

**Saginaw Tittabawassee Rivers Contamination CAG
Summary of Full CAG Meeting
Saginaw Valley State University – Curtiss Hall
Monday, July 18, 2011**

CAG Members Present

Jeffrey Bulls
Drummond Black
Charles Curtiss
Matthew de Heus
Leonard Heinzman
Deborah Huntley
Wendy Kanar
Michael Kelly
Rachel Larimore
Janet McGuire
David Meyer
Laura Ogar
Joel Tanner
Paul Vasold
Bob Weise

CAG Members Absent

Michael Espinoza
Ryan Jankoska
Judith Lincoln
Annette Rummel
William Webber

Ex-Officio Members Present

Joe Haas, US FWS
Todd Konechne, Dow Chemical
Mary Logan, US EPA

Ex-Officio Members Absent

Al Taylor, Michigan MDEQ

Support and Agency Staff Present

Don de Blasio, US EPA
Cheryl Howe, MDEQ
Tim Prendiville, USEPA
Diane Russell, US EPA
Doug Sarno, Facilitator

Doug Sarno called the meeting to order at 6:03 PM. Agenda items included:

- Leadership Team Update
- Update on Cleanup Activities
- Findings and Alternatives for Segment 1.

1. Leadership Team Update

- Incorporation is complete, the CAG has received its 501(c)3 status from the IRS; a bank account will be established to handle funds.
- Dr. Garabrant from the University of Michigan is confirmed to present at the September 19 CAG meeting. CAG members are asked to identify any topics that they would like to have Dr. Garabrant address in his presentation.
- A river tour was conducted on June 30 for new members and those who could not attend the tour last year. It was a great experience, and members were very appreciative of the opportunity. Those who attended said it provided a good perspective on things, to see the scale and effectiveness of the work so far.
- Blair Geskin, who has provided volunteer note-taking for the CAG since it started will not be able to continue providing those services. The CAG noted its thanks her for all her efforts and wished her well. The leadership team and EPA will explore options for note-taking in the future.

2. Cleanup Activities Update

Diane Russell, USEPA, provided an update on interim exposure controls at high use properties. An agreement was signed in late May between EPA and Dow to conduct this work. There are a total of 18 exposure units, with property assessments divided into four phases. Assessments for the first 2 phases were conducted last year. Homeowners were contacted about the assessments and plans for work from the first 2 phases. Property assessments for the third phase begin this week. Out of a total of 50 properties in first 2 phases, 6 property owners refused to have work conducted on their properties.

Mary Logan, USEPA, discussed the status of early action on Island MM. EPA has signed the decision document and entered into an agreement with Dow to implement the work. EPA was very pleased with the focus of the public comments they received on the actual options. Comments covered a wide range of options and included very good suggestions. EPA has selected at a minimum to remove the sediment above water surface, with a contingency to allow for changes based on what is found in the field as sampling is conducted while work is being done. This is a direct result of comments from the CAG and others. Dow has begun planning and should be in the field by late summer or early fall.

Mary provided some feedback on key issues and assumptions in the CAG recommendation. One key assumption in the CAG's recommendation was regarding ownership of the island and how that might affect cleanup activities. There may be some legal ownership of the island by adjacent landowners under riparian rights. An investigation is underway to fully understand this issue, and the CAG will be updated on

the findings. A CAG member commented that recent court cases found that property owners on state navigable waters and their tributaries do not have ownership rights beyond the edge of the waters. EPA noted that they do not believe this to be the case in this location, but it is still not a clear issue and they will let the CAG know about the final decision. The other assumptions in the CAG recommendation are basically correct.

With regard to the CAG comment about the general nature of cost estimates being very preliminary, Mary noted that this is how EPA operates because they do not want to put too much effort into creating detailed estimates for options that may never be implemented and the rough estimates are sufficient for the evaluations being done. For Island MM, EPA is comfortable about the need for action but will refine the scope based on what is learned in the field.

A CAG member asked if there can be some sort of formal confirmation process from EPA as assumptions are ground-truthed to provide feedback on the unknowns. Mary responded that after a decision is made there are a series of technical documents such as work plans to fill in the technical gaps. EPA will work to get that feedback to the CAG as the process proceeds. A CAG member noted that we are all still creating this process. The CAG will get better about asking the right questions and EPA will continue to learn what information will be required to best respond to the community's needs.

Public comment was accepted at this point in the meeting.

The Lone Tree Council has found that kids do go out to the island, and canoeists also stop at the island. There was public comment that the island should be posted; is that going to happen? EPA responded that they worry about diluting the message regarding exposure by posting a property that is not much used. EPA really wants to get the message to people where exposure is a major problem. A CAG member noted that the posting seems like a fairly benign request, even if used very little it seems like little effort to post the island. EPA responded that is not the concern, rather when you put up warning signs everywhere, do people really see them? True, but EPA has said this is an island that is highly contaminated so this would seem to be a place where signs are appropriate. EPA acknowledged this was true; however, the contamination is buried and not easily accessible. EPA noted that they will revisit this issue to make sure they make the right decision and fully understand how people are visiting the island. It was asked whether that implies that the areas not posted are safe? EPA noted that safety is both a function of the contamination present and how much access and exposure occurs. We really can't say with absolute certainty where things are safe or unsafe. A CAG member asked EPA to be careful with the argument about not reading the signs, we still need signs to be out there and people to be educated. From another perspective, a CAG member who is a property owner on the River noted they would be very upset to have signs indicated high levels of contamination on their property. It was asked if EPA has a set policy for posting areas? EPA responded that they do not. EPA is continuing the signage that is in place from the state, and are working to understand if those signs need to be supplemented but do not have a strict policy. The CAG recommended that a policy be developed so that this confusion does not go through this every time, and so that EPA clearly communicates where they believe that the public is potentially at real

risk. Everyone recognizes that these signs are not needed everywhere, and we don't want to disparage the community with too many signs.

3. Findings and Alternatives for Segment 1

EPA provided a brief overview of Segment 1 noting that this has been covered in previous CAG meetings. There are 3 options for each of the sediment management areas. We anticipate a lot of questions but also want to leave time for discussion. We are not quite ready to roll out our preferred alternative and start our public process, probably in early August.

Segment 1 covers 3 miles of the Tittabawassee River adjacent to the Dow Midland plant. Significant cleanup has already occurred. In this area, the conditions are very different than at the rest of the site, both in the chemicals and in their distribution. Cleanup should begin in 2012.

Extensive evaluations have been done on sediments, biota, and dense non-aqueous phase liquids (DNAPL), the heavy material that sinks to the bottom of the aquifer. As discussed at previous meetings, EPA has identified six chemicals/chemical groups as key drivers. These are not always found together and not found everywhere. Dioxins/furans have largely been cleaned up. Surface sediments are the main concern, especially bioaccumulation in benthic invertebrates.

There are six sediment management areas (SMAs) that are being targeted for cleanup, and they have been organized into four groups based on similarities: SMA 1, SMAs 2 & 3, SMAs 4 & 5, and SMA 6.

Segment 1 technologies that are being considered include:

1. Capping with clean material
2. Containment systems that use sheet pile and capping
3. DNAPL removal and treatment
4. Dredging, with treatment, dewatering, and disposal
5. Hydraulic control, using the RGIS system or wells to pump out water
6. Monitored natural recovery, that allows nature to clean the site over time.

Technologies are being considered in different ways for the four groups as shown in the following table.

SMA	Alternative 1	Alternative 2	Alternative 3
1	Monitored Natural Recovery	Cap	Dredge sediment and dispose
2 and 3	Containment system (sheet pile and cap) Hydraulic control and treatment	Containment system (sheet pile and cap) Hydraulic control and treatment DNAPL removal and	Dredge sediment and dispose Cap residuals

		treatment	
4 and 5	Monitored Natural Recovery	Cap	Dredge sediment and dispose Cap residuals
6	Dredge/dispose ethyl parathion sediment DNAPL removal and treatment	Dredge/dispose ethyl parathion sediment DNAPL removal and treatment Containment system (sheet pile and cap) Hydraulic control and treatment	Dredge sediment and dispose Cap residuals

There is no presumptive remedy for contaminated sediment sites. Digging it out does not always work and it is important to understand the site circumstances and balance the tradeoffs in both short- and long-term risk reduction. EPA's evaluation criteria look at effectiveness (overall protection of human health and environment and compliance with laws are a given), implementability (technical, administrative, availability of services and materials, state and community concerns), and cost (construction and long-term operation and maintenance). Advantages and disadvantages of different technologies are summarized in the table below.

	Advantage	Limitations	Best Used
Capping		Contaminants remain in place Long-term operation and maintenance required Institutional controls may be required	Water depth adequate Flow conditions suitable, or accommodate in cap design Available cap material Contaminant movement through cap relatively low Sediment strength sufficient
Dredging	Least uncertainty about long-term performance, if low residual level achieved Relatively rapid risk reduction, if low residual level	Implementation usually more costly and complex Treatment and disposal capacity Residuals Resuspension	Suitable staging, handling and disposal sites available Existing shoreline and infrastructure can

	<p>achieved Flexibility for future use of water body</p>		<p>accommodate construction needs High contaminant levels found in discrete areas Contaminate sediment overlies clean sediment Low incidence of debris Water management is practical, to reduce</p>
<p>Monitored Natural Recovery</p>	<p>Non-invasive Enhance MNR to jump start recover Relative low implementation cost</p>		<p>Concentration are low and cover diffuse areas Low ability of contaminants to bioaccumulate Natural recovery already occurring Sediment is reasonably stable Human explores low or reasonably controlled Land use compatible</p>

CAG members asked the following questions:

- What about dioxins and furans? The work that was done in Reaches B and D addressed most of these contaminants so these are no longer risk drivers. There is some dioxin co-located with the other chemicals, but it is not a driver
- Will all SMAs be implemented simultaneously or will it proceed from 1 to 6? EPA will look at which of the six make sense to act first, and take advantage of equipment and mobilization needs.
- How well defined are these sites regarding size? EPA does not do that level of engineering first, there is a good sense on some and more work is needed on others. Exact volume estimates do not yet exist.

- What is the general depth of the sand? SMA 6 is deepest with 8-9 feet of sediment; some others have only 3 feet or so.
- Is hydraulic dredging an option? EPA has not picked the technology for dredging, but there is a lot of choice if debris is present. Dredging Reach D began with hydraulic, but had to go to mechanical because of logs and rocks.
- There is a lot of debris out there, won't that really impact a lot of these options? The logs have been there for 100 years, they are not moving and would be capped in place.
- How confident are you that you have found the bad stuff? Study focused on outfall areas, and there is still ongoing work to look at other areas, but EPA is pretty confident that the major contamination has been identified.
- Does the RGIS system have adequate capacity? RGIS was built in 1977 and has been upgraded over time. Upgrades began in 1994 to replace farm tiles with HDPE piping. A significant portion on the plant side has been replaced. Every 800-1000 feet there is a pumping station with redundant capacity. There is plenty of capacity at the wastewater treatment plant with 45 million gallons of temporary storage for extreme events. The requirements of this work will not tax that system and all of the options are realistic.
- We don't know much about the toxicity and risks related to these chemicals. At Reach D, there was a screening by EPA that action needed to be taken. Was that on the high range of risk and how do these areas rank? On Reach D, there had been high levels of dioxins and also other contaminants, it appeared to be a source area. EPA could use its legal authority under Superfund to accomplish work that had been under consideration by the state RCRA program for some time. The driver for some of these SMAs are risks to the benthic invertebrates, not human health, and the DNAPLs are a concentrated continuing contaminant source.
- A CAG member noted that these chemicals are even worse than the furans.
- Are we really worried about materials at 10 foot depth? Yes, because they can continue to provide contamination downriver or be uncovered during extreme events.
- What is the life expectancy of sheet pile walls? Indefinite because they are not exposed to oxygen; examples are still in place from 1950s. This would be a permanent installation to the top of the sediment and then capped.
- Where do the dredge materials go? A dewatering facility will be constructed near the river. Sediments will be treated if necessary and disposed at off-site landfills.
- What kind of dredging volume are we talking about? These are relatively small volumes.
- What about costs, we really can't make decisions without a sense of cost? EPA does have some cost estimates, but wanted to have a technical discussion first. EPA will provide cost information by the next CAG meeting.

4. Public Comment

Public comment and questions were placed at this point in the meeting so that it could inform the CAG's discussion regarding Segment 1. There was no public comment.

5. CAG Small Group Conversations

CAG members organized into four small groups to discuss Segment 1 and identify important components of a possible recommendation. Key points identified in the small groups included the following:

- Reaction from the public is important; there needs to be a strong focus on how this segment is explained because it is the first segment to be addressed and it is dramatically different from all the other segments to be done
- Material Safety Data Sheets that exist on these chemicals would be helpful to explain risks to the public. These are sheets created for workers to help them understand toxicity of specific chemicals. It was pointed out that we are looking at classes of compounds, not individual chemicals and we are not really concerned with the human effects of these chemicals
- It is important that we don't make things worse and get the best certainty over time
- Containing and isolating it, and using existing treatment capacity, appear to make the most sense. If its contained, then slower treatment is ok
- This area is different than the rest of the river and that needs to be stressed, it is totally industrial, and we are not worried about human exposure,
- This is a non-residential area and has limited downstream impact. We don't want to stir up a bigger concern
- Capping seems like a reasonable solution; we have questions regarding the cost-benefit of dredging and possibly making things worse
- We are skeptical about natural attenuation; there is not a lot of comfort in this approach
- Hydraulic control and extending RGIS System makes sense
- We need to state very clearly that we are not talking about dioxin
- People need comfort as to why the decision was made
- What about institutional controls on the river bottom? This is a public trust concern about the use and cleanliness of the river, and long-term access to these natural resources is important
- If DNAPLs are left there it will affect the folks downstream, but not direct access; fundamentally different in how it affects people in the short and long term.

In early August, EPA will produce a fact sheet, announce a preferred option, and release its technical report. The CAG created a committee to draft a recommendation; committee members include Drummond Black, Charles Curtiss, and Matthew de Heus.

6. Public Comment

A final public comment was offered on the importance of sediment traps. The CAG acknowledged that it had little knowledge of the issue of sediment traps and committed to working with EPA to have detailed discussion on this issue at a subsequent meeting.

The meeting was adjourned at 9:00 PM.