CHAAP Data Verification

Laboratory and SDG#: TADenver 280-124928 **AECOM Chemist: Jared DeSadier**
Date Verified: 8/12/2019 **AECOM ITR: Jeff Aust**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8260B, 8015C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
G0017-19A	6/5/2019	6/7/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
PZ009-19A	6/5/2019	6/7/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
G0045-19A	6/5/2019	6/7/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
G0105-19A	6/5/2019	6/7/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
G0107-19A	6/5/2019	6/7/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
G0106-19A	6/5/2019	6/7/2019	Water	Explosives (8330A), Nitrate, Nitrite (353.2), Ammonia (350.1), TKN (351.2), MEE (RSK-175), DOC (9060A), Sulfate (9056A) Sulfide (9034), Alkalinity (2320B)
TB060519	6/5/2019	6/7/2019	Water	VOCs (8260B)
Source 2019	6/5/2019	6/7/2019	Water	VOCs (8260B), Explosives (8330A)
SHGW02-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B)
SHGW05-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B)
SAMW1-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B)
G0053-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B)
SHGW03-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B), DRO (8015C)
G0069-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B), DRO (8015C)
SHGW04-19A	6/6/2019	6/7/2019	Water	VOCs (8260B), Nitrate, Nitrite (353.2), MEE (RSK-175), Sulfate (9056A), Alkalinity (2320B), DRO (8015C)
TB060619	6/6/2019	6/7/2019	Water	VOCs (8260B)

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	

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The laboratory case narrative indicated that some surrogate, LCS/LCSD, and MS/MSD, recoveries were outside evaluation criteria and some samples were analyzed outside of holding time criteria. These issues are discussed further in the ADR report.

Some CCV %Ds were outside of evaluation criteria. This issue is discussed further in Section 5.0.

The case narrative also indicated that some samples were missing collection times on the COC. This issue is discussed further in Section 2.0. Some sample VOAs were received with headspace greater than 6 mm. Sufficient volume remained for analysis and no qualification of data was required.

No other issues were noted in the case narrative or cooler receipt form.

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 case narrative indicated that some samples were missing collection dates in the COC. Per the AECOM chemist, samples were logged via the time on the sample label and no qualification of data was required.

3.0 Instrument Performance Check (Tuning)

Method 8260B Instrument Tuning Criteria (Filename)	**g2_6446.D**		
Instrument:	**VMS_G2**		
Date of Tuning:	**6/17/2019**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundances for each target mass within the required intensities limits listed in Table 4 of SW-846 Method 8260B?	X		

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Method 8260B Instrument Tuning Criteria (Filename)	g2_6494.D		
Instrument:	VMS_G2		
Date of Tuning:	6/18/2019		
	Yes	No	N/A
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundances for each target mass within the required intensities limits listed in Table 4 of SW-846 Method 8260B?	X		

Method 8260B Instrument Tuning Criteria (Filename)	g2_6565.D		
Instrument:	VMS_G2		
Date of Tuning:	6/20/2019		
	Yes	No	N/A
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundances for each target mass within the required intensities limits listed in Table 4 of SW-846 Method 8260B?	X		

4.0 Initial Calibration

Method 8260B Initial Calibration Criteria			
Instrument:	VMS_G2		
Date of Calibration:	6/17/2019		
	Yes	No	N/A
Option 1: RSD for each analyte ≤ 15%?	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		

Verification Criteria for DRO instrument SGC_U2a on 7/9/2019	Yes	No	N/A
Was at least a 5-point calibration completed for all analytes prior to sample analysis?	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 $r^2 \geq 0.99$?	X		
If non-linear regression was used were 6 points used for second order and 7 points for third order?	X		

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Method 8330A Initial Calibration Criteria			
Instrument:	**CHHPL_G2_LUNA**		
Date of Calibration:	**5/7/2019**		
	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_X3**		
Date of Calibration:	**5/14/2019**		
	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_X3**		
Date of Calibration:	**7/1/2019**		
	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

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Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
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Method RSK-175 Initial Calibration Criteria			
Instrument:	**VGC_J**		
Date of Calibration:	**04/15/2019**		
	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

Method 9056A Initial Calibration Criteria			
Instrument:	**WC_IonChrom10**		
Date of Calibration:	**7/3/2019**		
	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_Alp 3**		
Date of Calibration:	**6/19/2019**		
	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:	**6/26/2019**		
	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_Astoria**		
Date of Calibration:	**6/25/2019**		
	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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Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8260B, 8015C

Method 9060A Initial Calibration Criteria			
Instrument:	**WC_SHI3**		
Date of Calibration:	**7/3/2019**		
	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		

5.0 Initial Calibration Verification [(ICV) Second Source]

Method 8260B ICV Criteria (Filename)	g2_6455.D		
Instrument:	**VMS_G2**		
Date of Initial Calibration Verification:	**6/17/2019**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV for all analytes within ± 20% of the true value?	X		

Verification Criteria for DRO instrument SGC_U2a on 7/9/2019 21:27	Yes	No
Was the ICV analyzed daily, before sample analysis?	X	
Were all reported analytes within ± 20% of the true value?	X	

Method 8330A ICV Criteria (Filename)	05070015.D		
Instrument:	**CHHLPC_G2_LUNA**		
Date of Initial Calibration Verification:	**5/7/2019**		
	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)	05070024.D		
Instrument:	**CHHLPC_G2_LUNA**		
Date of Initial Calibration Verification:	**5/8/2019**		
	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)	05080007.D		
Instrument:	**CHHLPC_G2_LUNA**		
Date of Initial Calibration Verification:	**5/8/2019**		
	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		

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Method 8330A ICV Criteria (Filename)	**0514B015.D**		
Instrument:	**CHHPLC_X3**		
Date of Initial Calibration Verification:	**5/14/2019**		
	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)	**0514B033.D**		
Instrument:	**CHHPLC_X3**		
Date of Initial Calibration Verification:	**5/15/2019**		
	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)	**07010015.D**		
Instrument:	**CHHPLC_X3**		
Date of Initial Calibration Verification:	**7/1/2019**		
	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)	**07010033.D**		
Instrument:	**CHHPLC_X3**		
Date of Initial Calibration Verification:	**7/1/2019**		
	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)	**04151911.D**		
Instrument:	**VGC_J**		
Date of Initial Calibration Verification:	**4/15/2019**		
	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		

Method 9056A ICV	**WC_IonChrom10**		
Date of Initial Calibration Verification:	**7/3/2019**		
	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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Method 350.1 ICV Criteria	**10:21**		
Instrument:	**WC_Alp 3**		
Date of Initial Calibration Verification:	**6/19/2019**		
	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 (Filename)	**WC_Alp 2**		
Date of Initial Calibration Verification:	**6/26/2019**		
	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 (Filename)	**19:01**		
Instrument:	**WC_Astoria**		
Date of Initial Calibration Verification:	**6/25/2019**		
	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 (Filename)	**15:51**		
Instrument:	**WC_SHI3**		
Date of Initial Calibration Verification:	**7/3/2019**		
	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		

6.0 Continuing Calibration Verification (CCV)

Method 8260B Beginning CCV Criteria (Filename)	**g2_6495**		
Method 8260B Ending CCV Criteria (Filename)	**g2_6526**		
Instrument:	**VMS_G2**		
Date of Calibration Verification:	**6/19/2019**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Were all reported analytes and surrogates within ± 20% of true value?		X	
Were all reported analytes and surrogates within ± 50% of true value for the end of analytical batch CCV?	X		

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The opening CCV %D for chloromethane (-20.2%) and chloroethene (-26.0) were outside of evaluation criteria. The RFs indicated a high bias and associated sample results were nondetect. No qualification of data was required.

Method 8260B Beginning CCV Criteria (Filename)	**g2_6566**		
Method 8260B Ending CCV Criteria (Filename)	**g2_6596**		
Instrument:	**VMS_G2**		
Date of Calibration Verification:	**6/20/2019**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Were all reported analytes and surrogates within ± 20% of true value?		X	
Were all reported analytes and surrogates within ± 50% of true value for the end of analytical batch CCV?	X		

The opening CCV %D for 1,2,3-trichlorobenzne was outside of evaluation criteria. The RFs indicated a high bias and associated sample results were nondetect. No qualification of data was required.

Field ID	Parameter	Analyte	Qualification
Source2019	VOCs	Chloromethane	**UJ**
Source2019	VOCs	Chloroethene	**UJ**

Verification Criteria for DRO instrument SGC_U2a on 7/17/2019 00:37	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	X	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	X	
Were all reported analytes within ± 20% of true value?		X

The %D for the surrogate n-octacosane (27.9%) was outside evaluation criteria. The surrogate is QC and no qualification of sample data was required.

Verification Criteria for DRO instrument SGC_U2a on 7/17/2019 07:08	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	X	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	X	
Were all reported analytes within ± 20% of true value?	X	

The %D for the surrogate n-octacosane (26.7%) was outside evaluation criteria. The surrogate is QC and no qualification of sample data was required.

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Method 8330A CCV Criteria (Filename)	007-3801.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	6/18/2019		
	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)	06170049_50.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	6/18/2019		
	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		

The %D for RDX (27.9%) was outside evaluation criteria. The RFs indicated a high bias. All associated samples were nondetect and no qualification of data was required.

Method 8330A CCV Criteria (Filename)	06210007_8.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	6/21/2019		
	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)	06210011_2.D		
Instrument:	CHHPLC_G2_LUNA		
Date of Calibration Verification:	6/21/2019		
	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 8330A CCV Criteria (Filename)	**07120030_1.D**		
Instrument:	**CHHPLC_G2_LUNA**		
Date of Calibration Verification:	**7/13/2019**		
	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)	**07120041_2.D**		
Instrument:	**CHHPLC_G2_LUNA**		
Date of Calibration Verification:	**7/13/2019**		
	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)	**0716007_8.D**		
Instrument:	**CHHPLC_G2_LUNA**		
Date of Calibration Verification:	**7/16/2019**		
	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)	**07160010_1.D**		
Instrument:	**CHHPLC_G2_LUNA**		
Date of Calibration Verification:	**7/16/2019**		
	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		

CHAAP Data Verification

Laboratory and SDG#: TADenver 280-124928 **AECOM Chemist: Jared DeSadier**
Date Verified: 8/12/2019 **AECOM ITR: Jeff Aust**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8260B, 8015C

Method 8330A CCV Criteria (Filename)	**06140053_5.D**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**6/15/2019**		
	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)	**06140066_8.D**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**6/15/2019**		
	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)	**07110042_4.D**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**7/12/2019**		
	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)	**07110055_7.D**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**7/12/2019**		
	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		

CHAAP Data Verification

Laboratory and SDG#: TADenver 280-124928 **AECOM Chemist: Jared DeSadier**
Date Verified: 8/12/2019 **AECOM ITR: Jeff Aust**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8260B, 8015C

Method 8330A CCV Criteria (Filename)	**07150007_9.D**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**7/15/2019**		
	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)	**07150020_2.D**		
Instrument:	**CHHPLC_X3**		
Date of Calibration Verification:	**7/15/2019**		
	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)			
Instrument:			
Date of Calibration Verification:			
	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 RSK-175 CCV Criteria (Filename)	**06111947.D**		
Instrument:	**VGC_J**		
Date of Calibration Verification:	**6/11/2019**		
	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 %D or %drift for all target compounds ≤ 25%?	X		

CHAAP Data Verification

Laboratory and SDG#: TADenver 280-124928 **AECOM Chemist: Jared DeSadier**
Date Verified: 8/12/2019 **AECOM ITR: Jeff Aust**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8260B, 8015C

Method RSK-175 CCV Criteria (Filename)	06111961.D		
Instrument:	VGC_J		
Date of Calibration Verification:	6/11/2019		
	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)	06121916.D		
Instrument:	VGC_J		
Date of Calibration Verification:	6/12/2019		
	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)	06121928.D		
Instrument:	VGC_J		
Date of Calibration Verification:	6/12/2019		
	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_IonChrom10, All CCVs on 7/3/2019	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 9056A, Instrument: WC_IonChrom10, All CCVs on 7/10/2019	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_Alp 3, All CCVs on 6/19/2019	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 353.2, Instrument: WC_Alp 2, All CCVs on 6/26/2019	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	

CHAAP Data Verification

Laboratory and SDG#: TADenver 280-124928 **AECOM Chemist: Jared DeSadier**
Date Verified: 8/12/2019 **AECOM ITR: Jeff Aust**
Guidance: DoD QSM Version 5.1 (January 2017)
Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
Applicable Analytical Methods: 8330A, 353.2, 350.1, 351.2, RSK-175, 9060A, 2320B, 9056A, 9034, 8260B, 8015C

Method 351.2, Instrument: WC_Astoria, All CCVs on 6/25/2019	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_SHI3, All CCVs on 7/3/2019	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	

7.0 Blank Samples

Blank Criteria	Yes	No	N/A
Were method blanks analyzed with every preparatory batch?	X		
Were target analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit (whichever is greater)?		X	
Were target analytes detected in method, trip or calibration blanks?	X		

Blank ID	Parameter	Analyte	Concentration	LOQ	Units
TB060519	VOCs	Acetone	7.3	10	ug/L

Analytical data that were reported nondetect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification.

Field ID	Parameter	Analyte	Qualification
G0053-19A	VOCs	Acetone	**U**
SAMW1-19A	VOCs	Acetone	**U**
SHGW02-19A	VOCs	Acetone	**U**
SHGW03-19A	VOCs	Acetone	**U**
SHGW04-19A	VOCs	Acetone	**U**
SHGW05-19A	VOCs	Acetone	**U**
Source2019	VOCs	Acetone	**U**

8.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)	X		
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ?	X		
Were the differences between the parent sample / field duplicate < 2x the LOQ for analytes that had concentrations < 5x the LOQ?	X		

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Applicable QAPP: Cornhusker Army Ammunition Plant QAPP (Brice and AECOM, October 2018)
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Parent ID	Duplicate ID
SHGW02-19A	SHGW05-19A

9.0 Internal Standard (IS) Recoveries

Method 8260B Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

10.0 Sensitivity

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

11.0 Retention Time Windows

Verification Criteria	Yes	No
Was retention time window position established once per ICAL and at the beginning of the analytical sequence?	X	
Was the retention time position set using the midpoint standard of the ICAL curve when ICAL is performed and on days when ICAL is not performed, was the initial CCV used?	X	
Was the retention time window width set at method set-up and after major maintenance (e.g., column change)?	X	
Was the retention time width ± 3 times the standard deviation for each analyte RT from the 72-hour study?	X	

12.0 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		

The common laboratory contaminant 2-butanone was qualified as nondetect using professional judgement.

Field ID	Parameter	Analyte	Qualification
G0053-19A	VOCs	2-butanone	**U**

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13.0 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		