REGION 6
DALLAS, TX 75270

April 23, 2025

BY EMAIL

Mr. Charles W. Munce, P.E.
Project Coordinator
GHD Services Inc.
11451 Katy Freeway, Suite 400
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Mail to: charles.munce@ghd.com

Re: Comments on Revised 100% Remedial Design - Northern Impoundment San Jacinto River Waste Pits Site Administrative Settlement Agreement and Order on Consent, EPA Region 6, CERCLA Docket No. 06-02-18 for Remedial Design

Dear Mr. Munce:

The Environmental Protection Agency (EPA), along with other agencies and stakeholders, has reviewed the November 25, 2024, submission of the deliverable entitled Revised Final 100% Remedial Design - Northern Impoundment for the San Jacinto River Waste Pits Superfund Site (Site). The Revised Northern Impoundment 100% Remedial Design (RD) deliverable was prepared pursuant to the requirements of the Administrative Settlement Agreement and Order on Consent for Remedial Design, Docket No. 06-02-18 (Settlement). Based on the reviews conducted by EPA and stakeholders, the following comments are enclosed to be addressed pursuant to the Settlement. In accordance with the Settlement, the Respondents shall resubmit the deliverable on May 23, 2025, for EPA approval. Please contact me if you have any questions regarding the comments or wish to set up a call to discuss them. You may reach me at 214-665-2730.

Sincerely,

Robert M. Appelt
Remedial Project Manager
Superfund Emergency Management Division

100033529

Enclosure

cc: Brent Sasser, P.E., Senior Environmental/Remediation Manager, International Paper Company
Judy Armour, P.E., Senior District Manager, McGinnes Industrial Maintenance Corporation
Sonja Inglin, Counsel for International Paper Company
Tobias Smith, Counsel for McGinnes Industrial Maintenance Corporation
Katie Delbecq, Texas Commission on Environmental Quality
Latrice Babin, PhD, Harris County Pollution Control District
Trae Camble, Port of Houston Authority
Jeanne Javadi, Texas Department of Transportation
Susan Snyder, National Oceanic and Atmospheric Administration

EPA Comments on the Revised Final 100% Remedial Design Deliverable Submitted on November 25, 2025 ("Revised 100% RD")

Administrative Settlement Agreement and Order on Consent for Remedial Design, CERCLA Docket No. 06-02-18 ("Settlement")

San Jacinto River Waste Pits Superfund Site ("Site"), Northern Impoundment

April 23, 2025

Revised 100% RD Report

1. **General Comment on the Revised 100% RD**

EPA has noted that responses to EPA's prior comments on the 100% RD as summarized in **Table 1-1** of the Revised 100% RD are not consistently incorporated into revisions to the text, figures, tables, attachments and/or appendices of the Revised 100% RD. This has the potential to lead to confusion with use of the RD by contractors bidding and implementing the design. In order to create an as accurate as possible 100% RD and minimize confusion that could lead to delays or issues with implementation of the project, the comment responses that are provided in **Table 1-1** of the Revised 100% RD and in response to this set of additional comments, as well as comment responses in Table 1-1 of the July 17, 2024, 100% RD submitted previously, need to be fully incorporated into the text of the re-submitted 100% RD.

2. **General Comment on the Revised 100% RD**

The RD report, attachments and appendices in the Revised 100% RD do not clearly identify the exact nature of the changes from the 100% RD. To facilitate EPA's review, the Respondents should submit both a clean version and a "redline strikeout" version of the re-submitted RD deliverable due 30 days after receipt of these comments, showing the changes between the Revised 100% RD and the re-submitted 100% RD.

3. **General Comment on the Revised 100% RD**

Multiple EPA comments require changes that impact different parts of the 100% RD beyond the sections specifically referenced, including sections in other parts of the Revised 100% RD Report and its attachments and appendices. This was noted in the comments on the July 17, 2024, 100% RD, but occurrences are still identified in the Revised 100% RD where a change in one part of the document was not consistently carried throughout the entire document. The Respondents need to ensure that when changes are made, that the changes are tracked throughout the entire RD, and that all impacted sections, attachments, and appendices are updated and internally consistent. This will prevent confusion or introduction of uncertainties that could require additional clarification; facilitate review of the revised deliverable; and clearly define the requirements and objectives for the selected Remedial Contractor (RC) as it implements the RD.

4. **General Comment on the Revised 100% RD**

The Revised 100% RD allows the RC to decide specific means and methods for implementation of some aspects of the selected remedy. The RC's proposed means and methods must be provided to EPA for review and approval prior to remedy implementation through Respondents' submission to EPA of updated supporting deliverables, plans required pursuant to the Design Specifications, and if required by EPA, an updated RD deliverable including drawings and specifications. Once approved, any changes need to be consistently propagated through the entire RD package.

5. Section 3.4.1.1 Compliance with the Texas Surface Water Quality Standard – Dioxins and Furans

Respondents' response to comment No. 6 in **Table 1-1** of the Revised 100% RD does not fully address the referenced EPA comment on **Section 3.4.1.1** of the 100% RD. The term Minimum Limit (ML) is not clearly defined in the 2nd paragraph, 3rd bullet, and it remains unclear if this is the same as the Limit of Detection (LOD) and whether it is below the Method Detection Limit (MDL) or the Limit of Quantification. While the ML is defined in the 4th bullet of the 2nd paragraph of this Section, it needs to be clarified in the RD Report that the ML is below the MDL, but it cannot be accurately quantified. Furthermore, it should be noted that ML is not exactly the same as the LOD which is the lowest level a concentration of an analyte can be detected at with a certain degree of confidence, while the ML is the lowest concentration of the substance that can be reliably distinguished from a blank sample.

6. Section 5.2 Remedial Approach – *Seasonal Excavation and Lateral Excavation Extent*

In EPA's comments on the 100% RD, as summarized in response to comment No. 10 in **Table 1-1** of the Revised 100% RD, EPA noted that the 100% RD did not address the full range of potential hydraulic heave mitigation strategies which are discussed in the Hydraulic Heave Report or suggested by the EPA and the USACE in EPA's prior comments and correspondence. For areas with potential heave outside of the Northwest Corner, the specifications identify only three potential excavation options in **Part 31 23 16 Excavation**, **Section 3.4 Heave Mitigation**, without additional options specified or potential methods to evaluate any other options later proposed by the RC.

In response to comment No. 10 in **Table 1-1**, Respondents noted that "*Section 31 23 16 Excavation, Paragraph 1.3.C, of the Design Specifications, requires the RC to submit a Heave Mitigation Plan and "Provide detailed procedures for excavation in the potential heave areas that includes provisions for off-setting heave." The RC has the option to consider mitigation measures listed in Paragraph 3.4 of the specification or propose other measures that will off-set heave. As stated in Response to EPA Comment #2, supporting plans that are updated with RC means and methods (including the Heave Mitigation Plan) will be provided to EPA for review and approval."* If the RC is allowed to evaluate and select other heave mitigation options, the language in the fifth paragraph of **Section 5.2** needs to be clarified to indicate that the RC will develop and present heave mitigation strategies in the Heave Mitigation Plan which will be provided for EPA review and approval prior to commencement of the excavation activities. This information should also be included in the relevant specifications.

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7. Section 5.2 Remedial Approach – *Seasonal Excavation and Top of Wall Elevation*

The last sentence of the fourth paragraph has been changed (per **Table 1-1**, response to comment No. 12) to indicate that the water that is accumulated in the BMP impoundment will be handled as

"non-contact water" as described in **Section 5.9.2** and returned to the river. This statement assumes that no other conditions are present, or no events have occurred, that could have resulted in the water coming in contact with waste material and thus needing to be handled as "contact water." Discussion needs to be added that describes what processes are in place to ensure that this does not occur, and to prevent the accidental release of "contact" water that may accumulate in the BMP impoundment between excavation seasons.

8. Section 5.2 Remedial Approach – *Seasonal excavation and Top of Wall Elevation* – General Comment

As noted in several of the following comments, the height of the wall has been increased by 1 ft from the 90% RD to the 100% RD. As discussed in Comment 2 above, the changes to the RD in response to EPA's comments need to he made throughout the entire document. Furthermore, in the case of the wall height increase, there are numerous places within the Revised 100% RD, including its attachments and appendices, where the wall height is used for calculations or other purposes where the increase in height is not acknowledged or addressed. The entire Revised 100% RD must be reviewed to ensure that the increased wall height is consistently applied and that the increased height does not negatively impact any of the design specifications and calculations or require other changes to the design be made.

9. Section 5.2 Remedial Approach – *Excavation Approach*

Section 5.2 states that the 100% RD "*excavation surface results in approximately 230,000 cubic yards of total volume removed.*" Similar statements are made in **Sections 5.3.4, 5.6.3.4**, and **5.8.2.2**. None of these statements distinguish between volumes of waste exceeding the cleanup level and volumes of potentially unimpacted material excavated from the historic berm or TCRA cap rock, nor do any of these statements reference detailed calculations of estimated volumes as an attachment or appendix to the 100% RD. The response to this Comment (**Table 1-1**, response to comment No. 19) in the Revised 100% RD provides some clarification on this issue. The response from **Table 1-1** needs to be incorporated into the discussion in this section and the other listed sections to distinguish between impacted and potentially unimpacted material to be excavated, and calculations to support the estimated volumes clearly provided and referenced.

10. Section 5.2 Remedial Approach – *Excavation Approach*

Figure 5-D indicates that the target excavation depths associated with potential heave are in red. In the Northwest Corner there are three borings, SJB056-C1, SKB097, and SJB103, which do not contain any inventoried waste material and have from 7 to 10 feet of material above the heave line as shown in **Table 5-1** of the Revised 100% RD. However, all three boring locations are depicted in red in Figure 5-D, indicating that after excavation they will be below the potential heave elevation. Provide either a note explaining this occurrence or revise the figure as needed to correct.

11. Section 5.2 Remedial Approach-*Excavation Approach* - Table 5.1

The description of **Table 5-1** includes language stating that the "*excavation surface will be refined on the confirmation sampling, which would be used to determine whether the clean-up level has been achieved, as detailed in the FSP (Appendix J, Attachment 3) and in Section 5.6.4.*" Per previous EPA comments, the pre-excavation sampling is not to be considered "confirmation sampling" and thus the

references in this section to it as such are incorrect, as well as the use of these samples to determine if the clean-up level has been achieved. This language needs to be removed, and the description revised to indicate that the pre-excavation samples are being collected to determine revisions to the previous developed excavation surface to demonstrate that the revised excavation surface will encompass the identified waste.

12. Section 5.2 Remedial Approach – *Water Management*

This section has been modified to clarify how non-contact water is managed verses contact water. However, in the second paragraph it discusses how water that "somehow" comes in contact with waste or contains suspended waste material will be treated as "contact water" and treated as such. However, as with the comment above for **Section 5.2 Remedial Approach – *Season Excavation and Top of Wall Elevation,*** there needs to some discussion here, or a reference to a discussion elsewhere in the RD, regarding the process to identify and track circumstances where there is potential contact between accumulated water and waste. The current discussion does not present a process by which potential contamination of "non-contact Water" in between excavation seasons or during pauses will be checked and documented to ensure that water is properly classified as "contact" or "non-contact."

13. Section 5.4.1 Property Access

The design indicates that approximately "*15 to 20 acres of dry land to utilize for lay-down storage of equipment, water storage and treatment, office trailers and parking"* will be required to implement the design. Have the locations for these activities been identified? Also, what modifications will need to be made to the design for different locations, especially the water treatment system and in particular conveyance lines to move the water from the BMP impoundment to the WTS and storage, then finally to the discharge point? The design should be updated to include these areas if known. Additionally, the design drawings and specifications should be updated to include the specifics of the conveyance system requirements and installation once locations are identified. Also, what other activities, such as the access road improvements will require agreements with property owners? Have those owners been identified?

14. Section 5.5.3.3 Scour at the BMP exterior

This section discusses the use of scour modeling to determine potential for scour along the exterior of the BMP. The modeling appears to be based off the current shoreline profile for the Site. It is discussed elsewhere in the design that the access road improvement will potentially include the widening of the useable area by filling and extending the shoreline to the west of the BMP to allow for an additional lane of traffic capacity. Was this shoreline modification accounted for in the scour modeling or is the proposed scour protection sufficient to mitigate any potential increases in scour along the exterior of the BMP structure? An evaluation of the effects of this potential shoreline modification on the scour modeling should be included in this section.

15. Section 5.5.4 Load Combinations

In listing the parameters used for the LC#5, the hydrostatic load was assumed to be +9 ft NAVD88, however as the BMP wall is now 1 foot taller, it seems this value should be +10 ft NAVD88. The calculations should be redone for the corrected wall height which in turn would result in a larger hydrostatic load. Also, the other Load Combinations should be checked to ensure that the correct wall

height is used consistently throughout.

16. Section 5.5.5.3 Embedment Depth – *Walers*

It appears there is an incomplete sentence at the end of the 2nd paragraph in this section; please revise this paragraph: "*The waler are evaluated as simply supported multi-span beams with tie-rods providing the support reactions. The walers are also evaluated for condition with a longer span (150 percent) accounting for a tie-rod failure thus able to redistribute loads to the adjacent tie-rods. The walers are designed using allowable stress design method in*". The missing information needs to be provided as well as its relation to the information in ***Table 5-E***.

17. Section 5.5.6.1 Cross-Section C2

The wall height for both the inner and outer walls of the BMP in the second sentence is given as 24 ft, however this is the same wall height that was provided in the 90% RD prior to the increase of the exterior wall height by 1 foot. This change should now make the exterior wall height 25 ft.

18. Section 5.6 Excavation Procedures – General Comment – Post Excavation Sampling

Post-excavation confirmation sampling is an essential step in the Superfund cleanup process that provides EPA the ability to verify that the remedial action objectives have been achieved. Post Excavation sampling needs to be included as part of the overall determination for the success of the remedial action. The Respondents should provide a detailed discussion that demonstrates how the proposed post excavation sampling effort will be performed and demonstrate its protectiveness. This discussion should include contingencies for addressing scenarios such as time constraints from non-excavation events including storms or excavation depths increasing to the point of unacceptable risks or unsafe conditions. This discussion also should define the potential risks that would limit the ability to collect post-excavation samples in some circumstances and what appropriate management should be taken, and how these risks differ between different areas of the Site.

19. Section 5.6.1 Pre-Excavation Sampling

The EPA does not agree with the use of composite samples for the pre-characterization sampling, and the 100% RD should be revised to incorporate collection and analysis of discrete samples to define the extent of the planned excavation surface. Analysis of discrete samples is more consistent with the purpose of the planned pre-excavation sampling. Removing Site waste above the cleanup level is the primary goal of the remedial action as outlined in the ROD. Proper management of the Site remediation requires evaluating how that goal will be achieved. The Respondents have proposed performing pre-excavation sampling to delineate the proposed final excavation surface and outline several potential benefits to the overall implementation of the RA. The locations of the RI, PDI and SDI samples do not provide consistent coverage of the planned area for excavation, and this is remedied by the proposed pre-excavation sampling locations. Furthermore, as indicated elsewhere in the Revised 100% RD, the areas to be excavated are not pre-defined, but will be based on many other factors. The use of the boring methodology and locations as described in the Revised 100% RD together with the collection and analysis of discrete samples, will provide stronger assurances that the excavation surfaces that are derived from the pre-excavation sampling will encompass and remove the identified wastes.

Additionally, the EPA agrees with the Respondents that pre-excavation sampling, including the collection of multiple samples at each location during a single field event, can be utilized to expedite the excavation process, potentially shortening the overall duration of the project. However, the recommendation for only collecting samples in one-foot intervals to a depth of 2 feet below the proposed excavation surface does not provide for sufficient confidence that the revised excavation surface will be successfully delineated. Samples collected to a depth of 5 feet in one-foot intervals and held for subsequent analysis if required would offer more confidence that the inventoried waste would be successfully excavated. This would also speed up the work schedule by eliminating the need to re-mobilize to the Site to perform additional rounds of drilling should the 1–2-foot sample have reported concentrations above the clean-up criteria. As discussed above the, the distribution of the previous boring locations is not uniform and increases the likelihood that additional sample intervals may be required in some locations where the target surface is being estimated from widely scattered borings from previous investigations.

20. Section 5.6.1 Confirmation Sampling

The Respondents did not adequately address EPA's comment summarized in **Table 1-1** of the Revised 100% RD, response to comment No. 48. TxDOT, Respondents and EPA participated in a call on October 10, 2024, in which TxDOT's concerns regarding the footprint of the southern BMP wall were discussed. During the meeting, the Respondents stated that the proposed pre-excavation sampling would provide information on final excavation depths that would allow them to assess the layout of the inner soil buttress and possibly reduce the footprint within the TxDOT ROW, but that the pre-excavation confirmation sampling would not be performed until after the BMP wall was completed. The response to EPA's comment on this issue provided in the Revised 100% RD states that the PRPs do not intend to perform any sampling prior to the installation of the BMP, so that the pre-excavation sampling could not be used to potentially determine if the southern BMP wall footprint could be shifted further north out of the TxDOT ROW. Respondents' statement that they do not intend to perform the sampling before BMP construction, without further discussion or evaluation, is insufficient. It should be noted during that October 2024 call, as well as in a meeting on November 11, 2024, the Respondents indicated that there are certain key borings along the southern portions of the planned excavation that would allow for a reassessment of the footprint, and that it was possible to perform borings at these locations prior to the installation of the BMP. If the data from the proposed pre-excavation confirmation sampling could be used to evaluate and facilitate the possible realignment of the BMP footprint in the TxDOT ROW and address concerns expressed by TxDOT on this issue, then the timing of the proposed pre-excavation sampling should be evaluated further to determine if there is value to performing it prior to the construction of the BMP wall in areas where the data could be used to further minimize overlap of the two projects.

21. Section 5.6.3.3 Excavation Procedures

The first paragraph of this section indicates that waste material that does not contain free liquids or require solidification/stabilization will be live loaded into trucks for transport to the off-site disposal location. The waste will need to be characterized in advance in some manner in accordance with the receiving facilities requirements, and this should be addressed in this section. There is also no discussion in **Appendix J, Attachment 3 – Field Sampling Plan – Northern Impoundment** that explains how ongoing waste characterization samples will be collected. It is understood that the exact analysis requirements and samples for volume of material to be disposed of will be per the requirements of the receiving facility, but also there needs to be discussion on how the samples will be collected to

ensure that they are representative of the excavated wastes and that the waste is being properly characterized and handled.

22. Section 5.6.3.3 Excavation Procedures

The Respondents did not adequately respond to EPA's comment summarized in in **Table 1-1** of the Revised 100% RD, response to comment No. 64. The comment presented concerned maintenance of the slopes once they are created by excavation of waste materials, but prior to removal of the BMP and restoration of the Site. It appears the perimeter excavation slopes are 3:1. The EPA comment asked if a slope stability analysis has been performed on the waste slopes in a dewatered state other than the analysis that was performed as part of the design for the BMP.

The Respondents' response indicated that the slopes would be maintained, but did not address how they would be maintained or present reference to other section(s) of the Revised 100% RD where this is discussed. Additionally, the response also states that the 3:1 slopes are not constructed in the waste material and the 3:1 slope was considered sufficient without further explanation. No answer was provided concerning whether a slope stability analysis was performed since the slopes would not be in the waste material. The resubmitted 100% RD should discuss whether a slope analysis has been performed on these slopes even if they are not constructed in the waste material to determine if the 3:1 slope is sufficient for the dewatered material that they will be constructed in.

23. Section 5.7.3.2.4 Dredging and Processing Equipment

The first paragraph of this section explains that if the total suspended solids (TSS) in the water from the containment sump is too high to be treated in the water treatment system (WTS), additional solids removal will be needed. Please also explain what the upper limit of the design range for TSS in the WTS is expected to be.

24. Section 5.7.3.2.5 Dredging and Verification Procedures

The last sentence of this section indicates that make-up water from the river and/or clean water treatment system effluent will be pumped into the area to help maintain the required water level. This section needs to be modified to include a statement that this make-up water, plus the water already in the area prior to excavation activities, will come in contact with waste materials and therefore will be handled as "contact water" despite its source.

25. Section 5.7.3.5 Residual Management Layer

The second sentence of the second to last paragraph on p. 81 states that the water level can be lowered below the sand level. Please revise "sand level" to "granular material level" for consistency with the rest of the section and the RD appendices. As stated in Comment 2 above, changes should be consistently applied across all sections, appendices, and attachments of the design.

26. Section 6.9.1.4 Waste Volume and Storage

The numbered list of different types of contact water on p. 88 starts with number 3 rather than 1; this needs to be corrected. Again, it appears that changes were made to the RD between the 100% RD and Revised 100% RD that were not consistently applied and reviewed.

27. Section 5.9.1.4 Waste Volume and Storage

In the response to Comment 81 in **Table 1-1** of the Revised 100% RD, the Respondents made the statement that "*Other seepage that occurs within areas that have already been remediated or from areas that are still covered by the TCRA cap would not be considered contact water. The groundwater seepage in the remediated areas would not be through impacted materials and seepage in the capped areas would not transport suspended solids with dioxin upward through the TCRA cap materia*l." The statement that suspended solids would not be carried upward through the TCRA cap material is not supported in the design with data indicating that the water passing through the TCRA capped material would not be impacted. Furthermore, the assumption also does not cover lateral migration of sub-TCRA cap contact water which could flow out from the perimeter of the TCRA cap area into remediated or other areas of the Site, especially under flow conditions that would exist in a dewatered excavation inside the BMP. Adequate data and/or analysis must be provided to support any designation of water within the BMP as non-contact water for treatment and handling purposes.

28. Section 5.11.1 Removal of the BMP

In the response to Comment 89 in **Table 1-1** of the Revised 100% RD, the Respondents state that "*The sheet piles can seize or get hung-up in the interlocks due to corrosion over time or due to the sealant specified to avoid seepage through the interlocks. In such cases, complete removal of the BMP wall may not be possible without tearing the sheets and the sheet piles will be cut or driven below the mudline*." Due to the presence of pipelines existing in the area, the discussion needs to be amended to include a determination if the sheet piles can be driven deeper without risk to damage to any subsurface structures or pipelines. Additionally, no hammer type is specified, so the potential for vibrations to damage pipelines, adjacent structures, or destabilize the end state of the remedy needs to be accounted for when making the decision on how to address sheet piles that cannot be removed.

29. Section 6.2 Monitored Natural Recovery

The ROD selected Monitored Natural Recovery as the remedy for sediments in the Sand Separation Area (SSA). This section states that except for Sample No. SJSSA06, concentrations of $TEQ_{DF,M}$ at depths less than 24 inches are below the risk-based protective level of 30 ng/kg. In **Figure 2-4 – Sand Separation Area Analytical Results**, the 2010 grab and core Sample Nos. SJNE02/032 were above 30 ng/kg at 0.5 and 1 foot below the sediment/surface water interface. This elevated $TEQ_{DF,M}$ location is just south of the area that may experience erosion (SJSSA05). This area should be monitored in a similar manner as SJSSA06 since that location also had elevated concentrations at the surface.

30. Section 6.2 Monitored Natural Recovery

The second to last sentence of the first paragraph states that the PDI-2 result is consistent with the results observed during RI. It should be noted in this paragraph that the location of the boring with elevated dioxin concentration in the top 2 ft during the RI is offshore approximately 100 ft east of SJSSA06.

31. Section 6.2 Monitored Natural Recovery

The last sentence of the second paragraph implies ICs will only be implemented near the area around

the hotspot SJSSA06, which is not consistent with the ICIAP in Appendix J. Please revise this section to avoid confusion.

Attachment E – Updated Hydraulic Heave Report

32. Figure 5

The same comment applies to **Figure 5** in this Attachment as to the comment above on **Figure 5-D** in **Section 5.2**. Once again, please ensure that responses to comments are carried throughout all sections, appendices, and attachments of the design consistently.

Appendix H – Design Specifications

33. General Comment

In the response to Comment No. 99 in **Table 1-1** of the Revised 100% RD, the Respondents indicate that heave is not a concern for the stability of the BMP and thus no requirements for heave monitoring to protect the stability of the BMP are required. The Respondents need to add some discussion of this response and supporting information to be clear that the issue has been adequately evaluated and that the design is sufficient to not be put at risk from heave.

34. Part 46 07 01 Water Treatment System (WTS) Section 2.9 Preliminary Control Narrative

The narrative for #12 of contact water appears incorrect; it reads "*Untreated and/or Out-of-Spec Valve" on recirculation line to the Influent Tank(s) shall be normally opened and locked. Valve shall only be unlocked and opened when contents in effluent tank have been sampled, tested and verified to be in compliance with discharge criteria by OWNER OR ENGINEER."* The section should be revised as follows: "*12. "Untreated and/or Out-of-Spec Valve" on recirculation line to the Influent Tank(s) shall be normally* ***closed*** *and locked. Valve shall only be unlocked and opened when contents in effluent tank have been sampled, tested and verified to be in compliance with discharge criteria by OWNER OR ENGINEER.*"

Other sections, appendices, and attachments that provide direction on procedures or direction on implementation of requirements should be reviewed to ensure they are consistent with the over-all goal of the remedial design.

35. Part 46 07 01 Water Treatment System (WTS) Section 3.2 Field Quality Control

Bullet C appears to indicate that the RC will be responsible for providing online monitoring of turbidity and discharge of treated, non-contact water to the diffuser. Please verify if this section is referencing non-contact water or is it referencing contact water.

Appendix I – BMP Structural Design Report

36. Table 6-1 Barge Impact Analysis Output

The Revised 100% RD uses a two-part barge impact analysis to assess the protectiveness of the combined barge impact protection system, separately evaluating impacts for the fiberglass reinforced polymer (FRP) barrier and the BMP (**Attachment 3.6 Barge Impact Evaluation**), with the BMP impact analysis being originally performed as part of the 90% RD. Why were there changes in the reported Barge Impact Analysis Output between the 90% RD and the 100% RD/Revised 100% RD (**Table 6-1** in Appendix I of all three deliverables), even though the evaluated BMP cross-sections, case scenarios and other parameters appear the same? The analysis results for the Demand to Capacity Ratio (Moment), as reported in **Table 6-1 Barge Impact Analysis Output**, decreased between the 90% RD and the 100% RD/Revised 100% RD without explanation, and this decrease affects the analysis of potential sheet pile overstress in the event of an impact. The barge impact analysis results as reported in the 90% RD could call into question the conclusions and protectiveness of the combined system in the Revised 100% RD.

For instance, **Section 6.7.2.1 (Analysis Model)** of Appendix I of the Revised 100% RD states that "*Results from Cross-Section C4 show that the BMP is adequate [for] impact with barges in ballasted and laden condition at velocity 2.2 ft/s even without the FRP barrier wall system*"; however, the barge impact analysis in the 90% RD shows a 28% overstress for laden barges at 2.2 ft/s for Cross-Section C4 (**Section 6.5.2 Results** of the 90% RD Appendix I). For Cross-Section C2, the Revised 100% RD analysis shows a 5% overstress in the sheet piles at Cross-Section C2 for impact with a ballasted barge at 3.8 ft/s, while the 90% RD barge impact analysis shows an 11% overstress for a ballasted barge at 3.8 ft/s at Cross-Section C2. The RD should acknowledge the change in analysis output between the deliverables and explain the reason for the differences.

37. Section 6.7.2.1 Analysis Model

Section 6.7.2. states that the barge impact analysis evaluated impacts to a 9-foot BMP, which is also reflected in the calculations in **Attachment 3.6 (Barge Impact Evaluation)**. Discussion should be provided regarding the adequacy of using the former BMP height, or the calculations should be corrected.

38. General Comment – Modeled Barge Impact Velocities

Table 1-1 of the Revised 100% RD, response to comment No. 107, states that the combined barge protection system of the FRP barrier wall and the BMP can withstand barge impacts at velocities up to 4.4 ft/s for a laden barge and 10.6 ft/s for a ballasted barge. These velocities were apparently derived by adding the impact velocities that the FRP barrier and the BMP separately were designed to withstand (note that calculations and conclusions regarding the protectiveness of the combined system should be incorporated into the barge impact discussion in Appendix I and in **Section 5.5.7 Barge Impact** of the RD report). The response to comment No. 107 also states that "*The BMP walls will have localized damage at greater velocity but will not result in a collapse of the BMP walls*." What "greater velocity" is being discussed for this conclusion, and does it reflect a worst-case scenario? Currents in flooding conditions can be as fast as 5.73 ft/s, and modeling should be performed to demonstrate something closer to a worst-case scenario.

Appendix J – Supporting Deliverables

39. General Comment – Aquatic Resource Management

As the BMP will be installed to isolate a portion of the San Jacinto River and pumped to remove the river water prior to excavation, there is a likelihood that wildlife in the river may be left behind within the BMP as this process is implemented. The Respondents should determine if there is a need to develop an Aquatic Resource Relocation Plan (ARRP) and address the substantive requirements of an Aquatic Introduction Permit (AIP) prior to draining the area within the BMP, as well as determining if state or federal threatened or endangered freshwater mussel species are present or likely to be present in the project area.

As the Respondents have not discussed these items to date, it is not clear who would perform and prepare the required information. However, the design should be updated as appropriate to include any required procedures or specifications.

40. General Comment for Supporting Deliverables

It is understood by the EPA that the Supporting Deliverables are not expected to be complete, and that the RC selected to perform the RA will be responsible for providing fully updated and complete site-specific Supporting Deliverables. The EPA would like to re-iterate that the updated Supporting Deliverables must be provided for EPA's review and approved by EPA before remedial construction starts. The EPA would like to also note that the Supporting Deliverables within the 100% RD should include as much information concerning the work to be performed, hazards expected, requirements, and special site conditions as possible to assist the selected RC with developing the final required Supporting Deliverables.

Attachment 3 – Field Sampling Plan – Northern Impoundment

41. Section 2.1.1 Sampling Locations within a DU

Since the pre-excavation sampling will be conducted as discrete samples at the indicted locations as shown in **Figure 2-1**, the need for decision units as part of the pre-excavation sampling is no longer required. The samples will be directly used to set the excavation surface, and there will be no averaging across decision units for the pre-excavation sampling. However, as discussed elsewhere, post excavation sampling will need to be conducted to document the final condition of the post excavation surface. In reading the discussion in the Revised 100% RD concerning the potential for variability regarding the area that will be excavated each season, and even the sub-areas that will be excavated throughout a given excavation season, it seems at this point predefined decision units may not be effectively implemented. It is recommended that the design require the use of a general guidance to determine the size of decision units for post-confirmation sampling which may be based on a variety of parameters, with individual decision units not to exceed a ½ acre area for final surface documentation.

Attachment 5 – Site-Wide Monitoring Plan – Northern Impoundment

42. Section 3.4.1.2 Data Review

The response provided to Comment No. 119 in **Table 1-1** of the Revised 100% RD does not provide sufficient supporting information for the validity of the collected ambient turbidity data for river conditions that may occur during the BMP installation if portions of the work occur outside the planned excavation season (i.e., during hurricane season). Have the PRPs evaluated the collected turbidity data and reviewed it for natural water conditions and river traffic conditions that impact turbidity and may fluctuate seasonally? If so, please provide the evaluation of whether any uncertainty or bias is created by using the ambient turbidity data collected in the winter/spring to establish the criteria for work that may be conducted in a different season.

43. Attachment 1 Air Monitoring Plan Section 2.2 Screening Level Development for Dioxins and Furans

The third to last sentence states that a SL of 0.00000006 milligrams per cubic meter (mg/m^3) for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) was calculated, while the calculation in Attachment 1 and Table 2 in section 2.3 show that RSL is 0.00000002 mg/m^3; these need to be corrected.

Again, the Respondents should review the design and ensure that it is consistent across the design, attachments, and appendices.

Attachment 9 – Monitored Natural Recovery Plan – Sand Separation Area

44. Section 4.8 Potential for Disturbance and Perturbation

The Respondents have updated the inspection requirements that would be put in place to monitor for disturbances, but the EPA notes that there seems to be no discussion of monitoring requirements on the submerged surface of the SSA like the bathometric surveys performed as part of the current TCRA Cap O&M plan. Performance of routine bathometric surveys of the SSA would help identified areas where erosion and deposition are occurring as noted by changes in the bottom depth. This would allow for confirmation of continued sediment deposition, or sediment erosion, and be useful for determining if additional actions need to be taken.

45. Section 5.1 Sampling Locations and Depth Intervals

The boundaries of the SSA need to be better defined to allow the decision units and sampling points to be determined for implementation of MNR. Currently, the SSA boundary is not fixed and has changed during various stages of the RD development since the ROD was issued. By determining the SSA boundaries, including the location of the shoreline, a better monitoring plan can be developed along with potential institutional controls that will be in compliance with the ROD.

46. Section 5.4 Data Evaluation

EPA does not agree with the proposal to use the arithmetic mean concentration of all the nine composite samples, of which most have Dioxin/Furan concentrations below the clean-up level, to evaluate remediation progress and determine the completion of remediation. This will significantly reduce the observed concentration of hot spots, which should be the targeted remediation areas for the MNR, although the IC covers the whole SSA.

Attachment 10 – High-Water Preparedness Plan – Northern Impoundment

47. Section 5.2 Minor Flooding Event Preparedness

The requested information in Comment No. 137 of **Table 1-1** of the Revised 100% RD - "the High-Water Preparedness Plan (HWPP) should be updated to show areas where equipment will be moved in response to potential flooding events and in-between excavation seasons. Furthermore, if these areas will be used to store materials or equipment that could pose a threat of a release from containers, vehicles oils and fuels, or other materials, they should be covered by appropriate plans, as well have BMPs in place to address the potential for releases" - should be included in the direction given for the **High-Water Preparedness Plan – Northern Impoundment**, in both the template document in **Appendix J** and the requirements for the preparation of the submittal in the specifications for the RD.

48. Section 5.4 Hurricane Preparation – *Phase I Preparations*

This section references excavations where clean confirmation samples have not been received being covered/backfilled in advance of tropical weather. The Revised 100% RD does not currently include post-excavation sampling, but EPA is directing that post-excavation sampling be conducted. This section will need to be revised to conform with the post-excavation sampling that is performed, including language indicating if different procedures will be followed If the data is not received prior to the decision point at which the surface would be covered. Additionally, this section implies that "clean" surface would not be covered as part of the storm preparations. This should be explained, and the process should reflect the other portions of the design that deal with post-excavation surface management.

49. Section 5.4 Hurricane Preparation – *Phase I Preparations*

The direction in Comment 138 of **Table 1-1** of the Revised 100% RD - "that the RC coordinate with the Engineer and EPA to standardize the sequence and scheduling for storm preparation into a format/process that includes benchmarks and triggers that stage the hurricane response preparations. This process could also be expanded to include not only the actual formation of a storm, but also possibly be triggered in some circumstances by a forecast that a storm may begin to form. At that point planning could begin so that the site activities could be tailored to make transitioning into storm preparation more orderly and take less time" - should be included in the direction given for the **High-Water Preparedness Plan – Northern Impoundment**, in both the template document in **Appendix J** and the requirements for the preparation of the submittal in the specifications for the RD.