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Your ref:
Our ref: LTR-RAC-20-31

March 20, 2020

Subject: Hydrofluoric Acid Spiking Station #1
Soil Sampling Plan

Mrs. Kuhn:

Please find attached for your review the Westinghouse Columbia Fuel Fabrication Facility Hydrofluoric Acid Spiking Station (HFSS) #1 Soil Sampling Plan.

Respectfully,

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Plan Reviewed by:

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ENOVIA Records

Enc.: "Westinghouse Soil Sampling Work Plan, HF Spiking Station #1, Rev0, March 20, 2020".

Soil Sampling Work Plan
HF Spiking Station #1, Rev 0

Background

In June of 2018, a system leak occurred at HF Spiking Station #2 (HFSS#2). As part of the corrective measures, the polypropylene liner was removed for repair work. At that time, a crack was noticed in the coating covering the diked area. Upon further investigation of the crack and degraded concrete, soil sampling in this location was performed by Westinghouse with analysis performed by the GEL laboratories. The laboratory analysis indicated the presence of uranium (U) in soil.

Westinghouse then removed portions of the concrete flooring in the HFSS#2 area to facilitate additional investigation, extensive soil sampling, and repairs. Results of the sampling are reported in the HF Spiking Station #2 Assessment Report, dated November 30, 2018 (LTR-18-81).

The soil sampling performed by Westinghouse in the assessment area of HFSS#2 indicated the potential presence of a clay layer at approximately 5 feet below concrete surface (bcs). However, during the initial investigative sampling performed in the HFSS#2 assessment area, no clay layer was encountered in Borings 1-12. This prompted further investigative sampling at deeper intervals within the assessment area.

For the 12 boring locations, composite soil samples were collected from each 2-foot interval to a maximum depth of 12 feet bcs, or auger refusal, whichever came first. Review of the HFSS#2 sample data shows little concern for the migration of impact beyond 10 feet bcs, with the most elevated levels of radioactivity identified in the 4-8 feet bcs depth range.

HF Spiking Station #1 Sampling Plan

A review of historical events indicates that no severe leakage or releases have been identified in the HF Spiking Station #1 (HFSS#1) assessment area that would prompt the concern for the extensive spread of contamination. Minor releases of impact have been found and documented in the past, and it is anticipated that residual levels of impact will be identified. In order to assess the subsurface impact of such a small area, the collection of five soil borings is sufficient. Over the approximate assessment area of 25 m^2, this represents one sample for every 5 m^2. Based on the experience developed from the HFSS#2 sampling and investigation and a review of historical events, the following sampling plan has been developed for HFSS#1.

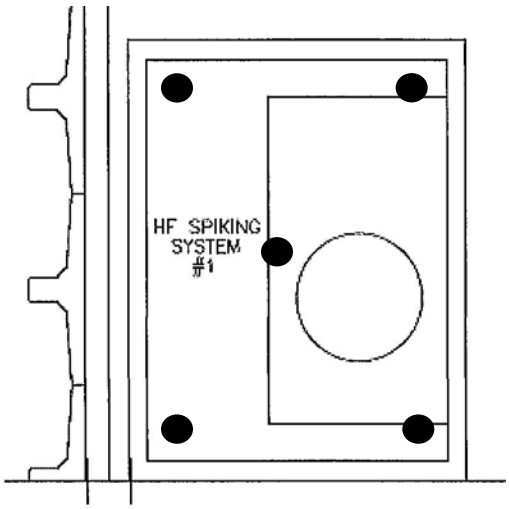
Soil Sampling

The condition of the concrete pad will be assessed and inspected for potential leaks, cracks, and/or holes both prior to and following containment dike removal. Potential pathways for the migration

of contamination will be identified and documented through pictures and field notes. The need for additional biased soil sampling will be reviewed once the concrete assessment is complete.

Second, after concrete pad removal and a temporary berm is installed, five (5) locations within the assessment area will be sampled by collecting soil borings in the center and each corner of the assessment area. The approximate location of each boring is shown by a black dot in Figure #1, the actual location of each boring will be determined by field sampling personnel, and may be moved to avoid potential obstructions.

Figure #1 – HFSS#1 Boring Locations



Each soil sample will be collected in 2-foot intervals from the exposed ground surface to a total depth of 10 feet bcs, or to auger refusal, whichever comes first. These borings will be performed using a hand auger bucket dedicated to each borehole. Each 2-foot interval will be homogenized on a clean piece of plastic sheeting, and an adequate sample volume (aliquot) will be collected for analysis of each interval. This method has been selected so that all soil within the vertical soil column will undergo laboratory analysis, while providing representative information about the possible extent of impact within the area. The goal of this sample plan is to collect a sufficient amount of information, eliminating the need for potential subsequent sampling campaigns. An anticipated maximum of 25 samples in total may be collected during this phase.

The hand auger method has been selected because of the location of the assessment area within the manufacturing plant. It is not practical to isolate the subsurface soil by installing a casing into the borehole prior to advancing the borehole. And due to limited access constraints, use of a geo-probe, or drill rig for sample collection is not suitable.

Based upon historical groundwater elevation data collected from nearby groundwater monitoring wells W-29 and W-30, the historical seasonal high water table in this area is between 12 and 13 feet bcs. Furthermore, based on the results of the previous HFSS#2 sampling depths, and the process knowledge of the conditions in the assessment area of HFSS#2, no potential for impact beyond 10 feet bcs is anticipated. Therefore, the vertical assessment will be conducted to a maximum depth of 10 feet bcs (which is approximately 2 feet above the historic depth to the seasonal high water table). All samples will be visually evaluated; subsurface soil classification and thickness of any present clay layer (if identified) in each boring will be logged by project personnel and reviewed by a South Carolina Professional Geologist.

Soil samples will be analyzed by a state certified laboratory for radionuclides (Isotopic Uranium [DOE HASL 300 U-02-RC Mod], and Tc-99 [DOE HASL 300 Tc-02-RC Mod), fluoride and nitrate (SW9056A), as well as moisture content, and pH. A chain of custody will be maintained throughout the process to ensure sample integrity.

After collection of the final soil sample at each boring location, the soil boring will be abandoned using bentonite pellets from the total boring depth to a level within 12 inches of the ground surface (to allow for expansion) as soon as practical. The bentonite pellets will be hydrated to reseal any conduit created by the borehole in order to prevent potential migration of contamination.

Groundwater Sampling

Groundwater sampling of the boreholes will not be necessary since it is anticipated that soil borings will be terminated before groundwater is encountered. Additional monitoring wells have been installed along the southern portion of the building to monitor potential changing conditions in the groundwater from potential sources inside the building.

Assessment Report

Westinghouse will prepare a letter report documenting the field location of the borings, depth of sample collection and analytical results. A hard copy and one electronic version of the formal report will be submitted to the South Carolina Department of Health and Environmental Control within four weeks of receipt of laboratory analytical data.