

#### ENVIRONMENTAL RESTORATION SERVICES FORT DETRICK, FREDERICK MD

Progress of the Pilot Study for Three Potential Remedial Technologies

April 2020

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### **Three Pilot Study Technologies in Two Areas**

Groundwater Pilot Study Area (source area)

- 1. Pump and Treat (Work on-going)
- 2. Enhanced Reductive Dechlorination (ERD) (Future Work)

Surface Water Pilot Study Area (downgradient)

3. Pond Aeration (Planned field work complete)



Surface

# Activities Completed Since the December 2019 RAB Meeting

- Completed Surface Water Pilot Study
- Began trenching to bring buried electrical line from offpost to proposed P&T building

## **General Pilot Study Schedule**

- Drilling work completed September 10, 2019
- Baseline Sampling conducted September 16-October 10
- Surface water aeration conducted June 10, 2019 through January 30, 2020.
- Phased build out of P&T system planned through mid-2020
- ERD will be conducted after completion of P&T
- Implementation of all options will take approximately 2.5 years



### Pump and Treat Pilot Study (Groundwater)

- Baseline sampling conducted September 16-October 10, 2019 to determine the final design of the P&T system
  - Validated data from the baseline sampling event will be provided as part of the third quarterly report
- Step test conducted November 20-22, 2019. This test involved pumping the planned extraction points at various pumping rates to determine the operational parameters for the future pump and treat system.
- Trenching and installation of an electric line to bring electricity from Kemp Lane to the planned P&T system began March 30th and will be completed by late April.
  - Work is being conducted in accordance with social distancing guidelines.



Excavation of line



Back-filled area

### **Pump and Treat - Next Steps**

- Arcadis has completed design of the treatment system. Currently under Army review.
  - A new building will be installed in the vicinity of the B-11/Western Disposal Area to house the groundwater treatment system.
  - In the future, treated clean water will be discharged to a nearby Area B stream with regular confirmatory testing. MDE and EPA will approve the discharge criteria and system effectiveness before system operation.
- The system will be temporary. The pumping test, water treatment, and sampling study will occur for 8 months.

Pump and Treat		
Drilling	Design	Implementation
4 months	4 months	Approx. 12-13 months
Current progress		

#### **Pond Aeration Pilot Study (Surface Water)**

- Two aerations systems (fountains and diffusers) have been tested at Robinson Pond, each for a period of 2 months.
  - Five fountains were operated July 18<sup>th</sup> to September 17<sup>th</sup>
  - Diffuser test ran from November 22<sup>nd</sup> through January 30<sup>th</sup>.
- This phase of the pilot test is now complete.
- Observations and data from the tests are provided in quarterly reports. Final results and recommendations will be provided in a future report at the conclusion of all groundwater and surface water study activities.
- Initial observations indicate detectable reductions of VOC concentrations in surface water during operation of the aeration devices.
- Surface water sampling results for TCE, PCE, chloroform, and cis-1,2-DCE are presented on the attached figure. Concentrations fall within the range of historically reported results in the spring, pond, and creek.



#### Legend

- Fort Detrick Boundary
- ----- Stream
- S Water Body

#### Surface Water Sampling Locations

- Carroll Creek Upstream Location
- Robinson Pond Outfall
- A Robinson Box Spring
- △ Carroll Creek Downstream Location
- △ Robinson Pond Location

#### Notes:

- Stream features were based on 2001 Frederick County MD Geographic Information Systems (GIS) digital data online, with added edits based on field observations.
- Aerial imagery (dated Nov. 2019) obtained from Google Earth.
- 3) Shaded boxes indicate detections.
- 4) Duplicate sample results are presented in brackets.5) Acronyms and Abbreviations:
- VOC = volatile organic compound U = analyte was not detected at the value indicated J = Estimated value greater than or equal to the
- Method Detection Limit (MDL or DL) and less than the Limit of Quantitation (LOQ or RL) μg/L = microgram per liter

< = less than

REFERENCE/PROJECTION: Maryland State Plane, NAD 83, Feet



Surface Water Concentrations

December 2019 to February 2020

Fort Detrick Frederick, MD