# APPENDIX C

# Data Validation Packages
# (Provided on CD)

# APPENDIX C

# June 2015 Validation Data
# (Provided on CD)

# APPENDIX C

# September 2015 Data Validation Checklists (DV Tables provided on CD)

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hill RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect - LMB)
Validation Date: 5/19/2016
Laboratory: Microseeps
SDG #: 16703
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☒ | subcontracted by KCEL |
| c) Field QC noted? | ☐ | ☒ | ☐ | Naming Convention / "Blind" |
| d) Was the COC signed by both field and laboratory personnel? | LMB ☒ | ☒ | ☐ | |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☑ | ☐ | ☐ | |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | see below |

**Note Deficiencies:**

Lab noted issues with sample labelling. Lab contacted sender and resolved issues. No further action needed.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/18/2016
Laboratory: Microseeps
SDG #: 16703
Analytical Method (type and no.): Dissolved Gasses AM20GAX

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☐ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☒ | no holdtime limit in |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☒ | documentation. |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☒ | |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☒ | |
| f) Were any matrix problems noted? | ☐ | ☐ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | see field QC NOTES |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☒ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☒ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☒ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☒ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | LCS/LCSD |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☒ | ☐ | ☐ | EW27150915-/EW27150915D RPD<20% |
| b) Were field dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | LCS/LCSD RPD<20% |
| d) Were lab dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**
All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Lab Quals:
Lab used J to indicate result between MDL + RL.
KCEL equivalent qualifier is T.
Lab used n to indicate lack of accreditation for this method.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hill RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect - LMB)
Validation Date: 5/19/2016
Laboratory: Microseeps
SDG #: 16694
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☒ | ☐ | subcontracted by KCEL |
| c) Field QC noted? | ☐ | ☒ | ☐ | Naming Convention / "Blind" |
| d) Was the COC signed by both field and laboratory personnel? | ☐ | ☑ | ☐ | |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ~~☒~~ | ☑ | ☐ | 21°C |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | |

**Note Deficiencies:**

Lab noted that samples were recieved with temperature in excess of control limit. Ice had melted, due to late FedEx delivery.
Lab ~~determinde~~ determined that samples were acceptable under the circumstances. No further action needed.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/18/2016
Laboratory: Microseeps
SDG #: 16694
Analytical Method (type and no.): Dissolved Gasses AM20GAX

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☐ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☒ | no hold time limit in |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☒ | documentation. |
| d) Were appropriate reporting limits achieved? | ☒ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☐ | ☒ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☒ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | see Field QC note |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☒ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☒ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☒ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☒ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | LCS/LCSD |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☒ | ☐ | ☐ | EW2-150910- / EW2-150910D ~~EW14150911-~~ / |
| b) Were field dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | EW14150911- / EW14150911D RPD<25% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | |
| d) Were lab dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | LCS/LCSD RPD<20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

All results are acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Lab Quals:

Lab used J to indicate results between MDL + RL.

KCEL equivalent qualifier is T.

Lab used n to indicate lack of accredidation for this method.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect- LMB)
Validation Date: 5/18/2016
Laboratory: Microseeps
SDG #: 16673, ~~16696~~, ~~16703~~ LMB
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☒ | Sub contracted by KCEL |
| c) Field QC noted? | ☐ | ☒ | ☐ | Naming Convention "Blind" |
| d) Was the COC signed by both field and laboratory personnel? | ☐ | ☐ | ☒ | |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☒ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☒ | ☐ | ☐ | |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | limits ☒ | ☒ | ☐ | |

**Note Deficiencies:**

No issued observed.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/19/2016
Laboratory: Microseeps
SDG #: 16673
Analytical Method (type and no.): Dissolved Gasses AM20GAX

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☐ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☒ | No Holdtime limit in |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☒ | documentation. |
| d) Were appropriate reporting limits achieved? | ☒ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☒ | |
| f) Were any matrix problems noted? | ☐ | ☐ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | see field QC note |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☒ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☒ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☒ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☒ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | LCS/LCSD |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☐ | ☒ | ☐ | |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Lab Quals:

Lab used J to indicate result between MDL & RL. KCEL equivalent qualifier is T.

Lab used n to indicate they hold no accreditation for this method.

# APPENDIX C

# December 2015 Data Validation Checklist (DV Tables provided on CD)

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS _____ Project Number: 421422 _____
Reviewer/Validator: Lea Beard (Aspect-LMB) _____ Validation Date: 5/12/2016 _____
Laboratory: King County Environmental Laboratory _____ SDG #: 010616 _____
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other _____

Work Plan or QAPP reference: Cedar Hills SAP / KCEL Control Levels

Applicable Data Validation Guidance: _____

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☒ | ☐ | ☐ | |
| c) Field QC noted? | ☐ | ☒ | ☐ | Naming convention used. Others blind. |
| d) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☒ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☒ | ☐ | ☐ | |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☒ | ☐ | ☐ | All reported issues acceptably addressed. |

**Note Deficiencies:**

Lab receiving notes that sample collection time was corrected (with approval) for VTRP151208-, and that the total number of containers for LFS3151211- was corrected (with approval). No further anomalies or issues were observed. Samples are considered to have been received in acceptable condition.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Laboratory: KCEL
Analytical Method (type and no.): VOA SW8260C

Validation Date: 5/12/2016
SDG #: CHGW-RIFS-010616 COCs: 13281, 13283-6

**Laboratory Case Narrative**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | Notes low %R for Spikes |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☐ | ☑ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☑ | ☐ | ☐ | Methylene Chloride |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | associated results ND - no Qual |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☑ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☑ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☑ | ☒ NA | |
| d) Were recoveries not calculated due to interference? | ☐ | ☑ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | %R Low Dichlorodifluoromethane |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | %R Low Chloromethane |
| c) Was the LCS accuracy criteria met? | ☐ | ☑ | ☐ | %R Low Vinyl Chloride Qualify associated "G" |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☑ | ☐ | %R low for Dichlorodifluoromethane (MS+MSD) |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | %R Low Chloromethane (MS+MSD) |
| e) Was MSD accuracy criteria met? | ☐ | ☑ | ☐ | %R Low Vinyl Chloride (MSD) |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | Associated Results Qualified "G" |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-151209-/ EW2-151209D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD < 20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | MS/MSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD < 20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure

QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
PCB: Polychlorinated Biphenyl
RPD: Relative Percent Difference
RSD: Relative Standard Deviation
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
LOQ: Limit of Quantitation

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB

Validation Date: 5/13/2016

Laboratory: KCEL

SDG #: CHGW_RIFS - 010616

Analytical Method (type and no.): Conventionals: ~~2320B~~, 2510B, 2540, Amonnia, N3/N2, TOC, 2320
Anions 4110B

**Laboratory Case Narrative**

a) Does the laboratory narrative indicate deficiencies? ☑ ☐ ☐

Notes HT exceedance for ~~NH3~~, NO3
MS %R High ~~Per~~ for NH3

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | method code 4500-NH3-G used in Report – |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | code "KEROUEL AMINOT 1997" used in ED |
| c) Were hold times met for sample analysis? | ☐ | ☑ | ☐ | these are essentially the same – just |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☐ | a lab naming quirk. |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | Lab flagged some NH3, NO3, NO2 |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | results for HoldTime. Taking their word for it. |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☑ | ☐ | One of Six MS had high %R for |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | NH3. All others in control. No Qual |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☑ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-151209-/EW2-151209D |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LR |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

Results are acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure

QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
PCB: Polychlorinated Biphenyl
RPD: Relative Percent Difference
RSD: Relative Standard Deviation
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
LOQ: Limit of Quantitation

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB

Validation Date: 5/13/2016

Laboratory: KCEL

SDG #: CHGW-RIFS-010616 COCs: 13281, ~~13~~ 13283-6

Analytical Method (type and no.): Metals 6020A Total + Dissolved. 6010C TOTAL

Hg 7470A Total + Dissolved

**Laboratory Case Narrative**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-151209- / EW2-151209D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LR for Metals MS/MSD for Hg |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% RPD<20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

All Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure

QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
PCB: Polychlorinated Biphenyl
RPD: Relative Percent Difference
RSD: Relative Standard Deviation
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
LOQ: Limit of Quantitation

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (ASPECT-LMB)
Validation Date: 5/16/2016
Laboratory: ~~Ac~~ Microseeps
SDG #: 17696
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other _____

Work Plan or QAPP reference: _____

Applicable Data Validation Guidance: _____

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☑ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☑ | |
| c) Field QC noted? | ☐ | ☑ | ☐ | Naming /"Blind" to lab |
| d) Was the COC signed by both field and laboratory personnel? | ☐ | ☐ | ☑ | sub contracted by KCEL |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☑ | ☐ | ☐ | |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/16/2016
Laboratory: Microseeps
SDG #: L7696
Analytical Method (type and no.): AM20GAX Dissolved Gases

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☑ | No HoldingTime provided by |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☑ | documentation |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☑ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☐ | ☑ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | LCS/LCSD RPD OK |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☑ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-151209-/ EW2-151209D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD <20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

all results are acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Lab qualified results between MDL + RDL with 'J'.
This translates in interpreted qualifiers to KCEL 'T'.
See Table 2.
Lab flagged all results "n" to indicate they do not hold accreditation for this method.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hill RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect - LMB)
Validation Date: 5/16/2016
Laboratory: Microseeps
SDG #: 17766
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☑ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☑ | sub contracted by KCEL |
| c) Field QC noted? | ☐ | ☐ | ☑ | Naming / "Blind" to Lab |
| d) Was the COC signed by both field and laboratory personnel? | ☐ | ☐ | ☑ | |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☑ | ☐ | ☐ | |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/16/2016
Laboratory: Microseeps
SDG #: 17766
Analytical Method (type and no.): Dissolved Gasses AM20GAX

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☑ | No Holding Time limit in documentation |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☑ | |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☑ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | see attached Field QC NOTES. |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | LCS/LCSD |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☑ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW141512 14- / EW141512 14D EW271512 15- / EW271512 15D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD <20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD <20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Lab qualified ~~yes~~ detections below RL but above MDL as "J". This translates to KCEL qualifier "T".
Lab flagged all results 'n' to indicate that they are not accredidated for this method.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect - LMB)
Validation Date: 5/16/2016
Laboratory: KCEL
SDG #: 011216 (COC 13338-13343)
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference: Cedar Hills SAP / KCEL Control levels

Applicable Data Validation Guidance:

**Sample Information:** See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☑ | ☐ | ☐ | |
| b) Sampling team indicated? | ☑ | ☐ | ☐ | |
| c) Field QC noted? | ☐ | ☑ | ☐ | Naming Convention / "Blind" to lab |
| d) Was the COC signed by both field and laboratory personnel? | ☑ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☑ | ☐ | ☐ | |

**Laboratory Receiving Notes**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | COC issues acceptably addressed by lab. |

**Note Deficiencies:**

Lab noted ~~at~~ TRIP BLANK Times not recorded on COC. - Corrected w/SWD approval.

Total number of bottles not listed on COC. - Corrected w/aproval by lab.

~~DC~~

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/16/2016
Laboratory: KCEL
SDG #: 011216 COC 13338-13343
Analytical Method (type and no.): Metals 6020A (T/D), 7470A (T/D), 6010C (Leachate)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | SEE Attached Field QC |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | Notes |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☑ | ☐ | ☐ | 5 MS results for 6020A had |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | too high of a concentration for this check |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW141512 14- / EW141512 14D<br>EW271512 15- / EW271512 15D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | ~~60020A only~~ LMB 3/16/2016<br>RPD<20 (Δ<2xRL) |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LR |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20 |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

See below. All results are considered acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Total vs. Dissolved

3 samples had results qualified due to the "dissolved" result being significantly greater than the "total" result.

EW20151216- Na results

EW21151216- Na results

W417-151214- Mn results

These have been qualified 'J' to indicate results may be estimated.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/16/2016
Laboratory: KCEL
SDG #: 011216 COC# (13338 - 13343)
Analytical Method (type and no.): Conventionals: SM2320, 2540, 4110B, 4500 (NO2/NO3), 5310, ~~A~~ NH3 2510-B

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | 4500-NH3-G = Kerouel Aminot 1997 |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☐ | Lab method naming quirk |
| c) Were hold times met for sample analysis? | ☐ | ☑ | ☐ | ~~240~~ 2540-D exceeded hold - |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☐ | results qualified (J/UJ) |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☐ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | see attached Field QC NOTES |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☑ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW14151214- / EW14151214D<br>EW27151215- / EW27151215D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20 |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LR |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20 |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Laboratory: KCEL
Analytical Method (type and no.): VOA 8260C

Validation Date: 5/16/2016
SDG #: D11216 COC# 13338 - 13343

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | see attached Field QC notes |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☑ | ☐ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☑ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☑ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☑ | ☒ LMB | |
| d) Were recoveries not calculated due to interference? | ☐ | ☑ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | Chloromethane %R low. |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | Associated Results qual G |
| c) Was the LCS accuracy criteria met? LMB | ☒ | ☑ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☑ | ☐ | Chloromethane %R Low |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | Vinyl Chloride %R Low |
| e) Was MSD accuracy criteria met? | ☐ | ☑ | ☐ | associated results qual G |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW14151214- / EW14151214D<br>EW27151215- / EW27151215D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☐ | ☑ | ☐ | RPD <20% |
| d) Were lab dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☑ | |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure

QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
PCB: Polychlorinated Biphenyl
RPD: Relative Percent Difference
RSD: Relative Standard Deviation
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
LOQ: Limit of Quantitation

# APPENDIX C

# March 2016 Data Validation Checklists
# (DV Tables provided on CD)

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 130088
Reviewer/Validator: Lea Beard (ASPECT-UMB)
Validation Date: 6/24/2016
Laboratory: Pace (Microseeps)
SDG #: 19510
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance: Lab provided levels

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☒ | sub contracted by KCEL |
| c) Field QC noted? | ☐ | ☐ | ☐ | |
| d) Was the COC signed by both field and laboratory personnel? | ☐ | ☐ | ☒ | signed by both lab |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☒ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☒ | ☐ | ☐ | 5°C |

**Laboratory Receiving Notes**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

No deficiencies.

# DATA REVIEW CHECKLIST - QA LEVEL II

Reviewer/Validator: ASPECT - LMB
Validation Date: 6/24/2016
Laboratory: MicroSeeps
SDG #: 18510
Analytical Method (type and no.): Dissolved Gases in Water (AM20GAX)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☒ | |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☒ | |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☒ | |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☒ | |
| f) Were any matrix probiems noted? | ☐ | ☐ | ☒ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | Known issue with field blanks |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | (not respresentative - do not use) |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☒ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☒ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☒ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☒ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | LCS/LCSD |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☒ | ☐ | ☐ | EW14160316-/EW14160316D |
| b) Were field dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | RPD<20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | <20% |

**Comments/Notes:**
All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
TCLP: Toxicity Characteristic Leaching Procedure
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
RPD: Relative Percent Difference
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
RT: Retention Time
LOQ: Limit of Quantitation

Lab flagged all results n to indicate a lack of NELAP certification.

Lab flagged results between the MDL + RL as J. This qualifier has been interpreted to T to better conform with KCEL/EIM qualification definitions.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hill RIFS
Project Number: 130089
Reviewer/Validator: Aspect - LMB
Validation Date: 6/24/2016
Laboratory: Microseeps
SDG #: 18436
Matrix: ☒ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☒ | Sub contracted by KCEL |
| c) Field QC noted? | ☐ | ☐ | ☒ | |
| d) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | Lab + Subcon. Lab |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☒ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☐ | ☒ | ☐ | 13°C insufficient ice |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☒ | ☐ | ☐ | Lab note temperature exceedance |

**Note Deficiencies:**

Samples were recieved at a temperature greater than 6°C (13°C), due to insufficient ice being packed in the cooler.
Lab noted deficiency to client. Client has made a note to provide more ice in future shipments.

# DATA REVIEW CHECKLIST - QA LEVEL II

Reviewer/Validator: ASPECT - LMB
Validation Date: 6/24/2016
Laboratory: Pace Microseeps
SDG #: 184336
Analytical Method (type and no.): Dissolved Gases in Water (AMGAx AM20GAx)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☒ | none specified |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☒ | |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☒ | |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☒ | |
| f) Were any matrix problems noted? | ☐ | ☐ | ☒ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☒ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☒ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☒ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☒ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | LCS/LCSD |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☐ | ☒ | ☐ | |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | RPD < 20% |

**Comments/Notes:**
All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
TCLP: Toxicity Characteristic Leaching Procedure
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
RPD: Relative Percent Difference
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
RT: Retention Time
LOQ: Limit of Quantitation

Lab flagged all results 'n' to indicate a lack of NELAP certification for this method.

Lab flagged results between MDL + RL as J. This qualifier has been interpreted to T to conform with KCEL/EIM qualification scheme.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect - LMB)
Validation Date: 5/18/2016
Laboratory: Microseeps
SDG #: 18487
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference:

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☑ | ☐ | ☐ | |
| b) Sampling team indicated? | ☐ | ☐ | ☑ | subcon by KCEL |
| c) Field QC noted? | ☐ | ☑ | ☐ | Naming convention / "Blind" |
| d) Was the COC signed by both field and laboratory personnel? | ☑ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☑ | ☐ | ☐ | |

**Laboratory Receiving Notes**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/18/2016
Laboratory: Microseeps
SDG #: 18487
Analytical Method (type and no.): Dissolved Gases AM20GAX

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☐ | ☐ | ☒ | No holding times indicated in |
| c) Were hold times met for sample analysis? | ☐ | ☐ | ☒ | documentation. |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☐ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | see field QC NOTE |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☑ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☑ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-160309-/EW2-160309D EW2716031I-/EW2716031ID |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☑ | ☐ | RPD>50% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

See below. All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Field Duplicats:

EW2-160309-/EW2-160309D RPD exceeded control for Methane.

Dup and Parent Results qualified J.

Lab Quals

Lab used J to indicate results between MDL + RL. KCEL uses T.

Lab used n to indicate they hold no accredidation for this ~~meet~~ method.

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (ASPECT - LMB)
Validation Date: 5/17/2016
Laboratory: KCEL
SDG #: 040616 COC#: 13452 - 13455
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference: CHLF SAP / KCEL control levels

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☑ | ☐ | ☐ | |
| b) Sampling team indicated? | ☑ | ☐ | ☐ | |
| c) Field QC noted? | ☐ | ☑ | ☐ | Naming Conventions / "Blind" to Lab. |
| d) Was the COC signed by both field and laboratory personnel? | ☑ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☐ | ☑ | ☐ | see below (resolved) |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | see below (resolved) |

**Note Deficiencies:**

Temperature exceeded limit (6.3-9.4°C). This is due to samples being delivered and processed promptly - ie they did not have time to cool to the target temperature. This is acceptable, and not indicative of any compromise of sample integrity. No action needed.

Lab noted a sample labeling descrepancy. Issue was resolved with SWD. No action needed.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/17/2016
Laboratory: KCEL
SDG #: 040616 COC# 13452 - 13455
Analytical Method (type and no.): Metals 6020A (T/D) ~~6010C (T)(T)(T)~~ LMB 5/17/16 Hg 7470A (T/D)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | See Field QC notes |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-160309- / EW2-160309D<br>EW2716031 1- / EW2716031 1D |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☑ | ☐ | Total Fe out for EW2-160309 pair- qualified parent + dup result J |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | Hg: MS/MSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☐ | Metals: LR |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☑ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☑ | |

**Comments/Notes:**

See below. Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

TOTAL vs. DISSOLVED

3 samples have results qualified due to the dissolved result being significantly greater than the total result.

EW16160310 -
Iron
Manganese

WS ~~E~~ W50-160308 -
Magnesium

W62-160309 -
Magnesium

These results have been qualified J to indicate results may be estimated.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/17/2016
Laboratory: KCEL
SDG #: 040616 COC# 13452- 13455
Analytical Method (type and no.): Conventionals: 2320, 2510, 2540 B-D, 4110B, 4500B($N_2/N_3$), NH3 5310

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | Narrative says ~~on~~ a blank not associated with ~~these~~ samples had NH3h No Qualification needed. |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | ~~lab repor~~ 4500-NH3-G = |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | Kerouel Aminot 1997 |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | see Field QC notes |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☑ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-160309-/EW2-160309D EW2716031 1-/EW2716031 1D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LR RPD<20% |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

Sample results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Laboratory: KCEL
Analytical Method (type and no.): VOA 8260

Validation Date: 5/17/2016
SDG #: 040616 COC# 13452-13455

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | Lab noted MS/MSD, LCS(BS) and method blank issues |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☑ | ☐ | ☐ | Methylene Chloride detected. All associated results ND - No Qualification. |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | see Field QC Note |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☑ | ☐ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☑ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☑ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☑ | ☐ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☑ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | Methyl Iodide high. All results ND → No Quals needed. |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☐ | ☒ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☒ | ☐ | Methylene Iodide %R high - all results ND - NO Qual. |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☒ | ☐ | Chloromethane %R Low - associated Results qualified GN. |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☒ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW2-160309- / EW2-160309D<br>EW27160311- / EW27160311D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | MS/MSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD < 40% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**
Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: 421422
Reviewer/Validator: Lea Beard (Aspect - LMB)
Validation Date: 5/17/2016
Laboratory:
SDG #: 041216 COC# 13456-13460
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference: CHLF SAP / KCEL control limits

Applicable Data Validation Guidance:

**Sample Information:** See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☑ | ☐ | ☐ | |
| b) Sampling team indicated? | ☑ | ☐ | ☐ | |
| c) Field QC noted? | ☐ | ☑ | ☐ | Naming Convention / "Blind" to lab |
| d) Was the COC signed by both field and laboratory personnel? | ☑ | ☐ | ☐ | "Thunder day" |
| e) Were samples received in good condition? | ☑ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☑ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☐ | ☑ | ☐ | see below (resolved) |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | see below (resolved) |

**Note Deficiencies:**

J: Cooler temperature exceeded ~~ht~~ limit (7.1–10.1°C) for COC 13460. Coolers contained sufficient ice. Likely samples had been delivered quickly and not had time to cool to specified temperature. No compromise to sample integrity – no qualification needed.

a: Lab noted issues with correct entry of bottle counts. Lab resolved descrepancy with SWD – no ~~acti~~ further action needed.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/17/2016
Laboratory: KCEL
SDG #: 041216 COC# 13456 - 13460
Analytical Method (type and no.): Metals 6020A (T/D) 6010C (T) Hg - 7470A (T/D)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☐ | ☐ | ☑ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | see Field QC NOTE |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☑ | ☐ | ☐ | |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW14160316- / EW14160316D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | LR + MS/MSD |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☐ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☐ | |

**Comments/Notes:**

See below. All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Total vs. Dissolved

1 Sample had results qualified due to the Dissolved result being significantly higher than the total result.

W47-16015

Manganese (T/D) results have been qualified J to indicate results may be an estimate.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Validation Date: 5/18/2016
Laboratory: KCEL
SDG #: 041216 COC# 13456-13460
Analytical Method (type and no.): Conventionals: NH3/N2N3, TOC, TS, TSS, TDS, Cond., Anions

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | Lab mentions on NH3 blank out but that it isn't associated w/ any samples. -NO QUAL |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | 4500-NH3-G = Kerouel Aminot 1997 |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | (naming quirk) |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☑ | ☐ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | See Field QC NOTE |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☐ | ☐ | ☑ | |
| b) Were recoveries within control limits? | ☐ | ☐ | ☑ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☐ | ☑ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☐ | ☑ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW14160316-/EW14160316D |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☑ | ☐ | Spec. Cond RPD>~~20~~25% - J |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | TOC RPD > 30% - J |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | LR |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

See below. All results are acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Field Duplicates -

~~Ex~~ RPD exceeded control limit (default of 25%) for Specific Conductance and TOC. Only field dup + parent results qualified. J to indicate potential estimate.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: ASPECT - LMB
Laboratory: KCEL
Analytical Method (type and no.): VOA 8260C

Validation Date: 5/18/2016
SDG #: 041216 COC# 13456 - 13460

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☑ | ☐ | ☐ | Lab note issues w/ LCS, MS & Blanks |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☑ | ☐ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☑ | ☐ | ☐ | Methylene Chloride detected. |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | all associated results ND - |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | No Qual. |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☑ | ☐ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | See Field QC Notes |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☑ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☑ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☑ | ☐ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☑ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | Chloromethane %R Low - G/GU |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☐ | ☑ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | Methyl Iodide %R High - all results |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | ND - NO QUAL |
| e) Was MSD accuracy criteria met? | ☐ | ☑ | ☐ | Chloroform %R Low - |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | qualified associated results GU |
| f) Were MS/MSD precision criteria met? | ☑ | ☐ | ☐ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☑ | ☐ | ☐ | EW14160316-/EW14160316D |
| b) Were field dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | MS/MSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | RPD<20% |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

All results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
CC: Continuing Calibration
RRF: Relative Response Factor
TCLP: Toxicity Characteristic Leaching Procedure

QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
PCB: Polychlorinated Biphenyl
RPD: Relative Percent Difference
RSD: Relative Standard Deviation
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
SPCC: System Performance Check Compound
RT: Retention Time
LOQ: Limit of Quantitation

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: CHLF RIFS
Project Number: 130088
Reviewer/Validator: Lea Beard (Aspect-LMB)
Validation Date: 5/18/2016
Laboratory: Freedman + Bruya
SDG #: 603279
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐ Other

Work Plan or QAPP reference: FTB: Control criteria

Applicable Data Validation Guidance:

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☐ | ☐ | ☒ | |
| b) Sampling team indicated? | ☐ | ☐ | ☒ | |
| c) Field QC noted? | ☐ | ☐ | ☒ | no Field QC in SDG |
| d) Was the COC signed by both field and laboratory personnel? | ☐ | ☐ | ☒ | |
| e) Were samples received in good condition? | ☐ | ☐ | ☒ | |
| f) Were the correct preservatives used? | ☐ | ☐ | ☒ | |
| j) Was the sample cooler temperature within QC limits? | ☐ | ☐ | ☒ | |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

COC and reciept documentation was not included with lab report.
This was a supplimental analysis.

# DATA REVIEW CHECKLIST - QA LEVEL II

Validator: Aspect - LMB
Laboratory: Freedman & Bruya
Analytical Method (type and no.): VOA 8260C

Validation Date: 5/18/2016
SDG #: 603279

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☑ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☑ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☑ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☑ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☑ | ☐ | ☐ | |
| e) Were any sample dilutions noted? | ☐ | ☑ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☑ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☑ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☑ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☑ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☑ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☑ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☑ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☑ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☑ | ☐ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☑ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☑ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☑ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☑ | ☐ | ☐ | LCS/LCSD |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| e) Was MSD accuracy criteria met? | ☑ | ☐ | ☐ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☑ | ☐ | |
| f) Were MS/MSD precision criteria met? | ☒ LMB | ☐ | ☑ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☐ | ☒ | ☐ | |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☑ | ☐ | ☐ | LCS/LCSD RPD<20% |
| d) Were lab dup. precision criteria met (Note RPD)? | ☑ | ☐ | ☐ | |

| ICP Serial Dilution (SD) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was an ICP SD analyzed once per SDG? | ☐ | ☐ | ☒ | |
| b) Was the ICP SD criteria met? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

**Definitions:**

| | |
|---|---|
| SDG: Sample Delivery Group | QC: Quality Control |
| COC: Chain of Custody | QAPP: Quality Assurance Project Plan |
| VOC: Volatile Organic Compound | SVOC: Semivolatile Organic Compound |
| TCL: Target Compound List | PCB: Polychlorinated Biphenyl |
| %D: Percent Difference | RPD: Relative Percent Difference |
| LCS: Laboratory Control Sample | RSD: Relative Standard Deviation |
| MS/MSD: Matrix Spike/Matrix Spike Duplicate | CRDL: Contract Required Quantitation Limit |
| MDL: Method Detection Limit | RL: Reporting Limit |
| %R: Percent Recovery | PEM: Performance Evaluation Mixture |
| CC: Continuing Calibration | SPCC: System Performance Check Compound |
| RRF: Relative Response Factor | RT: Retention Time |
| TCLP: Toxicity Characteristic Leaching Procedure | LOQ: Limit of Quantitation |

Lab qualifiers:

Lab used UJ to indicate that, by client request, they were reporting naphthalene non-detects to a level below the RL (below lowest calibration standard.)

No direct equivalent in KCEL quals. Using UJ because this indicates both the non-detect and the estimated reporting level.

# APPENDIX C

# Soil Gas Data Validation Checklists (DV Tables provided on CD)

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hill RIFS
Project Number: 130088
Reviewer/Validator: Lea Beard (ASPECT-LMB)
Validation Date: 6/7/2016
Laboratory: ALS - Simi Valley
SDG #: P1602391
Matrix: ☒ Air ☐ Soil/Sed. ☐ Water ☐ Waste ☐ Other SOIL GAS

Work Plan or QAPP reference: _____

Applicable Data Validation Guidance: Laboratory Specified Controls

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☒ | ☐ | ☐ | |
| c) Field QC noted? | ☐ | ☐ | ☒ | |
| d) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☐ | ☐ | ☒ | |
| j) Was the sample cooler temperature within QC limits? | ☐ | ☐ | ☒ | Not needed for method |

**Laboratory Receiving Notes**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | All OK |

**Note Deficiencies:**

# DATA REVIEW CHECKLIST - QA LEVEL II

Reviewer/Validator: ASPECT - LMB
Validation Date: 6/7/2016
Laboratory: ALS- Simi Valley
SDG #: P1602391
Analytical Method (type and no.): EPA-TO-15 (VOAs in Air)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☒ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☒ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☒ | ~~Note~~ |
| e) Were any sample dilutions noted? | ☒ | ☐ | ☐ | Sample specific |
| f) Were any matrix problems noted? | ☐ | ☒ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☒ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☒ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☒ | ☐ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☒ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☒ | ☐ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | No MS/MSD |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☐ | ☒ | ☐ | |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☐ | ☒ | ☐ | |
| d) Were lab dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | |

**Comments/Notes:**

All Results acceptable for use as qualified.

**Data Qualification:** See Table 2.

No results qualified. (aside from just u (non-detect)).

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
TCLP: Toxicity Characteristic Leaching Procedure
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
RPD: Relative Percent Difference
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
RT: Retention Time
LOQ: Limit of Quantitation

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hill RIFS
Project Number: 130088
Reviewer/Validator: Lea Beard (ASPECT - LMB)
Validation Date: 6/7/2016
Laboratory: ALS - Simi Valley
SDG #: P1602388
Matrix: ☒ Air ☐ Soil/Sed. ☐ Water ☐ Waste ☐ Other SOIL GAS

Work Plan or QAPP reference: _____

Applicable Data Validation Guidance: Laboratory Specified Limit

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☒ | ☐ | ☐ | |
| c) Field QC noted? | ☒ | ☐ | ☐ | Trip Blank |
| d) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☐ | ☐ | ☒ | none needed |
| j) Was the sample cooler temperature within QC limits? | ☒ | ☐ | ☒ LMB | ~~no limits~~ LMB 4°C ± 2 ok |

**Laboratory Receiving Notes**

| | | | | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | all ok. |

**Note Deficiencies:**

# DATA REVIEW CHECKLIST - QA LEVEL II

Reviewer/Validator: ASPECT - LMB
Validation Date: 6/7/2016
Laboratory: ALS - Simi Valley
SDG #: P1602388
Analytical Method (type and no.): EPA-TO-17 (VOCs in AIR)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☒ | ☐ | ☐ | lab notes LCS/LCSD issues + surrogate/IS issue |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☒ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☒ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☒ | none specified |
| e) Were any sample dilutions noted? | ☒ | ☐ | ☐ | Dilution Factor by sample |
| f) Were any matrix problems noted? | ☒ | ☐ | ☐ | lab noted surrogate/standard failure and suggested matrix may be issue. |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☒ | ☐ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☒ | ☐ | ☐ | %R of 1,2-DCA-d4 High in 1 sample |
| b) Were recoveries within control limits? | ☐ | ☒ | ☐ | Lab flagged affected results "I". |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☒ | ☐ | See notes |
| d) Were recoveries not calculated due to interference? | ☐ | ☒ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | %R low for napthalene |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | carbon disulfide |
| c) Was the LCS accuracy criteria met? | ☐ | ☒ | ☐ | Hexachlorobutadiene see note |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | No MS/MSD |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☐ | ☒ | ☐ | |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | LCS/LCSD |
| d) Were lab dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | |

**Comments/Notes:**

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
TCLP: Toxicity Characteristic Leaching Procedure
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
RPD: Relative Percent Difference
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
RT: Retention Time
LOQ: Limit of Quantitation

Surrogate / Internal Standard:

Sample G16S160505- had high %R for surrogate 1,2-DCA-d4
Associated Results in this sample have been qualified as estimated: J/UJ

LCS/LCSD:

%R was low in the LCS + LCSD for Naphthalene and Carbon Disulfide
Results in associated samples qualified as estimated (J/UJ)

%R was low in the LCSD for hexachlorobutadiene.
Results in associated samples qualified as estimated (J/UJ)

# DATA REVIEW CHECKLIST – SAMPLE RECEIVING

Project Name: Cedar Hills RIFS
Project Number: CHRLF
Reviewer/Validator: Lea Beard (ASPECT-LMB)
Validation Date: 6/7/~~2022~~ 2016
Laboratory: Freemont Analytical
SDG #: 1607089
Matrix: ☒ Air ☐ Soil/Sed. ☐ Water ☐ Waste ☐ Other SOIL GAS

Work Plan or QAPP reference:

Applicable Data Validation Guidance: Laboratory Control Limits

**Sample Information**: See Table 1 (attached)

| **Field/COC Information** | **YES** | **NO** | **NA** | **COMMENTS** |
|---|---|---|---|---|
| a) Sampling dates noted? | ☒ | ☐ | ☐ | |
| b) Sampling team indicated? | ☒ | ☐ | ☐ | |
| c) Field QC noted? | ☐ | ☐ | ☒ | ~~Naming Convention / "Blind" to lab~~ LMB 6/7/16 none |
| d) Was the COC signed by both field and laboratory personnel? | ☒ | ☐ | ☐ | |
| e) Were samples received in good condition? | ☒ | ☐ | ☐ | |
| f) Were the correct preservatives used? | ☒ | ☐ | ☐ | |
| j) Was the sample cooler temperature within QC limits? | ☐ | ☐ | ☒ | Not required for this type. |
| **Laboratory Receiving Notes** | | | | |
| a) Does the laboratory narrative indicate deficiencies? | ☐ | ☒ | ☐ | |

**Note Deficiencies:**

# DATA REVIEW CHECKLIST - QA LEVEL II

Reviewer/Validator: ASPECT - LMB
Validation Date: 6/7/2016
Laboratory: Fremont Analytical
SDG #: 1507089
Analytical Method (type and no.): EPA-TO-15 (VOCs in Air)

| Laboratory Case Narrative | YES | NO | NA | |
|---|---|---|---|---|
| a) Does the laboratory narrative indicate deficiencies? | ☒ | ☐ | ☐ | LCS %R High<br>Internal Standard failure<br>Calibration Exceedance |

**Note Deficiencies:**

These issues are addressed in the appropriate sections below.

| General (reference QAPP or Method) | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was the correct method used? | ☒ | ☐ | ☐ | |
| b) Were hold times met for sample pretreatment? | ☒ | ☐ | ☐ | |
| c) Were hold times met for sample analysis? | ☒ | ☐ | ☐ | |
| d) Were appropriate reporting limits achieved? | ☐ | ☐ | ☒ | None Specified |
| e) Were any sample dilutions noted? | ☐ | ☒ | ☐ | |
| f) Were any matrix problems noted? | ☐ | ☒ | ☐ | |

| Blanks | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were analytes detected in the method blank(s)? | ☐ | ☒ | ☐ | Method Blank + CCB |
| b) Were analytes detected in the field blank(s)? | ☐ | ☐ | ☒ | |
| c) Were analytes detected in the equipment blank(s)? | ☐ | ☐ | ☒ | |
| d) Were analytes detected in the trip blank(s)? | ☐ | ☐ | ☒ | |
| e) Were analytes detected in the storage blank(s)? | ☐ | ☐ | ☒ | |

| Surrogate (System Monitoring) Compounds | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were surrogate compounds added to all samples? | ☒ | ☐ | ☐ | |
| b) Were recoveries within control limits? | ☒ | ☐ | ☐ | |
| c) Were surrogate recoveries not calculated due to dilutions? | ☐ | ☒ | ☐ | |
| d) Were recoveries not calculated due to interference? | ☐ | ☒ | ☐ | |

| Laboratory Control Sample | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Was a LCS analyzed at the appropriate frequency? | ☒ | ☐ | ☐ | see notes - No Qual |
| b) Were the proper compounds included in the LCS? | ☒ | ☐ | ☐ | |
| c) Was the LCS accuracy criteria met? | ☐ | ☒ | ☐ | |

| Matrix Spike/Matrix Spike Duplicate | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| d) Was MS accuracy criteria met? | ☐ | ☐ | ☒ | No MS/MSD |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| e) Was MSD accuracy criteria met? | ☐ | ☐ | ☒ | |
| Recovery could not be calculated since sample contained high concentration of analyte? | ☐ | ☐ | ☒ | |
| f) Were MS/MSD precision criteria met? | ☐ | ☐ | ☒ | |

# DATA REVIEW CHECKLIST - QA LEVEL II

| Duplicates | YES | NO | NA | COMMENTS |
|---|---|---|---|---|
| a) Were field duplicates collected (note original and duplicate sample names)? | ☐ | ☒ | ☐ | |
| b) Were field dup. precision criteria met (Note RPD)? | ☐ | ☐ | ☒ | 1507089-005AREP / |
| c) Were lab duplicates analyzed (note original and duplicate samples)? | ☒ | ☐ | ☐ | G1025150708 |
| d) Were lab dup. precision criteria met (Note RPD)? | ☒ | ☐ | ☐ | RPD = 29.6<br>Lab Limit = 30 |

**Comments/Notes:**

Results are acceptable for use as qualified, with the exception of 2-Butanone in sample GG8-1507089.

**Data Qualification:** See Table 2.

**Definitions:**

SDG: Sample Delivery Group
COC: Chain of Custody
VOC: Volatile Organic Compound
TCL: Target Compound List
%D: Percent Difference
LCS: Laboratory Control Sample
MS/MSD: Matrix Spike/Matrix Spike Duplicate
MDL: Method Detection Limit
%R: Percent Recovery
TCLP: Toxicity Characteristic Leaching Procedure
QC: Quality Control
QAPP: Quality Assurance Project Plan
SVOC: Semivolatile Organic Compound
RPD: Relative Percent Difference
CRDL: Contract Required Quantitation Limit
RL: Reporting Limit
PEM: Performance Evaluation Mixture
RT: Retention Time
LOQ: Limit of Quantitation

LCS:
%R high for 1,2-Dichlorobenzene + 1,4-Dichlorobenzene
All associated sample results are non-detect – No Qualification needed.

IS (Internal Standard):
Lab indicated IS deficiencies in sample G60S150708 impacting results for:
Isoprobyl ~~Alcho~~ Alcohol
Acetone
Dichlorodifluoromethane
Results qualified JL to indicate estimated with potential high bias.

Calibration Range Exceedance:
2-Butanone in sample GG8-150708 Exceeded Instrument Calibration Range.
Result qualified E. Analyte is present in sample ~~at~~ at level above calibration upper limit. Numerical value ~~should not be used~~ is not considered accurate and should ~~not~~ be used only with great caution and caveats.