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**Sent:** Wednesday, July 24, 2019 9:43 AM
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**Subject:** Congaree River Permitting Strategy



Lucas,
Attached is the permitting strategy document that we discussed earlier. Rusty and I will call you at 10 to discuss further.

Thanks.

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**Congaree River Project – Permit Application Strategy**

July 24, 2019

The completion of the Congaree River Project can be broken down into 5 major components (also please refer to attached projected schedule). Essentially (with some exceptions), each component must be completed in a sequential and logical manner:

1. **Riverside Operations** – This task consists of defining everything that needs to be completed within the flowing waters of the river and includes the following major tasks:
    a. Objective - Obtain USACE concurrence for a cofferdam / removal approach.
        i. Determine precise footprint(s) of the area(s) to be removed – completed via stakeholder-developed Modified Removal Action (MRA).
        ii. Backwater Analysis – (assumed a rock-filled cofferdam approach) – submitted, awaiting USACE review.
        iii. "No-Rise Certification" (a product of the Backwater Analysis listed above) for the 100-year storm – needs approval from FEMA via local Floodplain Coordinators - Submitted, awaiting USACE and floodplain coordinator review/approval.
        iv. Re-evaluation of the type of cofferdam to be installed – Rock-filled or Cellular Sheetpile – [Cellular sheetpile approach may address prior concerns related to catastrophic failure]
            1. Originally, evaluated 10 types of cofferdams, reduced to top 3 types (rock-filled, port-o-dam and cellular sheetpile – Rizzo, May 2012). Recently, a draft evaluation of the rock-filled and cellular sheetpile cofferdams was completed; [the port-o-dam approach was eliminated due to over topping risk which would likely result in catastrophic failure] - the cellular sheetpile approach may reduce/eliminate catastrophic risk and create less rise "flooding" on the western shoreline during lower flow events [due to a smaller design footprint], however constructability and water leakage/management issues persist. **Need to collaboratively determine which approach to present in the design and final permit package.**
        v. Evaluate the net rise effects that the proposed cofferdam will exert on the western shoreline – (i.e. the lower flow evaluation). Ideally, the approved backwater analysis from above (using the same computer simulation /modeling software, survey data and other site-specific inputs) to predict the extent of the net rise (both increased water height and lateral extent due to the cofferdam installation) of water or "flooding" on the western shoreline. Also, identify which property owner(s) may be affected by the increase, or rise and obtain their approvals to "flood" their property(s). This effort has been started (using the rock-filled cofferdam approach), but USACE and Flood plain coordinator concurrence with the backwater analysis (computer model input variables, etc.) **must be determined prior to finalizing this analysis**. Also, the type of cofferdam (and its resulting elevation and footprint) should be finalized at this

point. [This assumes that the present berm height of 123.5 feet NVGD '29 is acceptable and a separate evaluation of berm height is not required.]

vi. Once the type of cofferdam has been selected and the impacts to the western shore have been evaluated and deemed acceptable, additional engineering studies will be required and include (but may not be limited to); a stability analysis, an evaluation for the potential increase of channel erosion adjacent to the cofferdam structure & the western shoreline, as well as an estimate of water leakage thru the selected cofferdam approach.

vii. Once the engineering/design approach has been finalized; the previously approved UXO removal support plans (4 separate plans), Archaeological Data Recovery Plan and coordination with SHPO/SCIAA (Memorandum of Agreement), and other existing plans will need to be re-evaluated in the context of the MRA scope of work. The re-approved plans should will be included in the actual, "Completed" permit application submittal (Number 3 below).

2. **Landside Operations** – After the riverside operations have been determined, this task would consist of defining everything that needs to be completed on landside of the project and includes:
    a. Determine access approach and define on-site access road improvements/construction.
    b. Obtain access agreement(s) for design activities, if required.
    c. Re-evaluate plans for constructing the office trailers and other project support facilities.
    d. Re-evaluate the design and permit application package for constructing a Culvert Crossing.
    e. Re-evaluate the "Support Plans" (i.e. Erosion and Sediment Control Plans, Water Management, Ambient Air-Monitoring etc.).
    f. Re-evaluate the off-site trucking routes.
3. **"Completed" USACE Permit Application Submittal**
    a. Revise the support plans based on number 1 and 2 listed above – include revised plans and related approvals, if available.
    b. As before, the "completed" permit application will consist of 3 major components:
        i. The Joint Application / Pre-Construction Notification (JA/PCN) form and required attachments;
        ii. The Culvert Crossing design package; and
        iii. The updated Draft MRA Work Plan.
4. **MRA Work Plan and Other Approvals**
    a. Provide the Draft MRA Work Plan to DHEC
    b. DHEC Review/Approval of MRA Work Plan (including Public Participation)
    c. Disposal Approvals
    d. Obtain Access Agreement(s) for MRA scope of work.
    e. Contractor Procurement
5. **Remediation Field Activities**
    a. Complete the site access improvements and construct the site support facilities.
    b. Complete the Mussel Relocation.
    c. Complete the screening / removal of Unexploded Ordnances (UXO's) within the footprint of the cofferdam.

d. Constructing the cofferdam using the footprints from the stakeholder-developed MRA
e. Perform the removal operations consistent with the approved plans.
f. Repeat the above steps until the project has been completed.
g. De-construct site support operations and restore the site to pre-existing conditions.