

# Pine River Progress

## EPA's Update on the Velsicol Site St. Louis, Michigan



VOLUME 5, ISSUE 1

SUMMER 2020

## Treatment Moves Ahead, COVID-19 Protocols in Place

### Learn More About the Cleanup



[www.epa.gov/superfund/velsicol-chemical-michigan](http://www.epa.gov/superfund/velsicol-chemical-michigan)

See cleanup-related documents at the information repository:



T.A. Cutler Memorial Library  
312 Michigan Ave.  
St. Louis

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**EPA has a contact number for Velsicol!**  
**989-681-8187**

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What makes this former chemical plant site a challenge to clean up is the number of areas that are impacted. Last year, EPA completed a cleanup of a location called “Area 1.” This area was a section of the property that was used as a dumping area – including chemicals that were dumped directly on the ground. Knowing this history, it is not surprising that 56,000 pounds of contamination was removed.

EPA is now working on an area of the former plant site where chemicals were produced. This area, called “Area 2,” is where DDT and brominated compounds were made and EPA has already recovered over 115,000 pounds of contamination.

This waste is a remnant from a time where minimal regulation allowed for little management of spills and leakage from the manufacturing facilities. But today, after decades of these contaminants in the ground, EPA is getting them out through use of the same thermal treatment technologies that successfully removed contaminants in Area 1. This work is divided into phases, with the first phase planned to be complete by late summer. Construction for the second phase is planned through this summer and fall with a startup targeted for late spring 2021 (see timeline, Page 4).

Work continues and will adjust to the evolving COVID-19 situation, but to-

date, EPA anticipates work will continue through the COVID-19 response with proper protocols being followed. Read “COVID-19 Response Update” on page 7 for more information.



Aerial photo of Area 2 at the Velsicol site.



# Velsicol Progress Tracker

The cleanup of the former plant site includes multiple remediation approaches. The current status of each one is presented as follows.

In-situ Thermal Treatment (ISTT)



Area 1

Ongoing  
DNAPL / Groundwater  
Collection System



Ongoing

Potential Source  
Area Excavation  
and ISCO



0% Complete

Engineered Cap and  
Vertical Barrier



0% Complete

Next phase of work

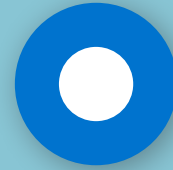
Excavation of  
Adjacent or Nearby  
Properties



100% Complete

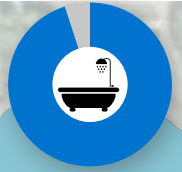
Area 2  
Treatment Areas

River Channel



100% Complete

Replacement of  
City of St. Louis  
Municipal Water  
Supply



95% Complete

Downstream



60% Complete

## Replacement of City of St. Louis Municipal Water Supply

The Gratiot Area Water Authority (Cities of Alma and St. Louis) began providing drinking water to St. Louis in October 2015. The City expects to begin construction on the final drinking water well (#12) this summer and this will provide additional drinking water to the Gratiot Area Water Authority. Construction is expected to be complete by the end of this year.

## River Channel

Cleanup of OU2 was completed in 2006. 670,000 cubic yards of contaminated sediment was excavated and disposed of off-site.

## Downstream

Remedial investigation included sampling in 2015; fish studies; follow-up sampling along the riverbank in 2018. Feasibility studies to start after completion of remedial investigation.

## In-situ Thermal Treatment (ISTT)

ISTT (removing harmful chemicals from soil using heat) for Area 1 was completed in November 2018. Construction of Area 2, Phase 1 was completed in September 2019 and operations are up and running. Construction of Area 2, Phase 2 is ongoing.

## DNAPL / Groundwater Collection System

Approximately 20,000 gallons of contaminated groundwater from the site is removed weekly and shipped off-site for treatment. This is a continuing operation.

## Potential Source Area Excavation and ISCO

Two potential source areas will be excavated (approximately 75,000 cubic yards of soil) with off-site disposal and another two areas will be evaluated for treatment with in-situ chemical oxidation (ISCO), which will be used to lower chemical concentrations found in soils and groundwater.

## Engineered Cap and Vertical Barrier

A cap will be installed to eliminate direct contact threat and prevent infiltration.

A vertical barrier will be installed to decrease the potential of contaminants directly discharging to the Pine River.

# Project Spotlight

## Slurry Wall Investigation

EPA is conducting an investigation to evaluate the integrity and effectiveness of an approximate 3,100-foot section of the upgradient slurry wall bordering M-46 and the adjacent neighborhood properties.

EPA will use the information from the investigation to support future design work associated with the groundwater collection tile and the upgradient portion of the slurry wall included in the 2012 Record of Decision. The investigation will involve the installation of shallow groundwater piezometers along the slurry wall, the evaluation of groundwater levels interior and exterior to the slurry wall, collection of slurry wall material for permeability testing, and the completion of a dye tracer study.

Previous investigations, namely the 2002 study, focused primarily on the downgradient slurry wall. Therefore, this evaluation will provide additional data and information

A slurry wall is subsurface barrier made up of a mixture of bentonite clay, soil, and water and is sometimes used in environmental cleanup applications to contain or obstruct the flow of contaminated groundwater.

needed to make a more thorough assessment of the upgradient section of the slurry wall. EPA will perform a slurry wall survey, conduct additional slurry wall hydraulic conductivity testing (to determine how easily groundwater is flowing through soil), install additional piezometer clusters, evaluate groundwater elevations on the interior and exterior sides of the slurry wall, and complete a dye tracer study (to determine the movement of groundwater).



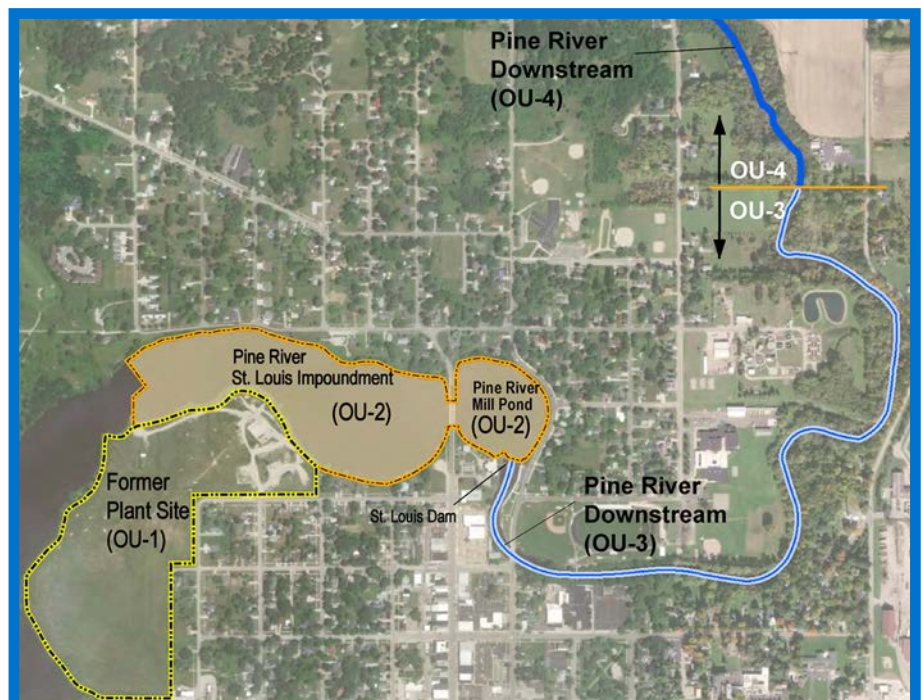
Cluster of piezometers at the Velsicol site. A piezometer is a device used to measure the pressure of groundwater at a specific point.

## Pine River Downstream Study

EPA and its contractor, Jacobs, are finishing the ecological study for the downstream area. Upon completion of the study, Jacobs will complete a report on cleanup options for the upstream section of the Pine River below the St. Louis dam, known as “Operable Unit 3” or OU3. The cleanup options will focus on removal of contamination from the most heavily impacted floodplains.

In addition, EPA and Jacobs continue monitoring the field pilot study using an activated carbon technology for potential application in the section of the Pine River that is farther downstream and appears less affected by contamination (OU4). The results of the field pilot study will be incorporated into a second feasibility study for OU4. There is evidence that activated carbon is effective at binding to contaminants like DDT reducing its ability to harm the environment. Alma College is performing supporting work using Solid Phase Micro-Extraction (SPME), which is a specialized laboratory test that mimics how animals in the ecosystem absorb chemicals like DDT from soil. That absorption process is known as “bioavailability.”

This testing will help scientists understand how much the carbon reduces bioavailability of contaminants to animals. In August, the activated carbon was placed in the pilot areas and testing is anticipated to go through spring 2020. EPA expects to release a Proposed Plan for OU3 in the summer of 2021.



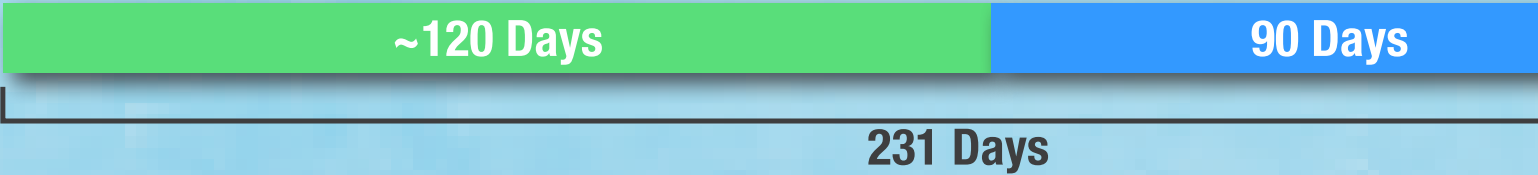




# OPERATION TIMEFRAME & Shutdown of System

## Operation

- Expected to take ~120 days to heat to boiling point
- Minimum of 90 days of operation at boiling point
- Post treatment of 21 days



## Project Schedule (Subject to Change)

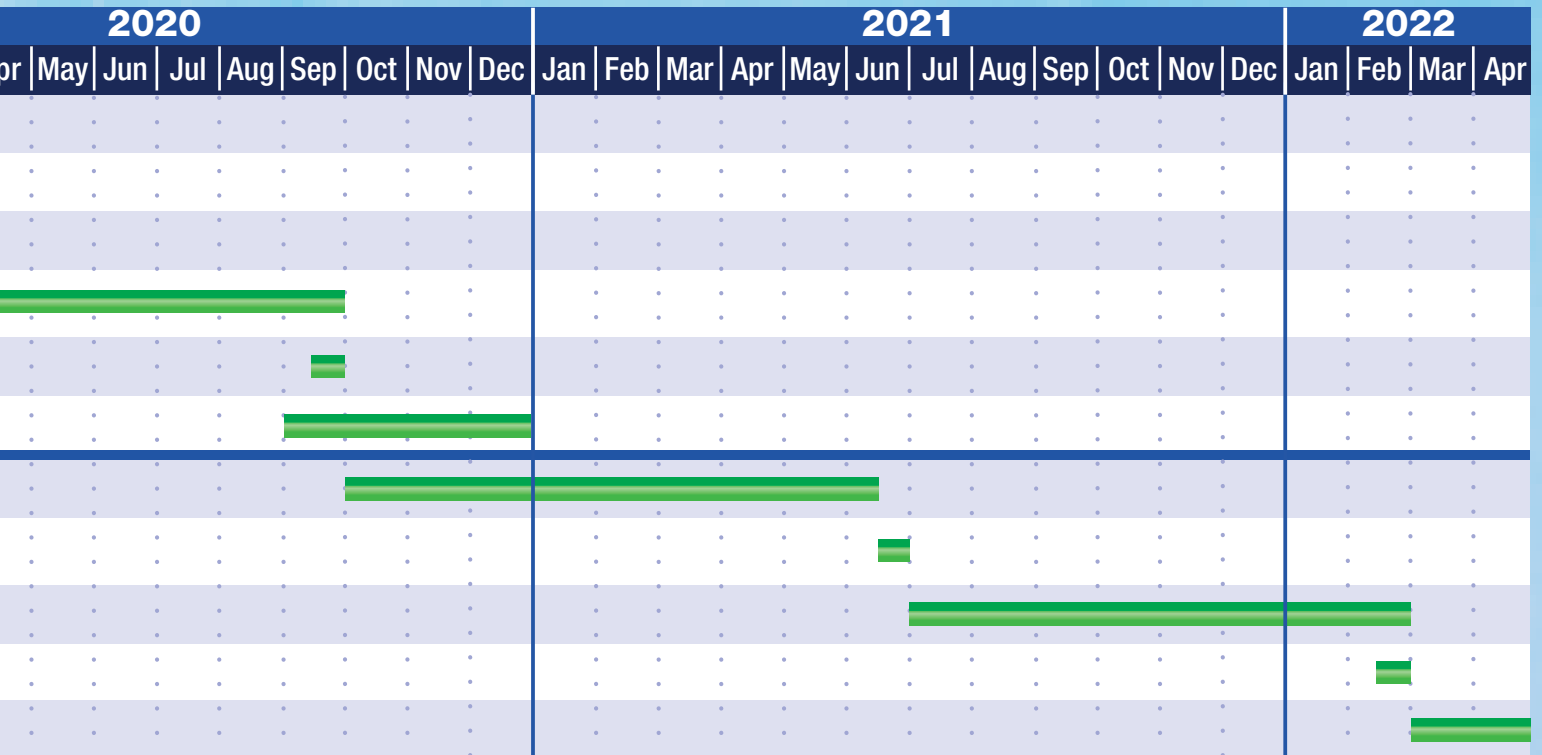
Task	2019												Jan	Feb	Mar	Apr		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
Area 2 Phase 1	Remedial Design Finalization	█																
	ISTT System Construction			█														
	ISTT System Testing									█								
	ISTT System Operation										█							
	Performance Verification																	
	Site Restoration																	
Area 2 Phase 2	ISTT System Construction						█											
	ISTT System Testing																	
	ISTT System Operation																	
	Performance Verification																	
	Site Restoration																	

# PHASE 2

## Shutdown

- System data used to demonstrate mass reduction of contaminant recovery
- Collection and evaluation of soil samples
- Document that performance standards of 2012 ROD have been met

21 Days



# Community Corner

## Michigan PBB Oral History Project

By Brittany Bayless Fremion, Ph.D.

### Project Overview:

In 1973 Michigan Chemical Corporation (owned by Velsicol) in St. Louis, Michigan, accidentally shipped an industrial fire retardant (polybrominated biphenyl or PBB) in place of a nutritional supplement to a livestock feed plant owned and operated by Farm Bureau Services. Workers at the mill mixed the crumbly white substance into livestock feed and sold it to farmers throughout the state. Over the course of a year, farm animals ingested the toxic chemical, contaminating the human food supply. Researchers estimate that nearly nine million Michigan residents—farm families, chemical workers, St. Louis residents, and consumers—were exposed to PBB. Public officials, community members, and researchers at the time were confronted with an accident unprecedented in scale, an unfamiliar chemical compound, and unknown long-term consequences.

The Michigan PBB Oral History Project documents the history of the PBB mix-up through a series of audio-recorded interviews. To date the project team has conducted oral histories with 68 individuals, collected more than 70 hours of audio recordings, produced more than a thousand pages of transcripts, and gathered many significant photographs and personal papers. The oral histories will be preserved at the Museum of Cultural and Natural History at Central Michigan University and thereby establish a powerful, personal, and permanent community presence in the historical record. The Michigan PBB Oral History Project also complements PBB-related research collections at CMU's Clarke Historical Library, the Archives of Michigan, Alma College, and the University of Michigan, which are accessible to researchers, community members, and educators.

**"The human side of PBB...there was no 0.3 parts per million, like there was with the animals. You either had a disease or you didn't have a disease... [People] were hurting. And nobody listened to them."**

—P.M.

**"It took the heart right out of farming because we lost those herds."**

—M.Z.



*The Neyer family's dairy farm in Mt. Pleasant was among the more than 500 farms in Michigan quarantined for PBB contamination. In his oral history, Tim Neyer recalled the day six semis arrived to haul their cattle to a kill and burial site in Kalkaska. Frustrated, he explained that for a few weeks, while under quarantine, the Michigan Department of Agriculture allowed them to continue to sell milk: "I thought it was such a conundrum. I couldn't understand it...and they wonder why millions of people in the state of Michigan got dusted with it." Photos courtesy of Tim and preserved in the Clarke Historical Library at CMU.*

### Acknowledgements:

Many thanks to the community members who have graciously shared their time and memories, whose stories have forever changed us, and to those whose stories we have yet to document. The Michigan PBB Oral History Project is supported by the Pine River Superfund Citizen Task Force and PBB Citizens Advisory Board, researchers at Emory University and the University of Michigan, and the Department of History and Museum of Cultural and Natural History at CMU. It is funded by the National Institute of Environmental Health Sciences, National Institutes of Health.

*Brittany Bayless Fremion, Ph.D. is an Associate Professor, Department of History at Central Michigan University.*

# The More You Know...

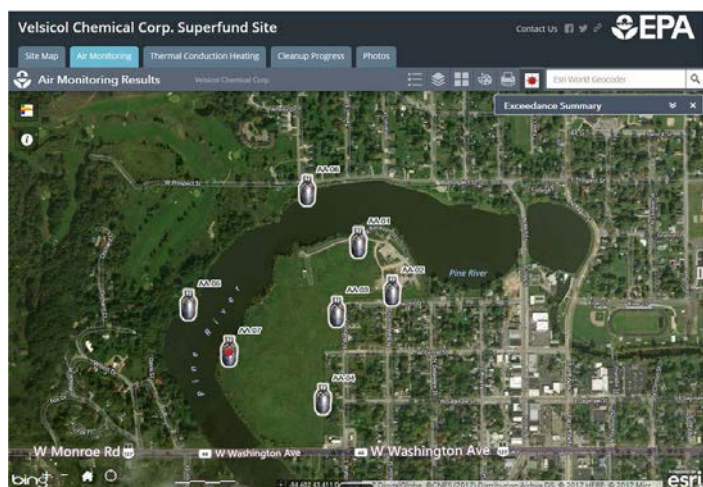
## Special note about work at the Velsicol Chemical Superfund Site

As we continue to adjust to the evolving COVID-19 situation, EPA is taking the necessary steps to ensure that decisions about ongoing cleanup activities at Superfund sites are made with the health and safety of communities, EPA staff, and contractors as the priority. Therefore, decisions about continuing on-site activities will be made on a case-by-case basis. EPA Region 5 is working closely with its local, state and tribal partners to evaluate options for continuing site work or securing sites, especially in areas where local health declarations are in effect due to COVID-19. EPA's contractor, Jacobs, and its subcontractors continue to remain on-site making sure the in-place thermal treatment system continues to operate. EPA anticipates that will continue through the COVID-19 response, but if there are any changes, we will provide you notification through the email listserv and post it on EPA's Velsicol website.

## Monitoring Work in Action

EPA will provide the public with air monitoring data collected during the thermal treatment process for Area 2. Data will be added to the interactive map during treatment to keep the public informed about operation of the system.

Visit [www.epa.gov/superfund/velsicol-chemical-michigan](http://www.epa.gov/superfund/velsicol-chemical-michigan) and look for Sampling and Monitoring under Cleanup Activities.



## Where to find more information:



Velsicol websites:  
[www.epa.gov/superfund/velsicol-chemical-michigan](http://www.epa.gov/superfund/velsicol-chemical-michigan)  
[www.epa.gov/superfund/velsicol-burnpit](http://www.epa.gov/superfund/velsicol-burnpit)



Sign up on EPA's List Serve to have site information and updates emailed to you. Go to the Velsicol website, and click on **Stay Updated, Get Involved.**



Information Repository  
T.A. Cutler Memorial Library  
312 Michigan Ave.  
St. Louis



EPA's contact number for Velsicol:  
989-681-8187



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## About this Publication

*Pine River Progress is a biannual newsletter that covers topics related to EPA's cleanup of the Velsicol Superfund site. We welcome feedback and ideas for future articles. If you would like to receive a copy of this newsletter, please contact EPA Community Involvement Coordinator, Diane Russell at [russell.diane@epa.gov](mailto:russell.diane@epa.gov) or call 989-395-3493 9:30 a.m. to 5:30 p.m., weekdays.*



Liquid waste measurement collected during ISTT operation.  
See Page 1 for more information.

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