

DMR Copy of Record

<b>Permit</b>		<b>Permittee:</b> NASA - GODDARD SPACE FLIGHT CENTER		<b>Facility:</b> NASA GODDARD FLIGHT CENTER	
<b>Permit #:</b> MD0067482	<b>Major:</b> No	<b>Permittee Address:</b> 8800 GREENBELT ROAD, CODE 250 GREENBELT, MD 20771	<b>Facility Location:</b> GREENBELT ROAD PRINCE GEORGE'S COUNTY GREENBELT, MD 20771		
<b>Permitted Feature:</b> 001 External Outfall	<b>Discharge:</b> 001-A 08-DP-3156				

<b>Report Dates &amp; Status</b>					
<b>Monitoring Period:</b> From 10/01/18 to 12/31/18	<b>DMR Due Date:</b> 01/28/19	<b>Status:</b> NetDMR Validated			

Considerations for Form Completion

<b>Principal Executive Officer</b>					
<b>First Name:</b> Kimberly	<b>Title:</b> Chief, Medical and Envir Mngt Division	<b>Telephone:</b> 301-286-4230			
<b>Last Name:</b> Finch					

No Data Indicator (NODI)

Form NODI: --

Code	Parameter Name	Monitoring Location	Season #	Param. NODI	Quantity or Loading					Quality or Concentration					# of Ex.	Frequency of Analysis	Sample Type						
					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3				Value 3	Units				
00011	Temperature, water deg. fahrenheit	1 - Effluent Gross	0	--	Sample									=	72.1	15 - deg F	01/30 - Monthly	IT - Immersion Stabilization					
					Permit Req. Value NODI												<=	90 DAILY MX	15 - deg F	01/30 - Monthly	IT - Immersion Stabilization		
					Sample						=	7.7					=	8.2	12 - SU	01/30 - Monthly	GR - GRAB		
00400	pH	1 - Effluent Gross	0	--	Permit Req. Value NODI														01/30 - Monthly	GR - GRAB			
					Sample																	01/30 - Monthly	GR - GRAB
					Permit Req. Value NODI																		01/30 - Monthly
00600	Nitrogen, total [as N]	1 - Effluent Gross	0	--	Sample									=	0.7	19 - mg/L	01/90 - Quarterly	08 - COMP-8					
					Permit Req. Value NODI																	01/90 - Quarterly	08 - COMP-8
					Sample																		01/90 - Quarterly
00600	Nitrogen, total [as N]	1 - Effluent Gross	1	--	Permit Req. Value NODI														01/90 - Quarterly	CA - CALCTD			
					Sample																	01/90 - Quarterly	CA - CALCTD
					Permit Req. Value NODI																		01/90 - Quarterly
00625	Nitrogen, Kjeldahl, total [as N]	1 - Effluent Gross	0	--	Sample									=	0.5	19 - mg/L	01/90 - Quarterly	08 - COMP-8					
					Permit Req. Value NODI																	01/90 - Quarterly	08 - COMP-8
					Sample																		01/90 - Quarterly
00630	Nitrite + Nitrate total [as N]	1 - Effluent Gross	0	--	Permit Req. Value NODI														01/90 - Quarterly	08 - COMP-8			
					Sample																	01/90 - Quarterly	08 - COMP-8
					Permit Req. Value NODI																		01/90 - Quarterly
00665	Phosphorus, total [as P]	1 - Effluent Gross	0	--	Sample									=	0.11	19 - mg/L	01/90 - Quarterly	08 - COMP-8					
					Permit Req. Value NODI																	01/90 - Quarterly	08 - COMP-8
					Sample																		01/90 - Quarterly
00665	Phosphorus, total [as P]	1 - Effluent Gross	1	--	Permit Req. Value NODI														01/90 - Quarterly	CA - CALCTD			
					Sample																	01/90 - Quarterly	CA - CALCTD
					Permit Req. Value NODI																		01/90 - Quarterly
00900	Hardness, total [as CaCO3]	1 - Effluent Gross	0	--	Sample									=	45.7	19 - mg/L	01/30 - Monthly	GR - GRAB					
					Permit Req. Value NODI																	01/30 - Monthly	GR - GRAB
					Sample																		01/30 - Monthly
01040	Copper, dissolved [as Cu]	1 - Effluent Gross	0	--	Permit Req. Value NODI														01/30 - Monthly	GR - GRAB			
					Sample																	01/30 - Monthly	GR - GRAB
					Permit Req. Value NODI																		01/30 - Monthly
01042	Copper, total [as Cu]	1 - Effluent Gross	0	--	Sample									=	0.0073	19 - mg/L	01/30 - Monthly	GR - GRAB					
					Permit Req. Value NODI																	01/30 - Monthly	GR - GRAB
					Sample																		01/30 - Monthly
50060	Chlorine, total residual	1 - Effluent Gross	0	--	Permit Req. Value NODI														01/30 - Monthly	GR - GRAB			
					Sample																	01/30 - Monthly	GR - GRAB
					Permit Req. Value NODI																		01/30 - Monthly
74076	Flow	1 - Effluent Gross	0	--	Sample														01/90 - Quarterly	MS - MEASRD			
					Permit Req. Value NODI																	01/90 - Quarterly	MS - MEASRD
					Sample																		01/90 - Quarterly
82220	Flow, total	1 - Effluent Gross	2	--	Permit Req. Value NODI														01/90 - Quarterly	MS - MEASRD			
					Sample																	01/90 - Quarterly	MS - MEASRD
					Permit Req. Value NODI																		01/90 - Quarterly

**Submission Note**  
If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

**Edit Check Errors**  
No errors.

**Comments**

As required by General Condition (A-2) of the National Pollutant Discharge Elimination System (NPDES) Permit MD0067482 (state discharge number 08DP3156A), NASA's Goddard Space Flight Center (GSFC) is submitting a fourth quarter 2018 Discharge Monitoring Report (DMR) for its discharge of non-contact cooling water and boiler blowdown from Outfall 001. The reported flow is the sum of effluent discharges and stormwater flow estimates. Nutrient samples were collected in December for this quarter. The analytical results for this quarter have been provided with this DMR as attachments. For questions/concerns please contact Ms. Janine Pollack at Janine.Pollack@nasa.gov or (301)286-0509.

**Attachments**

Name	Type	Size
Rpt_WO_18123101_Ver_1_000_Final.pdf	pdf	459848
20181001.pdf	pdf	361658
20181204.pdf	pdf	360117
20181101.pdf	pdf	355680

**Report Last Saved By**

**NASA - GODDARD SPACE FLIGHT CENTER**

User: janine.pollack@nasa.gov  
Name: Janine Pollack  
E-Mail: janine.pollack@nasa.gov  
Date/Time: 2019-01-11 14:31 (Time Zone: -05:00)

**Report Last Signed By**

User: TJMEYER59  
Name: Theodore Meyer  
E-Mail: theodore.j.meyer@nasa.gov  
Date/Time: 2019-01-23 15:24 (Time Zone: -05:00)

## DMR Copy of Record

### Permit

Permit #:	MD0067482	Permittee:	NASA - GODDARD SPACE FLIGHT CENTER	Facility:	NASA GODDARD FLIGHT CENTER
Major:	No	Permittee Address:	8800 GREENBELT ROAD, CODE 250 GREENBELT, MD 20771	Facility Location:	GREENBELT ROAD PRINCE GEORGE'S COUNTY GREENBELT, MD 20771
Permitted Feature:	001 External Outfall	Discharge:	001-B 08-DP-3156		

### Report Dates & Status

Monitoring Period:	From 01/01/18 to 12/31/18	DMR Due Date:	01/28/19	Status:	NetDMR Validated
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### Considerations for Form Completion

### Principal Executive Officer

First Name:	Kimberly	Title:	Chief, Medical and Envir Mngt Division	Telephone:	301-286-4230
Last Name:	Finch				

### No Data Indicator (NODI)

Form NODI: --

Code	Parameter Name	Monitoring Location	Season #	Param. NODI	Quantity or Loading			Quality or Concentration			# of Ex.	Frequency of Analysis	Sample Type						
					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1				Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units
00600	Nitrogen, total [as N]	2 - Effluent Net	2	-	Sample	=	2893.7		50 - lb/yr							01/YR - Annual	CA - CALCTD		
					Permit Req.			Req Mon ANNL TOT	50 - lb/yr									01/YR - Annual	CA - CALCTD
					Value NODI														
00665	Phosphorus, total [as P]	2 - Effluent Net	2	-	Sample	=	738.3		50 - lb/yr							01/YR - Annual	CA - CALCTD		
					Permit Req.			Req Mon ANNL TOT	50 - lb/yr									01/YR - Annual	CA - CALCTD
					Value NODI														

### Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

### Edit Check Errors

No errors.

### Comments

### Attachments

No attachments.

### Report Last Saved By

NASA - GODDARD SPACE FLIGHT CENTER

User: Rebecca.R.Ford@nasa.gov  
 Name: Rebecca Ford  
 E-Mail: rebecca.r.ford@nasa.gov  
 Date/Time: 2019-01-11 14:14 (Time Zone: -05:00)

### Report Last Signed By

User: TJMEYER59  
 Name: Theodore Meyer  
 E-Mail: theodore.j.meyer@nasa.gov  
 Date/Time: 2019-01-23 15:24 (Time Zone: -05:00)



**Submission Note**

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

**Edit Check Errors**

No errors.

**Comments**

As required by General Condition (A-2) of the National Pollutant Discharge Elimination System (NPDES) Permit MD0067482 (state discharge number 08DP3156A), NASA's Goddard Space Flight Center (GSFC) is submitting a fourth quarter 2018 Discharge Monitoring Report (DMR) for its discharge of non-contact cooling water from Outfall 004. The reported flow is the sum of effluent discharges and stormwater flow estimates. Nutrient samples were collected in December for this quarter. All analytical results for this permitted feature have been attached to permitted feature [MD006782] 001. For questions/concerns please contact Ms. Janine Pollack at Janine.Pollack@nasa.gov or (301)286-0509.

**Attachments**

No attachments.

**Report Last Saved By**

**NASA - GODDARD SPACE FLIGHT CENTER**

User: janine.pollack@nasa.gov  
Name: Janine Pollack  
E-Mail: janine.pollack@nasa.gov  
Date/Time: 2019-01-11 14:33 (Time Zone: -05:00)

**Report Last Signed By**

User: TJMEYER59  
Name: Theodore Meyer  
E-Mail: theodore.j.meyer@nasa.gov  
Date/Time: 2019-01-23 15:24 (Time Zone: -05:00)

## DMR Copy of Record

Permit																	
Permit #:	MD0067482	Permittee:	NASA - GODDARD SPACE FLIGHT CENTER					Facility:	NASA GODDARD FLIGHT CENTER								
Major:	No	Permittee Address:	8800 GREENBELT ROAD, CODE 250 GREENBELT, MD 20771					Facility Location:	GREENBELT ROAD PRINCE GEORGE'S COUNTY GREENBELT, MD 20771								
Permitted Feature:	004 External Outfall	Discharge:	004-B 08-DP-3156														
Report Dates & Status																	
Monitoring Period:	From 01/01/18 to 12/31/18		DMR Due Date:	01/28/19				Status:	NetDMR Validated								
Considerations for Form Completion																	
Principal Executive Officer																	
First Name:	Kimberly		Title:	Chief, Medical and Envir Mngt Division					Telephone:	301-286-4230							
Last Name:	Finch																
No Data Indicator (NODI)																	
Form NODI:	--																
Parameter Code	Monitoring Location	Season #	Param. NODI	Quantity or Loading					Quality or Concentration					# of Ex.	Frequency of Analysis	Sample Type	
				Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units		
00600	Nitrogen, total [as N]	2 - Effluent Net	2														
				Sample	=		407.9	50 - lb/yr									01/YR - Annual
				Permit Req.			Req Mon ANNL TOT	50 - lb/yr									01/YR - Annual
				Value NODI													CA - CALCTD
00665	Phosphorus, total [as P]	2 - Effluent Net	2														
				Sample	=		73.1	50 - lb/yr									01/YR - Annual
				Permit Req.			Req Mon ANNL TOT	50 - lb/yr									01/YR - Annual
				Value NODI													CA - CALCTD
Submission Note																	
If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.																	
Edit Check Errors																	
No errors.																	
Comments																	
Attachments																	
No attachments.																	
Report Last Saved By																	
NASA - GODDARD SPACE FLIGHT CENTER																	
User:	Rebecca.R.Ford@nasa.gov																
Name:	Rebecca Ford																
E-Mail:	rebecca.r.ford@nasa.gov																
Date/Time:	2019-01-11 14:14 (Time Zone: -05:00)																
Report Last Signed By																	
User:	TJMEYER59																
Name:	Theodore Meyer																
E-Mail:	theodore.j.meyer@nasa.gov																
Date/Time:	2019-01-23 15:24 (Time Zone: -05:00)																

# Analytical Report for

**DDC-4C**

**Certificate of Analysis No.: 18100104**

**Project Manager: Ian Cherok**

**Project Name : NPDES**

**Project Location: Outfalls 001, 004**



**October 8, 2018**

**Phase Separation Science, Inc.**

**6630 Baltimore National Pike**

**Baltimore, MD 21228**

**Phone: (410) 747-8770**

**Fax: (410) 788-8723**

OFFICES:  
6630 BALTIMORE NATIONAL PIKE  
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FAX 410-788-8723

# PHASE SEPARATION SCIENCE, INC.



October 8, 2018

**Ian Cherok**  
**DDC-4C**  
70 West King Street  
Chambersburg, PA 17201

Reference: PSS Work Order(s) No: **18100104**  
Project Name: NPDES  
Project Location: Outfalls 001, 004

Dear Ian Cherok :

This report includes 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(s) numbered **18100104**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. 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 November 5, 2018, with the exception of air canisters which are cleaned immediately following analysis. 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 5 years, after which time it will be disposed of 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](mailto:info@phaseonline.com).

Sincerely,

A handwritten signature in black ink that reads 'Dan Prucnal'.

**Dan Prucnal**

Laboratory Manager



# Sample Summary

**Client Name: DDC-4C**  
**Project Name: NPDES**

**Work Order Number(s): 18100104**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 10/01/2018 at 02:00 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18100104-001	20181001-001	SURFACE WATER	10/01/18 09:30
18100104-002	20181001-004	SURFACE WATER	10/01/18 09:43

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 Case Narrative Summary.

**Notes:**

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of 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].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminants, and part 141.3, for the secondary drinking water contaminants.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

**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.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

**Certifications:**

NELAP Certifications: PA 68-03330, VA 460156  
State Certifications: MD 179, WV 303  
Regulated Soil Permit: P330-12-00268  
NSWC USCG Accepted Laboratory  
LDBE MWAA LD1997-0041-2015





## Case Narrative Summary

Client Name: DDC-4C

Project Name: NPDES

Work Order Number(s): 18100104

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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.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Unless otherwise noted, surrogate recoveries outside of the acceptance criteria are most often the result of sample matrix interference and/or sample dilution.

Quality control samples that display a high bias will not be narrated when sample target compounds are not detected.

### Sample Receipt:

All sample receipt conditions were acceptable.

**NELAP accreditation was held for all analyses performed unless noted below. See [www.phaseonline.com](http://www.phaseonline.com) for complete PSS scope of accreditation.**



## Analytical Data Package Information Summary

**Work Order(s): 18100104**

Report Prepared For: DDC-4C, Chambersburg, PA

Project Name: NPDES

Project Manager: Ian Cherok

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>EPA 200.8</b>	20181001-001	Initial	18100104-001	1064	W	73534	157696	10/01/2018	10/02/2018 11:10	10/02/2018 19:34
	20181001-004	Initial	18100104-002	1064	W	73534	157696	10/01/2018	10/02/2018 11:10	10/02/2018 19:39
	73534-1-BKS	BKS	73534-1-BKS	1064	W	73534	157696	-----	10/02/2018 11:10	10/02/2018 19:13
	73534-1-BLK	BLK	73534-1-BLK	1064	W	73534	157696	-----	10/02/2018 11:10	10/02/2018 18:47
	20181001 S	MS	18100103-001 S	1064	W	73534	157696	10/01/2018	10/02/2018 11:10	10/02/2018 19:24
	20181001 SD	MSD	18100103-001 SD	1064	W	73534	157696	10/01/2018	10/02/2018 11:10	10/02/2018 19:29
	20181001-001	Reanalysis	18100104-001	1064	W	73534	157729	10/01/2018	10/02/2018 11:10	10/03/2018 18:19
	20181001-004	Reanalysis	18100104-002	1064	W	73534	157729	10/01/2018	10/02/2018 11:10	10/03/2018 18:24
<b>EPA 200.8</b>	20181001-001	Initial	18100104-001	1051	W	73519	157644	10/01/2018	10/01/2018 16:06	10/01/2018 19:52
	20181001-004	Initial	18100104-002	1051	W	73519	157644	10/01/2018	10/01/2018 16:06	10/01/2018 19:56
	73519-1-BKS	BKS	73519-1-BKS	1051	W	73519	157644	-----	10/01/2018 16:06	10/01/2018 19:14
	73519-1-BLK	BLK	73519-1-BLK	1051	W	73519	157644	-----	10/01/2018 16:06	10/01/2018 19:10
	Tank-1F S	MS	18092821-001 S	1051	W	73519	157644	09/28/2018	10/01/2018 16:06	10/01/2018 19:42
	Tank-1F SD	MSD	18092821-001 SD	1051	W	73519	157644	09/28/2018	10/01/2018 16:06	10/01/2018 19:47

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 18100104

DDC-4C

NPDES

**Analytical Method: EPA 200.8**

Seq Number: 157644

MB Sample Id: 73519-1-BLK

Matrix: Water

LCS Sample Id: 73519-1-BKS

Prep Method: E200.8\_PREP

Date Prep: 10/01/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	40.15	100	85-115	ug/L	10/01/18 19:14	

**Analytical Method: EPA 200.8**

Seq Number: 157696

MB Sample Id: 73534-1-BLK

Matrix: Water

LCS Sample Id: 73534-1-BKS

Prep Method: E200.8\_PREP

Date Prep: 10/02/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	399.3	100	85-115	ug/L	10/02/18 19:13	
Copper	<1.000	40.00	42.14	105	85-115	ug/L	10/02/18 19:13	
Magnesium	<100	400	416.3	104	85-115	ug/L	10/02/18 19:13	

F = RPD exceeded the laboratory control limits

X = Recovery of MS, MSD or both outside of QC Criteria

H= Recovery of BS,BSD or both exceeded the laboratory control limits

L = Recovery of BS,BSD or both below the laboratory control limits





# Phase Separation Science, Inc

## Sample Receipt Checklist

**Work Order #** 18100104  
**Client Name** DDC-4C  
**Project Name** NPDES  
**Disposal Date** 11/05/2018

**Received By** Thomas Wingate  
**Date Received** 10/01/2018 02:00:00 PM  
**Delivered By** Trans Time Express  
**Tracking No** Not Applicable  
**Logged In By** Thomas Wingate

### Shipping Container(s)

No. of Coolers 1

Custody Seal(s) Intact? N/A  
Seal(s) Signed / Dated? N/A

Ice Present  
Temp (deg C) 2.7  
Temp Blank Present No

### Documentation

COC agrees with sample labels? Yes  
Chain of Custody Yes

Sampler Name Hayley Thomas  
MD DW Cert. No. N/A

### Sample Container

Appropriate for Specified Analysis? Yes  
Intact? Yes  
Labeled and Labels Legible? Yes

Custody Seal(s) Intact? Not Applicable  
Seal(s) Signed / Dated Not Applicable

Total No. of Samples Received 2

Total No. of Containers Received 6

### Preservation

Total Metals	(pH<2)	Yes
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	Yes
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	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 sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:

Thomas Wingate

Date: 10/01/2018

PM Review and Approval:

Lynn Jackson

Date: 10/01/2018

# Analytical Report for

**DDC-4C**

**Certificate of Analysis No.: 18110110**

**Project Manager: Ian Cherok**

**Project Name : NPDES**

**Project Location: 001, 004**



**November 8, 2018**

**Phase Separation Science, Inc.**

**6630 Baltimore National Pike**

**Baltimore, MD 21228**

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# PHASE SEPARATION SCIENCE, INC.



November 8, 2018

**Ian Cherok**  
**DDC-4C**  
70 West King Street  
Chambersburg, PA 17201

Reference: PSS Work Order(s) No: **18110110**  
Project Name: NPDES  
Project Location: 001, 004

Dear Ian Cherok :

This report includes 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(s) numbered **18110110**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. 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 December 6, 2018, with the exception of air canisters which are cleaned immediately following analysis. 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 5 years, after which time it will be disposed of 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](mailto:info@phaseonline.com).

Sincerely,

**Dan Prucnal**

Laboratory Manager



# Sample Summary

**Client Name: DDC-4C**  
**Project Name: NPDES**

**Work Order Number(s): 18110110**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 11/01/2018 at 01:40 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18110110-001	20181101-001	SURFACE WATER	11/01/18 09:10
18110110-002	20181101-004	SURFACE WATER	11/01/18 09:35

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 Case Narrative Summary.

**Notes:**

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of 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].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminants, and part 141.3, for the secondary drinking water contaminants.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

**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.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

**Certifications:**

NELAP Certifications: PA 68-03330, VA 460156  
State Certifications: MD 179, WV 303  
Regulated Soil Permit: P330-12-00268  
NSWC USCG Accepted Laboratory  
LDBE MWAA LD1997-0041-2015





## Case Narrative Summary

Client Name: DDC-4C

Project Name: NPDES

Work Order Number(s): 18110110

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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.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Unless otherwise noted, surrogate recoveries outside of the acceptance criteria are most often the result of sample matrix interference and/or sample dilution.

Quality control samples that display a high bias will not be narrated when sample target compounds are not detected.

### Sample Receipt:

All sample receipt conditions were acceptable.

**NELAP accreditation was held for all analyses performed unless noted below. See [www.phaseonline.com](http://www.phaseonline.com) for complete PSS scope of accreditation.**



## Analytical Data Package Information Summary

**Work Order(s): 18110110**

Report Prepared For: DDC-4C, Chambersburg, PA

Project Name: NPDES

Project Manager: Ian Cherok

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>EPA 200.8</b>	20181101-001	Initial	18110110-001	1051	W	74001	158621	11/01/2018	11/02/2018 12:44	11/02/2018 16:45
	20181101-004	Initial	18110110-002	1051	W	74001	158621	11/01/2018	11/02/2018 12:44	11/02/2018 16:50
	74001-1-BKS	BKS	74001-1-BKS	1051	W	74001	158621	-----	11/02/2018 12:44	11/02/2018 15:49
	74001-1-BLK	BLK	74001-1-BLK	1051	W	74001	158621	-----	11/02/2018 12:44	11/02/2018 15:45
	SW-3-110118-UF S	MS	18110104-001 S	1051	W	74001	158621	11/01/2018	11/02/2018 12:44	11/02/2018 16:08
	SW-3-110118-UF SD	MSD	18110104-001 SD	1051	W	74001	158621	11/01/2018	11/02/2018 12:44	11/02/2018 16:12
	20181101-001	Reanalysis	18110110-001	1051	W	74001	158621	11/01/2018	11/02/2018 12:44	11/02/2018 15:54
	20181101-004	Reanalysis	18110110-002	1051	W	74001	158621	11/01/2018	11/02/2018 12:44	11/02/2018 15:59
<b>EPA 200.8</b>	20181101-001	Initial	18110110-001	1051	W	74010	158622	11/01/2018	11/02/2018 15:36	11/02/2018 17:17
	20181101-004	Initial	18110110-002	1051	W	74010	158622	11/01/2018	11/02/2018 15:36	11/02/2018 17:50
	74010-1-BKS	BKS	74010-1-BKS	1051	W	74010	158622	-----	11/02/2018 15:36	11/02/2018 17:13
	74010-1-BLK	BLK	74010-1-BLK	1051	W	74010	158622	-----	11/02/2018 15:36	11/02/2018 17:08
	20181101-001 S	MS	18110110-001 S	1051	W	74010	158622	11/01/2018	11/02/2018 15:36	11/02/2018 17:22
	20181101-001 SD	MSD	18110110-001 SD	1051	W	74010	158622	11/01/2018	11/02/2018 15:36	11/02/2018 17:27

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 18110110

DDC-4C  
NPDES

**Analytical Method: EPA 200.8**

Seq Number: 158621

MB Sample Id: 74001-1-BLK

Matrix: Water

LCS Sample Id: 74001-1-BKS

Prep Method: E200.8\_PREP

Date Prep: 11/02/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	397	99	85-115	ug/L	11/02/18 15:49	
Copper	<1.000	40.00	40.55	101	85-115	ug/L	11/02/18 15:49	
Magnesium	<100	400	381.5	95	85-115	ug/L	11/02/18 15:49	

**Analytical Method: EPA 200.8**

Seq Number: 158622

MB Sample Id: 74010-1-BLK

Matrix: Water

LCS Sample Id: 74010-1-BKS

Prep Method: E200.8\_PREP

Date Prep: 11/02/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	39.39	98	85-115	ug/L	11/02/18 17:13	

**Analytical Method: EPA 200.8**

Seq Number: 158622

Parent Sample Id: 18110110-001

Matrix: Surface Water

MS Sample Id: 18110110-001 S

Prep Method: E200.8\_PREP

Date Prep: 11/02/18

MSD Sample Id: 18110110-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Copper	7.586	40.00	48.56	102	48.35	102	70-130	0	25	ug/L	11/02/18 17:22	

F = RPD exceeded the laboratory control limits  
X = Recovery of MS, MSD or both outside of QC Criteria  
H = Recovery of BS, BSD or both exceeded the laboratory control limits  
L = Recovery of BS, BSD or both below the laboratory control limits



# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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

<b>1</b> *CLIENT: <u>DDC4C</u> *OFFICE LOC: <u>GSECNASA</u>		PSS Work Order #: <u>18110110</u> PAGE <u>1</u> OF <u>1</u>					
*PROJECT MGR: <u>Ian Chorok</u> *PHONE NO.: ( )		Matrix Codes: <b>SW</b> =Surface Wtr <b>DW</b> =Drinking Wtr <b>GW</b> =Ground Wtr <b>WW</b> =Waste Wtr <b>O</b> =Oil <b>S</b> =Soil <b>L</b> =Liquid <b>SOL</b> =Solid <b>A</b> =Air <b>WI</b> =Wipe					
EMAIL: <u>Ian.D.Chorok@nasa.gov</u> FAX NO.: ( )		No. CONTAINERS C = COMP G = GRAB *	Preservatives Used Analysis/Method Required (3)				
*PROJECT NAME: <u>NPDES</u> PROJECT NO.:							
SITE LOCATION: <u>001.004</u> P.O. NO.: <u>CS54</u>							
SAMPLER(S): <u>H. Thomas</u> DW CERT NO.:							
<b>2</b>							
LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	3	g	Remarks
1	20181101-001	11/1/18	9:10	SW	3	g	*dissolved
2	20181101-004	11/1/18	9:35	SW	3	g	copper samples are already filtered
<b>5</b>							
Relinquished By: (1)	Date	Time	Received By:	<b>4</b> *Requested TAT (One TAT per COC) <input checked="" type="checkbox"/> 5-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> Next Day <input type="checkbox"/> Emergency <input type="checkbox"/> Other		# of Coolers: <u>1</u> Custody Seal: <u>ABS</u>	
Relinquished By: (2)	Date	Time	Received By:	Data Deliverables Required: COA <input type="checkbox"/> QC <input type="checkbox"/> SUMM <input type="checkbox"/> CLP <input type="checkbox"/> LIKE <input type="checkbox"/> OTHER <input type="checkbox"/>		Ice Present: <u>PRES</u> Temp: <u>0.7°-1.4°C</u> Shipping Carrier: <u>TTE</u>	
Relinquished By: (3)	Date	Time	Received By:	Special Instructions:			
Relinquished By: (4)	Date	Time	Received By:	DW COMPLIANCE? YES <input type="checkbox"/>		STATE RESULTS REPORTED TO: MD <input type="checkbox"/> DE <input type="checkbox"/> PA <input type="checkbox"/> VA <input type="checkbox"/> WV <input type="checkbox"/> OTHER <input type="checkbox"/>	

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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 fees if collection becomes necessary. \* = REQUIRED



# Phase Separation Science, Inc

## Sample Receipt Checklist

**Work Order #** 18110110  
**Client Name** DDC-4C  
**Project Name** NPDES  
**Disposal Date** 12/06/2018

**Received By** Thomas Wingate  
**Date Received** 11/01/2018 01:40:00 PM  
**Delivered By** Trans Time Express  
**Tracking No** Not Applicable  
**Logged In By** Thomas Wingate

### Shipping Container(s)

No. of Coolers 1

Custody Seal(s) Intact? N/A  
Seal(s) Signed / Dated? N/A

Ice Present  
Temp (deg C) 1.4  
Temp Blank Present No

### Documentation

COC agrees with sample labels? Yes  
Chain of Custody Yes

Sampler Name Hayley Thomas  
MD DW Cert. No. N/A

### Sample Container

Appropriate for Specified Analysis? Yes  
Intact? Yes  
Labeled and Labels Legible? Yes

Custody Seal(s) Intact? Not Applicable  
Seal(s) Signed / Dated Not Applicable

Total No. of Samples Received 2

Total No. of Containers Received 6

### Preservation

Total Metals	(pH<2)	Yes
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	Yes
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	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 sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:

  
Thomas Wingate

Date: 11/01/2018

PM Review and Approval:

  
Amber Confer

Date: 11/01/2018

# Analytical Report for

**DDC-4C**

**Certificate of Analysis No.: 18120410**

**Project Manager: Ian Cherok**

**Project Name : NPDES**

**Project Location: Outfall 001 + 004**



**December 11, 2018**

**Phase Separation Science, Inc.**

**6630 Baltimore National Pike**

**Baltimore, MD 21228**

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# PHASE SEPARATION SCIENCE, INC.



December 11, 2018

**Ian Cherok**  
**DDC-4C**  
70 West King Street  
Chambersburg, PA 17201

Reference: PSS Work Order(s) No: **18120410**  
Project Name: NPDES  
Project Location: Outfall 001 + 004

Dear Ian Cherok :

This report includes 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(s) numbered **18120410**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. 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 January 8, 2019, with the exception of air canisters which are cleaned immediately following analysis. 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.

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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](mailto:info@phaseonline.com).

Sincerely,

**Dan Prucnal**

Laboratory Manager



# Sample Summary

**Client Name: DDC-4C**  
**Project Name: NPDES**

**Work Order Number(s): 18120410**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 12/04/2018 at 12:20 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18120410-001	20181204-001	SURFACE WATER	12/04/18 09:12
18120410-002	20181204-004	SURFACE WATER	12/04/18 09:26

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 Case Narrative Summary.

#### Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of 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].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminants, and part 141.3, for the secondary drinking water contaminants.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

#### 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.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

#### Certifications:

NELAP Certifications: PA 68-03330, VA 460156  
State Certifications: MD 179, WV 303  
Regulated Soil Permit: P330-12-00268  
NSWC USCG Accepted Laboratory  
LDBE MWAA LD1997-0041-2015

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 18120410

DDC-4C, Chambersburg, PA

December 11, 2018

Project Name: NPDES

Project Location: Outfall 001 + 004

**Sample ID: 20181204-001**      **Date/Time Sampled: 12/04/2018 09:12**      **PSS Sample ID: 18120410-001**  
**Matrix: SURFACE WATER**      **Date/Time Received: 12/04/2018 12:20**

Dissolved Copper      Analytical Method: EPA 200.8      Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	4.6	ug/L	1.0		1	12/05/18	12/05/18 17:27	1051

Total Copper plus Hardness      Analytical Method: EPA 200.8      Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Calcium	12,800	ug/L	2,000		20	12/06/18	12/06/18 17:30	1051
Copper	7.6	ug/L	1.0		1	12/06/18	12/06/18 18:52	1051
Magnesium	3,210	ug/L	100		1	12/06/18	12/06/18 18:52	1051
Hardness (Ca & Mg)	45.0	mg/L	5.40		1	12/06/18	12/06/18 18:52	1051

**Sample ID: 20181204-004**      **Date/Time Sampled: 12/04/2018 09:26**      **PSS Sample ID: 18120410-002**  
**Matrix: SURFACE WATER**      **Date/Time Received: 12/04/2018 12:20**

Dissolved Copper      Analytical Method: EPA 200.8      Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Copper	3.7	ug/L	1.0		1	12/05/18	12/05/18 17:54	1051

Total Copper plus Hardness      Analytical Method: EPA 200.8      Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Calcium	8,640	ug/L	100		1	12/06/18	12/06/18 18:57	1051
Copper	7.1	ug/L	1.0		1	12/06/18	12/06/18 18:57	1051
Magnesium	2,550	ug/L	100		1	12/06/18	12/06/18 18:57	1051
Hardness (Ca & Mg)	32.0	mg/L	0.660		1	12/06/18	12/06/18 18:57	1051



## Case Narrative Summary

**Client Name: DDC-4C**

**Project Name: NPDES**

Work Order Number(s): 18120410

---

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.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

### **Sample Receipt:**

All sample receipt conditions were acceptable.

**NELAP accreditation was held for all analyses performed unless noted below. See [www.phaseonline.com](http://www.phaseonline.com) for complete PSS scope of accreditation.**



## Analytical Data Package Information Summary

**Work Order(s): 18120410**

Report Prepared For: DDC-4C, Chambersburg, PA

Project Name: NPDES

Project Manager: Ian Cherok

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>EPA 200.8</b>	20181204-001	Initial	18120410-001	1051	W	74547	159566	12/04/2018	12/06/2018 15:46	12/06/2018 18:52
	20181204-004	Initial	18120410-002	1051	W	74547	159566	12/04/2018	12/06/2018 15:46	12/06/2018 18:57
	74547-1-BKS	BKS	74547-1-BKS	1051	W	74547	159566	-----	12/06/2018 15:46	12/06/2018 16:38
	74547-1-BLK	BLK	74547-1-BLK	1051	W	74547	159566	-----	12/06/2018 15:46	12/06/2018 16:33
	801 S	MS	18120403-001 S	1051	W	74547	159566	12/04/2008	12/06/2018 15:46	12/06/2018 18:11
	801 SD	MSD	18120403-001 SD	1051	W	74547	159566	12/04/2008	12/06/2018 15:46	12/06/2018 18:34
	20181204-001	Reanalysis	18120410-001	1051	W	74547	159566	12/04/2018	12/06/2018 15:46	12/06/2018 17:30
<b>EPA 200.8</b>	20181204-001	Initial	18120410-001	1051	W	74525	159518	12/04/2018	12/05/2018 15:04	12/05/2018 17:27
	20181204-004	Initial	18120410-002	1051	W	74525	159518	12/04/2018	12/05/2018 15:04	12/05/2018 17:54
	74525-1-BKS	BKS	74525-1-BKS	1051	W	74525	159518	-----	12/05/2018 15:04	12/05/2018 16:50
	74525-1-BLK	BLK	74525-1-BLK	1051	W	74525	159518	-----	12/05/2018 15:04	12/05/2018 16:46
	Eff S	MS	18120310-001 S	1051	W	74525	159518	12/03/2018	12/05/2018 15:04	12/05/2018 16:59
	Eff SD	MSD	18120310-001 SD	1051	W	74525	159518	12/03/2018	12/05/2018 15:04	12/05/2018 17:04

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 18120410

DDC-4C

NPDES

**Analytical Method: EPA 200.8**

Seq Number: 159518

MB Sample Id: 74525-1-BLK

Matrix: Water

LCS Sample Id: 74525-1-BKS

Prep Method: E200.8\_PREP

Date Prep: 12/05/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Copper	<1.000	40.00	42.28	106	85-115	ug/L	12/05/18 16:50	

**Analytical Method: EPA 200.8**

Seq Number: 159566

MB Sample Id: 74547-1-BLK

Matrix: Water

LCS Sample Id: 74547-1-BKS

Prep Method: E200.8\_PREP

Date Prep: 12/06/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Calcium	<100	400	422.7	106	85-115	ug/L	12/06/18 16:38	
Copper	<1.000	40.00	42.76	107	85-115	ug/L	12/06/18 16:38	
Magnesium	<100	400	402.2	101	85-115	ug/L	12/06/18 16:38	

F = RPD exceeded the laboratory control limits

X = Recovery of MS, MSD or both outside of QC Criteria

H= Recovery of BS,BSD or both exceeded the laboratory control limits

L = Recovery of BS,BSD or both below the laboratory control limits



# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

**PHASE SEPARATION SCIENCE, INC.**

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

<b>1</b> *CLIENT: <u>DDC-4L</u> *OFFICE LOC. _____					PSS Work Order #: <u>18120410</u> PAGE <u>1</u> OF <u>1</u>														
*PROJECT MGR: <u>Ian Cherole</u> *PHONE NO.: ( ) _____					Matrix Codes: <b>SW</b> =Surface Wtr <b>DW</b> =Drinking Wtr <b>GW</b> =Ground Wtr <b>WW</b> =Waste Wtr <b>O</b> =Oil <b>S</b> =Soil <b>L</b> =Liquid <b>SOL</b> =Solid <b>A</b> =Air <b>WI</b> =Wipe														
EMAIL: _____ FAX NO.: ( ) _____					No. C O N T A I N E R S	Preservatives Used: <u>HNO<sub>3</sub> HNO<sub>3</sub> HNO<sub>3</sub></u>													
*PROJECT NAME: <u>MPDES</u> PROJECT NO.: _____						Analysis/Method Required: <u>Total Copper</u>													
SITE LOCATION: <u>Outfall 001 + 004</u> P.O. NO.: <u>CS 54</u>						* <u>Dissolved Cu</u>													
SAMPLER(S): <u>I Cherole, L Wicklund</u> DW CERT NO.: _____						* <u>Hardness</u>													
<b>2</b> LAB NO.	*SAMPLE IDENTIFICATION			*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	REMARKS												
1	20181204-001			12/4/18	0912	SW	3	G	X	X	X	Dissolved							
2	20181204-004			12/4/18	0926	SW	3	G	X	X	X	Copper has been filtered							
<b>5</b> Relinquished By: (1) <u>[Signature]</u> Date: <u>12/4/18</u> Time: <u>1145</u> Received By: <u>[Signature]</u>												<b>4</b> *Requested TAT (One TAT per COC) <input checked="" type="checkbox"/> 5-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> Next Day <input type="checkbox"/> Emergency <input type="checkbox"/> Other			# of Coolers: <u>1</u> Custody Seal: <u>ABS</u>				
Relinquished By: (2) <u>[Signature]</u> Date: <u>12/4/18</u> Time: <u>1220</u> Received By: <u>[Signature]</u>												Data Deliverables Required: COA <input type="checkbox"/> QC <input type="checkbox"/> SUMM <input type="checkbox"/> CLP <input type="checkbox"/> LIKE <input type="checkbox"/> OTHER <input type="checkbox"/>			Ice Present: <u>PREJ</u> Temp: <u>0.9-1.3°C</u> Shipping Carrier: <u>TTE</u>				
Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____												Special Instructions: _____							
Relinquished By: (4) _____ Date: _____ Time: _____ Received By: _____												DW COMPLIANCE? YES <input type="checkbox"/>		EDD FORMAT TYPE _____		STATE RESULTS REPORTED TO: MD <input type="checkbox"/> DE <input type="checkbox"/> PA <input type="checkbox"/> VA <input type="checkbox"/> WV <input type="checkbox"/> OTHER _____			

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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 fees if collection becomes necessary. \* = REQUIRED



# Phase Separation Science, Inc

## Sample Receipt Checklist

**Work Order #** 18120410  
**Client Name** DDC-4C  
**Project Name** NPDES  
**Disposal Date** 01/08/2019

**Received By** Thomas Wingate  
**Date Received** 12/04/2018 12:20:00 PM  
**Delivered By** Trans Time Express  
**Tracking No** Not Applicable  
**Logged In By** Thomas Wingate

### Shipping Container(s)

No. of Coolers 1

Custody Seal(s) Intact? N/A  
Seal(s) Signed / Dated? N/A

Ice Present  
Temp (deg C) 1.3  
Temp Blank Present No

### Documentation

COC agrees with sample labels? Yes  
Chain of Custody Yes

Sampler Name Ian Cherok  
MD DW Cert. No. N/A

### Sample Container

Appropriate for Specified Analysis? Yes  
Intact? Yes  
Labeled and Labels Legible? Yes

Custody Seal(s) Intact? Not Applicable  
Seal(s) Signed / Dated Not Applicable

Total No. of Samples Received 2

Total No. of Containers Received 6

### Preservation

Total Metals	(pH<2)	Yes
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	Yes
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	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 sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:

  
\_\_\_\_\_  
Thomas Wingate

Date: 12/04/2018  
\_\_\_\_\_

PM Review and Approval:

  
\_\_\_\_\_  
Thomas Wingate

Date: 12/06/2018  
\_\_\_\_\_

# Analytical Report for

**DDC-4C**

**Certificate of Analysis No.: 18123101**

**Project Manager: Ian Cherok**

**Project Name : NPDES**

**Project Location: Outfalls 001 & 004**



**January 4, 2019**

**Phase Separation Science, Inc.**

**6630 Baltimore National Pike**

**Baltimore, MD 21228**

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**Fax: (410) 788-8723**

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# PHASE SEPARATION SCIENCE, INC.



January 4, 2019

**Ian Cherok**  
**DDC-4C**  
70 West King Street  
Chambersburg, PA 17201

Reference: PSS Work Order(s) No: **18123101**  
Project Name: NPDES  
Project Location: Outfalls 001 & 004

Dear Ian Cherok :

This report includes 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(s) numbered **18123101**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. 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 February 4, 2019, with the exception of air canisters which are cleaned immediately following analysis. 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 5 years, after which time it will be disposed of 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](mailto:info@phaseonline.com).

Sincerely,

A handwritten signature in black ink that reads 'Dan Prucnal'.

**Dan Prucnal**

Laboratory Manager



# Sample Summary

**Client Name: DDC-4C**  
**Project Name: NPDES**

**Work Order Number(s): 18123101**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 12/31/2018 at 08:53 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18123101-001	20181230-001	SURFACE WATER	12/30/18 08:00
18123101-002	20181230-004	SURFACE WATER	12/30/18 08:00

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 Case Narrative Summary.

#### Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of 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].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminants, and part 141.3, for the secondary drinking water contaminants.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

#### 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.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

#### Certifications:

NELAP Certifications: PA 68-03330, VA 460156  
State Certifications: MD 179, WV 303  
Regulated Soil Permit: P330-12-00268  
NSWC USCG Accepted Laboratory  
LDBE MWAA LD1997-0041-2015

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 18123101  
 DDC-4C, Chambersburg, PA  
 January 4, 2019

Project Name: NPDES  
 Project Location: Outfalls 001 & 004

**Sample ID: 20181230-001**      **Date/Time Sampled: 12/30/2018 08:00**      **PSS Sample ID: 18123101-001**  
**Matrix: SURFACE WATER**      **Date/Time Received: 12/31/2018 08:53**

Nitrite & Nitrate	Analytical Method: EPA 300.0	Preparation Method: E300.OP
	<b>Result</b> <b>Units</b> <b>RL</b> <b>Flag</b> <b>Dil</b>	<b>Prepared</b> <b>Analyzed</b> <b>Analyst</b>
Nitrate (as N)	<b>0.16</b> mg/L                      0.10                      1	12/31/18    12/31/18 12:47    1053
Nitrite (as N)	ND        mg/L                      0.10                      1	12/31/18    12/31/18 12:47    1053
Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2	
	<b>Result</b> <b>Units</b> <b>RL</b> <b>Flag</b>	<b>Prepared</b> <b>Analyzed</b> <b>Analyst</b>
Nitrogen, Total Kjeldahl	<b>0.5</b> mg/L                      0.4	01/03/19    01/03/19 15:34    4005
Phosphorus, Total as P	Analytical Method: EPA 365.3	Preparation Method: E365.3
	<b>Result</b> <b>Units</b> <b>RL</b> <b>Flag</b> <b>Dil</b>	<b>Prepared</b> <b>Analyzed</b> <b>Analyst</b>
Phosphorus, Total (as P)	<b>0.11</b> mg/L                      0.050                      1	12/31/18    12/31/18 12:31    1053
Nitrogen, Total by calculation	Analytical Method: N_Total Calc. TKN+NO32	
	<b>Result</b> <b>Units</b> <b>RL</b> <b>Flag</b>	<b>Prepared</b> <b>Analyzed</b> <b>Analyst</b>
Total Nitrogen(NO2 & NO3 & TKN)	<b>0.7</b> mg/L	01/03/19    01/03/19 15:34    4005

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 18123101  
 DDC-4C, Chambersburg, PA  
 January 4, 2019

Project Name: NPDES  
 Project Location: Outfalls 001 & 004

**Sample ID: 20181230-004**      **Date/Time Sampled: 12/30/2018 08:00**      **PSS Sample ID: 18123101-002**  
**Matrix: SURFACE WATER**      **Date/Time Received: 12/31/2018 08:53**

Nitrite & Nitrate	Analytical Method: EPA 300.0		Preparation Method: E300.OP					
	<b>Result</b>	<b>Units</b>	<b>RL</b>	<b>Flag</b>	<b>Dil</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Analyst</b>
Nitrate (as N)	ND	mg/L	0.10		1	12/31/18	12/31/18 13:32	1053
Nitrite (as N)	ND	mg/L	0.10		1	12/31/18	12/31/18 13:32	1053
Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2							
	<b>Result</b>	<b>Units</b>	<b>RL</b>	<b>Flag</b>		<b>Prepared</b>	<b>Analyzed</b>	<b>Analyst</b>
Nitrogen, Total Kjeldahl	<b>0.7</b>	mg/L	0.4			01/03/19	01/03/19 15:36	4005
Phosphorus, Total as P	Analytical Method: EPA 365.3		Preparation Method: E365.3					
	<b>Result</b>	<b>Units</b>	<b>RL</b>	<b>Flag</b>	<b>Dil</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Analyst</b>
Phosphorus, Total (as P)	ND	mg/L	0.050		1	12/31/18	12/31/18 12:31	1053
Nitrogen, Total by calculation	Analytical Method: N_Total Calc. TKN+NO32							
	<b>Result</b>	<b>Units</b>	<b>RL</b>	<b>Flag</b>		<b>Prepared</b>	<b>Analyzed</b>	<b>Analyst</b>
Total Nitrogen(NO2 & NO3 & TKN)	<b>0.7</b>	mg/L				01/03/19	01/03/19 15:36	4005



## Case Narrative Summary

**Client Name: DDC-4C**

**Project Name: NPDES**

Work Order Number(s): 18123101

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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.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

### **Sample Receipt:**

All sample receipt conditions were acceptable.

18123101: Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

**NELAP accreditation was held for all analyses performed unless noted below. See [www.phaseonline.com](http://www.phaseonline.com) for complete PSS scope of accreditation.**

EPA 351.2



## Analytical Data Package Information Summary

**Work Order(s): 18123101**

Report Prepared For: DDC-4C, Chambersburg, PA

Project Name: NPDES

Project Manager: Ian Cherok

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>EPA 300.0</b>	20181230-001	Initial	18123101-001	1053	W	74850	160228	12/30/2018	12/31/2018 10:03	12/31/2018 12:47
	20181230-004	Initial	18123101-002	1053	W	74850	160228	12/30/2018	12/31/2018 10:03	12/31/2018 13:32
	74850-1-BKS	BKS	74850-1-BKS	1053	W	74850	160228	-----	12/31/2018 10:03	12/31/2018 11:40
	74850-1-BLK	BLK	74850-1-BLK	1053	W	74850	160228	-----	12/31/2018 10:03	12/31/2018 11:17
	74850-1-BSD	BSD	74850-1-BSD	1053	W	74850	160228	-----	12/31/2018 10:03	12/31/2018 12:02
	20181230-001 S	MS	18123101-001 S	1053	W	74850	160228	12/30/2018	12/31/2018 10:03	12/31/2018 13:09
<b>EPA 351.2</b>	20181230-001	Initial	18123101-001	4005	W	160297	160297	12/30/2018	01/03/2019 15:34	01/03/2019 15:34
	20181230-004	Initial	18123101-002	4005	W	160297	160297	12/30/2018	01/03/2019 15:36	01/03/2019 15:36
<b>EPA 365.3</b>	20181230-001	Initial	18123101-001	1053	W	74856	160178	12/30/2018	12/31/2018 10:39	12/31/2018 12:31
	20181230-004	Initial	18123101-002	1053	W	74856	160178	12/30/2018	12/31/2018 10:39	12/31/2018 12:31
	74856-1-BKS	BKS	74856-1-BKS	1053	W	74856	160178	-----	12/31/2018 10:39	12/31/2018 12:31
	74856-1-BLK	BLK	74856-1-BLK	1053	W	74856	160178	-----	12/31/2018 10:39	12/31/2018 12:31
	20181230-001 S	MS	18123101-001 S	1053	W	74856	160178	12/30/2018	12/31/2018 10:39	12/31/2018 12:31
	20181230-001 SD	MSD	18123101-001 SD	1053	W	74856	160178	12/30/2018	12/31/2018 10:39	12/31/2018 12:31
<b>N_Total Calc. TKN+NO32</b>	20181230-001	Initial	18123101-001	4005	W	160297	160297	12/30/2018	01/03/2019 15:34	01/03/2019 15:34
	20181230-004	Initial	18123101-002	4005	W	160297	160297	12/30/2018	01/03/2019 15:36	01/03/2019 15:36

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 18123101

DDC-4C

NPDES

**Analytical Method: EPA 365.3**

Seq Number: 160178

MB Sample Id: 74856-1-BLK

Matrix: Water

LCS Sample Id: 74856-1-BKS

Prep Method: E365.3\_Prep

Date Prep: 12/31/18

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Phosphorus, Total (as P)	<0.0500	0.972	1.01	104	85-115	mg/L	12/31/18 12:31	

**Analytical Method: EPA 365.3**

Seq Number: 160178

Parent Sample Id: 18123101-001

Matrix: Surface Water

MS Sample Id: 18123101-001 S

Prep Method: E365.3\_Prep

Date Prep: 12/31/18

MSD Sample Id: 18123101-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	0.108	0.328	0.454	105	0.444	102	70-130	2	20	mg/L	12/31/18 12:31	

**Analytical Method: EPA 300.0**

Seq Number: 160228

MB Sample Id: 74850-1-BLK

Matrix: Water

LCS Sample Id: 74850-1-BKS

Prep Method: E300.0P

Date Prep: 12/31/18

LCSD Sample Id: 74850-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrate (as N)	<0.1000	5.000	4.925	99	4.911	98	90-110	0	20	mg/L	12/31/18 11:40	
Nitrite (as N)	<0.1000	5.000	4.937	99	4.922	98	90-110	0	20	mg/L	12/31/18 11:40	

**Analytical Method: EPA 300.0**

Seq Number: 160228

Parent Sample Id: 18123101-001

Matrix: Surface Water

MS Sample Id: 18123101-001 S

Prep Method: E300.0P

Date Prep: 12/31/18

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Nitrate (as N)	0.1580	5.000	5.284	103	87-115	mg/L	12/31/18 13:09	
Nitrite (as N)	<0.1000	5.000	5.155	103	80-112	mg/L	12/31/18 13:09	

F = RPD exceeded the laboratory control limits  
 X = Recovery of MS, MSD or both outside of QC Criteria  
 H= Recovery of BS,BSD or both exceeded the laboratory control limits  
 L = Recovery of BS,BSD or both below the laboratory control limits



# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

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

<b>1</b> *CLIENT: <u>DDL-4L</u> *OFFICE LOC. _____		PSS Work Order #: <u>18123101</u>		PAGE <u>1</u> OF <u>1</u>		
*PROJECT MGR: <u>Tan Cherok</u> *PHONE NO.: ( ) _____		Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe				
EMAIL: _____ FAX NO.: ( ) _____		No. C O N T A I N E R S	SAMPLE T Y P E  C = C O M P  G = G R A B	Preservatives Used: <u>None</u>		
*PROJECT NAME: <u>NPDES</u> PROJECT NO.: _____				Analysis/Method Required * <u>Nitrate-Nitrite</u> <u>TKN</u> <u>Total Phos</u>		
SITE LOCATION: <u>Outfalls cool #004</u> P.O. NO.: _____						
SAMPLER(S): <u>A. Cherok, I. Cherok</u> DW CERT NO.: _____						
<b>2</b>	LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	REMARKS
		<u>20181230-001</u>	<u>12/30/18</u>	<u>0853</u>	<u>SW</u>	<u>3 C</u> <u>X X X</u>
		<u>20181230-004</u>	<u>12/30/18</u>	<u>0850</u>	<u>SW</u>	<u>3 C</u> <u>X X X</u>
<b>5</b> Relinquished By: (1) <u>[Signature]</u> Date <u>12/31/18</u> Time <u>0853</u> Received By: <u>[Signature]</u>						
<b>4</b> *Requested TAT (One TAT per COC) <input type="checkbox"/> 5-Day <input checked="" type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> Next Day <input type="checkbox"/> Emergency <input type="checkbox"/> Other						
Relinquished By: (2) _____ Date _____ Time _____ Received By: _____			Data Deliverables Required: <input type="checkbox"/> COA <input type="checkbox"/> QC <input type="checkbox"/> SUMM <input type="checkbox"/> CLP LIKE <input type="checkbox"/> OTHER _____		# of Coolers: <u>1</u> Custody Seal: <u>ABS</u>	
Relinquished By: (3) _____ Date _____ Time _____ Received By: _____			Special Instructions: _____		Ice Present: <u>YES</u> Temp: <u>0.7-0.7°</u> Shipping Carrier: <u>Client</u>	
Relinquished By: (4) _____ Date _____ Time _____ Received By: _____			DW COMPLIANCE? YES <input type="checkbox"/>		STATE RESULTS REPORTED TO: <input type="checkbox"/> MD <input type="checkbox"/> DE <input type="checkbox"/> PA <input type="checkbox"/> VA <input type="checkbox"/> WV <input type="checkbox"/> OTHER _____	

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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 fees if collection becomes necessary. \* = REQUIRED



# Phase Separation Science, Inc

## Sample Receipt Checklist

**Work Order #** 18123101  
**Client Name** DDC-4C  
**Project Name** NPDES  
**Disposal Date** 02/04/2019

**Received By** Amber Confer  
**Date Received** 12/31/2018 08:53:00 AM  
**Delivered By** Client  
**Tracking No** Not Applicable  
**Logged In By** Amber Confer

### Shipping Container(s)

No. of Coolers 1

Custody Seal(s) Intact? N/A

Seal(s) Signed / Dated? N/A

Ice Present

Temp (deg C) .7

Temp Blank Present No

### Documentation

COC agrees with sample labels? Yes

Chain of Custody Yes

Sampler Name A. Cherok & I. Cherc

MD DW Cert. No. N/A

### Sample Container

Appropriate for Specified Analysis? Yes

Intact? Yes

Labeled and Labels Legible? Yes

Custody Seal(s) Intact? Not Applicable

Seal(s) Signed / Dated Not Applicable

Total No. of Samples Received 2

Total No. of Containers Received 6

### Preservation

Total Metals (pH<2) N/A

Dissolved Metals, filtered within 15 minutes of collection (pH<2) N/A

Orthophosphorus, filtered within 15 minutes of collection N/A

Cyanides (pH>12) N/A

Sulfide (pH>9) N/A

TOC, DOC (field filtered), COD, Phenols (pH<2) N/A

TOX, TKN, NH3, Total Phos (pH<2) Yes

VOC, BTEX (VOA Vials Rcvd Preserved) (pH<2) N/A

Do VOA vials have zero headspace? N/A

624 VOC (Rcvd at least one unpreserved VOA vial) N/A

524 VOC (Rcvd with trip blanks) (pH<2) 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 sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:

*Amber Confer*

Date: 12/31/2018

Amber Confer

PM Review and Approval:

*Lynn Jackson*

Date: 12/31/2018

Lynn Jackson