



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

DEPARTMENT OF NATURAL RESOURCES

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DEC 04 2015

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

RE: Technical Evaluation of a Heat Extraction Barrier Submittal, Bridgeton Sanitary Landfill,
Permit Number 0118912, St. Louis County

Dear Mr. Power:

This letter is in response to a submittal titled "Technical Evaluation of a Heat Extraction Barrier: Bridgeton Landfill" dated November 2015 and received from Republic Services, Inc. via e-mail on November 2, 2015. The evaluation was prepared for Bridgeton Landfill by Feezor Engineering, Inc., Bridgeton, Missouri, in association with P. J. Carey and Associates, P.C., Sugar Hill, Georgia. It was sealed by Daniel R. Feezor, P.E., of Feezor Engineering, Inc. The submittal is in response to the Department of Natural Resources' Solid Waste Management Program's (SWMP's) August 10, 2015, and September 24, 2015, letters requiring identification of corrective measures related to any movement of the existing South Quarry subsurface smoldering fire/event into the North Quarry of Bridgeton Landfill.

The SWMP has reviewed this submittal in concurrence with the U.S. Environmental Protection Agency and their consulting sister agency, U.S. Army Corps of Engineers and the St. Louis County Department of Public Health's Solid Waste Management Program. Our review has determined the current heat extraction barrier submission, if installed and implemented, as described will supplement existing controls in the Neck Area and not cause undue pollution, public nuisance or a health hazard.

The SWMP approves the work plan and schedule, as submitted, for installation of the heat extraction barrier with the following conditions:

CONDITIONS:

1. An addendum containing the information detailed below must be provided **within 20 days** of receipt of this letter. While current temperatures observed in the South Quarry subsurface smoldering event/fire have ranged between approximately 200 and 320° F, temperatures observed during a 1992-1994 North Quarry surface/subsurface fire were

markedly higher. In reviewing the submittal, the design does not provide a method for expanding the system if monitoring data shows actual temperatures are higher than modeled. Bridgeton Landfill must:

- a. Re-run the computer modeling using the higher temperatures and provide an analysis of the results;
 - b. Provide all calculations and assumptions used during selection of the input parameters to aid in our review; and
 - c. Provide the facility's methodology for system expansion.
2. Bridgeton Landfill's work plan proposes installation of additional temperature monitoring probes. In our review, we noted that new probes were not proposed between TMP-1 and TMP-2R and the west quarry wall and TMP-SPM1. Absence of new probes in these two locations results in an unmonitored zone. Please provide justification for the lack of probes in these areas or modify the plan to include probes in these locations.
 3. Temperature monitoring probes are used to determine system performance by Bridgeton Landfill and the SWMP. If the probes malfunction or fail, performance cannot be determined. The SWMP in accordance with the First Agreed Order and amendments will require replacement of any failed or malfunctioning temperature monitoring probes to ensure uninterrupted monitoring of the Neck Area of the Bridgeton Landfill.
 4. Bridgeton Landfill shall notify the SWMP five (5) working days prior to the start of heat extraction barrier system construction to allow for SWMP staff to be on-site to oversee construction activities.
 5. Based upon performance of the system, Bridgeton Landfill may request to augment the system through addition of heat removal points or additional controls, as determined necessary by the facility. On an ongoing basis, the SWMP will be evaluating the data collected and reports submitted and will inform Bridgeton Landfill of any department-required system modification requirements.
 6. Bridgeton Landfill shall submit as-built drawings to the SWMP within 60 days of completion of the project.
 7. Bridgeton Landfill shall submit weekly temperature monitoring probe (TMP) reports. Such reports shall include: TMP identification, i.e., TMP-SPM1, date reading was taken, depth of each thermocouple (MSL), depth from ground's surface, temperature reading for each thermocouple in degrees Fahrenheit and any comments necessary to describe the reading or condition of an individual thermocouple or the TMP, as a whole. The weekly

report may be submitted as a component of the weekly report required under the First Agreed Order.

8. Bridgeton Landfill shall submit monthly reports to the SWMP on the operation and effectiveness of the heat extraction barrier including: a narrative describing operation, maintenance activities and data collected documenting heat removed by the system during the month. Such monthly reports shall be submitted by the twentieth day of the following month and may be submitted in conjunction with the monthly reports required under the First Agreed Order.
9. Within one year of the heat extraction barrier operations beginning, Bridgeton Landfill shall submit a report to the SWMP on the barrier's performance. As described in Section 4 of the submittal, Bridgeton Landfill shall re-run its modeling to incorporate actual performance results. Based upon analysis of those results, Bridgeton Landfill shall provide a narrative report, evaluation of performance and a copy of the performance data to the SWMP within 7 days of report completion. If the report identifies the need for augmentation with additional heat removal points, the report must include a schedule for such augmentation.
10. The reports contained in sections 8, 9 and 10 must also be copied to the U.S. Environmental Protection Agency Region VII for their use and evaluation as well as for evaluation by their consulting sister agency, U.S. Army Corps of Engineers.
11. Bridgeton Landfill must implement the facility's odor control plan and associated measures to control odors and emissions during all installation/construction work.

Within **14 days** of receipt of this letter, Bridgeton Landfill is required to initiate installation of the heat extraction barrier system. As existing heat in the Neck Area has not notably subsided and no other corrective measures have been implemented between the Neck Area and North Quarry, this installation is required.

Once installed, Bridgeton Landfill must:

- Continue to monitor the barrier system and aggressively evaluate methods to augment this engineering control, as needed;
- Continue to evaluate and propose system modifications to the SWMP in an effort to achieve optimal performance of the system throughout its operational life; and
- Prepare and submit for review by the SWMP additional designs to stop the subsurface smoldering fire/event if this initial heat extraction barrier design does not halt forward movement of the heating front.

Mr. Brian Power
Bridgeton Landfill
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If you have any questions or comments, please feel free to contact me at (573) 526-3940 or at P.O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

SOLID WASTE MANAGEMENT PROGRAM



Charlene S. Fitch, P.E.
Chief, Engineering Section

CSF:jbl

- c: Mr. James Getting, Bridgeton Landfill LLC
- Ms. Laura Yates, St Louis County Department of Health
- Mr. Brad Vann, U.S. EPA Region 7
- Mr. Larry Lehman, Compliance/Enforcement Section, SWMP
- Ms. Brenda Ardrey, Operations Section Chief, SWMP
- Mr. Joe Trunko, St. Louis Regional Office via Electronic Shared File