



Interim Actions Proposed for High-Use Floodplain Areas

Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw and Bay City, Michigan

January 2011

Share your opinion

EPA invites comments on its interim proposed plan for areas located along the Tittabawassee River.

The Agency encourages people to attend the public meeting on **Wednesday, Jan. 19, 6:30 p.m.**, at Saginaw Valley State University, Curtiss Hall, Seminar Rooms D – G, 7400 Bay Road, Saginaw.

EPA and MDNRE representatives will also be available to talk to residents at informal sessions on **Tuesday, Jan. 18, 5 – 8 p.m.**, at the Freeland Sportszone, 5690 Midland Road, Freeland; and **Wednesday, Jan. 19, 1 – 4 p.m.**, at the Thomas Township Library, 8207 Shields Drive, Saginaw.

There are several ways to offer comments on the proposed plan: 1) orally or in writing at the public meeting; 2) fill out and mail the enclosed comment form or submit it at the meeting; 3) electronically by Internet at epa.gov/region5/publiccomment/dowchemical-pubcomment.htm; 4) fax to EPA's Patricia Krause at 312-697-2568.

Contact EPA

If you need special accommodations at either the availability sessions or the public meeting or have questions contact:

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Don de Blasio

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Region 5 toll-free: 800-621-8431,
9:30 a.m. – 5:30 p.m., weekdays

U.S. Environmental Protection Agency, working with Michigan Department of Natural Resources and Environment, is proposing an interim plan to limit human exposure to dioxin and furan contamination in areas along the Tittabawassee River. EPA's recommended plan includes placing a barrier such as ground cover over bare floodplain soil to limit human contact, or moving or raising land-use features such as gardens and recreation areas out of the floodplain. The plan is aimed at areas that frequently flood and contain bare soil. EPA is also recommending criteria that would make properties along the Tittabawassee River eligible for these early actions. The measures described in this fact sheet are interim exposure controls that EPA is proposing to take in the short-term, until long-term solutions are implemented for floodplain soil.

Public comment needed

The purpose of this proposed plan fact sheet is to give you background information, describe the proposed eligibility criteria and proposed interim exposure control options and explain EPA's recommendations.¹ You are encouraged to comment on this proposed plan. More details can be found in a document called the *Task 1.4 Engineering Evaluation/Cost Analysis for Early Response Action to Address Potential Acute or Near Term Exposure Risks*. EPA is also seeking comment on this technical report, which can be found on our website and at the local document repositories listed on Page 4.

EPA will be accepting comments from Jan. 12 – Feb. 11, 2011. See the left-hand box for ways you can participate in the decision-making process.

Managing high-use properties

EPA and MDNRE identified flood-prone properties along the Tittabawassee and Saginaw rivers that may be frequently used by people. These areas are called Exposure Units, or EUs. Properties within the EUs are being evaluated to see if interim exposure controls would be useful before comprehensive cleanup options are developed and implemented in future years. Work was completed at EU 01 in 2008 and EU 02 in 2009. There are currently about 260 properties in 18 other EUs that will be evaluated (see Figure 1 on P. 2).

Dow Chemical Co., with oversight by EPA and MDNRE, has been evaluating the EU properties in phases since the summer of 2010. Phase 1 includes EUs 10 and 11. Phase 2 includes EUs 04, 06, 07 and 08. The evaluation process includes an appointment and interview with residents to see how they use their property, and then conducting a survey to assess property conditions and identify land-use features. Findings are compared with the proposed eligibility criteria to see if an interim exposure control is recommended. Evaluations are complete for properties in Phase 1. Evaluations for Phase 2 properties are nearing completion. Phase 3 and 4 evaluations will take place in 2011 (see Figure 2 Timeline on P. 7).

¹ Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, known as the Superfund law) requires EPA to provide an opportunity for public input with a meeting and comment period. It also requires a newspaper ad announcing the proposed plan with a brief description. This fact sheet summarizes a document called the "engineering evaluation/cost analysis" and other site-related reports. All official site documents can be found at the repositories listed on P. 4 and at the EPA Region 5 office in Chicago.

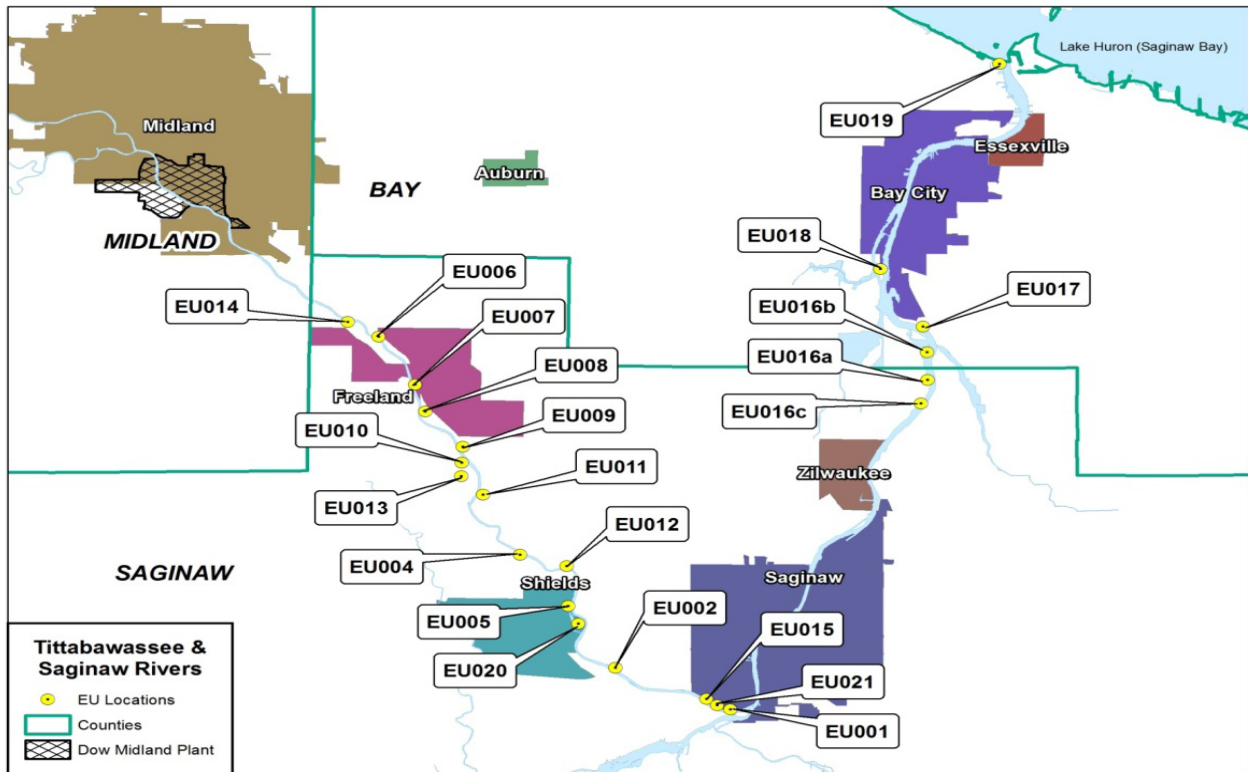


Figure 1 – Location of Exposure Units along the site.

Proposed eligibility criteria

Several thousand floodplain soil samples have been analyzed at the site. Dioxins and furans have been found in floodplain soils. As such, EPA is proposing that all of the following criteria must be met for a residential property in the Tittabawassee River EUs to qualify for interim exposure controls:

- A portion of the property is located within a frequently flooded area (generally, the 8-year floodplain), or soil has been moved from frequently flooded areas to other parts of the property.
- The property is actively used.
- There is bare soil located within the actively used floodplain.

Properties that do not meet the eligibility criteria now will be re-evaluated periodically to determine if conditions have changed. Residents with properties that were previously designated “Priority 1” or “Priority 2” by MDNRE may have undergone some interim response activities. Maintenance of those actions will continue, and the scope of the work may be expanded.

In the future after evaluations are conducted in these areas, EPA may develop other eligibility criteria or options for properties in the Saginaw River EUs and nonresidential properties.

Summary of proposed options

EPA considered three alternatives for interim exposure controls at eligible residential properties in the Tittabawassee River EUs.

Option 1 – No Action: No actions or controls would be implemented. The soil areas will remain “as is.” Education for reducing contact with potentially contaminated soil may be part of this option. **Estimated cost: Minimal**

Option 2 – Control Barrier: A barrier such as ground cover would be placed over the floodplain soil to limit contact with underlying soil. Ground cover could include clean reseeded soil, gravel, mulch or other appropriate materials. Maintenance would be conducted as needed to make sure the barriers remain effective. Education for reducing contact with soil and for recognizing when maintenance work is needed may be part of this option. **Estimated cost: Unit costs are based on type of material used, labor and equipment and can range from \$2 to \$3.50 per square yard.**

Option 3 – Moving or Raising Land-Use Features:

A land-use feature would be raised or moved out of the floodplain to reduce or eliminate exposure to floods, which can deposit contaminated mud (sediment). Examples include raising a garden or relocating a fire pit or swing (see photos P. 7). Bare soil would be covered after the land-use feature is relocated under this option. Education for reducing contact with soil and for recognizing when maintenance work is needed may be part of this alternative. **Estimated cost: Unit costs including labor, equipment and materials range from about \$1 per square foot to raise a garden to \$800 to \$900 to relocate a land-use feature.**

Evaluation of options

EPA is required by law to evaluate these options against the criteria of effectiveness, implementability and cost (see box below). Table 1 compares each alternative with the criteria.

Effectiveness: Options 2 and 3 will be effective because the actions will reduce contact with potentially affected soil by providing an exposure barrier or by relocating a land-use feature. Monitoring and maintenance as needed will ensure effectiveness until long-term solutions are implemented, and these actions are easy to do. Because Options 2 and 3 are small in scope, there will not be dramatic changes to the landscape. For example, we anticipate that trees will not be taken down during this phase. Option 1 would not be effective since it would not prevent contact with potentially contaminated soil.

Explanation of evaluation criteria
For this type of interim action, EPA uses three criteria to evaluate and compare cleanup options.

Effectiveness evaluates the ability of an option to meet objectives. It also considers protectiveness and whether the option will be reliable until long-term solutions are implemented. Protectiveness can be assessed in terms of how well the option protects public health and the community, protects workers during implementation, and protects the environment.

Implementability evaluates how difficult the option will be to construct and whether materials and services are available in the area.

Cost includes not only equipment, materials and labor but also the cost of maintaining the option until long-term solutions are implemented.

Implementability: Because Option 1 requires no action it can be easily implemented. Based on successful experience at other EUs and the ready availability of labor, equipment and materials, both Options 2 and 3 can also be implemented easily provided property owners provide legal access.

Cost: The cost for Option 1 is minimal and the costs for Options 2 and 3 are generally low. Total costs are difficult to estimate because the size of areas to be addressed and numbers and types of the land-use features varies by property. EPA estimates that costs for the proposed interim exposure controls for the potentially eligible Phase 1 properties would be less than \$200,000.

Phase 2 evaluations will be completed soon. Any Phase 2 properties that meet the final eligibility criteria will be offered interim exposure controls. Since the number of properties evaluated in Phase 2 is similar to the number of properties in Phase 1, EPA anticipates the cost to implement interim exposure controls at potentially eligible Phase 2 properties will be similar to Phase 1 costs.

Table 1 – Comparing the alternatives

Evaluation Criteria	Option 1 No Action	Option 2 Control Barrier	Option 3 Movement of Land-Use Feature
Effectiveness	Low	High	High
Implementability	High	High	High
Cost	Minimal	Low	Low

EPA's recommendations

Both Options 2 and 3 are recommended for interim exposure controls at eligible properties. The final option will be developed on a property-by-property basis, depending on conditions at that specific location. EPA will work with each property owner or resident to design and install one or a combination of these acceptable options.

Option 1, no action, is not recommended as an alternative for eligible properties.

Why are these control measures important?

Dioxins (including furans) are the primary contaminant found at the site. The term “dioxins” refers to a large family of similar chemicals. EPA has concluded that some dioxins may cause cancer or other health effects such as skin problems, liver damage and reproductive issues.

Dioxins are not created intentionally but can be formed by human activity or naturally, for example, by fires. At the site dioxins were formed as byproducts of Dow’s early manufacturing processes at its plant in Midland. In the past the chemicals were released to the Tittabawassee River where they washed up onto the floodplains during high river flows. It is believed that current waste management practices now control contaminant releases from Dow’s facility.

Several thousand floodplain soil samples have been analyzed. Dioxins have been found in floodplain soils at locations within the Phase 1 and Phase 2 EUs. Generally, higher levels of dioxins are found closer to the Tittabawassee River in areas that flood frequently. Sometimes the dioxins are found at or close to the surface, where people could be exposed to them, or where the dioxins could move during flooding.

Addressing current or potential high-use properties along the river through temporary control measures is important. Additional evaluation of floodplain soil cleanup will occur as our work moves segment-by-segment down the rivers. However, it will be several years before long-term solutions are implemented for all of the floodplain soil. EPA’s proposed short-term actions are intended to limit people’s contact with potentially affected soil while the final cleanup is being developed.

Next steps

Before it makes a final decision, EPA will review comments received during the public comment period and at the public meeting. Based on the comments, EPA, in consultation with MDNRE, may modify its recommended interim action plan or the proposed eligibility criteria so your opinion is important.

More details are available in the official documents on file at the information repositories and on EPA’s website listed below. EPA will respond to the comments in a document called a “responsiveness summary.” The Agency will announce the final plan in local newspapers and will place a copy in the information repositories and the website.

Once the plan is finalized, EPA expects Dow to implement the interim exposure controls at eligible properties after consultation with the property owners. Dow’s work will be done with oversight by EPA and MDNRE. The work should be completed quickly, depending on conditions at each property. To try to avoid bad weather and potential flooding, the work would be completed during the typical construction season, expected to begin in late spring and end in the fall. It is anticipated the Phase 1 properties will be completed in 2011.

Phase 2 evaluations will be completed soon. Any Phase 2 properties that meet the final eligibility criteria will be offered interim exposure controls. Dow, with EPA and MDNRE oversight, will conduct evaluations at the Phase 3 and 4 EUs in 2011. Once the Phase 3 and 4 evaluations are complete, EPA and Michigan will consider whether other eligibility criteria or options are needed for properties in those EUs.

For more information

EPA Field Office

EPA has opened an information office in the Saginaw County Courthouse, 111 S. Michigan Ave., Saginaw. Telephone: 989-790-5215.

View Site Documents

You can view documents related to the Tittabawassee River, Saginaw River & Bay site on the Web or at information repositories:

- At www.epa.gov/region5/sites/dowchemical.
- Grace A. Dow Memorial Library, 1710 W. Saint Andrews St., Midland.
- Hoyt Main Library, 505 Janes Ave., Saginaw.
- Alice and Jack Wirt Public Library, 500 Center Ave., Bay City.

Tittabawassee River, Saginaw River & Bay Site - Comment Sheet

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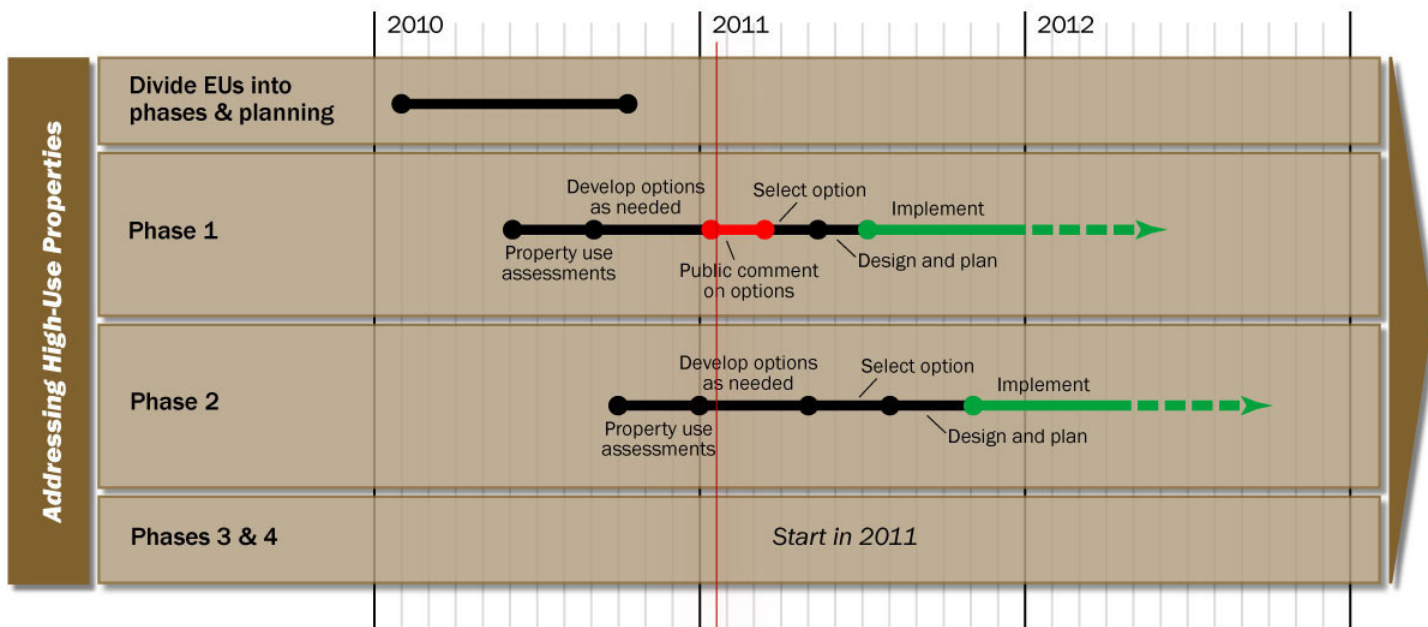


Figure 2 – Timeline to address high-use properties along the Tittabawassee and Saginaw rivers.

As we work on these proposed interim exposure controls, EPA is also developing cleanup options for addressing movement of highly contaminated soil and sediment and for the first segment of the Tittabawassee River. Please see the fact sheet at http://www.epa.gov/region5/sites/dowchemical/pdfs/dowchemical_fs_201007_timeline.pdf for more information about the other ongoing projects.



Figure 3 – Example of a raised garden bed.




Figure 4 – Example of ground cover around a fire pit.

EPA
Proposes Interim
Action Plan
For Floodplain Soil
Tittabawassee River, Saginaw River & Bay Site
Midland, Saginaw, Bay City, Michigan

Public Comment Period: Jan. 12 – Feb. 11, 2011
Public Meeting: Jan. 19, 2011
Availability Sessions: Jan. 18-19, 2011

(details inside)

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**TITTABAWASSEE RIVER, SAGINAW RIVER & BAY SITE:
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Environmental Protection
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