



Coal Combustion Residuals Impoundment Closure

Presentation to Board of Directors

3/19/2020



Contact Report an Outage Pay My Bill

Residential Services Business Services Community Other Resources About Us

- Permanent Cessation of Boiler Operations Notification
- [2019 Annual Groundwater Monitoring and Corrective Action Report](#)
- Closure Plan Pursuant To 40 CFR 257.102 Units 1 and 2 Inactive Ash Impoundments and Unit 3 Active East and West Ash Impoundments
- 2019 Holding Pond Annual Inspection Report
- No Alternate Disposal Capacity Documentation Report
- Location Restrictions Certification Report
- 2018 Annual Groundwater Monitoring & Corrective Action Report
- Notice of Initiating Assessment of Corrective Measures
- 2018 Holding Pond Annual Inspection Report
- Statistical Analysis Plan
- Groundwater Monitoring Network Certification
- 2016 Holding Pond Annual Inspection Report
- Fugitive Dust Control Plan
 - 2016 Fugitive Dust Control Annual Report
 - 2017 Fugitive Dust Control Annual Report
 - 2018 Fugitive Dust Control Annual Report
 - 2019 Fugitive Dust Control Annual Report
- CCR Initial Hazard Potential Classification
- Emergency Action Plan
- Revised Flood Control System
- Revised Documentation of Linear Report
- Revised Closure Plan
- 2017 Holding Pond Annual Inspection Report
- 2017 Annual Groundwater Monitoring and Corrective Action Report
- Notice of Assessment



Transparency
Information required to be
made available to public

- <https://ghblp.org/about-us/reports/ccr-rule-compliance-data-and-information/>
- 2019 Annual Groundwater Monitoring & Corrective Action Report: *Boron, Calcium, Chloride, Fluoride, Iron, pH, Sulfate, Total Dissolved Solids, Lithium.*





Harbor Island 1942 |

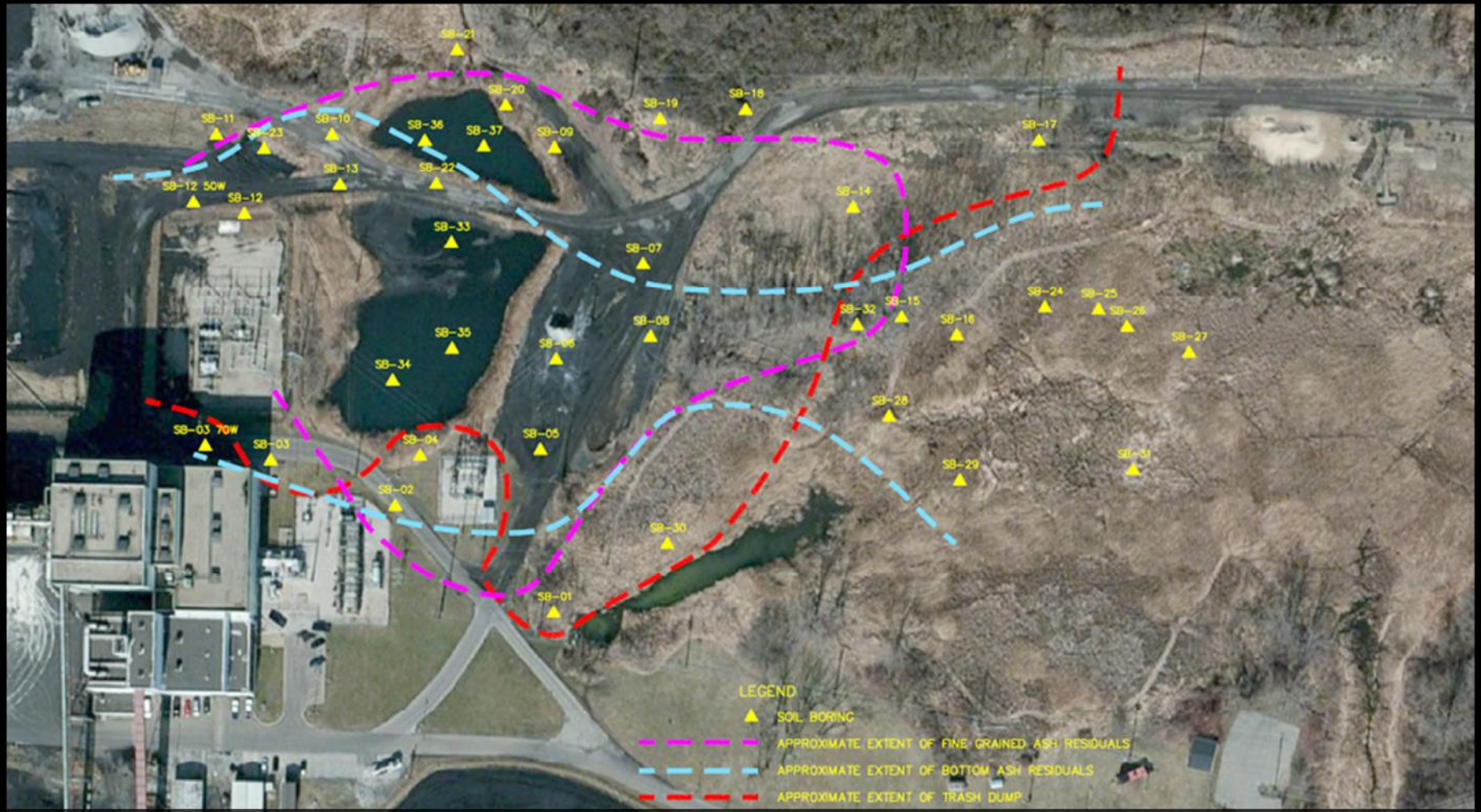
Harbor Island Site History: Before J.B. Sims Power Station





Grand Haven Tribune - February 7, 1958

'Ash fill from the steam plant will gradually eliminate the marshy areas on the Island. Additional fill will be provided by the city dump, the boundaries of which can be shifted. "Made" land of this character has infinite possibilities.'



Harbor Island Site History: Determination of Vertical & Horizontal Extent of Ash (February 2016)

Multiple Regulations for Impoundments

Federal: 40 CFR 257

Originally Published: 2015

Amended: July 2018

Closure by removal of CCR.

- An owner or operator may elect to close a **CCR unit** by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed **and groundwater monitoring concentrations do not exceed the groundwater protection standard** established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.

Closure performance standard when leaving CCR in place.

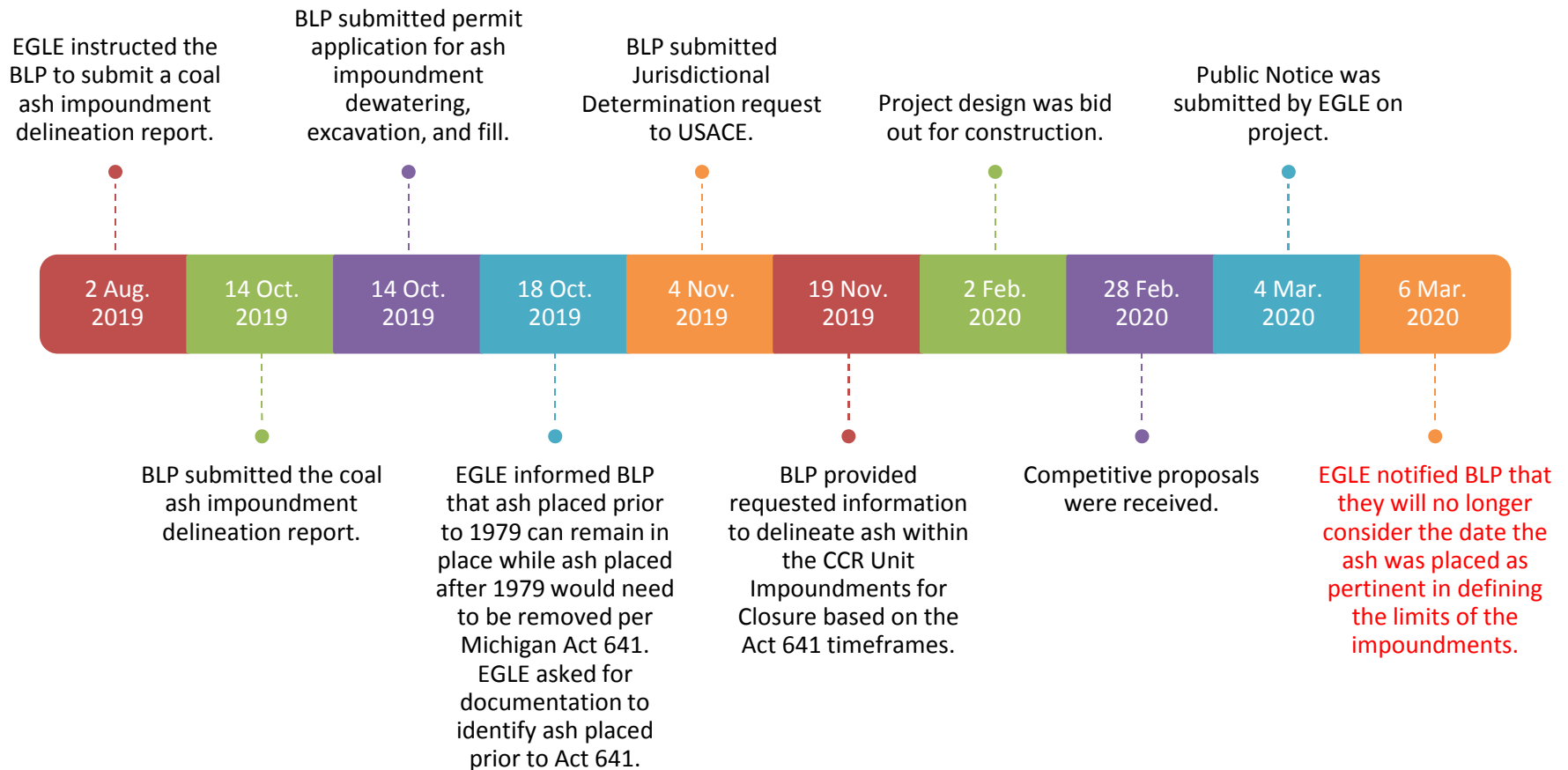
- (1) The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:
 - (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;
 - (ii) Preclude the probability of future impoundment of water, sediment, or slurry;
 - (iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
 - (iv) Minimize the need for further maintenance of the CCR unit; and
 - (v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

State: 11503(9) of Part 115

Published: December 2018

- A coal ash impoundment that has initiated closure is considered an open dump unless the owner or operator has completed closure of the coal ash impoundment or obtained an operating license for the coal ash impoundment by December 2020.

Timeline of Events – Last 7 Months





Remediation Steps & Boundaries

- Installation of slurry wall on northern most inactive impoundment
- Dewatering of inactive impoundments
- Excavation of coal ash material from inactive impoundments
- Placement of clean fill (sand)
- Final grading, topsoil, and seeding
- Excavation of active impoundments and site grade restoration

Challenges



Lake Michigan at historically high levels and predicted to rise.



Waiting on Joint Permit Application (JPA) approval for dewatering and excavating (EPA and USACE are in comment period).



Dewatering limitations on existing pumps for active impoundments.



May need to obtain separate permit for additional discharges.

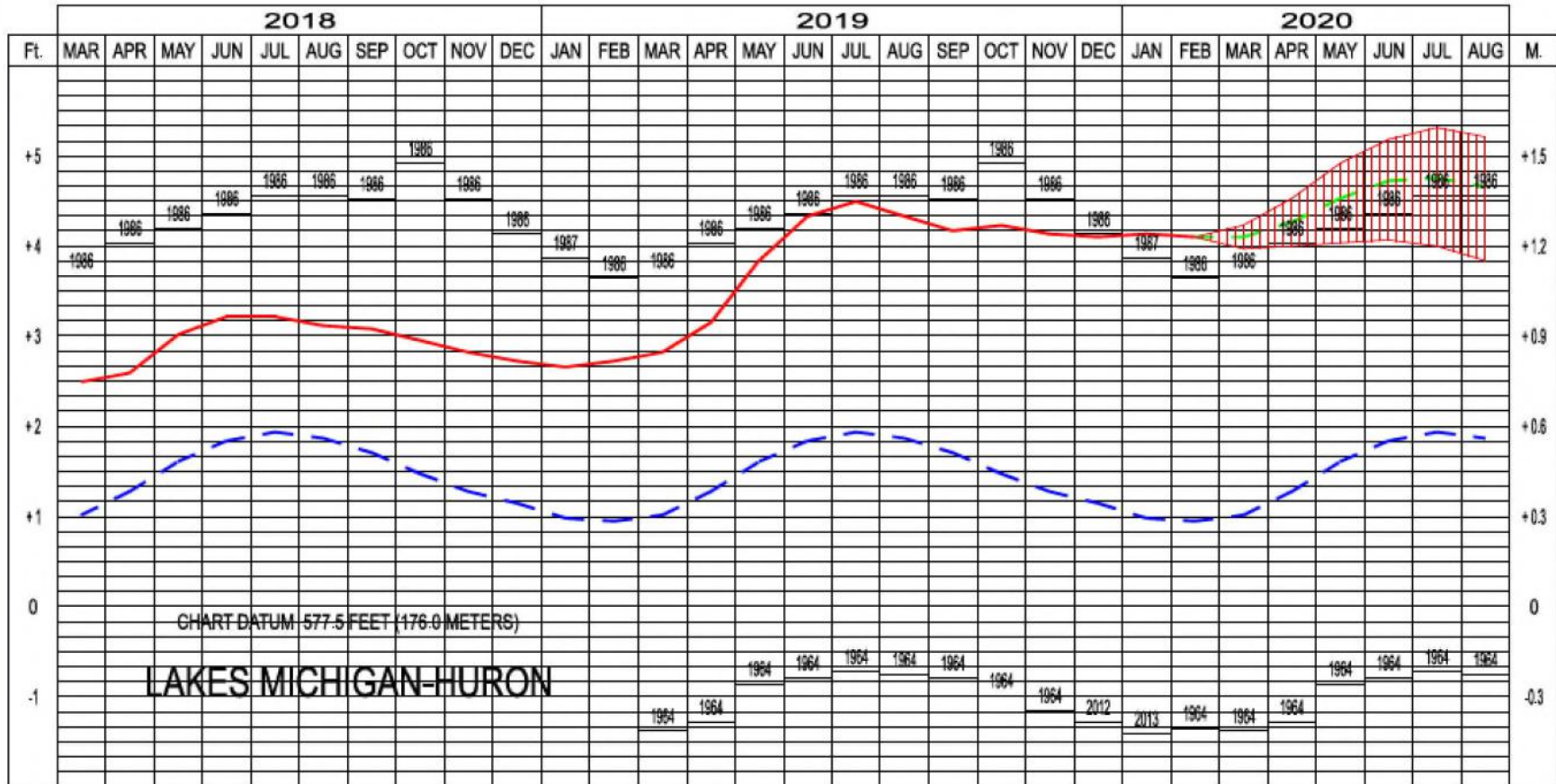


Unknown how effective slurry wall will be.



Unknown how removal of coal ash will impact groundwater.

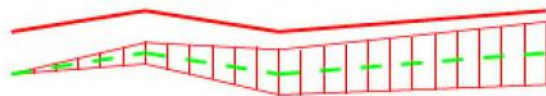
LAKES MICHIGAN-HURON WATER LEVELS - MARCH 2020



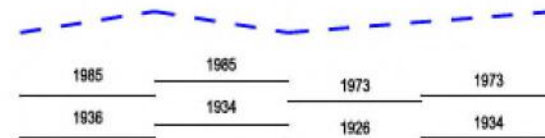
LEGEND

LAKE LEVELS

RECORDED
PROJECTED



AVERAGE **
MAXIMUM **
MINIMUM **



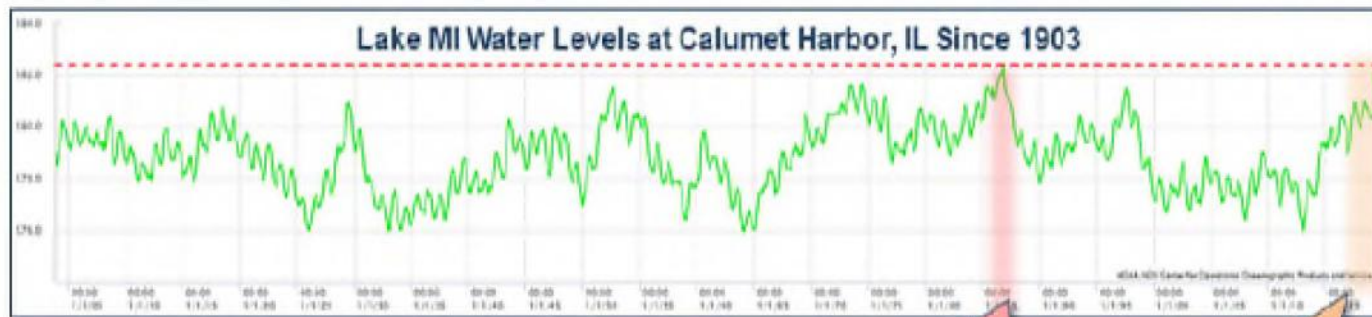
** Average, Maximum and Minimum for period 1918-2019



Lake Michigan at Near-Record High Water Levels

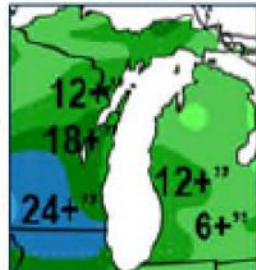


Photo credit: Jerry Robert Smith on July 22, 2019



Big reason why? WET!

The lake's basin received well above normal precipitation for a lengthy period. This map to the right is a departure from normal for March 1, 2018 – October 31, 2019.



Record high was observed in summer and autumn of 1986

From Jan 2013 through Nov 2019, lake level rose **6 feet**, including nearly 2 feet from Jan-Jul 2019.

Records shown above are monthly averages. There have been temporary even higher spikes during strong wind events.

Impacts

Greater frequency of flooding in vulnerable locations, even in non-high wind events

Example: Near / along Chicago bike path

Strong wind events, similar to January 11, 2020 bring higher waves, lakeside flooding, shore erosion, & potentially freezing spray



NOAA/National Weather Service
Chicago | January 13, 2020

Clean up of Harbor Island Phase I Costs

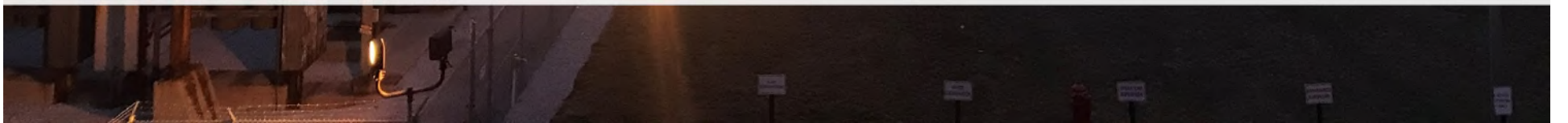
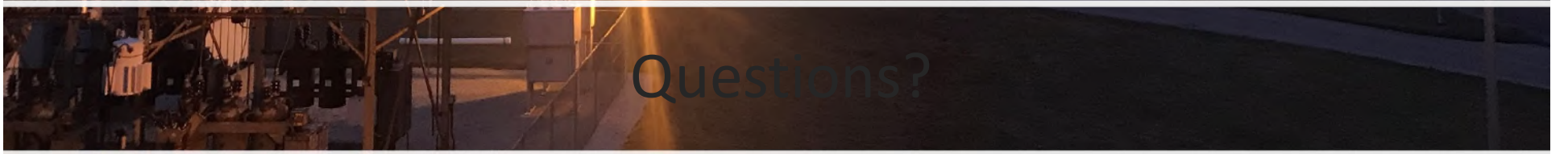
-
- Excavation Contract: \$2,064,061.20
 - Landfill Tipping Fees: \$625,000.00 (based on estimated cubic yards)
 - Wetland Mitigation Bank Credits: \$148,000.00
\$2,837,061.20

 - Quality Assurance/Quality Control Oversight: \$150,000 (estimate only)
 - Place additional monitoring wells: \$20,000 for approximately 4 wells
 - Post Closure Monitoring Program: To Be Determined

Note: Given complexity of site due to record high water levels, limitations of existing pumping capacity, potential need for additional permit for increased discharge capacity, scope changes to excavation contract are a real possibility.

How much more will be required?

- Will Phase I be the end?
 - Yet to be determined, there will likely be additional remediation projects in the future.
 - The site will enter into a post closure monitoring period with groundwater sampling to determine effects of impoundment closure by removal in Phase I.
 - If groundwater sampling results do not fall below the protection standards, a Phase II and possibly a Phase III will likely be required.
 - Even if groundwater sampling does fall below the protection standards, the State and/or EPA may still require additional material to be removed based on March 6, 2020 letter.
 - In addition, there will be environmental clean up efforts of the coal yard area (not covered in this discussion of coal ash cleanup).



March 18, 2020

Project No. 18113500

Erik Booth, P.E. and Paul Cederquist
 Grand Haven Board of Light and Power
 J.B. Sims Generating Station
 1231 N. 3rd Street
 Harbor Island, Grand Haven, MI 49417

RECOMMENDATION FOR BIDDER SELECTION FOR THE J.B. SIMS UNITS 1, 2, AND 3 CLOSURE PROJECT

Dear Mr. Booth and Mr. Cederquist

This letter has been prepared to serve as Golder Associates Inc.'s (Golder) recommendation for bidder selection for the Grand Haven Board of Light and Power (GHBLP) J.B. Sims Generating Station (JBSGS) Coal Combustion Residuals (CCR) Units 1, 2, and 3 Closure by Removal Project (Closure Project).

1.0 BID FORM COSTS

Completed bids for the Closure Project were received on February 28, 2020 from three qualified bidders; Charah LLC (Charah), TL Contracting Inc. (TL), and Catskill Remedial Contracting Services Inc. (Catskill). Subsequent questions on the bids were posed to each bidder and additional responses were received by March 13, 2020. Additional questions were posed to Catskill and responses were received by March 18, 2020. The final costs for each bidder are shown on Table 1.

Table 1: JB Sims Bid Form Total Costs, as of March 18, 2020

Bidder	Original Cost	Adjustments Based on Follow Up Questions (see note 1)	Final Bid Form Cost (see notes 2 and 3)
Charah	\$2,798,411.55	\$0	\$2,798,411.55
TL	\$2,478,260.93	-\$466,300.90	\$2,011,960.03
Catskill	\$2,035,061.96	+\$9,199.23 +\$19,800.00	\$2,064,061.20

Notes:

1. TL inadvertently included an optional bid item in their total. Catskill revised the price for the road and ditch materials and included additional costs needed for segmented dewatering, if needed, into the dewatering bid item.

2. Final bid form costs from the bidders included a unit rate for a bridging layer, if needed, but total costs for a bridging layer are not included in the final bid form cost.
3. Catskill provided a per linear foot price for additional slurry wall, if needed, however these total costs are not included in final bid form costs.

2.0 DEWATERING INFORMATION

The most critical part of the Closure Project involves the dewatering of the Units 1 and 2 Impoundments. The impoundments are below the groundwater levels and adjacent to the Grand River. As such, this item was bid as a lump sum item to place more risk on the contractor to complete this piece of the work.

The method for dewatering is a critical part of the Closure Project due to the proximity to the Grand River. A barrier will be necessary to impede flow from the Grand River into the project site, or dewatering will be nearly impossible to achieve. The bidder’s method, costs and pumping rates are factored into the decision for a recommendation to award this contact.

The bidders included the following information for their dewatering line item, as shown in Table 2.

Table 2: Dewatering Line Item 5 Details

Bidder	Dewatering Line Item 5 Cost (Final Cost)	Subcontractor	Methods	Pumping Rates Assumed	Labor Hours
Charah	\$724,200.00	Mersino Dewatering	550-foot long, 15 feet deep slurry wall at the north end of the impoundments with dewatering wells around perimeter	15 to 23 hours per day, 7 days per week dewatering. 250-350 gallons per minute (gpm). Option to lower rates and pumping times depending on success of the slurry wall	2,514 hours for Mersino and Charah combined
TL	\$212,793.27	Dewind Dewatering	Wellpoints around the perimeter	24/7 dewatering, 400 to 500 gpm per pump with 4 total pumps ~2,000 gpm	300 hours for Dewind and TL combined
Catskill	\$570,224.00	Mersino Dewatering	550-foot long, 15 feet deep slurry wall at the north end of the impoundments with dewatering wells around perimeter	24/7 dewatering, assuming 2,000 to 3,000 gpm	642 hours for Mersino and Catskill combined

3.0 ADDITIONAL DECISION FACTORS

Additional decision factors included each bidder's Experience Modification Rate (EMR) for safety, experience with ash removal and dewatering projects, contract terms acceptance, schedule, and an evaluation of the price for fill. Typical acceptable industry standard EMR should be less than 1.0, as this indicates that a company has fewer worker's compensation claims.

The price for fill is the next largest bid item cost, behind the dewatering item. Should the fill volumes increase from what was estimated in the design, the lower cost per cubic yard (cy) should be considered when choosing a contractor.

Table 3 includes the comparison for these additional decision factors.

Table 3: Additional Decision Factors

Bidder	EMR	Experience with Ash Removal Projects	Terms and Conditions Acceptance	Fill Line Item 009A Cost per Cubic Yard
Charah	0.67	Ameren, Duke, Consumers Energy	Exceptions Noted	\$15.11
TL	1.06	Lansing Board of Water and Light	Accepts Contract as is	\$21.89
Catskill	0.72	South Kent, Consumers Energy Company, several other contaminated soil removal projects	Accepts Contract as is	\$12.76

4.0 GOLDER'S RECOMMENDATION

Based on the information presented in Tables 1, 2, and 3, Golder recommends that the GHBLP award the Closure Project contract to Catskill for the following reasons:

1. Although not the lowest bid, they have defensible and reasonable costs for dewatering and fill.
2. The method proposed for dewatering Units 1 and 2 includes a slurry wall which is a cost effective and efficient method for this site, given the proximity to the Grand River.
3. Although the pumping rates for all bidders exceeds the limits in GHBLP's NPDES permit, Catskill has expressed that they are confident in their lump sum costs. They will, however, require GHBLP to provide an additional discharge option to achieve the dewatering in the timeframes required, but this would be true for all bidders.
4. Catskill has the appropriate experience, a less than 1.0 EMR rating, and is a local Michigan company.
5. Catskill will accept the contract terms and conditions as written.

We appreciate the opportunity to provide this recommendation to GHBLP. Please let us know if you have further questions on our recommendation.

Sincerely,

Golder Associates Inc.



Brian A. Brown
Staff Engineer



Tiffany D. Johnson, P.E.
Principal



March 19, 2020

Dave Walters, General Manager
Grand Haven Board of Light & Power
1700 Eaton Drive
Grand Haven, MI 49417

Re: Coal Combustion Residual Impoundment Closure by Removal

On February 15, 2019, the Board of Directors approved a proposal from Golder Associates for the *Mitigation Development Plan and Environmental Permitting* involving cleanup efforts of the coal combustion residual impoundments on Harbor Island. The original schedule was to conduct this work the summer of 2021 which would put the utility in compliance with the Federal Standards that have a deadline of 2023 for impoundment closure. On August 2, 2019 (based on newly enacted state rules), the Department of Environment, Great Lakes and Energy (EGLE) notified the Board of Light and Power, at a meeting in their Grand Rapids office, that the impoundments would need to be closed by December 2020 or else the utility would need to submit a license to operate. Based on this information, the project schedule to close the impoundments by removal was moved to 2020 so that this deadline could be met. Recent correspondence from EGLE suggests that a license to operate may still be necessary regardless of the 2020 clean-up efforts.

Both staff and our engineering consultants have been working diligently to adapt to this new schedule. A joint permit application was submitted in October 2019 so that the Department would have adequate time to review the proposed cleanup efforts. Simultaneously, engineering plans were developed, and the project was bid out in February 2020.

Nine construction companies attended the pre-bid meeting held at the Sims Power Plant on February 13, 2020 with three providing proposals. The proposals received were competitive but all three indicated challenges with the closure of the impoundments due to the records high water levels and pumping restrictions at the site. Staff and Golder have been working over the past two weeks to clarify the contractor's concerns and properly evaluate the proposals received. Golder is recommending awarding the coal combustion residual impoundment closure to Catskill Remedial Contracting Service, Inc. A copy of Golder's letter is attached, and staff agrees with their recommendation.

Tipping fees will be paid directly by the BLP and are estimated to be approximately \$625,000 based on unit quantities of tons of material to remove.

Additionally, in order to receive a permit to conduct the clean up efforts, EGLE has informed the BLP that 1.85 acres of wetland impacts must be mitigated through the purchase of wetland banked credits. We have consulted several different venues to purchase wetland credits and received only one source in the Grand River Watershed for a total amount of \$148,000.00.

J.B. SIMS Generating Station Community Owned. Locally Controlled. Not-for-Profit. Environmentally Responsible.



Production | p 616.607.1285 | f 616.842.3511 | e-mail ebooth@ghblp.org | ghblp.org

Based on the results of the competitive bidding process, I respectfully recommend the Board approve awarding the coal ash impoundment cleanup to Catskill Remedial Contracting Services, Inc in the amount of \$2,064,061.20 and the purchase of 1.85 acres of wetland credits in the amount of \$148,000.00 with both being contingent on receiving a permit from the Department of Environment, Great Lakes & Energy to perform the closure of the coal combustion residuals impoundments.

Sincerely,

A handwritten signature in blue ink, appearing to read "Erik Booth".

Erik Booth, P.E.
Power Supply Manager
Grand Haven Board of Light & Power