CLOSURE PLAN FOR EXISTING CCR SURFACE IMPOUNDMENT PER 40 CFR 257.102 (b)

SITE INFORMATION

Site Name / Address	DTE Energy River Rouge Power Plant Ash Basin (Figure 1) 1 Belanger Park Dr, River Rouge, MI 48218		
Owner Name / Address	DTE Electric Company / One Energy Plaza, Detroit, MI 48226		
CCR Unit	Bottom Ash Basin (BAB)	Final Cover Type	N/A
Reason for Initiating Closure	Known final receipt of waste	Closure Method	Closure by Removal

CLOSURE PLAN DESCRIPTION

(b)(1)(i) – Narrative description of how the CCR unit will be closed in accordance with this section.

The initial Closure Plan for the RRPP-BAB, placed into the operating record on October 17, 2016, is being amended in accordance with 40 CFR 257.102(b)(3)(B) as the initially proposed BAB closure approach was to be performed by full BAB dewatering followed by CCR removal. However, as a result of final design considerations, CCR removal from the BAB will be accomplished by wet excavation (dredging) techniques as further described below.

Closure Approach

The RRPP BAB will be closed by removal of all CCR based on proposed design grades; these design grades are based on clearly visible demarcation of CCR and underlying native materials witnessed during pre-construction soil borings.

Specific closure operations will involve: (i) CCR removal by wet dredging within the BAB, (ii) removal or decontamination of any areas affected by releases of CCR, (iii) cutting and capping of the former CCR process lines to the BAB, and (iv) regrading to final desired grades using borrow soil for fill.

The lateral boundaries of the BAB are defined by the sheet piling placed around the perimeter of the impoundment. Approximate area of the BAB is 40,000 square feet (SF). The existing site conditions are shown on Figure 2.

Dredging of CCR will reach approximate depths of 4 to 11 feet below the existing bathymetric surface within the BAB. Proposed excavation bottom elevation contours are provided on Figure 3 and a generalized cross-section is provided on Figure 4. After CCR is removed from the BAB, the area will be repurposed as a polishing lagoon to manage remaining process and stormwater streams utilizing existing wastewater/storm water infrastructure and the existing sheet pile wall at least until the RRPP is ultimately decommissioned. After BAB closure, none of the process or stormwater streams will contain CCR.

DTE Electric is planning to remove the CCR materials through wet excavation (dredging) within the BAB. Dry excavation within the basin was evaluated but was rejected as an option based on geotechnical review of the existing sheet pile wall stability. If dewatering was performed to enable CCR removal in dry conditions, the existing sheet pile wall infrastructure was calculated to be potentially unstable subject to these conditions as the sheet pile wall system was not originally designed for complete dewatering and the resultant hydrogeologic stresses that would occur if the basin was fully dewatered. Further, solutions to temporarily reinforce the existing sheet pile to perform CCR removal in dry conditions were deemed cost prohibitive, increased the overall project schedule, and caused potential constructability limitations/safety concerns.

CLOSURE PLAN DESCRIPTION

(b)(1)(ii) If closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.

Removal Criteria Development

DTE Electric will close the BAB based on the removal criteria described herein and with agreement from the Michigan Department of Environment, Great Lakes, and Energy (EGLE). DTE had a bathymetric survey completed (October 2019), and had confirmatory drilling performed with visual assessments of collected samples (February 2020) to develop lines of evidence for use in defining the horizontal and vertical extent of CCR within the BAB in support of final closure design efforts. Existing bathymetry of CCR within the BAB is depicted on Figure 2. Boring locations are shown on Figures 2 and 3. Confirmatory drilling included:

- Advancement of ten (10) soil borings until native materials were encountered utilizing a pontoon based Vibra-Core sampler rig to collect soil samples and determine the thickness of CCR within the BAB;
- Collection of samples at each boring location logged according to the unified soil classification system (USCS) and visually evaluated for the presence of CCR; and
- Soil cores were retained for future comparison to post-excavation conditions.

The confirmatory drilling identified CCR extending to a depth of 4 to 11 feet below the existing bathymetric surface within the BAB at a submerged depth of approximately 2 to 14 feet below the water surface depending on location within the BAB. Generally, the submerged depth to CCR and depth to native material is greater on the eastern end of the BAB where routine dredging was performed.

Clear visible demarcation between CCR and underlying native materials was noted in the confirmatory soil boring cores. Native material consists of silt and sand of distinctly different color and grain size gradation compared to CCR disposed within the BAB and this material difference will serve as strong visually-identifiable evidence for dredging limits within the BAB.

Therefore, based on the confirmatory drilling results, removal criteria for the project will primarily be based on proposed design grades for CCR removal that were set to the elevations CCR was observed within the BAB plus an additional 6 inches with visual confirmation and secondary documentation measures as described below (see "Documentation of CCR Removal").

CCR Removal Procedures

DTE Electric's selected contractor will perform the following tasks to effectively remove CCR from the BAB:

- Complete mobilization of construction facilities, material, equipment, and personnel necessary to perform work;
- Install erosion controls and site preparation including the installation of silt fence, silt curtains, and access road improvements. Full-depth silt curtains will be deployed at multiple locations within the BAB to ensure compliance with existing National Pollutant Discharge Elimination Discharge Elimination System (NPDES)/Publicly Owned Treatment Works (POTW) limits and to control redistribution of CCR during dredging efforts;
- Perform water management activities, anticipated to include:
  - Abandonment of coal combustion (CC) process-related inlet pipes at process units;
  - Maintain remaining process/storm water inlet pipes and flow streams during CCR removal from BAB. Process flow entering the basin will continue to be routed to the existing pump station on the western end of the basin and through the existing NPDES outfall or to the POTW. All waste streams discharging into the BAB must cease by October 31, 2020[1] per the CCR Rule until all CCR has been removed from the impoundment. Existing waste streams discharging into the basin will require diversion and, if needed, treatment if CCR dredging is not completed by October 31, 2020. After the CCR removal is completed, the remaining process/stormwater flow streams will discharge to the constructed

[1] Date is subject to change per finalization of EPA's December 2, 2019, Holistic Approach to Closure Part A: Deadline to Initiate Closure.

replacement process/stormwater polishing lagoon.

- Dredge CCR from the BAB utilizing long reach excavator(s), and/or barge mounted clamshell excavator and/or hydro-excavation methods to the design grades established, equal to the bottom of ash elevation observed during confirmatory drilling plus an additional 6 inches (to ensure CCR is removed). Excavated material will be first transferred/relocated to the existing on-site concrete dewatering/decant pad located west of the BAB, and then transported offsite to Sibley Quarry Landfill for disposal. Dewatered material will be observed when loaded to ensure it is acceptable material to be disposed of at Sibley Quarry Landfill. The Contractor will also use appropriate level of effort to remove CCR residuals from all sheet pile cavities/arches, including, but not limited to hydro-jetting to dislodge unexcavated debris from the interior of the sheet pile;
- Construct the replacement process/stormwater polishing lagoon within the confines of the existing sheet pile wall by placing engineered backfill, containing general fill to specified subgrade elevations and a minimum 4-inch-thick AquaBlok (e.g. Liner) with 4-inch-thick coarse aggregate armoring layer at the specified elevations to line the bottom of the polishing lagoon;
- Complete site restoration activities, which includes completing final grading around the BAB to restore areas to pre-construction grades and placing a stone surface (MDOT 21AA) over disturbed areas and/or dedicated access drives. Silt fence would be removed after closure of the county-issued soil erosion and sedimentation control (SESC) permit anticipated for the construction phase of this project; and
- Demobilization of construction facilities and equipment from the Site.

Documentation of CCR Removal

DTE Electric is planning to perform the following CCR removal documentation protocol to satisfy the requirements within §257.102(c):

- Final excavation grades will be compared to known elevations of CCR and the specified design grades as the primary documentation of CCR removal. Bathymetric survey(s) concurrent with the dredging efforts will determine whether there are locations where dredging/excavation did not remove CCR material to the extent required and will inform the contractor where additional removal is needed. Surveys will be based on survey control points previously established at the site. Elevations will be based on North American Vertical Datum of 1988 (NAVD88) datum and coordinates will be based on the state plane coordinate system;
- After excavation, confirmatory samples of the sediment bottom within the basin will be collected as necessary and examined as secondary documentation of CCR removal. Visual inspection of samples will be used to augment the post-dredging bathymetric survey as part of the overall CCR removal verification approach. The presence/absence of CCR in samples will be based primarily on color and gradation and will be compared to the retained pre-construction sample cores collected in February 2020; and
- Supplemental documentation of CCR removal will include photographic evidence of excavated material and clean condition field measurements collected by oversight personnel. Details of supplemental documentation protocols include:
  - Photographs will be in digital format and will be filed in chronological order in an electronic file. Photograph documentation will include date and time, location where photograph was taken, information regarding the orientation of the photograph itself for proper viewing, description of the subject matter, and unique identifying number for reference in reports.
  - Clean condition checks are anticipated to include depth checks along the interior wall to ensure CCR removal from all sheet pile cavities/arches. This termination depth will be compared to the design grades to verify if appropriate dredge depth has been established immediately adjacent to the sheet pile wall.
- CCR removal will be documented in a Construction Documentation Report (CDR) at the conclusion of construction efforts. The CDR and addendums are anticipated to include the following information:
  - Parties and personnel involved with the project;

CLOSURE PLAN DESCRIPTION

- Purpose and scope of work;
- A summary of the design criteria;
- Narrative of the project (detailed chronologically), including a discussion of problems encountered and how they were addressed;
- Quality assurance methods;
- Record drawings showing the excavation area and final grades, structures and permanent soil erosion and sedimentation control features;
- A summary of the field observations, test results reported, and inspection findings;
- A summary of problems and deficiencies encountered during construction that incorporated engineering design modifications as part of the solution;
- Certification by a Michigan Professional Engineer that construction was in accordance with the approved final plans and specifications for any necessary deviations from the approved plans and specifications;
- Explanation of any modifications to the approved final plans;
- Photographic documentation of major activities;
- Documentation that acceptance criteria were met in accordance with the plans and specifications; and
- Written correspondence with regulatory agencies.

Post-Removal Monitoring

DTE Electric intends to address the affected groundwater by continuing to operate the already-in-place interim groundwater collection system, however, evaluation of the final remedy will continue post-removal of CCR from the BAB. If the groundwater collection system is selected as part of the final remedy, the system will be operated until the risk of migration of CCR constituents from the RRPP BAB CCR unit to receptors is effectively mitigated and groundwater data demonstrate that groundwater concentrations of Appendix IV constituents are below the relevant GWPSs for at least two consecutive semiannual groundwater sampling events.

After removal of CCR from the BAB, DTE Electric will continue semiannual assessment monitoring as specified in §257.95 and annual nature and extent monitoring will continue for the RRPP BAB CCR unit per §257.95(g)(1). Groundwater monitoring will be performed in accordance with the existing Quality Assurance Project Plan – DTE Electric Company River Rouge Power Plant Bottom Ash Basin (the QAPP) (TRC, July 2016; revised August 2017) and statistically evaluated per the Groundwater Statistical Evaluation Plan – DTE Electric Company River Rouge Power Plant Coal Combustion Residual Bottom Ash Basin (Stats Plan) (TRC, October 2017).

INVENTORY AND AREA ESTIMATES

(b)(1)(iv) – Estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit	13,900 cubic yards
(b)(1)(v) – Estimate of the largest area of the CCR unit ever requiring a final cover	No final cover will be placed as the CCR is being removed.

CLOSURE SCHEDULE

(b)(1)(vi) – Schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including major milestones …and the estimated timeframes to complete each step or phase of CCR unit closure.

The milestone and the associated timeframes are estimates. Some of the activities associated with the milestones will overlap. Amendments to the milestones and timeframes will be made as more information becomes available.

Initial Written Closure Plan Placed in Operating Record	October 17, 2016
Notification of Intent to Close Placed in Operating Record	2020
Agency coordination and permit acquisition • Coordinating with state agencies for compliance • Acquiring state permits	May 2020 June 2020
Mobilization	June 2020
Dewater ash pond	NA
CCR removal and decontamination	June 2020-October 2020
Estimate of Year in which all closure activities will be completed	2023

Certification by qualified professional engineer appended to this plan.

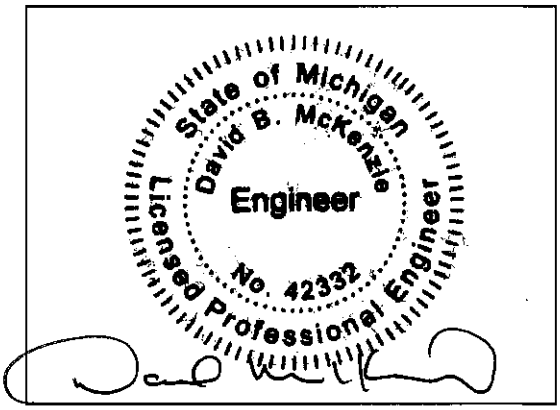
Certification Statement 40 CFR § 257.102(b)(4)- Amended Written Closure Plan for a CCR Surface Impoundment

CCR Unit: DTE Energy River Rouge Power Plant Ash Basin

I, David McKenzie, P.E. being a Registered Professional Engineer in good standing in the State of Michigan, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the information contained in this amended written closure plan dated July 15, 2020 meets the requirements of 40 CFR § 257.102.

David McKenzie, P.E.
Printed Name

7/15/2020
Date



Figures

LEGEND

- GROUNDWATER EXTRACTION SYSTEM PIPE AND CONDUIT TRENCH
- EXTRACTION WELL VAULT
- ELECTRICAL PULL BOX
- CLEANOUT (TWO-WAY)
- CLEANOUT (ONE-WAY)
- FENCE
- MISCELLANEOUS PIPING
- DRAIN PIPE
- UPPERMOST AQUIFER MONITORING WELL
- UPPERMOST AQUIFER MONITORING WELL
- MONITORING POINT
- BEDROCK MONITORING WELL
- PERCHED MONITORING WELL
- PERCHED MONITORING WELL
- BAB CLOSURE CONFIRMATORY BORING WITHIN BASIN (FEBRUARY 2020)
- E — ELECTRIC LINE
- DRAINS / ASH LINE
- GAS — GAS LINE
- GAS — GAS LINE ABANDONED OR NO LONGER PRESENT
- SAN — SANITARY SEWER LINE
- W — WATER LINE
- RIPRAP
- 570 — EXISTING BASIN BOTTOM CONTOUR (SEE NOTE 3)

NOTES

1. BASE MAP AND TOPOGRAPHIC CONTOURS OBTAINED FROM "DTE RIVER ROUGE POWER PLANT- BOTTOM ASH BASIN HYDRAULIC ANALYSIS", FIGURES 1 AND 3 (NTH CONSULTANTS, LTD., DATED 2016).
2. BMJ EXTRACTION WELL AS-BUILT SURVEY PERFORMED ON 12/27/2017, AND 3/28/2018.
3. BMJ BATHYMETRIC SURVEY OF BASIN PERFORMED ON 10/07/2019.

N

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SCALE IN FEET

PROJECT: DTE ELECTRIC COMPANY
RIVER ROUGE ELECTRIC GENERATING POWER PLANT
1 BELANGER PARK DRIVE
RIVER ROUGE, MICHIGAN

TITLE: SITE LAYOUT

DRAWN BY:	S. HAMWAY	PROJ. NO.:	358707.0002.0000
CHECKED BY:	S. PAWLUKIEWICZ		FIGURE 1
APPROVED BY:	V. BUENING		
DATE:	MAY 2020		

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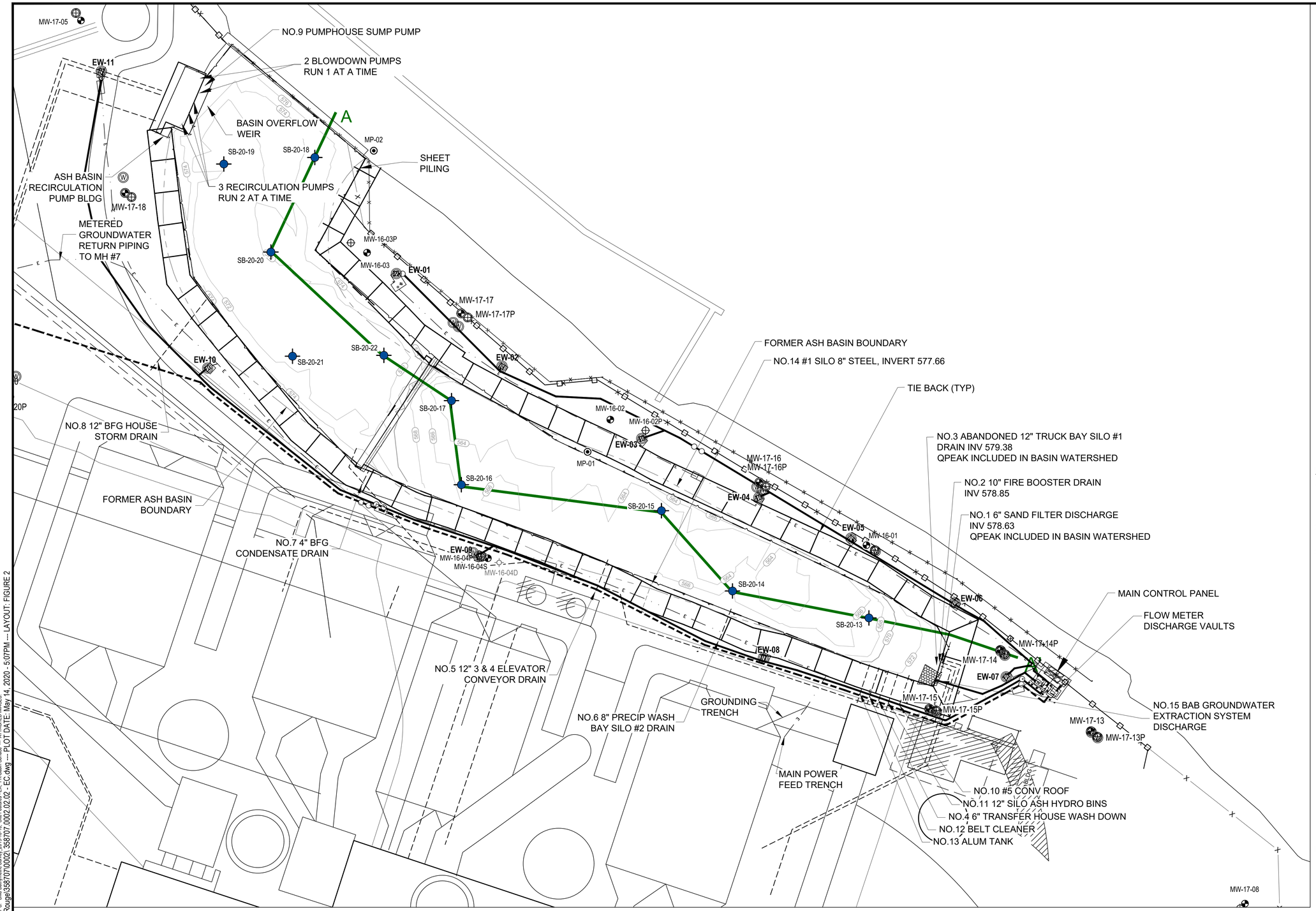

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- CROSS-SECTION A-A'

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N

0 30 60 90 120
SCALE IN FEET

PROJECT: DTE ELECTRIC COMPANY
RIVER ROUGE ELECTRIC GENERATING POWER PLANT
1 BELANGER PARK DRIVE
RIVER ROUGE, MICHIGAN

TITLE: EXISTING CONDITIONS SITE PLAN

DRAWN BY:	S. HAMWAY	PROJ NO.:	358707.0002.0000
CHECKED BY:	S. PAWLUKIEWICZ		FIGURE 2
APPROVED BY:	V. BUENING		
DATE:	MAY 2020		

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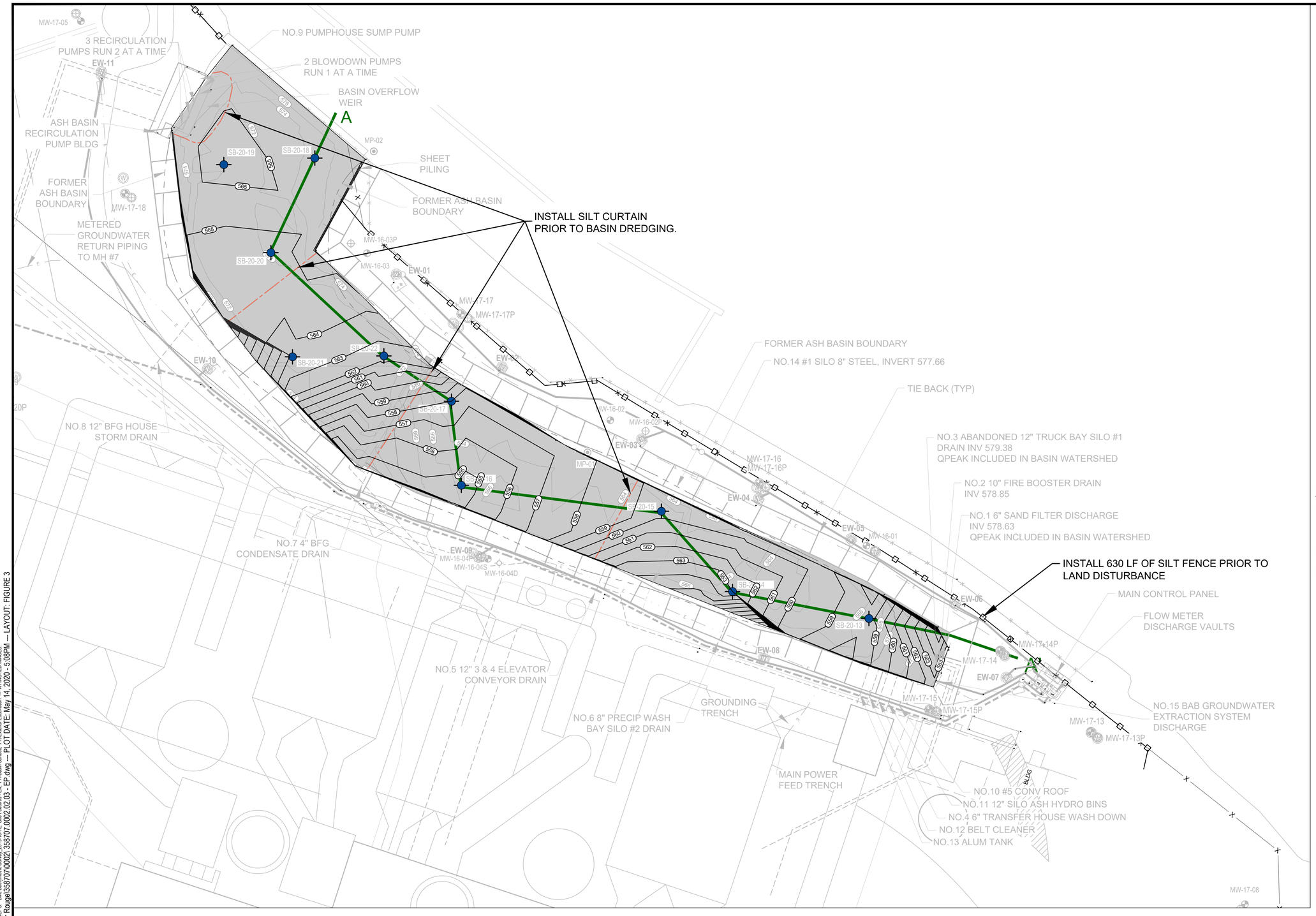

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- EXISTING BASIN BOTTOM CONTOUR (SEE NOTE 3)
- PROPOSED EXCAVATION CONTOUR
- PROPOSED EXCAVATION AREA
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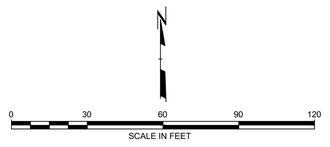

PROJECT: **DTE ELECTRIC COMPANY**
RIVER ROUGE ELECTRIC GENERATING POWER PLANT
1 BELANGER PARK DRIVE
RIVER ROUGE, MICHIGAN

TITLE:

PROPOSED EXCAVATION SITE PLAN

DRAWN BY:	S. HAMWAY	PROJ. NO.:	358707.0002.0000
CHECKED BY:	S. PAWLUKIEWICZ		
APPROVED BY:	V. BUENING		**FIGURE 3**
DATE:	MAY 2020		

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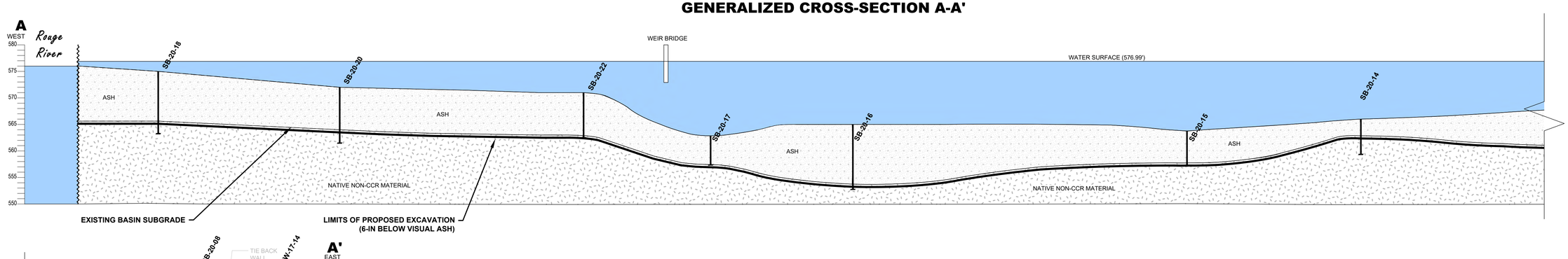
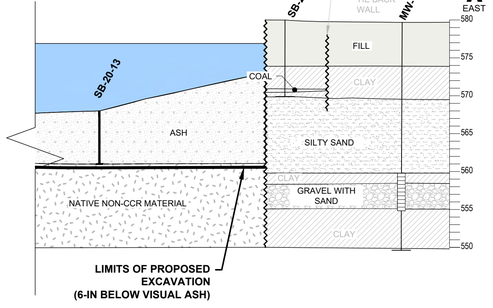
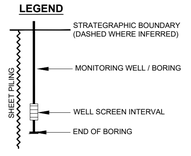
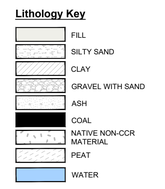
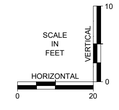
GENERALIZED CROSS-SECTION A-A'











PROJECT:
DTE ELECTRIC COMPANY
RIVER ROUGE ELECTRIC GENERATING POWER PLANT
1 BELANGER PARK DRIVE
RIVER ROUGE, MICHIGAN

TITLE:
GENERALIZED CROSS-SECTION A-A'

DRAWN BY:	S. HAMWAY	PROJ. NO.:	358707.0002.0000
CHECKED BY:	S. PAWLUKIEWICZ		
APPROVED BY:	V. BUENING		**FIGURE 4**
DATE:	MAY 2020		

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