



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

## DEPARTMENT OF NATURAL RESOURCES

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**JUN 02 2014**

Mr. Brian Power  
Area Environmental Manager  
Republic Services, Inc.  
13570 St. Charles Rock Road  
Bridgeton, MO 63044

RE: Operations, Maintenance, and Monitoring Plan, Volume 1, Bridgeton Landfill, Permit Number 0118912, St. Louis County

Dear Mr. Power:

This letter is in follow-up to our meeting on April 24, 2014, related to a submittal titled "Operation, Maintenance, and Monitoring Plan, Volume 1" (OM&M Plan), Bridgeton Landfill, L.L.C., dated September 2013, and received by the Missouri Department of Natural Resources' (MDNR) Solid Waste Management Program (SWMP) on September 19, 2013. The submittal was signed, compiled and/or prepared by Michael R. Beaudoin, P.E., Principal, and signed and sealed by Ivan A. Cooper, P.E. BCEE, Principal, both of Civil and Environmental Consultants, Inc.

Comments provided below relate specifically to the first of the three volumes which is titled, Volume 1-General Requirements and Surface Systems. As agreed upon during the meeting, Bridgeton Landfill will be revising the OM&M Plan Volumes to provide processes and procedures for landfill staff and third party contractors to follow to ensure consistency in performance of day-to-day operational maintenance, monitoring and recordkeeping activities at the facility. As mentioned during the meeting, the following comments are based upon the current submission and some may not be required given the planned change in format.

### Comments

#### Section 1.0 Introduction

- Ensure this section results in monitoring to assess: the reaction condition including status/progression of the SSE which must include, at a minimum, the tracking of settlement and methods for determining slope stability/slope movement, and characteristics of leachate and landfill gases; issues that warrant agency notification which must include, at a minimum, surface fires, slope movement or failure and sudden increases in temperature at wellheads and/or temperature monitoring probes; and



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conditions that may require or be conducive to further remedial measures, further evaluation or corrective actions.

- Include that the decision to end operating the facility pursuant to this OM&M which relates directly to the ongoing SSE, once the OM&M is approved, rests with the MDNR.
- Reference to the facility's Incident Management Plan should be made and its location at the facility included in this Volume.

### Subsection 1.3 Operation, Maintenance, and Monitoring Plan Management

- Additional information related to resource allocation, such as an organization chart containing positions and lines of supervision and authority is needed. The chart will need to detail the employees filling each position, their names and contact information (office and emergency), work hours (i.e., by shift or hours worked) and routine work days (i.e., M-F or Sat-Wed). Total number of Bridgeton Landfill staff working each shift should be clearly annotated on the chart. A general description of the duties of each position would be beneficial and will allow for the functions/tasks in the OM&M to be tied to specific positions.
- As discussed, significant modifications to the OM&M Plan or any other MDNR approved plan will require prior approval from or, given site conditions, prompt notification to the SWMP.
- For the second paragraph:
  - Modify the existing third sentence: "For major replacements, extensions, changes, and new installations, Bridgeton Landfill will submit for approval to the SWMP appropriate documentation sealed by a professional engineer licensed in the state of Missouri to request a permit modification and/or consult with SWMP (unless such change needs to be made on an emergency basis to protect human health or the environment which shall require immediate notification of such changes to the SWMP pursuant to the facility's permit.)"
  - Add a sentence following the existing fourth sentence: "Facility staff is responsible for providing prior notification to the SWMP, St. Louis County and the Pattonville and Robertson Fire Protection Districts of routine maintenance or major replacements, extensions, changes or new installations occurring at the facility in sufficient time to allow for advance notification to be provided to the surrounding community when such work is expected to result in odors extending beyond the property boundaries of the facility."
  - Add a sentence referencing that a facility as-built drawing will be included in the OM&M as an appendix and will be updated on at least a quarterly basis, if changes are made.
- For the third paragraph:
  - Modify the last sentence: "Significant changes to procedures or requirements of this OM&M Plan will be reflected in an updated document to be retained on site as

described in Section 6.0 and an update of such changes provided to the SWMP on a quarterly basis.”

- For the fourth paragraph:
  - Modify: “Forms used to operate and maintain the facility may be revised before implementation as long as the information required by the version contained in the approved OM&M Plan is modified as to form/format and content and an update provided to the SWMP on a quarterly basis.”

## **Section 2.0 Cover and Surface Water Management Systems**

- It appears the Cover and Surface Water Management Systems are severable items and should be placed into individual sections. Additionally, given the importance of the daily quad-checks in containing and controlling odors, they should be moved into a separate section of this volume.
- The end of the third sentence of the third paragraph requires modification: “Detailed as-builts for these features are contained in Appendix # and an update will be provided to the SWMP on a quarterly basis. Other construction record documentation related to these modifications will be maintained in the facility’s permanent records.”

### **Subsection 2.1 Daily Quad-Checks**

- Add a schematic or reference an existing schematic that shows the areas covered by the Quad Checks. These areas must include not only the South Quarry, but also the North Quarry and leachate pretreatment area which has proven to be an area generating odors capable of leaving the property.
- Add language stating the timeframes allowed after identification during the Quad Check, including marking with paint or flags, until corrective action is taken to repair/replace identified items and the completion timeframes. This information can be added as a separate column in Table 1. Note: Table 1 needs to be expanded to include items to be checked on a daily basis. The Table must be modified to separate out and address items that could result in odors or liquid releases which have the potential for leaving the permitted property.
- The last sentence of paragraph two states “Unless a major repair or structural change is required, records of such identified issues and their resolution or repair are documented in technician field books which will be retained on site.” There is no statement as to the procedure for a technician to report a major repair or need for structural change nor is there a clear requirement to document this need. An explanation of the process for reporting these “major or structural” repair needs should be included.

### Subsection 2.2 Final Clay Cover Areas

- This subsection requires update to reflect the vegetative cover being removed from the North Quarry, the area being hydro-seeded and provide the procedures within the OM&M to address erosion, odor control, if applicable, and other maintenance considerations specific to the North Quarry. Note: This is one of the subsections that will need to be amended with completion of the isolation barrier and associated monitoring controls.
- Add conditions and corrective procedures for: odors emanating from clay cover area; clay cap has become desiccated; stormwater management system components impaired; and no vegetation or vegetation impaired (i.e., damaged, compromised by weather conditions).

### Subsection 2.3 FML Cap Areas

- The last sentence in the subsection states: “Documentation and as-built not needed for minor repairs of FML.” Define “minor” and add that the repair will be documented and records of such repairs maintained on site.
- If not provided elsewhere in the OM&M volumes, a copy of the Material Safety Data Sheet for the EVOH material should be included as an appendix to Volume 1.
- No reference is made to under cap collectors and toe drains which are part of the EVOH capping system. A general description and procedures for maintenance of these features is needed.
- Table 1 does not provide how technicians will determine if the EVOH has degraded to the point that replacement is warranted for other than rips, tears, or punctures. Table 1 needs to be expanded to include conditions such as EVOH material degraded by SSE temperature/pressure, weather conditions, settlement and stormwater management system impairment (i.e., long-term pooling of water on EVOH material).

### Subsection 2.4 Surface Water Management Systems

- States that “In some cases, surface water discharge can be prevented using an isolation valve should a leachate leak or release be detected on the FML cap.” Include a drawing of the containment features identifying where the isolation valves are located and reference the drawing in this subsection.
- A description of the gate valves used to regulate stormwater should be included in this subsection including assigned responsibility for such functions/tasks and how anticipated weather conditions are taken into consideration and actions taken by facility staff.
- Information about collection and disposal of liquids or contaminated soil should a leak or release occur is not provided and should be. Additionally, the procedure to be followed

to ensure such leachate does not discharge from the permitted property is needed and the process for proper disposal of leachate contaminated soil should be stated.

- Information should be provided regarding the facility's compliance status with the National Pollution Discharge Elimination System (NPDES) regulatory requirements and permit numbers for the facility should be provided, if applicable.

### **Section 3.0 Odor Monitoring and Abatement**

#### **Subsection 3.1 On-site Odor Monitoring**

- Bridgeton Landfill is responsible for ensuring a staffing level that is adequate to timely identify, on a 24/7/365 basis, landfill infrastructure failures/impairments that result in odors that require corrective action/remediation and that such actions are timely completed.
- Due to the volume and intensity of odors generated by the SSE, the SWMP disagrees that the facility is in a "normal state of operation". The investigations of odors during the term of the SSE must be appropriately documented, tracked and records maintained by the facility to show that appropriate actions are timely taken to immediately remediate/correct the infrastructure impairment regardless of day or time to eliminate odors that extend beyond the facility's permitted boundaries at a level in excess of applicable state or county regulations.
- The landfill's infrastructure, such as gas extraction wells and leachate collection lines, etc., are being impacted by the SSE and are not designed for long-term exposure to high temperatures and pressure. Additionally, by placing lines above grade these components are exposed to weather conditions, i.e., freeze/thaw, or tornadic/severe thunderstorms /winds, which may adversely impact operations and result in periodic/episodic releases and increased odors that require enhanced remediation/corrective actions. The facility's maintenance plan to prevent and to address any "weather related" emergencies needs to be documented in the OM&M including information on maintenance of on-site generators and in-place contracts immediately available to address the needs of the facility, if any, following such an event.
- Periodic inspections by Bridgeton Landfill to ensure corrective or remedial action is taken to address any source that allows odors to extend beyond the property boundary at a level in excess of applicable state or county regulations.
  - Bridgeton Landfill shall establish an objective method for determining odor levels. Objective odor ranking can be performed with a Nasal Ranger Field Olfactometer (Nasal Ranger) or equivalent.
  - Bridgeton Landfill must ensure an adequate number of facility staff are trained in the proper use of the Nasal Ranger or equivalent and that odors are adequately monitored and timely addressed.
  - Such periodic inspections shall specifically include:

- The leachate pretreatment area;
  - The roadway corridor exiting the facility property and extending along Taussig Road that has routinely been impacted by odors from the leachate pretreatment area; and
  - The southwest corner of the landfill property in the vicinity of the 97,000 gallon tank which has routinely been impacted by odors and is near the property boundary and within close proximity to a warehouse business.
- At a minimum, due to the volume of odors being generated by the SSE and leachate management, this subsection needs to be expanded to include a paragraph about each bullet point listed including corrective action/remediation measures that are defined for each listed issue and specifically identify completion timeframes for minor/major repair events and staff assigned responsibility for the tasks.
  - Recently, Bridgeton personnel mentioned the use of a second neoprene boot on gas extraction wells as an odor preventative. This procedure should be referenced here and further explanation provided in Subsection 2.3 FML Cap Areas.
  - On-site investigations that determine there is a potential for off-site detection of odors must result in immediate notification by Bridgeton Landfill staff to the SWMP, St. Louis County and the public.

#### Subsection 3.2 Off-site Odor Investigation and Mitigation

- Bridgeton Landfill must provide a detailed plan including commitment of sufficient resources to ensure the facility is managed in a manner to prevent noxious odors generated by the SSE from extending beyond the permitted boundaries of the facility.
  - The Off-site Odor Investigation and Mitigation subsection is inadequate and lacking sufficient detail to ensure timely action by the facility to remediate or correct the impairment that results in off-site detection of odors above the regulatory limits.
  - This subsection provides only for real-time odor complaint investigations received during routine business hours being immediately acted upon by facility staff. The permitted facility is responsible for taking immediate action to investigate odors generated by the facility that extend beyond their permitted boundaries at a level above regulatory limits regardless of day or time and that appropriate and timely remedial/corrective action is taken ensuring a timely return to compliance.
- We understand Bridgeton Landfill plans to submit by May 15 an Odor Management Plan. When approved, the plan will need to be included or referenced specifically in this OM&M.

#### Subsection 3.3 Odor Control Procedures

The subsection only references Appendix D and needs to be expanded to include:

- a modification providing the criteria and process used by Bridgeton Landfill for determining when to issue odor notifications and/or odor alerts to the regulatory agencies and surrounding community;
- an additional section related to the periodic monitoring throughout the day of the leachate pretreatment area to ensure odors are minimized to prevent such odors from extending beyond the property boundaries at levels above regulatory limits; and
- an additional section related to the management of frac tanks and vac trucks operating at sumps/frac tanks and other locations within the facility's permitted boundaries and the method used to determine appropriate timing for carbon vessel replacement.

#### Subsection 3.4 Odor Neutralization

- The odor neutralizing systems utilized by the facility have not proven effective. The facility will need to continue investigating alternatives to the existing odor neutralizers and provide quarterly reports identifying activities and results of testing to the SWMP.
- The types and number of odor neutralizer units and quantity of neutralizer product maintained on site should be identified within this subsection or the inventory listing previously mentioned in this Volume.

### **Section 4.0 Monitoring and Data Collection**

#### Subsection 4.1 Monitoring Program Objectives

- Modify the first bullet point to "Monitor status/progression of the SSE reaction with specific attention paid to movement into or through the neck into the North Quarry."
- Insert after first bullet point a new bullet point two related to monitoring of odors generated by the SSE reaction.
- Modify the fourth bullet point to "Assess conditions requiring notification, repair, further evaluation, or corrective action with specific attention to tracking rapid settlement that may result in slope movement/instability."
- Add a new Subsection detailing the monitoring of the Gas Interceptor Wells and Temperature Monitoring Probes.

#### Subsection 4.2 Settlement Surveys

- Add to the last sentence of the subsection that "Bridgeton Landfill personnel will compare the survey results with previous months to help determine the rate of settlement and a summary of the results will be provided monthly to the MDNR."
- Include that quarterly settlement surveys of the North Quarry are required until the rate of settlement becomes greater than the normal rate for a sanitary landfill at which time monthly settlement surveys will be required.

#### Subsection 4.4 Gas Well Lab-Analyzed Gas Parameters

- Reference to NSPS related gas well field exceedances and corrective/remedial action taken to return the facility to compliance should be referenced and information including any permit numbers should be provided in this subsection.
- Bridgeton Landfill will need to continue to provide quarterly as-built drawings detailing modifications to the well field.

##### 4.4.1 South Quarry

- The as-built (referenced above) must include those wells changed from gas extraction wells to surface extraction wells in the South Quarry.
- Is there a limit or planned number of gas extraction wells to be converted to surface extraction wells? If there is a set number, this information should be provided in this subsection.

##### 4.4.2 North Quarry

- Additional procedures need to be included in this subsection or specific references provided in regard to enhanced monitoring of the North Quarry for isolated subsurface smoldering events (SSEs) until such time as the isolation barrier between the North Quarry and Operable Unit 1 is completed. Reference to other material elsewhere in the OM&M should be included here in relation to the North Quarry.

##### 4.4.3 Neck Area

- The neck area of the Bridgeton Landfill must be adequately monitored. A separate section should be included to describe the monitoring and maintenance of the gas interceptor wells within the neck area of the landfill, settlement survey and reference to the temperature monitoring probe information contained elsewhere in the OM&M.

#### Subsection 4.5 Leachate Collection Sump Liquid Levels

- The second paragraph begins “When conditions allow, and a pump is present and operating within the LCS...” Please describe what conditions would exist to either allow or not allow for leachate levels to be collected and why a pump would not be present or not operating in an LCS and what actions will be taken to correct these impairments.



#### Subsection 4.6 Gas Well Liquid Levels

- The SSE has impacted many of the gas wells in the South Quarry and southern portion of the neck area. Liquid levels have adversely impacted many of these wells over time. The subsection as presented appears to be incomplete and does not clearly state the facility's intent to prevent liquid build-up or watering in of wells. Please include the procedure to be used by Bridgeton Landfill's personnel for this purpose.

#### Subsection 4.7 Vertical Temperature Profiles/Temperature Monitoring Probes

- A figure or as part of the as-built drawing include the detail on the number and location of each of the current TMPs in the neck area. Additionally, specifications should be included on the temperature range of the Type T thermocouples, expected life expectancy, if known, and any information about resistivity which has impacted the reading of the installed TMPs.

#### Subsection 4.8 Flare Field-Analyzed Parameters

- Reference to any NSPS reporting and the facility's compliance status related to the flare field and permits, either state or county issued, should be included in this subsection.

#### Subsection 4.9 QA/QC Procedures Related to Monitoring Activities

- Information has not been provided related to the quality control/quality assurance procedures over monitoring activities and laboratory analysis or the staff/contractors responsible for such functions. A new subsection needs to be provided for this information.
- Information should also be provided related to the calibrating of test/monitoring equipment.

#### Subsection 4.10 Data Evaluation

- Information has not been provided related to data evaluation and presentation methodologies or the staff responsible for such functions.

#### Section 6.0 Modifications to OM&M Plan

- This section requires clarification as it states "In addition, many of the activities described in the OM&M Plan are self-implementing with no requirement for external authorizations; however, the MDNR shall be notified of significant potential or actual modifications." Routinely, any "significant change" in facility operation would result in

a modification to the facility's permit. It appears the facility needs to add the following "and shall be notified to allow for review and approval of such change" at the end of the referenced sentence.

- Quarterly updates to the OM&M plan shall be submitted to the SWMP.

If you have any questions or comments, please contact Mr. J. P. Boessen, of my staff at (573) 526-3940 or at P.O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

SOLID WASTE MANAGEMENT PROGRAM



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CSF:jbl

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