

### Summary of Changes: SOM02.2 to SOM02.3

The following Summary of Changes highlights the major modifications implemented in SOW SOM02.3 compared to SOW SOM02.2.

This is a high-level summary and is not intended to be a complete or comprehensive listing of every modification. Interested parties are strongly encouraged to read the complete SOW SOM02.3 and familiarize themselves with all of the requirements.

#### Global

- The following EPA staff title has been updated throughout the document wherever applicable:  
EPA Regional Laboratory Contracting Officer Representative (EPA Regional Laboratory COR) has been replaced with EPA Regional Contract Laboratory Program Contracting Officer's Representative (EPA Regional CLP COR).
- References to "SOM02.2" have been updated to "SOM02.3".

#### Exhibit B

- **Section 1.1, Table 1, Item F** – Deliverables for Proficiency Testing (PT) Audits are not to be distributed to QATS. All deliverables are to be delivered only to the Sample Management Office (SMO).
- **Section 1.1, Table 1, Item I** – The statement "Submit within 60 days after contract award" under the Delivery Schedule for the Quality Assurance Project Plan (QAPP) has been replaced with "Submit within XX<sup>4</sup> days after contract award" to indicate that the number of days will be provided in the associated laboratory contract document and will also be provided at the time of sample scheduling by the SMO Contractor.
- **Section 3.3.7.1, Table 5** – Table 5 (Codes for Labeling Data) has been moved from Section 3.3.11 to Section 3.3.7.1. In addition, the labeling requirement for the Toxicity Characteristic Leaching Procedure/Synthetic Precipitation Leaching Procedure (TCLP/SPLP) leachate samples has been updated in the table. The EPA Sample Number for these samples is to be reported without the "E" suffix in both the hardcopy data package and Staged Electronic Data Deliverable (SEDD).
- **Section 3.3.22** – "PT" for Purge\_and\_Trap has been added to the list of extraction types to be reported for the Trace Volatile and Low/Medium Volatile analytical methods.
- **Section 3.4.2.2.5** – The instructions for reporting the pH on the Organic Analysis Data Sheet (Form 1A-OR and Form 1B-OR) have been updated to: "pH" is required for aqueous/water samples. Enter the pH determined. Report the pH value for soil/sediment samples, if the measurement is requested.
- **Section 3.4.6.1** – The list of samples that are to be reported on Form 4-OR has been updated to include dilutions, reanalyses, re-extractions/reanalyses, and the requested Matrix Spikes/Matrix Spike Duplicates (MS/MSDs) associated with each method blank analysis.
- **Section 3.4.12.1** – The statement "This form is also used for reporting the PEM and Individual Standards A, B, or C as CCVs analyzed during the analytical sequence." has been added.
- **Section 3.4.12.2.1** – The "Time Analyzed" is also to be reported for the PEM and CS3 continuing calibration standards using military time.

## Exhibit B - Forms

- Form DC-2 has been redesigned to be in agreement with the instructions in Exhibit B, Section 2.6.2.1.2.

## Exhibit D – Introduction

- **Section 3.0** – The reference to EPA’s (SW-846) Chapter Four Organic Analytes has been updated from Section 4.1.4, Revision 4, 2007, to Section 4.1.6, Revision 5, July 2014. The web address to the electronic version of this manual has been updated to <http://www3.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/chap4.pdf>.

## Exhibit D – General

- **Section 4.1 through Section 4.1.3** – The following instructions related to pH determination have been added under the Interferences section:
  - 4.1 pH Determination
    - 4.1.1 Samples with very low or very high pH may give incorrect readings on the meter. For samples with a true pH >10, the measured pH may be incorrectly low. This error can be minimized by using a low-sodium-error electrode. Strong acid solutions with a pH <1 may give incorrectly high pH measurements.
    - 4.1.2 Coatings of oily material or particulate matter can impair electrode response. These coatings can generally be removed by gentle wiping or detergent washing followed by rinsing with reagent water. Treatment with 10% HCl may be necessary to remove some films.
    - 4.1.3 Temperature changes can affect measurements. This can be minimized by use of instruments with temperature compensation. The temperature of the sample can change the sample pH. The temperature at which the pH measurements are carried out shall be noted.
- **Section 6.2 through Section 6.2.6** – The following equipment and supplies requirements, related to pH determinations, have been added:
  - 6.2 pH Determinations
    - 6.2.1 pH meter with reference electrode accurate to  $\pm 0.05$  pH units. The pH meter/probe should be equipped with a means of temperature compensation either manually or automatically.
    - 6.2.2 pH paper, wide-range or narrow-range pH paper strip.
    - 6.2.3 Magnetic stirrer with fluoropolymer-coated stir bar.
    - 6.2.4 Beakers – Preferably polyethylene or polytetrafluoroethylene (PTFE).
    - 6.2.5 Various volumetric flasks and pipettes (Class A).
    - 6.2.6 Thermometer that covers the range of the sample temperature with a minimum accuracy of  $\pm 1^{\circ}\text{C}$ .

- **Section 7.1.8** – The following standards requirements, related to pH determination, have been added:

Standard Buffers for pH meter calibration. At a minimum, two standard buffer solutions are required to bracket the expected pH of the samples. The solutions shall be separated by at least three pH units.

- **Section 9.1** – The following requirements for pH meter calibration have been added:

#### 9.1 pH Meter Calibration

Because of the differences between various makes and models of satisfactory instruments, no detailed operating instructions can be provided. Instead, the analyst should follow the instructions provided by the manufacturer of the particular instrument. Each instrument and electrode shall be calibrated at a minimum of two points that bracket the expected pH of the samples. These two points shall be separated by at least three pH units.

Adjust the meter until the readings are within  $\pm 0.05$  pH units of the buffer solution value.

- **Section 10.1.2 through Section 10.1.2.2.4** – The following requirements for the determination of pH for aqueous/water and soil/sediment samples have been added:

#### 10.1.2 pH Determinations

##### 10.1.2.1 Aqueous/Water pH Determination

The determination of pH is required for all aqueous/water samples at the time of the receipt at the laboratory or after sample aliquots have been taken. The Contractor shall follow the procedures based on the EPA SW-846 Method 9041A, Revision 1, July 1992 (pH paper) or the EPA SW-846 Method 9040C, Revision 3, November 2004 [electrometric method (i.e., pH meter and electronic hand-held pen)].

##### 10.1.2.1.1 pH Measurement by pH Paper

Place one or two drops of sample on the pH paper and record the pH for the sample.

##### 10.1.2.1.2 pH Measurement by Electrometric Method

10.1.2.1.2.1 Transfer a sufficient volume of sample to a beaker to cover the sensing elements of the electrode(s) and to give adequate clearance for the magnetic stirring bar. The sample shall not be diluted.

10.1.2.1.2.2 If the sample temperature differs by more than 2°C from the temperature of the buffer solutions used to standardize the meter, the measured pH values must be corrected.

10.1.2.1.2.3 After rinsing and gently wiping the electrode(s) if necessary, immerse the electrode(s) in the sample beaker and stir at a constant rate to provide homogeneity and suspension of solids. The rate of stirring should minimize the air transfer rate at the air/water interface. Record the sample pH and the temperature. Repeat measurements on successive volumes of sample until values differ by less than 0.1 pH units.

#### 10.1.2.2 Soil/Sediment pH Determination

The determination of pH for soil/sediment samples is not required as a routine procedure to be completed at the laboratory. However, if requested at the time of scheduling, the Contractor shall follow the procedures based on the EPA SW-846 Method 9045D, Revision 4, November 2004 to determine the pH by electrometric method (i.e., pH meter or electronic hand-held pen).

10.1.2.2.1 Transfer 20 g of well-mixed sample to a 50 mL beaker, add 20 mL of reagent water, cover, and continuously stir the suspension for 1 hour. Additional water may be added if the soils are hygroscopic or contain large amounts of salts.

10.1.2.2.2 Let the soil suspension stand for at least 1 hour to allow most of the suspended clays to settle. Difficult samples may be filtered or centrifuged to separate the aqueous layer for pH determination. If the supernatant is biphasic, decant the oily phase and measure the pH of the aqueous phase.

10.1.2.2.3 Measure and record the pH for the sample.

10.1.2.2.4 Measure and record the temperature for the sample. If the sample temperature differs by more than 2°C from the temperature of the buffer solutions used to standardize the meter, the measured pH values must be corrected.

- **Section 10.2.2.4.3** – The second sentence in this section has been updated to: If the two liquids are not miscible, they shall be prepared and analyzed separately and the analytical results mathematically combined.
- **Section 12.1.2** – This section has been updated to: At least one LEB, consisting of the appropriate extraction fluid processed through the extraction procedure, shall be extracted with every SDG scheduled for TCLP or SPLP.
- **New Section 12.1.5** – The requirement that "under no circumstances should the LEB be analyzed at a dilution" has been added.
- **Section 16.0** – EPA SW-846 Method 9040C, Revision 3, November 2004; EPA SW-846 Method 9041A, Revision 1, July 1992; and EPA SW-846 Method 9045D, Revision 4, November 2004 have been included in the list of method references.

#### Exhibit D – Trace VOA

- **Section 9.4.5.2** – The CCV requirements have been updated to: For an opening or closing CCV, the RRF for each target analyte and DMC must be greater than, or equal to, the compound's minimum RRF listed in Table 4 – Technical Acceptance Criteria for Initial and Continuing Calibration Verification for Trace Volatile Organic Compounds.
- **Section 9.4.5.4** – The CCV requirements have been updated to: For an opening or closing CCV, up to two target analytes and/or DMCs (excluding those compounds with minimum RRF requirements of 0.010) may fail to meet the criteria listed in Section 9.4.5.2, but these compounds must still meet the minimum RRF requirements of 0.010.

#### Exhibit D – Low/Medium VOA

- **Section 9.4.5.2** – The CCV requirements have been updated to: For an opening/closing CCV, the RRF for each purgeable target analyte and DMC must be greater than, or equal to, the compound's opening/closing minimum RRF listed in Table 4 – Technical Acceptance Criteria for Initial and Continuing Calibration Verification for Volatile Organic Compounds.
- **Section 9.4.5.4** – The CCV requirements have been updated to: For an opening or closing CCV, up to two target analytes and/or DMCs (excluding those compounds with minimum RRF requirements of 0.010) may fail to meet the criteria listed in Section 9.4.5.2, but these compounds must still meet the minimum RRF requirements of 0.010.
- **Section 11.3.4** – The following requirements have been added for the recovery of DMCs in TCLP leachate samples: For TCLP leachate sample analysis, up to two DMCs associated to the TCLP analytes may fail to meet the recovery limits listed in Table 10 – Deuterated Monitoring Compound Recovery Limits.

#### Exhibit D – SVOA

- **Sections 1.3 and 17.0, Table 3** – Target analyte Dichlorobenzidine has been updated to 3,3'-Dichlorobenzidine.
- **Section 7.2.2.1.2** – DMC analyte 2,4-Dinitrophenol-d<sub>3</sub> has been removed from the list of less sensitive analytes.
- **Section 9.4.5.2** – The CCV requirements have been updated to: For an opening or closing CCV, the RRF for each semivolatile target analyte and DMC must be greater than, or equal to, the compound's minimum RRF listed in Table 5 – Technical Acceptance Criteria for Initial and Continuing Calibration Verification for Semivolatile Organic Compounds
- **Section 9.4.5.5** – The CCV requirements have been updated to: For an opening or closing CCV, up to four target analytes and/or DMCs (excluding those compounds with minimum RRF requirements of 0.010) may fail to meet the criteria listed in Table 5 - Technical Acceptance Criteria for Initial and Continuing Calibration Verification for Semivolatile Organic Compounds. Up to four target analytes and/or DMCs (excluding those with maximum %D requirements of ±40.0%) may fail to meet the requirements listed.
- **Section 9.4.5.6** – The CCV requirements have been updated to: For the opening CCV of the optional analysis of PAHs and PCP using the full scan method or the SIM technique, up to two target analytes and/or DMCs (excluding those with minimum RRF requirements of 0.010) may fail to meet the criteria listed in Table 5 - Technical Acceptance Criteria for Initial and Continuing Calibration Verification for Semivolatile Organic Compounds. Up to two target analytes and/or DMCs (excluding those with maximum %D requirements of ±40.0%) may fail to meet the criteria listed. For a closing CCV, up to two target analytes and/or DMCs (excluding those with minimum RRF requirements of 0.010) may fail to meet the criteria listed.
- **Section 11.3.4** – The following requirements have been added for the recovery of DMCs in TCLP leachate samples: For TCLP leachate sample analysis, up to one DMC associated to the TCLP analytes may fail to meet the recovery limits listed in Table 11 – Deuterated Monitoring Compound Recovery Limits, but the %R must be greater than zero.
- **Section 16.0** – The revision numbers and/or version dates of EPA SW-846 Method 3545A, EPA SW-846 Method 8270D, and EPA SW-846 Method 3550C have been updated.

- **Section 17.0, Table 3** – Target analytes Hexachlorocyclopentadiene and 3,3'-Dichlorobenzidine previously associated with 4-Chloroaniline-d<sub>4</sub> (DMC-6) are now associated with Nitrobenzene-d<sub>5</sub> (DMC-7).

#### Exhibit D – PEST

- **Section 16.0** – The revision numbers and/or version dates of EPA SW-846 Method 8081B, EPA SW-846 Method 3545A, EPA SW-846 Method 3620C, and EPA SW-846 Method 3550C have been updated.

#### Exhibit D – ARO

- **Section 16.0** – The version dates of EPA SW-846 Method 8082A, EPA SW-846 Method 3545A, and EPA SW-846 Method 3550C have been updated.
- **Section 17.0, Table 2** – Aroclor 1254 and associated concentration levels of Initial Calibration and Continuing Calibration Verification standards, and technical acceptance criteria have been added. The concentration levels and technical acceptance criteria for this analyte are the same as for the other target analytes listed in the table.

#### Exhibit E

- **Section 3.3.1** – The Contractor is required to submit their QAPP to the EPA CO within the number of days provided in the associated laboratory contract document and not within 60 days of contract award.

#### Exhibit G

- The definitions for Analytical Sequence, Calibration Standards, Contract Required Quantitation Limit (CRQL), Date, EPA Regional Laboratory Contracting Officer Representative (Regional Laboratory COR) [now EPA Regional CLP Contracting Officer's Representative (Regional CLP COR)], Laboratory Control Sample (LCS), and Matrix Effect have been updated. The definition for EPA Regional CLP Lead has been removed.

#### Exhibit H

- **Section 2.1** – The web address for information on the Staged Electronic Data Deliverable (SEDD) has been updated to <http://www2.epa.gov/clp/staged-electronic-data-deliverable-sedd>.
- **Section 3.1.12** – The Handling node has been added to the list of nodes that may contain one or more Characteristic nodes.
- **Section 4.1.5** – In the requirements for the "HandlingBatch" element, "Method Blank" has been replaced with "Leachate Extraction Blank".
- **Section 7, Tables 1, 2, 3, 4, 5, and 6** – In the Instructions for the QCType element under the SamplePlusMethod node, "Method\_Blank" has been replaced with "Leachate\_Extraction\_Blank" for Leachate Extraction Blank (LEB) samples.
- **Section 7, Tables 1, 2, 3, 4, 5, and 6** – The Instructions for reporting the pH to the nearest tenth in the CharacteristicValue element under the Characteristic node have been updated to include soil/sediment samples.

- **Section 7, Tables 1, 2, and 3** – The PreparationBatch element under the PreparationPlusCleanUp node is applicable to Trace Volatiles and Low/Medium Volatiles samples that are analyzed in the same analytical sequence.
- **Section 7, Tables 1, 2, and 3** – "Purge-and-Trap" is to be reported for Trace Volatiles and Low/Medium Volatiles samples in the PreparationType element under the PreparationPlusCleanUp node.
- **Section 7, Tables 1, 2, and 3** – The purge-and-trap date and time for Trace Volatiles and Low/Medium Volatiles samples is to be reported in the PreparedDate element under the PreparationPlusCleanUp node.
- **Section 7, Tables 1, 2, and 3** – The following has been added to the Instructions for the PeakID element under the Analyte node: For unknown TICs, report the unique identifiers as applicable. For alkanes, report "Total alkanes" as the identifier.
- **Section 7, Tables 1 and 4** – The Instructions for the CharacteristicType element under the Characteristic node have been updated to include requirements for reporting the "pH" and "Temperature", measured for the TCLP or SPLP leachates, under the Handling node.
- **Appendix A, Section 1.0** – The format requirement for the Microsoft® Excel file name of the Method Detection Limit (MDL) study data deliverable has been updated. The file name format is required to be "MDL\_#.xls", where "#" can be any naming convention selected by the Contractor.
- **Appendix A, Table A-1** – The MDL study data deliverable table has been updated to include a "Required" field that identifies the columns that are always required to be populated in the deliverable spreadsheet.
- **Appendix A, Table A-1** – The MDL study data deliverable table has been updated to include a "Level" and a "Matrix" row (and associated Instructions) before the "InstrumentID" row.
- **Appendix A, Table A-1** – The "SOW" and "ClientMethodCode" column names, in the MDL study data deliverable table, have been changed to "MethodSource" and "PreparationMethod", respectively. In addition, the "ClientMethodType" column name has been changed to "Method" and the associated Instructions have been updated.
- **Appendix A, Table A-1** – The Instructions for the "AnalyzedDate##" column have been updated to include the required Date format.
- **Appendix A, Table A-1** – The Instructions for the "ConcentrationAcceptable" row, in the MDL study data deliverable table, have been updated to: Enter "Y" if the concentration of the analyte in the MDL standards was less than or equal to 10 times the calculated MDL for that analyte. Otherwise enter "N".