VIA ELECTRONIC MAIL

November 14, 2022

John Hopkins
Remedial Project Manager
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Mail Code – 3LD10
Philadelphia, PA 19103-2029

Subject: **Quarterly Progress Report No. 24**
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 third quarter of calendar year 2022 (July 1st through September 30th) as part of the corrective measures implementation at the former Kop-Flex, Inc. facility property located at 7555 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). The report also describes the activities planned for the fourth quarter of calendar year 2022 (October 1st through December 31st).

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 perform the remedial activities specified in 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
Senior Technical Manager – Earth & Environment

SLB::REJ
K:\Emerson\Kop-Flex_Reports_Progress Reports\EPA Progress Reports\CM Progress Report 24 Q3 2022\
Encl.

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

WSP USA
Suite 300
13530 Dulles Technology Drive
Herndon, VA 20171

Tel.: +1 703 709-6500
Fax: +1 703 709-8505
wsp.com

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: 

Name: Stephen L. Clarke

Title: President of EMERSUB 16, LLC

WSP USA
Suite 300
13530 Dulles Technology Drive
Herndon, VA 20171

Tel.: +1 703 709-6500
Fax: +1 703 709-8505
wsp.com

Quarterly Progress Report No. 24
Former Kop-Flex Facility Site
July 2022 through September 2022

Site Name:	Former Kop-Flex Facility
Site Address:	7555 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 JULY 2022 – SEPTEMBER 2022 REPORTING PERIOD

1.1 HYDRAULIC CONTAINMENT SYSTEM OPERATION

- The hydraulic containment system (System) operated for 32 of the 92 days during the third quarter of 2022, which equates to a 35% run-time efficiency over this 3-month period. As discussed in Quarterly Progress Report #23, the System was manually shut down on April 29 based on the results of a boiler blowdown discharge pH study conducted at the request of the Anne Arundel County (County) Pre-treatment Program. The study findings showed the pH of the blowdown discharge consistently exceeded the upper limit of 10 standard units (SU) specified in the Wastewater Discharge Permit issued by the County. The System remained nonoperational until August 8th, when modifications were made to the System for interim management of the boiler blowdown water. These modifications involved rerouting the blowdown water to an onsite frac tank for subsequent pH adjustment and discharge to the sanitary sewer system in accordance with the County Wastewater Discharge Permit. There were a few short-term (1 to 5-day) shutdowns in August during the start-up of the System modifications for managing the boiler blowdown water.

- After resuming operation, there were a few very brief shutdowns in September that were associated with the replacement of malfunctioning System components. These shutdowns were linked to problems with a part for the compressed air system that controls the automated process valves and the operation of the pH probe for the pH adjustment system. The malfunctioning components were quickly replaced in October to allow for optimal System operation.

- As mentioned in the previous progress report, the long-term approach for management of the boiler blowdown discharge will be the addition of this water to the extracted groundwater flow. For implementation of this permanent solution, Addendum #2 for the renewal application for National Pollutant Discharge Elimination System (NPDES) Permit MD 0069094, which corresponds to Maryland State Discharge Permit Number 15-DP-3442 issued by the MDE (Discharge Permit), was submitted to MDE on August 5, 2022. This addendum provides information for the planned addition of the boiler blowdown to the process water flow and routing of the combined water through the treatment system with eventual discharge to Stony Run.

- A total of approximately 3.01 million gallons of impacted groundwater were extracted by the recovery wells and treated by the System during the third quarter of 2022, with the combined average monthly withdrawal rate during full-scale operation ranging from 68 gallons per minute (GPM) to 72 GPM. During System operation, effluent samples were collected for chemical analysis in accordance with the Discharge Permit. (No effluent sample was collected in July as the System did not operate, and there was no discharge of treated water to Outfall 001 during the month.) The analytical results for all monitoring parameters complied with the effluent limitations specified in the Discharge Permit.

- To monitor and evaluate concentrations of volatile organic compounds (VOCs) and 1,4-dioxane in the untreated (*i.e.*, extracted) and treated water, samples of both the System influent and effluent were collected and analyzed during the reporting period. An influent water sample was collected for analysis in September, while effluent samples were collected in August and September. The total concentration of chlorinated VOCs (CVOCs) and 1,4-dioxane in the influent sample was 480 micrograms per liter (µg/L). This CVOC + 1,4-dioxane concentration is higher than levels detected in recent influent samples collected when the System was under normal (*i.e.*, continuous) operation. The increased contaminant level in the September sample may reflect the diffusion of constituents from low permeability zones/layers to groundwater moving through zones/layers of higher permeability when the System was shut down for approximately 3 months. Groundwater in these high permeability zones/layers serves as the primary source of water to the recovery wells during remedial pumping. As of the end of September 2022, an estimated total of 438 pounds of CVOCs and 184 pounds of 1,4-dioxane have been recovered from the affected portion of the Lower Patapsco aquifer. Analyses of the effluent samples indicated non-detect concentrations of CVOCs and 1,4-dioxane.

1.2 RECOVERY WELL ASSESSMENT AND REHABILITATION

- As mentioned in Quarterly Progress Report #23, WSP retained Parratt-Wolff, Inc. to assist with the assessment and rehabilitation of the System recovery wells based on observed iron fouling at recovery well RW-1S. Assessment of the recovery wells was completed during late June 2022. Short-term pumping tests indicated a significant reduction in yield, or well discharge per foot of drawdown, of each of the shallow recovery wells but no reduction in performance of the deep recovery wells. In order to identify the cause of the yield reduction, a down-well camera survey was conducted at each recovery well. This survey indicated the existence of significant biofouling deposits on the well screens and iron-containing solids at the bottom of each of the shallow recovery wells. Fouling of the deep recovery wells was much less significant, with some minor build-up on the screens. The camera surveys also revealed the presence in some wells of degraded remnants of the galvanized steel cable used to secure the submersible pump in each recovery well. Based on the assessments, rehabilitation activities were planned for all shallow and deep recovery wells. The submersible pumps and connected water conveyance hose and pressure transducers were removed from the recovery wells in anticipation of the rehabilitation work.

- Chemical rehabilitation of the shallow recovery wells to address the biofouling impacts and redevelopment of all recovery wells was completed during early July 2022. First, air lifting, which involves injecting compressed air to ‘lift” water out of a well, was used to remove the solids-containing water from the well casing and sand pack at each recovery well. Following air lifting, chemical treatment to break down the biofouling deposits in the well and screen was applied at each of the three shallow recovery wells. The chemical products selected for the rehabilitation consisted of a bio-dispersant (Nu-Well 310 Dispersant) combined with a liquid acid (Nu-Well 120 Descale Safe), both of which are manufactured by Johnson Screens and suitable for use on potable water wells. (Copies of the Safety Data Sheets for these products are provided in Enclosure A.) Based on the length of the water column determined from the well construction information and water level measurements, approximately 2 gallons of the Nu-Well 120 Descale Safe and 1 gallon of the Nu-Well 310 Dispersant were carefully added to each shallow recovery well. The acid-based chemicals remained in each well overnight prior to conducting further rehabilitation activities. After the treatment period, each of the shallow wells was redeveloped by surging for a minimum of 1 hour using a suitably sized surge block attached to drill rig tooling. For the redevelopment of the deep recovery wells, the surging of the screen for RW-1D was completed using a wire brush attached to the drill rig tooling while a surge block was used instead of a wire brush for RW-2D because the brush was getting caught in the well casing. A second round of air lifting was completed at each recovery well following the surging and wire-brushing activities. During this round of air lifting, the pH of the shallow recovery well purge water was monitored to ensure the removal of all water containing the acid-based treatment chemical.

  The surging and brushing activities allowed for the removal of the corroded security cable from recovery wells RW-3S and RW-1D. Removal of the security cable from RW-2D was not feasible due to the same down-well obstruction that

prevented use of the wire brush during the surging phase. (The corroded cables for shallow recovery wells RW-1S and RW-2S were removed prior to conducting the rehabilitation activities.)

- After completing the rehabilitation activities, another short-term pumping test was conducted at each shallow recovery well to determine the degree of improvement in the well yield. The test results indicated a significant increase in well yield at RW-1S and RW-2S, with values consistent with data from the baseline tests conducted following the installation of the wells in the fall of 2016. Yield testing at RW-3S did not show any noticeable improvement in the post-rehabilitation well performance.
- During the inspection and rehabilitation activities, the O&M contractor performed cleaning of the pumps and associated water conveyance lines and pressure transducers in all recovery wells to remove accumulated iron deposits and biofouling deposits. The cleaning procedure involved scrubbing the outside of the components with cleaning solution followed by a potable/tap water rinse prior to redeployment of the down-well components in the recovery wells.
- Water generated from the initial air lifting of the shallow and deep recovery wells was pumped through a bag filter and into the flow equalization tank for treatment through the System. Redevelopment water generated from air lifting the shallow wells after the chemical addition and surging was placed in 55-gallon steel drums for subsequent characterization and management at an offsite disposal facility. A representative sample of this wastewater was collected and submitted to the ALS Environmental laboratory in Middletown, Pennsylvania for analysis of Total Resource Conservation and Recovery Act (RCRA) metals using the U.S. Environmental Protection Agency SW-846 Test Method 6010D for arsenic, barium, cadmium, chromium. lead, selenium, and silver, and Method 7470A for mercury. In addition, WSP measured the pH of the wastewater using a calibrated field meter at the time of sample collection. The wastewater will be profiled and disposed offsite in accordance with applicable state and federal regulations.

1.3 REPLACEMENT OF MONITORING WELL MW-04

- Based on the facility owner's – Catalent Harmans Road LLC (Catalent) – design for a multi-level parking garage to be constructed in the eastern portion of the Site, existing shallow monitoring well MW-04 would not be usable for future monitoring activities. Given MDE's desire to not remove any wells from the monitoring program at this time, an agreement was reached to install a new monitoring well to replace the MW-04 well. This replacement well, designated MW-04R, was to be installed approximately 70 feet northeast of existing well MW-04. The proposed location for the installation of replacement well MW-04R was approved by MDE via an August 26, 2022, email to Catalent's contractors and WSP.
- Replacement well MW-04R was installed at the proposed location east of the small storm water management area during the week of September 12, 2022 (Figure 1). The new well was completed at a depth of approximately 40 feet below ground surface, which is consistent with the depth of well MW-04 within the shallow zone of the Lower Patapsco aquifer.
- Well MW-04 was abandoned in-place in accordance with the Maryland well regulations.

2.0 PLANNED ONSITE ACTIVITIES FOR THE FOURTH QUARTER OF 2022

- Continue with the full-scale System operation, including the implementation of the interim solution for managing the boiler blowdown discharge, and collection and assessment of System data to evaluate operational performance. Upon receipt of the new Discharge Permit, the blowdown water will be rerouted to enable combining it with the extracted groundwater in the flow equalization tank for treatment through the System.
- Conduct the required effluent monitoring and monthly reporting pursuant to the State Discharge/NPDES Permit.

- Collect 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 shallow and deep zones of the Lower Patapsco aquifer at the Site.

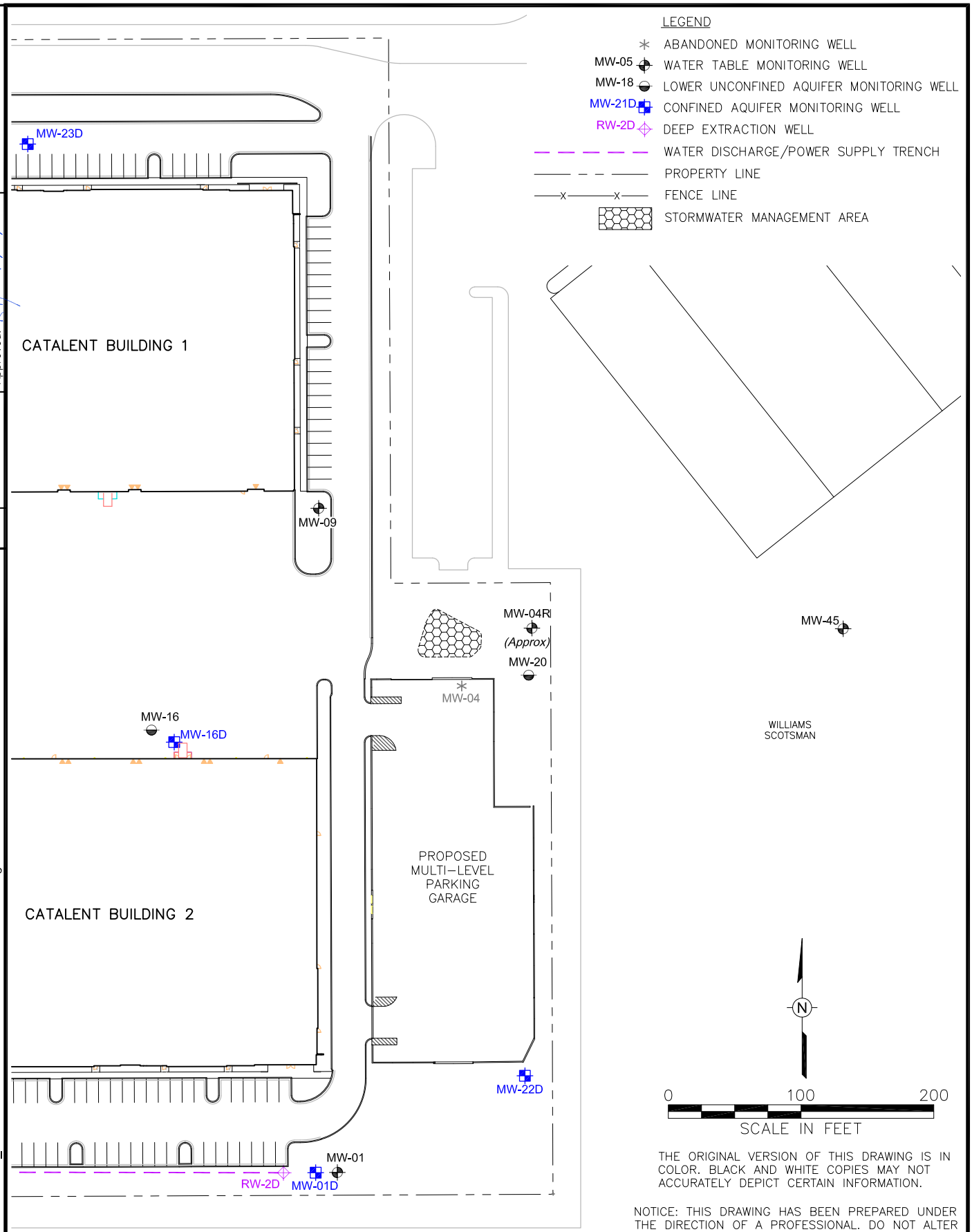
- Conduct semi-annual sampling of the monitoring wells and recovery wells discharge in late November 2022 pursuant to the approved Groundwater Monitoring Plan.

- Submit the Five-Year (2017 through 2021) Corrective Measures Assessment Report for the hydraulic containment system to EPA and MDE.

3.0 KEY PERSONNEL/FACILITY CHANGES

There were no changes to the key personnel for the corrective action or onsite conditions related to the activities conducted by the facility owner/operator.

FIGURE



THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK AND WHITE COPIES MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A PROFESSIONAL. DO NOT ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE WRITTEN CONSENT OF WSP USA INC.

DWG Name: 314V5608.010-001

Checked: Approved: 10/25/2022

Drawn By: EGC

A

R:\ACAD\CADD_CLIENT\Emerson\MD_Hanover\314O5608.010\CAD\314V5608.010-001.dwg 10/25/2022 2:33 PM USEC01012

WSP USA Inc.
13530 DULLES TECHNOLOGY DR
SUITE 300
HERNDON, VA 20171
TEL: +1 703.709.6500

FIGURE 1

LOCATION OF REPLACEMENT WELL MW-04R

FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

ENCLOSURE A – SAFETY DATA SHEETS FOR CHEMICALS USED IN SHALLOW RECOVERY WELL REHABILITATION