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December 9, 2016

Ms. Addie Walker, Project Manager
SC Department of Health and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Re: Response to SCDHEC Comments
Groundwater Delineation Work Plan
Delavan Spray Technologies Site
Bamberg, South Carolina
SCDHEC VCC Number 13-4762-RP
SCDHEC File Number 51778
AECOM Project Number 60314964

Dear Ms. Walker:

Per our telephone conversations of December 7 and 8, this is to formally notify you that AECOM did not receive a copy of your October 31, 2016 comments to the Groundwater Delineation Work Plan, which was prepared by AECOM and submitted to SCDHEC on September 13, 2016. On behalf of United Technologies Corporation (UTC), AECOM is providing you the following responses or additional information to each of your four comments:

Response 1: Comment noted. Other field screening methods may be considered, as appropriate, to conduct the groundwater delineation.

Response 2: A discussion of the temporary borings/wells to be drilled during the groundwater delineation is attached in the form of change-out pages to the September 13 Work Plan. The following sentence has been added to the end of the second paragraph of Sections 2.2.1 and 2.2.2:

> *"Borings and/or temporary wells installed for groundwater screening will be abandoned by forced injection grouting from total depth to land surface with a non-shrink neat bentonite/cement grout."*

A revised pdf of the full document, including change out pages, is included on the attached cd.

Response 3: AECOM intends to perform a desk top review of potential technologies for remediating the source area under the manufacturing building. The desk top review will include recommendations for one or more bench-scale studies, which would be followed by a field scale pilot study. The findings of the desk top review and recommendations will be submitted to SCDHEC for informational purposes. A formal pilot study work plan (including UIC permitting, if needed) will be prepared and submitted to SCDHEC based on the results from any bench scale studies. AECOM anticipates that the desk top review and recommendations will be completed by March 15, 2017. We will provide an update on the timing of the field scale pilot study work plan submittal after bench scale testing is completed.

Response 4: Due to the delay in receipt of your correspondence giving approval of the Work Plan, the field activities have not yet been scheduled. AECOM will assist UTC in securing the access to the off-site drilling locations and will schedule the groundwater delineation activities with our drilling subcontractor. Barring any unforeseen circumstances, the assessment report should be completed and delivered to SCDHEC by April 15, 2017. We intend to evaluate the field screening data in real time and determine the locations for permanent monitoring well during the same mobilization.

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AECOM will forward the field data and recommendations for permanent monitoring well locations to SCDHEC for concurrence before proceeding with the well installations.

If you have any questions or require further information, please feel free to contact me.

Sincerely,
AECOM Technical Services, Inc.

Walter C. Gerald

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cc: Mr. Bill Penn – United Technologies Corporation
Ms. Evelyn Rogers, PE – AECOM
Ms. Kanistha Coombs, UTAS
Project File 60314964

Groundwater Delineation Work Plan

United Technologies Corporation
Delavan Spray Technologies Site
4334 Main Highway
US Highway 301 South
Bamberg, South Carolina

VCC 13-4762-RP

RECEIVED
DEC 12 2016
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

Prepared for:

United Technologies Corporation
9 Farm Springs Road - MS 101
Farmington, CT 06032

Prepared by:

AECOM Technical Services, Inc.
10 Patewood Drive
Building 6, Suite 500
Greenville, South Carolina

September 13, 2016
Revised December 8, 2016

2.2.1 Shallow Aquifer Groundwater Screening

Delineation of the shallow aquifer zone beneath the Kinsey property will be conducted as a tiered (phased) approach. Tier 1 borings will consist of a line of up to four sampling locations GW-DPT-1S through GW-DPT-4S, which will initially be evaluated by advancing a soil boring from land surface to approximately 20 feet below land surface (bls) penetrating the upper shallow sand/clay aquifer unit (Table 1 and Figure 3). The soils will be continuously sampled using a Geoprobe® or mini-sonic drilling rig and a continuous core sampler. The lithology of the soils will be described by an AECOM geologist. The soils will be screened in the field using a photo ionization detector (PID) for the presence of VOCs. The soils will also be examined for visual signs of impact and any observations will be measured and recorded. Borehole drilling methods are described in further detail in Section 2.3 below.

Based on the PID field screening results, one or two groundwater screening samples will be collected from the surficial aquifer at each drilling location using a screen point sampler as described in Section 2.4 below. Borings and/or temporary wells installed for groundwater screening will be abandoned by forced injection grouting from total depth to land surface with a non-shrink neat bentonite/cement grout.

Based on the results of the field screening of the soils and groundwater from the initial four Tier 1 locations (i.e., GW-DPT-1S through GW-DPT-4S), the data will be evaluated and up to five additional Tier 2 locations may be drilled and sampled (Table 1 and Figure 3). As field screening and data evaluation is a dynamic assessment strategy, the number and locations of borings to be advanced in the surficial aquifer may vary based on the results of the environmental data collected. The proposed drilling and sampling locations may be adjusted in the field, as necessary, due to the presence of utilities, drill rig accessibility, etc. keeping in mind, however, the overall goal is delineation of PCE in shallow groundwater. Note: if the Tier 2 borings do not define the extent of PCE below the MCL, downgradient wells MW-15 and MW-16 provide delineation below the detection limit for PCE.

Once the PCE plume has been fully defined based on field screening and existing downgradient monitoring well data, one or two Type II surficial monitoring wells will be drilled and installed at strategic locations and depths determined based on field screening results to provide long-term monitoring of the plume (Table 2). Monitoring well drilling and installation methods are described in further detail in Sections 2.3 and 2.5 below. The proposed monitoring well construction details including total depth and estimated screen intervals are presented on Table 2 and in Appendix A.

2.2.2 Deeper Limestone Aquifer Groundwater Screening

Figure 4 illustrates the known occurrence of PCE in the deeper limestone aquifer unit in the Delavan site vicinity. Based on this information, additional locations were selected for assessment to fully delineate the occurrence of PCE further to the south / southwest of the site, beyond the locations of monitoring wells MW-25D and MW-26D where PCE exceeds the MCL in groundwater.

In order to determine the extent of the PCE plume to the south of the Delavan site and the MW-26D location, up to four additional locations along the SCE&G power line right of way (GW-DPT-1D through GW-DPT-4D) will initially be evaluated by advancing a soil boring from land surface to approximately 50 feet bls (Table 1 and Figure 4). The soils will be continuously sampled using a Geoprobe® or mini-sonic drilling rig and a continuous core sampler. The lithology of the soils will be described by an AECOM geologist. The soils will be screened in the field using a PID for the presence of VOCs. The soils will also be examined for visual signs of impact and any observations will be measured and recorded. Borehole drilling methods are described in further detail in Section 2.3 below.

Based on the PID field screening results, one or two groundwater screening samples will be collected from the bedrock aquifer at each drilling location using a screen point sampler as described in Section 2.4 below. Borings and/or temporary wells installed for groundwater screening will be abandoned by forced injection grouting from total depth to land surface with a non-shrink neat bentonite/cement grout.

In order to determine the extent of the PCE plume further to the south-southwest of the Delavan site and the MW-25D/MW-26D locations, up to six additional locations are proposed to be installed along an existing logging road (GW-DPT-4D through GW-DPT-10D) (Table 1 and Figure 4).

Based on the results of the field screening of the soils and groundwater, additional locations may be drilled and sampled if deemed necessary. This strategy will be continued until the plume is determined to be defined using the field screening methods. As field screening and data evaluation is a dynamic assessment strategy, the number and locations of borings to be advanced in the limestone aquifer unit may vary based on the results of the environmental data collected. The proposed drilling and sampling locations may also be adjusted in the field, as necessary, due to the presence of utilities, drill rig accessibility, field results, etc. keeping in mind, however, overall goal of delineation of PCE in the deeper limestone aquifer unit. Once the PCE plume appears to be fully defined based on field screening, two or three deep Type III monitoring wells will be drilled and installed to depths of approximately 50 feet bls at strategic locations to provide long-term monitoring of the plume (Table 2). Monitoring well drilling and installation methods are described in further detail in Sections 2.3 and 2.5 below. The proposed monitoring well construction details including total depth, surface casing depths (for the deeper wells), and estimated screen intervals are presented on Table 2 and in Appendix A.

2.3 Borehole Drilling

For both the shallow and deeper borings and monitoring wells, sonic drilling techniques are expected to be used to advance each boring to the target depth. However, other technologies may be used, if necessary, such as: DPT, hollow-stem auger or mud rotary. It is expected that the sonic rig will utilize a 6-inch diameter outer casing and a 4-inch diameter inner core barrel. Soil samples will be extruded from the inner core barrel into plastic sleeves for lithological logging and soil screening by an AECOM geologist. Pending approval by SCDHEC, it is expected that a permanent surface casing will not be

needed for the bedrock aquifer monitoring wells if sonic techniques are used – the temporary drill casing will be sufficient to seal the upper surficial aquifer during drilling and well installation. Soil cuttings will be containerized in 55-gallon drums and temporarily stored on-site as investigation-derived waste (IDW) until they are profiled and disposed, as described in Section 2.13 below.

2.4 Screen Point Groundwater Sampling

Groundwater screening will be conducted using the Geoprobe® SP-16 groundwater sampling system or equivalent technology. The SP-16 groundwater sampling system will use expendable points, which will be left in the ground as the probe rods are withdrawn. To obtain a discrete groundwater sample, a new borehole will be pushed for each selected sample interval.

Upon reaching the desired sampling depth, the screen point will be opened. Polyethylene tubing fitted with a stainless steel check valve will be inserted through the probe rods into the screened interval to allow for groundwater sample collection. The AECOM drilling subcontractor will provide sampling tubing and check valves for the groundwater sampling.

Groundwater from the screened interval will be purged to ensure a representative sample is collected. During purging, pH, temperature, specific conductance, dissolved oxygen, oxidation reduction potential, and turbidity will be measured and recorded. Purging will continue until pH, temperature, and specific conductance have stabilized to within 10 percent (0.2 s.u. for pH).

Groundwater samples collected for analysis of PCE will be kept chilled on ice to about 4 degrees Celsius under chain of custody protocol after collection. The samples will be delivered via courier to Shealy Environmental Services (Shealy), located in West Columbia, SC for analysis by USEPA Method 8260B. Shealy is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and State of South Carolina certified laboratory. Sample results are expected to be requested for 1-day turn-around-time.

2.5 Monitoring Well Installation

All monitoring wells will be installed through the center of the sonic core barrel and will be constructed of 2-inch diameter Schedule 40 polyvinylchloride (PVC) casing and 10 to 15 feet of 0.010-inch machine slotted PVC screen. Filter sand will be placed into the annular space of each well to approximately two-feet above the top of the well screens. A pelletized bentonite clay seal approximately 2 feet thick will be placed in the annular space above the filter sand and hydrated with potable water, as necessary. As the filter sand and bentonite clay are added, the core barrels will be pulled from the borehole to ensure the annulus is completely filled. Depths to sand and bentonite will be monitored with a weighted tape measure as the installation progresses. A neat cement-bentonite grout will then be injected from above the bentonite seal to land surface via a tremie pipe as the core barrel is pulled.