09:33	MP2489-B1	1		
09:39	MP2489-D1	1		
09:44	F5869-1	1		(sample used for QC only; not part of login F5829)
09:51	MP2489-S1	1		
09:57	MP2489-S2	1		
10:02	MP2489-SD1	5		
10:08	MP2486-MB1	1		
10:14	MP2486-B1	1		
10:20	MA1751-CCV3	1		
10:26	MA1751-CCB3	1		
10:31	MP2486-D1	1		Tip missed cup. See rerun.
10:37	F5850-1	1		(sample used for QC only; not part of login F5829)
10:47	MP2486-D1	1		
10:52	F5850-1	1		(sample used for QC only; not part of login F5829)
10:58	MP2486-S1	1		
11:03	MP2486-S2	1		
11:08	MP2486-SD1	5		
11:14	ZZZZZZ	1		
11:19	MA1751-CCV4	1		
11:34	MA1751-CCB4	1		
11:42	MP2485-MB1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0217M2.ASC
Analyst: JK
Parameters: Pb

Date Analyzed: 02/17/00 Methods: SW846 6010A
Run ID: MA1751

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:47	MP2485-B1	1		
11:53	MP2485-D1	1		
11:58	F5865-1	1		(sample used for QC only; not part of login F5829)
12:03	MP2485-S1	1		
12:09	MP2485-S2	1		
12:14	MP2485-SD1	5		
12:19	ZZZZZZ	1		
12:25	ZZZZZZ	1		
12:30	F5829-1	1		
12:41	MA1751-CCV5	1		
12:46	MA1751-CCB5	1		
12:52	F5829-2	1		
12:58	ZZZZZZ	1		
13:03	MP2475-MB1	1		
13:08	MP2475-B1	1		
13:14	MP2475-D1	1		
13:19	F5826-4	1		(sample used for QC only; not part of login F5829)
13:25	MP2475-S1	1		
13:30	MP2475-S2	1		
13:35	MP2475-SD1	5		
13:41	MA1751-CCV6	1		
13:47	MA1751-CCB6	1		
13:53	ZZZZZZ	1		
13:58	ZZZZZZ	1		
14:04	ZZZZZZ	1		
14:09	ZZZZZZ	1		
14:14	ZZZZZZ	1		
14:20	ZZZZZZ	1		
14:25	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:36	ZZZZZZ	1		
14:43	MA1751-CCV7	1		
14:48	MA1751-CCB7	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0217M2.ASC
Analyst: JK
Parameters: Pb

Date Analyzed: 02/17/00 Methods: SW846 6010A
Run ID: MA1751

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:54	ZZZZZZ	1		
14:59	ZZZZZZ	1		
15:04	ZZZZZZ	1		
15:10	ZZZZZZ	1		
15:15	ZZZZZZ	1		
15:23	ZZZZZZ	1		
15:28	ZZZZZZ	1		
15:33	ZZZZZZ	1		
15:39	ZZZZZZ	1		
15:44	ZZZZZZ	1		
15:49	MA1751-CCV8	1		
15:55	MA1751-CCB8	1		
16:00	ZZZZZZ	1		
16:05	ZZZZZZ	1		
16:11	ZZZZZZ	1		
16:16	ZZZZZZ	1		
16:21	ZZZZZZ	1		
16:27	ZZZZZZ	1		
16:32	ZZZZZZ	1		
16:40	MA1751-CCV9	1		
16:48	MA1751-CCB9	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0211M1.ASC Date Analyzed: 02/11/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1749
Parameters: Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, Tl, V, Zn (QC only)

Time	Sample Description	Dilution Factor	PS Recov	Comments
07:31	MA1749-ICV1	1		
07:36	MA1749-ICB1	1		
07:41	MA1749-CCV1	1		
07:47	MA1749-CCB1	1		
07:53	MA1749-CRI1	1		
07:58	MA1749-CRIA1	1		
08:04	MA1749-ICSA1	1		
08:09	MA1749-ICSAB1	1		
08:18	MA1749-CCV2	1		
08:24	MA1749-CCB2	1		
08:29	ZZZZZZ	1		
08:35	ZZZZZZ	1		
08:40	MP2474-MB1	1		
08:45	MP2474-B1	1		
08:50	MP2474-D1	1		
08:56	F5750-1R	1		(sample used for QC only; not part of login F5829)
09:01	MP2474-S1	1		
09:06	MP2474-S2	1		
09:12	MP2474-SD1	5		
09:17	ZZZZZZ	1		
09:22	MA1749-CCV3	1		
09:30	MA1749-CCB3	1		
09:36	MP2481-MB1	1		
09:41	MP2481-B1	1		
09:46	MP2481-D1	1		
09:52	F5832-1	1		(sample used for QC only; not part of login F5829)
09:59	MP2481-S1	1		
10:04	MP2481-S2	1		
10:10	MP2481-SD1	5		
10:15	ZZZZZZ	1		
10:21	ZZZZZZ	1		
10:26	ZZZZZZ	1		
10:31	MA1749-CCV4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0211M1.ASC Date Analyzed: 02/11/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1749
Parameters: Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, Tl, V, Zn (QC only)

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:37	MA1749-CCB4	1		
10:42	MP2482-MB1	1		
10:48	MP2482-B1	1		
10:53	MP2482-D1	1		
10:58	F5832-2	1		(sample used for QC only; not part of login F5829)
11:04	MP2482-S1	1		
11:09	MP2482-S2	1		
11:15	MP2482-SD1	5		
11:20	ZZZZZZ	1		
11:26	ZZZZZZ	1		
11:31	MA1749-CCV5	1		
11:36	MA1749-CCB5	1		
11:42	ZZZZZZ	1		
11:47	ZZZZZZ	1		
11:52	ZZZZZZ	1		
11:58	ZZZZZZ	1		
12:04	ZZZZZZ	1		
12:09	ZZZZZZ	1		
12:14	ZZZZZZ	1		
12:20	ZZZZZZ	1		
12:25	ZZZZZZ	1		
12:30	MA1749-CCV6	1		
12:36	MA1749-CCB6	1		
12:41	ZZZZZZ	1		
12:46	ZZZZZZ	1		
12:52	ZZZZZZ	1		
12:57	ZZZZZZ	1		
13:02	ZZZZZZ	5		
13:08	ZZZZZZ	1		
13:13	ZZZZZZ	1		
13:18	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:33	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5829
Account: TETRPAPT - Tetra Tech, NUS
Project: TETRPAPT1252 - NAS Cecil Field

File ID: IR0211M1.ASC Date Analyzed: 02/11/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1749
Parameters: Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, Tl, V, Zn (QC only)

Time	Sample Description	Dilution Factor	PS Recov	Comments
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13:43 MA1749-CCV7 1

13:49 MA1749-CCB7 1

Refer to raw data for calibration curve and standards.