CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: November 13, 2017 FILE REF: 02-16-275446

TO: Jamie Dunn, Joe Graham

FROM: Scott Inman

SUBJECT: Review Comments regarding SWL&P Supplemental Investigation

---

Site Name	Superior Water Light and Power Company (SWL&P) Former Manufactured Gas Plant (MGP)
BRRTs Site No.	02-11-543021
Upland Location	Winter and East 1st Street Superior, Wisconsin
Waterbody	Superior Bay, Lake Superior (WBIC 2751220)
Responsible Party	Superior Water Light and Power Company (SWL&P) 2915 Hill Avenue Superior, WI 54880
Responsible Party Contact	Rachael Snyder-Cochran (715) 395-6224 rcochran@swlp.com
Consultant	Summit Environsolutions, Inc. 1210 East 115th Street Burnsville, MN, 55337
Consultant Contact	William Greg[1] (651) 262-4236 bgregg@summite.com
Document Reviewed	Supplemental Site Investigation Report for the Former Manufactured Gas Plant in Superior, Wisconsin
Date Submitted	September 12, 2017

---

[1] Signed NR 712.03 Hydrogeologist Certification.

COMMENTS

1. **Overlay Historic Information on Maps:** Critical pieces of information regarding the conceptual site model (CSM), degree and extent of contamination, and history of the site would be beneficial to overlay onto the Figures showing the contamination, such as Figures 20, 21, 24, and 25. Specifically, items such as the gas holders, the MGP building, location of the clay tile pipe, shoreline and shoreline features as they have changed over time.

   Section 5.1.1 of the Report refers to a previous report {Phase II Part IV Investigation report (ENSR, 2007)} that describes shoreline changes in detail, but I do not have said report. Further, the information that is pertinent to understanding the CSM should be brought into this supplemental report so that it is a standalone document. Joe Graham forwarded me a series of shoreline figures from 1861 to 1997 from Army Corps of Engineers Map that I have in mind, especially for the timeline of when the MGP operated. What is interesting is that the figures indicate numerous gas holder locations beyond those identified in the Supplemental Report.

2. **Perpendicular Cross Sections:** This can be an item for design, but cross-sections perpendicular to the slip, parallel to the shoreline, would be valuable on a set interval (x-number of feet). The Report describes nearly 30,000 CY of material on the bank of the WWTP berm. Differentiating the berm material from the sediment will be critical for determining appropriate target dredge volume.

3. **Containment First:** Before SWL&P can dredge sediments, containment of the land side will be needed to avoid recontamination of the slip. The groundwater to surface water/sediment pathway exists and may be significant.

4. **Dredge to refusal[2] the extents of the slip:** The Report describes the fate of sediments within the slip as being subject to significant human influence, mainly shipments of coal for the Graymont Plant. Approximately five times per year, shipments arrive that disturb the lakebed:

   > "prop wash and/or grounding of the hull of the delivery ship in the sediments creates the uneven sediment thickness."

   Due to the ships, sediments within the slip periodocially become resuspended, mixed, redistributed, and settle again throughout the slip. The periodic redistribution of sediment is problematic for assigning concentrations to areas; the sediment data is only truly respresentative until aother ship comes in. It would be helpful to understand the delivery practices and the orientation of the ships when they come into and leave the the slip.

   Due to the ships and the problem with assisging concentrations to areas, I, therefore, recommend that the entire slip be dredged to refusal[2] within the clay unit. This simplifies the design and avoids the confusion and arguments that are generated over a cleanup number. Figure 23 supports this line of thinking in that there is not an apparent pattern to explain the

[2] Refusal means dredging until an underlying stiff clay, gravel till, and or bedrock material is encountered.

contamination or lack thereof in the slip. That and sediments towards the mouth of the slip are thin deposits.

5. **Section 5.4 Contaminant Migration:** The Report asserts that the MGP residue, also called tarry material, is not mobile. I do not believe the assertion. Considerable experience on other MGP sites with tarry material from carbureted water gas (such as Ashland) has proven otherwise. Obtaining samples of the MGP residue, often called non-aqueous phase liquid (NAPL), is difficult. Finding NAPL during remediation in areas where it was not found previously has been documented at MGPs such as Campmarina. NAPL was not found during investigations even though many rounds of sampling were performed but was present during dredging.

   As to the first bullet regarding the statement that the tarry material was found within the fill material but has not migrated downward to the clay unit. I also find this difficult to full believe, or at least the extent of the migration. At Ashland, the pre-remeidation understanding was that the clay layer was the apparent boundary between contamination and the native material. However, experience during the remedial action found tar extending into the clay unit and the Responsible Party added an additional 1-ft below the elevation of contamination to the entire remedial footprint to calibrate for this.

   In any case, I would consider the tarry material / MGP residue / NAPL to be free product. NR 708.13 directs that:

   > *Responsible parties shall conduct free product removal whenever it is necessary to halt or contain the discharge of a hazardous substance or to minimize the harmful effects of the discharge to the air, lands or waters of the state. When required, free product removal shall be conducted, to the maximum extent practicable, in compliance with all of the following requirements:(1) Free product removal shall be conducted in a manner that minimizes the spread of contamination into previously uncontaminated zones using recovery and disposal techniques appropriate to the hydrologic conditions at the site or facility, and that properly reuses or treats discharges of recovery byproducts in compliance with applicable state and federal laws. (2) Free product removal systems shall be designed to abate free product migration. (3) Any flammable products shall be handled in a safe and competent manner to prevent fires or explosions. History: Cr. Register, April, 1994, No. 460, eff. 5–1–94.*

6. **Quantification of PAHs:** This site, like many sites, has difficultly with that quantification of PAH concentrations in sediment. The consultant is unable to fully explain higher concentrations by the EPA. Another reason that dreding the entire slip to refusal makes sense versus trying to pick a clean up number.

7. **Land and Water Equipment:** I expect that both land based and water based excavation will be needed per the cross section on Figure 15.

8. **Deep and hard material:** The design engineer and contractor will need to determine the appropriate dredging technology. The Report describes the top two or three ft of material near the storm sewer inlet as being loose, but that materials underneath this are compacted. I would be concerned that materials could be too dense for the hydraulic dredge and they may want to collect geotechnical information to quantify the density and if it can be removed hydraulically.