



December 23, 2021

*(sent via email only to [gprom@mnpower.com](mailto:gprom@mnpower.com))*

Mr. Greg Prom  
Superior Water Light and Power Company  
2915 Hill Avenue  
Superior, WI 54880

SUBJECT: 90% Remedial Action Design Report – Upland Area,  
Superior Water Light and Power Manufactured Gas Plant  
Winter Street and USH 53, Superior, WI  
BRRTS ID: 02-16-275446

Dear Mr. Prom,

The Wisconsin Department of Natural Resources (DNR) has completed a review of the September 14, 2021 90% Upland Area Remedial Action Design Report, submitted to the DNR on your behalf by Foth Infrastructure and Environment, LLC (Foth) on September 17, 2021 (RAD). The RAD is for the remedial action option conditionally approved by the DNR on January 28, 2021 for the upland portion of the former Superior Water Light and Power (SWL&P) Manufactured Gas Plant (Site) only. A Field Sampling Plan (FSP), Air Management Plan (AMP), Remedial Action Quality Assurance Plan (QAPP), Erosion Control and Storm Water Management Plan (ECSWMP) were submitted to the DNR along with the RAD (collectively referred to as the “reviewed reports”). The DNR received a \$1050 fee for review of the RAD.

The term “Site” is used in this letter as defined in §NR700.03 (56) and includes the area of contamination near the former MGP gas holder and Hortonsphere as well as the MGP discharge area north and east of the former manufactured gas plant including the BNSF ROW, City of Superior property, wastewater treatment plant (WWTP) property and retention pond, Cutler Laliberte McDougal Corporation properties, Lakehead Concrete Works and the area of contaminated sediment in the slip west of the WWTP where manufactured gas plant contamination was detected. Also, the term “active remedial action” in this letter means the planned air sparging/soil vapor extraction and excavation of contaminated soil.

The DNR Remediation and Redevelopment Program reviewed the RAD, FSP, AMP, QAPP, and ECSWMP for compliance with Wis. Stats. ch. 292 and Wis. Admin. Code chs. NR700 – NR799. The DNR’s review is not an engineering review of the document.

#### **General Comments:**

1. The remedial action design for the upland portion of the Site has focused on the three Remedial Action Objectives (RAOs) formulated by SWL&P and Foth during the selection of the remedial action options. RAOs are used in the CERCLA process and are not defined or used as such in Wis. Adm. Code chs. NR700-799. There are many locations in the reviewed reports that reference achievement of the RAOs will result in closure of the Site under Wis. Adm. Code ch. NR726. Although the RAOs established by Foth and SWL&P may include certain obligations required under Wis. Adm. Code chs. NR700-799, the DNR will evaluate the remedial action against all applicable requirements of Wis. Adm. Code chs. NR700-799 for determination of SWL&P’s compliance with

its responsibility under Wis. Stats. ch. 292. When referencing closure of the Site in the reviewed reports reference the closure requirements of Wis. Adm. Code ch. NR726.

2. The ‘target concentrations’ developed by SWL&P and Foth are not environmental standards as that term is defined in Wis. Adm. Code § NR720.03(20) nor are they site-specific Wis. Adm. Code ch. NR720 RCLs (RCLs) for the protection from direct contact, groundwater protection, or environmental protection. The various ‘target concentrations’ developed by SWL&P and Foth are described using various terms. In places it references them as ‘Site specific target concentrations’, or ‘cleanup standards’ or ‘environmental standards’. Modify all the descriptions of target concentrations in the reviewed reports to standardize the language and make it very clear these are not environmental standards or Wis. Adm. Code ch. NR720 RCLs. It is perhaps better to define the target concentrations as ‘action levels’ that were developed during design to guide remedial action so that the applicable cleanup levels in Wis. Adm. Code chs. NR140 and NR720 are achieved. Include a table that summarizes all the various target concentrations developed by SWL&P as well as the Wis. Adm. Code ch. NR720 RCLs for all Site contaminants, not benzene alone. This table should include the applicable media for each target concentration, as well as the basis for each target concentration. Also, throughout the document SWL&P refers to an industrial ‘shallow’ soil D-C RCL. Wis. Adm. Code ch. NR720 defines the soil RCLs in terms of land use and not depth. Refer to the RCLs as they are defined in Wis. Adm. Code.

3. The DNR believes the contaminated soil that contains concentrations of contamination greater than the Wis. Adm. Code ch. NR720 RCLs for the protection of groundwater is a threat to the environment due to the potential leaching of contaminants to groundwater resulting in further Wis. Adm. Code NR140 Enforcement Standards exceedances (Wis. Adm. Code § NR718.12(1)(c)7). **The DNR is not granting an exemption (Wis. Adm. Code § NR718.12(1)(d)) to the location standards contained in Wis. Adm. Code § NR718.12(1)(c). Therefore, soil contaminated at concentrations greater than the Wis. Adm. Code ch. NR720 RCLs for the protection of groundwater is not to be returned to the excavation.** Edit all subsequent reports to reflect this requirement. The DNR informed you the DNR was not approving replacement of contaminated soil in excavations in its April 16, 2021 letter reviewing the 60% RAD. Based on our December 23, 2021 discussion we understand that you will implement the project complying with these requirements. The DNR will not approve a final RAD if this is carried forward again.

4. Throughout the reviewed reports Foth states Site closure can be achieved by excavating soil exceeding the target concentration of 5 mg/kg benzene in the Hortonsphere and Gas Holder Area and actively remediating other areas of the site to other target concentrations. The DNR has not approved the use of 5 mg/kg benzene or the other ‘target concentrations’ as site specific Wis. Adm. Code ch. NR720 RCLs for this site. Leaving contaminated soil in place or returning excavated contaminated soil back into the excavation at concentrations greater than the Wis. Adm. Code NR720 RCLs for the protection of groundwater may lead to excessive groundwater contamination remaining after the remedial action. Therefore, the DNR is not approving natural attenuation as a final remedial action until a full and complete assessment of remaining contamination both horizontal and vertical in all affected media is conducted following the active remedial action. This includes the Hortonsphere and Gas Holder area.

5. In multiple places in the reviewed report Foth asserts natural attenuation will remediate remaining contamination and the Site will close under Wis. Adm Code ch. NR726 following the remedial action. **The DNR does not approve this remedial action as the final remedial action for the Site nor will it assume further remedial action is not necessary or is not technically or economically feasible until after active remedial action is completed and adequate monitoring of the Site and assessment of remaining contamination is completed.**

6. Throughout the reviewed reports, when referencing calculations used to establish target concentrations, remediation time frames, etc., Foth references information contained in the appendices without giving a specific page or section reference. A brief explanation of the methodology including the assumptions used to derive the

target concentrations would greatly improve the text of the report and we suggest including some additional explanatory text in the final RAD.

7. Throughout the reviewed reports, Foth uses the terms such as ‘non-impacted material’ or ‘soil’ (or similar) to mean soil that is contaminated at concentrations below the Wis. Adm. Code ch. NR720 RCLs for protection from direct contact. Also, Foth does not clearly define the terms ‘impacted’, ‘non-impacted’, and ‘overburden’. As stated in the DNR’s April 16, 2021 letter reviewing the 60% design report, Wis. Admin. Code § NR718.03(5) defines the term ‘contaminated soil’. Soil with any detections of contaminants is considered by the DNR to be contaminated. Reference all soil that is contaminated at any concentrations ‘impacted’ and clearly define what is meant by the terms ‘impacted’, ‘non-impacted’, and ‘overburden’ and standardize the language in all the reviewed reports. Also, correct and revise all calculations and models that do not consider the mass of contaminants in the ‘non-impacted soil’ or ‘overburden’.

### **Specific Comments:**

#### **90% Design Upland Area Remedial Action Design Report**

##### Section 1.1, page 2, last paragraph:

This paragraph discusses numeric soil targets based on protection of groundwater but not human health risk from direct contact with soil. Add discussion on this.

##### Section 1.1 page 2, last sentence:

Please explain why the geometric mean is used to characterize average soil concentration rather than the arithmetic mean or the 95% upper confidence limit (UCL) of the arithmetic mean. The use of a geometric mean could lead to underestimating the average soil concentrations. Also, if geometric means were used to determine compliance for soil cleanup, to calculate treatment rates, or to calculate degradation rates, the resulting calculations will also likely result in an underestimate of time to achieve cleanup criteria and ultimately Site closure. See additional comments with further explanation: Appendix B-1, second page, Average Soil Concentrations.

##### Section 1.1, page 2, footnote 2:

The Wis. Adm. Code ch. NR720 RCL for groundwater protection is not based on human health risk from direct contact with soil, it is based on protection of groundwater. This footnote is incorrect and needs to be corrected.

##### Section 1.2 page 3, first paragraph, sixth sentence:

This sentence is worded so it appears Option 3 was the DNR’s preferred alternative. The DNR provided conditional approval to SWL&P’s and Foth’s preferred Option 3. Change this sentence to state the remedial option selected is the preferred alternative of SWL&P and Foth.

##### Section 1.3 page 4, bullet point “RAO 2”

When the asymptotic rate of mass removal is reached using the selected active remedial option, it does not necessarily demonstrate that active remedial action is completed. If contaminant concentrations are not adequately reduced another active remedy may need to be considered.

##### Section 1.4, page 5, bulleted list:

Wis. Adm. Code § NR726.05(6)(b) requires that natural attenuation will bring the groundwater into compliance with Wis. Adm. Code ch. NR 140 groundwater quality standards within a reasonable period of time, considering the criteria in Wis. Adm. Code § NR722.07 is a requirement for Site closure with remaining groundwater contamination. Add demonstration of reasonable timeframe to achieve groundwater quality standards as a bullet.

Section 1.4, page 5, third bullet:

It has not been shown that cleanup to the requirements of Wis. Adm. Code ch. NR140 groundwater quality standards is not technically or economically feasible at this Site. The DNR agrees that attainment of the Wis. Adm. Code ch. NR140 groundwater quality standards may not be achievable with the selected active remedial action, however, adequate monitoring following the active remedial action may show that attainment of the Wis. Adm. Code ch. NR140 groundwater quality standards are achievable through natural attenuation or another remedial action.

Section 1.4, page 5, first paragraph, third sentence:

The DNR does not agree that the contamination detected in the area of the City of Superior Wastewater Treatment Plants is “likely due to facility construction and fill activities unrelated to MGP operations”. This has not been shown to be the case through the SI activities conducted to date. The DNR does concur that the infrastructure in this area of the Site limits options for active remedial action. Further monitoring during and following active remedial action will be used to evaluate this area of the Site to determine what additional actions, if any, are warranted for compliance with Wis. Adm. Code chs. NR700-799 and Wis. Stats. ch. 292. Remove the phrase “likely due to facility construction and fill activities unrelated to MGP operations”.

Section 1.5, page 6, title:

Retitle this section to include monitoring to achieve Wis. Adm. Code ch. NR726 closure requirements.

Section 1.5 page 7, first bullet, last two sentences:

The statements that the RA will leave “limited residual contamination” and “the residual subsurface soils impacts will not present an unacceptable groundwater contaminant risk” are based on modeled predictions and not actual results as measured post-remediation. Modify these statements in the RAD to clarify that they are predictions based on pre-remedial modeling, unless adequate quantification of expected residual impacts can be stated with certainty and include documentation of the specific data used to make these assumptions. A section needs to be added to the RAD to discuss this topic in detail. This section should include information on post-remediation monitoring that will be done to confirm residual contaminant concentrations after the active remedial action is complete.

Section 1.5, page 7, second bullet, second sentence:

Compliance with the requirements of Wis. Adm. Code ch. NR140 is required. Remove “and unnecessary” from this sentence. Wis. Adm. Code § NR726.05(6)(b) states “natural attenuation will bring the groundwater into compliance with ch. NR140 groundwater quality standards within a reasonable period of time, considering the criteria in s. NR722.07”. In order to comply with this requirement, monitoring data, collected following active remedial action activities, will need to be used to evaluate the timeframe to achieve groundwater standards, prior to the DNR granting closure of this Site. Also, the DNR does not concur that compliance with the PALs/ESs is technically and economically infeasible. Ultimately, compliance with Wis. Adm. Code ch. NR140 may be possible using natural attenuation as a final remedial action which may be technically and economically feasible. This, however, must be shown through adequate long-term monitoring following the active remedial action.

Section 1.5, page 7, second bullet, third sentence:

Groundwater contaminated at concentrations greater than the Wis. Adm. Code ch. NR140 groundwater quality standards are an impact to the environment. Remove the statement that Site groundwater is not a threat to the environment. It is acceptable to discuss property use and human health exposure pathways.

The Miller Creek formation is known to contain sand and gravel seams, particularly in proximity to the Superior harbor of Lake Superior, and may not be as protective as implied here. Adequate monitoring of the remedial action may show protectiveness, but this has not been demonstrated in the work conducted to date. Change this sentence to reflect this.

Section 1.5, page 7, second bullet, fourth sentence:

This sentence says that following the active remedial action data “will confirm the groundwater contamination is shrinking and poses no unreasonable human health or environmental risk”. The DNR does not concur with this statement. This is not known, nor has it been demonstrated, at this time. Evidence documenting Site conditions will need to be gathered following the active remedial action to evaluate Site conditions. Change this sentence to state monitoring will be conducted to demonstrate the effectiveness of the selected remedial action and natural attenuation.

Section 1.5, page 7, second bullet, fifth sentence:

The DNR concurred during the development of the RAOR that compliance with the Wis. Adm. Code ch. NR140 ESs and PALs may not be achievable utilizing the selected active remedial action. The use of natural attenuation as a final remedial action may ultimately result in compliance with the ESs and PALs but this will need to be shown through monitoring following active remedial action at this Site. Remove the statement saying the DNR concurred that the ESs and PALs could not be achieved at this Site.

Section 1.5, page 7, second bullet, last sentence:

The DNR conditionally approved the RAOR on the basis that the DNR would require additional remedial action if the selected remedial action was not effective at remediating the Site to Wis. Adm. Code requirements. Reference the conditional approval letter of January 28, 2021 in this sentence.

Section 1.5, page 8, first paragraph:

This paragraph appears to say that Foth’s Site-Specific target concentration of 5 mg/kg benzene and Foth’s Site Specific MNA target concentration of 250 µg/L in groundwater will not be met. The DNR was on the understanding that Foth’s target concentration for excavation and MNA would be met during the active remedial action. This needs further explanation. Also, Foth’s target concentration of 5 mg/kg is 1000 times higher than the Wis. Adm. Code NR720 Residual Contaminant Level (RCL) for protection of groundwater. Leaving high concentrations of contamination in place following the active remedial action may make natural attenuation ineffective as a final remedial action. See General Comment #4.

Section 1.5, page 8, first paragraph, last sentence:

The DNR has not approved the Site-Specific Excavation target concentration as an applicable cleanup level at the Site. The Wis. Adm. Code ch. NR 720 RCLs for direct contact and groundwater will be used to determine compliance for soil remedial actions. Achieving the RAOs established by Foth and SWL&P does not necessarily mean the Site will close under Wis. Adm. Code ch. NR726. See General Comments #1.

Section 1.5.1, page 8, first paragraph, fourth sentence:

The DNR allows averaging of soil sample results, with prior approval of a proposed sampling plan and analysis methodology. This approval has not been requested, nor would DNR likely approve averaging for the stated purpose. The individual discrete sample results will be compared to the Wis. Admin. Code ch. NR720 Residual contaminant levels. The DNR **is not** approving the use of averaging of soil contaminant concentrations at this Site for the purpose of compliance with Wis. Adm. Code ch. NR720, comparison of Site conditions to environmental standards as defined in Wis. Adm. Code ch. NR700.03(20), or any other requirement of Wis. Adm. Code chs. NR700-799 or Wis. Adm. Code ch. NR140.

Section 1.5.1, page 8, footnote 12:

250 µg/l benzene in groundwater is not an environmental standard established by the DNR nor has this concentration been approve by the DNR as an acceptable endpoint for the remedial action. The remedial action must comply with the requirements of Wis. Adm. Code chs. NR140 and NR700-NR799. The DNR will evaluate groundwater concentrations against the Wis. Adm. Code NR140 Groundwater Quality Standards.

Section 1.5.1, page 9, first paragraph:

See General Comment #3.

Section 1.5.1, page 9, third paragraph:

The information and assumptions used in the modeling in Appendix D-1 provide the rationale for developing the 5 mg/kg target concentration. However, the predictive modeling results will need to be verified by actual Site conditions during the monitoring phase after the active remedial action is complete.

Section 1.5.1, page 9, fourth paragraph:

See General Comment #3.

Section 1.5.1, page 9, fourth paragraph last two sentences:

Foth has indicated in Section 1.5, page 8, first paragraph, that the Site-Specific Excavation target concentrations would not be met. Here it states the excavation limits were established based on the target concentrations. This is contradictory language. Edit to clearly state what is being used to establish the limits of the excavations.

Section 1.5.2, page 10, second paragraph and footnote:

The Site-Specific Biosparge target concentration of 1 mg/kg benzene is not a Wis. Adm. Code ch. NR720 RCL established for the protection of groundwater and it is not an endpoint concentration approved by the DNR.

Section 1.5.2, page 10, second paragraph:

This paragraph discusses benzene acting as a solvent for the other BTEX and PAH compounds. In the last sentence Foth explains that the “inert tarry material” is acting as a carbon source reducing the benzene concentration in groundwater. Remove “inert” from the term “inert tarry material”. These compounds are mainly PAHs and other organic compounds and are not “inert”. Additional detail is necessary explaining this relationship and its effect on remediation and estimated remediation timeframes.

Section 1.5.2, page 10, third paragraph, third sentence:

Add text indicating the DNR will make decisions at this Site by evaluating the analytical results against the Wis. Adm. Code ch. NR720 residual contaminant levels for the both the direct contact pathway as well as the groundwater pathway.

Section 1.5.2, page 10, third paragraph, last sentence:

When referencing the modeling done in Appendix D-1 and the methodology used to derive the Site Specific Biosparge target concentration, it would be helpful to provide additional discussion in this section. Instead of simply listing the variables used, provide information on how they impact the remedial timeframe, and a summary of the analysis done to determine remedial timeframe and establish the remedial target. See General Comment #6.

Section 1.7, page 11 first paragraph, last sentence:

See General Comment #1.

Section 1.7, page 14, third paragraph:

Residual soil contamination causing exceedances of Wis. Adm. Code ch. NR140 groundwater quality exceedances is a completed pathway and an ongoing threat to the environment. Also, due to the significant contamination in the slip it is unknown at this time what, if any, concern there is for ecological or human receptors for the remaining contamination. Further evaluation is needed following active remedial action while assessing natural attenuation as a final remedial action.

Section 1.7, page 14, fourth paragraph, third sentence:

The DNR required establishing Continuing Obligations (COs) as part of the remedial action design in the RAOR conditional approval letter dated January 28, 2021. The DNR does not intend to approve a final design without

these COs established and a GIS package submitted to the DNR. See “Continuing Obligations” near the end of this letter. Also, continuing obligations remain in effect on a property until it can be shown that the remaining contamination, in any affected media, is below environmental standards established by the DNR (e.g. Wis. Adm. Code ch. NR720 RCLS for soil and NR140 groundwater quality standards for groundwater).

Section 2.1.5, page 19, first paragraph:

The DNR requested additional groundwater monitoring wells and piezometers be installed to provide further information on groundwater quality during and following active remedial action activities. The DNR requested piezometers, nested with monitoring wells MW-3R and MW-4R, monitoring wells directly downgradient of the Hortonsphere and gas holder excavations and an additional monitoring well located near the City of Superior building in the area of SLIF-33.

This RAD does not include the requested piezometers. The DNR will not approve a final design without all the requested monitoring wells included in the RAD. DNR wants the replacement monitoring wells MW-3R and MW-4R installed as water table observation wells screened within the excavation backfill only and piezometers installed with 5-foot well screens installed at approximately 596 to 601ft MSL and adjusted to intersect any sand and gravel seams encountered near this depth. The screen and filter pack for the piezometers is not to extend into the excavation and an adequate seal placed so groundwater from the backfilled excavation does not migrate through the filter pack or well casing into the piezometer.

Also, Foth depicts the location of an additional monitoring well MW-29, further east than the DNR would prefer. The DNR wants a well installed near the location of SLIF-33 to be nearer the active remedial action area to be able to assess groundwater quality near the active remedial action system. Install the well screen to intersect the depths of elevated LIF values.

Section 2.2.1.1, page 21, first paragraph, third sentence:

See General Comment #7.

Section 2.2.1.1, page 22, first paragraph, last sentence:

See General Comment #3.

Section 2.2.1.2, page 22, first paragraph, first bullet:

“Soil” does not describe the contamination present. See General Comment #7.

Section 2.3, page 23:

Section 2.3 should specify that the vented soil pile construction will comply with the requirements of Wis. Adm. Code NR718. Also, although the liquid drainage sump location is identified in Drawing B-8, the drainage sump design is not illustrated as indicated in the narrative.

Section 2.6.1, page 26, second bullet:

The 5 mg/kg Site-Specific Excavation target concentration is not a concentration developed under Wis. Adm. Code NR720 and it is not a Residual Contaminant Level approved by the DNR. See General Comment #2.

Section 2.6.1, page 26 second paragraph, third sentence:

See general Comment #3.

Section 2.6.1, page 27, second paragraph, first sentence:

The “standards” established in the Field Sampling plan were not developed using Wis. Adm. Code ch NR720 and therefore are not considered RCLs protective of groundwater quality.

Section 2.6.2, page 27, second paragraph, second sentence:

See General Comment #3.

Section 2.10, page 33, second paragraph, second sentence:

See General Comment #3.

Section 2.11, page 35, second paragraph:

The description of the systems in this paragraph is unclear in part due to the terminology used and the lack of or incorrect references to drawings. For example, Drawing F-2 does not appear to be the correct reference for the SVE system elements described. Does the system have 16 or 17 horizontal wells? Are the terms bioventing well and biosparging well being used interchangeably? Please revise the paragraph to clearly and concisely describe the individual system components and design parameters.

Section 2.12, page 36:

This section describes the “potential” use of chemical oxidants as a backfill amendment. The DNR understands that the use of chemical oxidants is planned for backfill placed beneath the water table. Change this section to state how chemical oxidants are to be used.

Section 2.14, first paragraph:

See General Comment #5.

Section 3.1.1, page 37, second sentence:

See General Comment #3.

Section 3.1.3, page 38:

Air emission standards are not included in Wis. Admin. Code NR 700. Please use the correct code reference.

Section 4.1.3 page 45, second paragraph, third sentence:

See General Comment #1.

Section 4.2.1, page 46:

Drawing references are incorrect. Wastewater treatment system component labels are inconsistent with narrative. Correct this section.

Section 4.3.3 page 50, second paragraph:

See comments on Section 1.5.2, page 10, second paragraph and footnote and Section 1.5, page 10, third paragraph, last sentence.

Section 4.3.3 page 50:

Please describe the placement and construction of horizontal wells used for soil vapor extraction including:

- Range of depths from ground surface and the potential for short circuiting,
- Well screen/perforation density and distribution,
- Potential for freezing condensate in pipes during winter

Section 7, page 59, first paragraph:

Wis. Adm. Code § NR712.07(2) requires that submittals prepared to satisfy the requirements of Wis. Adm. Code ch. NR724 be jointly prepared by or under the supervision of both and professorial engineer and a hydrogeologist. Submittal certification requirements are contained in Wis. Adm. Code ch. NR712.09.

Table 1-1, left column, Shallow Soil Excavation, Evaluate Soil Data:

See General Comment #3.



Table 1-1, left column, Deep Soil Excavation, Evaluate Soil Data:

See General Comment #3.

Table 1-1, Center Column, Evaluate SVE Recovered Air Data:

Explain in text and reference in table how it was determined that a one-week shutdown of the system is sufficient for determination of rebound.

Table 1-1, Center Column, Evaluate Soil Data:

See comment for Section 1.5.1, page 8, first paragraph, fourth sentence. The DNR will not utilize averaged sample results for Wis. Adm. Code chs. NR700-799 compliance decisions.

Table 1-1, Right Column, Monitored Natural Attenuation, Monitor Long Term Groundwater Network:

The DNR will not use groundwater samples collected during the operation of the air sparge/SVE system for natural attenuation evaluation. Change text to make it clear that natural attenuation monitoring will begin following shutdown of the air sparge/SVE system.

Table 1-1, Right Column, Evaluate Groundwater Data, Evaluate Groundwater Data Results:

The DNR considers an increasing contaminant concentration in a well to be indicative of an unstable or increasing groundwater contaminant plume and depending on the specific circumstances the DNR may require additional remediation, continued monitoring, or additional investigation. If this situation arises the DNR may not concur that RAO #3 is achieved. Edit Table 1-1 to reflect this.

Figure A-7, Typical Temporary Fence Detail:

According to Wis. Adm. Code § NR714.07(4), Department issued signs are required to be posted at various locations at the Site as required in Wis. Adm. Code § NR 714.07(4)(a) and contain the information required in Wis. Adm. Code § NR714.07(4)(b). Per Wis. Adm. Code ch. NR714.07(4)(c) the DNR is requiring signs at the locations specified in Wis. Adm. Code § NR714.07(4)(a) 1.-4. and at 100-foot intervals along construction fences.

Figure C-2, Typical Railroad Section:

This figure mentions the railroad bed being “impermeable”. It is highly unlikely the railroad bed, which was originally built on pilings in open water and later filled in is “impermeable”. The DNR has investigated this railroad bed for another investigation near this Site and found crushed rock fill beneath the tracks. It appears the assumption the railroad bed is “impermeable” was used in other construction calculations. This should be corrected unless it is known the railroad bed is in fact “impermeable”.

Appendix B-1, General Comments:

Label all tables and figures with a distinct number and title for easy reference.

Appendix B-1, PDF page 144, Average Soil Concentrations:

Provide an explanation for the City of Superior area not being included in the Average Soil Concentrations. Add explanation for the highlighting or bold figures in the table. See comment for Section 1.5.1, page 8, first paragraph, fourth sentence for comment on the use of averaging.

Appendix B-1 PDF page 144, Average Soil Concentrations Tables:

Section 1.1 explains that the geometric mean is used to characterize the average soil concentrations for shallow and deep soil. Please explain why the geometric mean is used to characterize average soil concentration rather than the arithmetic mean or the 95% upper confidence limit (UCL) of the arithmetic mean. The use of a geometric mean could lead to underestimating the average soil concentrations. The use of a 95% UCL of the arithmetic mean, assuming there is sufficient data to calculate one, may produce more reliable values for Site averages. In instances where not enough data exist to calculate a reliable mean, the maximum concentration should be used. In

addition, when conducting averaging of soil results, please provide a table of the data used in each calculation, and summarize the data along with other statistical measure such as mean, median, max, 95%ile, 95% UCL, and any other useful measures used to describe the dataset. Also describe how non-detects are handled in any calculations. For example, when using the benzene concentration data summarized in the “Summary of Shallow Soil Analytical Results” included in Appendix B, the soil concentrations for locations outside of the ‘Former Hortonsphere’ excavation area generate a maximum concentration of 114 µg/kg, 95%ile of 85 µg/kg, and a 95% UCL of 50 µg/kg. It is apparent that the 15 µg/kg listed in the “Average Soil Concentrations” Table in Appendix B-1 is an underestimate of what is likely the average soil concentration for this area. Similarly, for the shallow soil benzene concentrations inside the excavation area for the ‘Former Hortonsphere’, the maximum concentration is 366,000 µg/kg, 95%ile of 315,600 µg/kg, and a 95% UCL of 275,623 µg/kg. Again, the geometric mean calculated for this area (79,982 µg/kg) is likely underestimating the average concentration within the excavation area. Although the ‘Former Hortonsphere’ shallow soil concentration data is the only portion of the Site which the Department checked to evaluate the effect of utilizing different methods of calculating the mean to characterize Site soils, it is likely that the average calculations for all the Site sub-areas are underestimates of average soil concentrations if the geometric mean was utilized to characterize average soil concentrations. **If these geometric means are used to determine compliance for soil cleanup, to calculate treatment rates, or to calculate degradation rates, the resulting calculations will likely underestimate contaminant concentration and mass and also result in an underestimate of time to achieve cleanup criteria and ultimately Site closure.**

Appendix B-1, PDF page 153, Summary of Shallow Soil Analytical Results and Summary of Deep Soil Analytical Results:

1. Bold font is used to highlight NR 720 Industrial Direct Contact exceedances in the “Shallow Soil” tables; there are instances where some values in bold are not exceedances, and some instances where exceedances are not in bold. Please revise and correct these errors.
2. Bold font is used to highlight NR 720 Groundwater pathway exceedances in the “Deep Soil” tables; there are instances where some values in bold are not exceedances, and some instances where exceedances are not in bold. Please revise and correct these errors.
3. Tables should also use italics or other means to distinguish NR 720 groundwater pathway exceedances.
4. When listing non-detect values in the tables, the associated detection limit should be used, not ‘ND’.
5. Explain why some samples are listed as “Missing on Map” – are they truly samples where the location is unknown, or are they simply not depicted on the figure included in Appendix B-1? Explain how or if these sample concentrations are used in the averages calculated for each sub-area.

Appendix B-1, PDF page 196, Summary of 2017 and 2020 Groundwater Analytical Results:

The table does not have a key to indicate why bold and italic text is used to highlight certain results. Presumably it is used to highlight exceedance of the Wis. Adm. Code ch. NR 140 PALs and ESs, but if so, there are many errors. Please revise and correct.

Appendix B-2, Material Management Flow Diagram:

This diagram appears to show ORC being mixed with the ‘Non-Impacted’ soil. The text of the RAD does not state this is planned. If excavated contaminated soil is treated with ORC it will have to be shown through analysis that contaminant concentrations are below the Wis. Adm. Code ch. NR720 RCLs for the protection of groundwater and meet the other requirements of Wis. Adm. Code ch. NR718 prior to returning the soil to the excavation. See General Comment #3.

Appendix B-2, PDF page 211, Former MGP Gas Holder Excavation:

This sheet appears to say that of the 3,695 cubic yards of excavation volume, 134.3 cubic yards is ‘impacted’. The Gas Holder Soil Ratios indicate that 85% of the soil is ‘impacted’. 134.3 cubic yards is not 85% of 3,695 cubic yards. This is an example of where information in the appendices is not explained or presented clearly. Information on this sheet and subsequent sheets needs explanation and clarification.

Appendix B-2, PDF page 216, Biosparging Performance Summary” Tables:

1. No units are given for the columns containing chemical concentrations. Edit all tables to show units.

2. One of the tables lists the average overburden concentrations. Define how these average values were derived. Values of 16,000 for benzene (no units given). Assuming the units are  $\mu\text{g}/\text{kg}$ , these average overburden concentrations exceed both the Wis. Adm Code ch. NR720 groundwater pathway and direct contact RCLs. Why is this material called overburden? Please define how the term ‘overburden’ is used here and in the rest of the RAD. See General Comment #7.

Appendix B-3, Table B.2 Vented Pile 3 & 4:

1. This table includes parameters in both metric and imperial units. Please clearly label all columns with the appropriate units.

2. Soil pH affects soil  $K_{oc}$ . Was the potential impact of significant cement plant fines from the cement plant activity or the ‘lime like material’ encountered during the site investigation assessed?

3. ‘% Removed’ columns – why don’t the percentages listed in the column sum to 100%, or in some cases exceed 100%?

Appendix D-1, Summary of Calculations for Biosparge and MNA Performance, Methodology and Approach:

MNA must show that natural attenuation will achieve compliance with the Wis. Adm. Code ch. NR140 Groundwater Quality Standards in a reasonable period of time not the “Site-specific biosparge and MNA target concentration” endpoint selected by SWL&P and Foth (Wis. Adm. Code § NR726.05(6)6.(b). Include calculations to indicate the estimated time necessary to achieve Wis. Adm. Code ch. NR140 Groundwater Quality Standards.

Appendix D-1, PDF page 344, Table 1-1 Total Estimated Mass on Site (Benzene >5 mg/L):

This table is not referenced in the text of this section and it is not clear how it supports the methodology and analysis in this section. It is also labeled “Benzene > 5 mg/L”. It is unclear if this table is discussing mass of contaminants in soil or water or both. It may be this concentration is supposed to be 5 mg/kg? Please correct this or explain the purpose of this table in the text of this section. Not accounting for mass of contaminants with concentrations from the Wis. Adm. Code ch. NR720 groundwater pathway RCL and the Site specific 5 mg/L (5 mg/kg?) will underestimate the quantity of contaminants present and the Site and result in modeled natural attenuation predictions concluding the Site will achieve cleanup levels more rapidly. Provide a calculation of the total estimated mass including all contaminant mass greater than the Wis. Adm. Code ch NR720 groundwater pathway RCLs or the Wis. Adm. Code ch. NR140 Groundwater quality standards for comparison to the calculations provided in this section.

Appendix D-1, PDF page 357, Section 5, Calculation of Mass Flux Rate:

It is not clear how the mass flux area was measured. Referencing the cross sections without an explanation and justification for the values chosen is not adequate. Provide the sample results and other observations used to support this calculation. It appears the 100-foot length would only cover the contamination in the Hortonsphere area, not both the Hortonsphere and gas holder area.

Appendix D-1, Section 7, PDF page 361, Biosparge and MNA Effectiveness and Time Frame, second bullet:

The ORC in the deep fill material may help remediate benzene and other contaminants leaching from the remaining soil contamination but due to the low permeability of the clay soil it is suspected the ORC will not remediate remaining contamination beneath and outside of the area of excavation. Groundwater monitoring will provide information on the effectiveness of the ORC.

Appendix D-2, page 449:

SVE pilot testing concluded that the actual ROI for a vertical well was 15 feet as opposed to the theoretical 30 feet. With implementation of an engineered low-permeability surface cover, the ROI is anticipated to expand to approximately 20 feet. Discuss whether these conclusions hold true for a shallow horizontal well and if so, provide specifications for the engineered low-permeability cover that will provide the additional ROI and prevent short circuiting.

Appendix E, PDF page 660, Specifications, Section 02 61 13, Part 2 Products, 2.1 Barrier Fence:

This section should include appropriate warning signs required in Wis. Adm. Code ch. NR714.07(4). See comment on Figure A-7.

Attachment 3 Calculations, PDF page 820, Aqtesolv Summary Output:

See comment for Figure C-2, Typical Railroad Section.

Attachment 3 Calculations, PDF page 821, Aquifer Parameter Summary Table:

Hydraulic conductivity measurements were not conducted at the MW-3 and MW-4 location. The DNR expects hydraulic conductivity testing will be conducted at the location of MW-3R, MW-4R and the piezometers installed with MW-3R and MW-4R for natural attenuation evaluation.

**Construction Quality Assurance Plan**

Construction Quality Assurance Plan, PDF page 859, Table 4-1, Groundwater well abandonment:

Construction Acceptance Criteria for the groundwater well abandonment includes both Wis. Adm. Code § NR 812.26 and Wis. Adm. Code § NR141.25. All reference to Wis. Adm. Code in this table should be labeled as Wis. Adm. Code.

Table 4-1, Construction Acceptance Criteria for Vented soil pile construction should include Wis. Adm. Code ch. NR718.

Table 4-1, Construction Acceptance Criteria for Excavation material confirmation sampling should not label that soil < industrial shallow soil RCL is non-impacted material. The DNR considers this material contaminated as that term is defined in Wis. Adm. Code NR700.03(7). See General Comment #7.

Table 4-1 Construction Acceptance Criteria for Backfill of non-impacted material and clean fill: The DNR is not granting an exemption to the location standards contained in Wis. Adm. Code ch. NR718.12(1)(c). Therefore, soil contaminated at concentrations greater than the Wis. Adm. Code ch. NR720 RCLs for the protection of groundwater is not to be returned to the excavation. See General Comment #3.

Construction Quality Assurance Plan, PDF page 862, Section 5.1:

Daily inspection reports should also contain records of any public complaints received and follow-up taken to correct the situation.

Construction Quality Assurance Plan, PDF page 862, Section 5.3:

The DNR will not review this Site for closure until it can be shown that the requirements of case closure contained in Wis. Adm. Code ch. NR726.05 are met. Adequate post-construction and post-operation monitoring will be necessary to document compliance with Wis. Adm. Code. See General Comment #1.

**Remedial Action Operations, Maintenance, and Monitoring Plan**Section 1.1 and 1.2, PDF page 883-886, Overview and Purpose:

See General Comment #1-8 and specific comments above.

Section 2.4, PDF page 892, first paragraph, second to last sentence:

See comment: Table 1-1, Center Column, Evaluate SVE Recovered Air Data above.

Table 1-1, PDF page 927, Performance Monitoring to Achieve Remedial Action Objectives:

See comments:

Table 1-1, Left Column, Shallow Soil Excavation, Evaluate Soil Data above.

Table 1-1, Left Column, Deep Soil Excavation, Evaluate Soil Data above.

Table 1-1, Center Column, Evaluate SVE Recovered Air Data above.

Table 1-1, Center Column, Evaluate Soil Data above.

Table 1-1, Right Column, Monitored Natural Attenuation, Monitor Long Term Groundwater Network above.

Table 1-1, Right Column, Evaluate Groundwater Data, Evaluate Groundwater Data Results above.

**Erosion Control and Storm Water Management Plan**

The DNR RR Program will rely on the DNR's Wastewater Program and the City of Superior to comment and provide permit approval for the Erosion Control and Storm Water Management Plan.

**Field Sampling Plan**Section 2, PDF page 1223-1224, Objectives:

See General Comment #1-8 and specific comments above.

Section 2.2, PDF page 1224, Monitoring Approach, first sentence:

The ROAR developed target concentrations for the remedial action which are not consistent with the term Environmental Standards in Wis. Adm. Code § NR700.03 (20) referenced in the footnote on page 2 of the Field Sampling Plan. The exception to this is removing soil with direct contact exceedances of the Wis. Adm. Code ch. NR720 industrial RCLs. Clarify this sentence.

Section 2.3, PDF page 1225, Monitored Natural Attenuation:

See General Comment #5.

Section 4.3, PDF page 1231, Soil Excavation Confirmation:

The DNR is not approving using soil with contamination above the Wis. Adm. Code ch. NR720 groundwater RCLs to be placed back into the excavation. See General Comment #3. Also, a clear definition of the term 'overburden' is not included in any of the reports reviewed for this letter. See General Comment #7. Section 4.3 requires modification.

Section 4.4, PDF page 1232, Backfill Confirmation:

See General Comment #3. Section 4.4 requires modification.

Section 4.8.1, PDF page 1235, Well Network:

See comment Section 2.1.5, page 19, first paragraph above.

Section 4.9.1 PDF page 1237, Perimeter Air Monitoring, first paragraph:

This paragraph mentions the COCs being measured include particulate matter, naphthalene and benzene whereas the Air Management Plan appears to include all BTEX compounds being monitored. This discrepancy needs clarification or correction.

Section 4.10, PDF Page 1238, Biosparge/ SVE Monitoring:

See General Comment #2.

Section 7, PDF Page 1251, Methods for Evaluating Compliance with RAOs:

Modify this section to include comparison of results to the Wis. Adm. Code ch. NR720 Residual Contaminant Levels for the protection of groundwater.

Section 8, PDF page 1252, Contingency Plan for Non-Compliance:

In addition to extended monitoring to meet SWL&P's and Foth's 'remediation goals', add to this section that extended monitoring may be needed to meet the requirements for Site closure under Wis. Adm. Code ch. NR726.

Section 8.2, PDF page 1252, Excavation Extents and Confirmation:

Add a description of actions to be taken if confirmation samples concentrations are greater than SWL&Ps and Foth's Excavation target concentration of 5 mg/kg benzene.

Table 2-1, PDF page 1257, Footnote 4:

The definition of Groundwater Protection RCLs is incorrect. A residual contaminant level based on the protection of groundwater is a numerical value expressing the concentration of a substance in soil which is considered protective of groundwater quality not protective of human health from direct contact. Correct this footnote.

Table 8-1, PDF page 1265, Verification Sample Results Evaluation Matrix, Non-impacted Soil:

See General Comment #3.

Table 8-1, PDF page 1265, Verification Sample Results Evaluation Matrix, Impacted Material:

Is the reference to Impacted Material (benzene or naphthalene >100 ppm) supposed to be >10 ppm? If >100 ppm is correct this needs explanation in the table as well as in the text of the reports.

**Remedial Action Quality Assurance Plan**

No Comments

**Air Management Plan**Section 2.10.1, PDF page 1452, Field Documentation:

This subject needs further detail. What is the process for registering a complaint? What outreach will be conducted over what area to notify businesses and residents of the work that is occurring and how to register a complaint? When a complaint is received what is the process for investigation and resolution of the complaint?

Section 5, PDF page 1462, Public Communication, First Paragraph, Last Sentence:

The DNR requests copies of all information supplied during this effort as well as a listing of business and properties contacted as well as detailed documentation of these efforts. The Douglas County Health Department should also be contacted and copied on the same information presented to the public. Add to this section that the DNR will be copied on any complaint received.

**Continuing Obligations**

The DNR received copies of the notifications to affected off Site properties on December 1, 2021 from SWL&P. The notification submitted to the DNR did not contain figures or the cover letters. The DNR subsequently received copies of the entire submittals from the City of Superior and Graymont. The notifications provided to Graymont and the City of Superior are inadequate for the following reasons and will need to be resubmitted:

- The cover letter to the notifications indicate they are draft.
- The notifications are not signed by SWL&P.
- The notifications do not include a proper description of the extent of soil or groundwater contamination
- The notifications do not depict the extent of soil or groundwater contamination on the included figures.

In order to complete the establishment of continuing obligations for the Site the DNR requires the resubmittal of the notifications as required in Wis. Adm. Code ch. NR725, submittal of a completed database package as required in Wis. Adm. Code ch. NR722.15(2)(d)6., and the database fees required in Wis. Adm. Code ch. NR749.04 Table 1 for sites with soil and groundwater contamination. SWL&P was notified a database package was required in the DNR's April 16, 2021 60% RAD letter. The corrected notifications, database package, and fees are needed prior to DNR approval of the final RAD.

The DNR appreciates the opportunity to comment on the RAD. Please contact me at [john.sager@wisconsin.gov](mailto:john.sager@wisconsin.gov) or call me at 715-919-7239 if you have questions or if you would like to discuss the contents of this letter.

Sincerely,



John Sager  
Hydrogeologist  
Remediation and Redevelopment Program

C: File  
Erin Hughes, Foth  
Chris Saari, DNR