Grand Haven Board of Light and Power

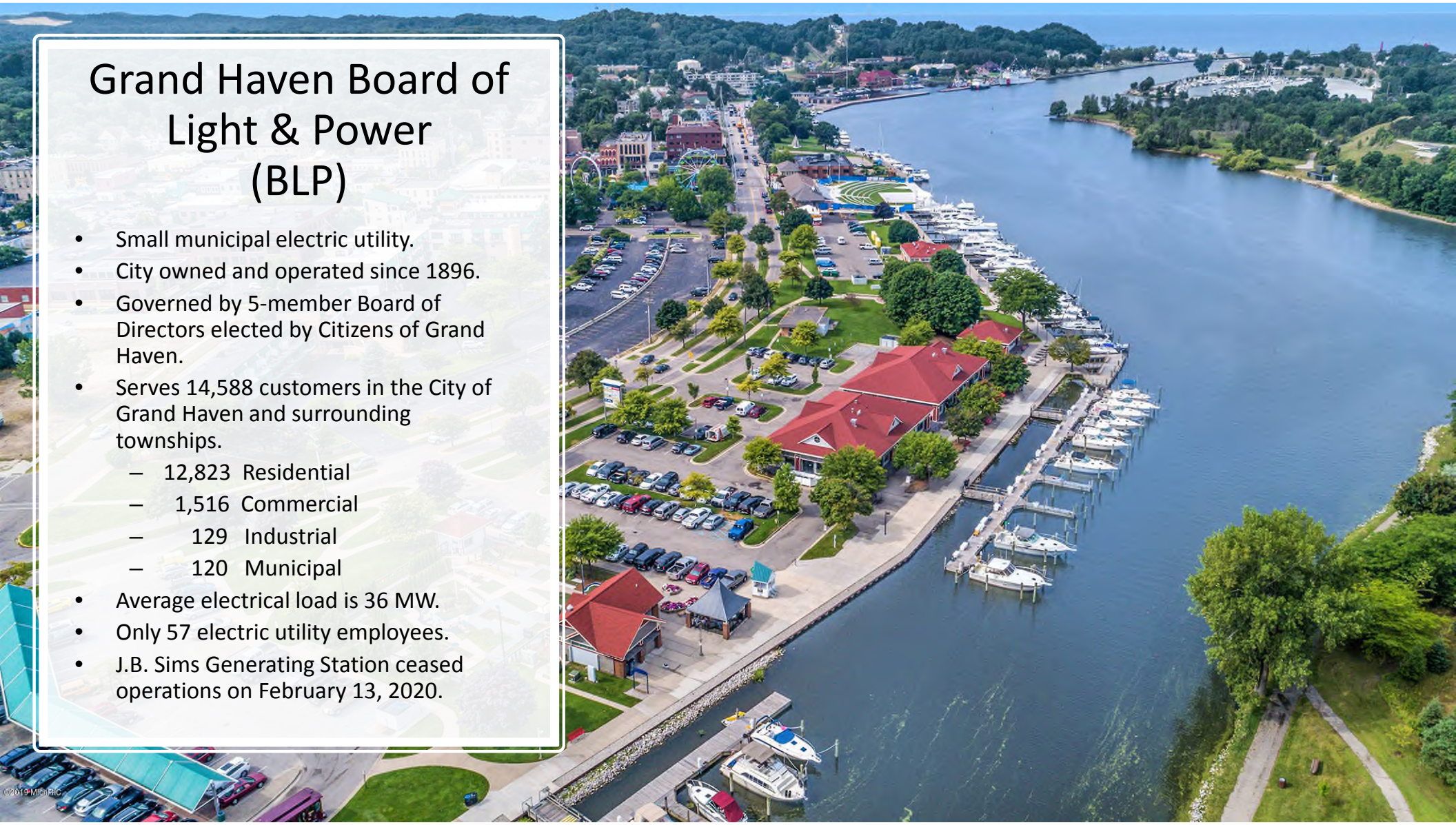
J.B. Sims Generating Station:

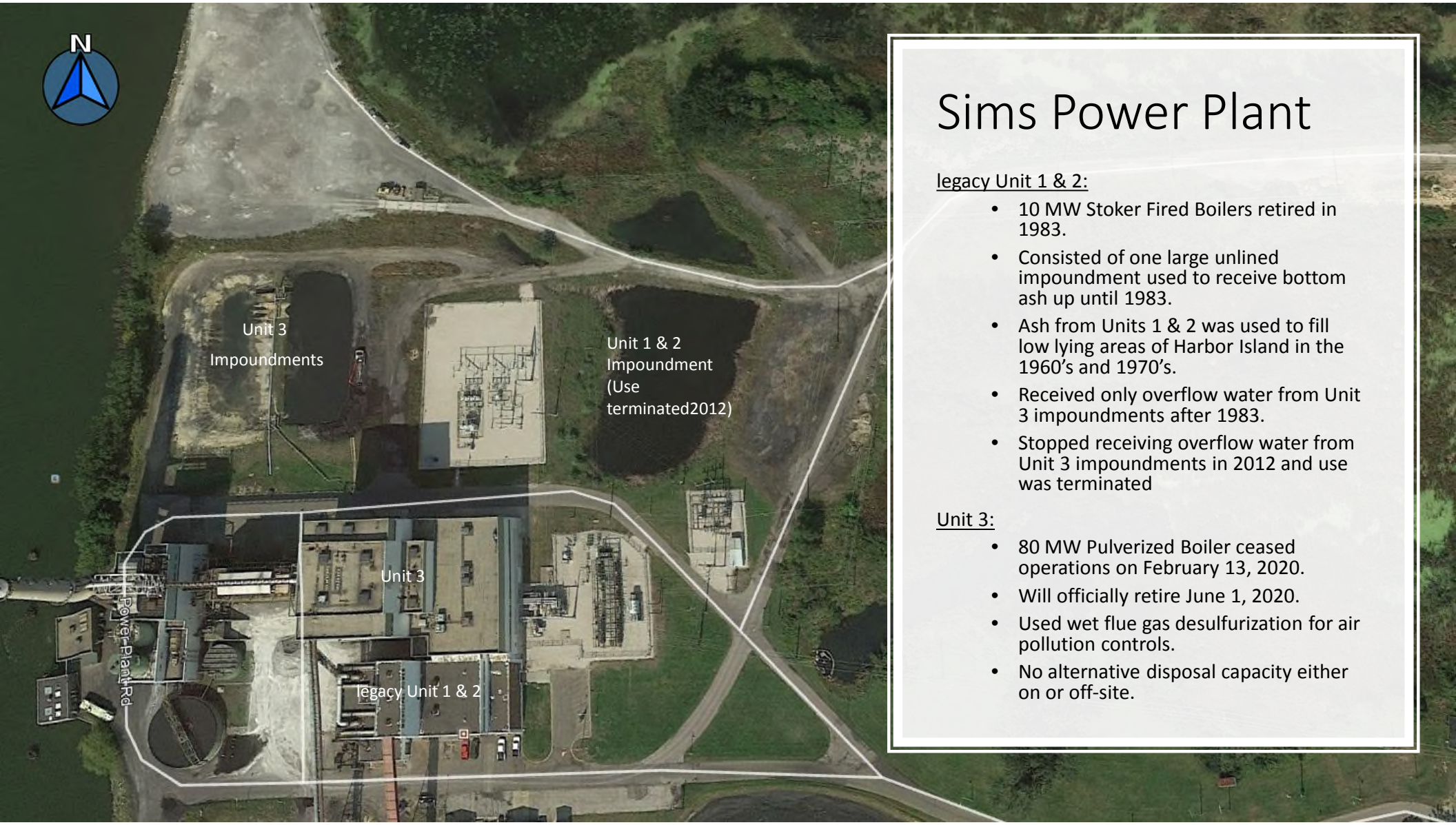
Coal Combustion Residuals Impoundments Closure

April 27, 2020

Grand Haven Board of Light & Power (BLP)

- Small municipal electric utility.
- City owned and operated since 1896.
- Governed by 5-member Board of Directors elected by Citizens of Grand Haven.
- Serves 14,588 customers in the City of Grand Haven and surrounding townships.
  - 12,823 Residential
  - 1,516 Commercial
  - 129 Industrial
  - 120 Municipal
- Average electrical load is 36 MW.
- Only 57 electric utility employees.
- J.B. Sims Generating Station ceased operations on February 13, 2020.





Sims Power Plant

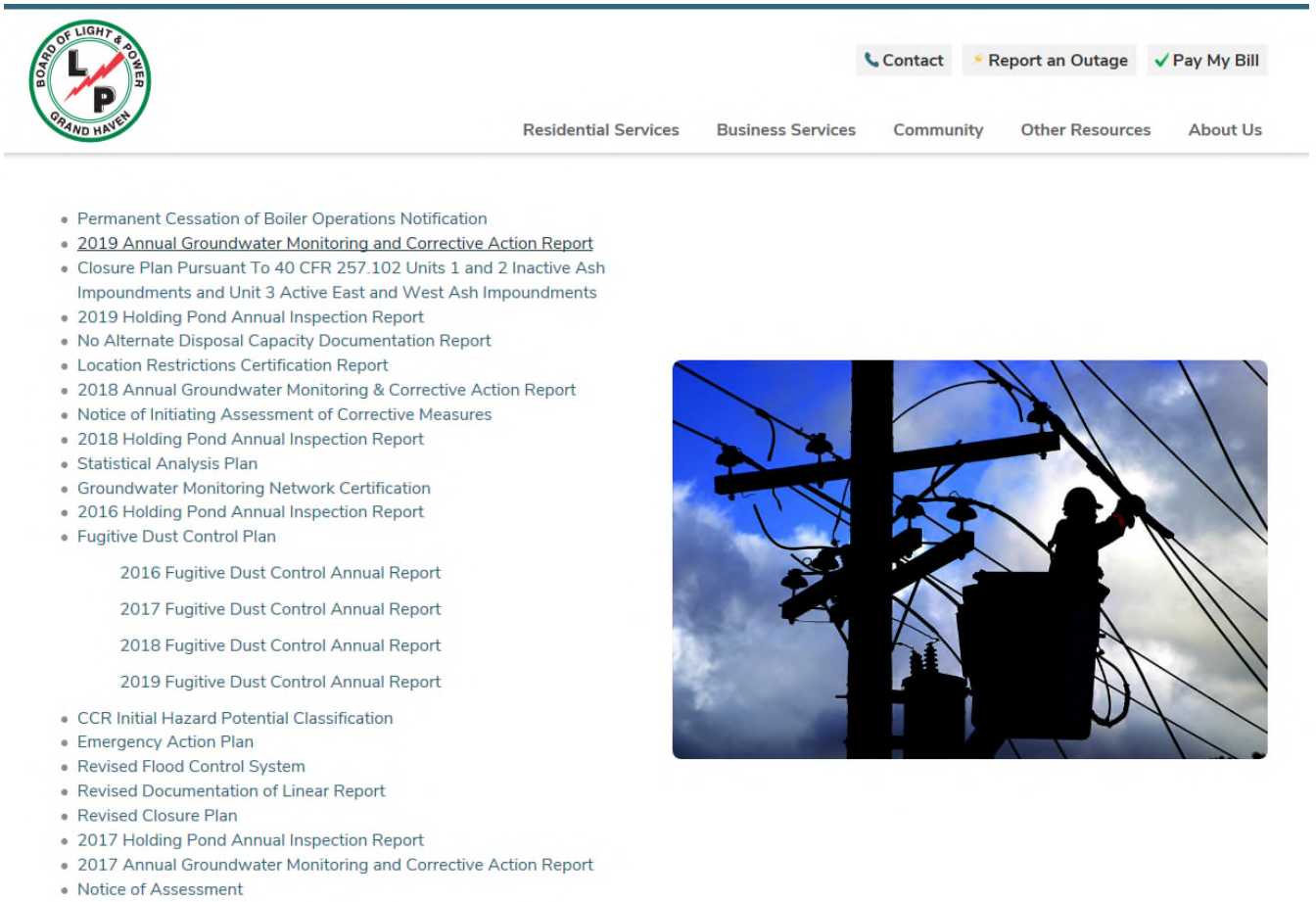
<u>legacy Unit 1 & 2:</u>

- 10 MW Stoker Fired Boilers retired in 1983.
- Consisted of one large unlined impoundment used to receive bottom ash up until 1983.
- Ash from Units 1 & 2 was used to fill low lying areas of Harbor Island in the 1960's and 1970's.
- Received only overflow water from Unit 3 impoundments after 1983.
- Stopped receiving overflow water from Unit 3 impoundments in 2012 and use was terminated

<u>Unit 3:</u>

- 80 MW Pulverized Boiler ceased operations on February 13, 2020.
- Will officially retire June 1, 2020.
- Used wet flue gas desulfurization for air pollution controls.
- No alternative disposal capacity either on or off-site.

The Board hired Soils & Structures in 2016 and then Golder Associates in 2017 for assistance with CCR Compliance, Reporting, Record Keeping, and Closure



Information available on public website

- 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*.

1. Definitions and Delineation
40 CFR 257.53

- CCR surface impoundment.
- Existing CCR surface impoundment.
- Inactive CCR surface impoundment.
- CCR unit.

Is historical fill on Harbor Island treated under 257?

2. Achieving Closure
40 CFR 257.102

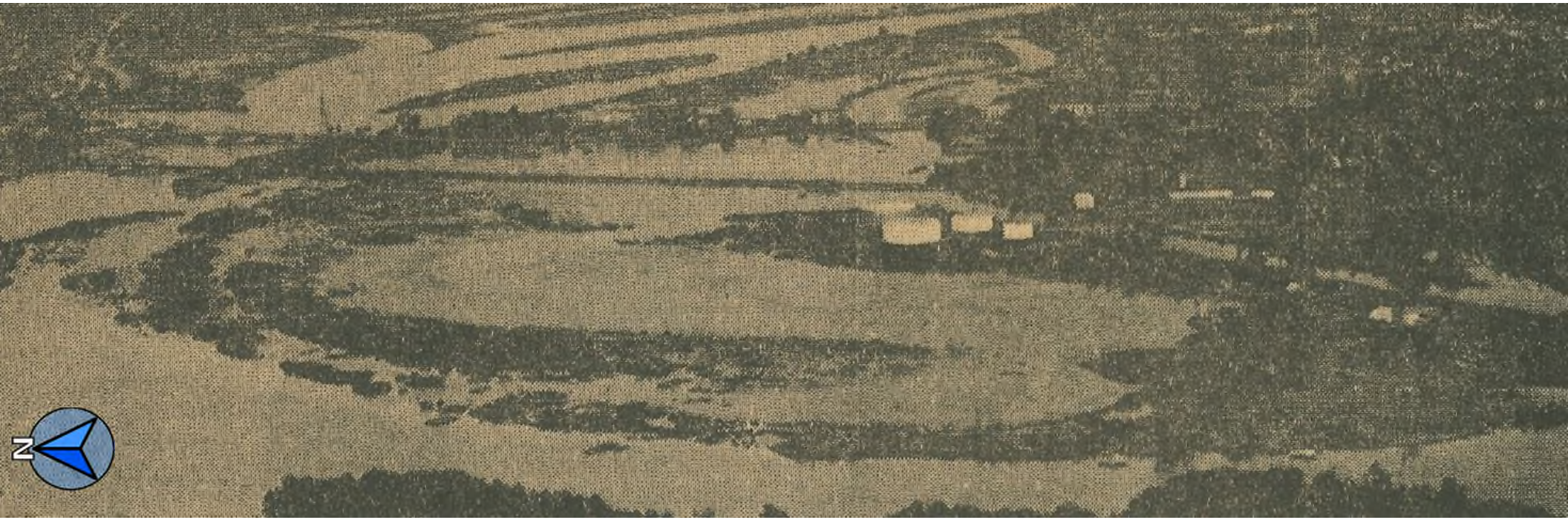
- Closure by removal.
- Closure performance standard when leaving CCR in place.

3. Deadlines for Closure
40 CFR 257.101 and 257.103

- No later than October 31, 2020 or,
- No later than October 17, 2023

Seeking Agency Guidance:

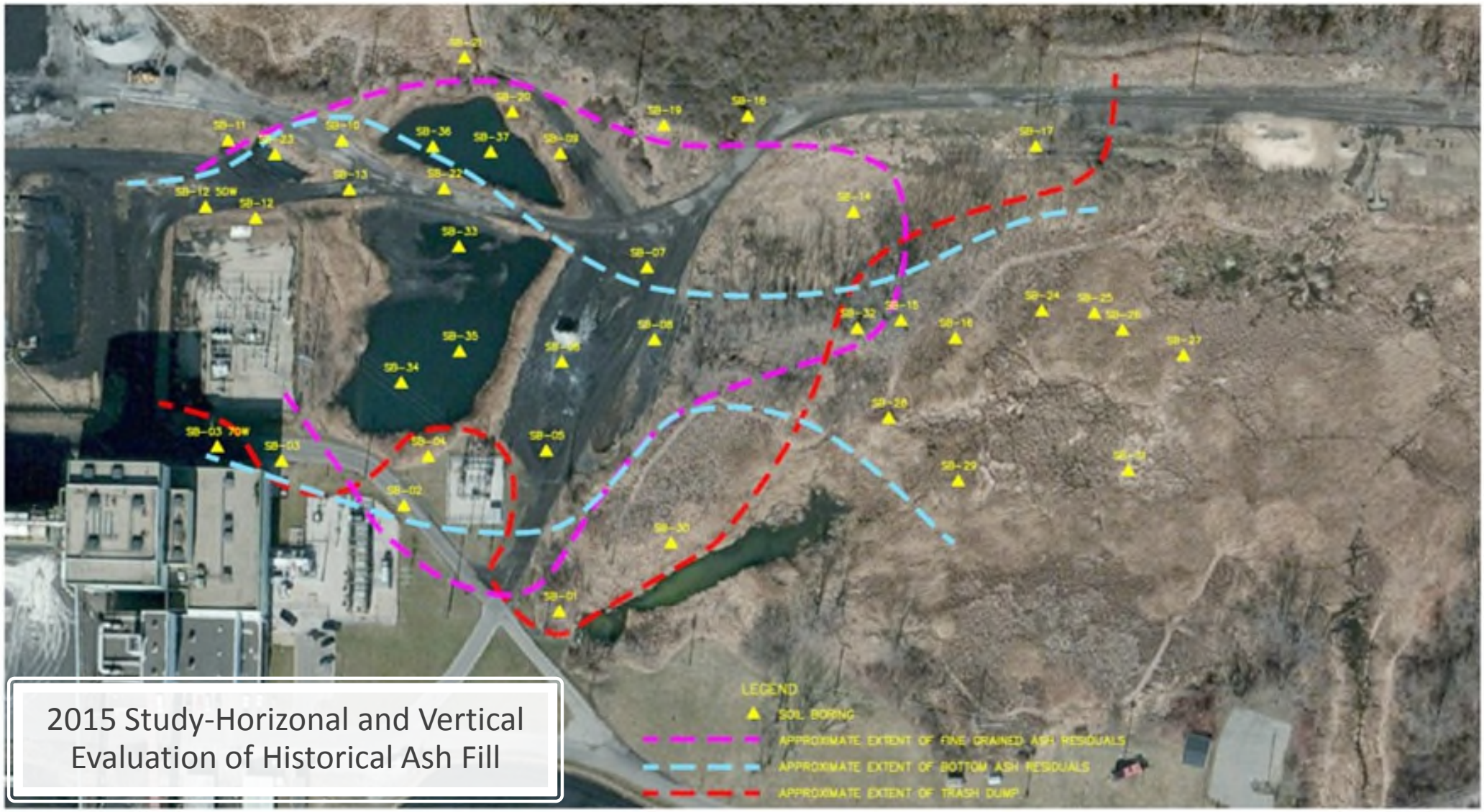
1. Define and Delineate Impoundments



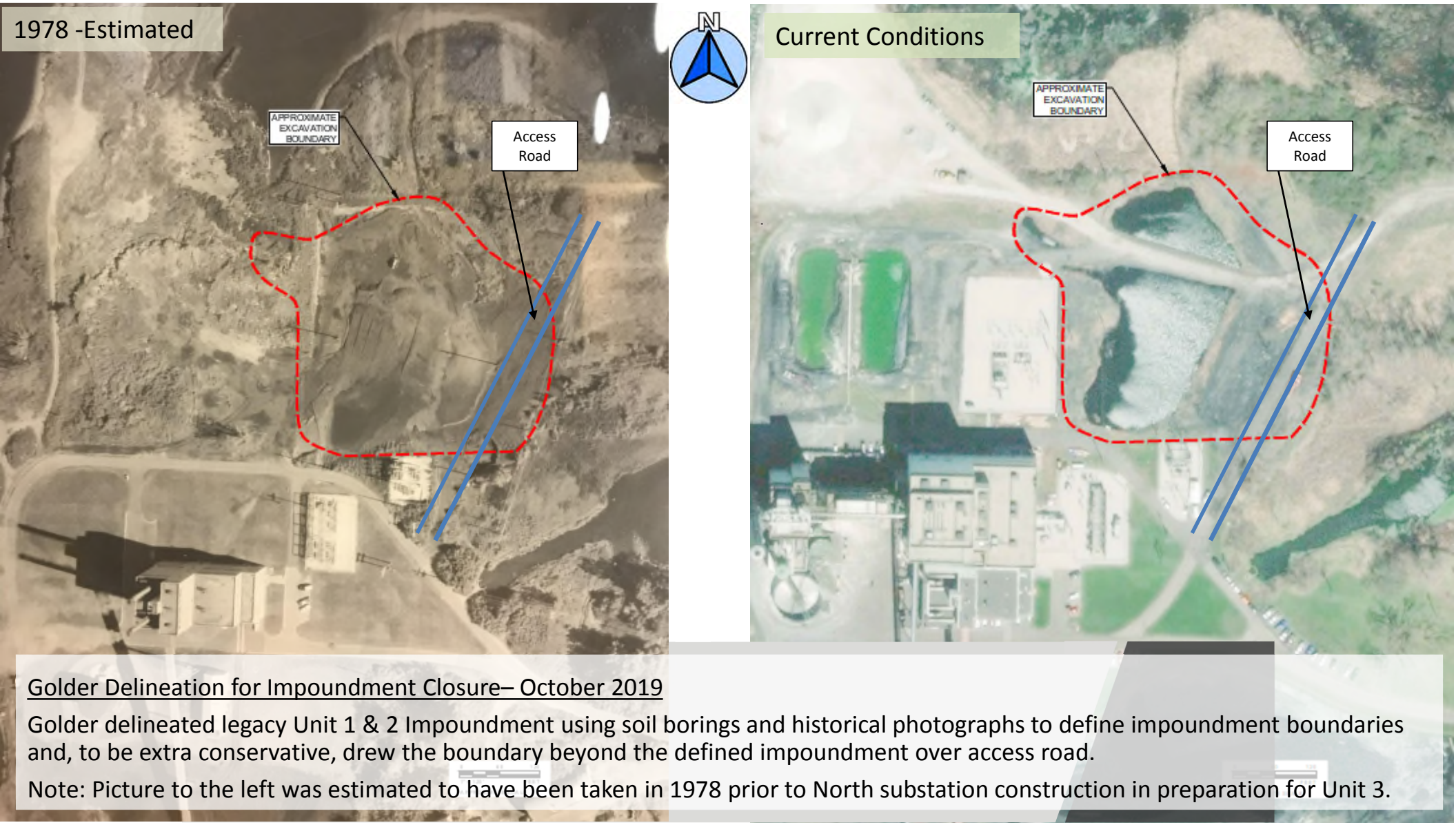
Harbor Island 1942

Prior to construction of the power plant on Harbor Island the City's plans were to use the ash generated from legacy Unit 1 & 2 to fill in the low-lying areas of the Harbor Island as quoted below.

'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.' -*Grand Haven Tribune - February 7, 1958*



2015 Study-Horizonal and Vertical Evaluation of Historical Ash Fill

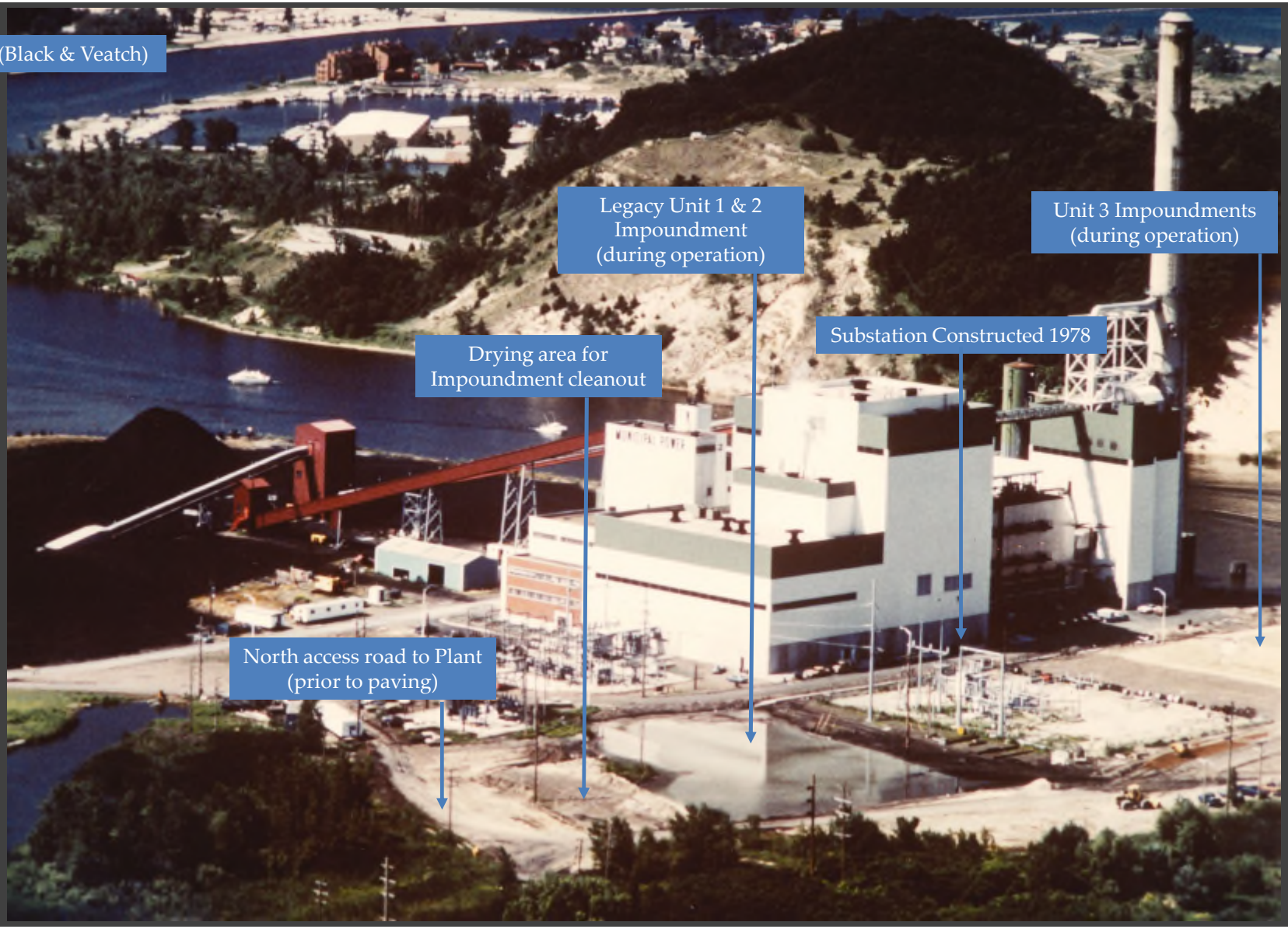


Golder Delineation for Impoundment Closure– October 2019

Golder delineated legacy Unit 1 & 2 Impoundment using soil borings and historical photographs to define impoundment boundaries and, to be extra conservative, drew the boundary beyond the defined impoundment over access road.

Note: Picture to the left was estimated to have been taken in 1978 prior to North substation construction in preparation for Unit 3.

Picture – 1983 (Black & Veatch)



Definitions

(BLP Understanding)

CCR surface impoundment or impoundment

- means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR.
  - Applies to Unit 3 Impoundments
  - Applies to legacy Unit 1 & 2 Impoundment

Existing CCR surface impoundment

- means a CCR surface impoundment that receives CCR both before and after October 19, 2015, or for which construction commenced prior to October 19, 2015 and receives CCR on or after October 19, 2015
  - Applies to Unit 3 Impoundments
  - Does not apply to legacy Unit 1 & 2 Impoundment

Inactive CCR surface impoundment

- means a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015.
  - Does not apply to Unit 3 Impoundment
  - Does it apply to legacy Unit 1 & 2 Impoundment?

CCR unit

- means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified.
  - Applies to Unit 3 Impoundments
  - Does not apply to legacy Units 1 & 2 Impoundment based on last sentence of definition.

Seeking EPA Clarification on Definitions and Delineation

1 - Confirmation or correction on how BLP is applying the definitions to the Unit 3 impoundments and legacy Unit 1 & 2 impoundment.

2 - Confirmation or correction that Rule 257 does not regulate historical coal ash that was used as fill on the Island prior to 1978.

3- Clarification that Rule 257 does not consider ash used as fill to be part of the legacy Unit 1 & 2 impoundment even if it is adjacent or contiguous to the impoundment.

<u>Prior to the agency making a determination, the BLP would like the EPA to consider the following.</u>

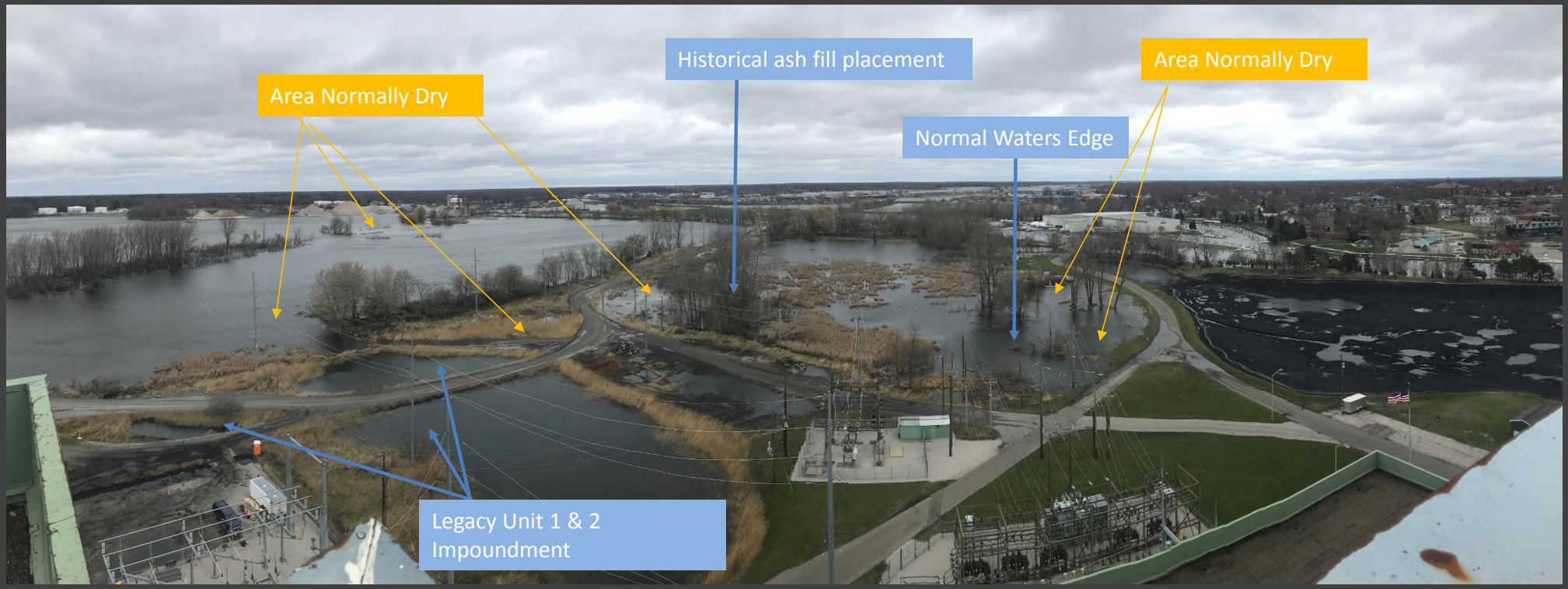
- The legacy Unit 1 & 2 impoundment footprint has been specifically defined since the construction of Unit 3 (over 37 years).
- Golder took a conservative approach and included the access road in their delineation so as not to underestimate the delineation of the inactive impoundment.
- Neither BLP, Golder, nor our legal council have been able to find any requirements that would make the ash used as historical fill applicable to any of the definitions of Rule 257.

2. Achieving Closure of Legacy Impoundment

Closure

(BLP Understanding)

Closure By Removal 257.102(c)	Relatively simple to close Unit 3 impoundments by removal since they were well engineered, built above ground, are well defined, clay lined, and maintained for the past 37 years. More difficult to achieve with legacy Unit 1 & 2 impoundment since it is a non-engineered depression in the ground, more challenging to define, unlined, and not maintained after abandonment in 2012. However, Golder believed this would be best option for trying to achieve compliance. High lake and river levels will make closure by removal very difficult. Unknown what effects this will have on concentrations getting below groundwater protection standards based on historical uses of Harbor Island.
Leaving in place and install a final cover system 257.102(d)	Never considered for Unit 3 impoundments given the ease of closure by removal. Since ash in legacy Unit 1 & 2 impoundment are now below water table, Golder did not believe compliance could be achieved with this option because they could not identify a practical ability to 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.



Harbor Island – Flooding (4/14/2020)

NOAA/National Weather Service – January 13, 2020.

- January 2013 through November 2019, Lake Michigan rose 6 feet including nearly 2 feet from January-July 2019.
- Current Lake Michigan level is near record high which was observed in summer and autumn of 1986.
- Homes are falling in the lake along the west shoreline.
- Strong winds and rain cause spikes in water level.

Closure of Impoundments

- The Board engineered, through its environmental engineering firm, closure of impoundments by material removal.
- The Board submitted the necessary permit applications in October 2019 and is in the final stages of receiving approval to conduct work.
- The Board solicited requests for proposals and received competitive bids in February 2020.
- The Board ceased generation of Unit 3 on February 13, 2020 and is immediately moving forward to close the impoundments this year.
- The Board voted on March 19, 2020 to award both the construction contract and the purchase of wetland mitigation bank credits pending receipt of a permit to conduct the remediation project.

Costs of Clean up:

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.

Seeking EPA Clarification on Closure Requirements

- Assuming that it is regulated under 40 CFR 257 Subpart D (as it is not regulated under Michigan law), clarification of how to achieve maximum effective environmental protection for the inactive legacy Unit 1 & 2 impoundment given its physical circumstances.

3. Deadlines for Closure

Background and History

- October 2018 : The original date in the 2015 CCR Rule that required the impoundments cease accepting CCR.

- April 23, 2018: BLP held a conference call and presented EPA with information to determine what would be needed to close under the Alternate Closure Provisions in 40 CFR 257.103. (we can provide a copy of this 2018 presentation if needed).
  - At the time, BLP staff was working with BLP Board of Directors to evaluate retirement of the plant rather than making retrofits to Unit 3 impoundments.
  - Engineering was completed by Lutz, Daily & Brain in early 2018 so that impoundments could be retrofitted if BLP Board did not vote to retire the facility.
  - Retrofit costs were estimated to be approximately $500,000 per Unit 3 impoundment.
- May 17, 2018: BLP Board voted to cease operations and retire the J.B. Sims Generating Station by June 1, 2020.
- July 31, 2018: Rule 257 was revised and the date to cease acceptance of CCR was extended to October 31, 2020 (approximately 5 months following the retirement of the J.B. Sims Generating Station).
  - BLP staff ceased the pursuit of the alternative closure provision since the plant would be retired before the deadline in the revised 257 rule.
- December 2018: the State of Michigan adopted its own CCR Law that did not provide the same timelines in Rule 257.101, unless the Alternate Closure Provisions in Rule 257.103 were used.
  - Therefore, based on this new requirement, the BLP completed the alternative closure demonstration documents in July 2019 that it had originally started in April 2018.

Deadlines

(BLP Understanding)

Closure or retrofit of CCR Unit 257.101(a)	Must cease placing CCR and non-CCR waste streams into such CCR surface impoundment no later than October 31, 2020. Timeframe does not apply if the owner or operator complies with the alternative closure procedures in 257.103.
Alternate Closure Requirements 257.103	The owner or operator of a CCR surface impoundment subject to close under 257.101 may continue to receive CCR in the unit provided the owner or operator meets the requirements of either: (a) No alternative CCR disposal capacity, or (b) Permanent cessation of a coal fired boiler by a certain date.

Seeking EPA Clarification on Closure Timelines

- Confirmation that the BLP meets the requirements to use the alternate closure provisions in Rule 257.103.

<u>Prior to the agency making a determination, the BLP can provide the following information.</u>

- Demonstration that there is no alternative disposal capacity.
- Documentation that the Board certified that it will cease operations by June 1, 2020.
- The Board can provide the necessary documentation for EPA review to determine if either or both of the alternate closure provisions have been met and can be used.

Summary

- The Board is working towards compliance with Rule 257 based on our understanding presented today but needs agency confirmation or guidance.
- Rule 257 has been through multiple revisions and it appears that another revision may be coming.
- We believe we have a good understanding of the rule and a well-developed plan for closure of impoundments.
- Harbor Island is a difficult site based on past historical activities.
- Current water levels will add to the difficulty of cleanup.
- The cost of the current cleanup plan is extremely expensive for a small city-owned electric utility.
- Before spending a significant amount of capital on clean-up efforts, the Board needs agency confirmation that our planned actions are properly defined and meet the requirements of the rules.

1. Agency questions?
2. What additional information does the Board need to provide?