Work Plan for Short-Term West Lake Data Analysis

November 4, 2014

Objective: Review EPA volatile organic compound (VOC) and gamma radiation data for comparison with other similar data collected in the St. Louis metro area.

Timeline:

Deliverable	Due Date	Person(s) Responsible
Draft Work Plan	Nov 3, 2014	Doolan, Hooper
Final Work Plan	Nov 5, 2014	Doolan, Hooper
Electronic Summary of VOC Detects and Gamma Radiation Data	Nov 7, 2014	TTEMI
Graphs of gamma data	Nov 12, 2014	Hooper, TTEMI
Statistical analysis of VOC data	Nov 12, 2014	Doolan, Hawkins
Draft Short-Term Data Review and Analysis Report for Internal Review	Nov 14, 2014	Doolan, Hooper
Review and Comment on Draft Report	Nov 19, 2014	AWMD (Jay, Tapp, Smith) SUPR (Jackson, Nold, Field, Johnson) ENSV (Beringer, Davis) OPA (Carey, Peterson, Whitley) CNSL (Stoy) RGAD (Slugantz)
Final Short-Term Data Review and Analysis Report to Regional Administrator	Nov 21, 2014	Doolan, Hooper, Jay, Tapp, Slugantz

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Background:

In May 2014, EPA began collection of VOC and radiation data at five stations in the neighborhoods surrounding the West Lake Landfill site in Bridgeton, Missouri. The data were collected in accordance with an approved Quality Assurance Project Plan (QAPP). The VOC data were collected in accordance with EPA Method TO-15 and Summa air canister data. The radiation data includes real-time gamma monitoring, dosimetry, radon monitoring and air particulate analysis.

Analysis:

The VOC data were analyzed by TestAmerica Laboratories, Inc., and reported to EPA's START Contractor, Tetra Tech, Inc. Tetra Tech, Inc., has provided summaries of the data in MS Excel spreadsheet format (attached). The attached summary of the VOC data collected to date are compared with Regional Screening Levels for Residential Air based on a cancer risk of 1E-06 and/or a noncancer Hazard Index of 0.1.

In addition to the comparison with RSL for internal purposes, the arithmetic mean of the VOC data collected to date will be compared with the historical data collected by Missouri Department of Natural Resources' (MDNR's) Air Program at the St. Louis National Air Toxics Trends Site (NATTS) Monitor located on Blair Street in the urban core of the city. The St. Louis NATTS is one of 29 sites nationally, established to monitor air toxics trends across the nation (provide statistically significant, high-quality air toxics data). A few brief facts about the NATTS are as follows:

- EPA funds annually with CAA 103 grant funding
- Pollutants monitored include:
    - VOCs
    - PM10 metals
    - PM2.5 metals
    - PAHs
    - Hexavalent chromium
- Chemicals posing the highest risk are benzene, formaldehyde and acetaldehyde, constituents associated largely with on-road vehicle emissions
- EPA and MDNR continue to analyze the resulting data for changes in air quality trends and to determine effectiveness of enforcement and air pollution controls, as well as comparing the data with other urban sites nationwide

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Although the West Lake data have only been collected since May 2014, the NATTS data provide a long-term trend for the detection of VOCs in the St. Louis metro area to which the West Lake data may be compared.

The West Lake radiation data collected by EPA from May 2014 to the present may be divided into four different types of data: exposure rate, radiation dosimetry, radon and particulate. The exposure rate data are real-time, continuous monitoring data collected by a monitor called a Genitron. The radiation dosimetry data are collected and analyzed monthly by Landauer laboratory and reported to EPA's START contractor. The radon data are collected on-site, weekly, by an Electret Ion Chamber (http://radelec.com/index.php?option=com_content&task=section&id=8&Itemid=31). Particulate data are collected by filter on-site and are sent to TestAmerica laboratory for analysis on a weekly basis.

EPA established a background monitoring station at a location in St. Charles, Missouri, which is appropriate for comparison with the monitoring stations adjacent to the landfill. Radiation data analysis will be conducted based on the methods prescribed by the NRC's NUREG 1505 guidance.

Reporting:

The following is a proposed outline of the Short-Term Data Review and Analysis Report to be prepared.

1 – Title/Description of the data

2 – Purpose

3 - Data Collection and Monitoring

4 – Discussion (including summary tables, figures and graphs)

5 – Statistical Analysis and Comparison with Background (radiation) and NATTS (VOCs)

6 – Quality Assurance (discussion of analytical and field discrepancies)

7 - Conclusion

Tentative List of Tables and Figures:

- Site figure depicting monitoring stations

<u>Genitron:</u>

- Exposure rate showing 8-hour average
- Exposure rate showing maximum values per day

- Exposure rate showing individual high and low readings above a level of (3-sigma or NUREG 1505 line). The number of high and low readings should be about the same. 3-sigma should contain 99.7% of the data, so plotting the # of outliers (red = high, blue = low) per day will indicate natural variability in a data set.

TLD Dosimetry:

- Graph showing monthly results with a NUREG-1505 line (may need to show when TLDs were moved away from brick buildings).

Radon:

- Graph showing weekly radon results with a NUREG-1505 line (might include pressure or rainfall if we can see a correlation).

Particulates:

- Graph for Gross alpha, Gross beta, Total alpha radium, Th230, and U238

** Might need to include: U233/U234, U235/U236, Th228, Th232*

Wind rose:

- Daily for the dates of VOC data collection
- Weekly and Monthly for radiation data

VOC Data:

- Summary Table of Detections by Station
- Summary Table of Detection with Max/Min/Arithmetic Mean compared with NATTS averages
- Box plot of Detects
- Figure with Max/Min/Ave by Station

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