July 9, 2021 Project No. 21451440

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GRAND HAVEN BOARD OF LIGHT AND POWER, FORMER J.B. SIMS GENERATING STATION, UPDATED COAL REMOVAL VERIFICATION WORK PLAN, GRAND HAVEN, MICHIGAN

Mr. Unseld:

This letter is being submitted to the Michigan Department of Environment, Great Lakes and Energy (EGLE) as a work plan to document and verify the removal of residual coal at the Grand Haven Board of Light and Power (GHBLP) former J.B. Sims Generating Station (JB Sims) facility located at 1231 Third Street in Grand Haven, Michigan. The plan was prepared to achieve the closure requirements of Part 115 of the Natural Resources Protection Act, 1994, PA 451 as amended (Part 115) and has been updated to incorporate EGLE's review comments provided June 10, 2021 and July 9, 2021.

Coal removal goals

Following the closure of J.B. Sims, residual coal remains in the low area of the eastern portion of the former coal yard where storm water collects.

GHBLP or their designated contractor will remove the residual coal and underlying layer of coal soil mixture from areas where coal currently remains. After the remaining coal and underlying layer of mixed coal and soil is removed, GHBLP or their designated contractor will remove an additional thin lift of soil/fill material from across the coal yard to address any remaining residuals. The goal is for GHBLP to remove soils until they are below the lower limit of the former coal layer and a de minimus amount of coal residue remains.

Verification method

Documentation of removal of the coal soil mixture will begin by completing topographic surveys of the area before and after removal operations using Global Positioning System (GPS) methods to determine location and elevation. Each survey location will be completed on the verification grid described in later paragraphs. Survey data will be tabulated, and topographic maps of the pre and post removal surfaces will be generated as a line of evidence of the removal. The survey grid will be supplemented with additional survey points to document grade

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changes and other irregularities in the surface if necessary. It is important to note that salvageable coal was removed from the western half of the coal yard for resale and the survey may not show changes in these areas.

In addition to the topographic survey, up to 12 soil borings will be completed prior to coal removal spread across the site to establish the thickness of the remaining coal and soils mixed with residual coal (Figure 1). The final excavation grades will be compared to the existing vertical extent determined from the borings as a line of evidence that the final excavation has removed all the coal to a de minimus amount. The proposed soil borings or soil pits will be completed using either direct push techniques, an excavator, hand auger, or hand shovel. The soil borings/pits will continue to a depth of 3 feet below the last encountered coal and are anticipated to be less than a total depth of 10 feet. Direct push borings will be completed using 5-foot-long macro-core samplers.

GHBLP intends to utilize a visual verification method to demonstrate consistency with a de minimus goal of an approximate 5% coal / 95% soil by designated area following coal removal. This has been historically the criteria used for a cleanup goal at other area sites that had coal yards closed.

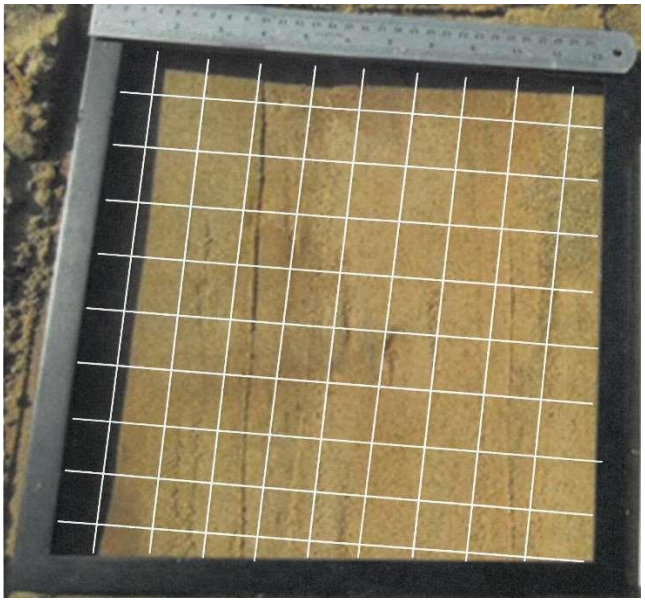


Figure 2: Typical Photograph Grid Frame

The visual documentation methodology will consist of first collecting photographs of the exposed soil surface after removal of the coal from the coal yard. Photographs will be taken depicting the general conditions of the overall coal yard area after removal operations are completed. Aerial photographs of the area may be used as part of this documentation, if available.

In addition, close up photograph documentation of “gridded areas” taken from a standard height (using a monopod or tripod) of a 1-foot by 1-foot square grid frame containing scaled grid markings depicting 100 sub-grid squares. It is anticipated that a grid frame will be constructed similar to the example depicted in Figure 2. The grid frame will assist in providing a visual assessment that residual coal does not exceed more than 5% of the area within the grid frame. A systematic numbering process will be used on each photo correlating with a site map showing the approximate grid locations where the photographs were taken.

Per the guidance contained in EGLE’s Sampling Strategies and Statistics Training Materials (S3TM) guidance manual, calculations for a sampling grid resulted in an approximate grid spacing of approximately 33 feet for the 468,850 square foot area of the former coal yard. To facilitate placement of the grid spacing on site, a grid interval of approximately 33.33 feet will be used. This will result in a preliminary grid pattern having approximately 437 grid intersections within the former coal yard area as depicted on Figure 1; the total number may change depending on configuration of the grid pattern in the field. Close up photograph documentation, as described above using the grid frame, will be taken at approximately half (219 locations) of the grid intersections.

Verification documentation implementation

The process of coal removal verification consists of two phases:

1. GHBLP workers or their designated contractor will excavate remaining residual coal to the satisfaction of the site GHBLP representative. If there are locations where the excavation activities encounter areas where storm water collects during the excavation activity, the water will be pumped to other areas of the site to infiltrate or a surface water body under appropriate permitting.

2. A construction quality assurance (CQA) officer will then document removal of the coal soil mixture as soon as removal operations are complete. Work will begin by using GPS survey methods to establish each grid node within the excavation area and comparing the elevation to the preconstruction survey elevation to document thickness removed. At each grid node, the CQA officer will place the 1-foot by 1-foot square grid frame at the grid node to visually confirm the area has met the 95% or more coal removal goal. If the grid placement and area evaluation identified coal as greater than 5%, then additional material will be removed. If the evaluation performed by the CQA officer results in a visually identified coal content of less than 5%, photographs and survey information will be collected and recorded to document completion of removal within that grid node.

Once both parties (i.e., GHBLP Representative and the CQA officer) agree that 95% removal has been achieved, the grid node will be deemed “verified” and GHBLP or their designated contractor may backfill the area with clean fill sand as appropriate based upon future development plans. Please note that while quantified (visual) verification will be documented at each grid node, both parties involved in the removal action (i.e., GHBLP and the CQA officer) will observe each 33 feet by 33 feet grid square to assess and determine that coal had been removed over the entire grid square to a minimum of 95% removal.

As done at other west Michigan coal yard closures, a summary report will be provided to EGLE that describes the verification activities and provides the CQA documentation collected in the field. The verification process will start after the approval of this work plan and after GHBLP or their designated contractor completes the residual coal removal.

If you have any questions or comments about the work plan, please contact Blaine Litteral at 616-283-3881.

Sincerely,

Golder Associates Inc.

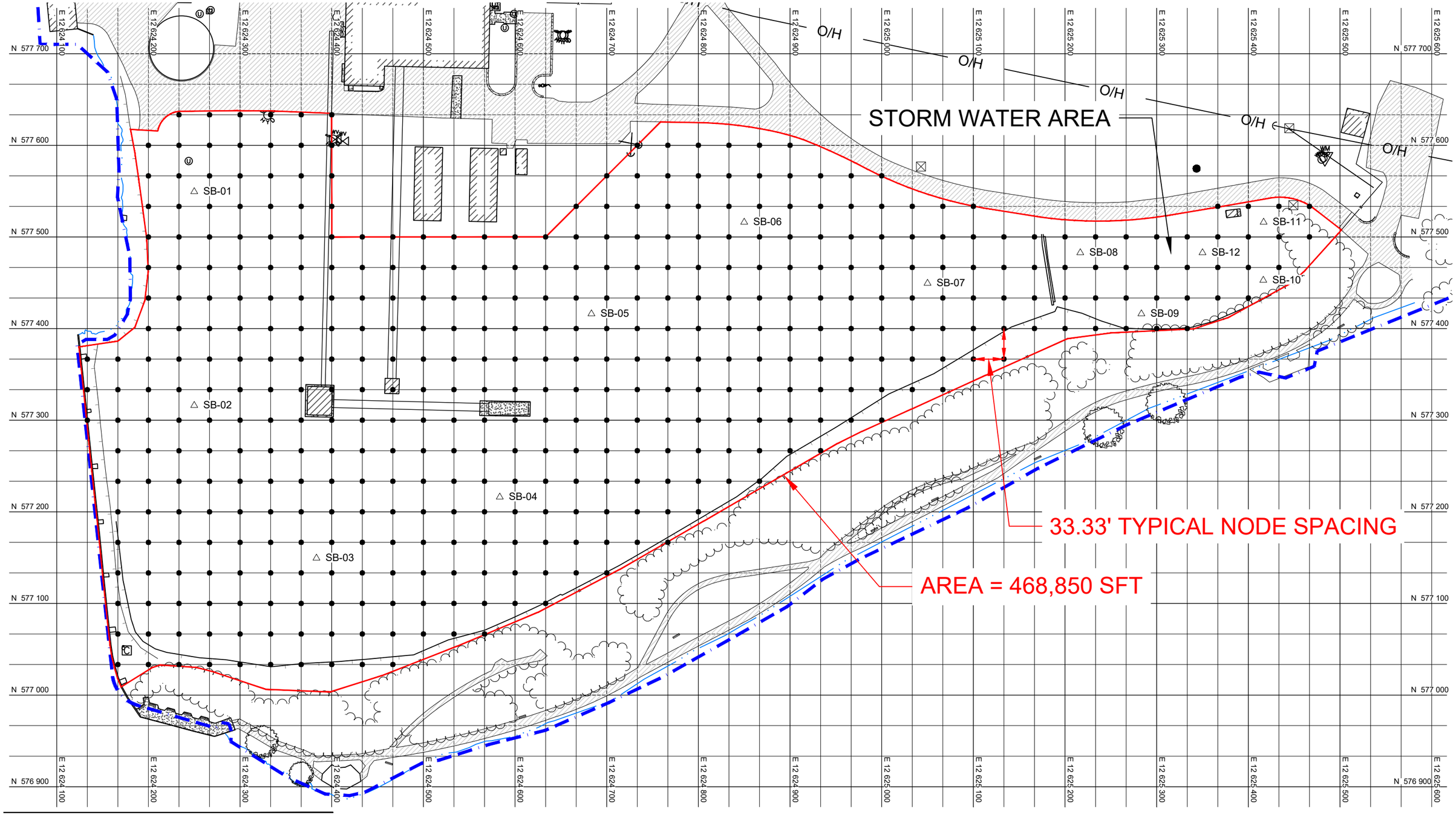
Kurtis J. Van Appledorn, P.G.
Senior Hydrogeologist

Blaine A. Litteral, P.E.
Practice Leader

KJV/BAL

CC: Erik Booth – GHBLP (email)
Paul Cederquist – GHBLP (email)
Arthur Siegal – Foster Swift (email)

Attachments: Figure 1



LEGEND

- △ PROPOSED SOIL BORING
- ● NODE

0 50 100
1" = 100' FEET

CLIENT
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-07-07
DESIGNED	DJS
PREPARED	DJS
REVIEWED	KVA
APPROVED	BAL

PROJECT
JB SIMS GENERATING STATION
COAL PILE CLOSURE

TITLE
GRID NODES AND PROPOSED SOIL BORING LOCATIONS

PROJECT NO.	CONTROL	REV.	FIGURE
21451440		1	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B