N00158.AR.000265
NAS WILLOW GROVE
5090.3a

TETRA TECH NUS

PHIL-21217

TO: RUSS TURNER **DATE:** JULY 13, 2007

FROM: MEGAN N. RITCHIE **COPIES:** FILE

SUBJECT: INORGANIC DATA VALIDATION – METALS, CYANIDE, PERCENT SOLIDS
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. C7E020142

SAMPLES: 5/Solid/

03TP06-0102-05 03TP06-0304-01 03TP06-0607-04 03TP06-0708-02
03TP06-0809-03

OVERVIEW

The sample set for the NAS JRB Willow Grove Site 3 Test Pits – Willow Grove, PA, SDG C7E020142 consists of 5 solid environmental samples (designated 03TP06-). No matrix spike samples were designated for this sample set. No field duplicate pairs were included in this sample set. All samples were analyzed for target analyte list (TAL) metals and cyanide except for sample 03TP06-0102-05 which was analyzed for percent solids only.

The samples were collected by Tetra Tech NUS on May 1, 2007 and analyzed by Severn Trent Laboratories (STL) of Pittsburgh, Pennsylvania.

EPA SW-846 Methods were conducted using 6010B for ICP-AES metals, 7471A for mercury, and 9012A for cyanide. Percent solids were analyzed by EPA Method 160.3 modified.

SUMMARY

All analytes were successfully analyzed in all samples. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, calibration data, laboratory blank results, ICP interference check samples, matrix spike (MS) and matrix spike duplicate (MSD) results, laboratory control spike (LCS) results, field duplicate results, ICP serial dilution results, detection limits, and analyte quantitation.

Areas of concern with respect to data quality are listed below as follows:

MAJOR PROBLEMS

- Selenium, sodium, and thallium exhibited negative concentrations with absolute values greater than the MDL in ICS solution A, which indicates the potential for negative bias to an extent that depends on the sample mineral concentrations. For non-detected selenium, sodium, and thallium results, when the MDL was less than the absolute value of the predicted magnitude of negative interference, such results were qualified as unusable (UR).

MINOR PROBLEMS

- The following table summarizes the analytes detected as contaminants in the laboratory blanks at the maximum concentration indicated:

Analyte	Maximum Concentration	Action Level
Aluminum	19.7 ug/L	9.85 mg/kg
Antimony	1.9 ug/L	0.95 mg/kg
Beryllium	0.8 ug/L	0.4 mg/kg
Manganese	0.4 ug/L	0.2 mg/kg
Potassium	18.7 mg/kg	93.5 mg/kg
Zinc	0.39 mg/kg	1.95 mg/kg

Samples affected: The action levels apply to all solid environmental samples.

Dilution factors, percent solids, and sample preparation weights were taken into account during application of action levels. Results reported at concentrations within the action level are qualified (B) and are considered to be false positives (artifacts of blank contamination). No action was taken for aluminum, beryllium, manganese, potassium, and zinc because the results exceeded the action level or there were no positive results for these analytes.

- Arsenic and sodium exhibited negative concentrations with absolute values greater than the MDL in ICS solution A, which indicates the potential for negative bias to an extent that depends on the sample mineral concentrations. For positive arsenic and sodium results, when the sample concentration less than 10 times the absolute value of the expected interference, such results were qualified as biased low (L).
- The MS/MSD recoveries for barium, cadmium, chromium, copper, lead, nickel, and zinc exceeded the upper QC limit of 125%. All positive results for these analytes were qualified as biased high (K), except where superseded by the qualifier (J) for other QC problems.
- The MS/MSD recoveries for antimony and selenium were below the lower QC limit of 80%. All positive and non-detected results for these analytes were qualified as biased low (L/UL), except where superseded by the qualifier for unusable results (UR) or by the qualifier "B" due to blank contamination.
- The MS/MSD recoveries for mercury were below the lower QC limit of 75%. All positive results for mercury were qualified as biased low (L).
- The MS/MSD relative percent difference (RPD) for barium and lead exceeded the QC limit of 35%. The positive results for barium and lead were qualified as estimated (J). This qualifier supersedes the biased high (K) qualifier for MS/MSD recovery. A laboratory duplicate was not analyzed; therefore, the MSD results were used in place of a laboratory duplicate.

NOTES

Dilutions were required for cadmium, chromium, iron, sodium, lead, antimony, selenium, thallium, vanadium, and zinc in samples 03TP06-0607-04 and 03TP06-0708-02 and for cadmium, chromium, copper, iron, manganese, sodium, lead, antimony, selenium, thallium, vanadium, and zinc in sample 03TP06-0809-03 because the original analyses concentrations for these analytes were over the instruments linear range.

The cyanide and percent solids data are acceptable as reported by the laboratory.

EXECUTIVE SUMMARY

Laboratory Performance: Many analytes displayed signals with absolute values greater than the MDL in the ICP Interference Check Sample A. Four of these may have produced bias in sample results. Several analytes were present in the laboratory blanks.

Other Factors Affecting Data Quality: Several MS/MSD recoveries were outside QC criteria. Two metals MSD RPDs exceeded QC criteria.

The data for these analyses were reviewed with reference to the EPA "Functional Guidelines for Inorganic Data Review", as amended for use within EPA Region 3 (4/93).

The text of this report has been formatted 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 Functional Guidelines and the Quality Assurance Project Plan (QAPjP)."

Megan N. Ritchie

Megan N. Ritchie
Chemist

Russ Sloboda

Tetra Tech NUS, Inc.
Russ Sloboda
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

Qualified Analytical Results

PROJ_NO: 2192

SDG: C7E020142 MEDIA: SOIL DATA FRACTION: M

nsample	03TP06-0304-01	nsample	03TP06-0607-04	nsample	03TP06-0708-02
samp_date	5/1/2007	samp_date	5/1/2007	samp_date	5/1/2007
lab_id	C7E020142001	lab_id	C7E020142004	lab_id	C7E020142002
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG	units	MG/KG
Pct_Solids	81.0	Pct_Solids	68.0	Pct_Solids	78.0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	15200		
ANTIMONY	0.58	B	A
ARSENIC	2.6	L	K
BARIUM	167	J	DF
BERYLLIUM	1.1		
CADMIUM	1.4	K	D
CALCIUM	984		
CHROMIUM	9.4	K	D
COBALT	13.2		
COPPER	67.4	K	D
IRON	24100		
LEAD	63.2	J	DF
MAGNESIUM	665		
MANGANESE	1290		
MERCURY	0.58	L	D
NICKEL	13.8	K	D
POTASSIUM	351		
SELENIUM	0.32	UR	K
SILVER	0.64		
SODIUM	19.2	UR	K
THALLIUM	0.56	UR	K
VANADIUM	16.7		
ZINC	103	K	D

Parameter	Result	Val Qual	Qual Code
ALUMINUM	25400		
ANTIMONY	28.8	L	D
ARSENIC	10.7	L	K
BARIUM	628	J	DF
BERYLLIUM	1		
CADMIUM	99.4	K	D
CALCIUM	26200		
CHROMIUM	108	K	D
COBALT	30.1		
COPPER	1280	K	D
IRON	113000		
LEAD	2170	J	DF
MAGNESIUM	8690		
MANGANESE	2030		
MERCURY	4.8	L	D
NICKEL	145	K	D
POTASSIUM	1590		
SELENIUM	3.8	UR	K
SILVER	233		
SODIUM	987	L	K
THALLIUM	1.3	UR	K
VANADIUM	32.9		
ZINC	7390	K	D

Parameter	Result	Val Qual	Qual Code
ALUMINUM	21600		
ANTIMONY	12.9	L	D
ARSENIC	4.1	L	K
BARIUM	267	J	DF
BERYLLIUM	0.78		
CADMIUM	25.1	K	D
CALCIUM	5550		
CHROMIUM	53.4	K	D
COBALT	12.1		
COPPER	475	K	D
IRON	106000		
LEAD	1370	J	DF
MAGNESIUM	1720		
MANGANESE	1590		
MERCURY	3.9	L	D
NICKEL	40.9	K	D
POTASSIUM	553		
SELENIUM	1.7	UR	K
SILVER	6		
SODIUM	100	UR	K
THALLIUM	2.9	UR	K
VANADIUM	18		
ZINC	1230	K	D

PROJ_NO: 2192

SDG: C7E020142 MEDIA: SOIL DATA FRACTION: M

nsample	03TP06-0809-03
samp_date	5/1/2007
lab_id	C7E020142003
qc_type	NM
units	MG/KG
Pct_Solids	71.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	25600		
ANTIMONY	113	L	D
ARSENIC	8.6	L	K
BARIUM	656	J	DF
BERYLLIUM	0.61		
CADMIUM	155	K	D
CALCIUM	14700		
CHROMIUM	83.7	K	D
COBALT	20.2		
COPPER	1500	K	D
IRON	91600		
LEAD	1990	J	DF
MAGNESIUM	3690		
MANGANESE	3070		
MERCURY	6.7	L	D
NICKEL	81.3	K	D
POTASSIUM	790		
SELENIUM	3.7	UR	K
SILVER	45.7		
SODIUM	158	L	K
THALLIUM	1.3	UR	K
VANADIUM	26.2		
ZINC	4990	K	D

PROJ_NO: 2192

SDG: C7E020142 MEDIA: SOIL DATA FRACTION: MISC

nsample	03TP06-0102-05
samp_date	5/1/2007
lab_id	C7E020142005
qc_type	NM
Pct_Solids	67.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
PERCENT MOISTURE	%	32.7		

nsample	03TP06-0304-01
samp_date	5/1/2007
lab_id	C7E020142001
qc_type	NM
Pct_Solids	81.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CYANIDE	MG/KG	0.25		
PERCENT SOLIDS	%	81.4		

nsample	03TP06-0607-04
samp_date	5/1/2007
lab_id	C7E020142004
qc_type	NM
Pct_Solids	68.0
DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CYANIDE	MG/KG	1		
PERCENT SOLIDS	%	68.1		

PROJ_NO: 2192

SDG: C7E020142 MEDIA: SOIL DATA FRACTION: MISC

nsample	03TP06-0708-02	nsample	03TP06-0809-03
samp_date	5/1/2007	samp_date	5/1/2007
lab_id	C7E020142002	lab_id	C7E020142003
qc_type	NM	qc_type	NM
Pct_Solids	78.0	Pct_Solids	71.0
DUP_OF:		DUP_OF:	

Parameter	units	Result	Val Qual	Qual Code
CYANIDE	MG/KG	0.63		
PERCENT SOLIDS	%	78.2		

Parameter	units	Result	Val Qual	Qual Code
CYANIDE	MG/KG	4.6		
PERCENT SOLIDS	%	70.7		

Data Qualifier Key:

B	-	Positive result is considered to be an artifact of blank contamination and should not be considered present.
J	-	Value is considered estimated due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).
L	-	Positive result is considered biased low due to exceedance of technical quality control criteria.
U	-	Value is a non-detected result as reported by the laboratory.
UL	-	Non-detected result is considered biased low due to exceedance of technical quality control criteria.

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	=	LSC/LSCD Noncompliance
f	=	Laboratory Duplicate Imprecision
g	=	Field Duplicate Imprecision
h	=	Holding Time Exceedance
i	=	ICP Serial Dilution Noncompliance
j	=	GFAA PDS – GFAA MSA's r<0.995 (correlation coefficient)
k	=	ICP Interference – include ICSAB %Rs
l	=	Instrument Calibration Range Exceedance
m	=	Sample Preservation
n	=	Internal Standard Noncompliance
o	=	Poor Instrument Performance (i.e. baseline drifting)
p	=	Uncertainty Near Detection Limit (<2 x IDL for inorganics and < CRQL for organics)
q	=	Other Problems (can encompass of number of issues)
r	=	Surrogates Recovery Noncompliance
s	=	Pesticide/PCB Resolution
t	=	% Breakdown Noncompliance for DDT and Endrin
u	=	Pesticide/PCB % Difference Between Columns for Positive Results
v	=	Non-linear Calibrations, Tuning r <0.995 (correlation coefficient)

APPENDIX B

Results as Reported by the Laboratory

Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0304-01

TOTAL Metals

Lot-Sample #...: C7E020142-001 Matrix.....: SOLID
Date Sampled...: 05/01/07 Date Received..: 05/02/07
% Moisture.....: 19

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7123045						
Silver	0.64	0.61	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AH
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.037	
Aluminum	15200	24.6	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AJ
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.98	
Arsenic	2.6	1.2	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AK
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.40	
Barium	167	24.6	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AL
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.12	
Beryllium	1.1	0.49	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AM
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.051	
Calcium	984	614	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AN
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 4.9	
Cadmium	1.4	0.61	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AP
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.086	
Cobalt	13.2	6.1	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AQ
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.065	
Chromium	9.4	0.61	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1AR
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.11	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0304-01

TOTAL Metals

Lot-Sample #...: C7E020142-001 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper	**67.4**	**3.1**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1AT**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.14	
Iron	**24100**	**12.3**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1AU**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.2	
Potassium	**351 J,B**	**614**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1AV**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 9.2	
Magnesium	**665**	**614**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1AW**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.3	
Manganese	**1290**	**1.8**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1AX**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.014	
Sodium	ND	614	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1A0
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 19.2	
Nickel	**13.8**	**4.9**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1A1**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.15	
Lead	**63.2**	**0.37**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1A2**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.19	
Antimony	**0.58 J**	**1.2**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1A3**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.39	
Selenium	ND	0.61	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1A4
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.32	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0304-01

TOTAL Metals

Lot-Sample #...: C7E020142-001 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Thallium	ND	1.2	mg/kg	SW846 6010B	05/03-05/16/07	JV37P1A5
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.56	
Vanadium	**16.7**	**6.1**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1A6**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.13	
Zinc	**103 B**	**2.5**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV37P1A7**
		Dilution Factor: 1		Analysis Time..: 13:09	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.21	

Prep Batch #...: 7137232

Mercury	**0.58**	**0.041**	**mg/kg**	**SW846 7471A**	**05/17/07**	**JV37P1AG**
		Dilution Factor: 1		Analysis Time..: 17:09	Analyst ID.....: 400491	
		Instrument ID..: HGHYDRA		MS Run #.....: 7137134	MDL.....: 0.0087	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated Result: Result is less than RL and greater than or equal to the MDL.

B Blank contamination: Target analyte was detected at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0607-04

TOTAL Metals

Lot-Sample #...: C7E020142-004 Matrix.....: SOLID
Date Sampled...: 05/01/07 Date Received..: 05/02/07
% Moisture.....: 32

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7123045						
Silver	233	0.73	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AT
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.044	
Aluminum	25400	29.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AU
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.2	
Arsenic	10.7	1.5	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AV
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.48	
Barium	628	29.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AW
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.15	
Beryllium	1.0	0.59	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AX
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.061	
Calcium	26200	734	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A0
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 5.8	
Cadmium	99.4	1.5	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A1
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.20	
Cobalt	30.1	7.3	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A2
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.077	
Chromium	108	1.5	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A3
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.27	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0607-04

TOTAL Metals

Lot-Sample #...: C7E020142-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper	1280	3.7	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A4
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.17	
Iron	113000	29.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A5
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 5.3	
Potassium	1590 B	734	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A6
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 11.0	
Magnesium	8690	734	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A7
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.5	
Manganese	2030	2.2	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1A8
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.017	
Sodium	987 J	1470	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AA
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 46.0	
Nickel	145	5.9	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AC
		Dilution Factor: 1		Analysis Time..: 13:47	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.18	
Lead	2170	4.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AD
		Dilution Factor: 10		Analysis Time..: 22:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.3	
Antimony	28.8	2.9	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AE
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.94	
Selenium	ND	7.3	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AF
		Dilution Factor: 10		Analysis Time..: 22:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 3.8	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0607-04

TOTAL Metals

Lot-Sample #...: C7E020142-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Thallium	ND	2.9	mg/kg	SW846 6010B	05/03-05/16/07	JV38J1AG
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.3	
Vanadium	**32.9**	**14.7**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV38J1AH**
		Dilution Factor: 2		Analysis Time..: 22:35	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.31	
Zinc	**7390 B**	**29.4**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV38J1AJ**
		Dilution Factor: 10		Analysis Time..: 22:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.5	

Prep Batch #...: 7137232

Mercury	**4.8**	**0.24**	**mg/kg**	**SW846 7471A**	**05/17/07**	**JV38J1AR**
		Dilution Factor: 5		Analysis Time..: 18:18	Analyst ID.....: 400491	
		Instrument ID..: HGHYDRA		MS Run #.....: 7137134	MDL.....: 0.052	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Blank contamination: Target analyte was detected at a reportable level.

J Estimated Result: Result is less than RL and greater than or equal to the MDL.

Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0708-02

TOTAL Metals

Lot-Sample #...: C7E020142-002 Matrix.....: SOLID
Date Sampled...: 05/01/07 Date Received..: 05/02/07
% Moisture.....: 22

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7123045						
Silver	6.0	0.64	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AT
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.038	
Aluminum	21600	25.6	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AU
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.0	
Arsenic	4.1	1.3	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AV
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.42	
Barium	267	25.6	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AW
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.13	
Beryllium	0.78	0.51	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AX
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.053	
Calcium	5550	639	mg/kg	SW846 6010B	05/03-05/16/07	JV3771A0
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 5.1	
Cadmium	25.1	3.2	mg/kg	SW846 6010B	05/03-05/16/07	JV3771A1
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.45	
Cobalt	12.1	6.4	mg/kg	SW846 6010B	05/03-05/16/07	JV3771A2
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.067	
Chromium	53.4	3.2	mg/kg	SW846 6010B	05/03-05/16/07	JV3771A3
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.60	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0708-02

TOTAL Metals

Lot-Sample #...: C7E020142-002 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper	**475**	**3.2**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771A4**
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.15	
Iron	**106000**	**63.9**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771A5**
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 11.5	
Potassium	**553 J,B**	**639**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771A6**
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 9.6	
Magnesium	**1720**	**639**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771A7**
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.3	
Manganese	**1590**	**1.9**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771A8**
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.015	
Sodium	ND	3200	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AA
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 100	
Nickel	**40.9**	**5.1**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771AC**
		Dilution Factor: 1		Analysis Time..: 13:03	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.16	
Lead	**1370**	**1.9**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771AD**
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.0	
Antimony	**12.9**	**6.4**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771AE**
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.0	
Selenium	ND	3.2	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AF
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.7	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0708-02

TOTAL Metals

Lot-Sample #...: C7E020142-002 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Thallium	ND	6.4	mg/kg	SW846 6010B	05/03-05/16/07	JV3771AG
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.9	
Vanadium	**18.0 J**	**32.0**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771AH**
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.66	
Zinc	**1230 B**	**12.8**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV3771AJ**
		Dilution Factor: 5		Analysis Time..: 22:02	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.1	

Prep Batch #...: 7137232

Mercury	**3.9**	**0.21**	**mg/kg**	**SW846 7471A**	**05/17/07**	**JV3771AR**
		Dilution Factor: 5		Analysis Time..: 18:14	Analyst ID.....: 400491	
		Instrument ID..: HGHYDRA		MS Run #.....: 7137134	MDL.....: 0.045	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated Result: Result is less than RL and greater than or equal to the MDL.

B Blank contamination: Target analyte was detected at a reportable level.

Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0809-03

TOTAL Metals

Lot-Sample #...: C7E020142-003 Matrix.....: SOLID
Date Sampled...: 05/01/07 Date Received..: 05/02/07
% Moisture.....: 29

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7123045						
Silver	45.7	0.71	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AT
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.042	
Aluminum	25600	28.3	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AU
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.1	
Arsenic	8.6	1.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AV
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.47	
Barium	656	28.3	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AW
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.14	
Beryllium	0.61	0.57	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AX
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.059	
Calcium	14700	707	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A0
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 5.6	
Cadmium	155	1.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A1
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.20	
Cobalt	20.2	7.1	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A2
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.075	
Chromium	83.7	1.4	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A3
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.26	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0809-03

TOTAL Metals

Lot-Sample #...: C7E020142-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper	1500	7.1	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A4
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.33	
Iron	91600	28.3	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A5
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 5.1	
Potassium	790 B	707	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A6
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 10.6	
Magnesium	3690	707	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A7
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.4	
Manganese	3070	4.2	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1A8
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.032	
Sodium	158 J	1410	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AA
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 44.3	
Nickel	81.3	5.7	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AC
		Dilution Factor: 1		Analysis Time..: 13:41	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.17	
Lead	1990	4.2	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AD
		Dilution Factor: 10		Analysis Time..: 22:30	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.2	
Antimony	113	2.8	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AE
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.90	
S lenium	ND	7.1	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AF
		Dilution Factor: 10		Analysis Time..: 22:30	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 3.7	

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Tetra Tech NUS, Inc

Client Sample ID: 03TP06-0809-03

TOTAL Metals

Lot-Sample #...: C7E020142-003 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Thallium	ND	2.8	mg/kg	SW846 6010B	05/03-05/16/07	JV38A1AG
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 1.3	
Vanadium	**26.2**	**14.1**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV38A1AH**
		Dilution Factor: 2		Analysis Time..: 22:24	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 0.29	
Zinc	**4990 B**	**28.3**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV38A1AJ**
		Dilution Factor: 10		Analysis Time..: 22:30	Analyst ID.....: 022952	
		Instrument ID..: TRACEICP		MS Run #.....: 7123029	MDL.....: 2.4	

Prep Batch #...: 7137232

Mercury	**6.7**	**0.23**	**mg/kg**	**SW846 7471A**	**05/17/07**	**JV38A1AR**
		Dilution Factor: 5		Analysis Time..: 18:16	Analyst ID.....: 400491	
		Instrument ID..: HGHYDRA		MS Run #.....: 7137134	MDL.....: 0.050	

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Blank contamination: Target analyte was detected at a reportable level.

J Estimated Result: Result is less than RL and greater than or equal to the MDL.

Willow Grove CTO 003

Cyanide, Total

Lab Name: STL PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID

Method: SW846 9012A
Lot Number: C7E020142

Distillati n procedure

Client Sample ID	Sample Number	Workorder	Result	Units	Min. Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
03TP06-0304-01	C7E020142 001	JV37P1A8	0.25 B	mg/kg	0.12	0.61	1	5/7/2007 - 5/8/2007 11:13	7127511
03TP06-0708-02	C7E020142 002	JV3771AK	0.63 B	mg/kg	0.12	0.64	1	5/7/2007 - 5/8/2007 11:13	7127511
03TP06-0809-03	C7E020142 003	JV38A1AK	4.6	mg/kg	0.14	0.71	1	5/7/2007 - 5/8/2007 11:13	7127511
03TP06-0607-04	C7E020142 004	JV38J1AK	1.0	mg/kg	0.14	0.73	1	5/7/2007 - 5/8/2007 11:13	7127511

Willow Grove CTO 003

Percent Moisture

Lab Name:	STL KNOXVILLE	**Method:**	MCAWW 160.3 MOD
Client Name:	Tetra Tech NUS, Inc	**Lot Number:**	C7E020142
Matrix:	SOLID		

T tal Residue as Percent Moisture

Client Sample ID	Sample Number	Workorder	Result	Units	Min. Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
03TP06-0102-05	C7E020142 005	JV38M1AC	32.7	%	0.10	0.10	1	5/3/2007 - 5/4/2007 14:58	7124309

Willow Grove CTO 003

Percent Solids

Lab Name: STL PITTSBURGH
Client Name: Tetra Tech NUS, Inc
Matrix: SOLID

Method: MCAWW 160.3 MOD
Lot Number: C7E020142

T tal Residue as Percent Solids

Client Sample ID	Sample Number	Workorder	Result	Units	Min. Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
03TP06-0304-01	C7E020142 001	JV37P1AA	81.4	%	0.0		1	5/4/2007 - 5/5/2007 09:33	7124492
03TP06-0708-02	C7E020142 002	JV3771AL	78.2	%	0.0		1	5/4/2007 - 5/5/2007 09:33	7124492
03TP06-0809-03	C7E020142 003	JV38A1AL	70.7	%	0.0		1	5/4/2007 - 5/5/2007 09:33	7124492
03TP06-0607-04	C7E020142 004	JV38J1AL	68.1	%	0.0		1	5/4/2007 - 5/5/2007 09:33	7124492

APPENDIX C

Support Documentation

CASE NARRATIVE
TETRATECH NUS, INC.
WILLOW GROVE
CT0 003

STL Lot #: C7E020142

Metals (cont):
The method blanks had analytes detected at concentrations between the MDL and the reporting limit. The results were flagged with a "B" qualifier. Any sample associated with a method blank that had the same analyte detected had the result flagged with a "J" qualifier.

For the matrix spike and matrix spike duplicate, aluminum, manganese, and iron recoveries were not calculated due to the concentration of analyte in the sample being >4 times the concentration of spike added.

The matrix spike and matrix spike duplicate recovered outside of the control limits for antimony, cadmium, chromium, copper, lead, zinc and mercury.

The matrix spike duplicate recovered outside of the control limits for barium.

The matrix spike recovered outside of the control limits for nickel and selenium.

The relative percent difference between the matrix spike and the matrix spike duplicate was outside of the control limits for barium, chromium, and lead

General Chemistry:
STL Knoxville, TN performed the percent moisture analysis. All data is included in the package.

Dioxins:
STL Knoxville, TN performed the dioxin analysis. All data is included in the package.

C7E020142

Chain of Custody Record

SEVERN TRENT **STL**

S vern Trent Laboratories, Inc.

STL-4124 (0901)

Client: Tetra Tech NUS	Project Manager: Russell Turner	Date: 5/1/07	Chain of Custody Number: 312315
Address: 600 Clark Ave.	Telephone Number (Area Code)/Fax Number: 610-491-9688	Lab Number	Page 1 of 1
City: King of Prussia; State: PA; Zip Code: 19406	Site Contact	Lab Contact	
Project Name and Location (State): NAS JRB Willow Grove, PA	Carrier/Waybill Number: FedEx 8545 6865 8520		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	VOC 5 g Encore	TCL SVOC/PCB/PEST	TAL Metals/CN	Dioxin	VOC 40ml	Special Instructions/ Conditions of Receipt
03TP06-0304-01	5/1/07	0925				✓	✓						6	2	2			Do MS/MSD
03TP06-0708-02	5/1/07	1045				✓	✓						3	1	1			
03TP06-0809-03	5/1/07	1110				✓	✓						3	1	1	2*		* Do MS/MSD Dioxin only
03TP06-0607-04	5/1/07	1330				✓	✓						3	1	1			
03TP06-0102-05	5/1/07	1400				✓	✓									1		
03TB-02	5/1/07	0740		✓						✓							2	Trip Blank

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By: Donald Wilder	Date: 5/1/07	Time: 1900	1. Received By: [signature]	Date: 05/02/07	Time: 1030
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

STL-Pittsburgh

Metals Data Reporting Form

Interference Check Standard A

Instrument: ICPST **Units:** ug/L

Chart Number: T70516B.ARC **Acceptable Range:** 80% - 120%

Standard Source: Inorganic Ventures **Standard ID:** MET2386-07

Element	WL/ Mass	Reporting Limit	True Conc	ICSA 5/16/2007 11:39 AM Found	Found	Found	Found	Found
Aluminum	308.215		500000	467000				
Antimony	220.353	10		0				
Arsenic	189.042	10		-3				
Barium	493.409	200		1				
Beryllium	313.042	4		0				
Cadmium	226.502	5		0				
Calcium	317.933		500000	480000				
Chromium	267.716	5		1				
Cobalt	228.616	50		0				
Copper	324.753	25		-2				
Iron	271.441		200000	197000				
Lead	220.353	3		0				
Magnesium	279.078		500000	517000				
Manganese	257.61	15		4				
Nickel	231.604	40		2				
Potassium	766.491	5000		190				
Selenium	220.353	5		-3				
Silver	328.068	5		0				
Sodium	330.232	5000		-300				
Thallium	190.864	10		-5				
Vanadium	292.402	50		3				
Zinc	213.856	20		7				

5.04.5

U Result is less than the MDL
B Result is between MDL and RL

Form 4 Equivalent

INORGANIC INTERFERENCE CHECK SAMPLE VALIDATION

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Arsenic	2.3	03TP06-0304-01	21.02		Iron	200000	-3	195870	-2.94	L	na
Barium	0.36	03TP06-0304-01	1355.5		Iron	200000	1	195870	0.98	na	na
Chromium	0.82	03TP06-0304-01	76.89		Iron	200000	1	195870	0.98	na	na
Copper	1.4	03TP06-0304-01	548.29		Iron	200000	-2	195870	-1.96	na	na
Manganese	0.27	03TP06-0304-01	10534		Iron	200000	4	195870	3.92	na	na
Nickel	1	03TP06-0304-01	112.73		Iron	200000	2	195870	1.96	na	na
Selenium	2.9	03TP06-0304-01		U	Iron	200000	-3	195870	-2.94	na	UR
Sodium	139	03TP06-0304-01		U	Iron	200000	-300	195870	-293.81	na	UR
Thallium	3.2	03TP06-0304-01		U	Iron	200000	-5	195870	-4.90	na	UR
Vanadium	2.6	03TP06-0304-01	135.7		Iron	200000	3	195870	2.94	na	na
Zinc	3.5	03TP06-0304-01	837.3		Iron	200000	7	195870	6.86	na	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Arsenic	2.3	03TP06-0607-04	73.12		Iron	200000	-3	749640	-11.24	L	na
Barium	0.36	03TP06-0607-04	4276.5		Iron	200000	1	749640	3.75	na	na
Chromium	0.82	03TP06-0607-04	717.29		Iron	200000	1	749640	3.75	na	na
Copper	1.4	03TP06-0607-04	8717.5		Iron	200000	-2	749640	-7.50	na	na
Manganese	0.27	03TP06-0607-04	13849		Iron	200000	4	749640	14.99	na	na
Nickel	1	03TP06-0607-04	984.29		Iron	200000	2	749640	7.50	na	na
Selenium	2.9	03TP06-0607-04		U	Iron	200000	-3	749640	-11.24	na	UR
Sodium	139	03TP06-0607-04	7241.3		Iron	200000	-300	749640	-1124.46	L	na
Thallium	3.2	03TP06-0607-04		U	Iron	200000	-5	749640	-18.74	na	UR
Vanadium	2.6	03TP06-0607-04	208.37		Iron	200000	3	749640	11.24	na	na
Zinc	3.5	03TP06-0607-04	5033.4		Iron	200000	7	749640	26.24	na	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Arsenic	2.3	03TP06-0708-02	32.35		Iron	200000	-3	815380	-12.23	L	na
Barium	0.36	03TP06-0708-02	2091.5		Iron	200000	1	815380	4.08	na	na
Chromium	0.82	03TP06-0708-02	412.61		Iron	200000	1	815380	4.08	na	na
Copper	1.4	03TP06-0708-02	3719.3		Iron	200000	-2	815380	-8.15	na	na
Manganese	0.27	03TP06-0708-02	12449		Iron	200000	4	815380	16.31	na	na
Nickel	1	03TP06-0708-02	319.94		Iron	200000	2	815380	8.15	na	na
Selenium	2.9	03TP06-0708-02		U	Iron	200000	-3	815380	-12.23	na	UR
Sodium	139	03TP06-0708-02		U	Iron	200000	-300	815380	-1223.07	na	UR
Thallium	3.2	03TP06-0708-02		U	Iron	200000	-5	815380	-20.38	na	UR
Vanadium	2.6	03TP06-0708-02	127.35		Iron	200000	3	815380	12.23	na	na
Zinc	3.5	03TP06-0708-02	8986.9		Iron	200000	7	815380	28.54	na	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Arsenic	2.3	03TP06-0809-03	60.9		Iron	200000	-3	641180	-9.62	L	na
Barium	0.36	03TP06-0809-03	4637.3		Iron	200000	1	641180	3.21	na	na
Chromium	0.82	03TP06-0809-03	584.89		Iron	200000	1	641180	3.21	na	na
Copper	1.4	03TP06-0809-03	5319.8		Iron	200000	-2	323680	-3.24	na	na
Manganese	0.27	03TP06-0809-03	10861		Iron	200000	4	323680	6.47	na	na
Nickel	1	03TP06-0809-03	575.21		Iron	200000	2	641180	6.41	na	na
Selenium	2.9	03TP06-0809-03		U	Iron	200000	-3	641180	-9.62	na	UR
Sodium	139	03TP06-0809-03	1585.1		Iron	200000	-300	641180	-961.77	L	na
Thallium	3.2	03TP06-0809-03		U	Iron	200000	-5	641180	-16.03	na	UR
Vanadium	2.6	03TP06-0809-03	176.36		Iron	200000	3	641180	9.62	na	na
Zinc	3.5	03TP06-0809-03	3525.3		Iron	200000	7	65888	2.31	na	na

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: C7E020142 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Lead	ND	0.30	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AU
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Magnesium	ND	500	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AP
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Manganese	ND	1.5	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AQ
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Nickel	ND	4.0	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AT
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Potassium	**18.7 J**	**500**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV6CC1AN**
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Selenium	ND	0.50	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AW
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Silver	ND	0.50	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AA
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Sodium	ND	500	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AR
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Thallium	ND	1.0	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1AX
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Vanadium	ND	5.0	mg/kg	SW846 6010B	05/03-05/16/07	JV6CC1A0
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	
Zinc	**0.39 J**	**2.0**	**mg/kg**	**SW846 6010B**	**05/03-05/16/07**	**JV6CC1A1**
		Dilution Factor: 1				
		Analysis Time..: 12:36		Analyst ID.....: 022952	Instrument ID..: TRA	

(Continued on next page)

STL-Pittsburgh

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: T70516B.ARC

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB1 5/16/2007 11:28 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Aluminum	308.215	200	**19.7**	**B**								
Antimony	220.353	10	**1.0**	**B**								
Arsenic	189.042	10	2.3	U								
Barium	493.409	200	0.4	U								
Beryllium	313.042	4	**0.4**	**B**								
Cadmium	226.502	5	0.5	U								
Calcium	317.933	5000	251.0	U								
Chromium	267.716	5	0.8	U								
Cobalt	228.616	50	0.4	U								
Copper	324.753	25	1.4	U								
Iron	271.441	100	30.0	U								
Lead	220.353	3	1.6	U								
Magnesium	279.078	5000	13.1	U								
Manganese	257.61	15	0.3	U								
Nickel	231.604	40	1.0	U								
Potassium	766.491	5000	500.0	U								
Selenium	220.353	5	2.9	U								
Silver	328.068	5	0.4	U								
Sodium	330.232	5000	**-630.0**	**B**								
Thallium	190.864	10	3.2	U								
Vanadium	292.402	50	2.6	U								
Zinc	213.856	20	3.5	U								

5.04.5

U Result is less than the MDL
B Result is between MDL and RL

Form 3 Equivalent

STL-Pittsburgh

Metals Data Reporting Form

Continuing Calibration Blank Result

Instrument: ICPST **Units:** ug/L

Chart Number: T70516B.ARC

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB1 5/16/2007 12:28 PM Found	Q	CCB2 5/16/2007 1:36 PM Found	Q	CCB3 5/16/2007 2:41 PM Found	Q	CCB4 5/16/2007 3:47 PM Found	Q	CCB5 5/16/2007 4:47 PM Found	Q
Aluminum	308.215	200	14.2	U	14.2	U	14.2	U	14.2	U	**15.2**	**B**
Antimony	220.353	10	0.9	U	0.9	U	**1.9**	**B**	0.9	U	0.9	U
Arsenic	189.042	10	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
Barium	493.409	200	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Beryllium	313.042	4	**0.4**	**B**	**0.8**	**B**	**0.8**	**B**	**0.9**	**B**	**1.1**	**B**
Cadmium	226.502	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Calcium	317.933	5000	251.0	U	251.0	U	251.0	U	251.0	U	251.0	U
Chromium	267.716	5	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U
Cobalt	228.616	50	0.4	U	**-0.6**	**B**	0.4	U	0.4	U	0.4	U
Copper	324.753	25	1.4	U	1.4	U	1.4	U	**-1.8**	**B**	**-2.2**	**B**
Iron	271.441	100	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U
Lead	220.353	3	1.6	U	1.6	U	**2.4**	**B**	1.6	U	1.6	U
Magnesium	279.078	5000	13.1	U	13.1	U	13.1	U	13.1	U	13.1	U
Manganese	257.61	15	0.3	U	**0.4**	**B**	0.3	U	0.3	U	0.3	U
Nickel	231.604	40	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Potassium	766.491	5000	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Selenium	220.353	5	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U
Silver	328.068	5	0.4	U	0.4	U	0.4	U	**0.4**	**B**	0.4	U
Sodium	330.232	5000	**-670.0**	**B**	**-630.0**	**B**	**-630.0**	**B**	**-600.0**	**B**	**-690.0**	**B**
Thallium	190.864	10	3.2	U	3.2	U	3.2	U	3.2	U	3.2	U
Vanadium	292.402	50	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
Zinc	213.856	20	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U

03TP06 03TP06 no samples affected

5.04.5

U Result is less than the MDL
B Result is between MDL and RL

Form 3 Equivalent

STL-Pittsburgh

Metals Data Reporting Form

Continuing Calibration Blank Result

Instrument: ICPST **Units:** ug/L

Chart Number: T70516B.ARC

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB6 5/16/2007 5:57 PM		CCB7 5/16/2007 7:02 PM		CCB8 5/16/2007 8:08 PM		CCB9 5/16/2007 9:13 PM		CCB10 5/16/2007 10:19 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Aluminum	308.215	200	**16.7**	**B**	14.2	U	**19.3**	**B**	**20.4**	**B**	**18.6**	**B**
Antimony	220.353	10	0.9	U	**1.6**	**B**	0.9	U	**1.1**	**B**	0.9	U
Arsenic	189.042	10	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
Barium	493.409	200	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Beryllium	313.042	4	**1.0**	**B**	**1.4**	**B**	**1.4**	**B**	**1.4**	**B**	**1.4**	**B**
Cadmium	226.502	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Calcium	317.933	5000	251.0	U	251.0	U	251.0	U	251.0	U	251.0	U
Chromium	267.716	5	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U
Cobalt	228.616	50	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Copper	324.753	25	**-2.1**	**B**	**-2.5**	**B**	**-2.4**	**B**	**-2.4**	**B**	**-2.3**	**B**
Iron	271.441	100	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U
Lead	220.353	3	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U
Magnesium	279.078	5000	13.1	U	**13.2**	**B**	13.1	U	13.1	U	13.1	U
Manganese	257.61	15	**0.7**	**B**	0.3	U	0.3	U	**0.3**	**B**	**0.4**	**B**
Nickel	231.604	40	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Potassium	766.491	5000	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Selenium	220.353	5	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U
Silver	328.068	5	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Sodium	330.232	5000	**-530.0**	**B**	**-620.0**	**B**	**-670.0**	**B**	**-630.0**	**B**	**-640.0**	**B**
Thallium	190.864	10	3.2	U	3.2	U	3.2	U	3.2	U	3.2	U
Vanadium	292.402	50	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
Zinc	213.856	20	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U

5.04.5

U Result is less than the MDL
B Result is between MDL and RL

Form 3 Equivalent

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C7E020142 **Matrix.....:** SOLID
Date Sampled...: 05/01/07 **Date Received..:** 05/02/07

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: C7E020142-001 **Prep Batch #...:** 7123045							
						% Moisture.....: 19	
Aluminum	NC	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DC
	NC	(80 - 120)		(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DD
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Antimony	53 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CG
	51 N	(80 - 120)	4.5	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CH
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Ars nic	80	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DE
	87	(80 - 120)	8.0	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DF
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Barium	82	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DG
	189 N,*	(80 - 120)	52	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DH
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Beryllium	84	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DJ
	88	(80 - 120)	3.2	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DK
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Cadmium	123 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DN
	140 N	(80 - 120)	11	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DP
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Calcium	91	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DL
	111	(80 - 120)	17	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DM
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C7E020142 **Matrix.....:** SOLID
Date Sampled...: 05/01/07 **Date Received..:** 05/02/07

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Chromium	170 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DT
	125 N,*	(80 - 120)	25	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DU
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Cobalt	81	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DQ
	87	(80 - 120)	5.4	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DR
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Copper	287 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DV
	216 N	(80 - 120)	15	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DW
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Iron	NC	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1DX
	NC	(80 - 120)		(0-20)	SW846 6010B	05/03-05/16/07	JV37P1D0
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Lead	192 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CE
	507 N,*	(80 - 120)	69	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CF
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Magnesium	89	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1D3
	94	(80 - 120)	5.0	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1D4
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Manganese	NC	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1D5
	NC	(80 - 120)		(0-20)	SW846 6010B	05/03-05/16/07	JV37P1D6
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C7E020142 **Matrix.....:** SOLID
Date Sampled...: 05/01/07 **Date Received..:** 05/02/07

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Nickel	127 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CC
	116	(80 - 120)	7.0	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CD
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Potassium	91	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1D1
	92	(80 - 120)	1.6	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1D2
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Selenium	76 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CJ
	82	(80 - 120)	7.3	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CK
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Silver	107	(75 - 120)			SW846 6010B	05/03-05/16/07	JV37P1C9
	105	(75 - 120)	2.0	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1DA
		Dilution Factor: 1					
		Analysis Time..: 13:20			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Sodium	91	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1A9
	91	(80 - 120)	0.74	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CA
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Thallium	84	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CL
	85	(80 - 120)	1.2	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CM
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					
Vanadium	94	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CN
	97	(80 - 120)	2.5	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CP
		Dilution Factor: 2					
		Analysis Time..: 22:08			Instrument ID..: TRACEICP	Analyst ID.....: 022952	
		MS Run #.....: 7123029					

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: C7E020142 **Matrix.....:** SOLID
Date Sampled...: 05/01/07 **Date Received..:** 05/02/07

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Zinc	439 N	(80 - 120)			SW846 6010B	05/03-05/16/07	JV37P1CQ
	439 N	(80 - 120)	0.08	(0-20)	SW846 6010B	05/03-05/16/07	JV37P1CR

Dilution Factor: 2
Analysis Time..: 22:08 Instrument ID..: TRACEICP Analyst ID.....: 022952
MS Run #.....: 7123029

MS Lot=Sample #: C7E020142-001 **Prep Batch #...:** 7137232
% Moisture.....: 19

Mercury	71 N	(75 - 125)			SW846 7471A	05/17/07	JV37P1C7
	62 N	(75 - 125)	4.9	(0-20)	SW846 7471A	05/17/07	JV37P1C8

Dilution Factor: 1
Analysis Time..: 17:11 Instrument ID..: HGHYDRA Analyst ID.....: 400491
MS Run #.....: 7137134

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.
Results and reporting limits have been adjusted for dry weight.
NC The recovery and/or RPD were not calculated.
N Spiked analyte recovery is outside stated control limits.
* Relative percent difference (RPD) is outside stated control limits.