UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

MAY 18 2017

ADVANCE COPY VIA ELECTRONIC MAIL

Richard S. Lewis
Hausfeld, LLP
1700 K Street, NW
Suite 650
Washington, DC 20006

RE: Bridgeton Dust Report

Dear Mr. Lewis:

I am writing to provide you with a link to the results of the U.S. Environmental Protection Agency's (EPA) pre-CERCLA screening for the Bridgeton Dust Site located in Bridgeton, Missouri. The final report will be posted at this location: https://response.epa.gov/bridgetondust. This investigation was conducted in response to certain allegations originally made in a Petition filed by you on behalf of your clients, Michael and Robbin Dailey, as well as your November 16, 2016 request for EPA to conduct tests for radioactive particles in soil and dust of houses in the area. Please note that this report has been redacted to protect the privacy of the homeowners.

EPA is disappointed that we were unable to obtain from you the supporting laboratory data and quality assurance information for the samples your team collected from the Dailey's home. It is also unfortunate that we were not able to reach agreement with you to obtain access to conduct our sampling at the Dailey's residence. We made several attempts to arrange a meeting with you and your technical team to discuss EPA's Quality Assurance Project Plan (QAPP) that was developed with input from the St. Louis office of the U.S. Army Corps of Engineers, the Agency for Toxic Substances and Disease Registry, the Missouri Department of Natural Resources, and the Missouri Department of Health and Senior Services. As you're aware EPA did proceed with our focused residential sampling effort as described in the final Bridgeton Dust report, and I'd like to take this opportunity to respond to the issues you raised in your December 26, 2016 email regarding EPA's QAPP:

> Lewis Comment #1: The EPA proposed method uses an improper protocol, equipment that is not sensitive enough for the job, and is inappropriate for the proposed purpose based on the site-specific and historic data that is already available to the agency.
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> EPA Response: The survey and sampling plan, or protocol, referred to as the QAPP, was crafted in part to broadly scan for any commercial/consumer radiation source(s) in and around a residential property. In addition, the methods and procedures presented in the QAPP were used to identify and quantify loose or fixed contamination from a range of possible radioactive

contaminants including those that are a concern to the community and identified within legacy Manhattan Project waste in the St. Louis area.

Lewis Comment #2: The protocol uses gamma-detecting equipment to look for contamination that we know is primarily alpha-emitting. Then, based off of the data gathered from this equipment, they want to decide where to sample. Of course they will never find what the equipment is not designed to detect. This protocol and sampling method design is not specifically designed to look for the isotopes of concern and the potential transport vectors of concern.

EPA Response: The QAPP specifies surveying equipment for indoor and outdoor purposes to derive some of the locations for sampling. Outdoor surveys were conducted with a gamma survey instrument to identify any areas of increased general radiation exposure. The gamma survey instrument specified in the QAPP is capable of detecting Radium-226 and several of its decay products in surface soils. Radium-226 is one of the primary contaminants of concern associated with Manhattan Project waste. In addition to any soil sample locations identified by the outdoor gamma survey, the QAPP also specifies that soil samples would be taken from areas with the greatest potential for contamination and based on site features such as near downspouts. The QAPP further specifies that composite soil samples will be collected consisting of five aliquots from different areas within a residential property. As specified in the QAPP, the soil samples were analyzed by an independent radiation laboratory and tested for full suite radionuclides including Thorium-230 and other primarily alpha-emitting and beta-emitting radionuclides associated with legacy Manhattan Project wastes.

Lewis Comment #3: The indoor testing protocol is equally problematic. EPA has suggested a protocol that is more suitable for establishing levels of surface contamination in controlled or restricted areas, not a detailed forensic analysis.

EPA Response: The QAPP specifies that the indoor survey equipment will include both a Geiger-Müller thin window probe capable to respond to alpha, beta and gamma radiation, and a zinc sulfide scintillation detector capable of response to alpha radiation. Indoor contamination samples (wipes) were then taken based on survey results of floor, walls and other accessible surfaces at locations of increased count rates and at random locations when no increased count rates were identified. The QAPP specifies that wipes will be collected from high and low occupancy rooms in addition to all entrances. Every wipe sample was then screened for gross alpha activity. Wipes are then chosen for laboratory analyses based on this screen. The QAPP specifies that wipes from each high occupancy room and entrance will be sent for laboratory analysis for a wide range of gamma-emitting radionuclides along with legacy Manhattan Project radionuclides such as isotopes of uranium and thorium. The laboratory results are reported in units of activity per area, i.e. picocuries per square centimeter. Because typical background levels for dust inside residential properties in Spanish Village are not available, the QAPP specifies the results for the wipe samples are to be compared to default residential parameters from EPA's Preliminary Remediation Goals for Radionuclides in Buildings (BPRG) calculator.

Furthermore, the QAPP specifies that bulk dust will be collected from areas where large amounts of visible dust can be identified. All the bulk dust samples were sent for laboratory analysis for the same radionuclides as the wipe samples. While the results from the bulk dust samples are not comparable to health base standards, the QAPP specifies the results will be used to characterize radionuclide concentrations and relative ratios. In this way, the bulk dust samples can provide evidence as to the potential origin of any radioactive materials found. For instance, the ratio of Thorium-232 to Thorium-230 was considered for one bulk dust sample.

Lewis Comment #4: The EPA protocol is designed to measure generic surface contamination and ambient short term radon in well-ventilated spaces only. We have been looking at residual particulate matter contamination in the house, and the impact those have on ingestion, dermal contact, and inhalation exposure. The EPA isn't looking for that, although it is critical to determining the risk here.

EPA Response: As stated in the response to the previous comment, the EPA QAPP specifies the use of survey equipment capable of measure alpha, beta, and gamma activity. The purpose of these surveys is to ensure that wipe samples are biased to any areas with elevated surface activity. The QAPP specifies that wipe samples will be collected from each high and low occupancy room in addition to every entrance. In this way, the QAPP was designed in order to maximize the coverage of the wipe sampling throughout a residence. The wipe samples and bulk dust samples were specifically chosen to characterize radioactive particulate matter that may be present inside a residence. The purpose of the investigation was to determine whether radioactive materials are present beyond what is naturally occurring and where inside the residence these materials are located if present. The exposure pathways considered in the default residential BPRGs are ingestion and external exposure.

Lewis Comment #5: The EPA protocol seeks to catalog material like granite counter tops, glow in the dark dials, or other materials not relevant to the legacy Manhattan Project wastes at issue here.

EPA Response: The EPA QAPP specifies that commercial/consumer radiation products should be identified, and specifies that baseline surface activities for each building material should be established. These actions are performed to ensure that sampling does not occur more prominently on one type of surface simply due to known sources of radiation or minor differences in the naturally occurring radioactive content of various building materials.

Lewis Comment #6: The EPA probes are to move at a rate of 1 to 2 feet per second at a distance of a half foot away from surfaces. This is much too fast to register the types of contamination we have already identified and provided to the EPA. That test is more appropriate for a controlled radiation protection area inside a nuclear facility; not for a home.

EPA Response: As stated in the *Real-time Monitoring for Surface Soil Gamma Activity* section of the QAPP, "The detector will be held approximately 6 inches above ground surface while the surveyor moves the detector at approximately 1 to 2 feet per second." This procedure applies only to the real-time monitoring for gamma activity in surface soils. It does not apply to any procedure involving either handheld scanning or sample collection from inside the residence.

Furthermore, this outdoor procedure is standard practice for investigating surface soils including residential. As stated in our response to comment #2, the gamma surveys are utilized to ensure that areas of elevated gross gamma activity are sampled. Soil samples were also taken from areas based on site features such as near downspouts.

Lewis Comment #7: They are not using probes of the proper sensitivity or with a short enough time constant, i.e. a short enough response factor, to detect hot spots.

EPA Response: The QAPP specifies the use of a variety of field instruments and the collection of three different types of samples to determine if radioactive materials are present in excess of background. As stated in the response to comments 2, 3, and 6, the field instruments included general gamma survey instruments and two different types of contamination probes for surface scanning capable of detecting alpha, beta, and gamma radiation. The QAPP further specifies the use of a Ludlum 3030 drawer counter to assess gross alpha and beta activity of the wipe samples and a Durridge RAD7 for real-time continuous radon monitoring. The equipment and sampling described in the QAPP are adequate and appropriate to determine whether additional investigation is warranted at these residential properties.

Lewis Comment #8: They intend to measure gross activity, there is nothing in the protocol to measure radioactive particles.

EPA Response: As specified in Table 3 of the QAPP, all of the wipe and bulk dust samples will be analyzed for specific radionuclides present in particulate matter or dust. Field instrumentation is limited to characterizing gross surface activities in order to ensure areas of elevated activity are sampled. The QAPP specifies that the results from laboratory analyzed samples will be used to determine the radionuclide specific content of particulate matter.

Lewis Comment #9: There is no quantitative basis for how human judgment will be used to select samples. There is no discussion about what the contamination vectors could be, so how does the operator exercise judgment to find the contamination caused by wholly undefined vectors?

EPA Response: The QAPP requires the collection of certain sample types and from specific locations should they be present at particular residential property in order to ensure that areas with the greatest potential for contamination are characterized.

The outdoor component of the investigation involves the collection of samples that are biased based on the results of the gamma survey, storm water discharge points, vegetable gardens, children's play areas, and non-native soils. This ensures samples are collected from areas with the greatest exposure potential and from areas with the greatest potential to deposit wind-blown particulates on a residential property. The QAPP includes objective criteria to ensure samples are collected to characterize these areas.

Similarly, the indoor component of the investigation involves the collection of samples that are biased based on the surface activity survey, surface type, room occupancy, entrances, and laundry rooms, if present. This ensures samples are collected from areas with the greatest

exposure potential and from areas with the greatest potential for particulate matter from outside the home to be brought inside by human activity. Again, the QAPP includes objective criteria to ensure samples are collected to characterize the areas describes in the previous sentence.

EPA takes the concerns of your clients and others in the Bridgeton community very seriously, and we continue to emphasize that we will evaluate all scientifically valid data. Although we have concluded our Bridgeton Dust sampling effort, we ask that you provide any soil and dust data beyond summary data tables that are associated with the allegations referenced by you in the Petition or any other similar data you possess from residences, businesses or publicly accessible locations.

Please feel free to contact me at (913) 551-7826 if you have any questions regarding this matter.

Sincerely,

Alyse Stoy
Associate Deputy Regional Counsel