



**VIA ELECTRONIC MAIL**

May 4, 2021

John Hopkins  
Remedial Project Manager  
U.S. Environmental Protection Agency, Region III  
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**Subject: Quarterly Progress Report No. 18  
Former Kop-Flex Facility Site, Hanover, Maryland  
USEPA ID No. MDD043373935  
Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA**

Dear John:

On behalf of EMERSUB 16, LLC, a subsidiary of Emerson Electric Co., WSP USA, Inc. (WSP) is submitting this quarterly progress report describing the activities conducted in the first quarter of calendar year 2021 (January 1<sup>st</sup> through March 31<sup>st</sup>) as part of the corrective measures implementation at the former Kop-Flex, Inc. facility property located at 7565 Harmans Road (Site) in Hanover, Maryland. The Site is identical to the area described as the “Facility” in the Administrative Order on Consent, Docket No. RCRA-03-2016-0170 CA (Consent Order) for the Site. The report also describes the activities planned for the second quarter of calendar year 2021 (April 1<sup>st</sup> through June 30<sup>th</sup>).

This progress report is being submitted to the U.S. Environmental Protection Agency (EPA) pursuant to Section VI.C.3 of the Consent Order. Please note that, in addition to performing the work conducted under the Consent Order, EMERSUB 16 continues to fulfill its remedial obligations under the October 2015 Response Action Plan (RAP) approved by the Maryland Department of the Environment (MDE) Voluntary Cleanup Program, and that EMERSUB 16 copies USEPA on all submittals required under that program.

If you have any questions, please do not hesitate to contact us at 703-709-6500.

Kind regards,

Robert E. Johnson  
Director, Geological Sciences

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Encl.

cc: Mr. Stephen Clarke, EMERSUB 16 LLC  
Ms. Richelle Hanson, Maryland Department of the Environment

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## CERTIFICATION

I certify that the information contained in or accompanying this quarterly progress report is true, accurate, and complete.

As to those portions of this quarterly progress report for which I cannot personally verify their accuracy, I certify under penalty of law that this quarterly report and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature:

A handwritten signature in blue ink, appearing to read 'Stephen L. Clarke', written over a horizontal line.

Name:

Stephen L. Clarke

Title:

President of EMERSUB 16, LLC

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## Quarterly Progress Report No. 18

Former Kop-Flex Facility Site

January 2021 through March 2021

**Site Name:** Former Kop-Flex Facility  
**Site Address:** 7565 Harmans Road  
Hanover, Maryland 21077

**Consultant:** WSP USA Inc.  
**Address:** 13530 Dulles Technology Drive, Suite 300  
Herndon, Virginia 20171  
**Phone No.:** (703) 709-6500

**Project Coordinator:** Eric Johnson  
**Alternate:** Lisa Kelly

### 1.0 ACTIVITIES COMPLETED DURING JANUARY 2021 – MARCH 2021 REPORTING PERIOD

#### 1.1 HYDRAULIC CONTAINMENT SYSTEM OPERATION

- The hydraulic containment system (System) operated for 87 of the 90 days during the first quarter of 2021, which equates to a 97% run-time efficiency over this 3-month period. The only System shut-down was limited to a 3-day planned shut-down in mid-February to conduct a regeneration “reset” of the resin vessels.

With regards to the regeneration reset, the System typically continues to operate with a single resin vessel while the other resin vessel undergoes steam regeneration. As a preventative measure based on increasing rates of 1,4-dioxane breakthrough, System operation was temporarily stopped to allow for both resin vessels to be regenerated prior to resuming System operation. This process minimizes potential contaminant pre-loading of the second (lag) resin vessel during normal operation and thus helps to prevent possible breakthrough of 1,4-dioxane.

- A total of approximately 8.97 million gallons of impacted groundwater were extracted by the recovery wells and treated by the System during the first quarter of 2021, with the combined average monthly withdrawal rate during full-scale operation ranging from 71 gallons per minute (GPM) in January to 72 GPM in March. To monitor and evaluate concentrations of volatile organic compounds (VOCs) and 1,4-dioxane in the untreated and treated water, samples of both the influent and effluent were collected and analyzed during the reporting period. An influent water sample was collected for chemical analysis in January, while effluent samples were collected from January through March.
  - The total concentration of chlorinated VOCs (CVOCs) and 1,4-dioxane for the influent sample was 384 micrograms per liter ( $\mu\text{g/L}$ ), which is consistent with past sampling data. As of the end of March 2021, an estimated total of 380 pounds of CVOCs and 162 pounds of 1,4-dioxane have been recovered from the aquifer system.
  - The monthly effluent samples were submitted for chemical analysis in accordance with State Discharge Permit Number 15-DP-3442 and National Pollutant Discharge Elimination System (NPDES) Permit MD 0069094 issued by the MDE (Discharge Permit). Analysis of the effluent samples indicated non-detect concentrations of CVOCs. The analytical results for all monitoring parameters complied with the effluent limitations specified in the Discharge Permit.
  - The 1,4-dioxane concentrations in the effluent samples were very low to low, with concentrations ranging from 1.1  $\mu\text{g/L}$  (February 2021) to 13.0  $\mu\text{g/L}$  (January 2021). The detected levels of 1,4-dioxane were below the site-specific cleanup level



of 15 µg/L. This reduced 1,4-dioxane treatment capacity is likely due to the continued problem of natural organic carbon in groundwater adsorbing to the resin media, and not being completely removed during the resin steam regeneration process. During the second quarter of 2021, WSP will be conducting a small-scale pilot test of a pre-treatment technology to remove the natural organic carbon from groundwater and prevent fouling of the specialty treatment resin.

## **1.2 ORGANIC MATTER FOULANT PRE-TREATMENT EVALUATION**

- During the fall of 2020, WSP worked with two vendors to evaluate pre-treatment technologies that could remove natural organic carbon from the influent, thereby preventing fouling of the resin media used to adsorb contaminants. The first phase of the evaluation involved the completion of bench-scale isotherm studies of granular activated carbon (GAC) by Calgon Carbon and ion exchange by Emerging Contaminant Treatment Technologies (ECT2) for removing the fouling constituents. The GAC isotherm study was inconclusive due to the non-detect levels of the natural organic carbon indicator compounds – tannins and lignins - in the influent. Using total organic carbon as an approximate measure of the natural organic carbon foulants, the ion exchange isotherm studies identified an anionic polyacrylic resin as the most effective in removing these constituents from the extracted groundwater.
- Based on the results of the bench-scale isotherm testing, WSP and EMERSUB 16 decided to move forward with a small-scale column treatability test of the ion exchange technology using one type of exchange resin recommended by ECT2. Given the low natural organic carbon concentrations in the influent, the column test would be conducted onsite because of the very large volume of water that would need to be treated to reach break-through by the foulants. After completing the treatment portion of the column test, the spent ion exchange resin will be shipped to ECT2’s laboratory for performance of a bench-scale regeneration study, including the collection and analysis of samples of the wastewater produced during the regeneration process to assess disposal options. WSP and ECT2 initiated the small-scale pilot test of the selected ion exchange resin early in the second quarter of 2021.

## **1.3 WASTEWATER DISCHARGE PERMIT TO PUBLICLY OWNED TREATMENT WORKS**

- On March 1, 2021, WSP met onsite with a representative of the Anne Arundel County (County) Department of Public Works (DPW), Christian Tait, to review the System and explore the possibility of EMERSUB 16 obtaining a wastewater discharge permit pertaining solely to non-groundwater discharges to the sanitary sewer from the treatment activities. Based on the meeting discussions, the County DPW did not identify any issue that would prevent the issuance of a permit for both current and potential future waste streams from the treatment system to the public sewer system. The County DPW also provided information on the permit application and review process, and the procedure for modifying an existing permit to allow for the discharge of a new waste stream.
- Based on the determination offered by the County during the March 1<sup>st</sup> site meeting, WSP initiated preparation of the wastewater discharge permit application for the treatment system. The completed application, which was certified by a duly authorized representative of EMERSUB 16, and corresponding application fee was submitted to the County DPW in early April 2021.

## **1.4 GROUNDWATER MONITORING**

- As indicated in the Groundwater Monitoring Plan for the response action, groundwater level monitoring to evaluate the head distribution in response to remedial pumping is to be conducted on a semi-annual basis, with the next measurement event scheduled for mid-May 2021. No conditions occurred that warranted the collection of an additional round(s) of water level data from the shallow or deep portions of the Lower Patapsco aquifer (LPA) during the first quarter of 2021.
- Long-term groundwater monitoring to assess changes in VOC and 1,4-dioxane concentrations in the shallow and deep portions of the LPA during System operation is also conducted semi-annually at the Site. The next sampling event for the groundwater recovery wells and onsite monitoring wells will be performed during mid-May 2021.



## 2.0 PLANNED ONSITE ACTIVITIES FOR THE SECOND QUARTER OF 2021

- Continue with the full-scale System operation, including the collection and assessment of System data to evaluate operational performance, and conduct regular and as needed maintenance activities to optimize System performance and run-time.
- Conduct the required effluent monitoring and monthly reporting pursuant to the State Discharge/NPDES Permit.
- Complete the small-scale field treatability test using the ion exchange technology to confirm the effectiveness of the technology and gather information on the resin capacity and regeneration frequency from evaluation of foulant break-through. After finishing the field treatment phase of the test, conduct bench-scale testing to assess regeneration of the ion exchange resin, including disposal characterization of the wastewater.
- Collect a synoptic round of water level measurements from the monitoring and recovery wells and evaluate the data to assess the aquifer response to remedial pumping and capture of the VOC plumes in the unconfined and confined portions of the LPA at the Site.
- Conduct semi-annual sampling of the monitoring wells and recovery well discharge in mid-May 2021 pursuant to the approved Groundwater Monitoring Plan.
- Submit the 2020 Operation, Maintenance, and Monitoring (OM&M) Report for the hydraulic containment system to EPA and MDE.
- Submit the report for the late December 2020 inspection of the engineering controls implemented as part of the Site response action.

Given the ongoing coronavirus pandemic, it is possible that planned field activities could be delayed and re-scheduled to ensure conformance with government-issued directives and to address potential health concerns raised by the current Site operator – Catalent Cell & Gene Therapy. EMERSUB 16 will coordinate Site activities to the extent possible to avoid any delays or disruptions regarding the completion of these field tasks.

## 3.0 KEY PERSONNEL/FACILITY CHANGES

There were no changes to key project personnel during the reporting period