UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Mr. Paul V. Rosasco
Project Coordinator
Engineering Management Support, Inc.
25923 Gateway Drive
Golden, Colorado 80401

Re: West Lake Landfill Superfund Site, Operable Unit 2, Remedial Design Work Plan, Quality Assurance Project Plan, and Sampling and Analysis Plan

Dear Mr. Rosasco:

The U.S. Environmental Protection Agency has completed its review of the third version of the Remedial Design Work Plan, Quality Assurance Project Plan, and Sampling and Analysis Plan, dated March 23, 2020. The EPA is approving the Work Plan and Sampling and Analysis plan with modifications in accordance with paragraph 22(f) 8) of the Third Amendment to Settlement Agreement and Order on Consent, dated October 15, 2008, and the Quality Assurance Project Plan (QAPP) is approved with conditions and modifications.

In order to provide approval of these documents with modifications and conditions, the EPA is requiring that the Slope Stability Evaluation Plan be removed from the Remedial Design Work Plan (RDWP) and submitted as a separate design investigation plan. The Slope Stability Evaluation is a significant design investigation and the revisions necessary are not conducive to approval with modifications. By removing the Slope Stability Evaluation Plan from the RDWP and requiring it to be a separate submission, the EPA is able to approve portions of the remedial resign work, while further development of the Slope Stability Evaluation Plan continues. At the end of the enclosed list of modifications to the RDWP are comments related to the Slope Stability Evaluation Plan, to be addressed when developing the Plan for submission. The Slope Stability Evaluation Plan shall be submitted no later than September 15, 2020.

The QAPP was approved with conditions by the Region 7 Quality Assurance Manager. The QAPP must be revised to address the critical comments and general comments, as well as the modifications that were identified during review.

The list of required modifications to the RDWP and Sampling and Analysis Plan (SAP), and the comments and modifications on the QAPP are enclosed with this letter. Also enclosed is the signed QAPP signature page. A revised document that incorporates the modifications to the RDWP and the SAP, as well as the revised QAAP, should be submitted within 15 days of receipt of this letter.

If you have any questions or concerns, please contact me either by phone at (913) 551-7910 or by e-mail at schwartz.jamie@epa.gov.

Sincerely,

JAMIE SCHWARTZ

Digitally signed by JAMIE SCHWARTZ
Date: 2020.05.08 13:18:06 -05'00'

Jamie Schwartz
Remedial Project Manager
Site Remediation Branch
Superfund and Emergency Management Division

Enclosures

cc: Mr. Ryan Seabaugh, MDNR

EPA Modifications to the West Lake Landfill Superfund Site, Operable Unit 2, Remedial Design Work Plan, dated March 23, 2020

1. **Slope Stability Evaluation.** Update all relevant sections of the work plan, and associated documents, to include a statement that the Slope Stability Evaluation Plan will be submitted as a future design investigation planning document. This planning document must be submitted no later than September 15, 2020.

2. **Section 1.1 Purpose and Scope, Item 2, Page 4.** Replace "gas monitoring probes" with "gas monitoring wells" in this section, and throughout the Remedial Design Work Plan (RDWP) and associated documents.

3. **Section 2.2.2 Long-Term Performance Groundwater Monitoring, Page 8**.

    a. **Second Paragraph:** Remove the following "…with the exception of 10 CSR 80-3.010(11)(B) 3.A. Upgradient monitoring wells are not proposed for the baseline monitoring phase. The need for upgradient wells for the ISL will be determined by the groundwater investigations conducted under the OU-3 RI/FS."

    b. **Second Bullet:** Modify to state "Detection groundwater monitoring – to begin after baseline groundwater monitoring and be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report."

4. **Section 2.2.2 Long-Term Performance Groundwater Monitoring, Page 9.** Groundwater wells S-82, I-9, D-93, PZ-205-AS, I-73, and D-89 shall be added to the groundwater monitoring network. Replace all references to "13 groundwater wells" and "seven existing groundwater wells" with "19 groundwater wells" and "13 existing wells" in this section and throughout the RDWP and associated documents.

5. **Section 2.2.2, Long-Term Performance Groundwater Monitoring, Page 10.**

    a. Revise the second sentence of the second paragraph to state: "Detection groundwater monitoring will be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report."

    b. Remove "if necessary" from the following sentence in the second paragraph: "Groundwater quality data will also be evaluated, and compared if necessary, against the following established Federal and State water quality standards."

    c. In the third paragraph, revise the first sentence to state "The OU-2 groundwater monitoring program may be modified upon approval by the EPA and the MDNR."

6. **Section 2.2.3 Surface Water Runoff Controls, Page 11.** Revise the second sentence in the second paragraph to state "The proposed stormwater infrastructure will be designed using calculation methods that will provide sufficient capacity for **at a minimum** the 24-hour, 25-year design storm as required by…".

7. **Section 2.2.3 Surface Water Runoff Controls, Page 11.** Revise the third sentence in the fourth paragraph to state "The plan will include collecting stormwater samples from all Inactive Sanitary Landfill outfall locations based on the approved stormwater plan to be developed." Remove the fourth sentence and the proposed list of sampling parameters.

8. **Section 2.2.4 Landfill Gas Monitoring and Control, Page 13.** Add the following to the first sentence in the last paragraph of this section "and the design will be included in the Preliminary Remedial Design submittal."

9. **Section 2.2.5 Institutional Controls, Page 13.** Change the acronym for the Missouri Environmental Covenants Act from MECA to MoECA.

10. **Section 4.0 Design Investigations.**

    a. **General.** Add the following summary level discussion to this section: "Stormwater Monitoring Plan - The stormwater monitoring program will evolve over time and will include provisions for stormwater monitoring during the RD, RA, and ongoing operations and maintenance during closure/post closure. An initial *RD Stormwater Monitoring Plan* will be submitted for review and approval and used for this RD phase of the project."

    b. **1.0 Topographic Survey and Base Map Preparation.** Before the last sentence of this section, add the following "Historical surface elevations before placement of waste, and after, will also be reviewed and documented to show anticipated depth to underlying native materials."

11. **Section 5.7 Missouri Well Construction Code, Page 23.** Revise the second sentence in this section to state "The Well Construction Code 10 CSR 23-3.010 currently prohibits the placement of a well within 1,000 feet of a sanitary landfill."

12. **Section 6.1 Conceptual Design, Page 25.** Add the following after the last sentence of the first paragraph: "Additional details regarding alternatives will be thoroughly discussed in the Slope Stability Evaluation Plan."

13. **Section 6.1 Conceptual Design, Preliminary (30%) Remedial Design Report, Page 26**. Add the following to this section "Once the EPA has completed reviewing the Preliminary Design Report (30%), the EPA will make a determination whether the Intermediate Design Report is necessary. Should the EPA determine the Intermediate Design Report is not necessary, the submittal shall be limited to the draft O&M Plan and the Groundwater Monitoring Plan."

14. **Section 6.1 Conceptual Design, Page 27.** Add the following "Intermediate (60%) Remedial Design Report – This submittal will be dependent upon the EPA review of the Preliminary Design Report (30%). The EPA may determine that the Intermediate Design Report is not necessary and the submittal shall be limited to the draft O&M Plan and the Groundwater Monitoring Plan."

15. **Section 6.1 Conceptual Design, Groundwater Monitoring Reports, Page 27.** Add the following after the fifth sentence of this section: "Additionally, statistical analyses will also be performed on the sample results in accordance with MDNR 10 CSR 80-3.010(11)(C)5 and documented in the annual reports."

16. **Section 6.2 Basis of Design, Baseline Groundwater Monitoring, Page 30.**

    a. **First Bullet:** Remove the following: "…with the exception of 10 CSR 80-3.010(11)(B) 3.A. Upgradient monitoring wells are not proposed for the baseline monitoring phase. The need for upgradient wells for the ISL will be determined by the groundwater investigations conducted under the OU-3 RI/FS."

    b. **Second Sub-bullet:** Revise this bullet to state "Detection groundwater monitoring – to begin after baseline groundwater monitoring and be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report."

17. **Section 8.0, Project Schedule.**

    a. **Remedial Design Investigations/Evaluations, Existing Soil Cap Evaluation, page 32.** Remove the word "several" and replace "approximately" with "minimum" in the second sentence.

    b. **Remedial Design Report Submittals, Page 33 and 34**.

        i. **30%.** Revise this section to include the following "In accordance with the Statement of Work (SOW), the 30% Remedial Design Report will be submitted within 60 days after the last design investigation report is completed."

        ii. **60%.** Add the following "In accordance with the SOW, based upon review of the Preliminary Design Report (30%), the EPA may determine that the Intermediate Design Report is not necessary and this submittal shall be limited to the draft O&M Plan and the Groundwater Monitoring Plan."

        iii. **90%.** Revise this section to include the following "In accordance with the SOW, the 90% Remedial Design Report will be submitted within 60 days after receipt of the EPA's comments on the 60% Remedial Design Report."

        iv. **Final Remedial Design Report.** Revise this section to include the following "In accordance with the SOW, the Final Remedial Design Report will be submitted within 30 days after receipt of the EPA's comments on the 90% Remedial Design Report."

18. **Figures, Figure 1.** Modify this figure to include additional groundwater monitoring wells to be included in the groundwater monitoring program: S-82, I-9, D-93, PZ-205-AS, I-73, and D-89.

19. **Project Schedule.** A revised schedule was received on May 1, 2020 after specific changes were made to address errors in the schedule. The revised schedule must be modified to include submittal of the Intermediate (60%) Design Report as stated in the SOW, 60 days after receipt of the EPA's comments on the Preliminary Design Report.

EPA Modifications to Appendix A: Quality Assurance Project Plan

20. **Section 1.8 Long-Term Performance Groundwater Monitoring, Page 11.** Modify the second bullet to state "Detection groundwater monitoring – to begin after baseline groundwater monitoring and be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report."

21. **Section 1.8 Long-Term Performance Groundwater Monitoring, Page 13.** Modify the second paragraph to state "Upon completion of the OU-2 RD, groundwater monitoring will continue (as detection groundwater monitoring) in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report." The OU-2 proposed groundwater monitoring program may be modified based upon approval by the EPA and the MDNR. Modifications may include revising or eliminating groundwater sampling locations, sampling frequency, and reporting frequency."

22. **Section 2.0 Data Quality Objectives, Page 15.** Previous comments stated that the QAPP lacked full development of project specific Data Quality Objectives (DQOs) by application of the DQO Planning Process (EPA QA/G-4). The QAPP DQO section has been revised to provide more detail than previous versions; however, project-specific data quality objectives for some of the various investigative components of the RD activities are still lacking. The RD Stormwater Monitoring Plan, the Western Slope Waste Limit Investigation

Plan, the Slope Stability Evaluation Plan, the Explosive Gas Monitoring Plan, and the Soil Borrow Area Investigation Plan shall be submitted with an addendum to the RDWP QAPP and provide fully developed DQOs by application of the DQO Planning Process.

23. **Section 2.3.6 Installation and Monitoring of Temporary Landfill Gas Perimeter Monitoring Wells, Performance or Acceptance Criteria, Page 18.** This section shall be modified to include the criteria included in the 1999 MDNR technical bulletin "Sampling procedures require proper instrument calibration and allowing for the instrument to properly warm up as directed by the manufacturer prior to sample collection. Once the sample collection begins it should continue until the reading stabilizes. A stable reading is one that does not vary by more than 0.5% by volume on the instrument's scale. A proper reading should have 2% oxygen by volume or less. If levels of oxygen are higher, it may indicate that air is being drawn into the system giving a false reading of the true soil gas concentration. If the problem cannot be corrected, record those values and make sure the problem is well documented in the report."

24. **Section 2.8.4 Boundaries of the Study, Page 25.** Modify the second bullet to state "Detection groundwater monitoring – to begin after baseline groundwater monitoring and be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report."

25. **Section 5.8 Long-Term Performance Groundwater Monitoring, Page 35.**

    a. **Second Bullet:** Modify to state "Detection groundwater monitoring – to begin after baseline groundwater monitoring and be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report."

    b. **Proposed Wells:** Add monitoring wells S-82, I-9, D-93, PZ-205-AS, I-73, and D-89 to the list of proposed monitoring wells. Revise all other relevant sections and figures of this work plan to include these wells.

26. **Figures, Figure A-4.** This figure was revised and submitted as a revision to add an additional landfill gas monitoring well location.

27. **Figures, Figure A-10.** Modify this figure to include additional groundwater monitoring wells to be included in the groundwater monitoring program: S-82, I-9, D-93, PZ-205-AS, I-73, and D-89.

EPA Modifications to Appendix B: Remedial Design Sampling and Analysis Plan

28. **Section 4.0 Installation and Monitoring of Temporary Landfill Gas Perimeter Monitoring Probes, Page 5.** Modify the second sentence of the first paragraph to state there will be 6 temporary landfill gas wells installed.

29. **Section 8.0 Long-Term Performance Groundwater Monitoring, Page 12.** Modify the second bullet to state "Detection groundwater monitoring – to begin after baseline groundwater monitoring and be conducted in accordance with 10 CSR 80-3.010(11)(C). Additional details regarding sampling frequency, locations and evaluation approach will be included in the Groundwater Monitoring Plan submitted as part of the Intermediate Design Report. The objective of the detection groundwater monitoring program is to monitor for a change in groundwater conditions that could indicate a potential impact to groundwater from the landfill."

30. **Section 8.1.2 Wells to be Sampled, Page 16.** This section shall be modified to include wells S-82, I-9, D-93, PZ-205-AS, I-73, and D-89 to be sampled.

31. **Figures, Figure B-3.** This figure was revised and submitted as a revision to add an additional landfill gas monitoring well location.

32. **Figures, Figure B-8.** Modify this figure to include additional groundwater monitoring wells to be included in the groundwater monitoring program: S-82, I-9, D-93, PZ-205-AS, I-73, and D-89.

EPA Comments on the Slope Stability Evaluation – Future Plan

Note: These comments should be addressed during development of the Slope Stability Evaluation Plan, which shall be submitted no later than September 15, 2020.

Work Plan

33. **Section 4.0 Design Investigations, Page 17.** Add a summary of 10 CSR 80-3.010(17)(B)3. For reference, the citation states: "Surface grades and side slopes needed to promote maximum runoff, without excessive erosion, to minimize infiltration. Final side slopes shall not exceed twenty-five percent (25%) unless it has been demonstrated in a detailed slope stability analysis approved by the department that the slopes can be constructed and maintained throughout the entire operational life and post-closure period of the landfill."

Quality Assurance Project Plan

34. **General Comment.** The QAPP/SAP is not sufficiently developed to meet expectations. The QAPP addendum for the Slope Stability Evaluation Plan should include specific performance and acceptance criteria for all data quality parameters of each medium/sampling process beyond describing a general definition of data quality parameters.

35. **Section 1.6 Slope Stability Verification, Fifth Bullet, Page 8.** The third to last line in this bullet indicates the remolded sample will be compacted to 65 pounds per cubic foot. This section should describe the basis for the unit weight selected. Additionally, identify if there is another method to obtain an estimate of the actual unit weight, such as weighing 1-foot sections of the material retrieved from the sonic core.

36. **Section 1.6 Slope Stability Verification, Fifth Bullet, Page 8.** The fifth bullet indicates a grab sample will be collected every five feet to form the composite sample for laboratory analysis. The third bullet on this same page indicates material for the composite will be collected from the "wetter" material samples. Review this section and revise the discrepancy so the sampling methodology is clearly identified.

37. **Section 5.6 Slope Stability Verification, Sixth Sub-Bullet, Page 34**. This bullet indicates a grab sample will be collected every five feet to form the composite sample for laboratory analysis. The fourth sub-bullet on this same page indicates material for the composite will be collected from the "wetter" material samples. Review this section and revise the discrepancy so the sampling methodology is clearly identified.

38. **Section 6.6, Fifth Bullet, Page 39.** The last sentence indicates the engineering analysis will include slope stability for a minimum of "three (3) critical surfaces". It is unclear if the slope stability program runs multiple surfaces to find the most critical, or if this is referring to the three most critical cross sections along the entire western slope. Revise this section to provide additional information regarding the critical surfaces.

39. **Section 9.6 Slope Stability Verification Along Western Portion of the Inactive Sanitary Landfill, Page 49.** Critical QA Comment. It is not clear why this section states there are no sample quality control issues associated with waste samples from sonic borings and quality control is not addressed at all for the soil samples, especially when previous sections imply there are only sample quality control issues when samples are collected for laboratory analyses and both of these samples will include laboratory analyses.

Sampling and Analysis Plan

40. **Section 6.0, Evaluation Criteria, CPT, Page 9.** This section states that "If significant differences are noted (i.e., greater than 20 percent), the CPT strength data may not be used in the slope stability evaluations, but rather the literature values will be used." Remove this sentence. Predetermining data range usability is not appropriate without first evaluating the data.

REMEDIAL DESIGN ENVIRONMENTAL
QUALITY ASSURANCE PROJECT PLAN (QAPP)

WEST LAKE LANDFILL OU-2 FACILITY

SIGNATURE / APPROVAL PAGE

Approved by:

JAMIE SCHWARTZ Digitally signed by JAMIE SCHWARTZ Date: 2020.03.24 15:06:03 -05'00'

Ms. Jamie Schwartz – USEPA Region 7
Regional Project Manager

3/24/2020
Date

DIANE HARRIS Digitally signed by DIANE HARRIS Date: 2020.04.17 11:37:15 -05'00'

Ms. Diane Harris – USEPA Region 7
Quality Assurance Manager

04/17/2020
Date
approved w/condition

Mr. Kevin Kamp– Project Manager

03/23/2020
Date

Mr. Randal Bodnar– Project Principal/QA Manager

03/23/2020
Date

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Apr 17, 2020

MEMORANDUM

SUBJECT: Remedial Design Environmental Quality Assurance Project Plan West Lake Landfill Superfund Site Operable Unit 2; Bridgeton, Missouri – Approved with Condition

FROM: Diane Harris
Regional Quality Assurance Manager
Laboratory Services and Applied Sciences Division

DIANE HARRIS Digitally signed by DIANE HARRIS Date: 2020.04.17 14:11:23 -05'00'

TO: Jamie Schwartz
EPA Remedial Project Manager
Superfund and Emergency Management Division
Site Remediation Branch
Federal Facilities and Post Construction Section

The review of the subject document prepared by Civil & Environmental Consultants, Inc. and dated 03/23/2020 has been completed according to "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations," EPA QA/R-5 March 2001.

Based on the comments below, the document is approved with condition. The document was found to be incomplete in addressing some key areas to the extent of potentially jeopardizing the quality of the data. These areas are fully described in this review memorandum as critical comments and can be adequately addressed by incorporation into the document but without resubmission. The document would not be approved without addressing these issues. General comments identify opportunities for strengthening the document but do not affect approval.

Critical Comments

1. § 1.4 Existing Thickness and Material Evaluation of Inactive Sanitary Landfill Cover, page 3.

    a. This section states geospatial data will meet EPA guidance for geospatial quality assurance project plans. Because this guidance provides information on how to develop a QAPP for geospatial data, it is not clear what this statement means or how this project will meet this EPA guidance for QAPPs. Will a separate QAPP be developed for the geospatial data? Any separate QAPP will need to be submitted to EPA for review and approval.

    b. This section gives a proposed estimate of 87 cover thickness samples but sections 2.4.3, 5.4 and 6.4 identify 90 samples and Fig. A-5 appears to show 88. The proposed number of cover thickness samples needs to be verified and the QAPP updated accordingly for consistency.

2. § 6.8 Long-Term Performance Groundwater Monitoring, page 40. All field equipment will be deconned before use. The decontamination procedures need to be described or a reference provided to where this information can be found.

3. § 8.4 Existing Thickness and Material Evaluation of Inactive Sanitary Landfill Cover, page 44. According to the ASTM website, the most recent versions of ASTM D421 and ASTM D422 were withdrawn with no replacement. The use of these methods needs to be verified with the laboratory.

4. § 8.7 Long-Term Performance Groundwater Monitoring, page 46. This section lists parameters these samples will, in general, be analyzed for but then also refers to Table A-2 which includes additional parameters. Which is correct? Will these samples be analyzed for all parameters in Table A-2 or only the subset of parameters listed in this section?

5. § 9.3 Installation and Monitoring of Temporary Landfill Gas Perimeter Monitoring Probes, page 48. Because field activities also contribute to the potential for error, it is not clear why this section states sample quality control issues are not expected simply because no samples will be collected for laboratory analyses.

6. § 9.6 Slope Stability Verification Along Western Portion of the Inactive Sanitary Landfill, page 49. It is not clear why this section states there are no sample quality control issues associated with waste samples from sonic borings and quality control is not addressed at all for the soil samples, especially when previous sections imply there are only sample quality control issues when samples are collected for laboratory analyses and both of these samples will include laboratory analyses.

7. § 9.7.1 Groundwater Field Quality Control Samples, page 50. The field QC samples listed include field duplicates, field blanks, equipment blanks, and trip blanks. Section 14.2.3 addresses how the results of field duplicates will be evaluated for acceptance; however, no similar information could be found for how field blanks, equipment blanks, and trip blanks will be evaluated for acceptance and what action might be taken if they are not acceptable.

8. § 14.2.4 Representativeness, page 60. This section defines representativeness but does not describe what steps are being taken to ensure or evaluate representativeness.

9. Table A-2. The methods for the following parameters need to be verified because of inconsistencies between the QAPP and the laboratory QA manual:

    a. For total phosphorus, Table A-2 section 8.7 lists 365.3 but the laboratory QA manual indicates 365.1.

    b. For Hg, Table A-2 says 6010B (not a typical method for Hg) but the laboratory QA manual and section 8.7 indicate 7470A.

10. Missing QAPP Elements. The following QAPP elements were missing and no equivalent information could be found:

a. Assessments and Response Actions – identifies the required number, frequency, and type of assessments with approximate dates and names of responsible personnel; notes individuals responsible for corrective actions

b. Reconciliation with User Requirements – defines the process for reconciling project results with DQOs and reporting limitations on use of data including any statistical analysis of the data (section 2.8.5 refers to review for statistical outliers and trends and statistically significant increases over background levels)

General Comments

11. Reference to future investigation work plans. It is assumed the referenced future work plans for the soil borrow area investigation and western slope waste limit investigation will be submitted to EPA for review and approval before implementation.

12. Project/Task Organization, page 3.

    a. Region 7 and MDNR staff are included here and on the distribution list. It would be helpful to briefly summarize any project-related responsibilities they have.

    b. Please note Table A-1 lists Justin Barker as the EPA RPM.

13. § 1.9 Validation of Groundwater Laboratory Analytical Results, page 13. This section refers to an electronic database with no additional details. When addressing data management, a QAPP should describe all data handling equipment and procedures used to process, compile, and analyze data (e.g., required computer hardware and software).

14. § 4.0 Documents and Records, page 28.

    a. This section of a QAPP should also address the following:

        i. The process and responsibilities for ensuring that the most current approved version of the QAPP is available

        ii. The level of detail of the field sampling and/or lab analysis narrative needed to completely describe difficulties encountered (if applicable)

        iii. The retention time and location for records and reports

    b. Several logs and forms are listed in this section and it would be helpful to attach examples of these logs and forms to the QAPP if possible

15. § 6.0 Sampling Methods, page 37. This section of a QAPP should also identify who will be responsible for any field corrective actions that might be needed or a provide a reference to where this information can be found.

16. § 6.3 Installation and Monitoring of Temporary Landfill Gas Perimeter Monitoring Probes, page 37. A 1999 MDNR technical bulletin will be followed for the sampling of landfill gas

monitoring wells. Is there a similar written procedure that can be referenced for the installation of these gas monitoring wells?

17. § 8.0 Analytical Methods, page 44. This section of a QAPP should also identify who will be responsible for any corrective actions that may be needed in the laboratory as well as the needed laboratory turnaround time (if important to the project schedule) or provide a reference to where this information can be found.

18. § 10.0 Instrument/Equipment Testing, Inspection and Maintenance, page 51.

    a. This section only address calibration of the field instrumentation and does not appear to address any testing, inspection and maintenance that may apply as well.

    b. In addition to addressing field instrumentation, this section should also address laboratory equipment and instrumentation testing, inspection, maintenance, and calibration or provide a reference to where this information can be found.

    c. This section of a QAPP should also address the location and availability of spare parts if applicable.

19. § 10.1 Landfill Gas Monitoring Instrumentation Calibration, page 51. How will the calibration of the instrumentation for the landfill gas monitoring be documented?

20. § 11.0 Inspection/Acceptance of Supplies and Consumables, page 52. In addition to identifying the supplies and consumables needed, this section of a QAPP should also include any associated acceptance criteria for the supplies and consumables and who will be responsible for ensuring the supplies and consumables meet these criteria before use.

21. § 12.0 Non-Direct Measurements, page 54. In addition to identifying the sources of non-direct measurements, this section of a QAPP should also address any acceptance criteria associated with non-direct measurements and any limitations on the use of such non-direct measurements.

If you have any questions, please contact me at x7258.

R7QAO Document Number: 2020086