ANALYTICAL REPORT

Job Number: 180-28340-1

Job Description: Willow/Hawthorne

For:
Natural Resource Technology, Inc.
300 S. Wacker Drive
Suite 2050
Chicago, IL 60606

Attention: Ms. Sarah L Meyer

Approved for release.
Craig Addison
Project Management Assistant I
12/26/2013 1:04 PM

Craig Addison, Project Management Assistant I
301 Alpha Drive, Pittsburgh, PA, 15238
(412)963-7058
craig.addison@testamericainc.com
12/26/2013

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CASE NARRATIVE

Client: Natural Resource Technology, Inc.

Project: Willow/Hawthorne

Report Number: 180-28340-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/20/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 4.2 C.

AVAILABLE CYANIDE

No difficulties were encountered during the Available Cyanide analysis.

SAMPLE SUMMARY

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
180-28340-1	121913032	Water	12/19/2013 1350	12/20/2013 1000

EXECUTIVE SUMMARY - Detections

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
180-28340-1	**121913032**					
Available cyanide		0.0034		0.0020	mg/L	OIA-1677

METHOD SUMMARY

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Cyanide, Available (Flow Injection)	TAL PIT	OI CORP OIA-1677	

Lab References:

TAL PIT = TestAmerica Pittsburgh

Method References:

OI CORP = OI Corporation Instrument Manual.

METHOD / ANALYST SUMMARY

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Method	Analyst	Analyst ID
OI CORP OIA-1677	Johnson, Paul	PGJ

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

General Chemistry

Client Sample ID: **121913032**

Lab Sample ID: 180-28340-1 Date Sampled: 12/19/2013 1350
Client Matrix: Water Date Received: 12/20/2013 1000

Analyte	Result	Qual	Units	RL	Dil	Method
Available cyanide	0.0034		mg/L	0.0020	1.0	OIA-1677

Analysis Batch: 180-93210 Analysis Date: 12/24/2013 1006

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Method Blank - Batch: 180-93210 **Method: OIA-1677**
Preparation: N/A

Lab Sample ID:	MB 180-93210/52	Analysis Batch:	180-93210	Instrument ID:	ALPKEM2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\122413A.RST
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	12/24/2013 0958	Units:	mg/L	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL
Available cyanide	0.0020	U	0.0020

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 180-93210 **Method: OIA-1677**
Preparation: N/A

LCS Lab Sample ID:	LCS 180-93210/50	Analysis Batch:	180-93210	Instrument ID:	ALPKEM2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\122413A.RST
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	12/24/2013 0955	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 180-93210/51	Analysis Batch:	180-93210	Instrument ID:	ALPKEM2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	C:\FLOW_4\122413A.RST
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	12/24/2013 0957	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Available cyanide	102	104	82 - 132	1	20		

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 180-93210 **Method: OIA-1677**
Preparation: N/A

LCS Lab Sample ID:	LCS 180-93210/50	Units:	mg/L	LCSD Lab Sample ID:	LCSD 180-93210/51
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	12/24/2013 0955			Analysis Date:	12/24/2013 0957
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Available cyanide	0.100	0.100	0.102	0.104

DATA REPORTING QUALIFIERS

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Lab Section	Qualifier	Description
General Chemistry		
	U	Indicates the analyte was analyzed for but not detected.

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:180-93210					
LCS 180-93210/50	Lab Control Sample	T	Water	OIA-1677	
LCSD 180-93210/51	Lab Control Sample Duplicate	T	Water	OIA-1677	
MB 180-93210/52	Method Blank	T	Water	OIA-1677	
180-28340-1	121913032	T	Water	OIA-1677	

Report Basis

T = Total

Client: Natural Resource Technology, Inc. Job Number: 180-28340-1

Laboratory Chronicle

Lab ID: **180-28340-1** **Client ID:** **121913032**

Sample Date/Time: 12/19/2013 13:50 Received Date/Time: 12/20/2013 10:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:OIA-1677	180-28340-A-1		180-93210		12/24/2013 10:06	1	TAL PIT	PGJ

Lab ID: **MB** **Client ID:** **N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:OIA-1677	MB 180-93210/52		180-93210		12/24/2013 09:58	1	TAL PIT	PGJ

Lab ID: **LCS** **Client ID:** **N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:OIA-1677	LCS 180-93210/50		180-93210		12/24/2013 09:55	1	TAL PIT	PGJ

Lab ID: **LCSD** **Client ID:** **N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:OIA-1677	LCSD 180-93210/51		180-93210		12/24/2013 09:57	1	TAL PIT	PGJ

Lab References:
TAL PIT = TestAmerica Pittsburgh

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
WAvCN.1StdCCV_00161	12/27/13	12/23/13	DI Water, Lot NA	1000 mL	WAvCN10Pi_00223	10 mL	Available cyanide	100 ug/L
.WAvCN10Pi_00223	12/27/13	12/23/13	DI Water, Lot DI Water	100 mL	WAvCN1000P_00009	1 mL	Available cyanide	10000 ug/L
..WAvCN1000P_00009	12/28/13	LabChem Inc, Lot C178-07			(Purchased Reagent)		Available cyanide	1000 mg/L
WAvCN0.1ICV_00159	12/27/13	12/23/13	DI Water, Lot NA	200 mL	WAvCN10Si_00224	2 mL	Available cyanide	100 ug/L
.WAvCN10Si_00224	12/27/13	12/23/13	DI Water, Lot DI Water	100 mL	WAvCN1000S_00012	1 mL	Available cyanide	10000 ug/L
..WAvCN1000S_00012	01/31/14	Ricca Chemical Co., Lot 2307A89			(Purchased Reagent)		Available cyanide	1000 mg/L
WAvCN0.1LCS_00166	12/27/13	12/23/13	DI Water, Lot NA	1000 mL	WHg210Pi_00235	10 mL	Available cyanide	100.116 ug/L
.WHg210Pi_00235	12/27/13	12/23/13	DI Water, Lot DI water	100 mL	WHg2CN1000P_00011	1 mL	Available cyanide	10011.6 ug/L
..WHg2CN1000P_00011	01/25/14	07/25/13	DI Water, Lot DI Water	500 mL	WHg(II) CNP_00003	2.43 g	Available cyanide	1001.16 mg/L
...WHg(II) CNP_00003	03/18/14	Sigma-Aldrich, Lot 030M1156V			(Purchased Reagent)		Available cyanide	0.206 g/g

903114
ID: WCN1000P_00019
Exp:12/29/13 Prpd:PGJ Opn:07/29/13
Cyanide 1000 ppm Primary

903115
ID: WAvCN1000P_00009
Exp:12/28/13 Prpd:PGJ Opn:07/29/13
Available Cyanide 1000 PP

LabChem
performance through chemistry
Jackson's Pointe Commerce Park - Building 1000
1010 Jackson's Pointe Court, Zelienople, PA 16063
Ph: 412-826-5230 | Fax: 724-473-0647 | www.labchem.com

CERTIFICATE OF ANALYSIS

Description: CYANIDE STANDARD, 1000ppm (1ml = 1mg CN)

Catalog Number: LC13545
Lot Number: C178-07

Mfg Date: 06/28/2013
Expiration Date: 12/28/2013

ANALYTICAL SECTION

Test	Specification	Test Result
Appearance	clear, colorless solution	Pass Test
Concentration ppm CN	1000ppm +/- 10ppm	1009ppm
Concentration mg CN/mL	1.000mg/mL +/- 0.010 mg CN/mL	1.009 mg CN/mL
Traceable to NIST	Potassium Chloride	999b

Submitted By: Greg Albright, Chemist Supervisor

Greg Albright

An ISO9001:2008 certified company. Registration # 0306-01

07/26/2013 9:13:31 AM

Form #17.12 06/19/2012

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908379
ID: WCN1000S_00012
Exp:01/31/14 Prpd:PGJ Opn:08/02/13
Cyanide 1000 ppm Secondar

908380
ID: WAvCN1000S_00012
Exp:01/31/14 Prpd:PGJ Opn:08/02/13
Available Cyanide 1000 pp

RIC EMICA PANY

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Cyanide Standard, 1 mL = 1 mg CN, 1000 ppm CN

Lot Number: 2307A89 Product Number: 2543 Expiration Date: JAN 2014 Manufacture Date:7/19/2013

This standard is prepared using accurate volumetric techniques from material that has been assayed against Silver Nitrate solution certified traceable to NIST Standard Reference Material 999. The certified value reported is the prepared value based upon the method of preparation of the material. The uncertainty in the prepared value is the combined uncertainty based on the stability of the assayed Potassium Cyanide, and the uncertainty in the mass and volume measurements.
Use 0.16% (w/v) (0.04 N) Sodium Hydroxide or 0.225 % (w/v) (0.04 N) Potassium Hydroxide to make dilutions of this standard.
Restandardize weekly if extreme accuracy is required.

Contains:

Name	CAS#	Grade
Potassium Cyanide, KCN	151-50-8	ACS
Sodium Hydroxide, NaOH	1310-73-2	ACS
Water, Deionized, H2O	7732-18-5	ACS, ASTM D 1193 (Type I), EP, USP

Test Name	Assay Method	Specification	Result
Appearance	Clarity, Color, Odor	Clear, colorless, cyanide odor	Passed Test
Certified Concentration	Based on accurate volumetric preparation	1000 ± 5 ppm CN-	1000 ppm CN-

Specification	Reference	Method Number
Stock Standard Cyanide Solution	APHA	4500-CN- F
Stock Cyanide Solution	APHA	4500-CN- E
Stock Cyanide Solution	APHA	4500-CN- K
Stock Cyanide Solution	APHA	4500-CN- H
Cyanide Reference Solution (1000 mg/L)	EPA (SW-846)	7.3.3.2
Cyanide Calibration Stock Solution (1,000 mg/L CN-)	EPA (SW-846)	9213
Stock Cyanide Solution	EPA	335.3
Stock Cyanide Solution	EPA	335.2
Cyanide Solution Stock	ASTM	D 4282
Simple Cyanide Solution, Stock (1.0 g/L CN)	ASTM	D 4374

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Shelf Life (unopened container):

Part Number	Shelf Life
2543-4	6 months
2543-32	6 months
2543-16	6 months

Recommended Storage: 2°C - 8°C (36°F - 46°F)

LaNelle Ohlhausen
Quality Assurance

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

Version: 2

To determine manufacture site using lot number, visit http://www.riccachemical.com/Documents/lot.pdf.

Certification Summary

Client: Natural Resource Technology, Inc.
Project/Site: Willow/Hawthorne

TestAmerica Job ID: 180-28340-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Pittsburgh	Arkansas DEQ	State Program	6	88-0690
TestAmerica Pittsburgh	California	NELAP	9	4224CA
TestAmerica Pittsburgh	Connecticut	State Program	1	PH-0688
TestAmerica Pittsburgh	Florida	NELAP	4	E871008
TestAmerica Pittsburgh	Illinois	NELAP	5	002602
TestAmerica Pittsburgh	Kansas	NELAP	7	E-10350
TestAmerica Pittsburgh	L-A-B	DoD ELAP		L2314
TestAmerica Pittsburgh	Louisiana	NELAP	6	04041
TestAmerica Pittsburgh	New Hampshire	NELAP	1	203011
TestAmerica Pittsburgh	New Jersey	NELAP	2	PA005
TestAmerica Pittsburgh	New York	NELAP	2	11182
TestAmerica Pittsburgh	North Carolina DENR	State Program	4	434
TestAmerica Pittsburgh	Pennsylvania	NELAP	3	02-00416
TestAmerica Pittsburgh	South Carolina	State Program	4	89014
TestAmerica Pittsburgh	US Fish & Wildlife	Federal		LE94312A-1
TestAmerica Pittsburgh	USDA	Federal		P330-10-00139
TestAmerica Pittsburgh	USDA	Federal		P-Soil-01
TestAmerica Pittsburgh	Utah	NELAP	8	STLP
TestAmerica Pittsburgh	Virginia	NELAP	3	460189
TestAmerica Pittsburgh	West Virginia DEP	State Program	3	142
TestAmerica Pittsburgh	Wisconsin	State Program	5	998027800

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job Number: 180-28340-1

SDG No.:

Project: Willow/Hawthorne

Client Sample ID	Lab Sample ID
121913032	180-28340-1

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: 121913032
Lab Sample ID: 180-28340-1
Lab Name: TestAmerica Pittsburgh
Job No.: 180-28340-1
SDG ID.:
Matrix: Water
Date Sampled: 12/19/2013 13:50
Reporting Basis: WET
Date Received: 12/20/2013 10:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Available cyanide	0.0034	0.0020		mg/L			1	OIA-1677

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Analyst: PGJ Batch Start Date: 12/24/2013

Reporting Units: mg/L Analytical Batch No.: 93210

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
14	ICV	09:01	Available cyanide	0.104	0.100	104	85-115		WAvCN0.1ICV_00159
15	ICB	09:03	Available cyanide	0.0020				U	
47	CCV	09:51	Available cyanide	0.106	0.100	106	86-118		WAvCN.1StdCCV_0016 1
48	CCB	09:52	Available cyanide	0.0020				U	
62	CCV	10:13	Available cyanide	0.104	0.100	104	86-118		WAvCN.1StdCCV_0016 1
63	CCB	10:15	Available cyanide	0.0020				U	

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 93210	Date: 12/24/2013 09:58						
OIA-1677	MB 180-93210/52	Available cyanide	0.0020	U	mg/L	0.0020	1

FORM III-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 93210		Date: 12/24/2013 09:55									
						LCS Source:	WAvCN0.1LCS_00166				
OIA-1677	LCS 180-93210/50	Available cyanide	0.102		mg/L	0.100	102	82-132	1	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
LAB CONTROL SAMPLE DUPLICATE
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 93210		Date: 12/24/2013 09:57									
						LCSD Source: WAvCN0.1LCS_00166					
OIA-1677	LCSD 180-93210/51	Available cyanide	0.104		mg/L	0.100	104	82-132	1	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job Number: 180-28340-1

SDG Number:

Matrix: Water Instrument ID: ALPKEM2

Method: OIA-1677 MDL Date: 01/10/2013 08:36

Analyte	Wavelength/ Mass	RL (mg/L)	MDL (mg/L)
Available cyanide		0.002	0.0018

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job Number: 180-28340-1

SDG Number:

Matrix: Water Instrument ID: ALPKEM2

Method: OIA-1677 XMDL Date: 01/10/2013 08:36

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Available cyanide		0.002	0.0018

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Instrument ID: ALPKEM2 Method: OIA-1677

Start Date: 12/24/2013 08:42 End Date: 12/24/2013 10:16

Lab Sample ID	D/F	Type	Time	Analytes																			
				CNAm																			
ICV 180-93210/14	1		09:01	X																			
ICB 180-93210/15	1		09:03	X																			
CCV 180-93210/47	1		09:51	X																			
CCB 180-93210/48	1		09:52	X																			
LCS 180-93210/50	1	T	09:55	X																			
LCSD 180-93210/51	1	T	09:57	X																			
MB 180-93210/52	1	T	09:58	X																			
180-28340-1	1	T	10:06	X																			
CCV 180-93210/62	1		10:13	X																			
CCB 180-93210/63	1		10:15	X																			

Prep Types

T = Total/NA

Peak Table:Cyanide, Amenable

File name: C:\FLOW_4\122413A.RST
Date: 24-Dec-13
Operator: P.JOHNSON

J. Johnson 12-24-13

Peak	Cup	Name	R	Type	Dil	Wt	Height	Calc. (ppb)	Flags
1	1	SYNC	1	SYNC	1	1	197832	198.504684	
2	0	BLANK	1	BLNK	1	1	1793	-0.017058	LO
3	0	BLANK	2	BLNK	1	1	339	-1.489328	LO
B	0	BASELINE	1	RB	1	1	0	-1.833091	BL
5	2	Cal 0.000 ppb	1	C	1	1	3	-1.829861	LO
6	3	Cal 2.000 ppb	1	C	1	1	2603	0.802728	
7	4	Cal 5.000 ppb	1	C	1	1	6099	4.343087	
8	5	Cal 10.000 ppb	1	C	1	1	12367	10.690171	
9	6	Cal 20.000 ppb	1	C	1	1	23522	21.986507	
10	7	Cal 100.000 ppb	1	C	1	1	102954	102.424240	
11	8	Cal 200.000 ppb	1	C	1	1	197910	198.583130	
12	0	BLANK	1	BLNK	1	1	1536	-0.277414	LO
B	0	BASELINE	1	RB	1	1	0	-1.833091	BL
14	9	ICV	1	U	1	1	104351	103.839119	
15	10	ICB	1	U	1	1	1037	-0.783085	LO
B	0	BASELINE	1	RB	1	1	0	-1.833091	BL
17	11	LCS	1	U	1	1	98978	98.398140	
18	12	MB	1	U	1	1	878	-0.943721	LO
19	13	180-28276-A-1	1	U	1	1	13751	12.091608	
20	14	180-28279-A-1	1	U	1	1	4201	2.421455	
21	15	180-28279-A-2	1	U	1	1	559	-1.266620	LO
22	16	180-28279-A-2 MS	1	U	1	1	99256	98.679497	
23	17	180-28279-A-2 MSD	1	U	1	1	101145	100.592400	
24	18	180-28280-A-1	1	U	1	1	24767	23.247440	
25	19	180-28280-A-2	1	U	1	1	20327	18.751535	
26	20	180-28280-A-3	1	U	1	1	23030	21.488201	
27	21	180-28280-A-4	1	U	1	1	927	-0.894490	LO
28	22	180-28296-A-5	1	U	1	1	2739	0.940896	
29	23	180-28296-A-7	1	U	1	1	149	-1.682125	LO
30	24	180-28296-A-13	1	U	1	1	82	-1.749994	LO
31	25	CCV	1	U	1	1	101991	101.449471	
32	26	CCB	1	U	1	1	969	-0.851333	LO
B	0	BASELINE	1	RB	1	1	0	-1.833091	BL
34	27	LCS	1	U	1	1	98338	97.750092	
35	28	MB	1	U	1	1	893	-0.929076	LO
36	29	180-28296-A-16	1	U	1	1	87	-1.744686	LO
37	30	180-28296-A-16 MS	1	U	1	1	99240	98.663841	
38	31	180-28296-A-16 MSD	1	U	1	1	103727	103.207283	
39	32	180-28296-A-18	1	U	1	1	3165	1.371588	
40	33	180-28296-A-19	1	U	1	1	1204	-0.613596	LO
41	34	180-28296-A-20	1	U	1	1	3930	2.146540	
42	35	180-28296-A-21	1	U	1	1	813	-1.009487	LO
43	36	180-28296-A-25	1	U	1	1	539	-1.287711	LO
44	37	190-2912-B-4	1	U	1	1	50	-1.782846	LO
45	38	190-2921-C-2	1	U	1	1	5061	3.292058	
46	39	190-2922-C-2	1	U	1	1	3578	1.790273	
47	40	CCV	1	U	1	1	106675	106.192932	
48	41	CCB	1	U	1	1	957	-0.863808	LO
B	0	BASELINE	1	RB	1	1	0	-1.833091	BL
50	42	LCS	1	U	1	1	102747	102.215485	
51	43	LCSD	1	U	1	1	104188	103.674751	
52	44	MB	1	U	1	1	1061	-0.758171	LO
53	45	180-28336-A-1	1	U	1	1	997	-0.823071	LO
54	46	180-28336-A-2	1	U	1	1	9568	7.855598	
55	47	180-28338-A-1	1	U	1	1	815	-1.008102	LO
56	48	180-28338-A-2	1	U	1	1	23957	22.427073	
57	49	180-28340-A-1	1	U	1	1	5177	3.409144	
58	50	180-28380-A-1	1	U	1	1	407	-1.421239	LO
59	51	180-28380-A-2	1	U	1	1	3772	1.986507	
60	52	180-28381-A-1	1	U	1	1	2340	0.536814	
61	53	180-28381-A-2	1	U	1	1	2674	0.875188	
62	54	CCV	1	U	1	1	104700	104.193115	
63	55	CCB	1	U	1	1	685	-1.139761	LO

Peak	Cup	Name	R	Type	Dil	Wt	Height	Calc. (ppb)	Flags
B	0	BASELINE	1	RB	1	1	0	-1.833091	BL

Run Results Report

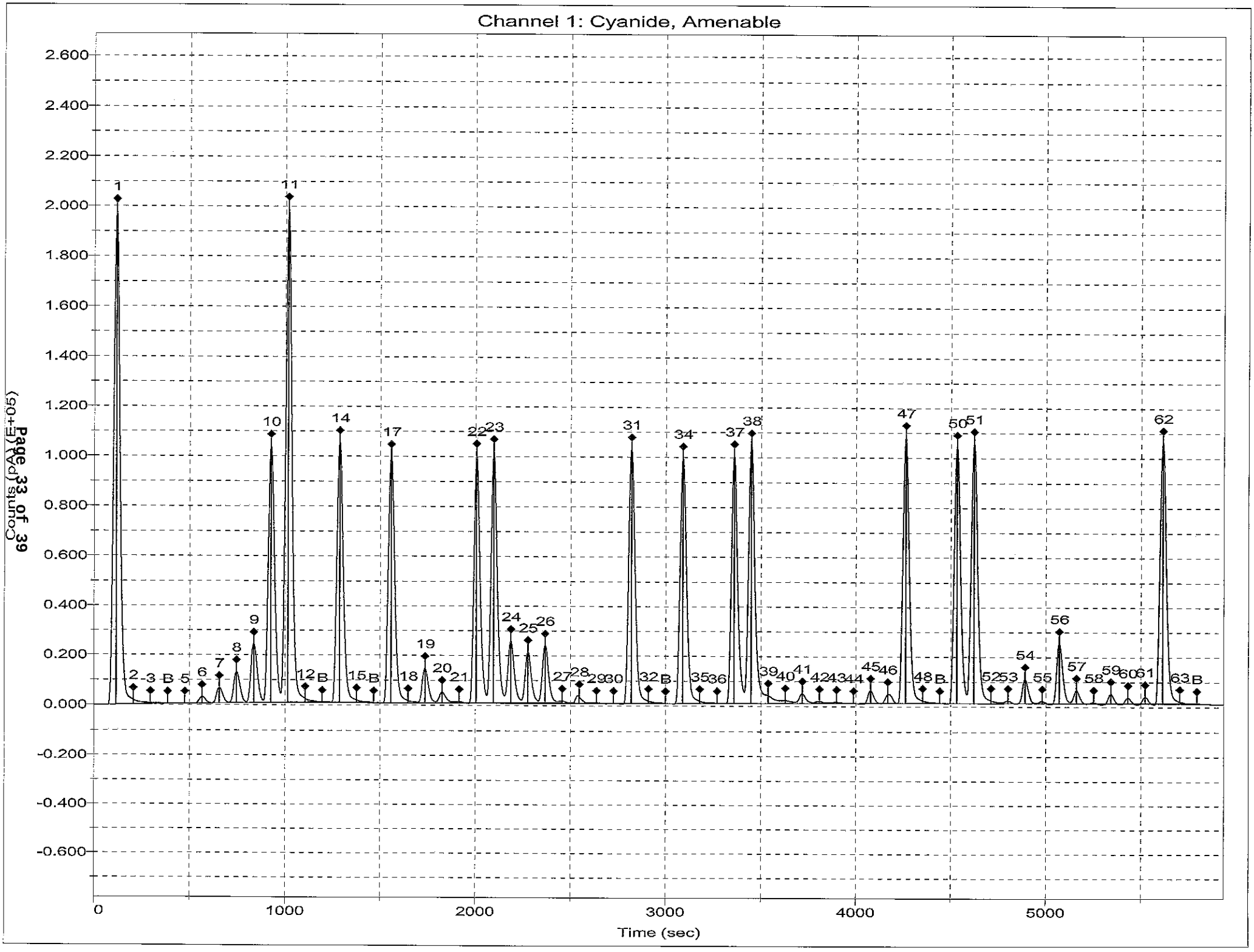
Facility Name	
Facility Location	
Department	
Operator Name	P.JOHNSON
Operator ID	P.JOHNSON
Platform	FS 3000
Software Rev Code	222
Data system ID	57
Result path	C:\FLOW_4\122413A.RST
Sample table path	C:\FLOW_4\CNAMPPB.TBL
Method path	C:\FLOW_4\CNAMPPB.MTH
Date acquired	24-Dec-13
Time acquired	10:21

P. Johnson 12.24.13

				|-------- Cyanide, Amenable -----|	
Date	Time	Cup	Name	Response	Calc [ppb]	Flags
24-Dec-13	08:42	1	SYNC	197832	198.505	
24-Dec-13	08:43	0	BLANK	1793	-0.017	LO
24-Dec-13	08:45	0	BLANK	339	-1.489	LO
24-Dec-13	08:46	0	BASELINE	0	-1.833	BL
24-Dec-13	08:48	2	Cal 0.000 ppb	3	-1.830	LO
24-Dec-13	08:49	3	Cal 2.000 ppb	2603	0.803	
24-Dec-13	08:51	4	Cal 5.000 ppb	6099	4.343	
24-Dec-13	08:52	5	Cal 10.000 ppb	12367	10.690	
24-Dec-13	08:54	6	Cal 20.000 ppb	23522	21.987	
24-Dec-13	08:55	7	Cal 100.000 ppb	102954	102.424	
24-Dec-13	08:57	8	Cal 200.000 ppb	197910	198.583	
24-Dec-13	08:58	0	BLANK	1536	-0.277	LO
24-Dec-13	09:00	0	BASELINE	0	-1.833	BL
24-Dec-13	09:01	9	ICV	104351	103.839	
24-Dec-13	09:03	10	ICB	1037	-0.783	LO
24-Dec-13	09:04	0	BASELINE	0	-1.833	BL
24-Dec-13	09:06	11	LCS	98978	98.398	
24-Dec-13	09:07	12	MB	878	-0.944	LO
24-Dec-13	09:09	13	180-28276-A-1	13751	12.092	
24-Dec-13	09:10	14	180-28279-A-1	4201	2.421	
24-Dec-13	09:12	15	180-28279-A-2	559	-1.267	LO
24-Dec-13	09:13	16	180-28279-A-2 MS	99256	98.679	
24-Dec-13	09:15	17	180-28279-A-2 MSD	101145	100.592	
24-Dec-13	09:16	18	180-28280-A-1	24767	23.247	
24-Dec-13	09:18	19	180-28280-A-2	20327	18.752	
24-Dec-13	09:19	20	180-28280-A-3	23030	21.488	
24-Dec-13	09:21	21	180-28280-A-4	927	-0.894	LO
24-Dec-13	09:22	22	180-28296-A-5	2739	0.941	
24-Dec-13	09:24	23	180-28296-A-7	149	-1.682	LO
24-Dec-13	09:25	24	180-28296-A-13	82	-1.750	LO
24-Dec-13	09:27	25	CCV	101991	101.449	
24-Dec-13	09:28	26	CCB	969	-0.851	LO
24-Dec-13	09:30	0	BASELINE	0	-1.833	BL
24-Dec-13	09:31	27	LCS	98338	97.750	
24-Dec-13	09:33	28	MB	893	-0.929	LO
24-Dec-13	09:34	29	180-28296-A-16	87	-1.745	LO
24-Dec-13	09:36	30	180-28296-A-16 MS	99240	98.664	
24-Dec-13	09:37	31	180-28296-A-16 MSD	103727	103.207	
24-Dec-13	09:39	32	180-28296-A-18	3165	1.372	
24-Dec-13	09:40	33	180-28296-A-19	1204	-0.614	LO
24-Dec-13	09:42	34	180-28296-A-20	3930	2.147	

Result path C:\FLOW_4\122413A.RST
Sample table path C:\FLOW_4\CNAMPPB.TBL
Method path C:\FLOW_4\CNAMPPB.MTH
Date acquired 24-Dec-13
Time acquired 10:21

				|-------- Cyanide, Amenable -----|	
Date	Time	Cup	Name	Response	Calc [ppb]	Flags
24-Dec-13	09:43	35	180-28296-A-21	813	-1.009	LO
24-Dec-13	09:45	36	180-28296-A-25	539	-1.288	LO
24-Dec-13	09:46	37	190-2912-B-4	50	-1.783	LO
24-Dec-13	09:48	38	190-2921-C-2	5061	3.292	
24-Dec-13	09:49	39	190-2922-C-2	3578	1.790	
24-Dec-13	09:51	40	CCV	106675	106.193	
24-Dec-13	09:52	41	CCB	957	-0.864	LO
24-Dec-13	09:54	0	BASELINE	0	-1.833	BL
24-Dec-13	09:55	42	LCS	102747	102.215	
24-Dec-13	09:57	43	LCSD	104188	103.675	
24-Dec-13	09:58	44	MB	1061	-0.758	LO
24-Dec-13	10:00	45	180-28336-A-1	997	-0.823	LO
24-Dec-13	10:01	46	180-28336-A-2	9568	7.856	
24-Dec-13	10:03	47	180-28338-A-1	815	-1.008	LO
24-Dec-13	10:04	48	180-28338-A-2	23957	22.427	
24-Dec-13	10:06	49	180-28340-A-1	5177	3.409	
24-Dec-13	10:07	50	180-28380-A-1	407	-1.421	LO
24-Dec-13	10:09	51	180-28380-A-2	3772	1.987	
24-Dec-13	10:10	52	180-28381-A-1	2340	0.537	
24-Dec-13	10:12	53	180-28381-A-2	2674	0.875	
24-Dec-13	10:13	54	CCV	104700	104.193	
24-Dec-13	10:15	55	CCB	685	-1.140	LO
24-Dec-13	10:16	0	BASELINE	0	-1.833	BL


Channel 1: Cyanide, Amenable
Counts (pA) (E+06)
Time (sec)
2.600
2.400
2.200
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
-0.200
-0.400
-0.600
0
1000
2000
3000
4000
5000

Cyanide, Amenable:Calibration 1: Peak 5-64

File name: C:\FLOW_4\122413A.RST
Date: 24-Dec-13
Operator: P.JOHNSON

P. Johnson 12.24.13

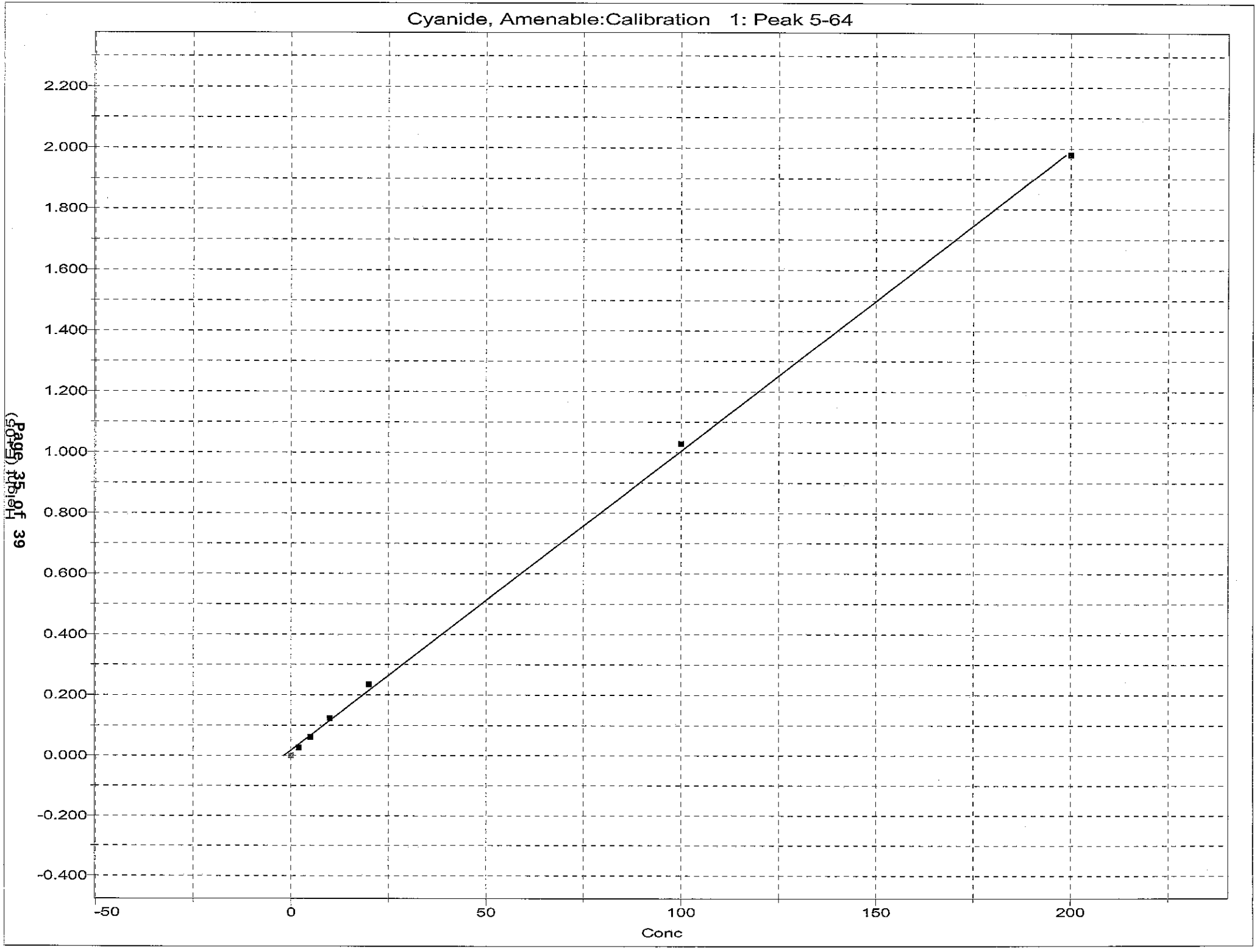
*	Name	Conc	Height
*	Cal 0.000 ppb	0.000000	3.188904
*	Cal 2.000 ppb	2.000000	2602.854980
*	Cal 5.000 ppb	5.000000	6098.938477
*	Cal 10.000 ppb	10.000000	12366.647461
*	Cal 20.000 ppb	20.000000	23521.714844
*	Cal 100.000 ppb	100.000000	102953.500000
*	Cal 200.000 ppb	200.000000	197909.843750

Calib Coef:
y=bx+a
a: (intercept) 1.8102e+03
b: 9.8749e+02

Corr Coef: 0.999745

Carryover: n/a

No Drift Peaks


Cyanide, Amenable:Calibration 1: Peak 5-64
2.200
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
-0.200
-0.400
-50
0
50
100
150
200
Conc

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Pittsburgh Job No.: 180-28340-1

SDG No.:

Batch Number: 93210 Batch Start Date: 12/24/13 08:42 Batch Analyst: Johnson, Paul

Batch Method: OIA-1677 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	WAvCN.1StdCCV 00161	WAvCN0.1ICV 00159	WAvCN0.1LCS 00166		
ICV 180-93210/14		OIA-1677		10 mL		10 mL			
CCV 180-93210/47		OIA-1677		10 mL	10 mL				
LCS 180-93210/50		OIA-1677		10 mL			10 mL		
LCSD 180-93210/51		OIA-1677		10 mL			10 mL		
CCV 180-93210/62		OIA-1677		10 mL	10 mL				

Batch Notes	
Sodium Hydroxide Reagent ID Number	1039209
Pipette ID	J1207624U,J1102764U
WAD AR Solution Reagent ID	1039211
WAD Carrier Solution Reagent ID	1039210
WAD A Reagent ID	992494
WAD B Reagent ID	992500

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Burns & McDonnell
SINCE 1898

Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
1431 Opus Place
Downers Grove, Illinois 60515
Phone: (630) 724-3200 Fax: (630) 724-3201

Attention: sarah meyer
Report to: smeyer@naturalrt.com

Laboratory: Test America
Address: 301 Alpha Drive
City/State/ZIP: Pittsburgh, PA 15238
Telephone: 412-963-7058

Document Control No.: 69420-142-2013
Lab. Reference No. or Episode No.:

Project Number: 69420 (Invoice to Integrys PO 3400002533)
Site Name: Peoples Gas - Willow St / Hawthorn Ave OU

Group or SWMU Name	Sample Point	Sample Designator	Sample Event Round	Sample Event Year	Sample Depth (in feet) From	Sample Depth (in feet) To	Sample Collected Date	Sample Collected Time	Matrix Liquid	Matrix Solid	Matrix Gas	Number of Containers	Parameter/Method Code: AVAILABLE CYANIDE	Remarks
121913032							12/19/13	1350	X			1	X	

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180-28340 Chain of Custody

Sampler (signature):
Sampler (signature):
Custody Seal Number: 69420-122427, 69420-122428
Special Instructions: * FIELD FILTERED AND PRESERVED
10-DAY TAT

Relinquished By (signature): 1. | Date/Time
Received By (signature): VIA FED EX | Date/Time
Ice Present in Container: Yes ☐ No ☐
Temperature Upon Receipt:

Relinquished By (signature): 2. | Date/Time
Received By (signature): | Date/Time 12/20/13 10:00
Laboratory Comments:

Login Sample Receipt Checklist

Client: Natural Resource Technology, Inc.

Job Number: 180-28340-1

Login Number: 28340

List Source: TestAmerica Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	