

# Pine River Progress

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



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FALL 2016

## 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 Avenue  
St. Louis

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## Cleanup Moves Forward—Site Preparation Work

U.S. Environmental Protection Agency has started the next phase in the cleanup of the former Velsicol Chemical plant site in St. Louis. Construction activities are underway to prepare the site for the in-place treatment of contaminated soil and groundwater, using a soil heating technology. “Groundwater” is an environmental term for underground supplies of fresh water.

Actions to support the construction and operation of the treatment system include work on a new site entrance off M-46, new access and service roads on the site, and other utility services. A concrete vapor and water treatment pad and a gravel equipment staging and parking area will be built, along with improvements to bring electrical service to areas of the site to be treated.

This will also include construction of a new overhead circuit in coordination with the city. The electrical circuit will supply the high amount of power that is needed for the remedy. The design of the new circuit is currently being completed with plans to have it operable and energized in April 2017.



Concrete pipes for drainage culverts under new gravel road



Workers construct new haul road to support cleanup of Main Plant site

# Project Spotlight

## Downstream Toxicological Study

**E**PA teamed with Michigan State University Wildlife Toxicology Laboratory to complete a toxicological study of the area downstream of the St. Louis Dam to help determine if additional cleanup work is required downstream. “Toxicological” means of, or relating to, poisonous substances. The objective of this study is to answer key questions for future cleanup decisions and specifically to assess the harmfulness to the environment of a chemical called hexabromobenzene. Fieldwork for the study was conducted from June 6 through Aug. 25, 2016. Owners of 20 different properties participated in the study. The lots are located downstream of the St. Louis Dam to Redstone Road about one mile north of the Gratiot/Midland County line.

Items collected for this study included:

- Soil, sediment and plants.
- Bottom-dwelling (benthic) organisms.
- Crayfish and frogs.
- Earthworms and beetles.
- Fish (forage, northern pike, bowfin, channel catfish).
- Small mammals (moles, voles, mice, shrews).
- Small birds (robin, house wren, tree swallow).
- Waterfowl (wood duck, hooded merganser).

Key environmental surveys included in the study are:

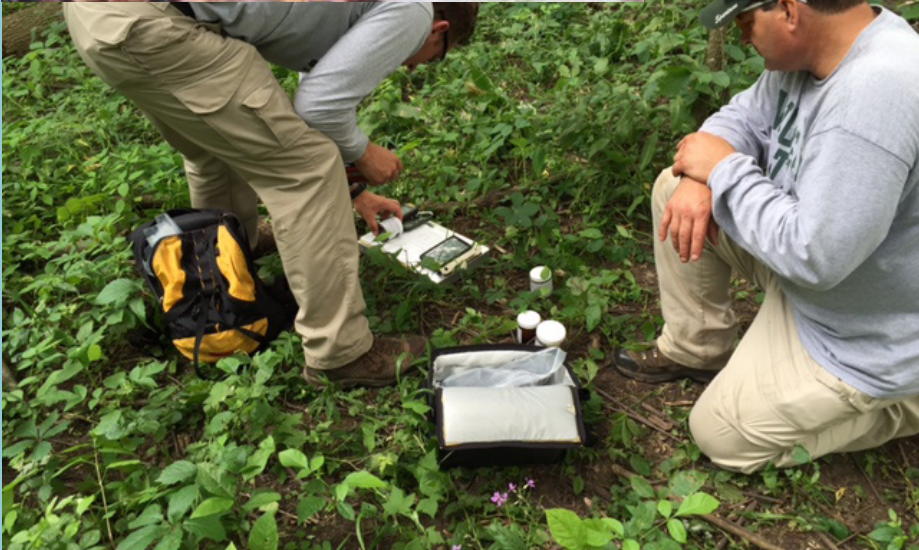
- American robin nest surveys: Each property was visually surveyed for the presence of American robin nests. Once a nest was identified, daily checks were conducted to record nesting success (presence of eggs), hatching success (number of eggs hatched) and fledging success (number of birds that matured and left the nest). Eggs that did not hatch or hatchlings that did not survive were collected for analysis.

- Bird box survey: 100 bird boxes throughout the study area were monitored for the factors mentioned above.
- Wood duck box survey: 12 wood duck boxes throughout the study area were monitored.
- Small mammal survey: A small mammal survey was conducted using live traps located on three separate floodplain areas within the study area. Mice and shrews captured in the live traps were collected for analysis.
- Emerging insect collection: Insects emerging from the Pine River after dark were collected with a light and vacuum system. The insects were sorted by species and then processed for analysis.
- Benthic organism survey: Benthic organisms live in or on the river bottom. Examples include larval forms of mayflies, caddisflies, dragonflies and damselflies. Benthic organisms were collected and sorted by species. They were then processed for analysis.
- Terrestrial invertebrate survey: Examples of terrestrial invertebrates include earthworms and beetles. Terrestrial invertebrates located in the floodplains within the study area were collected and sorted by species. They were then processed for analysis.

Samples collected as part of the study are currently undergoing tests. Once the analyses are completed, EPA will assess the survey and analytical data and prepare a report documenting the findings.







Activities during the toxicological study.

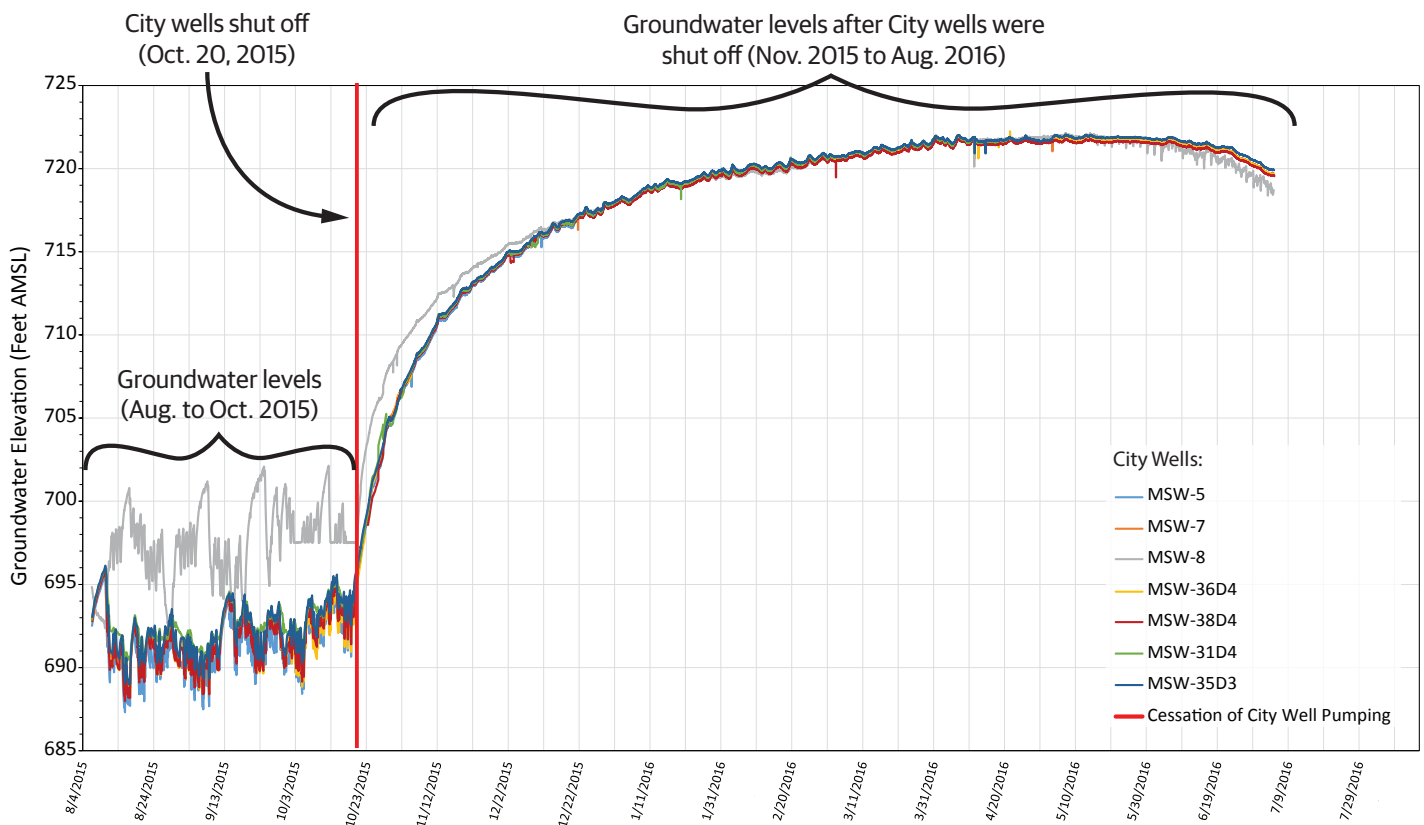


# Science in Focus

Prior to the fall of 2015, the city of St. Louis pumped deep groundwater from wells down to a depth of 230 feet for its drinking water supply. Over time, this pumping decreased the deep groundwater level. On Oct. 20, 2015, the Gratiot Area Water Authority (cities of Alma and St. Louis) began providing drinking water to St. Louis from the water treatment plant in Alma, and the St. Louis water wells were shut off. The deep groundwater level then increased in response to closing the St. Louis wells. In anticipation of this increase, EPA monitored the

groundwater until it stabilized. Monitoring shows the deep groundwater stage increased approximately 30 feet and stabilized by June 2016. Shallow groundwater exhibited normal seasonal changes and was not affected by shutting off the St. Louis wells. The chart below depicts the stabilization of groundwater levels after shutting off the city wells. Removing the pumping drawdown previously created by the city wells is expected to make it easier and less costly to contain and treat contaminated groundwater under the site.

**Stabilization of groundwater levels after shutting off city wells**



# Community Corner

## Students Test for Lingering Industrial Pollution

**A**LMA – The Velsicol chemical plant, the source of extreme environmental contamination in the Michigan rural community of St. Louis, has been gone for nearly 40 years. Yet, the after-effects continue to impact the residents of Gratiot County.

Alma College student Grace Sutherland, a junior from Waterford, in summer research supervised by biology and environmental studies assistant professor Amanda Harwood, conducted a Pine River water and sediment study downstream from the former Velsicol site to determine if there is still evidence of industrial pollution present in the environment.

For her fieldwork, Sutherland collected macroinvertebrates — bottom-dwelling animals that include crustaceans and worms but mostly aquatic insects — at four sites along the river. The bugs and sediment are scooped in a net and transported to the lab for study.

“We are looking for pollution in the sediment, and macroinvertebrates live in the sediment,” says Harwood. “Unlike fish, these bugs don’t travel far; they basically live where they are found. They are brought back to the lab for identification.”

*Alma College students Grace Sutherland and Bonnie Hamilton*

It’s important to identify what is living in the sediment, because some bugs are more tolerant of pollution, and some have different ecological functions, says Harwood. In the lab, Sutherland put healthy lab-grown animals into the collected river sediment and then observed to see if they survived and how fast they grew.

In another project, Alma College student Bonnie Hamilton, a junior from Harbor Springs, conducted a fish E. coli study in a project. As evidence shows rising levels of E. coli in the Pine River, Hamilton sought to determine if fish caught upstream of the Alma dam could be safely consumed?

In her summer research project, Hamilton caught fish in areas of high E. coli counts, swabbed the fish specimens in places that humans might typically touch — like the mouth, gills, organs and fillet — and put the samples into an incubator to see if E. coli grows.

“Fish E. coli won’t grow in the incubator, but other animal or human-sourced E. coli will grow,” says Harwood. “Our goal is to determine if there are E. coli concentrations in the fish.”

In another component of this study, Hamilton tested and observed fish caught in cages in the Pine River. Do the fish, which normally have the ability to swim long distances, survive in the cages? If they die, then the evidence may suggest the presence of harmful pollution, says Harwood.

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Alma College Communications**

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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 989-401-5507 9:30 a.m. to 5:30 p.m., weekdays.*



*EPA begins site preparation work at the Velsicol site. See page 1 for details.*

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