



March 15, 2021

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[sent electronically]

Subject: Revisions Needed - Site Investigation Work Plan, Downstream of Hayton Mill Pond Dam, Rev. 1, January 2021, BRRTS 02-08-587108

Dear Mr. Harvey:

Thank you for submitting the Site Investigation Work Plan (SIWP) and Quality Assurance Project Plan (QAPP) for the South Branch of the Manitowoc River downstream of the Hayton Dam, dated January 14, 2021. Please note the new BRRTS tracking number for this area: BRRTS 02-08-587108.

The SIWP and QAPP are not approved. Attached please find the department's comments on the SIWP and QAPP. The purpose of a site investigation is described in Wis. Adm. Code § NR 716.01 "*.... site investigations provide the information necessary to define the nature, degree and extent of contamination, define the source or sources of contamination, determine whether any interim actions, remedial actions, or both are necessary at the site or facility, and allow an interim or remedial action option to be selected that complies with applicable environmental laws.*" A site investigation may be an iterative process where information collect in one step may inform the process of the need for further evaluation, analysis or data collection in order to meet the overall objective of the site investigation.

The department has reviewed the scoping statements for emerging contaminants PFAS and 1,4 Dioxane included in this SIWP. The department concurs with your determination that sampling for these compounds is not required at this time. This concurrence may change if additional information is received.

The comments provide are intended to refine the SIWP in an attempt to improve the work product and assist with compliance with the regulations. The comments should not be interpreted as all of the changes to the SIWP that will be necessary to successfully meet the regulatory requirements of a complete site investigation. Please revise and re-submit the SIWP and QAPP with a technical assistance review fee.

Please contact me if you wish to discuss this further.

Regards



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Attachment: WDNR Comments on the Site Investigation Work Plan (SIWP), Additional Investigation Sampling Plan, Downstream Hayton Millpond Dam, Chilton, Wisconsin, January 2021, Rev 1, March 15, 2021

Ecc: Carrie Williamson, Tecumseh Products Co.  
Jason Smith, Tecumseh Products Co.  
William J. Nelson, DNR LS/8

**WDNR Comments on the Site Investigation Work Plan (SIWP), Additional Investigation Sampling Plan, Downstream Hayton Millpond Dam, Chilton, Wisconsin, January 2021, Rev 1**

**March 15, 2021**

1. Note: a new BRRTS # for OU5 has been assigned per the Negotiated Agreement: 02-08-587108 HARP Downstream of Hayton Millpond Dam
2. General Comment: Be aware that the site investigation process can be iterative, may change in scope for the media or geographical area requiring investigation, and additional sampling and an associated site investigation work plan (SIWP) may be required to complete the site investigation for OU5.
3. Thank you for including DNR form 4400-316 SIWP Checklist in the report appendix. The checklist and the annotated comments with section references was helpful in the review of the SIWP.
4. Section 3.13 Emerging Contaminants – The department has reviewed the scoping statements for emerging contaminants PFAS and 1,4 Dioxane included in this SIWP. The department concurs with your determination that sampling for these compounds is not required at this time. This concurrence may change if additional information is received.
5. Degree and Extent – the SIWP has not defined the extent of the contamination below the Hayton Dam. The WP Scoping is to be used to present evidence as to the extent of contamination, based on existing data, or evidence of unimpacted media below the Dam. If the degree of contamination is unknown the WP must provide the steps that will be taken during the investigation to determine the extent. For example, PCBs were measured above background in sediment and fish at Clarks Mill, 26 miles below the dam.
  - a. The SIWP has proposed a study area extending 2 miles below the Dam. Please provide a rational for why this is the appropriate study area.
  - b. If the proposed study area is something less than the area impacted by contamination provide a rational as to why it is appropriate to focus an investigation in this area.
6. NR 716.07(2) requires that the SIWP include information on the knowledge of the type of contamination and the amount of the contamination. The Form 4400-316 Checklist identified the SIWP Section 3.2 as containing the information required for NR 716.07(2). Add the following information to Section 3.2:
  - a. Summary of past data on PCBs in water, fish and sediment.
  - b. Include a summary of PCB data from the Hayton Millpond.
  - c. The sediment data collected in OU5 by the WDNR and TRC. Provide a map of these results.
  - d. Past water data on PCBs, e.g., USGS.

- e. The information in this section should be sufficient to explain the current knowledge of contaminant concentration in the environmental media.
7. Section 3.4 Environmental Media Potentially Affected (NR 716.07(4)) – Examples of water and fish data are presented. One PCB water sample from 2003 is presented. There are other water data such as samples from the millpond from 2001 and 2003 with concentrations up to 334 ng/l that may also be relevant in assessing potential effects. Nineteen fish samples were collected below the dam from 2015. This information may be combined with the information in Section 3.2.
- a. Compile relevant water data for the site in the Scoping Section and compared the data to numeric environmental standards such as water quality criteria for the protection of aquatic life and humans. Water quality criteria must include numeric and narrative criteria, designated use, and anti-degradation.
  - b. Fish tissue data should be compiled in the Scoping Section and compared to numeric criteria for human health and wildlife.
  - c. Sediment data for this study area must be compiled in the Scoping Section and compared to environmental standards.
  - d. Sample results shall be compared to environmental standards as discrete results, not averaged, composited, or normalized to other parameters.
8. Section 3.7 Potential or Known Impacts to Receptors –this section does not call out all potential receptors as required by NR 716.07 (7). Receptor is defined in NR 700.03 (47) as “... *environmental resources, including but not limited to, plant and animal species and humans, sensitive environments and habitats, water supply wells, and buildings or locations that have the potential to be, or have actually been, exposed to contamination.*”
- a. Please consider plant and animal species and humans as potential receptors. The species listed in Section 3.8 would appear to be a starting point for this evaluation.
  - b. Add an evaluation of human health risk from PCBs in sediment and upland soil including direct contact.
9. Section 3.8 Potential Impacts to Resources – This section is to address the requirements of NR 716.07 (8).
- a. Impacts to downstream areas due to off-site transport of PCBs by fish, aquatic life and streamflow should be evaluated.
  - b. The presence of PCBs in water, sediment, and fish should be evaluated on the potential impacts to species, habitat or ecosystems sensitive to the contamination.
  - c. The report evaluated threatened and endangered species and concluded no impact to these species. The report didn’t consider bioaccumulation and trophic transfer in the food chain that could affect the evaluated species.

- d. Other species that are known for sensitivity to PCBs such as mink should also be evaluated.
  - e. Wetlands – the report mentions the functions of wetland including habitat however the potential effects of PCBs on wetland organisms is not mentioned.
  - f. Outstanding Resources/ Exceptional Resource Waters- The text states these resources are not present in the study area. However, impacts to downstream ORW/ERW due to off-site transport of PCBs by fish, aquatic life and streamflow should be evaluated. If there are ORW/ERW downstream of the OU5 field investigation area, these resources should be listed and evaluated for potential impacts.
10. Section 4 Site Description – This section is intended to provide a general overview of the geological and physiographical setting of the SIWP. The report does not provide site specific information regarding topography, surface water drainage patterns, hydrogeologic features, texture and classification of surface soils and sediment, geology, hydrogeology, and potential pathways. Basic site-specific information regarding each of these topics should be provided, it is not sufficient to state “(they) will not affect the choice of sampling methods, and sample locations have been accounted for based on these factors.”
11. Section 5.1 Scope of Work – To define the degree and extent of site contamination the environmental media at the site must be sampled and analyzed.
- a. The WP has identified the 4000 foot reach below the dam for SI data collection.
    - i. The distance may or may not be adequate for the purpose of a SI.
    - ii. The study reach may be expanded if needed in the future.
  - b. Water column samples should be obtained for PCB analysis. Samples should be obtained in a variety of flow regimes and conditions to represent the expected variance of PCBs over time. Detection levels should be appropriate for the anticipated range of PCB concentrations.
  - c. Biological media must be evaluated to assess bioaccumulation and trophic transfer of PCBs. Insects, birds, and fish are resources that may be helpful in defining effects on biota. The Department is recommending an evaluation of fish and insects in this SI to assess these routes of bioaccumulation at this point in the investigation. Fish tissue have been collected in the study area in 2015. These data should be adequate for an evaluation of fish PCBs.
    - i. Aquatic macroinvertebrates should be sampled to assess this key foundation of the food chain and to evaluate the uptake of sediment and water column PCBs to the invertebrates and to the consumers of invertebrates. Invertebrates should be collected from soft organic sediment and sand/gravel areas using appropriate manual sampling protocols for wadable streams such as bulk grab sediment collection and nets.
    - ii. Invertebrate samples from mud and sand/gravel areas must be processed and analyzed separately.

- iii. The organic sediment sampled for invertebrates should also be collected for PCB analyses.
    - iv. Taxonomy analyses should be performed on invertebrates.
  - d. Sediment PCBs in the bed of the river are primarily associated with soft organic sediment as opposed to gravels, sands, or hardpan clays. The occurrence and distribution of soft anthropogenic sediment in the study area should be mapped (location, boundaries, thickness) ahead of sediment sampling to inform the study as to the appropriate sampling location to find sediment PCBs.
    - i. Section 5.2 setting up transect locations based on a 500-foot interval with a core collected 10-feet from each bank and the center of the channel, may make sense if the sediment is assumed to be universally impacted. However, it is more appropriate to locate the sampling both transects and core locations based on geomorphology evaluated in the field. DNR recommends a geomorphic evaluation of the distribution of soft anthropogenic sediment be completed prior to determining transects and core locations.
    - ii. Section 5.3.2 while past sampling has been completed with a 2-inch core tube it may not be appropriate for all areas based on sediment grain size and sorting. Alternative methods of sampling that will have improved recovery of the fine-grained fraction such as a grab sampler (e.g., ponar) should be used.
    - iii. Where a core sampler is specified, quality control criteria for acceptable core recovery must be established.
  - e. Bank face PCB deposits have been noted in prior sampling in the HARP project. Sediment sampling by the Department in 2014 found higher PCBs in sloughed bank material from the first cutbank meander below the dam and in the point bar deposit opposite the cutbank. These sediment PCB results were many times higher than millpond sediment indicating a localized PCB input to the study area. The river's eroding streambanks are the most likely source of the higher concentrations.
    - i. The SIWP must include bank scrape sampling to assess this source. Bank face sampling should be focused primarily on outside river bends and include grab samples of bank slump features at the base of cutbanks. The scrape samples should be performed in 1 foot intervals above the low water level of the stream with intervals collected up the bank face. Below low water elevation sampling of the banks should also be performed in one foot intervals.
    - ii. Add bank scraping sampling collection to 12 locations in the study area. Present the location of the scrape sampling in the SIWP and the procedures that will be used in the field to determine sample locations.
  - f. Point bar deposits are comprised in large measure from secondary circulation transport from bed and bank erosion at meander bends. These deposits should be mapped and targeted for sampling for PCBs.

- g. Section 5.2 Over bank sampling- the SIWP proposed to sample overbank soils based on a 500-foot interval. The sampling would be more productive in assessing this environmental compartment if the sampling was focused on bank areas that are likely to have experiences inundation by the river.
    - i. DNR recommends a geomorphic evaluation be completed prior to determining sampling locations. Overbank sampling should be performed in areas where soft sediment would tend to drop out of suspension during a flood event. The rational for the proposed locations must be presented.
    - ii. Grab sampling or soil cores are more appropriate for overbank sampling versus sampling soil with a sediment corer.
  - h. Sediment analyses – Sediment particle size and total organic carbon are important parameters to assess the behavior of sediment and trophic transfer of contaminants. These parameters should be added to the sediment analyses for a sufficient number of samples to characterize for a SI.
  - i. The QAPP must include appropriate SOPs for all data collection including references to established protocols.
12. Section 5.2 Sample Location Rationale - See comments 11 d & g. Sampling locations must be selected to identify the degree and extent of contaminates and should be based on a conceptual site model of locations where PCBs are likely to accumulate. Setting up transect locations based on a 500-foot interval with a core collected 10-feet from each bank and the center of the channel, may make sense if the sediment is assumed to be universally impacted. However, it is more appropriate to locate the sampling transects and core locations based on geomorphology evaluated in the field. DNR recommends a geomorphic evaluation be completed prior to determining transects and core locations.
13. Section 5.3 Sediment Sample Collection – The WP proposes to homogenize the upper 12 inches of a sediment core sample for laboratory analyses.
- a. Sediment collected by core sample must be subsampled for lab analyses by the 0-6 inch interval and the 6-18 inch interval when available. If the full 6-18 inch interval is not available, the portion that is available must be analyzed.
  - b. The SAP must specify recovery criteria for core sampling. Commonly a minimum recovery ratio of 75% is specified in sediment core sampling plans.
  - c. Sediment core recovery ratios must be recorded and reported in the SI report.
14. Section 5.3.3 Sediment Sample Processing – the WP proposes to use a pump to remove standing water in the core tube. A drilled hole or saw cut of the tube above the sediment water interface may be used to remove overlying water if appropriate measures are taken to preserve the fine material at the top of the sediment column. The core tubes may be drained if visual indications are that the water column sediment have settled, and fines will not be discharged by the draining of water.
15. Section 5.6 – This section should be inclusive for soil and sediment samples.

16. Section 5.7 QA/QC – Neither the SIWP nor the FSP associated with it included any field quality measures. This includes locational controls, recovery criteria (as mentioned in 13b) and procedures to prevent cross-contamination between sample locations.
  - a. Collocated or split cores (i.e. field duplicates) that are processed independently at a frequency of 5% are recommended to assess field variance.
  - b. Note that processing sample replicates (two aliquots from the same sample) at 10% as specified in the QAPP is an appropriate frequency.
  - c. Photo documentation is strongly encouraged.
  - d. As other environmental media are incorporated into the SIWP, appropriate field quality measures (e.g. blanks) should also be included.
  - e. Include specific information on how field duplicate and replicate are processed in the field or the processing facility to create samples.
  - f. See comments on the QAPP, modify this section as appropriate.
17. Section 6.0 Schedule/Reporting
  - a. SI Report - This section describes the reporting of the field data collection. The SI report must contain the information described in NR 716.15 including data collected in the field investigation and the information and analyses performed in the SI scoping stage of the investigation. Please clarify the text in Section 6.0 as to the proposed content of the SI Report.
  - b. Quality Assurance Information - The SI Report must include an evaluation of quality control data including the results of field duplicates, lab duplicates, and lab results for precision, accuracy and completeness.
  - c. SWAC - The text describes using a SWAC to assess the results of sediment sampling. The Department has used SWAC to assess the results after a remedial action not to assess the risk of contamination prior to a remedial action. If a SWAC is proposed to assess the risk in the study area it would constitute a risk assessment which is limited by NR 722.11. Risk assessment may be allowed for the purpose of developing environmental standards only if “Compliance with the applicable environmental standards listed in s. NR 722.09 (2) will not be protective of public health, safety and welfare and the environment; or attaining compliance with the applicable residual contaminant levels in ch. NR 720 is not practicable.” A SWAC may be presented in the SI Report but it will not be used by the Department to assess site risks.
18. Figure 2 - Add stream distance on the map @ 100 ft intervals, show all sediment data.



**WDNR Comments on the Quality Assurance Project Plan, Downstream Hayton Millpond Dam, Chilton, Calumet County, Wisconsin, January 2021, Rev 0**

19. Note: a new BRRTS # for OU5 has been assigned per the Negotiated Agreement: 02-08-587108 HARP Downstream of Hayton Millpond Dam.
20. There are several comments and changes required for the SIWP that will affect the QAPP; ensure that the QAPP is updated to reflect the changes to the SIWP.
21. The QAPP must include appropriate SOPs for all data collection including references to established protocols.
22. Section 1.2, 3<sup>rd</sup> sentence – “Dam” is incorrectly spelled “Dan”
23. Section 1.2.1 WDNR PM, Bill Fitzpatrick is in the Environmental Management Division, Bureau of Remediation and Redevelopment.
24. Section 1.4 Project Background and Description – The QAPP has defined the project boundary as 2 mile below the Hayton Dam: *“Pursuant to the Negotiated Agreement, WDNR required further characterization of the sediment and overbank soil downstream of the Dam, extending from the Dam to approximately 2 miles downstream of the Dam in the South Branch Manitowoc River.”* The quoted text must be changed. The Negotiated Agreement has no such statement on the boundaries of the site. TRC must provide justification as to why the 2 mile area is an appropriate investigation area for the purpose of this QAPP and SIWP.
25. Section 1.5.2, Step 2 Identify the Goals – The goals of the investigation are to fulfill the obligations of NR 716: “... to ensure that site investigations provide the information necessary to define the nature, degree and extent of contamination, define the source or sources of contamination, determine whether any interim actions, remedial actions, or both are necessary at the site or facility, and allow an interim or remedial action option to be selected that complies with applicable environmental laws.”
  - a. In the first sentence change “investigation” to “field data collection”
  - b. Add bullets to call out other data collection such as sampling for water and biological media and sediment mapping.
26. Section 1.5.7 – sediment subsample intervals. Soft sediment from a core sampler should be separated into a 0-6 inch interval for homogenization and analyses. If present the 6-18 inch interval or portion of the interval retrieved should be separated for homogenization and analyses
27. Section 1.7.1 and 1.7.2 Records Retention – The duration of records retention should be until five years after the receipt of a NR 726 case closure.
28. Section 2.2.2 paragraph 1 provide additional detail as to when an alternate size core tube may be used e.g. what types of sediment might necessitate a wider diameter etc.
29. Section 2.2.2 - Core recovery criteria is not stated or assessed although the raw data would enable this to be done. See comment 13.

30. Table 2 - Holding times are incorrect for soil PCBs and do not match the laboratory SOP.