CHAAP Data Verification

Laboratory and SDG#: Eurofins 280-162262 **AECOM Chemist: D. Casagrande**
Date Verified: 7/20/2022 **AECOM ITR: S. Louie**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2019)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
CA210-22A	5/11/2022	5/12/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
CA211-22A	5/11/2022	5/12/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
CA212-22A	5/11/2022	5/12/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
NW070-22A	5/11/2022	5/12/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
NW071-22A	5/11/2022	5/12/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)
CA213-22A	5/11/2022	5/12/2022	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), Methane (RSK-175), DOC (9060A), Sulfate (9056A), Alkalinity (2320B), Sulfide (9034)

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD QSM deviations noted in the laboratory case narrative?	X		
Were DoD QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?	X		

Validator comments in italics.

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): CA210-22A (280-162262-1), CA211-22A (280-162262-2), CA212-22A (280-162262-3) and CA213-22A (280-162262-6). The container labels list 06/11/2022, while the COC lists 05/11/2022. *This issue is further discussed in Section 2.0.*

For Method RSK-157: The method requirement for no headspace was not met. The following volatile sample was analyzed with significant headspace in the sample container(s): CA213-22A (280-162262-6). Significant headspace is defined as a bubble greater than 6 mm in diameter. *This issue is further discussed in Section 7.0.*

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For Method 8330A: Surrogate recovery for the following samples in preparation batch 280-575370 and analytical batch 280-575414 for method 8330 was outside the upper control limit: CA211-22A (280-162262-2) and CA212-22A (280-162262-3). These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed. *No data were affected or qualified.*

No other issues were noted in the case narrative or cooler receipt form for all other methods analyzed.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?		X
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were samples relinquished properly on the COC?	X	

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): CA210-22A (280-162262-1), CA211-22A (280-162262-2), CA212-22A (280-162262-3) and CA213-22A (280-162262-6). The container labels list 06/11/2022, while the COC lists 05/11/2022. The samples were received at the laboratory on 5/12/2022. The COC sample date was used to log the samples into the laboratory. No data were affected or qualified.

3.0 Initial Calibration

Method 8330A Initial Calibration Criteria			
Instrument:	**CHHPLC_X3**		
Date of Calibration:	**1/4/2022**		
	Yes	**No**	**N/A**
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte ≤ 20%?	X		
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?			X
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

The RSD was met for all target analytes.

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Method 8330A Initial Calibration Criteria			
Instrument:	**CHHPLC_X3**		
Date of Calibration:	**1/5/2022**		
	Yes	**No**	**N/A**
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte ≤ 20%?	X		
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?			X
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Method 8330A Initial Calibration Criteria			
Instrument:	**CHHPLC_X5**		
Date of Calibration:	**3/2/2022**		
	Yes	**No**	**N/A**
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte ≤ 20%?	X		
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?			X
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

This calibration was used for tetryl only. The RSD was met.

Method RSK-175 Initial Calibration Criteria			
Instrument:	**VGC_J**		
Date of Calibration:	**9/24/2021**		
	Yes	**No**	**N/A**
Was at least a five point calibration completed for all analytes prior to sample analysis and one option below?	X		
Option 1: RSD for each analyte ≤ 25%?		X	
Option 2: If linear least squares regression was used was the $r^2 \geq 0.99$?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

The ICAL for methane met the r2 criteria; no information for the %RSD was provided for this analyte.

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Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2019)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034

Method 9056A Initial Calibration Criteria			
Instrument:	**WC_IonChrom13**		
Date of Calibration:	**5/16/2022**		
	Yes	**No**	**N/A**
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**WC_SKALAR_01**		
Date of Calibration:	**5/25/2022**		
	Yes	**No**	**N/A**
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 353.2 Initial Calibration Criteria			
Instrument:	**WC_Alp 2**		
Date of Calibration:	**5/24/2022**		
	Yes	**No**	**N/A**
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 351.2 Initial Calibration Criteria			
Instrument:	**WC_GAL1**		
Date of Calibration:	**5/25/2022**		
	Yes	**No**	**N/A**
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**WC_SHI5**		
Date of Calibration:	**12/10/2021**		
	Yes	**No**	**N/A**
Was a minimum of three standards and a calibration blank used for ICAL?	X		
Was $r^2 \geq 0.99$?	X		

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Date Verified: 7/20/2022 **AECOM ITR: S. Louie**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2019)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034

4.0 Initial Calibration Verification [(ICV) Second Source]

Method 8330A ICV Criteria (Filename)	**280-562503/20**		
Instrument:	**CHHPLC_X3**		
Date of Initial Calibration Verification:	**1/4/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within ± 15% of the true value?	X		

Method 8330A ICV Criteria (Filename)	**280-562503/38**		
Instrument:	**CHHPLC_X3**		
Date of Initial Calibration Verification:	**1/5/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within ± 15% of the true value?	X		

Method 8330A ICV Criteria (Filename)	**280-567560/19**		
Instrument:	**CHHPLC_X5**		
Date of Initial Calibration Verification:	**3/3/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within ± 15% of the true value?	X		

Method 8330A ICV Criteria (Filename)	**280-567560/28**		
Instrument:	**CHHPLC_X5**		
Date of Initial Calibration Verification:	**3/3/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within ± 15% of the true value?	X		

Method RSK-175 ICV Criteria (Filename)	**280-550959/13**		
Instrument:	**VGC_J**		
Date of Initial Calibration Verification:	**9/24/2021**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within ± 25% of the true value?	X		

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Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2019)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034

Method 9056A ICV	**WC_IonChrom13**		
Date of Initial Calibration Verification:	**5/16/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within ± 10% of the true value?	X		

Method 350.1 ICV Criteria	**WC_SKALAR_01**		
Date of Initial Calibration Verification:	**5/25/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within ± 10% of the true value?	X		

Method 353.2 ICV Criteria	**WC_Alp 2**		
Date of Initial Calibration Verification:	**5/24/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within ± 10% of the true value?	X		

Method 351.2 ICV Criteria	**WC_GAL1**		
Date of Initial Calibration Verification:	**5/25/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within ± 10% of the true value?	X		

Method 9060A ICV Criteria	**WC_SHI5**		
Date of Initial Calibration Verification:	**5/23/2022**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	X		
Was the ICV for all analytes within ± 10% of the true value?	X		

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5.0 Continuing Calibration Verification (CCV)

Method 8330A CCV Criteria (Filename)	**280-575414/32-33**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**5/19/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 15% of the true value?	X		

Method 8330A CCV Criteria (Filename)	**280-575414/44-45**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**5/19/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 15% of the true value?	X		

Method 8330A CCV Criteria (Filename)	**280-575546/20-21**		
Instrument:	**CHHPLC_X5**		
Date of Calibration Verification:	**5/19/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 15% of the true value?	X		

Method 8330A CCV Criteria (Filename)	**280-575546/30-31**		
Instrument:	**CHHPLC_X5**		
Date of Calibration Verification:	**5/19/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 15% of the true value?	X		

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Method RSK-175 CCVRT Criteria (Filename)	**280-575695/2**		
Instrument:	**VGC_J**		
Date of Calibration Verification:	**5/20/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 25% of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	**280-575695/19**		
Instrument:	**VGC_J**		
Date of Calibration Verification:	**5/20/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 25% of the true value?	X		

Method RSK-175 CCVRT Criteria (Filename)	**280-575858/2**		
Instrument:	**VGC_J**		
Date of Calibration Verification:	**5/23/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 25% of the true value?	X		

Method RSK-175 CCV Criteria (Filename)	**280-575858/17**		
Instrument:	**VGC_J**		
Date of Calibration Verification:	**5/23/2022**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 10 field samples and at the end of the analysis sequence?	X		
Was the CCV for all analytes within ± 25% of the true value?	X		

Method 9056A, Instrument: WC_IonChrom13, All CCVs on 5/25/2022	**Yes**	**No**
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within ± 10% of the true value?	X	

Method 350.1, Instrument: WC_SKALAR_01, All CCVs on 5/25/2022	**Yes**	**No**
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within ± 10% of the true value?	X	

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Method 353.2, Instrument: WC_Alp 2, All CCVs on 5/24/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within ± 10% of the true value?	X	

Method 351.2, Instrument: WC_GAL1, All CCVs on 5/25/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within ± 10% of the true value?	X	

Method 9060A, Instrument: WC_SHI5, All CCVs on 5/23/2022 and 5/24/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within ± 10% of the true value?	X	

Method SM2320B, Instrument: WC-AT4, All CCVs on 5/19/2022	Yes	No
Was a CCV analyzed after every 10 field samples and at the end of the analysis sequence?	X	
Were the CCVs for all analytes within ± 10% of the true value?	X	

6.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

7.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Was professional judgment used to qualify data (if yes, list below)?	X		

Method RSK-175: The method requirement for no headspace was not met. The following volatile sample was analyzed with significant headspace in the sample container(s): CA213-22A (280-162262-6). Significant headspace is defined as a bubble greater than 6 mm in diameter. The non-detect result for Methane is qualified as potential low bias reporting limit (UJ).

Sample ID	Analysis	Analyte	Qualification
CA213-22A	Dissolved Gases	Methane	**UJ**

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8.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?		X	
Were any samples lost, broken, or in any other manner in not verified?		X	
Were requested sample analyses performed, the correct analyte lists used, and correct sample preparation and analyses methods and units utilized?	X		