Facility Name: Constellation - C.P.Crane	CCB Tonnage Report – 2	009
26.04.10.08 requires generators of CCBs concerning the disposition of the CCBs that t	to submit an annual report to the Departhey generated the previous year.	tment
III. Required Information. The following March 1, 2010:	information must be provided to the Departme	ent by
A. Contact information:		
Facility Name: <u>C.P. Crane Electric Ge</u>	eneration Station	
Name of Permit Holder:Constellation F	Power Source Generation	
Facility Address:101 Carroll Island Road	Street	
Facility Address: Chase	Maryland 21220 State Zi	p
County: Baltimore		
Contact Information (Person filing report or E	Environmental Manager)	
Facility Telephone No.: 410.682.9797	Facility Fax No.: 410.682.9805	
Contact Name: <u>John E. Murosko, P.G.</u>		
Contact Title: Program Manager, Environm	nental Services	
Contact Address: 1005 Brandon Shores Roa	ad Street	
Contact Address: Baltimore	Maryland 21 State Zi	1226
Contact Email: <u>john.murosko@constellatic</u>	on.com	
Contact Telephone No.: 410,787,5471	Contact Fax No.: 410.787.6637	
	please call Mr. Edward Dexter, Administrator, um at 410-537-3318.	Solid

Form Number: MDE/WAS/PER.033 Date: February 2, 2010 TTY Users: 800-735-2258

Facility Name: Constellation – C.P.Crane	CCB Tonnage Report – 2009
B. A description of the process that generates the coal coatype of coal or other raw material that generates the coal	• • • • • • • • • • • • • • • • • • • •

The C.P. Crane Generating Station (Crane) is located along Seneca Creek in eastern Baltimore County. The plant consists of two coal-fired units: Unit 1, which is nominally rated at 190 MW, and which began operating in 1961; and Unit 2, which is nominally rated at 209 MW, and which began operating in 1963. Both units use cyclone-type boilers manufactured by Babcock and Wilcox (B&W). Coal is supplied to the plant via rail and is stored adjacent to the plant. The coal is prepared for use by four Pennsylvania crushers per boiler. It is gravity-fed to the boilers after transport into the plant via mechanical conveyor. Each unit is equipped with a baghouse for capture and control of particulate matter (PM) emissions. Fly ash is collected from the baghouse hoppers and conveyed pneumatically to storage silos from where it is loaded into trucks for temporary staging on an asphalt pad on the coal pile prior to loading for final disposition. Boiler slag is recovered from the boilers and processed for shipping.

Coals burned in 2009 at the C.P. Crane Plant included bituminous coal from Northern Appalachian and South American sources, and sub-bituminous coal from Powder River Basin and Indonesian sources.

C. The annual volume of coal combustion byproducts generated during the last calendar year, including an identification of the different types of coal combustion byproducts generated and the volume of each type generated. If the space provided is insufficient, please attach additional pages in a similar format:

Table I: Volume of CCBs Generated for Previous Calendar Year:

provided is insufficient, please attach additional pages:

Reporting Year	Volume of CCB Type:	Volume of CCB Type:	Volume of CCB Type:
	Fly Ash (dry tons)	Boiler Slag (dry tons)	
2009			
	24,752	21,983	

Additional notes:		

D. Descriptions of any modeling or risk assessments, or both, conducted relating to the coal combustion byproducts or their use that were performed by you or your company during the reporting year. Please attach this information to the report.

Neither modeling nor risk assessments have been performed during the past year.

- E. Copies of all laboratory reports of all chemical characterizations of the coal combustion byproducts. Please attach this information to the report.
- Crane Bottom Ash, Penniman & Browne, Inc., January 19, 2009
- Flyash for TCLP Metals, Phase Separation Science, Inc., April 14, 2009
- Crane Fly Ash, Phase Separation Science, Inc., May 15, 2009
- Cyclean Test, Phase Separation Science, Inc., May 15, 2009
- Adaro Coal, Phase Separation Science, Inc., June 25, 2009
- Drummond Flyash, Phase Separation Science, Inc., July 27, 2009
- Fly Ash Tests for MDE, Phase Separation Science, Inc., September 22, 2009
- F. A description of how you disposed of or used your coal combustion byproducts in the last calendar year, identifying:
- (a) The types and volume of coal combustion byproducts disposed of or used (if different than described in Paragraph C above), the location of disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts disposed of or used at each site:

Year	CCB Receiver	Fly Ash (dry tons)	Boiler Slag (dry tons)	CCBs Use
2009	Virginia Materials, Inc., MD	0	21,983	Abrasives/roofing mat'l
	Bulk Materials, Int'i, NY	184	0	cement kiln feed
	Waste Mgmt, VA	19,690	0	landfill, daily cover
	Mountainview LF, MD	3,070	0	landfill, daily cover
	The East End LF, VA	25	0	landfill, daily cover
	Tri-Cities LF, VA	1,783	0	landfill, structural fill

and (b) The different uses by type and volume of coal combustion byproducts:

- CCBs delivered to Waste Management were used for daily cover in a municipal solid waste (MSW) landfill located in King George, VA.
- CCBs delivered to Mountainview Landfill in Allegany County, MD were used for daily cover in that MSW landfill, as authorized by MDE.
- CCBs delivered to The East End Landfill in Henrico, VA were used for daily cover in municipal solid waste (MSW) landfills.
- CCBs delivered to Tri-Cities Landfill in Petersburg, VA will be used as structural fill to build walls and barriers in that MSW landfill.
- CCBs delivered to Virginia Materials, Inc. in Baltimore, MD were used for abrasives and roofing granules.

Form Number: MDE/WAS/PER.033 Date: February 2, 2010 TTY Users: 800-735-2258

Facility Name:	Constellation C.P. Crone	CCB Tonnage Report - 2009
racility Name:	Constellation - C.P.Crane	CCD Tournage Report - 2009

• CCBs delivered to Bulk Materials, Inc. were subsequently shipped by BMI to a LaFarge cement plant New York for use as cement kiln feed

If the space provided is insufficient, please attach additional pages in a similar format. . (Please note that in subsequent years you need only provide the information in Section F for the last calendar year).

- G. A description of how you intend to dispose of or use coal combustion byproducts in the next 5 years, identifying:
- (a) The types and volume of coal combustion byproducts intended to be disposed of or used, the location of intended disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts intended to be disposed of or used at each site:
- Fly Ash: CPSG projects that approximately 43,000 tons will be generated each year for the next five years, all of which will be disposed of in landfills in Virginia and Maryland authorized to accept CCBs, used primarily for daily cover. Beginning in March 2011, CPSG will place unused flyash in a permitted industrial waste landfill in Baltimore City.
- Boiler Slag: CPSG projects that approximately 31,000 tons will be generated each year for the next five years, all of which will be beneficially used for blasting grit and/or roofing granules.
- and (b) The different intended uses by type and volume of coal combustion byproducts.
- Fly Ash: No beneficial use of fly ash generated at the C.P. Crane station is projected for the next 5 years; however, with proper certification as a Class C fly ash, there is a potential for beneficial use in concrete products. It's possible that all fly ash generated at C.P. Crane will be beneficially used.
- Boiler Slag: Approximately 31,000 tons each year will be beneficially used for blasting grit and/or roofing granules.

If the space provided is insufficient, please attach additional pages in a similar format.

Form Number: MDE/WAS/PER.033 Date: February 2, 2010 TTY Users: 800-735-2258

Facility Name: Constellation - C.P.Crane	CCB Tonnage Report -	2009
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**IV. Signature and Certification**. An authorized official of the generator must sign the annual report, and certify as to the accuracy and completeness of the information contained in the annual report:

This is to certify that, to the best of my knowledge, the information contained in this report and any attached documents are true, accurate, and complete.

| Ouinn Morrison, Director-Asset Operations | 410.787.5399 |
| Name, Title, & Telephone No. | Date |
| Quinn.morrison@constellation.com | Your Email Address



CHEMISTS / ENCINEERS INSPECTORS
BY DESTRIAL EMORE AS INSPECTORS

Prepared for:

Phase Separation Science, Inc. Betsy Orr 6630 Baltimore National Pike Route 40 West Baltimore, MD. 21228

9011401 Crane Bottom Ash

Sample Information

Sample Number

90000191-01

Sample ID

9011401-001

Description

Matrix

Miscellaneous Solid

Certificate of Analysis

1/19/2009

Sample Date/Time

01/13/09 7:00

Sample Received

01/14/09 11:55

Sampler

Client

Analysis	Units	PQL	Results	Analyst	Date / Time Tested	Method
Loss on Ignition	%	0.1	28.7	BAS	01/16/2009 17:00	ASTM D2974
Moisture	%	0.1	33.6	BAS	01/16/2009 17:00	ASTM D2974
Total Solids	%	0.1	66.4	BAS	01/16/2009 17:00	ASTM D2974

C/ Jak

Beth Slowik - Quality Assurance Manager

Juban Schryer

Barbara Schroyer, Laboratory Director

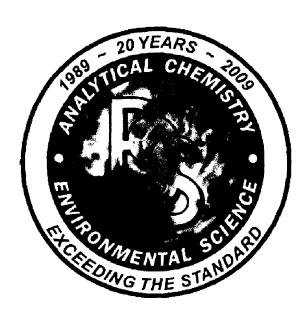
# **Analytical Report for**

# Constellation Energy Group - CP Crane plant Certificate of Analysis No.: 9040701

Project Manager: Faith Davidson

Project Name: Flyash for TCLP-Metals

Project Location: CP Crane



April 14, 2009
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES: 6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047

# PHASE SEPARATION SCIENCE, INC.



April 14, 2009

Faith Davidson

Constellation Energy Group - CP Crane plant
1001 Carroll Island Rd
Baltimore, MD 21220

Reference: PSS Work Order No: 9040701

Project Name: Flyash for TCLP-Metals

Project Location: CP Crane

### Dear Faith Davidson:

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered 9040701.

All work reported herein has been performed in accordance with referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 12, 2009. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

Laboratory Manager



### **Case Narrative Summary**

# Client Name: Constellation Energy Group - CP Crane plant

Project Name: Flyash for TCLP-Metals

### Project ID: N/A

Work Order Number: 9040701

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/07/2009 at 08:06 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
9040701-001	CPC#1A Baghouse	SOLID	04/06/2009 09:00 am
9040701-002	CPC#1B Baghouse	SOLID	04/06/2009 09:00 am

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in the Sample Receipt Checklist.

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

### Notes:

- 1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.

### Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J The target analyte was positively identified below the reporting limit but greater than one-half of the reporting limit.
- ND Not Detected at or above the reporting limit.
- RL Reporting Limit.
- U Not detected.

OFFICES: **6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228** 410-747-8770 800-932-9047 FAX 410-788-8723

# **PHASE SEPARATION** SCIENCE, INC.



### CERTIFICATE OF ANALYSIS

No: 9040701

Constellation Energy Group - CP Crane plant, Baltimore, MD

April 14, 2009

Project Name: Flyash for TCLP-Metals

Project Location: CP Crane

Sample ID: CPC#1A Baghouse

**Matrix: SOLID** 

**TCLP Metais** 

Date/Time Sampled: 04/06/2009 09:00

Date/Time Received: 04/07/2009 08:06

Analytical Method: SW846 6020A

PSS Sample ID: 9040701-001

Preparation Method: SW846 3010A

	Result	<u>Units</u>	TCLP Limit Flag	Dil	Prepared	Analyzed A	<u>Inalyst</u>
Arsenic	ND	mg/L	5.0	1	04/14/09	04/14/09 13:06	1034
Barium	ND	mg/L	100	1	04/14/09	04/14/09 13:06	1034
Cadmium	ND	mg/L	1.0	1	04/14/09	04/14/09 13:06	1034
Chromium	ND	mg/L	5.0	1	04/14/09	04/14/09 13:06	1034
Lead	ND	mg/L	5.0	1	04/14/09	04/14/09 13:06	1034
Mercury	ND	mg/L	0.200	1	04/14/09	04/14/09 13:06	1034
Selenium	ND	mg/L	1.0	1	04/14/09	04/14/09 13:06	1034
Silver	ND	mg/L	5.0	1	04/14/09	04/14/09 13:06	1034

Sample ID: CPC#1B Baghouse Matrix: SOLID

**TCLP Metals** 

Date/Time Sampled: 04/06/2009 09:00 Date/Time Received: 04/07/2009 08:06

Analytical Method: SW846 6020A

Preparation Method: SW846 3010A

PSS Sample ID: 9040701-002

	Result	Units	TCLP Limit Flag	DII	Prepared	Analyzed A	<u>Analyst</u>
Arsenic	ND	mg/L	5.0	1	04/14/09	04/14/09 13:37	1034
Barium	ND	mg/L	100	1	04/14/09	04/14/09 13:37	1034
Cadmium	ND	mg/L	1.0	1	04/14/09	04/14/09 13:37	1034
Chromium	ИD	mg/L	5.0	1	04/14/09	04/14/09 13:37	1034
Lead	ND	mg/L	5.0	1	04/14/09	04/14/09 13:37	1034
Mercury	ПN	mg/L	0.200	1	04/14/09	04/14/09 13:37	1034
Selenium	ND	mg/L	1.0	1	04/14/09	04/14/09 13:37	1034
Silver	ND	mg/L	5.0	1	04/14/09	04/14/09 13:37	1034

# TANNA BANKE

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com emalt: info@phaseonline.com

"MAENTAL"													~ F. I. W.		
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PROJECT MGR:	MGR:	PHONE	PHONE NO. (1/0)6/2-9850	85799	rsd	Matrix Codes: SW-Sultaze Wit DW-Ditinking Wit GW-Ground Wit WW-Waste Wit D-DR S-Soil WI.=Waste Liquid WS-Waste Solid W= Wipe	PW=Drinking	Wrt GW=Gro	and Witr WW	-Waste Wir	0=0# <b>\$</b> =Sei	WL=Waste	W biupil W	S=Waste Solie	W= Wipe
EMAILA	EMAILTAITH, daviding Constitution for	EKATON 16	•	(410) 682-9972	22	No.		$\frac{1}{2}$	<b>+</b>	$\overline{}$	_	$\downarrow$	$\dashv$		
PROJECT	PROJECT NAME: FLYGIA PW TCLF MOTEL	TOPM	ا ا	PROJECT NO.			7	\pi	<u>_</u>	<u> </u>	_	<u></u>	_		
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ONIGHT	SAMPLE IDENTIFICATION	TION	DATE	THME	MATRIX (See Codes)		_	_	_	<u>_</u>	_		<u> </u>	REMARKS	ડ્ર
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6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723
The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable tees if collection becomes necessary.

### Amy

From: Davidson, Faith [Faith Davidson@constellation.com]

Sent: Tuesday, April 07, 2009 9:35 AM

To: 'amyf@phaseonline.com'

Cc: Davidson, Faith

Subject: April 6, 2009 CPC Baghouse Flyash Samples

Please disregard hold notice in comments on the 4/6/09 CP Crane Baghouse flyash samples chain of custody sheet. Please run both samples since both are labeled the same.

Thanks and have an unbelievable day! Faith E. Davidson 410-682-9850 Desk 443-824-8729 Cell faith.davidson@constellation.com 120/80, 100/125, 200, 35/40, Smile!

>>> This e-mail and any attachments are confidential, may contain legal, professional or other privileged information, and are intended solely for the addressee. If you are not the intended recipient, do not use the information in this e-mail in any way, delete this e-mail and notify the sender. CEG-IP2



04/07/2009 09:38 AM

# Phase Separation Science, Inc

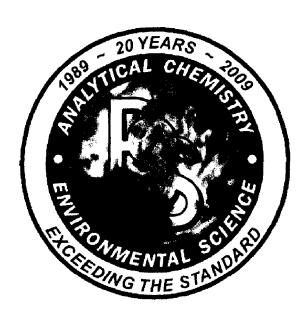
# Sample Receipt Checklist

Wo Number	9040701			Received By	Amy Friedlander
Client Name	Constellat	ilon Energy Group - CP C	ra	Date Received	04/07/2009 08:06:00 AM
Project Name	Flyash for	TCLP-Metals		Delivered By	Client
Project Number	N/A			Tracking No	Not Applicable
Disposal Date:	05/12/200	9 .		Logged In By	Rachel Davis
Shipping Conta	iner(s)				
No. of Coo	olers	1		Ice	Present
Custody S	eals	Present		Temp (deg C)	3
Seal Cond	ition	Intact, Dated And Signed	l	Temp Blank Pre	sent No
•		nple labels? X Yes o	or 🚫	)_ No _No	
Sample Contair	ner				
intact? Labeled ar	e for Specif nd Labels L of Samples		o	Custody Seal(s) Custody Seal(s) I Seal(s) Signed / I Total No. of Contr	
Preservation				Yes I	No N/A
Metals			(pH<	2)	<u>X</u>
Cyanides			(pH>		<del>×</del>
Sulfide	<b>.</b>	•	(pH>		<del></del>
TOC, COE	·	ni Dhan	(pH<)	,	<del></del>
	, NH3, Tota	al Mnos als Rovd Preserved)	(pH </th <th></th> <th><del>-</del> <del>-</del></th>		<del>-</del> <del>-</del>
•	•	ero headspace?	(pH<		$- \leftarrow$
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Comments: (An	ny "No" re	sponse must be deta	iled i	n the comments	section below.)
documentation of a	any client no	conditions, list sample 10, pre tification as well as client inst alyzed as soon as possible, p	truction	s Samples for pH, ch	lorine and
		nples received read, CPC CPC#1A and the other C			Davidson, analyze both for
		A/	<del>}</del>		
Samples Inspecte	d/Checklis	t Completed By:	De	Date:	4/7/9
	PM Revie	w and Approval:	X	Date:	4/7/09

# **Analytical Report for**

Constellation Energy Group
Certificate of Analysis No.: 9051404

Project Manager: John Basciano Project Name: Crane Fly Ash Project Location: Crane Station



May 15, 2009
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770

Fax: (410) 788-8723

OFFICES: 6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047

# PHASE SEPARATION SCIENCE, INC.



May 15, 2009

John Basciano Constellation Energy Group 1005 Brandon Shores Rd. Baltimore, MD 21226

Reference: PSS Work Order No: 9051404

Project Name: Crane Fly Ash Project Location: Crane Station

### Dear John Basciano:

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered 9051404.

All work reported herein has been performed in accordance with referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on June 18, 2009. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not he sitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

Laboratory Manager



# **Case Narrative Summary**

# Client Name: Constellation Energy Group

Project Name: Crane Fly Ash

Project ID: N/A

Work Order Number: 9051404

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/14/2009 at 11:55 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
9051404-001	Crane Fly Ash	SOLID	05/14/2009 12:00 am

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in the Sample Receipt Checklist.

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

### Notes:

- 1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
- Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

### Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- Results Pending Final Confirmation.
- D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J The target analyte was positively identified below the reporting limit but greater than one-half of the reporting limit.
- ND Not Detected at or above the reporting limit.
- RL Reporting Limit.
- U Not detected.

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# PHASE SEPARATION SCIENCE, INC.



### **CERTIFICATE OF ANALYSIS**

No: 9051404

Constellation Energy Group, Baltimore, MD

May 15, 2009

Project Name: Crane Fly Ash Project Location: Crane Station

Sample ID: Crane Fly Ash

Matrix: SOLID

**TCLP Metals** 

Date/Time Sampled: 05/14/2009 00:00

PSS Sample ID: 9051404-001

Date/Time Received: 05/14/2009 11:55

Analytical Method: SW846 6020A

Preparation Method: SW846 3010A

	Result	Units	TCLP Limit Flag	Dil	Prepared	Analyzed	Analyst
Arsenic	ND	mg/L	5.0	1	05/15/09	05/15/09 11:59	1034
Barium	ND	mg/L	100	1	05/15/09	05/15/09 11:59	1034
Cadmium	ND	mg/L	1.0	1	05/15/09	05/15/09 11:59	1034
Chromium	ΝD	mg/L	5.0	1	05/15/09	05/15/09 11:59	1034
Lead	ND	mg/L	5.0	1	05/15/09	05/15/09 11:59	1034
Mercury	ND	mg/L	0.200	1	05/15/09	05/15/09 11:59	1034
Selenium	0.111	mg/L	1.0	1	05/15/09	05/15/09 11:59	1034
Silver	ND	mg/L	5.0	1	05/15/09	05/15/09 11:59	1034

# TOWN SHARED TO A STANDARD TO A

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com email: info@phaseonline.com

Nativ Codes: 8W-Surace Wt DW-Drinking Wrl GW-Ground Wit WW-Waste Wit O-OR 8-Soil WI.-Waste Liquid WS-Waste Soild W- Wipe Click to enter Remarks Analysis/ Required 7.4 duel 540 meseules REMARKS 4 Shipping Carder OUENT Method  $\Psi$ ا ا Custody Seal. #65 # of Coolers: PAGE 1 Please forward results ASAP. Caber Other Requested Turnaround Time **50た/50**あ 5-Dav 3-Dav
Next Day Emergency Data Deliverables Required: Special Instructions: ICLP Metals PSS Work Order Slick to enter Analysia TYPE G= GRAB COMP O ၌ပ္oz⊦ Fly Ash MATRIX (See Codes) Received By: Received By: PHONE NO.: 410-987-3202 410-787-5424 OFFICE LOC. BS coal yard PROJECT NO.: HWE P.O. NO.: CERT NO. 15/4 5/14/09 DATE Time Time E E EMAIL; iohn.m.basciano@constellation.com.Fax NO.: 5/14/09 Š Date Date Date SAMPLE IDENTIFICATION Crane Fly Ash PROJECT MGR: John Basciano SITE LOCATION: Crane Station PROJECT NAME: Crane Ash Relinquished By: (3) Relinquished By: (1) Relly(plished By: (2) Relinquished By: (4) CLIENT: CPSG SAMPLERS LAB NO.

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable tees if collection becomes necessary. 6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723



05/14/2009 12:08 PM

# Phase Separation Science, Inc

# Sample Receipt Checklist

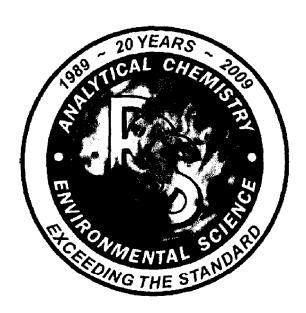
Wo Number	9051404	Received By	Rachel Davis
Client Name	Constellation Energy Group	Date Received	05/14/2009 11:55:00 AM
Project Name	Crane Fly Ash	Delivered By	Client
Project Number	N/A	Tracking No	Not Applicable
Disposal Date:	06/18/2009	Logged In By	Rachel Davis
Shipping Conta	iner(s)		
No. of Cor Custody S Seal Cond	leats Absent None	lce Temp (deg C) Temp Blank Pre	Absent 17 sent No
COC agre	es with sample labels? Yes or Custody (COC) Yes or	No No	
Sample Contail	ner		
Intact? Labeled a	of for Specified Analysis? Yes No	Custody Seal(s) I Seal(s) Signed / I	
Preservation		Yes	No N/A
TOX, TKN VOC, BTE Do VOA v  Comments: (Air For any improper documentation of	(pH: (pH: (pH: (pH: (pH: (pH: (pH: (pH:	>12) >9) <2) <2) <2) <2) <1 mathrix in the comments ative added (reagent ID ons. Samples for pH, cl	number) below as well as niorine and
		140.0	
Samples Inspecte	ed/Checklist Completed By:	Date:	->11419
	PM Review and Approval:	Date:	5/14/09

Page 2 of 2

# **Analytical Report for**

Constellation Energy Group
Certificate of Analysis No.: 9051405

Project Manager: John Basciano Project Name: Cyclean Test Project Location: Crane Station



May 15, 2009
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES: 8630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047

# PHASE SEPARATION SCIENCE, INC.



May 15, 2009

John Basciano Constellation Energy Group 1005 Brandon Shores Rd. Baltimore, MD 21226

Reference: PSS Work Order No: 9051405

Project Name: Cyclean Test Project Location: Crane Station

### Dear John Basciano:

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered 9051405.

All work reported herein has been performed in accordance with referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on June 18, 2009. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Pruenal

Laboratory Manager



# **Case Narrative Summary**

# Client Name: Constellation Energy Group

**Project Name: Cyclean Test** 

Project ID: N/A

Work Order Number: 9051405

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/14/2009 at 11:55 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
9051405-001	Crane Bottom Ash Slag	SOLID	05/14/2009 11:15 am

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in the Sample Receipt Checklist.

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

### Notes:

- 1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
- 3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

### Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination,
- C Results Pending Final Confirmation.
- D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J The target analyte was positively identified below the reporting limit but greater than one-half of the reporting limit.
- ND Not Detected at or above the reporting limit.
- RL Reporting Limit.
- U Not detected.

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# PHASE SEPARATION SCIENCE, INC.



### **CERTIFICATE OF ANALYSIS**

No: 9051405

Constellation Energy Group, Baltimore, MD

May 15, 2009

Project Name: Cyclean Test Project Location: Crane Station

·Sample ID: Crane Bottom Ash Slag

**Matrix: SOLID** 

Date/Time Sampled: 05/14/2009 11:15

PSS Sample ID: 9051405-001

Date/Time Received: 05/14/2009 11:55

TCLP Metals Analytical Method: SW846 6020A

Preparation Method: SW846 3010A

	Result	Units	TCLP Limit Flag	Dil_	Prepared	Analyzed	Analyst
Arsenic	ND	mg/L	5.0	1	05/15/09	05/15/09 12:30	1034
Barium	ND	mg/L	100	1	05/15/09	05/15/09 12:30	1034
Cadmium	ND	mg/L	1.0	1	05/15/09	05/15/09 12:30	1034
Chromium	ND	mg/L	5.0	1	05/15/09	05/15/09 12:30	1034
Lead	ND	mg/L	5.0	1	05/15/09	05/15/09 12:30	1034
Mercury	ND	mg/L	0.200	1	05/15/09	05/15/09 12:30	1034
Selenium	ND	mg/L	1.0	1	05/15/09	05/15/09 12:30	1034
Silver	ND	mg/L	5.0	1	05/15/09	05/15/09 12:30	1034

# THE TAY . ENVIRONMENTAL PROPERTY OF THE PROPER

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com email: info@phaseonline.com

WENTAL														
VOLIENT: CPSG	SPSG	OFFICE	OFFICE LOC. BS coal yard	oal yard		PSS Work Order #		5	50h./50b	261	S	PAGE	E 1	or 1
PROJECT	PROJECT MGR: John Basciano	PHONE	NO.: 410-	PHONE NO.: 410-917-3202		Matrix Codes: SW=Surtace Wir	WK-Drinki	ag Wat GW.	-Ground Wit	WW=Was	e Wyr G-Oil	S-Soit WIL-Wa	ste Liguid V	Matrix Cocles. SW-Surface Wit DW-Drinlang Wit GW-Ground Wit WW-Waste Wit O-OH S-Soil WIL-Waste Liguid WS-Waste Soild W-Wipe
EMAIL: Joh	EMAIL: John.m.basciano@constellation.com.FAX NO.:	COM FAX NO	410-7	410-787-5424		No. C SAMPLE	,	$\vdash \mid$						Propervativ
PROJECT	PROJECT NAME: Cylean test			PROJECT NO:		O N ⊢	alysie	SIS				·		1
SITE LOCA	SITE LOCATION: Crane Station		P.O. NO:	ij		A COMP	وتتعديد	λeί						Analysis/ Method
SAMPLERS:	S:	DW (	CERT NO.	), ;		N GEAB		l d l						Required
.AB NO.	SAMPLE IDENTIFICATION	TION	DATE	TIME	MATRIX (See Codes)			DT						REMARKS 4
	Crane bottom ash slag	slag	5/14/09	11.15a	slag	1 9								Click to enter Remarks
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Relimpushed Bv: (2)	ed By: (2)	Date	Time	Received By:	* * * * * * * * * * * * * * * * * * *	7/2	Data	od Day Deliverat	Next Day   Emergency Data Deliverables Required:	-	Other	lize Present Shimlor		toe Present: ASS Temp: 17.0. Shinsing Carriers 1.1.7.1.
Refinquished By: (3)	ed By: (3)	Date	Time	Received By:	). 34:		Spec	Special instructions:	tions:				9	T A FA
Refinduished By: (4)	ed By: (4)	Date	Time	Received By:	i i									

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The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable tees it collection becomes necessary.



# Phase Separation Science, Inc

# Sample Receipt Checklist

Vo Number	9051405		Received 8	y Ra	chel Davis
lient Name	Constella	ation Energy Group	Date Recei	ved 05/	14/2009 11:55:00 AM
roject Name	Cylean T	est	Delivered E	By Clie	ent
roject Number	N/A		Tracking N	o Not	: Applicable
isposal Date:	06/18/20	09	Logged in i	By Rad	chel Davis
Shipping Conta	ainer(s)				
No of Co	olers	0	Ice		Absent
Custody S	}eals	Absent	Temp (de	eg C)	17
Seal Cond	dition	None	Temp Bla	ank Present	No
~		mple labels? X Yes	s or No s or No		
Sample Contai	ner				
Appropiate	e for Speci	ified Analysis? YesX	No Custody S	Seal(s)	Yes NoX
intact?		<del></del>		Seal(s) Intac	
	ind Labels	,		gned / Date	
Total No.	of Sample:	s Received 1	Total No.	of Containe	's Received 1
Preservation			Y	es No	N/A
Metals			(pH<2)		*
Cyanides			(pH>12)		<del>\S</del> _
Sulfide	D Dhamala		(pH>9)		<del>-                                      </del>
•	D, Phenois		(pH<2)		<del>\$</del>
•	N, NH3, To	fals Rovd Preserved)	(pH<2) (pH<2)		<del>\$</del>
	•	zero headspace?	(PIT\2)		<del>\$</del>
For any improper documentation of	preservation any client n	esponse must be de n conditions, list sample ID, p otification as well as client in nalyzed as soon as possible	preservative added (rea natructions. Samples (	agent ID numb for pH, chlorin	er) below as well as e and
		•			
		/	\ <b>^</b>		
		/	1/1		i
			1 1 50		
Samples Inspect	ed/Checkli	st Completed By:	Louis	Date: _	5149
Samples Inspect		st Completed By:	A Servis	Date: _	5/14/09

# **Analytical Report for**

Constellation Energy Group - CP Crane plant Certificate of Analysis No.: 9062414

Project Manager: Faith Davidson
Project Name: Adaro Coal
Project Location: C.P. Crane



June 25, 2009
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES: 6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047

# PHASE SEPARATION SCIENCE, INC.



June 25, 2009

Faith Davidson
Constellation Energy Group - CP Crane plant
1001 Carroll Island Rd
Baltimore, MD 21220

Reference: PSS Work Order No: 9062414

Project Name: Adaro Coal Project Location: C.P. Crane

### Dear Faith Davidson:

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered 9062414.

All work reported herein has been performed in accordance with referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on July 29, 2009. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

Laboratory Manager



## Case Narrative Summary

## Client Name: Constellation Energy Group - CP Crane plant **Project Name: Adaro Coal**

Project ID: N/A

Work Order Number: 9062414

The following samples were received under chain of custody by Phase Separation Science (PSS) on 06/24/2009 at 05:29 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
9062414-001	CPC2 Baghouse	SOLID	06/24/2009 01:00 pm
9062414-002	CPC2 Bottom Ash	SOLID	06/24/2009 01:00 pm

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in the Sample Receipt Checklist.

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

### Notes:

- 1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
- 3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

### Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J The target analyte was positively identified below the reporting limit but greater than one-half of the reporting limit.
- ND Not Detected at or above the reporting limit.
- RL Reporting Limit.
- U Not detected.

OFFICES: 6630 BALTIMORE NATIONAL PIKE **ROUTE 40 WEST** BALTIMORE, MD 21228 410-747-8770 800-932-9047 FAX 410-788-8723

# **PHASE SEPARATION** SCIENCE, INC.



## **CERTIFICATE OF ANALYSIS**

No: 9062414

Constellation Energy Group - CP Crane plant, Baltimore, MD

June 25, 2009

Project Name: Adaro Coal Project Location: C.P. Crane

Sample ID: CPC2 Baghouse

Matrix: SOLID

**Total Metals** 

Sample ID: CPC2 Baghouse

**Matrix: SOLID** 

**TCLP Metals** 

Date/Time Sampled: 06/24/2009 13:00

Date/Time Received: 06/24/2009 17:29

PSS Sample ID: 9062414-001

% Solids: 99

Preparation Method: SW846 3050B

Dil Prepared Analyzed Analyst Result Units Rep Limit Flag 100 06/25/09 06/25/09 15:19 1033 26,000 mg/kg 4,800

Date/Time Sampled: 06/24/2009 13:00 PSS Sample ID: 9062414-001

Date/Time Received: 06/24/2009 17:29

Analytical Method: SW846 6020A

Analytical Method: SW846 6020A

Preparation Method: SW846 3010A

	Result	Units	TCLP Limit Flag	ווע	Prepared	Analyzed	Analyst
Arsenic	ND	mg/L	5.0	1	06/25/09	06/25/09 11:59	1033
Barium	ND	mg/L	100	1	06/25/09	06/25/09 11:59	1033
Cadmium	ND	mg/L	1.0	1	06/25/09	06/25/09 11:59	1033
Chromium	ND	mg/L	5.0	1	06/25/09	06/25/09 11:59	1033
Lead	ND	mg/L	5.0	1	06/25/09	06/25/09 11:59	1033
Mercury	ND	mg/L	0.200	1	06/25/09	06/25/09 11:59	1033
Selenium	ND	mg/L	1.0	1	06/25/09	06/25/09 11:59	1033
Silver	ND	mg/L	5.0	1	06/25/09	06/25/09 11:59	1033

Sample ID: CPC2 Bottom Ash

Matrix: SOLID

**Total Metals** 

Date/Time Sampled: 06/24/2009 13:00

Date/Time Received: 06/24/2009 17:29

PSS Sample ID: 9062414-002

% Solids: 75

Analytical Method: SW846 6020A

Preparation Method: SW846 3050B

Result Units Rep Limit Flag Dil Prepared Analyzed Analyst Iron 120,000 mg/kg 5,400 100 06/25/09 06/25/09 15:25 1033

OFFICES: 6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047 FAX 410-788-8723

# PHASE SEPARATION SCIENCE, INC.



# **CERTIFICATE OF ANALYSIS**

No: 9062414

Constellation Energy Group - CP Crane plant, Baltimore, MD

June 25, 2009

Project Name: Adaro Coal Project Location: C.P. Crane

Sample ID: CPC2 Bottom Ash

Matrix: SOLID

**TCLP Metals** 

Date/Time Sampled: 06/24/2009 13:00 PSS Sample ID: 9062414-002

Date/Time Received: 06/24/2009 17:29

Analytical Method: SW846 6020A

Preparation Method: SW846 3010A

	Result	Units	TCLP Limit Flag	Dil	Prepared	Analyzed	<u>Analyst</u>
Arsenic	ND	mg/L	5.0	1	06/25/09	06/25/09 12:30	1033
Barium	ND	mg/L	100	1	06/25/09	06/25/09 12:30	1033
Cadmium	ND	mg/L	1.0	1	06/25/09	06/25/09 12:30	1033
Chromium	ND	mg/L	5.0	1	06/25/09	06/25/09 12:30	1033
Lead	ND	mg/L	5.0	1	06/25/09	06/25/09 12:30	1033
Mercury	ND	mg/L	0.200	1	06/25/09	06/25/09 12:30	1033
Selenium	ND	mg/L	1.0	1	06/25/09	06/25/09 12:30	1033
Silver	ND	mg/L	5.0	1	06/25/09	06/25/09 12:30	1033

# AND STANFORD OF THE PROPERTY O

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com email: info@phaseonline.com

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CLIENT: CONNECCONNECT FIRMY OFFICE LOC. CY	MCAY OFFICI	=10C. C.	P Crano		PSSIWARK	PSSWeighbeight County County Control Page OF
PROJECT MGR. 1934 (MINING PHONENO: (40) 612-915	CACO PHONE	3/) :ONE	, 6\$2.9	الحج	Matrix Codes SW=Surface	Matrix Codes: SW-Surface Wir DW-Drinking Wrt GW-Ground Wir WW-Waste Wir O-Oil S-Soil WL-Waste Liquid WS-Waste Soiid W- Wipe
EMAIL:	FAX NO.:	- C	(P) 6 17 (B)	\$0°F.		Preservatives Liberd
PROJECT NAME: GOLD TO (DOU)		E.	PROJECT NO:		Ç 0 ≥ ⊦	TYPE Administration of the American Secured Comment of the American of the Ame
SITE LOCATION: C P CONO	, 0	P.O. NO.:			- <u></u> ∢ -	COMP (3) (F) ( / / / / / / / / / / / /
SAMPLERS:					2 Ш	GRAB
SAMPLE IDENTIFICATION	ICATION	DATE	TIME	MATRIX (See Codes)		FILE
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Relinquished Bv. (3)	Date	∃mi⊔	Received By:	. <del>.</del>	,	Special Instructions:
100						* COR 6/25/26
relinquished by: (4)	Oate	e m	Received By:	¥		

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable tees if collection becomes necessary.



# Phase Separation Science, Inc

# Sample Receipt Checklist

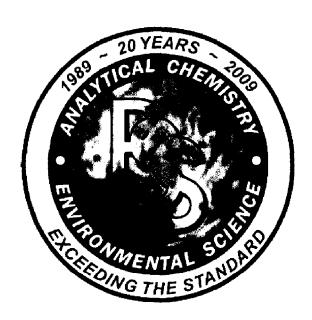
Vo Number	9062414	Received E	y Rachel Davis		
Client Name	me Constellation Energy Group - CP Cra		ved 06/24/2009 05:29:0	06/24/2009 05:29:00 PM	
Project Name	Adaro Coal	Delivered E	By Client		
roject Number	N/A	Tracking N	o Not Applicable	Not Applicable	
Disposal Date:	07/29/2009	Logged In	By Rachel Davis		
Shipping Conta	ainer(s)	**	-		
No. of Co.	olers 1	/ Ice	Present		
Custody S	Seals Present	Temp (d	eg C) 4		
Seal Cond	lition Intact, Dated And S	igned Temp Bl	ank Present No		
_	-	Yes orNo Yes orNo			
Sample Contain	ner				
Appropiate	e for Specified Analysis? Yes		, ·		
Intact?	X		Seal(s) Intact? Not Applicat		
	nd Labels Legible		gned / Dated Not Applicat	ole	
I Otal No.	of Samples Received 2	Total No.	of Containers Received 2		
Preservation		Y	es No N/A		
Metals		(pH<2)			
Cyanides		(pH>12)	<u>×</u> _		
Sulfide	·	(pH>9)	_ <del>_</del> <del>_</del> <del>_</del> <del>_</del> _ <del>_</del> <del>_</del> <del> </del>		
	O, Phenois	(pH<2)	<del></del>		
	I, NH3, Total Phos	(pH<2)	— — <del>X</del>		
	EX (VOA Vials Rovd Preserved)	(pH<2)	<del></del>		
DO VOA V	ials have zero headspace?		<u>~</u>		
For any improper p	ny "No" response must be preservation conditions, list sample any client notification as well as clie should be analyzed as soon as poss	ID, preservative added (reant instructions Samples t	gent ID number) below as well a or pH, chlorine and	18	
	t	$\Omega$			
		W/ DODAN	10/11/0		
Complee Incoce-	diChantilet Carrelated Dr \				
Samples Inspecte	d/Checklist Completed By:		Date: Old 1	2	
Samples Inspecte	ed/Checklist Completed By: PM Review and Approval:		Date: 6/75/09	9_	

Page 2 of 2

# **Analytical Report for**

# Constellation Energy Group - CP Crane plant Certificate of Analysis No.: 9072312

Project Manager: Faith Davidson
Project Name: Drummond Flyash
Project Location: 1001 Carroll Island Rd.



July 27, 2009
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES: 6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047

# PHASE SEPARATION SCIENCE, INC.



July 27, 2009

Faith Davidson
Constellation Energy Group - CP Crane plant
1001 Carroll Island Rd
Baltimore, MD 21220

Reference: PSS Work Order No: 9072312

Project Name: Drummond Flyash Project Location: 1001 Carroll Island Rd.

### Dear Faith Davidson:

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered 9072312.

All work reported herein has been performed in accordance with referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on August 27, 2009. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

Laboratory Manager



### Case Narrative Summary

# Client Name: Constellation Energy Group - CP Crane plant

**Project Name: Drummond Flyash** 

Project ID: N/A

Work Order Number: 9072312

The following samples were received under chain of custody by Phase Separation Science (PSS) on 07/23/2009 at 04:10 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
9072312-001	Drummond Flyash	SOLID	07/22/2009 12:00 pm

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in the Sample Receipt Checklist.

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

### Notes:

- 1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
- 3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

### Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- Results Pending Final Confirmation.
- D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J The target analyte was positively identified below the reporting limit but greater than one-half of the reporting limit.
- ND Not Detected at or above the reporting limit.
- RL Reporting Limit.
- U Not detected.

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# PHASE SEPARATION SCIENCE, INC.



### **CERTIFICATE OF ANALYSIS**

No: 9072312

Constellation Energy Group - CP Crane plant, Baltimore, MD

July 27, 2009

Project Name: Drummond Flyash Project Location: 1001 Carroll Island Rd.

Sample ID: Drummond Flyash

Matrix: SOLID

Date/Time Sampled: 07/22/2009 12:00 PSS Sample ID: 9072312-001

Date/Time Received: 07/23/2009 16:10

TCLP Metals

Analytical Method: SW846 6020A

Preparation Method: SW846 3010A

	Result	Units	TCLP Limit Flag	Dil	Prepared	Analyzed	Analyst
Arsenic	ND	mg/L	5.0	1	07/27/09	07/27/09 14:50	1033
Barium	ND	mg/L	100	1	07/27/09	07/27/09 14:50	1033
Cadmium	ND	mg/L	1.0	1	07/27/09	07/27/09 14:50	1033
Chromium	ND	mg/L	5.0	1	07/27/09	07/27/09 14:50	1033
Lead	ND	mg/L	5.0	1	07/27/09	07/27/09 14:50	1033
Mercury	ND	mg/L	0.200	1	07/27/09	07/27/09 14:50	1033
Selenium	0.443	mg/L	1.0	1	07/27/09	07/27/09 14:50	1033
Silver	ND	mg/L	5.0	1	07/27/09	07/27/09 14:50	1033

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

SAMPLE CHAIN OF CUST

SAMPLE CHAIN OF CUST

SAMPLE CHAIN OF CUST

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com email: info@phaseonline.com

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YOLIENT: & PEUT DON'USM OFFICE LOC. CP CYAM!	M OFFICE	1.0c.	P Cra		C WORKSTA	IIIIIIIIII/AI/ABIIIIIIIAIPPONSSII		182		7 700 h	PAGE	QF.	
PROJECT MGR:	PHONE NO.:	NO. (46	(40, 42-9850	10	Matrix Codes: SW-Surtace Wo	Matrix Codes. SW-Surace Wir DW-Drinking Wit GW-Ground Wit WW-Maste Wit (D-Oil S-Soil WIWaste Liquid WS-Waste Solid W-Wipe	t GW-Groum	W-MM IM	Secte Wir G	Jil S=Soil WL.	=Waste Liqui	WS-Waste Soli	W= Wine
ENAUGUITA. davidine Entruction (1/2)(27.979)	FAX NO	Con di	9.6P.9"	79,	No. C	Preservatives Used							
PROJECT NAME: D'CLIM MOND FY BY PROJECT NO.	A FA	163 PRO	JECT NO:		O TYPE	Analysis/ Method Recurrent	\ 2020		_		//	//	
STELOCATION: 1001 CLVA	/ Dies	A 10.	Ğ.:		A COMP	<u></u>	<u></u>				_	_	
SAMPLERS: 1					N G= GRAB	77.	_		<u></u>	<u></u>	_	_	
LABING SAMPLE IDENTIFICATION	NOI	DATE	TIME	MATRIX (See Codes)	ŒS	$\rightarrow$	<u></u>	<u></u>	_		<u>\</u>	/ REMARKS	S
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	Date	Time	Received By		2	Data Deli	appes	quired:		Shipping	ice Present PES femo. Shipping Carles: 1/1	the Present PE Temp Shipping Carles III	
Relinquished Bv: (3)	Date	Time	Received By:			Special In	Special Instructions:			24 - 20 - 20 - 20 - 20 - 20 - 20 - 20 -			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Relinquished Bv: (4)	Date	Time	Received By:			<b>T</b>							

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay tor the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable tees if collection becomes necessary.



# Phase Separation Science, Inc

# Sample Receipt Checklist

Mar Manakan	0070040	Decelored Dec	Back of Bosic
Wo Number	9072312	Received By	Rachel Davis
Client Name	Constellation Energy Group - CP Cra	Date Received	07/23/2009 04:10:00 PM
Project Name	Drummond Flyash	Delivered By	Client ~
Project Number	N/A	Tracking No	Not Applicable
Disposal Date:	08/27/2009	Logged In By	Rachel Davis
Shipping Conta	iner(s)		
No. of Cor Custody S Seal Cond	eals Absent / lition Not Applicable	Ice Temp (deg C) Temp Blank Pres	Present 5 sent No Name: Not Provided
Chain of C	Custody (COC) Yes or	No Samplei	Name. Not Provided
intact? Labeled a	ner e for Specified Analysis? Yes No and Labels Legible of Samples Received 1	Custody Seal(s) II Seal(s) Signed / E Total No. of Conta	• • • • • • • • • • • • • • • • • • • •
VOC, BTE Do VOA vi  Comments: (Ar  For any Improper p documentation of	(pH (pH> (pH> 0, Phenols (pH 1, NH3, Total Phos (pH 1X (VOA Vials Royd Preserved) (pH als have zero headspace? ny "No" response must be detailed preservation conditions, list sample ID, preservatory client notification as well as client instructions should be analyzed as soon as possible, prefere	in the comments ative added (reagent ID nons. Samples for pH, ch	umber) below as well as lorine and
Samples Inspecte	nd/Checklist Completed By:  PM Review and Approval:	Date:	7 23 9.

Printed: 07/23/2009 05:57 PM

# **Analytical Report for**

Constellation Energy Group
Certificate of Analysis No.: 9091404

Project Manager: Beth Pittaway
Project Name: Fly Ash Tests for MDE
Project Location: Various Coal Plants



September 22, 2009
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES: 6630 BALTIMORE NATIONAL PIKE ROUTE 40 WEST BALTIMORE, MD 21228 410-747-8770 800-932-9047

# PHASE SEPARATION SCIENCE, INC.



September 22, 2009

Beth Pittaway Constellation Energy Group 1005 Brandon Shores Rd. Baltimore, MD 21226

Reference: PSS Work Order No: 9091404

Project Name: Fly Ash Tests for MDE Project Location: Various Coal Plants

# Dear Beth Pittaway:

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered 9091404.

All work reported herein has been performed in accordance with referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on October 19, 2009. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

Laboratory Manager



# **Case Narrative Summary**

# Client Name: Constellation Energy Group Project Name: Fly Ash Tests for MDE

# Project ID: N/A

Work Order Number: 9091404

The following samples were received under chain of custody by Phase Separation Science (PSS) on 09/14/2009 at 01:21 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
9091404-001	Brandon Shores #1	SOLID	09/14/2009 09:00
9091404-002	Brandon Shores #2	SOLID	09/14/2009 09:00
9091404-003	Crane	SOLID	09/14/2009 09:00
9091404-004	Wagner #2	SOLID	09/14/2009 09:00
9091404-005	Wagner #3	SOLID	09/14/2009 09:00
9091404-006	Brandon Shores #4 Silo	SOLID	09/14/2009 09:00
9091404-007	Wagner Bottom Ash	SOLID	09/14/2009 09:00
9091404-008	Brandon Shores Wastewater Slud	SOLID	09/14/2009 09:00
9091404-009	Brandon Shores Bottom Ash	SOLID	09/14/2009 09:00

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in the Sample Receipt Checklist.

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

## **Narrative Comments:**

Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

All Sulfur results reported on an "as received" basis.

# Notes:

- 1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
- 3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

# Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- J The target analyte was positively identified below the reporting limit but greater than one-half of the reporting limit.

ND Not Detected at or above the reporting limit.

- RL Reporting Limit.
- U Not detected.

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# **PHASE SEPARATION** SCIENCE, INC.



# **CERTIFICATE OF ANALYSIS**

No: 9091404

Constellation Energy Group, Baltimore, MD

September 22, 2009

Project Name: Fly Ash Tests for MDE Project Location: Various Coal Plants

Sample ID: Crane Matrix: SOLID

Date/Time Sampled: 09/14/2009 09:00

PSS Sample ID: 9091404-003

Date/Time Received: 09/14/2009 13:21

% Solids: 100

Total Metals

Analytical Method: SW846 6020A

Preparation Method: SW846 3050B

	Result	Units	Rep Limit	Flag	Dil	Prepared	Analyzed	Analyst
Aluminum	46,000	mg/kg	24,000		1000	09/14/09	09/16/09 21:38	1033
Antimony	4.1	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Arsenic	170	mg/kg	0.2		1	09/14/09	09/15/09 15:22	1033
Barium	910	mg/kg	240		100	09/14/09	09/16/09 13:26	1033
Beryllium	5.9	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Boron	780	mg/kg	240	В	100	09/14/09	09/16/09 13:26	1033
Cadmium	1.7	mg/kg	2.4	J	1	09/14/09	09/15/09 15:22	1033
Calcium	68,000	mg/kg	4,700		100	09/14/09	09/16/09 13:26	1033
Chromium	120	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Cobalt	26	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Copper	88	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Iron	70,000	mg/kg	4,700		100	09/14/09	09/16/09 13:26	1033
Lead	80	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Lithium	43	mg/kg	1.2		1	09/14/09	09/15/09 15:22	1033
Magnesium	9,100	mg/kg	4,700		100	09/14/09	09/16/09 13:26	1033
Manganese	160	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Mercury	2.4	mg/kg	0.5		5	09/14/09	09/17/09 15:34	1033
Molybdenum	16	mg/kg	4.9		1	09/14/09	09/15/09 15:22	1033
Nickel	89	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Potassium	9,800	mg/kg	4,700		100	09/14/09	09/16/09 13:26	1033
Selenium	30	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Silver	ND	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Sodium	5,000	mg/kg	4,700	В	100	09/14/09	09/16/09 13:26	1033
Thallium	7.2	mg/kg	0.5		1	09/14/09	09/15/09 15:22	1033
Vanadium	230	mg/kg	2.4		1	09/14/09	09/15/09 15:22	1033
Zinc	170	mg/kg	9.7		1	09/14/09	09/15/09 15:22	1033

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# PHASE SEPARATION SCIENCE, INC.



# **CERTIFICATE OF ANALYSIS**

No: 9091404

Constellation Energy Group, Baltimore, MD

September 22, 2009

Project Name: Fly Ash Tests for MDE Project Location: Various Coal Plants

Sample ID: Crane Matrix: SOLID

Date/Time Sampled: 09/14/2009 09:00

PSS Sample iD: 9091404-003

Date/Time Received: 09/14/2009 13:21

Total Metals

Analytical Method: SW846 6010B

i otai wetais	Analytical Method. S	5VV040 0I	J I V B				
	Result	Units	Rep Limit Flag		Prepared	Analyzed A	\ <u>nalyst</u>
Sulfur	13,400	mg/kg	714		09/15/09	09/15/09 14:14	4005
TCLP Metałs	Analytical Method: 5	SW846 60	020A	Prep	paration Me	thod: SW846 3050	ЭВ
	Result	Units	TCLP Limit Flag	Dil	Prepared	Analyzed A	nalyst
Arsenic	ND	mg/L	5.0	1	09/14/09	09/15/09 16:12	1034
Barium	ND	mg/L	100	1	09/14/09	09/15/09 16:12	1034
Cadmium	ND	mg/L	1.0	1	09/14/09	09/15/09 16:12	1034
Chromium	ND	mg/L	5.0	1	09/14/09	09/15/09 16:12	1034
Lead	ND	mg/L	5.0	1	09/14/09	09/15/09 16:12	1034
Mercury	ND	mg/L	0.200	1	09/14/09	09/15/09 16:12	1034
Selenium	ND	mg/L	1.0	1	09/14/09	09/15/09 16:12	1034
Silver	ND	mg/L	5.0	1	09/14/09	09/15/09 16:12	1034
TCLP Organochlorine Pesticides	Analytical Method: S	SW846 80	981B	Prep	aration Met	thod: SW846 3510	C
	Result	Units	TCLP Limit Flag	Dìl	Prepared	Analyzed A	<u>nalyst</u>
Chlordane	ND	mg/L	0.030	1	09/15/09	09/16/09 12:55	1029
Endrin	ND	mg/L	0.020	1	09/15/09	09/16/09 12:55	1029
gamma-BHC (Lindane)	ND	mg/L	0.400	1	09/15/09	09/16/09 12:55	1029
Heptachlor	ND	mg/L	0.008	1	09/15/09	09/16/09 12:55	1029
Heptachlor epoxide	· ND	mg/L	0.008	1	09/15/09	09/16/09 12:55	1029
Methoxychlor	ND	mg/L	10	1	09/15/09	09/16/09 12:55	1029
Toxaphene	ND	mg/Ł	0.500	1	09/15/09	09/16/09 12:55	1029
TCLP Chlorinated Herbicides	Analytical Method: S	SW846 81	51A				
	Result	Units	TCLP Limit Flag	Dìl	Prepared	Analyzed A	nalyst
2,4-D	ND	mg/L	10	1	09/15/09	09/15/09 20:56	1029
2,4,5-TP (Silvex)	ND	mg/L	1.0	1	09/15/09	09/15/09 20:56	1029

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# PHASE SEPARATION SCIENCE, INC.



# **CERTIFICATE OF ANALYSIS**

No: 9091404

Constellation Energy Group, Baltimore, MD

September 22, 2009

Project Name: Fly Ash Tests for MDE Project Location: Various Coal Plants

Sample ID: Crane Matrix: SOLID

Date/Time Sampled: 09/14/2009 09:00

PSS Sample ID: 9091404-003

Date/Time Received: 09/14/2009 13:21

TCLP Volatile Organic Compounds

Analytical Method: SW846 8260B

Preparation Method: SW846 5030B

	Result	Units	TCLP Limit Flag	_Dil	Prepared	Analyzed	Analyst
Vinyl chloride	ND	mg/L	0.2	20	09/15/09	09/15/09 15:28	3 1011
1,1-Dichloroethene	ND	mg/L	0.7	20	09/15/09	09/15/09 15:28	3 1011
2-Butanone (MEK)	NĐ	mg/L	200	20	09/15/09	09/15/09 15:28	1011
Chioroform	ND	mg/L	6.0	20	09/15/09	09/15/09 15:28	1011
1,2-Dichloroethane	ND	mg/L	0.5	20	09/15/09	09/15/09 15:28	1011
Carbon tetrachloride	ND	mg/L	0.5	20	09/15/09	09/15/09 15:28	1011
Benzene	ND	mg/L	0.5	20	09/15/09	09/15/09 15:28	1011
Trichloroethene	ND	mg/L	0.5	20	09/15/09	09/15/09 15:28	1011
Tetrachloroethene	ND	mg/L	0.7	20	09/15/09	09/15/09 15:28	1011
Chlorobenzene	ND	mg/L	100	20	09/15/09	09/15/09 15:28	1011
1,4-Dichlorobenzene	ND	mg/L	7.5	20	09/15/09	09/15/09 15:28	1011

TCLP Semivolatile Organic Compounds

Analytical Method: SW846 8270C

Preparation Method: SW846 3550

	Result	Units	TCLP Limit Flag	Dil	Prepared	Analyzed	Analyst
2,4-Dinitrotoluene	ND	mg/L	0.130	1	09/15/09	09/16/09 00:58	1014
Hexachlorobenzene	ND	mg/L	0.130	1	09/15/09	09/16/09 00:58	1014
Hexachlorobutadiene	ND	mg/L	0.500	1	09/15/09	09/16/09 00:58	1014
Hexachloroethane	ND	mg/L	3.0	1	09/15/09	09/16/09 00:58	1014
2-Methyl phenol	ND	mg/L	200	1	09/15/09	09/16/09 00:58	1014
3&4-Methylphenol	ND	mg/L	200	1	09/15/09	09/16/09 00:58	1014
Nitrobenzene	ND	mg/L	2.0	1	09/15/09	09/16/09 00:58	1014
Pentachlorophenol	ND	mg/L	100	1	09/15/09	09/16/09 00:58	1014
Pyridine	ND	mg/L	5.0	1	09/15/09	09/16/09 00:58	1014
2,4,6-Trichlorophenol	ND	mg/L	2.0	1	09/15/09	09/16/09 00:58	1014
2,4,5-Trichtorophenol	ND	mg/L	400	1	09/15/09	09/16/09 00:58	1014



# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.comemail: info@phaseonline.com

(					I										
CLIENT: CPSG	CPSG	OFFIC	OFFICE LOC. Coal Yard	l Yard		RSS Work Order #			カツアンかのか	Ì	77.		PAGE 1		OF 1
PROJECT	PROJECT MGR: Beth Pittaway	PHON	PHONE NO.: 410-787-5320	787-532(	0	Matrix Codes: SW=Surface	S: Wfr DW	-Orinking Wri	GW-Ground	Wir WW-W	aste Wir O	Of S-Soil W	R-Waste Lic	ouid WS-	Matrix Codies: SW-Surface WIT DW-Drinking Writ GW-Ground Wir WW-Waste Wir O-Off 8-Soil WIL-Waste Liquid WS-Waste Soild W-Wine
EMAIL: DE	EMAIL: beth.pittaway@constellation.comFAX NO.:	COM FAX N	Ì	410-787-5424	4	<u>§</u> ∪	Į.								Preservative
PROJECT	PROJECT NAME: Fly Ash Tests for MDE	or MDE	*	PROJECT NO.:		0 Z I	TYPE	nar							V
SITE LOC	SITE LOCATION: Various coal plants	nts	P.O. NO.:	Ş		- 4 -	C ∓ COMP	Co							Analysis/ Wethod
SAMPLERS	38:	D₩	CERT NO.	. :		- <del>Z</del> Ш	GBAB	орес							Required
SE ES	SAMPLE IDENTIFICATION	NOIT	DATE	TIME	MATRIX (See Codes)	E O	• • •	ettA				·			HEMARKS \$\left\right\right\}
	Brandon Shores # 1	#1	9/14/09	9am	Fly Ash	-	ပ	>				-	-	₹	Click to enter Remarks
7	Brandon Shores # 2	#2	9/14/09	9am	Fly Ash	-	ပ	>						-	
2	Crane		9/14/09	9am	Fly Ash	-	၅	\ <u>\</u>						-	
	Wagner # 2		9/14/09	9am	Fly Ash	-	ပ	\ <u>\</u>				-		-	
S	Wagner # 3		9/14/09	9am	Fly Ash	-	Ű	>				-		-	
9	Brandon Shores #45.16	*45.16	4/14/09	gam	FlyAsh		ত							╀	
	Wagner Bothom Ash		6/14/6	gam	Btm Ash	_	שׁ					<u> </u>		$\vdash$	
V 1 1 1 2 2 2	Bianden Sheres lithstemater Stude	Marker Shuk	x 264109	gam	Suskie	~	Ġ							-	
9	Brandon Shores Brittem Ash	dsH ma	1 player	i 1	BhmAsh	,	9							$\vdash$	; ;
(5)							`							_	
Relinquist	led By: (1)	Date,	Time	C Received By	/ / 74		•	P. B.	Requested Turnaround Time	naround	Time.	# of Coolers:			
トスス	THUM Blow	9/14/9					$\overline{\zeta}$	5-Dev	3-5-	3-Day	2-0-6 0-0-0-6 0-0-0-6 0-0-0-6 0-0-0-0-	Custod		200	
Relinquished By: (2)		Date	Типе	Received By			1	Data Deliw	<del>-</del>	nirad:	1	5 P	ice Present DBS Temp.		
Relinquished By: (3)	ed By: (3)	Date	Time	Received By:	By:			Oracle Inches	1					3	- 2 0
								Please	special instructions. Please test samples per attached Comar 26.21.04.05B	ples p	er atta	ched C	omar 2	26.21.	04.05B
Relinquished By: (4)	ed By: (4)	Date	Time	Received Bv:	. <del>X</del>					12 PM	_				
							-								

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723
The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable tees if collection becomes necessary.

9091404

# Amy

From:

Pittaway, Beth [Beth Pittaway@constellation.com]

Sent:

Monday, September 14, 2009 2:17 PM

To:

'amyf@phaseonline.com'

Cc:

despinoza@Geosyntec com; mlloyd1@a-oenv com

Subject:

CCB analyses

Attachments: Document.pdf

# Amy,

Nine samples were just dropped off to you for analysis labeled as:

- 1. Brandon Shores Unit 1
- 2. Brandon Shores Unit 2
- 3. Brandon Shores #4 Silo
- 4 Brandon Shores Bottom Ash
- 5. Brandon Wastewater sludge
- 6. Wagner Unit 2
- 7. Wagner Unit 3
- 8. Wagner Bottom Ash
- 9 Crane Ash

We require a Total analysis for the elements detailed in the attached COMAR 26.21.04.05 B. We also need a full TCLP on the samples as required in COMAR 26.21.04 03A(3) which references 40 CFR Section 261 24.

Thanks for your help and the quick turn around.

Beth Pittaway Assistant General Supervisor Fuel and Ash Handling 410-787-5320 410-733-2165 (cell)

>>> This e-mail and any attachments are confidential, may contain legal, professional or other privileged information, and are intended solely for the addressee. If you are not the intended recipient, do not use the information in this e-mail in any way, delete this e-mail and notify the sender. CEG-IP2

Iry Another Page | Return to Main COMAR Search Page

26 21 04 05

# .05 Initial and Ongoing Characterization.

Phase Separation 410-747-8770
Army FR

phase on line com

monocoal A. A person who uses or intends to use, or gives, sells, or otherwise provides for use, coal combustion byproducts for noncoal surface mine reclamation shall develop and implement a sampling plan, using a methodology acceptable to the Department for the initial characterization of the coal combustion byproducts.

B The sampling plan shall include the following:

(1) A list of the parameters to be analyzed and their detection limits (Practical Quantitation Limits—PQL), which shall include, at a minimum, the following:

# ELEMENTS AND INDICATOR PARAMETERS PQL(mg/kg)

	- · · •
Total Aluminum	40
Total Antimony	1
Total Arsenic	1
Total Barium	1
Total Beryllium	1
Total Boron	20
Total Cadmium	1
Total Caromium	1
Total Calcium	1
Total Cobalt	1
Total Copper	2
Total Iron	500
Total Lead	1
Total Magnesium	100
Total Lithium	1
Total Manganese	1
Total Mercury	0.2
Iotal Molybdenum	10
Total Nickel	5
Total Potassium	100
Total Selenium	4
Total Silver	1
Fotal Sodium	100
Total Sulfur	10
Total Thallium	50.0
Total Vanadium	4
Total Zinc	10

- (2) A description of analytical methods to be used in the characterization, which is subject to the approval of the Department; and
- (3) Other information as may be required by the Department.

26.21.04.05 Page 2 of 2

C Coal combustion byproducts shall be characterized in accordance with the sampling plan developed under §A of this regulation at least one time per calendar year.

- D. L'aboratory results from the initial and ongoing characterizations of the coal combustion byproducts shall be submitted to the Department and to any recipients of the coal combustion byproducts.
- Elifthere is a change in the raw materials of processes that generate the coal combustion byproducts, the generator of the coal combustion byproducts shall characterize the byproducts in accordance with the sampling plan and submit the results to the Department. All subsequent characterizations shall include any additional parameters found in the coal combustion byproducts.

Ity Another Page | Return to Main COMAR Search Page

26 21 04.03

# .03 Authorization of Use and General Requirements.

# A Authorization of Use

- (1) Coal combustion byproducts may be used in the reclamation of a permitted noncoal surface mine only when approved by the Department.
- (2) The Department shall review and approve the use as part of a permit review or permit modification in accordance with this chapter and in accordance with the applicable provisions of Environment Article, Title 15, Subtitle 8, Annotated Code of Maryland, and COMAR 26 21

# B. General Requirements.

- (1) Five gas desulfurization studge and other solid residuals recovered from flue gas by wet or dry methods that are generated by the combustion of east may not be used in the reclamation of a noncoal surface mine
- (2) The use of coal combustion byproducts in the reclamation of a noncoal surface mine shall be designed to prevent the degradation of water quality.
- (3) Coal combustion hyproducts containing a constituent at a level exceeding the TCLP toxicity limits defined in 40 CFR §261.24 may not be used in the reclamation of a noncoal surface mine.
- (4) To minimize leachate generation, coal combustion hyproducts used in noncoal surface mine reclamation shall be placed in layers and compacted to at least 90 percent of its maximum dry density based on ASTM D698 (Standard Proctor), or to a permeability of less than 10-5 centimeters/second. Thickness of each layer may not be greater than 12 inches
- (5) Final grade of a site after reclamation may not exceed approximate pre-mining contours at the site, except where post-mining land use requires minimal variation and is approved by the Department.
- (6) Coal combustion byproducts may not be placed in ground or surface waters and may not be placed within 3 feet of the maximum expected ground water elevation at the site, unless the Department approves otherwise upon a demonstration that ground water contamination will not occur.
- (7) The area of exposed coal combustion byproducts at a site shall be minimized and may not exceed 5 acres unless approved by the Department
  - (8) Coal combustion byproducts at a site shall be immediately placed and compacted and may not be stockpiled.
- (9) If placement of coal combustion byproducts is halted for more than 15 days, the coal combustion byproducts shall be covered to prevent infiltration of ground or surface water.
  - (10) Adequate measures shall be taken to minimize dust at a site as follows:
- (a) A person shall control dust by moisture-conditioning the coal combustion byproducts before they leave the coal combustion byproducts generating facility, or by handling them in sealed containers designed for transportation of powdery solids and moisture-conditioning them prior to off-leading them to the ground;
  - (b) A person shall control dust by spreading and compacting the coal combustion byproducts upon arrival at a site;
  - (c) A person may not store uncompacted coal combustion byproducts at a site;
  - (d) A water truck shall be available to add water at a site as needed for fugitive dust control; and
  - (e) The Department may require other measures it considers necessary to protect public health and the environment

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9/14/2009

26 21.04 03

Page 2 of 2

- (11) Only coal combustion byproducts obtained from sources approved by the Department may be used at a site
- (12) Coal combustion byproducts may not be placed within 200 feet of any lands not owned by the permittee or owner
- (13) A permittee shall implement an erosion and sediment control plan that satisfies the requirements of Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland, and COMAR 26.17.01
- (14) A permittee shall provide a minimum of two upgradient and two downgradient monitoring wells at a site. The Department may require additional monitoring wells based upon site conditions. Monitoring wells shall be constructed and installed by a Statelicensed well driller in accordance with COMAR 26.04.04. The well screen or slotted casing shall extend from the seasonally high water table downward a minimum of 15 feet.
  - (15) A permittee shall comply with all other permits and approvals required by the Department

in ASTM Standard D-3278-78 (incorporeted by reference, sec \$260.11), or as determined by an equivalent test method approved by the Administrator under procedures set forth in \$5250.20 and 260.21

(2) It is not a liquid and is capable under standard temperature and pres-sure, of causing fire through friction, absorption of molsture or spontaneous chemical changes and when ignited burns so vigorously and persistently that it creates a hazard

(3) It is an ignitable compressed gas as defined in 49 CFR 173 300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Adminis-trator under \$5280.20 and 260.21.

(4) It is an oxidizer as defined in 49

CFR 173 151.

(b) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D061

[45 FR 33110 May 19, 1980 as amerided at 46 RR 35247 July 7 1981; 55 FR 22684 June 1

# § 261.22 Characteristic of corresivity.

(a) A solid waste exhibits the characteristic of corrosivity if a rapresentative sample of the waste has either of

the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 2010 in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in \$260.11 of this chapter.

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0 250 inch) per year at a test tem-perature of 55 °C (130 °F) as determined by the test method specified in NACE (National Association of Corresion Engineers) Standard TM-01-69 as stand-ardized in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." EPA Publication SW-846, as incorporated by reference in \$260 11 of this chapter:

(b) A solid waste that exhibits the characteristic of corresivity has the EPA Hazardous Waste Number of D002

(45 FR 35118 May 18, 1980 as amended at 46 PR 35247, July 7, 1981; 55 FR 22684 June 1, 1990; 58 FR 46049 Aug. 31 1993)

\$251.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the weste has any of the following properties:

(i) It is normally unstable and readily undergoes violent change without

detonating.

(2) It reacts violently with water

(3) It forms potentially explosive mixtures with water

(4) When mixed with water it gonerates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH con-ditions between 2 and 12.5, can generate texte gases, vapors or furnes in a quantity sufficient to present a danger to human health or the environment

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure

(8) It is a forbidden explosive as dofined in 49 CFR 173.51, or a Class A ex-plosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173 88

(b) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003

[45 FR 33119, May 16, 1989, as amended at 55 FR 22584; June 1, 1980]

# 1261-24 Toxicity characteristic

(a) A solid waste (except manufac-tured gas plant waste) exhibits the characteristic of toxicity if using the Toxicity Characteristic Leaching Pro-cedure, test Method [31] in Test Methode for Evaluating Solid Waste. Physical/Chemical Methods. EPA Publication SW-848, as incorporated by reference in \$260.11 of this chapter, the extract from a representative sample of the waste contains any of the centerninants listed in table I at the concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids the waste

itself, after filtering using the methodology outlined in Method 1311, is constdered to be the extract for the purness of this section.

pase of this section.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous

Tang I - Markey Corresponded of Contamber Pie The Cooley (Habacteriste)

EPA HW No:	Conteminent	CAS No. #	Fleggy- latory Lavel (mg/L)
D004	Arsenic	7440-38-2	6.0
1700S	Argenic Berluin	7440-59-3	100.0
DO16	Senzene	71-43-2	0.5
D008	Carrien	7440-43-0	1.0
D019	Cartion terrachionide	56-23-6	0.5
0020	Chiordana	67-74-6	0.63
D021	Chlorobenzene	108-90-7	f00.0
12022	Chiorotom	67-68-3	:6-0
0007	Cityromium	7440-47-3	5.0
0023 0024	o-Cresol m-Cresol	95-48-7	1200 A
D025	The Comment	108-30-4	4200.0 +200.0
D028	p-Ciraci Cresol	100-00-0	*200.0
D016	2.40 montement	94-75-7	10.0
D007	1,4-Dichlorobenzene	106-48-7	75
D028	1,3-Dichloroethens	107-06-2	0.5
0026	1,1-Dichloroethylane	75-35-4	0.7
D080	2.4-Dinitrotobrese	121-14-2	30.12
D012	Enden	72-20-8	0.02
Q031	Ender	76-44-8	0.008
D032	Hexachiorobenzene	118-74-1	70.13
0033	Headinorobutediene	87-68-6	0.5
D034	Hereohioroetherre	67-72-t	3.0
DOGS	Lead	7439-82-1	5.0
0013	Limiterio	58-89-9	0.4
6000	Marcuty	7439-97-6	0.2
D014	Methogohier	72-43-5	10.0
D035	Methyl ethyl ketons	78-03-3	200.0
DOSE	Pentractionophenoi	98-95-3	2.0
D037	Perimenteropheno	67-86-5	100.0
D038	Pyridine	#10 <b>-80</b> -1	86.0
DO10	i Salehium	7782-48-2	1.0
0011	Shirer management	7440-22-4	5.0
D039	Tetracriomethylene	127-18-4	97
D015	Torrephene	8001-35-2	0.5
D046	Tricharoethylene	70 01-6	0.5
D041	2,4,5 Inchiorophenol	95-95-4	400.0
0042	2,4,6 Trichloroptional	88-06-2	2.0
0017	2.4.6 TP (Seven)	99-72-1	1.0
0043	Virgi chioride	75-01-4	0.2

1 Hazardous waste number.

\*Chiefficial abstracts service number.
\*Culentimien sink is greater than the calculated regulatory from the cultural regulatory from the cultural state.

evel.

"If or, to-, and or Creant concentrations cannot be differentiated, the total creek (10025) concentration is used. The requision level of total oresol is 200 mg/s.

[55 FR 11862, Mar 29., 1990, as arrended at 55 FR 22864, June 1, 1990; 65 FR 20987, June 29 1990; 85 FR 46049 Aug 31, 1993; 67 PR 11254, Mar 13, 2002]

# Subpart D Lists of Hazardous Wantes

# \$261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this subpart, unless it has been excluded from this list under \$250.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrostve Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(11)
Toxic Waste	m

Appendix VII identifies the constituent which caused the Administrator to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in \$5261 31 and 281 32.

(c) Each hazardous waste listed in this subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act, and certain recordkeeping and reporting requirements under parts 262 through 265, 288, and part 270 of this chapter.

(ii) The following hazardous wastes listed in \$261.31 or \$261.32 are subject to the exclusion limits for acutely hazardous wastes established in \$261.5: EPA Hazardous Wastes Nos. FO20, FO21 FO22 FO23 FO26, and FO27.

[45 FR 33119, May 19, 1989, as amended at 48 FR 14294, Apr. 1, 1983; 50 FR 2000, Jan. 14 1985; 51 FR 46636, Nov. 7, 1986; 55 FR 11863 Mar 29 1990]

# \$281.31 Hazardous wastes from nonspecific sources.

(a) The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under \$\$260.20 and 200.22 and listed in appendix IX



# Phase Separation Science, Inc.

# Sample Receipt Checklist

Croject Name   Constellation Energy Group   Date Received   09/14/2009 01:21:00 PM   Project Name   Fly Ash Tests for MDE   Delivered By   Client   Project Number   N/A   Tracking No   Not Applicable   Project Number   N/A   Tracking No   Not Applicable   Project Number   N/A   Tracking No   Not Applicable   Disposal Date:   10/19/2009   Logged In By   Rachel Davis   Shipping Container(s)   Ice   Absent   Custody Seals   Absent   Temp (deg C)   30   Seal Condition   Not Applicable   Temp Blank Present No   Documentation   COC agrees with sample labels?   X yes or   No   Sampler Name: Not Provided   Chain of Custody (COC)   X yes or   No   Sample Container   Approplate for Specified Analysis? Yes X   No   Custody Seal(s) Intact?   Not Applicable   Intact?   X   Custody Seal(s)   Intact?   Not Applicable   Seal(s) Signed / Dated   Not Applicable   Total No of Samples Received   9   Total No. of Containers Received   18    Preservation   Yes   No   N/A   Metals   (pH-2)   X   Cyanides   (pH-2)   X   Cy	Cilient Name Constellation Energy Group Date Received 09/14/2009 01:21:00 PM Project Name Fly Ash Tests for MDE Delivered By Client Project Number N/A Tracking No Not Applicable Disposal Date: 10/19/2009 Logged in By Rachel Davis Shipping Container(s) No. of Coolers 1 Ice Absent Custody Seals Absent Temp (deg C) 30 Temp Blank Present No  Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC) Yes or No  Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Intact? Not Applicable Intact? Labeled and Labels Legible Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals (pH<2) Yes No N/A  Metals (pH>2) Yes No N/A  Metals (					
Project Name Fly Ash Tests for MDE Delivered By Client Project Number N/A Tracking No Not Applicable Project Number N/A Tracking No Not Applicable Disposal Date: 10/19/2009 Logged In By Rachel Davis Shipping Container(s)  No. of Coolers 1 Ice Absent Custody Seals Absent Termp (deg C) 30 Seal Condition Not Applicable Temp Blank Present No  Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC) Yes or No  Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Intact? Not Applicable Intact? Labeled and Labels Legible X Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation Yes No N/A  Metals (pH<2) Cyanides (pH>12) Sulfide (ph>9) TOC, COD, Phenols (pH>2) TOX, TKN, NH3, Total Phos (pH<2) VOC, BTEX (VOA Vials Rovd Preserved) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any impropar preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as ellent instructions. Samples for pH, Incloides and diasolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.	Project Name Fly Ash Tests for MDE Delivered By Client Project Number N/A Tracking No Not Applicable Disposal Date: 10/19/2009 Logged in By Rachel Davis Shipping Container(s) No. of Coolers 1 ice Absent Custody Seals Absent Temp (deg C) 30 Temp Blank Present No Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC) Yes or No Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Intact? Approplate for Specified Analysis? Yes X No Custody Seal(s) Intact? Not Applicable Labeled and Labels Legible Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals (pH<2) Yes No N/A  Metals (pH<2) Yes No N/A  Metals (pH>9) TOC, COD, Phenols (pH>9) TOC, COD, Phenols (pH>2) TOX, TKN, NH3, Total Phos (pH>2) VOC, BTEX (VOA Vials Rovd Preserved) (pH<2) VOC, BTEX (VOA Vials Rovd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.) For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as commentation of any client notification as well as commentation of any client notification as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By: PM Review and Approval:  Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review and Approval: Date: 915 99 PM Review a	Wo Number	9091404		Received By	Rachel Davis
Project Number N/A Disposal Date: 10/19/2009 Shipping Container(s) No. of Coolers 1 Custody Seals Absent Temp (deg C) 30 Seal Condition Not Applicable  Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC)  Sample Container  Approplate for Specified Analysis? Yes No Custody Seal(s) Intact? Not Applicable Total No of Samples Received 9  Preservation  Metals (pH<2) Cyanides (pH>12) Suifide (pH>2) Suifide (pH>2) Suifide (pH>2) Suifide (pH>2) Suifide (pH>2) TOX, TKN, NH3, Total Phos VOC, BTEX (VOA Vialis Rovd Preserved) Do VOA vialis have zero headspace?  Camples Inspected/Checklist Completed By:  Date: 4  Samples Inspected/Checklist Completed By:  Cyanides (privation Samples for ph, othoring as well as documentation of any client notification as well as client instructions. Samples for ph, othoring as well as documentation of any client notification as possible, preferably in the field at the time of earspling.	Project Number N/A Disposal Date: 10/19/2009 Shipping Container(s) No. of Coolers 1 Custody Seals Absent Temp (deg C) 30 Seal Condition Not Applicable  Documentation COC agrees with sample labels? Chain of Custody (COC)  Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Intact? Labeled and Labels Legible X Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9  Preservation  Metals (pH<2) Cyanides (pH+2) Suifide (pH>9) TOC, COD, Phenois TOX, TKN, NH3, Total Phos (pH<2) VOC, BTEX (VOA Vials Rave Preserved) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative in the field at the time of eampling.	Client Name	Constellation Energy Gr	oup	Date Received	09/14/2009 01:21:00 PM
Disposal Date: 10/19/2009   Logged In By   Rachel Davis	No. of Coolers   1	Project Name	Fly Ash Tests for MDE		Delivered By	Client
Shipping Container(s)  No. of Coolers 1 Custody Seals Absent Temp (deg C) 30 Seal Condition Not Applicable Temp Blank Present No  Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC)  Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Absent Intact? Labeled and Labels Legible X Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation Yes No N/A  Metals (pH<2) Cyanides (pH>12) Suffide (ph>9) TOC, COD, Phenols (pH<2) TOC, COD, Phenols (pH<2) TOC, COD, Phenols (pH<2) TOC, COD, Phenols (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any ellent notification as well as client instructions. Samples for pti, chlorine and diasolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.	Shipping Container(s)  No. of Coolers 1	roject Number	N/A		Tracking No	Not Applicable
No. of Coolers 1 Custody Seals Absent Temp (deg C) 30 Seal Condition Not Applicable Temp Blank Present No  Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC)  Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Absent Intact? Labeled and Labels Legible X Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals (pH<2) Cyanides (pH>12) Suifide (pH>9) TOC, COD, Phenols (pH<2) TOC, COD, Phenols (pH<2) TOC, COD, Phenols (pH<2) TOC, STEX (VOA Vials Rovd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and diasolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.	No. of Coolers  Custody Seals Absent Seal Condition Not Applicable  Documentation  COC agrees with sample labels? X Yes or No Sampler Name: Not Provided Chain of Custody (COC) X Yes or No  Sample Container  Appropriate for Specified Analysis? Yes X No Custody Seal(s) Absent Intact?  Labeled and Labels Legible X Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals (pH<2) X Sulfide (pH>9) X  Cyanides (pH>12) X  Sulfide (pH>9) X  TOX, TKN, NH3, Total Phos (pH<2) X  VOC, BTEX (VOA Valas Rovd Preserved) (pH<2) X  Do VOA valas have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as silant instructions. Samples Roy enhanced as soon as possible, preferably in the field at the time of sampling.  Samples Inspected/Checklist Completed By: PM Review and Approval: Date: 9115 199  PM Review and Approval: Date: 9115 199	Disposal Date:	10/19/2009		Logged In By	Rachel Davis
Custody Seals Absent Temp (deg C) 30  Temp Blank Present No  Documentation  COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC) Yes or No  Sample Container  Approplate for Specified Analysis? Yes X No Custody Seal(s) Absent Intact?  Approplate for Specified Analysis? Yes X No Custody Seal(s) Intact? Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals (pH<2) Yes No N/A  Metals (pH<2) Yes No N/A  Metals (pH>2) Yes No N/A  Metals (pH>9) X  TOC, COD, Phenols (pH>2) X  CVC, BTEX (VOA Vials Rovd Preserved) (pH<2) X  VOC, BTEX (VOA Vials Rovd Preserved) (pH<2) X  Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification se well se client instructions. Samples for pH, chlorine and classofted oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.	Custody Seals Absent Temp (deg C) 30 Temp Blank Present No  Documentation COC agrees with sample labels? Yes or No Sampler Name: Not Provided Chain of Custody (COC) Yes or No  Sample Container  Approplate for Specified Analysis? Yes No Custody Seal(s) Absent Intact? Labeled and Labels Legible Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals (pH<2) Yes No N/A  Metals (pH>9) Yes No N/A  Metals (pH>9) Yes No N/A  TOC, COD, Phenols (pH>9) Yes No N/A  TOC, COD, Phenols (pH>9) Yes No N/A  TOC, TOX, TKN, NH3, Total Phos (pH<2) Yes No N/A  VOC, BTEX (VOA Vials Revel Preserved) (pH<2) Yes No N/A  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.	Shipping Conta	ainer(s)			
COC agrees with sample labels?	COC agrees with sample labels?  Yes or No Sampler Name: Not Provided Chain of Custody (COC)  Yes or No Sampler Name: Not Provided Yes or No Sampler Name: Not Provided Yes or No Custody Seal(s) Intact?  Appropriate for Specified Analysis? Yes No Custody Seal(s) Intact? Not Applicable Intact?  Yes No Not Applicable Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Yes No N/A	Custody S	Seals Absent	9	Temp (deg C)	30
Approplate for Specified Analysis? Yes No Custody Seal(s) Absent Intact?  Labeled and Labels Legible Seal(s) Signed / Dated Not Applicable Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation Yes No N/A  Metals (pH<2) Yes No N/A  Cyanides (pH>9) Yes No N/A  Suffide (pH>9) Yes No N/A  TOC, COD, Phenois (pH<2) Yes No N/A  TOC, COD, Phenois (pH<2) Yes No N/A  TOX, TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX, TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, Total Phos (pH<2) Yes No N/A  TOX TKN, NH3, TXN, TXN, TXN, TXN, TXN, TXN, TXN, TXN	Approplate for Specified Analysis? Yes No Custody Seal(s) Absent Intact?  Labeled and Labels Legible Seal(s) Signed / Dated Not Applicable Seal(s) Signed / Dated Not Applicable Total No of Samples Received 9 Total No. of Containers Received 18  Preservation Yes No N/A  Metals (pH<2) Cyanides (pH>12) Sulfide (pH>9) TOC, COD, Phenols (pH<2) TOX, TKN, NH3, Total Phos (pH<2) VOC, BTEX (VOA Vials Rovd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.	COC agre	ees with sample labels?			Name: <u>Not Provided</u>
Intact?  Labeled and Labels Legible Total No of Samples Received  Preservation  Metals Cyanides Cyanid	Intact? Labeled and Labels Legible Total No of Samples Received 9 Total No. of Containers Received 18  Preservation  Metals Cyanides Cyanides Cyanides Cyanides Cyanides TOC, COD, Phenols TOC, COD, Phenols TOC, TKN, NH3, Total Phos VOC, BTEX (VOA Vials Royd Preserved) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Date:  PM Review and Approval:  Date:	Sample Contain	ner			
Metals (pH<2) Cyanides (pH>12) Sulfide (pH>9) TOC, COD, Phenols (pH<2) TOX, TKN, NH3, Total Phos (pH<2) VOC, BTEX (VOA Vials Roud Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.) For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples inspected/Checklist Completed By:  Date:  91519  Guide (pH<2) Do VOA vials Roud Preserved) Do VOA vials have zero headspace?	Metals (pH<2) Cyanides (pH>12) Sulfide (pH>9) TOC, COD, Phenols (pH<2) YOC, BTEX (VOA Vials Royd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling.  Samples Inspected/Checklist Completed By:  PM Review and Approval:  Date: 915.99  PM Review and Approval:  Date: 915.99  Date: 915.99	Intact? Labeled a	nd Labels Legible	Yes X No X 9	Custody Seal(s) li Seal(s) Signed / I	ntact? Not Applicable Dated Not Applicable
Metals  Cyanides  Cyanides  (pH>12)  Sulfide  (pH>9)  TOC, COD, Phenols  TOX, TKN, NH3, Total Phos  VOC, BTEX (VOA Vials Rcvd Preserved)  Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples inspected/Checklist Completed By:  Date:  QUELTY  Date:	Metais (pH<2) Cyanides (pH>12) Suifide (pH>9) TOC, COD, Phenols (pH<2) TOX, TKN, NH3, Total Phos (pH<2) VOC, BTEX (VOA Vials Rovd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.) For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By: PM Review and Approval:  Date: 915/09  Date: 915/09	Preservation			Yes 1	In N/A
Sulfide TOC, COD, Phenois TOX, TKN, NH3, Total Phos VOC, BTEX (VOA Vials Rcvd Preserved) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.) For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By:  Date:  Date:	Suiffide (pH>9)  TOC, COD, Phenois (pH<2)  TOX, TKN, NH3, Total Phos (pH<2)  VOC, BTEX (VOA Vials Rcvd Preserved) (pH<2)  Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples inspected/Checklist Completed By:  PM Review and Approval:  Date:  Date:  Date:	Metals		(pH<		X
TOC, COD, Phenois  TOX, TKN, NH3, Total Phos  VOC, BTEX (VOA Vials Rcvd Preserved)  Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples inspected/Checklist Completed By:  Date:  Date:	TOC, COD, Phenols  TOX, TKN, NH3, Total Phos  VOC, BTEX (VOA Vials Rcvd Preserved)  Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By:  PM Review and Approval:  Date:  Date:  Date:	Cyanides		(pH>	12)	<u>X</u>
TOX, TKN, NH3, Total Phos  VOC, BTEX (VOA Vials Revd Preserved) (pH<2)  Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Camples Inspected/Checklist Completed By:  Date:  91519  Guilling	TOX, TKN, NH3, Total Phos (pH<2) VOC, BTEX (VOA Vials Rcvd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By:  PM Review and Approval:  Date:  91519  PM Review and Approval:  Date:			(pH>	9)	<u> </u>
VOC, BTEX (VOA Vials Rovd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Camples inspected/Checklist Completed By:  Date: 91519	VOC, BTEX (VOA Vials Rcvd Preserved) (pH<2) Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling.  Samples Inspected/Checklist Completed By:  PM Review and Approval:  Date:  91519  PM Review and Approval:  Date:	•	•	**	<i>,</i> ——— —	<u> </u>
Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Camples inspected/Checklist Completed By:  Date:  91519  Guidage	Do VOA vials have zero headspace?  Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples inspected/Checklist Completed By:  PM Review and Approval:  Date:  Date:  Date:	•		**		<del>X</del> _
Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples inspected/Checklist Completed By:  Date:  91519	Comments: (Any "No" response must be detailed in the comments section below.)  For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By:  PM Review and Approval:  Date:  Date:		•	, ,,	2)	— <del>X</del> -
For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By:  Date:  91519	For any improper preservation conditions, ilst sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of eampling.  Samples Inspected/Checklist Completed By:  PM Review and Approval:  Date:  91519  PM Review and Approval:  Date:	Do VOA vi	lals have zero headspace	?		<u>X</u> _
alichon	PM Review and Approval: Date: 9/15/09	For any improper a	preservation conditions, list sa any client notification as well	ample ID, preservat as client instruction	ive added (reagent iD r ns. Samples for pH, ch	umber) below as well as lorine and
alichon	PM Review and Approval: Date: 9/15/09			00		
PM Review and Approval:	$\iota$ $\iota$ $\iota$	Samples Inspecte		TAR		9/15/9
	rted: 09/15/2009 10:27 AM		MM Review and Approva	ai: — ///Ty	Date:	417/0/

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