West Lake Update

April 11, 2017

West Lake Landfill Site Progress Update

This edition of the West Lake Update provides an update on the major site activities associated with the West Lake Landfill.

2016 was a year of progress at the West Lake Landfill Superfund Site in Bridgeton, Mo., with more work underway for 2017. Across the site and around the community, EPA completed or oversaw a number of actions.

Surface Fire Mitigation

This past summer, under a unilateral order by Region 7, the parties at the site largely completed surface fire mitigation measures in Operable Unit 1, Areas 1 and 2, of the West Lake Landfill where radiologically impacted material (RIM) had been determined to be at or near the surface. More than 21 acres have been covered.

The work included cutting and laying brush in place, covering the brush with a permeable geotextile cover, and then placing eight inches of crushed rock on top of the geotextile cover. This layered cover is collectively known as the non-combustible cover. This work alleviates concerns with potential surface fires in areas where RIM is at or near the surface and reduces the risk of off-site migration of contaminants that could result from removing the vegetation.

In addition to reducing the risk of surface fires, the non-combustible cover also reduces the health risks for on-site workers who enter OU-1 by providing additional shielding between the RIM and the workers.

Work crews under EPA oversight began installing the non-combustible cover in February 2016. Construction of the non-combustible cover in Operable Unit 1, Area 1, is complete. In Area 2, two small additional areas remain uncovered due to a steep slope in the areas. EPA required the PRPs to submit a work plan to cover these remaining areas.

EPA required the PRPs to submit a work plan to conduct vegetative sampling in areas where vegetation remains in OU-1.

Isolation Barrier System

As a result of the April 2016 North Quarry Administrative Settlement and Order on Consent, Bridgeton Landfill, LLC under EPA oversight designed and installed specific components of the isolation barrier system in the Bridgeton Landfill "Neck" area and the North Quarry. These actions were required as a Time Critical Removal Action.

Actions completed in 2016 include installation of the Heat Extraction System (HES) within the Neck area between the North and South Quarry portions of the Bridgeton Landfill, installation of additional temperature monitoring probes (TMPs) in the North Quarry, installation of two sulfur dioxide (SO2) monitors, approval of the ethylene vinyl alcohol (EVOH) cover work plan, and a review of the Inert Gas Injection Work Plan.

Specifically, the HES in the Neck area became fully operational on October 14, 2016. The HES is designed to ensure waste temperatures in the Neck area remain below levels that could indicate the presence of a subsurface reaction and prevent potential spread of a reaction from the South to the North Quarry.

Installation of a sentinel line of additional TMPs in the North Quarry was completed on November 29, 2016, and data collected from those TMPs can be found under weekly reporting on the Missouri Department of Natural Resources Bridgeton Landfill Sanitary website: http://dnr.mo.gov/env/swmp/facilities/BridgetonSanitaryLandfill-RCP.htm.

The EPA has also recently approved a work plan for the phased installation of an EVOH cover over the North Quarry. Bridgeton Landfill is now required to proceed with the construction of the EVOH cover as soon as weather permits. The EVOH cover will assist in prevention of oxygen intrusion, collection of landfill gasses, reduction of odors emanating from the landfill, and prevent surface water infiltration.

The SO2 monitors are installed and operational. Their locations provide coverage of air emissions under a variety of wind directions, and data is reported on an hourly basis. Initial results show levels substantially below the 1-hour SO2 National Ambient Air Quality Standards. The data is available online: http://www.inqenv.com/bridgeton/index.htm

Lastly, EPA and MDNR have reviewed and commented on the Bridgeton Landfill's draft Inert Gas Injection and TMP Work Plans, received on December 19, 2016, and expects those plans to be released within the next few weeks. Inert Gas Injection is designed as a rapid deployment measure to isolate, contain, and inhibit and/or extinguish any independent subsurface

reaction that may occur in the Neck area of the North Quarry. The settlement requires Bridgeton Landfill to maintain inert gas injection materials on site, so as to facilitate implementation within seven days if certain triggers are met.

The EPA will continue to evaluate the technical details and other considerations associated with a physical isolation barrier in conjunction with on-going site evaluations.

Phase 1 Comprehensive Report

In April 2016, EPA released the Final Comprehensive Phase 1 Report, which included data and findings from a detailed investigation of Operable Unit-1 (OU-1), Area 1. The investigation of Area 1 was conducted in four primary phases known as: Phase 1A, 1B, 1C, and Phase 1D. The Phase 1 report identifies areas containing radiologically impacted material in Operable Unit 1, Area 1, of the West Lake Landfill. One primary purpose of the Phase 1 investigation was to help identify an appropriate location for an isolation barrier; however, over time the purpose of the investigation was expanded to define the extent of RIM in the south and southwest portions of Area 1.

The Phase 1A portion of this effort consisted of the Gamma Cone Penetration Test (GCPT) investigation and began in 2013. The Phase 1B field work consisted of additional GCPT investigation in the western portion of Area 1 and began in 2014. The Phase 1C field work consisted of using sonic drilling technologies to place soil borings and collect samples for laboratory analysis. The Phase 1D work consisted of additional GCPT investigation, sonic drilling and core sampling, and began in May and continued through July, 2015. Phase 1D focused on the western and southwestern portions of Operable Unit 1, Area 1.

The GCPT work, soil borings, and samples from the Phase 1 investigation provided data that improved the conceptual site model. Based upon the Phase 1 data a revised Extent of RIM map was created. The Extent of RIM map depicts areas of RIM located in Area 1 that are based on sampling points included in the Phase 1 Investigation combined with data collected from previous site investigations.

EPA will use data from this effort in the upcoming Remedial Investigation Addendum and Final Feasibility Study.

Community Air Monitoring and Enforcement

In response to community concerns regarding air quality and respiratory health, from April to June 2016, EPA conducted twelve Clean Air Act compli-

ance inspections of sources in the Bridgeton, Maryland Heights, and Earth City areas. The purpose of the EPA inspections was to ensure sources in these areas are in compliance with the CAA. These efforts were consistent with EPA National Enforcement Initiatives - Cutting Hazardous Air Pollutants and Reducing Air Pollution from the Largest Sources. Specifically, EPA focused compliance inspections on sources of air emissions of methane, sulfur compounds, and trichloroethylene (TCE).

One inspection, at the Champ Landfill located in Maryland Heights, found deficiencies with the landfill's surface emission monitoring and surface integrity monitoring required by the CAA New Source Performance Standard (NSPS) for Municipal Solid Waste landfills. These standards require landfills to collect and control air emissions of landfill gases, including methane.

On August 11, 2016, EPA announced a settlement with Champ to bring them back into compliance by implementing numerous measures designed to minimize odors and landfill gas air emissions and ensure on-going compliance with regulatory requirements of the CAA. Under the terms of this settlement, Champ Landfill conducted a comprehensive third party audit of its gas collection system and is in the process of implementing the auditor's recommended corrective actions. Champ Landfill installed 39 additional landfill gas extraction wells and will likely install more in 2017. In the short-term, some landfill gas odors are expected as the drilling of the new wells continues and the overall gas collection system is optimized. Upon completion, the modifications to the gas collection system are expected to significantly improve the ability to collect gases generated by the landfill, resulting in lower emissions of landfill gas and odors to the surrounding community.

In addition to EPA's settlement with Champ Landfill, the State of Missouri has issued several Notices of Violation (NOVs) to Bridgeton Landfill, LLC, for air permitting violations. Specifically, the NOVs allege failure to comply with air permitting regulations governing sulfur dioxide (SO2) emissions from the Bridgeton Landfill flares. The State of Missouri and Bridgeton Landfill, LLC, are working toward resolving these alleged violations.

Sediment Sampling

Following major rain events in Spring 2016, EPA conducted sediment sampling to ensure no off-site migration.

In September 2016, EPA released the results from the June 10, 2016, sediment sampling effort at the West Lake Landfill. The sediment sampling results did not indicate radiologically impacted material (RIM) at any location, with all results below the definition of RIM of 7.9 picocuries per gram (pCi/g) of combined radium and/or combined thorium.

More information regarding the sediment sampling is available online: https://www.epa.gov/mo/west-lake-landfill-additional-sediment-sampling-results

Enhanced Community Engagement

In 2016, EPA also initiated and held a series of Community Dialogue meetings.

EPA invited the community, elected officials and their representatives, to participate in facilitated meetings to discuss the Superfund process, the 2008 West Lake Landfill Record of Decision, and the upcoming Final Feasibility Study, which will outline potential remedial alternatives for the site.

The Community Dialogue meetings generated widespread participation by the community, with representatives from federal and state elected officials' offices, the Missouri Coalition for the Environment, the Community Advisory Group, the Missouri

Accountability Project, and Just Moms STL participating. Representatives from Earth City and the Hussman Corporation, in addition to numerous additional community members and stakeholders also participated.

EPA thanks all who supported and participated in the Community Dialogue meetings in 2016.

Pyrolysis

In July 2016, EPA Region 7 released results from laboratory tests that indicated heating radiologically impacted material (RIM) from the West Lake Landfill did not increase radon emanation.

The data from this study indicates that there is not a direct relationship between radon emanation and RIM that has been heated to temperatures consistent with, and greater than, the current SSE in the South Quarry of Bridgeton Landfill. The data from this study indicates that radon emanation does increase as the moisture of RIM increases up to a maximum and then moisture content no longer has an effect once the sample is saturated. This relationship is consistent with previously documented studies and scientific literature related to radon emanation.

The final report including radon emanation results, laboratory testing procedures, and other analytical data associated with this study are now available on our website: https://www.epa.gov/mo/west-lake-landfill.

Final Remedy Decision

In November 2016, EPA announced the need to extend the timeline for proposing a final remedy decision for soils at the West Lake Landfill.

EPA's decision to extend the timeline for the final remedy proposal followed delays in receiving complete technical documents related to the Remedial Investigation Addendum and Final Feasibility Study from the Potentially Responsible Parties (PRPs). The EPA utilized our enforcement tools to address these unacceptable delays, and ultimately the final sections of the draft documents that will support the EPA's final decision for Operable Unit 1 were received in late October and early November. The agency will continue to require that the PRPs produce quality work products that take into account the complexity of the site and can withstand the scrutiny of agency experts.

While the EPA worked to require the potentially responsible parties to complete their submission of the draft documents, at that same time, Region 7 engaged the U.S. Army Corps of Engineers' commanders from both the St. Louis and Kansas City Districts regarding their support to the EPA in reviewing the Remedial Investigation Addendum and Final Feasibility Study technical documents. EPA has reached an agreement with USACE to provide assistance to EPA, and their support will help EPA develop a sound final remedy decision.

EPA has not established a new timeline for announcing a proposed final remedy for the site.

Looking Ahead to 2017

EPA is looking forward to continuing the ongoing work at the site into 2017. While the agency has not established a new timeline for proposing a remedy at the site, EPA will work closely with elected officials, the Community Advisory Group, and others in the community to ensure that the Agency's actions are transparent, and that the public is kept well informed of progress at the site.

Community Inquiries

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