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

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

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March 22, 2013

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SUPERFUND DIVISION

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

RE: Comments on Addendum to Sampling and Analysis Plan, Additional Groundwater Monitoring, West Lake Landfill Operable Unit 1, Bridgeton, Missouri

Dear Mr. Rosasco:

The Missouri Department of Natural Resources has completed its review of the above referenced document prepared by Engineering Management Support Inc. (EMSI) which was received by email on March 18, 2013. The Department is transmitting the enclosed comments with respect to this review. Please keep me apprised of any scheduled field activities to allow us the opportunity to participate in these sampling events.

The Department notes that there are outstanding comments on the *Groundwater Monitoring Report* (EMSI, 2012) which presented the results of groundwater sampling conducted in July and August 2012. It is expected that these comments can be addressed during future reporting documents which summarize the combined 2012 and 2013 groundwater sampling results.

Thank you for giving us the opportunity to review and comment on this document. If you have any questions pertaining to these comments please contact me by phone at (573)751-3107 or by written correspondence at P.O. Box 176, Jefferson City, MO 65102.

Sincerely,

HAZARDOUS WASTE PROGRAM

Shawn Muenks

Shawn Muenks, P.E.
Federal Facilities Section

SM:ls

Enclosure

c: Dan Gravatt, U.S. Environmental Protection Agency
Victoria Warren, Republic Services, Inc.

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
Comments on the Sampling and Analysis Plan (SAP) Addendum

1.) Background Sampling

The second paragraph on page 2 of the SAP Addendum begins by stating, "EPA requested that all of the available OU-1 and OU-2 monitoring wells [which] were sampled during the 2012 monitoring event be included in at least the first of additional sampling events to be performed in 2013..." The Department has provided comments on the *Groundwater Monitoring Report* (EMSI, 2012) regarding sampling of nearby off-site wells for calculating site-specific background for this site (See comments #7 and 14 of Missouri Department of Natural Resources letter dated January 15, 2013). The Department also notes that the subject of background sampling and calculation was discussed during a conference call on February 14, 2013 between EMSI, the Department, EPA, and Republic Services representatives. During this call, it was agreed that nearby wells would be identified and included in the sampling events described in the SAP Addendum. It is also the Department's understanding that EPA has provided a list of wells identified by the U.S. Geological Survey that may fit this criterion. Please include a list of these wells and a description of background sampling in the SAP Addendum.

2.) Well Re-development

The third paragraph on page 2 of the SAP Addendum states, "One change will be to re-develop those wells that contained high levels of suspended sediment or turbidity prior to performance of the first of the three additional rounds of groundwater sampling." The Department strongly supports this procedure for accurate and representative data collection. In addition to re-developing those twelve wells listed in the SAP Addendum based on NTU greater than 100, the Department recommends using information from the 2012 field logs for wells with reported visual high turbidity. Any other information within the 2012 field logs should also be used to select wells for re-development such as depth to bottom of well or previous filtering information. The 2012 groundwater data should also be screened for data where dissolved fraction values exceeded total fraction values for radionuclides and metals. Any wells that exhibit these criteria beyond standard variability should also be considered for re-development.

The Department would also like to see the well re-development procedures outlined in a Standard Operating Procedure to be included in the SAP Addendum. Recent e-mail correspondence from you indicates that a disposable bailer will be used as a "surge block" and for water removal. The Department does not oppose this method; however, it is suggested that the bailers be weighted to offset buoyancy effects once submerged to get the greatest affect for agitation of the water column. The Department also suggests having provisions for use of a standard surge block in case there are wells with obstructions that would prevent the use of a bailer for well development.

3.) Sampling Flow Rates and Groundwater Level Monitoring

Another sampling parameter which may have an effect on variability in the data is sampling flow rates. The Department would like to see discussion included in the SAP Addendum on

sampling flow rates and how this can be controlled to ensure consistency in sampling collection. The Department also recommends using continuous logging pressure transducers to measure groundwater levels. The transducers can efficiently monitor water levels for well recovery/stabilization and help identify optimum sampling flow rates in order to eliminate draw down. At a minimum, the SAP Addendum should include provisions for multiple water level measurements to ensure slow recovery wells have stabilized prior to sampling.

4.) Monitoring Well D-14

The Department reiterates its concerns with sampling monitoring well D-14, as described on page 3 of the SAP Addendum. The Department has previously commented on protocol for abandoning wells that are no longer performing their intended function or are not able to be repaired per the Missouri Monitoring Well Construction Code (see comment #2 of letter dated January 15, 2013, regarding the 2012 *Groundwater Monitoring Report*). The Department again recommends repairing this well to meet code, or abandonment and replacement of this well, in order to retain historic geographic sampling locations. The location of this well is extremely important for determining potentiometric surface, hydraulic gradient, and comparison to significant historical radiological data.

The Department offers some consideration for attempting to collect representative samples from the existing well to meet the Missouri Monitoring Well Construction Code. These include attempting to insert tubing past the casing constriction and use of a peristaltic pump to retrieve a sample from the screened interval. Previous water level measurements of this well were reported at 30.79 feet below top of casing. Our research indicates that a peristaltic pump has the capability to pull water from this depth. The Department is available to discuss alternative sampling methods such as use of a peristaltic pump for this well.

5.) Sample Collection and Handling Procedure

The second paragraph on page 3 of the SAP Addendum discusses changes to the sample collection and handling procedure for radionuclide analyses. The second sentence states, "Specifically, rather than sequentially collecting two separate one gallon containers of groundwater and field filtering the water placed into one of the containers as was done during the 2012 event, during the 2013 a minimum of 2 gallons of groundwater be collected from each well collection of a minimum of 2 gallons of groundwater from each well." Please check this statement for grammatical errors. The paragraph goes on to state, "The samples will then be shipped unpreserved to Eberline laboratories where they will filter half the sample for the dissolved fraction." Will the 2 gallons be sent in to the lab in a single container? The Department notes that samples are typically collected in one-gallon containers and if the lab simply filters one of the gallons and calls it "half" of the sample, this is really no different than the field filtering method. Finally, the second sentence of the last paragraph on page 3 of the SAP Addendum references "field filtered samples." Should this be changed to "laboratory filtered samples" to be consistent with the previously proposed change in sample collection?

6.) Reporting

The second last paragraph of the SAP Addendum discusses reporting requirements for the 2013 groundwater monitoring events. In addition to those submittals listed, the Department

requests electronic copies of the tabulated data. The Department also requests a comprehensive interpretive report at the end of the groundwater sampling to combine all of the 2012 and 2013 groundwater data to be compared against historical groundwater data including trend graphs and statistical spatial analyses. Department comments remaining on the *Groundwater Monitoring Report* (EMSI, 2012) which were transmitted by letter dated January 15, 2013, can be addressed in this future groundwater report.