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Dear Scott,

We would like to thank you and Weston for putting together our monthly updates and for taking the time to present us with "pre-drafts" of the feasibility study documents for the remediation of the former Velsicol Chemical site in St. Louis, Michigan. We would especially like to thank you for soliciting and encouraging us to submit comments at this time. We are fortunate to have a working relationship with the MDEQ and USEPA in which this level of discussion and consideration is practiced.

Below are some comments we have developed and put together for you and Weston for your consideration as you draft the feasibility study. It is possible and likely that others from the group will submit individual comments as well.

What guides our comments are not only the technical, legal and scientific aspects of the site, but the fundamental feelings and sensibilities of the people who live, work and raise families in this community. Though, as you know, everyone would like to see this site "dug up and hauled away," you may not find that a particularly salient argument from a technical or scientific perspective. However, it is important that you understand it represents a broader perspective in what the community sees as, perhaps its last chance to finally "clean" the site, the river and have a real sense that progress was made towards making this site and the river reusable and shed the negative environmental stigma this community has lived with for decades.

We have drafted our comments addressing two main issues: 1. Decisions that were made on the closure of Velsicol and construction of what essentially is a hazardous waste landfill in 1982 and 2. The specific alternatives you laid out at the last CAG and TAG meetings.

**Comments Regarding Policy and Decisions That Led to the Failure of Contaminant
From 1982 – Today**

Ed Lorenz presented a well-crafted and substantially supported claim that what happened during the negotiation and drafting of the consent decree in the early 1980's as well as the closure and burial of the site itself was not only unethical, but illegal (a summary is attached). Also, the decisions made based upon those negotiations led to the hauling of

hazardous waste from other sites (most notably the “golf course site”) into the main plant site which, in effect, made it a hazardous waste landfill. In fact, the MDEQ and EPA have repeatedly referred to the site as a hazardous waste landfill. Refer to the case of *The Environmental Defense Fund and State of New Jersey vs. EPA* to utilize, implement and incorporate state standards in remedial response. This was later added to section 121 of SARA that “codifies ARARs concepts.” These standards may include guidelines on the construction of hazardous waste landfills (refer to Michigan Public Act 451 section 324 part 11). According to Act 451, passed in 1979 before the consent decree was signed, all hazardous waste landfills must conform to the construction of a bottom liner that meets general standards for permeability (10^{-7} cm/s). Your investigation (presented in the RI presentation last month) stated clearly that the till layer does not meet this standard criteria. Therefore, the site does not presently meet the State of Michigan criteria for hazardous waste landfill construction AND, the site did not meet the standards back in the 1980’s when it was constructed.

The negotiations in 1982 also led to the improper construction and faulty O & M decisions of the site which contributed to the broad and significant problems we have today regarding the integrity of the cap, the integrity of the wall and the integrity of the “till” layer that underlies the entire site.

It is through the investigation of these facts that helps us determine what has and hasn’t worked on the site and what will, in all probability work (or not work) on the site in the future. The following are what we see as failures from the 1982 consent decree and subsequent “landfilling” of the site that have significant impact on the alternatives presented to us in the FS:

- **It was believed that the plant site and the contaminants within it could be contained through the use of a slurry wall and a cap.** The result, of course was that the cap soon leaked and the slurry wall was breached and contaminants migrated laterally into the river as well as vertically into and through the till layer. This was after treatability studies were conducted on the slurry wall and cap.
- **It was believed that contaminants in the river sediment would pose less of a threat to the biotae of the river and the food chain in general over time as sediment covered the contaminants and they were “disseminated” downstream.** The result of which was higher levels of DDT found in fish over a 12 year period (between 1985 and 1997).
- **The level of water inside the plant site was placed at a higher elevation (hydraulic head) than the elevation of the river.** This was based on some (erroneous) notion concerning the movement of contaminants via head difference. Though everyone, including Velsicol’s consultants saw this as a potential risk for migration of contaminants into the river (water moving from higher to lower head), no one knew then about the existence of the NAPL recently found onsite. Lowering the hydraulic head inside the plant site to cause a negative (inward head), does not completely solve the problem of contaminant migration as NAPL migration is controlled, many times by gravity and not hydraulic head. Hence,

NAPL may move vertically and even somewhat laterally despite a negative head (inward gradient).

- **The slurry wall was constructed to be “keyed” into the low permeable till layer.** However, the physical nature of the till layer made this difficult and in some cases impossible. New construction of a slurry wall (sheet piling or otherwise) will prove difficult and perhaps impossible as well. There have been cases in which water has bubbled up in the region where the sheet pilings were supposed to be keyed into the till layer in the construction of the coffer dams suggesting that they were not completely keyed into the till layer.
- **The plant site and the river were considered as two separate and distinct units (Operable Unit 1 and Operable Unit 2).** It was believed that the plant site could be contained and the river could, in time be remediated under CERCLA without addressing the plant site contamination. In fact, USEPA initially fought the Community Advisory Group (CAG) on the possibility of addressing the plant site and the river at the same time. Later, through the hard work of the EPA and MDEQ it is quite evident that there is not only a hydrologic connection, but a stratigraphic connection between the river and the plant site (and their respective stratigraphies) given the nature of the sand seam within the till layer. The sand seam, the source for copious quantities of free-phase NAPL, runs beneath the plant site and under the river bed. Its nature and extent have not been defined and the possibility (probability?) exists that more high concentrations of NAPL could still exist.
- **Continued operation and maintenance of the site from 1986 – 1997 was poor.** Water built up within the site (a testament to the failing cap) and treatment of the contaminated water within the site became a legal battle as there were no stipulations on *how* the contaminated water was to be disposed. This suggests that there was little if any contingency plan on what to do should an unforeseen circumstance like this occur.
- **The cap and slurry wall remedy was touted as containment technologies “proven elsewhere.”** This is a misconception and deception as evidence of clay cap failure and bentonite slurry wall failure was widely known in the mid-1980’s when the remedy of this site was implemented. Since that time, more and more evidence has been generated proving that these are not permanent remedies (as is required under SARA guidelines) but temporary remedies. EPA publications such as Presumptive Remedies: CERCLA Landfill Caps RI/FS Data Collection Guide admit to the fact that caps are temporary “fixes” and have shown “significant cracking and leaking potential” even when combined with HDPE liners.

Addressing Specific Issues Related To Proposed Alternatives For FS

From the presentation given this month on the alternatives chosen to be included in the FS, it seems there are five general ways in which the site can be addressed:

1. No Action. We understand this is not a likely option and will not discuss it at this time.

2. Dig up and remove plant site material (either entire plant site, only hot spots, and/or only barrier strip on outside of the slurry wall).
3. Contain materials in place as they are and attempt to mitigate infiltration and further migration.
4. Conduct in-situ or on-site remediation of contaminated materials through the use of an incinerator, water treatment and/or alternative (innovative) remediation technologies.
5. A combination of containment and in-situ remediation – mostly through pump-and-treat or a modified pump-and-treat model.

After reviewing the data from EPA's Final NAPL Report and data that will be contained in the draft RI, we have concerns that help shape the remedy we feel is best for the site. These concerns are:

- **Contaminant migration (vertically and perhaps laterally) will be a continuous threat to the lower outwash unit and the river unless the source is removed or cleaned.** The nature of NAPL movement despite the hydraulic head controls proposed in the alternatives and the fact that the till layer has been compromised and will continue to be compromised leaves a serious threat to the continued contamination of this area. Even in combination with a pump-and-treat system proposed for the sand lens, the till layer can still act as a conduit for transmission of NAPL and other contaminants. Leaving this material in place capped with another slurry wall is a temporary remedy as these remedies of only certain lifetimes of effectiveness. SARA guidelines require a remedy that is permanent.
- **The extent of contamination, especially NAPL has not been clearly defined in the sand lens, the till layer and the lower outwash unit.** There is potential for NAPL migration out of the sand lens as well as within the sand lens if a pump-and-treat system were to be employed. This must remain a consideration no matter what remedy is selected. The unknown nature of NAPL and its existence and migration potential are unknowns that, like in 1982 cannot be foreseen at this time, but steps can be taken now to mitigate their potential effects.
- **The inhomogeneity and complex nature of the upper outwash unit does not lend itself to support a typical pump-and-treat system, therefore, controlling migration (especially vertical migration) of contaminants will be difficult.** A pump-and-treat system such as has been used on sites that have natural hydraulic connection and similar hydraulic conductivity within them forces contaminated water towards a desirable region or away from an undesirable region. This type of pump-and-treat system would seem difficult on the upper outwash unit where the contaminant sources reside. When the cap becomes compromised (as is stated in its designs specifications – even in 30 years), there will be a need to pump groundwater entering the site. How will this be done given the complexity of the subsurface.
- **NAPL continues to pose a threat to the mobilization of contaminants as well as as further contamination or recontamination from unknown existing sources.** The EPA and MDEQ do not have a clearly defined delineation of where

the NAPL occurs especially in sand stringers associated with the sand lens under the plant site and river bed. Whatever action is taken on remediating the sand lenses (ie. grouting and pump-and-treat), the potential movement of NAPL within this lens must be taken into consideration.

- **Reuse of the property is severely limited as long as source material remains in place.** Though it has been stated that the proposed remedy dictates final usage of the site, the consideration of usage is a significant factor in selecting an alternative. Besides the requirement for protecting human health, balancing factors such as long-term effectiveness and permanence and modifying factors such as community acceptance address the economic redevelopment viability of the site and should be considered in selection of any remedy. In this sense, the remedy must include economic development as one of its criteria for selecting an alternative.

We acknowledge the fact that remediation of the sand lens and lower outwash unit will most likely have to be conducted through some type of pump-and-treat system no matter what happens to the materials in the upper outwash unit or along the river. We favor, however, a remedial alternative that removes the source material, or treats it on-site, either through incineration (as was proposed) or through innovative or alternative technologies. One other issue to consider regarding on-site remediation is that it could provide a means to deal with contamination beyond the former Velsicol site. Several hazardous waste dumps around the county (in which Velsicol was a major contributor) could send material to any on-site treatment facility. We recognize this would increase the time element for completion of the remedy (perhaps significantly), but it would accomplish our main objectives: removing the source of contamination, “cleaning” the site, increasing our flexibility on what we can do on the site, and clean other contamination that exists in our community.

How do you want me to wrap this up here? Do we want to make specific suggestions or have we made our point?

Cc: Governor Jennifer Granholm, Governor of Michigan
Thomas V. Skinner, Esq., Regional Administrator of USEPA Region 5
U.S. Senator Carl Levin
U.S. Senator Debbie Stabenow
U.S. Congressman Dave Camp
State Senator Mike Goschka
State Representative Scott Hummel
EPA Remedial Project Manager Stephanie Ball
Weston Associates: Rob Conestra
CH2Mhill: Theo Von Wallmenich
Mayor: City of St. Louis: Hon. George Kubin
City Manager of St. Louis: Dennis Collison

