



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7

11201 Renner Boulevard
Lenexa, Kansas 66219

JUL 15 2016

Mr. Paul Rosasco, P.E.
Engineering Management Support, Inc.
7220 West Jefferson Avenue, Suite 406
Lakewood, Colorado 80235

Re: EPA Comments to the May 20, 2016 North Quarry Subsurface Temperature Monitoring Probes (TMPs) Work Plan Bridgton Landfill, Bridgton, Missouri

Dear Mr. Rosasco:

The U.S. Environmental Protection Agency is providing the enclosed comments on the document referenced above prepared by Feezor Engineering Inc. This work plan was submitted to the EPA for review and approval in accordance with paragraph 35(e) of the North Quarry Administrative Settlement Agreement and Order on Consent for Removal Actions at the West Lake Landfill Superfund Site, EPA Docket No. CERCLA-07-2016-0005. The EPA is also enclosing comments on the May 2016, Health and Safety Plan that relates to the Temperature Monitoring Probes Work Plan fieldwork activities.

Pursuant to paragraph 37(b) of the North Quarry Administrative Settlement Agreement and Order on Consent, please submit a revised work plan to the EPA within 14 calendar days of your receipt of this letter.

If you have any questions pertaining to this letter, please contact me by phone at (913) 551-7416 or by email at mahler.tom@epa.gov.

Sincerely,

A handwritten signature in black ink that reads "Tom Mahler".

Tom Mahler
On-Scene Coordinator
Missouri/Kansas Remedial Branch
Superfund Division

Enclosures (2)

cc: Mr. Ryan Seabaugh, MDNR



**EPA Comments on the May 20, 2016 North Quarry
Subsurface Temperature Monitoring Probes (TMPs) Work Plan,
Bridgton Landfill, Bridgeton, Missouri**

1. **Page 2, Section 2.1, 2nd paragraph:** “Improvements of the TMP design may be incorporated before installation such as multiple TMP conduits in one TMP boring to allow easier replacement ...”

Comment: The work plan must provide definitive information on the specific number of conduits that will be used during TMP installations. Historical failures of TMPs seem to occur when the electrical cable tie(s) separate and subsequently shorts-out the sensor(s). The work plan should address how the TMP design considers this issue and provides measures to support probe longevity.

2. **Page 2, Section 2.2:** “The ASAOC has requested that TMPs be installed in the North Quarry to form a line of temperature measurements approaching the OU-1, Area 1 ...”

Page 2, Section 2.2: “These proposed TMPs are positioned to augment the existing TMP locations that are shown on Drawing 003 in Appendix A.”

Comment: The ASAOC requires a “system” of TMPs capable of monitoring landfill temperatures that could be indicative of a SSR developing in or moving into the North Quarry that could come into contact with RIM in OU-1. A system of TMPs represents more than a single line of TMPs and should include additional sentinel TMPs located in areas with previously identified RIM (i.e., within the Muffin Top waste).

The proposed TMP line appears to have new TMPs located approximately 125 feet apart based on Drawing 003, which appears significantly wider than the existing line of sentinel TMPs located in the North Quarry. The effectiveness of the proposed interval spacing is questionable. The work plan should be revised to demonstrate a system of TMPs with spacing intervals consistent with the previous North Quarry sentinel area installations or provide justification for the proposed TMP spacing. In addition, please provide a rationale for the inconsistent proximity of the proposed line of TMPs to the RIM located in Operable Unit-1, Area 1.

3. **Page 3, Section 2.3:** “Therefore the lost tip method is imperative to successful TMP installation and no sampling is possible using this method.”

Comment: The work plan should specify that if sufficient volume of investigation derived waste (IDW) material is collected from drill stem cleaning, it will be scanned for radionuclides.

4. **Page 3, Section 2.3.1:** The bulleted list does not contain the total TMP depth for the waste thickness interval between 120 feet and 160 feet.

Comment: Please include total TMP depth information for the interval between 120 feet and 160 feet.

6. **Page 4, Section 3.1, Last Paragraph:** “To qualify the temperature reading, the resistance (ohms) is compared to a baseline value based on the thermocouple and wire lead length.”

Comment: Please explain in the text of this section how the baseline value is to be established, and whether installation conditions or temperature are part of establishing baseline conditions. Please

also include the QA/QC “prove out” procedures for testing the temperature probes prior to placing into service. The prove-out procedures should specify the anticipated versus recorded resistive value of the probe, loss of signal per depth/temperature, and a clearly stated recommended serviceable vendor operational range.

7. **Page 5, Section 3.2, 1st Paragraph:** “In addition, the connections to the selector switch may corrode, as well as the selector switch itself.”

Comment: Steps to be used by installation crews during the initial installation to protect the selector switch from corrosion or to slow the corrosion process should be included in the work plan. Additionally, in the second to last sentence starting, “This conductivity test will ...,” please replace the word “connected” with “corrupted” or “damaged.”

8. **Page 5, Section 3.2:** “TMPs installed in waste have a discrete life. When some thermocouples fail, the TMP can still be used if a general trend in the TMP can be inferred, as compared to historical records of that specific thermocouple interval. This can be seen in the historical analysis in Appendix B. However, if more than three consecutive thermocouple intervals fail (a vertical interval over 60 feet is not monitor-able), then the entire TMP will be replaced, or the missing intervals may be replaced with a shorter neighboring TMP.”

Comment: Some TMP strings may be 60 feet or less in total length, and thus have only three (or less) thermocouples total, based on the 20-foot interval spacing as currently specified in the work plan. Based upon prior TMP data, accurate inference of TMP data appears more likely to fail with two or fewer thermocouples within a well. Thus thermocouple maintenance should include for thermocouple replacement if two consecutive thermocouple intervals fail, or greater than 60 vertical feet at a location is not being monitored due to thermocouple failure. Additionally, all failed thermocouples should be replaced if the number of failed thermocouples exceeds 20 percent of the total number of thermocouples within a TMP location. Please revise the document accordingly.

9. **Page 5, Section 4.0:** “In accordance with the North Quarry ASAOC, certain triggers will be used to indicate the need for further investigation of the possibility of an SSR in the North Quarry. The proposed triggers are:”

Comment: Please modify the sentence to say “In accordance with the North Quarry ASAOC, the defined triggers will be used to indicate the need for the installation of additional TMPs. The triggers are ...” In addition, for the two bulleted items, please replace “and” with “or” (conjunction between GEW and TMP triggers). Please also specify in the work plan any additional activities that would prompt notification to regulators for pending installations of additional TMPs and/or other applicable response actions which would occur prior to trigger exceedance

Furthermore please include in the document a decision tree-type process diagram that provides the steps to be implemented in the event data demonstrates that trigger levels are being approached or are exceeded. The decision tree-type process diagram should contain the steps necessary to verify data and, as needed, take additional response actions by the facility Environmental Manager.

10. **Page 5, Section 4.0:** “If a TMP reading indicates a possible trigger exceedance, a verification process will be followed to ensure the reading is a true exceedance. The conductance of the thermocouple string will also be checked.”

Comment: The EPA understands that a sudden increase in temperature (alone) may indicate an equipment issue and warrant confirmation, as opposed to the likelihood of a sudden SSR or SSO development. However, it is equally likely that the development of an SSR (and likely SSO) would occur over time and also produce gas measurements that could be tracked over multiple monitoring events before achieving a trigger exceedance. Therefore, confirmation of equipment issues would have already been performed (possibly several times). This work plan needs to state a clear process for the initiation of subsequent responses for additional TMP installations and/or coordination within the provisions of the associated IGI work plan. Please add language to this section (and elsewhere as appropriate) to clearly indicate that data associated with trigger exceedances, or readings that approach exceedances, will be confirmed and quality control checked within 24 hours of recording.

This comment is the same for any exceedance or approaching exceedance of a GEW well. The work plan should specify that the EPA and MDNR would receive a notification followed by associated correspondence with proposed locations and schedule for adding additional TMPs in accordance with the ASAOC and associated work plans, including the Inert Gas Injection Plan. Please amend this paragraph accordingly. These items and steps to be taken as mentioned in this comment, may be applicable to the steps to be addressed and identified in the decision tree-type diagram. Please see comment 8 above for more information.

- 11. Page 5 and 6, Section 4.0:** “A verified achievement of a trigger value could indicate either the presence of a subsurface oxidation event (SSO), or the presence of an SSR, or just a non-typical or transient reading that is neither an SSO nor an SSR. Procedures for investigating, verifying, and remediating an SSO are presented in the “Inert Gas Injection Work Plan for Hot Spot Remediation.”

Comment: Verified trigger exceedances require prompt actions to reduce and control subsurface temperatures. This statement should be deleted or revised to describe the actions to control and reduce temperatures below trigger values (see comments 8 and 9 as provided above).

- 12. Page 6, Section 4.0, Last Paragraph:**

Comment: Change the sentence to state, “If it is suspected that the triggers or monitoring trends suggest a possible independent SSR is developing...”

- 13. Page 6, Section 5.0, Bulleted Items:**

Comment: Add a bullet specifying the delivery of data in accordance with ASAOC paragraph 38b, which requires electronic deliverables in addition to data summaries.

- 14. Section 6, Page 7:** “TMP Calibration and Normalization – requirement of 2 week period for this step.”

Comment: This 2 week time period appears to be excessive and should be reduced, as the installation methods and grout slurry mixtures typically require less than 1 week to fully cure. Please reduce this timeframe or provide justification for the proposed TMP calibration and normalization period.

**EPA Comments on the Health and Safety Plan (HASP)
Bridgton Landfill, Bridgeton, Missouri
May 2016**

1. **Page 28, Section 3.5.1:** “If the work will be performed at a location in the North Quarry that 1) overlies the southwestern portion of Area 1 of West Lake Landfill, and 2) has the potential to encounter Area 1 RIM (as determined in consultation with FEI, EMSI, and/or A&A, ...”

Comment: Please revise this section as follows: “All downhole tooling and equipment utilized for the installation of temperature monitoring probes shall be checked for radiological impact using Masslinn wipes and direct read instruments at the conclusion of each boring. Responses from the direct read instrumentation will be documented in the field log book(s). If decontamination of the downhole equipment is required, the decontamination protocols shall be followed as provided in Section 3.1.7.”