PM ENVIRONMENTAL
Risk Well Managed

Corporate Headquarters
Lansing, Michigan
3340 Ranger Road, Lansing, MI 48906
f: 877.884.6775
t: 517.321.3331

Michigan Locations
Berkley **Bay City**
Grand Rapids **Oak Park**
Chesterfield **Lansing**

February 29, 2020

Mr. Paul Owens
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Warren District Office
27700 Donald Court
Warren, Michigan 48092

Progress Update - February 2020 Activities
Former Revere Copper and Brass
5851 West Jefferson, Detroit, Wayne County, Michigan 48209
EGLE Site ID No. 82000136

Dear Mr. Owens,

On behalf of Revere Dock, LLC (Revere Dock) PM Environmental, Inc. (PM) is providing an update of activities undertaken at the above-refenced subject property in February 2020, including installation of additional erosion and site access controls; upland bank failure and sediment characterization activities; and geotechnical investigation and reporting activities.

Existing Bank Failure Area Dermal Contact and Erosion Controls

As outlined in the January 24, 2020 Interim Response Plan prepared for the subject property by PM and the February 7, 2020 Response to January 31, 2020 Compliance Communication, direct contact and erosion controls exist in the bank failure area and have been implemented as follows (refer to the attached Figure 2):

- **Gravel/Concrete Surface Cover:** The majority of the area of the bank failure is equipped with a gravel cover (limited areas of concrete surfacing are also present) that provides a barrier to dermal contact with contaminated soils.

- **Security Fencing:** A 6-foot tall chain link fence was constructed across the entire north/south width of the subject property on January 31, 2020, which is equipped with a locked security gate (Appendix A). This fence prevents access to the bank failure area by unauthorized persons. This fencing is inspected on a weekly basis with records maintained by Revere Dock.

- **Gravel Erosion Control Berm:** A gravel control berm was installed along the northeast boundary of the pond in January 2020 within the bank failure area to provide erosion control and filtration of potential runoff in the pond area. The gravel erosion control berm is inspected on a daily basis with, maintenance completed as needed, and records of inspection and maintenance activities maintained by Revere Dock.

- **Erosion Control Blankets:** As an additional control, Revere Dock installed erosion control blanketing along the boundary of the bank failure area as depicted in the attached figure and the photos included in Appendix A. The erosion control blankets/rolls were installed on February 8, 2020. The erosion control blankets are inspected on a daily basis with, maintenance completed as needed, and records of inspection and maintenance activities maintained by Revere Dock.

- **Cable Buoys:** Cable buoys were installed in the river across the entire length of the subject property as depicted on Figure 2 to further restrict access via the river. Installation of the buoys was completed on February 8, 2020. The buoys were moved intermittently during the river bank failure material and sediment characterization activities conducted between February 11 and 17, 2020 (refer to the Bank Failure Area Material Characterization/Sampling section below), with maintenance completed on the cable buoy assembly during the week of February 17, 2020.

  The cable buoys are inspected on a weekly basis, with records maintained by Revere Dock. Refer to Appendix A for photos of the cable buoys.

- **5-foot Turbidity Curtains:** Turbidity control curtains (five-foot curtain depth) with linked surface flotation elements/buoys are present in the water immediately adjacent to the bank failure area, which are anchored to the river bottom in accordance with manufacturer recommendations. The depth of the curtains approximates the bottom depth of the area where they are installed such that they are serving to contain potential erosion/turbidity sourced from the site.

  Ice-related damage was identified during turbidity curtain inspection activities Therefore, the 5-foot turbidity curtains were replaced during the week of February 20, 2020, as depicted in the photographs included in Appendix A. Consistent with the February 7, 2020 Response to January 31, 2020 Compliance Communication, the curtains are inspected on a daily basis with records maintained by Revere Dock.

- **20-foot Turbidity Curtain Removal:** Deeper turbidity control curtains (20-foot curtain depth) with linked surface flotation elements/buoys were installed beyond the 5-foot turbidity curtains to provide additional erosion/turbidity control. However, the larger curtains, were not able to be maintained in place in a vertical orientation in the strong river current and were required to be removed to facilitate characterization of bank failure material and sediments in the river adjacent to the subject property. Therefore, the 20-foot turbidity curtains were removed during the week of February 10, 2020, following the installation of additional erosion and site access controls in the form of erosion control blanket and cable buoys, as outlined above.

Bank Failure Area Aggregate Material Removal and Visual Stability Evaluation

A Bank Failure Area Aggregate Material Removal Visual Stability Evaluation Summary report, dated February 5, 2020 was submitted to EGLE, per its request for information regarding the removal of aggregate material from the bank failure area, including the area of the failure area pond.

The February 5, 2020 summary report, which is included in Appendix B, documented that aggregate material present in the area of the river bank failure was removed/excavated and relocated onsite by Detroit Bulk Storage between November 29 and December 13, 2019, and that the pond area was excavated using power equipment and its presence is consistent with a dug pond.

The summary also documented that excepting the erosion berm construction activities completed between the pond area and the shoreline, the topography remained relatively constant between December 13, 2019 and January 21, 2002, which was the time period during which aerial drone shots of the bank failure area were evaluated in the summary.

Onsite Geology/Hydrogeology Correction

At the request of EGLE, the geology/hydrogeology descriptions included in the January 24, 2020 Interim Response Plan were reviewed. References to the Tonquish and Johnson drain, and the associated groundwater depths and flow direction included in that report were determined to have been included by mistake.

Geology/hydrogeology at the subject property is as follows:

- Site specific stratigraphy generally varies across the site and consists of clayey sand or gravelly sand to between 3.0 and 4.0 feet below ground surface (bgs) with intermittent concrete and brick debris present at varying depths to 7.0 feet bgs, underlain by soft clay to a depth of at least 20.0 feet bgs. Some gravelly sand lenses were identified between clay seams between 6.0 and 14.0 feet bgs.

- Groundwater was encountered within deeper gravelly sand lenses at an average depth of 8.5 feet bgs, with groundwater flow documented to the southeast, towards the Detroit River.

Bank Failure Area Material Characterization/Sampling:

Restoration of the bank failure area will include removal of the material present within the Detroit River as a result of the failure event, which in turn requires characterization of the material to determine appropriate management, relocation, and/or disposal requirements.

It is anticipated that the bank failure material may be suitable for relocation on the subject property in accordance with Section 20120c of Part 201; therefore, additional soil, groundwater, and onsite surface water sampling were conducted within the (on land) bank failure area to further document current concentrations and to determine whether the river material and onsite soils are sufficiently similar for onsite relocation to occur.

Additionally, it is expected that sediments underlying the bank failure material will be disturbed during removal of the bank failure material and that management, relocation and/or disposal of sediment material will be required. Therefore, sediments underlying the failure material were characterized to determine requirements for managing the sediment material and to support preparation and submittal of a Joint Permit Application for construction activities to the United States Army Corps of Engineers (USACE) and EGLE as part of the Restoration Plan, planned for submittal on March 30, 2020.

Refer to Figure 3 for the locations where samples were collected within the bank failure area.

On Land Characterization Activities

On land characterization activities were completed on February 10, 2020, and included the advancement of three soil borings (SB-12 through SB-14) to a maximum depth of 20.0 feet bgs

using a Geoprobe® drill rig and the installation of three temporary monitoring wells (TMW-12 through TMW-14), which were screened to intersect the shallow water table. The temporary monitoring wells were surveyed using a total station with ground surface and top of casing elevations recorded. The wells were allowed to stabilize prior to sampling using low-flow methods on February 20, 2020. Surface water sampling in the pond and river area inside of the 5-foot turbidity curtains was also completed.

All soil borings were screening visually and using a photo-ionization detector, radiation detector, and x-ray fluorescence (XRF) meter calibrated to detect thorium and uranium. No elevated radiation levels were identified during field screening of the soils recovered from the soil borings and no elevated thorium or uranium concentrations were identified during XRF screening.

All drilling and sampling equipment was decontaminated prior to the start of field activities and between soil boring locations, with all investigation derived waste placed in sealed, labeled drums, the contents of which are being characterized for proper disposal at a later date.

Soil, groundwater, and surface water samples, as well as quality control/quality assurance (QA/QC samples) collected during the on land characterization activities were placed in appropriately labeled/preserved sample containers and transported under chain of custody procedures to ALS Global laboratories for chemical analysis of volatile organic compounds (VOCs), polynuclear aromatic compounds (PCBs), polychlorinated biphenyls (PCBs), and metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thorium, uranium, and zinc).

The analytical results of the on-land samples are pending and will be included in the Restoration Plan, planned for submittal on March 30, 2020.

Bank Failure Material and Sediment Characterization Activities

Bank failure material and sediment characterization activities were completed between February 11 and 17, 2020. Those activities included advancing 13 core samples within the bank failure material and underlying sediment (S-1 through S-13), with a terminal depth of 5-feet into the sediment, using a barge-mounted sonic drill rig (Figure 2). Discrete samples (not exceeding 1-foot in thickness) were collected from each five foot interval within the bank failure material, with field screening completed visually and using a photo-ionization detector, radiation detector, and an XRF meter calibrated to detect thorium and uranium, to aid in sample selection.

Following receipt of comments from the United States Environmental Protection Agency (EPA) and EGLE on February 12, 2020, sediment cores were replicated with discrete samples of the river sediment collected in one-foot increments for laboratory analysis, in nine locations (S-3, S4, S-6, S-7, and S-8R through S-13R).

No elevated photo-ionization detector readings or elevated radiation or XRF levels were identified during field screening of the soils/sediments recovered from the core samples. All tooling was also screened using the radiation meter prior to and following sampling with no radiation detected.

All tooling and sampling equipment was decontaminated prior to sampling, between each sample location, and following the completion of sampling, with all decontamination materials recovered for proper disposal.

All of the borings were backfilled with bentonite grout and all recovered materials and decontamination liquids were placed in sealed, labeled drums, the contents of which are being characterized for proper disposal at a later date.

Bank failure material and sediment samples, as well as QA/QC samples were placed in appropriately labeled/preserved sample containers and transported under chain of custody procedures to ALS for chemical analysis of VOCs, PCBs, PCBs, metals, total phosphorous, pH, and Biochemical Oxygen Demand (BOD). Selected samples were also submitted for toxicity characteristic leaching procedure (TCLP) analysis based on the results of preliminary analysis completed by the laboratory, to determine appropriate management of the material as a waste, if needed.

The analytical results of the bank failure material and sediment samples are pending and will be included in the Restoration Plan, planned for submittal on March 30, 2020.

Geotechnical Evaluation

Aerial Visual Stability Inspections

Surface monitors were installed at the subject property to act as reference points, which are monitored visually on a weekly basis using an aerial drone to detect potential visual movement of the bank failure area over time.

Weekly aerial drone flyovers in February were conducted on February 2, 12, and 19, 2020, as outlined in the February 27, 2020 Flight and Status Report, prepared by G2 (Appendix C), which includes the results of those drone flyovers and documents that no significant visual surface movement has been observed in the bank failure area since December 13, 2019.

A Flight and Status Report will be furnished to EGLE for the visual stability inspection completed during the last week of February, as it becomes available.

Geotechnical Investigation

To define and evaluate existing geotechnical conditions at the subject property, including stability and suitability of potential shoreline restoration alternatives the following geotechnical investigation activities were completed between February 13 and 24, 2020:

- Five geotechnical borings (B-101, B-101A, and B-102 through B-104) were advanced to a maximum depth of 105-feet bgs to evaluate geotechnical conditions using hollow stem auger and mud rotary methods.

- Soil sampling using the Standard Penetration Test Method was completed at regular intervals within the borings with field vane shear testing also completed.

- Geotechnical inclinometers were installed within borings B-103 and B-104, with the remainder of the borings backfilled with grout following completion.

  Non-disposable drilling equipment was decontaminated between and after sampling. Decontamination materials/wastes and drilling spoils generated during the borings were placed in 55-gallon drums for proper disposal at a later date.

Inclinometer baseline monitoring will occur on Friday, February 28, 2020, with inclinometer inspections to be combined with visual stability inspections, both of which will be completed on a weekly basis, moving forward.

A Geotechnical Investigation Report outlining the results of the geotechnical investigation will be issued in March. The Geotechnical Investigation Report will be incorporated within the Restoration Plan, planned for submittal on March 30, 2020, which will include a tieback evaluation for the remaining dock structure in the event that any portion of it is to be reused.

Site Stability Evaluation

G2 issued a February 18, 2020 Site Stability Evaluations report (Appendix D), which concludes that the site is stable in its present condition so long as aggregate stockpiling activities are conducted at a distance greater than 400 feet of the river shoreline.

The information contained in the February 2020 Site Stability Evaluations report will incorporated within the Restoration Plan, planned for submittal on March 30, 2020.

Revere Dock, LLC is committed to addressing the November 2019 bank collapse in accordance with all applicable regulations. If you have questions regarding the contents of this response please contact us at 800-313-2966.

Sincerely,
PM Environmental, Inc.

J. Adam Patton, CHMM
Vice President

FIGURES

Figure 1: Property Vicinity Map
Figure 2: Surface Cover and Erosion/Sedimentation Control Map with Soil Boring and Monitoring Well Locations
Figure 3: Soil Boring and Monitoring Well Locations

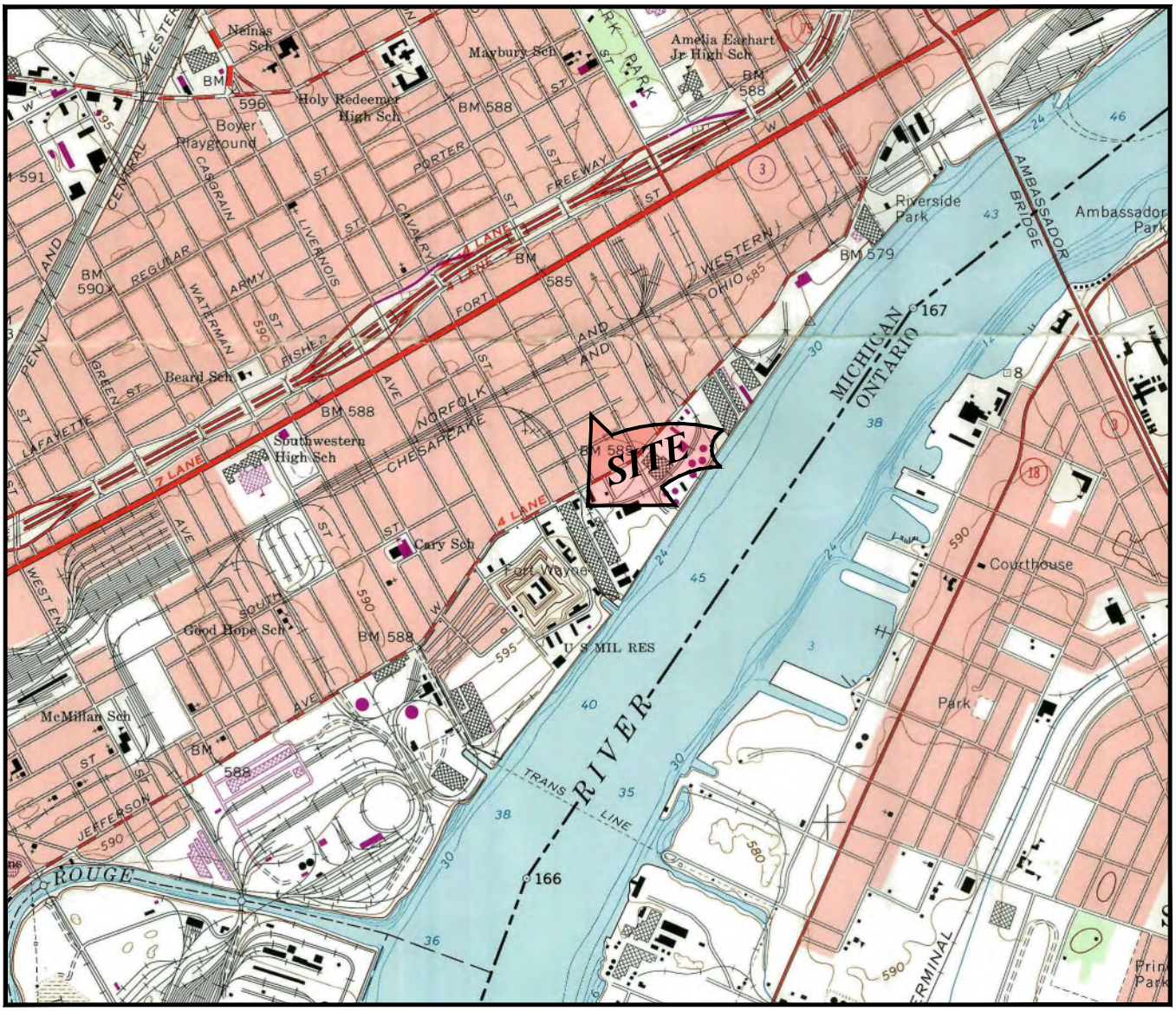
APPENDICES

Appendix A: Photo Log
Appendix B: February 5, 2020, Bank Failure Area Aggregate Material Removal Visual Stability Evaluation Summary Report, PM
Appendix C: February 27, 2020, Flight and Status Report, G2
Appendix D: February 18, 2020, Site Stability Evaluations report, G2

cc:
Mr. Brian Kelly, USEPA (electronic delivery)
Mr. Donald Reinke, United States Army Corps of Engineers (electronic delivery)
Mr. Josh Scheels, EGLE-RRD (electronic delivery)
Ms. Beth Vens, EGLE-RRD (electronic delivery)
Mr. Andrew Harz, EGLE-WRD (electronic delivery)
Ms. Anita Harrington, City of Detroit Environmental Affairs (electronic delivery)
Ms. Beth Gotthelf, Butzel Long (electronic delivery)
Ms. Susan Johnson, Butzel Long (electronic delivery)
Mr. Steve Erickson, Revere Dock, LLC (electronic delivery)

Figures

PM ENVIRONMENTAL Environmental & Engineering Services



MICHIGAN QUADRANGLE LOCATION

WAYNE COUNTY

SCALE 1:24,000

1 MILE 1/2 MILE 0 1 MILE

FIGURE 1

PROPERTY VICINITY MAP

USGS, 7.5 MINUTE SERIES

DETROIT, MI QUADRANGLE, 1968. PHOTO REVISED 1973 & 1980.

PM ENVIRONMENTAL | Environmental & Engineering Services

PROJ: 5851 WEST JEFFERSON AVENUE DETROIT, MI

THIS IS NOT A LEGAL SURVEY

VERIFY SCALE 0 2,000'

IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

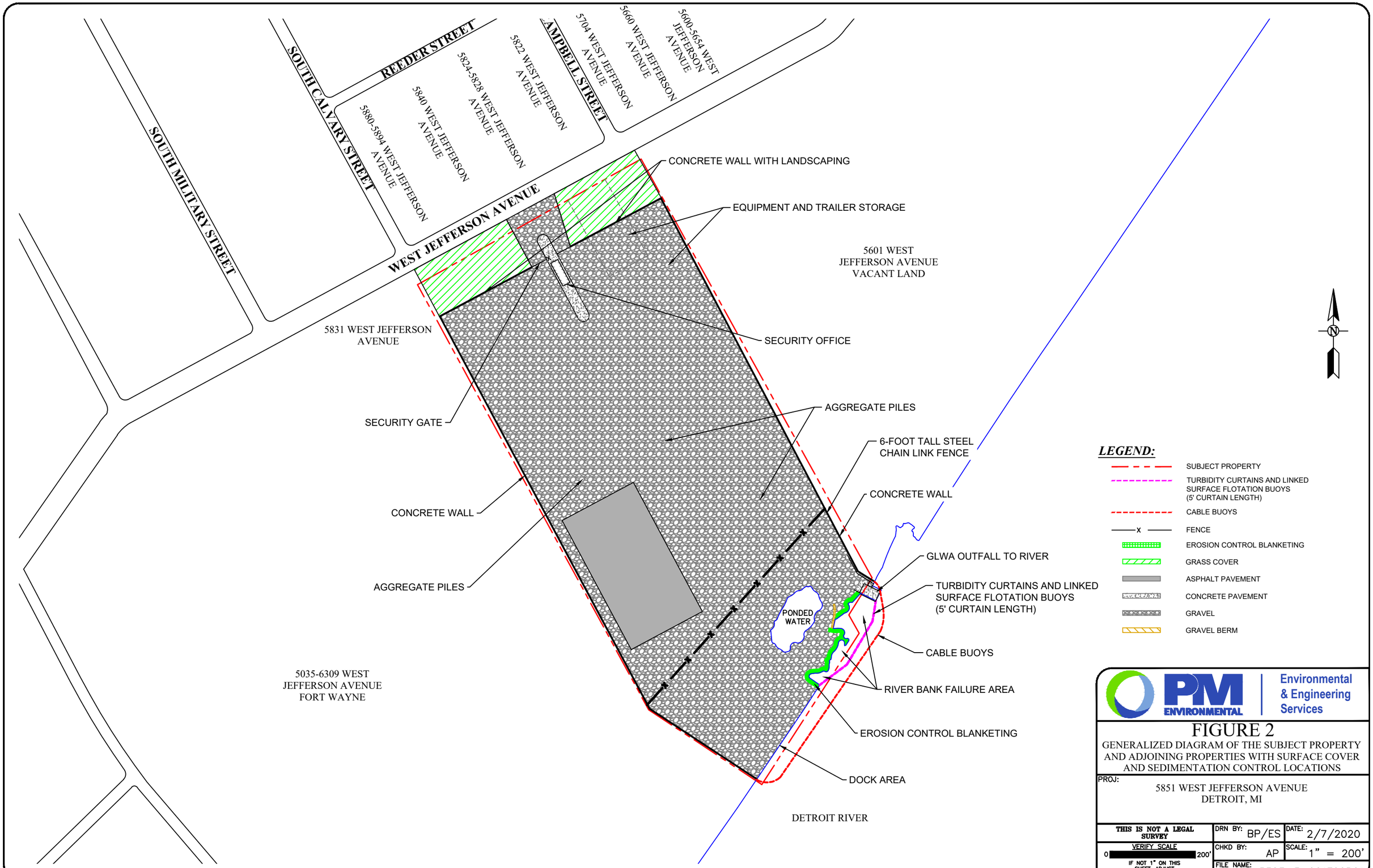
DRN BY: ES/CS/BP

DATE: 1/10/2020

CHKD BY: RF/AP

SCALE: 1" = 2,000'

FILE NAME: 01-5303-3-001F01R00



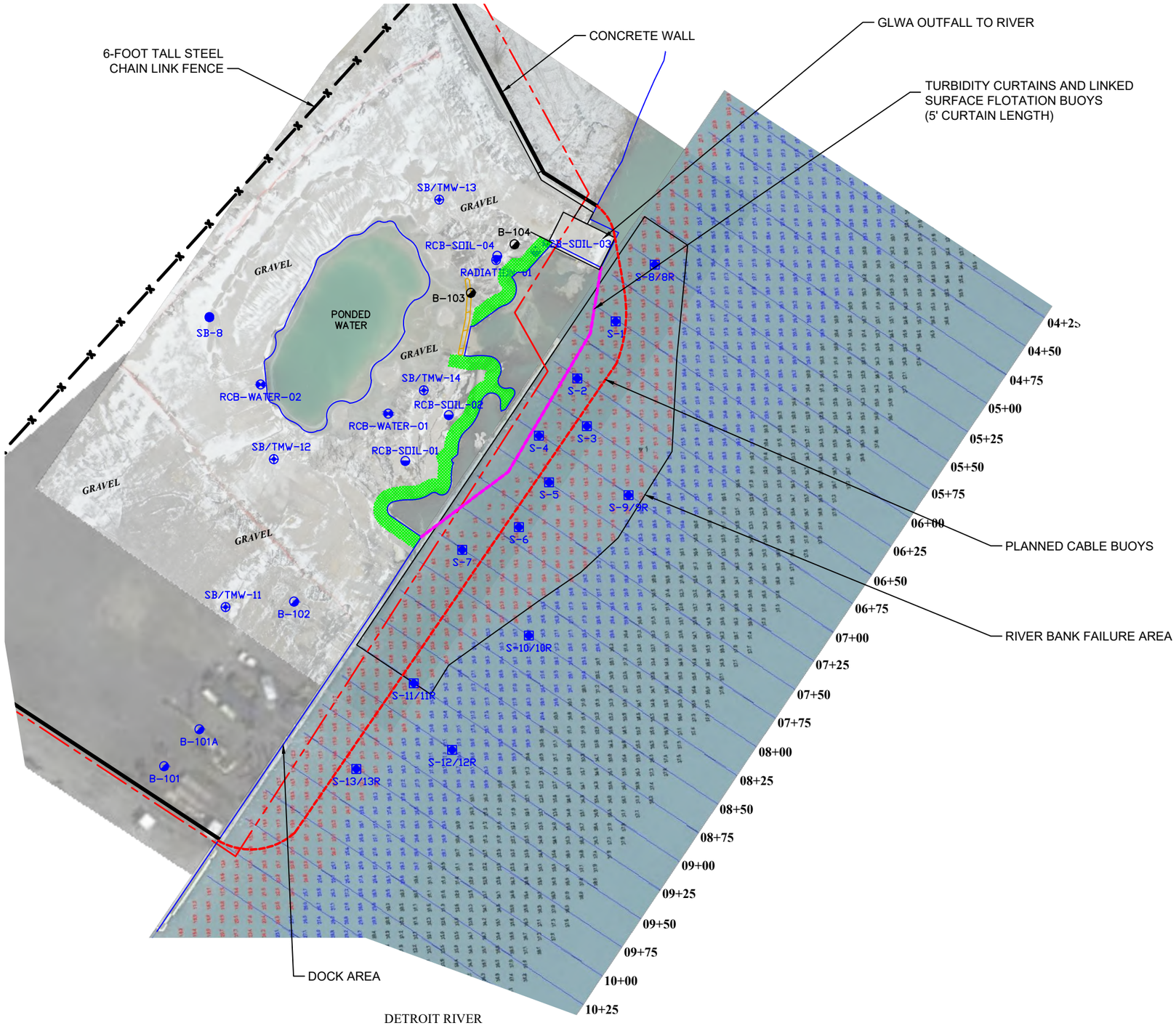
PM ENVIRONMENTAL | Environmental & Engineering Services

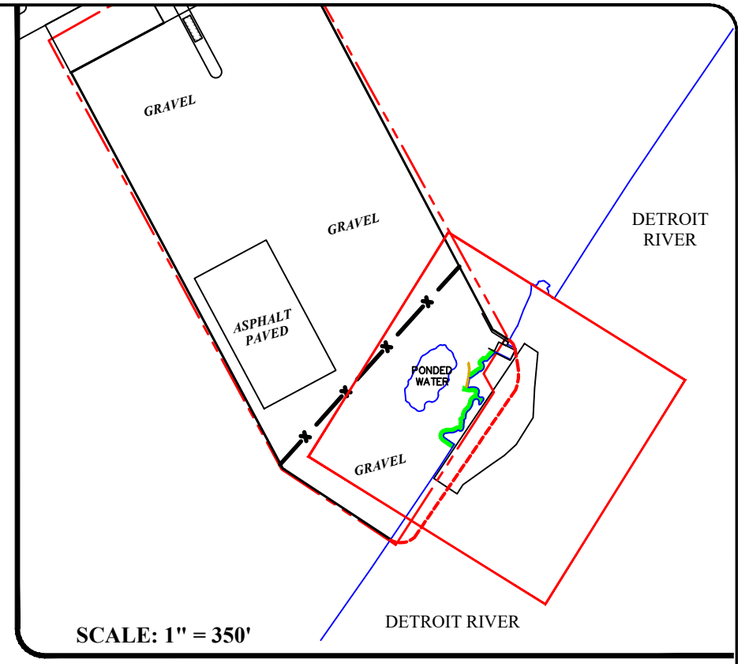
FIGURE 2

GENERALIZED DIAGRAM OF THE SUBJECT PROPERTY AND ADJOINING PROPERTIES WITH SURFACE COVER AND SEDIMENTATION CONTROL LOCATIONS

PROJ:
5851 WEST JEFFERSON AVENUE
DETROIT, MI

THIS IS NOT A LEGAL SURVEY	DRN BY: BP/ES	DATE: 2/7/2020
VERIFY SCALE 0 — 200' IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CHKD BY: AP	SCALE: 1" = 200'
	FILE NAME: 01-5303-3-001F00R01	





SCALE: 1" = 350'

LEGEND:

- SUBJECT PROPERTY
- TURBIDITY CURTAINS AND LINKED SURFACE FLOTATION BUOYS (5' CURTAIN LENGTH)
- 20' TURBIDITY CURTAINS AND LINKED SURFACE FLOTATION BUOYS (TO BE REMOVED)
- PLANNED CABLE BUOYS
- FENCE
- GRAVEL BERM
- PLANNED EROSION CONTROL BLANKETING
- SOIL BORING
- SOIL BORING / TEMPORARY MONITORING WELL
- TERRA TECH SOIL SAMPLE LOCATION
- TERRA TECH WATER SAMPLE LOCATION
- TERRA TECH RADIATION MONITORING LOCATION
- DISCRETE SAMPLING LOCATION
- GEOTECHNICAL BORING
- GEOTECHNICAL BORING WITH INCLINOMETER

NOTE: HYDROGRAPHIC SURVEY GRID ADOPTED FROM YOUNG'S CONSULTING, INC NOVEMBER 29, 2019 HYDROGRAPHIC SURVEY

PM ENVIRONMENTAL | Environmental & Engineering Services

FIGURE 3
SAMPLING LOCATION MAP

PROJ:
5851 WEST JEFFERSON AVENUE
DETROIT, MI

THIS IS NOT A LEGAL SURVEY	DRN BY: BP/ES	DATE: 2/6/2020
VERIFY SCALE 0 ▬▬▬ 80' IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CHKD BY: AP/SZ	SCALE: 1" = 80'
	FILE NAME: 01-5303-3-001F00R01	

Appendix A

PM ENVIRONMENTAL Environmental & Engineering Services

PM Project No. 01-05303-3-0001
Location: 5851 West Jefferson Avenue, Detroit, Michigan

Photograph 1 (January 31, 2020)

View of chain link security fence – facing northeast.

Photograph 2 (February 11, 2020)

View of bank failure and sediment sampling activities – facing south.

PM Project No. 01-05303-3-0001
Location: 5851 West Jefferson Avenue, Detroit, Michigan

Photograph 3 (February 25, 2020)

Cable buoys, erosion control blankets, and 5-foot turbidity curtains – facing north/northwest.

Note: Drums of drilling spoils from geotechnical investigation have been removed.

Photograph 4 (February 25, 2020)

View of cable buoys, facing south.

Appendix B

PM ENVIRONMENTAL Environmental & Engineering Services

PM ENVIRONMENTAL
Risk Well Managed

Corporate Headquarters
Lansing, Michigan
3340 Ranger Road, Lansing, MI 48906
f: 877.884.6775
t: 517.321.3331

Michigan Locations
Berkley **Bay City**
Grand Rapids **Detroit**
Chesterfield **Lansing**

February 5, 2020

Mr. Paul Owens
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Warren District Office
27700 Donald Court
Warren, Michigan 48092

RE: Bank Failure Area Aggregate Material Removal and Visual Stability Evaluation Summary (December 2019 and January 2020)
5851 West Jefferson Avenue, Detroit Michigan
Former Revere Copper and Brass
EGLE Site ID No. 82000136
PM Environmental Project No. 01-5303-3-0001

Dear Mr. Owens

Per the request of the Michigan Department of Environment, Great Lakes, and Energy (EGLE), PM Environmental, Inc. (PM), on behalf of Revere Dock, LLC (Revere Dock) is submitting this Bank Failure Area Aggregate Material Removal Visual Stability Evaluation Summary for the above-referenced subject property.

The summary below is based on interviews and information obtained from Detroit Bulk Storage, Inc. (DBS), which leases the property from Revere Dock, photo documentation obtained from aerial drones operated by Revere Dock, EGLE, and G2 Consulting Group, Inc. (G2), Revere Dock's Geotechnical consultant, and the results of visual monitoring of the subject property completed by G2.

Background Information

A failure of approximately 200-feet of shoreline along the bank of the Detroit River occurred at the subject property on November 26, 2019. A large aggregate stockpile owned by DBS was present in the area at the time of the incident. The presence of the aggregate stockpile resulted in an apparent rotational slope failure that displaced soils downward within and outward from the subject property to an area of the Detroit River immediately east of the former shoreline boundary. Photo #1 in Appendix A depicts the aggregate stockpile on November 27, 2019, the day after the bank failure incident occurred.

Refer to Figure 1 for the location of the subject property and Figure 2 for a generalized diagram of the subject property and adjoining properties.

Aggregate Removal Activities

Subsequent to the apparent bank failure incident, the aggregate material was reportedly removed from the area by DBS between November 29 and December 5, 2019, to an elevation approximately equivalent to the surrounding ground surface within the failure area. The aggregate material was relocated to an area west of the bank failure area.

Photo #2 in Appendix A depicts the area of the bank failure on December 6, 2019, when EGLE, the United States Environmental Protection Agency (USEPA), and others toured the subject property.

Between December 11 and December 13, the area formerly occupied by the aggregate stockpile was further excavated by DBS to recover aggregate material that had become located below the surrounding ground surface elevation as a result of the bank failure. The excavation was dug in the area currently occupied by a pond and reportedly reached an approximate maximum depth of 20-feet.

At that depth, the asphalt-gravel surfacing that was previously located at the pre-incident ground surface reportedly was encountered by DBS and the excavation was not dug beyond that depth. Similar to the aggregate removed between November 29 and December 5, 2019, aggregate removed between December 11 and December 13, 2019 was relocated to an area west of the bank failure area. Water was reportedly present in the excavation area during the aggregate recovery activities, which formed the current pond after the excavation activities were complete.

Photo #3 in Appendix A depicts the area of the bank failure on December 13, 2019, during the latter stages of aggregate excavation from the pond area.

Appendix B contains DBS equipment/time tickets documenting the equipment used to remove the aggregate material between November 29 and December 13, 2019. The volume of aggregate removed/relocated from the bank failure area by DBS was reportedly not calculated.

Based on the information and documentation provided by DBS, the pond area was excavated using power equipment and its presence is consistent with a dug pond.

Visual Ground Surface Monitoring

On December 13, 2019, G2 established temporary ground control points to facilitate ongoing ground surface monitoring to visually monitor and evaluate the stability of the bank failure area. Additional semi-permanent ground control points were installed on January 17, 2020 by G2.

A baseline visual survey was completed using an aerial drone on December 13, 2019 with subsequent weekly visual surveys (i.e. drone “flights) initiated on January 17, 2020, with visual surveys to be completed on a weekly basis thereafter.

The results of the December 13, 2019 and January 17 and January 21, 2020 visual surveys are summarized in the February 3, 2020 Status Report Revere Dock Shoreline Evaluation prepared by G2 included in Appendix C. That report documents the presence of a gravel erosion control berm that was installed along the eastern edge of the pond area in early January 2020 and concludes that no large-scale changes were detected between December13, 2019 and January 21, 2020 in the survey area. With the exception of erosion berm construction activities between the ponded areas and the shoreline, the February 3, 2020 Status Report prepared by G2 documents that the topography remained relatively constant during the reported timeframe.

The results of subsequent weekly visual surveys and Status Reports will be provided to EGLE as they become available.

Aerial drone photos of the bank failure area collected by G2 on December 13, 2019 and January 17 and 21, 2020 are included in Appendix A as Photos # 4 and #5, respectively.

Conclusions

Between November 29 and December 13, 2019 aggregate material present in the area of the river bank failure was removed/excavated and relocated onsite by DBS. Based on the information and documentation provided by DBS, the pond area was excavated using power equipment and its presence is consistent with a dug pond.

Visual surveys of the river bank failure area completed by G2 in December 2019 and January 2020 did not detect large-scale changes in the survey area. With the exception of erosion berm construction activities between the ponded areas and the shoreline, this documents that the topography remained relatively constant during the reported timeframe.

The results of subsequent visual surveys will be provided to EGLE as they become available.

If you have any questions regarding the information in this summary, please contact us at 800-313-2966.

Sincerely,

PM Environmental, Inc.

J. Adam Patton, CHMM
Vice President

FIGURES:

Figure 1: Site Vicinity Map
Figure 2: Generalized Diagram of the Subject Property and Adjoining Properties

APPENDICES:

Appendix A: Aerial Drone Photos, November 2019 through January 2020
Appendix B: DBS Equipment and Time Tickets for Aggregate Removal Activities
Appendix C: February 3, 2020 Status Report Revere Dock Shoreline Evaluation prepared by G2

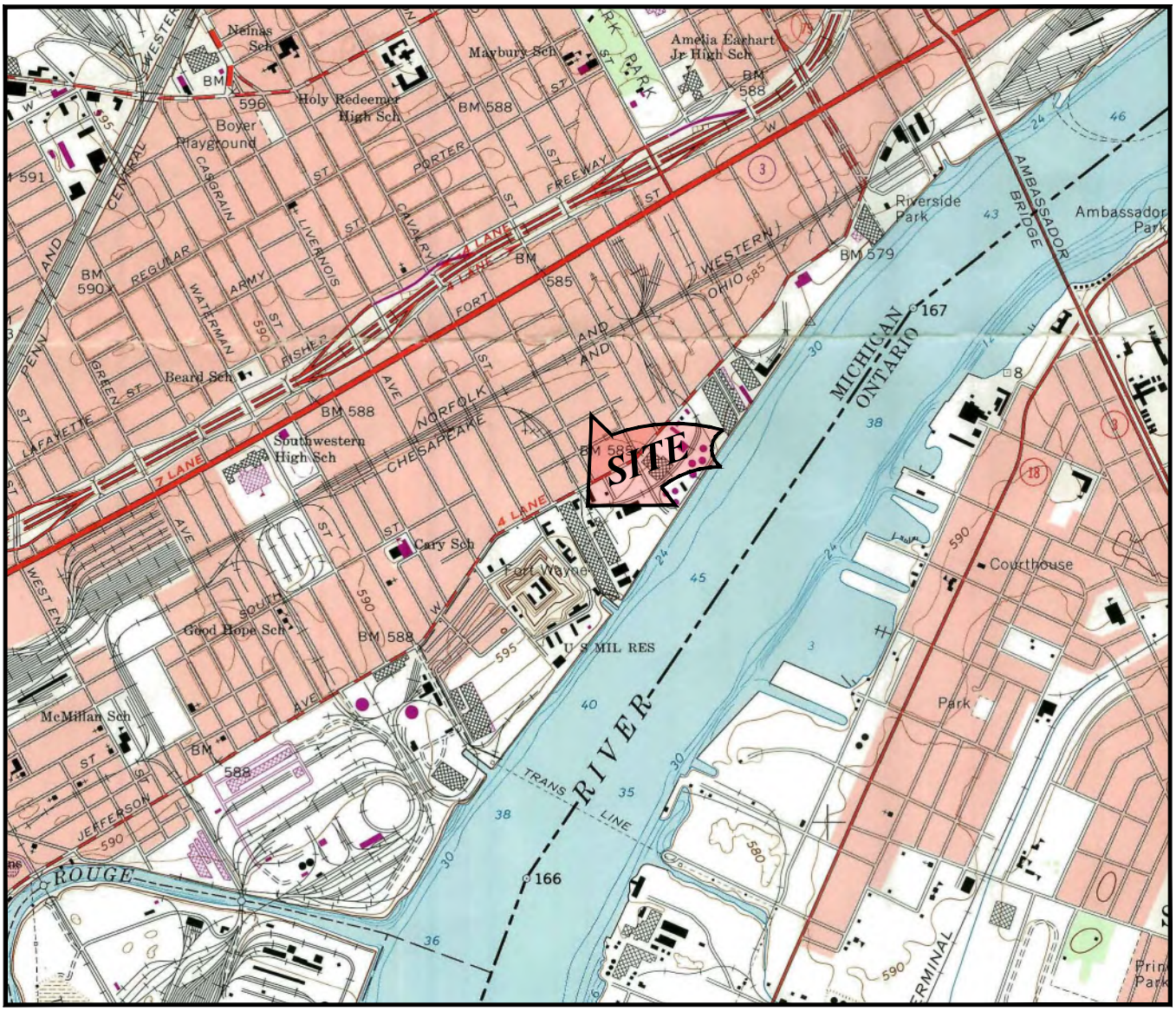
cc:

Mr. Brian Kelly, USEPA (electronic delivery)
Mr. Donald Reinke, United States Army Corps of Engineers (electronic delivery)
Mr. Josh Scheels, EGLE-RRD (electronic delivery)
Ms. Beth Vens, EGLE-RRD (electronic delivery)

Mr. Andrew Harz, EGLE-WRD (electronic delivery)
Ms. Anita Harrington, City of Detroit Environmental Affairs (electronic delivery)
Ms. Beth Gotthelf, Butzel Long (electronic delivery)
Mr. Steve Erickson, Revere Dock, LLC (electronic delivery)

Figures

PM ENVIRONMENTAL Environmental & Engineering Services



MICHIGAN QUADRANGLE LOCATION

WAYNE COUNTY

SCALE 1:24,000

1 MILE 1/2 MILE 0 1 MILE

FIGURE 1

PROPERTY VICINITY MAP

USGS, 7.5 MINUTE SERIES

DETROIT, MI QUADRANGLE, 1968. PHOTO REVISED 1973 & 1980.

PM ENVIRONMENTAL | Environmental & Engineering Services

PROJ: 5851 WEST JEFFERSON AVENUE DETROIT, MI

THIS IS NOT A LEGAL SURVEY

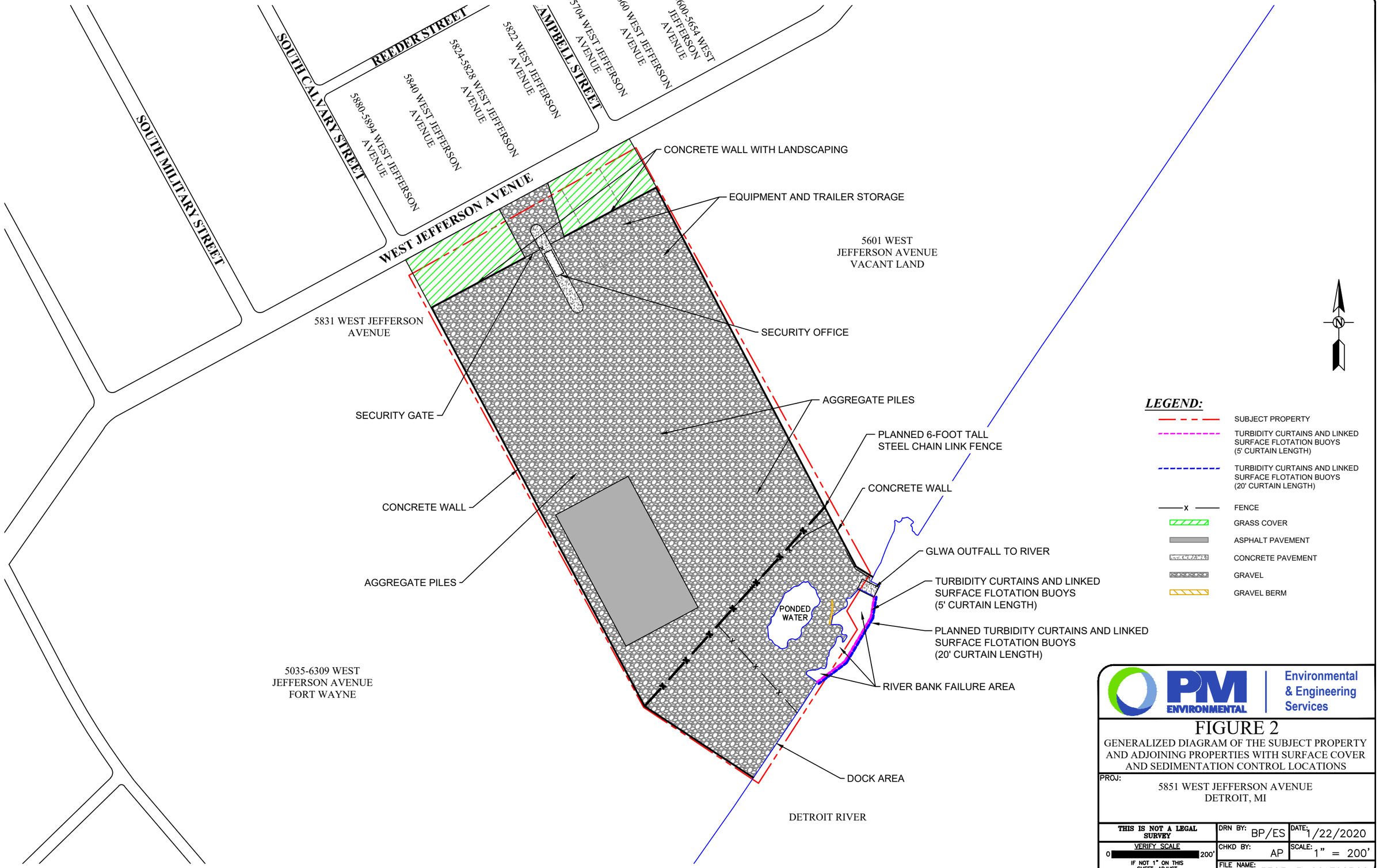
VERIFY SCALE 0 2,000'

IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRN BY: ES/CS/BP | DATE: 1/10/2020

CHKD BY: RF/AP | SCALE: 1" = 2,000'

FILE NAME: 01-5303-3-001F01R00



PM ENVIRONMENTAL | Environmental & Engineering Services

FIGURE 2

GENERALIZED DIAGRAM OF THE SUBJECT PROPERTY AND ADJOINING PROPERTIES WITH SURFACE COVER AND SEDIMENTATION CONTROL LOCATIONS

PROJ:
5851 WEST JEFFERSON AVENUE
DETROIT, MI

THIS IS NOT A LEGAL SURVEY	DRN BY: BP/ES	DATE: 1/22/2020
VERIFY SCALE 0 — 200' IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CHKD BY: AP	SCALE: 1" = 200'
	FILE NAME: 01-5303-3-001F00R00	

Appendix A

PM ENVIRONMENTAL Environmental & Engineering Services

PM Project No. 01-05303-3-0001
Location: 5851 West Jefferson Avenue, Detroit, Michigan

Photograph 1 – Taken by Revere Dock, LLC (November 27, 2019)

View of river bank failure area, facing west.

Photograph 2 – Taken by EGLE (December 6, 2019)

View of river bank failure area, facing west.

PM Project No. 01-05303-3-0001
Location: 5851 West Jefferson Avenue, Detroit, Michigan

Photograph 3 – Taken by G2 Consulting Group (December 13, 2019)

View of river bank failure area, facing west/northwest.

Note in-progress excavation activities within the southern portion of the pond area.

Also note that this photo was overlaid on a reference aerial for location comparison purposes.

Photograph 4 – Taken by G2 Consulting Group (January 17, 2020)

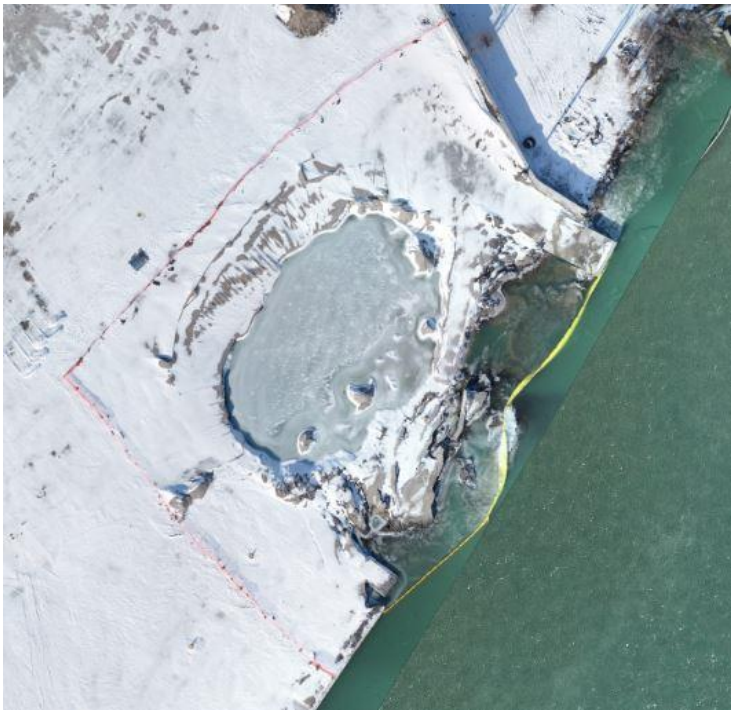
View of river bank failure area, facing west/northwest.

Note in-progress turbidity curtain installation activities and presence of gravel erosion control berm installed along the eastern boundary of the pond area.

Also note that this photo was overlaid on a reference aerial for location comparison purposes.

PM Project No. 01-05303-3-0001
Location: 5851 West Jefferson Avenue, Detroit, Michigan

Photograph 5 – Taken by G2 Consulting Group (January 21, 2020)



View of river bank failure area, facing west/northwest.

Note that this photo was overlaid on a reference aerial for location comparison purposes.

Appendix B

PM ENVIRONMENTAL Environmental & Engineering Services

LOAD AND TIME TICKET

PRO. NO. 50356

NAME OF CARRIER

DETROIT BULK STORAGE DBS

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		11.29.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		4		
	FINISH	12:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Remote

AGENT FOR SHIPPER SIGNATURE: SS

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50357

NAME OF CARRIER

DETROIT BULK STORAGE DBS

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 F		11.29.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		4		
	FINISH	12:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Eric

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50358

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
22061		11.29.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		4		
	FINISH	12:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Craig

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50359

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
22062		11.29.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		4		
	FINISH	12:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Austin

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50353

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: Stack [redacted] Material

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12-2-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stock Pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

AND TIME TICKET

PRO. NO. 50354

RRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

L HAULED: 346

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 G1		12-2-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stock Pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

PIT TICKET NO.:

TONS

YARDS

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	10:00		6		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Cray

AGENT FOR SHIPPER SIGNATURE:

Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

AND TIME TICKET

PRO. NO. 50355

ARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

AL HAULED: 346

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 G2		12-2-19

NAME OF SHIPPER: DBS

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

PIT TICKET NO.:

TONS

YARDS

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Austin

AGENT FOR SHIPPER SIGNATURE:

Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

OAD AND TIME TICKET PRO. NO. 50360

ME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

ATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12·3·19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.: | TONS | YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

AD AND TIME TICKET PRO. NO. 50361

E OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

ATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 61		12·3·19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.: | TONS | YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	10:00		6		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

ND TIME TICKET PRO. NO. 50362

IER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

HAULED: 346

SECTION 1

S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
2062		12·3·19

ME OF SHIPPER: D.B.S.

OM: (LOADING PLACE) Revere

(UNLOADING PLACE) Revere Stockpile

ROSS		NET OR ESTIMATE WEIGHT
ARE		

TICKET NO.: | TONS | YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
GULAR	START	8:00		8		
	FINISH	4:00				
ERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

VER'S SIGNATURE: Austin

ENT FOR SHIPPER SIGNATURE:

y: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50365

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12-4-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

AND TIME TICKET

PRO. NO. 50363

RRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

L HAULED: 346

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 61		12-4-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

PIT TICKET NO.:

TONS

YARDS

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: Craig

AGENT FOR SHIPPER SIGNATURE:

Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

ND TIME TICKET

PRO. NO. 50364

IER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

HAULED: 346

S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
2062		12.4.19

ME OF SHIPPER: DBS.

OM: (LOADING PLACE) Revere

(UNLOADING PLACE) Revere Stockpile

ROSS		NET OR ESTIMATE WEIGHT
ARE		

TICKET NO.:

TONS

YARDS

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
ULAR	START	9:00		7		
	FINISH	4:00				
RTIME	START					
	FINISH					

(FOR BOTH TON-MILE AND HOURLY HAULS)

VER'S SIGNATURE: Austin

NT FOR SHIPPER SIGNATURE:

: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50366

NAME OF CARRIER

DETROIT BULK DBS STORAGE

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 34G

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 F		12.5.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	10:00		6		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50318

NAME OF CARRIER

DETROIT BULK DBS STORAGE

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 34G

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 G2		12.5.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 50317

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Deere 470		12.5.19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Dock

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE: J.P.

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 43990

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12.5.19

NAME OF SHIPPER: DBS

FROM: (LOADING PLACE) Revere

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR Both Ton-Mile and Hourly Hauls)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53922

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 34G

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
22061		12-11-19

NAME OF SHIPPER: Detroit Bulk Storage

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	10am		6hrs		
	FINISH	4pm				
OVERTIME	START					
	FINISH					

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53930

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 34g

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
22062		12-11-19

NAME OF SHIPPER: Detroit Bulk Storage

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stock Pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	10am		6		
	FINISH	4pm				
OVERTIME	START					
	FINISH					

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53926

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
4706		12-11-19

NAME OF SHIPPER: DBS

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stock Pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME	HOURS	RATE	CHARGES
REGULAR	START	10:00	6		
	FINISH	4:00			
OVERTIME	START				
	FINISH				

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53940

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12-11-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere StockPile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME	HOURS	RATE	CHARGES
REGULAR	START	10:00	6		
	FINISH	4:00			
OVERTIME	START				
	FINISH				

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53931

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 34g

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
12092		12-12-19

NAME OF SHIPPER: Detroit Bulk Storage

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stock Pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.: TONS / YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

TIME				HOURS	RATE	CHARGES
REGULAR	START	8am		8		
	FINISH	4pm				
OVERTIME	START					
	FINISH					

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53923

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 31G

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
22061		12-12-19

NAME OF SHIPPER: Detroit Bulk Storage

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.: TONS / YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

TIME				HOURS	RATE	CHARGES
REGULAR	START	8am		8 hrs		
	FINISH	4pm				
OVERTIME	START					
	FINISH					

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 53927

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 3A6

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
4706		12-12-19

NAME OF SHIPPER: DBS

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stock pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME	HOURS	RATE	CHARGES
REGULAR	START	8:00	8		
	FINISH	4:00			
OVERTIME	START				
	FINISH				

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET

PRO. NO. 53941

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 3A6

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12-12-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME	HOURS	RATE	CHARGES
REGULAR	START	8:00	8		
	FINISH	4:00			
OVERTIME	START				
	FINISH				

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53932

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 34g

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Volvo 220 g		12-13-19

NAME OF SHIPPER: Detroit Bulk Storage

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere stock pile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8am		8		
	FINISH	4pm				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53924

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
220 G1		12-13-19

NAME OF SHIPPER: Detroit Bulk Storage

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3

(FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8am		8hrs		
	FINISH	4pm				
OVERTIME	START					
	FINISH					

SECTION 4

(FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53928

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
4 to 6		12-13-19

NAME OF SHIPPER: DBS

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stock P-16

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		8		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

LOAD AND TIME TICKET PRO. NO. 53942

NAME OF CARRIER

Detroit Bulk Storage, Inc.
P.O. Box 600
Marine City, MI 48039

MATERIAL HAULED: 346

SECTION 1

M.P.S.C. TRUCK NO.	JOB TRUCK NO.	DATE:
Stacker		12-13-19

NAME OF SHIPPER: D.B.S.

FROM: (LOADING PLACE) Revere Dock

TO: (UNLOADING PLACE) Revere Stockpile

GROSS		NET OR ESTIMATE WEIGHT
TARE		

SEC. 2

PIT TICKET NO.:

TONS

YARDS

SECTION 3 (FOR HOURLY RATED HAULS)

		TIME		HOURS	RATE	CHARGES
REGULAR	START	8:00		4		
	FINISH	4:00				
OVERTIME	START					
	FINISH					

SECTION 4 (FOR BOTH TON-MILE AND HOURLY HAULS)

DRIVER'S SIGNATURE:

AGENT FOR SHIPPER SIGNATURE:

White Copy: **DBS** • Green: **DBS** • Canary: **DBS** • Pink: **Drivers** • Gold: **Customers**

Appendix C

PM ENVIRONMENTAL Environmental & Engineering Services

CONSULTING GROUP

February 3, 2020

Mr. Steve Erickson
Revere Dock LLC
3128 Three Mile Road NW
Grand Rapids, Michigan 49534

RE: Status Report
Revere Dock Shoreline Evaluation
5851 West Jefferson Avenue
City of Detroit, Wayne County, Michigan
G2 Project No. 193662

Dear Mr. Erickson:

The purpose of this letter is to provide a status report of the observed site conditions at the above referenced project site. Subsequent to reported deep seated rotational slope movements at the project site, we have conducted Unmanned Aerial Vehicle (UAV) operations of the property to observe and document visual conditions of the site. These operations capture images and these data were used to prepare topographic information. Based on review of the data we collected, it appears that site contours have not deviated much and the surface of the ponded area within the reported failure area appears to remain relatively constant.

UAV operations where conducted by a G2 Federal Aviation Administration (FAA) Part 107 Licensed Remote Pilot in Command in accordance with FAA Part 107 guidelines and regulations. G2 utilized a DJI Phantom 4 Pro to capture 385 nadir aerial images at an approximate altitude of 200 feet, on a predetermined grid flight pattern with a front overlap ratio of 82 percent and a side overlap ratio of 71 percent, corresponding to a ground sampling distance of 0.65 inches per pixel. The grid pattern was generated using Pix4Dcapture. The same grid pattern was used for all flights.

For the site visit on December 13, 2019, G2 established Ground Control Points (GCPs) using a set of 8 survey grade GPS targets (Aeropoints, manufactured by Propeller). At this time, G2 understood the scope of work would not include subsequent site visits. Upon return to the site on January 17, 2020, G2 established 10 semi-permanent GCPs, and on January 21, 2020 G2 used a set of 10 Propeller Aeropoints to obtain accurate geolocation information for the new semi-permanent GCPs. Aerial imagery was processed using a desktop version of Pix4D Mapper. For each flight, certain GCP's were selected as Check Points to verify accuracy. NAVD88 was used for the model's vertical coordinate system. NAD 1983 State Plane Michigan South FIPS 2113 was used for the model's horizontal coordinate system. In addition, the following information was determined regarding the water surface elevation at the time of our UAV operations.

Flight Date	River Elevation at USGS Fort Wayne Station
December 13, 2019	+/- 575.2 feet (NOAA Fort Wayne IGLD 85)
January 17, 2020	+/- 576.0 feet (NOAA Fort Wayne IGLD 85)
January 21, 2020	+/- 575.5 feet (NOAA Fort Wayne IGLD 85)

*Source: waterdata.usgs.gov

For the purpose of this report, the site is divided into two areas; The Disturbed Zone where ponded area is visible, and the Undisturbed Zone located downstream from the Disturbed Zone. Review of Plates 1 through 3 show the contour maps of the project site in the near vicinity of the Detroit River shoreline. In the Disturbed Zone, a ponded area is identified and is located about 100 feet landward of the Detroit River shoreline. We have also highlighted the topographic lines representing Elevations 576, 580, and 585. Further, we have simplified the presentation by indicating the shoreline to be at Elevation 576.

Based on analysis of the Ponded Area, our calculations indicate the following:

Flight Date	Approximate Surface Area of Water in Failure Dep
December 13, 2019	+/- 16,830 sq. ft.
January 17, 2020	+/- 16,381 sq. ft.
January 21, 2020	+/- 16,160 sq. ft.

It should be noted that between the date of December 13, 2019 and January 17, 2020, fill activities took place between the ponded area and the Detroit River shoreline. We understand these operations were intended to armor the shoreline and reduce erosion and scour in the ponded area. Examination of the contour lines from the three flight dates verify that the shoreline along the Detroit River was straightened and that a berm of higher elevation was established separating the Detroit River from the ponded area. It should also be noted that the ground surface was snow covered and the ponded area was frozen on the January 21, 2020 flight. Based on the data we collected, we do not detect large scale changes in the ponded area.

In the Undisturbed Area, our baseline flight indicated the area just landward of the shoreline has a topographic elevation between Elevation 578 and 579. In the subsequent flights, the ground surface remains between Elevations 578 and 579. Based on the visual data we collected, we do not detect large scale ground surface changes in this vicinity. Further review of the contour lines shown on Plates 1 through 3 attached to this report indicates the Elevation 580 and 585 contour lines remain relatively constant in their location. Based on this information, we do not detect any large-scale ground surface movements in this zone located northwest of the Disturbed Zone and Undisturbed Zone.

We hope the information contained in this letter is sufficient for your present needs. If you have questions of require additional information, please contact us.

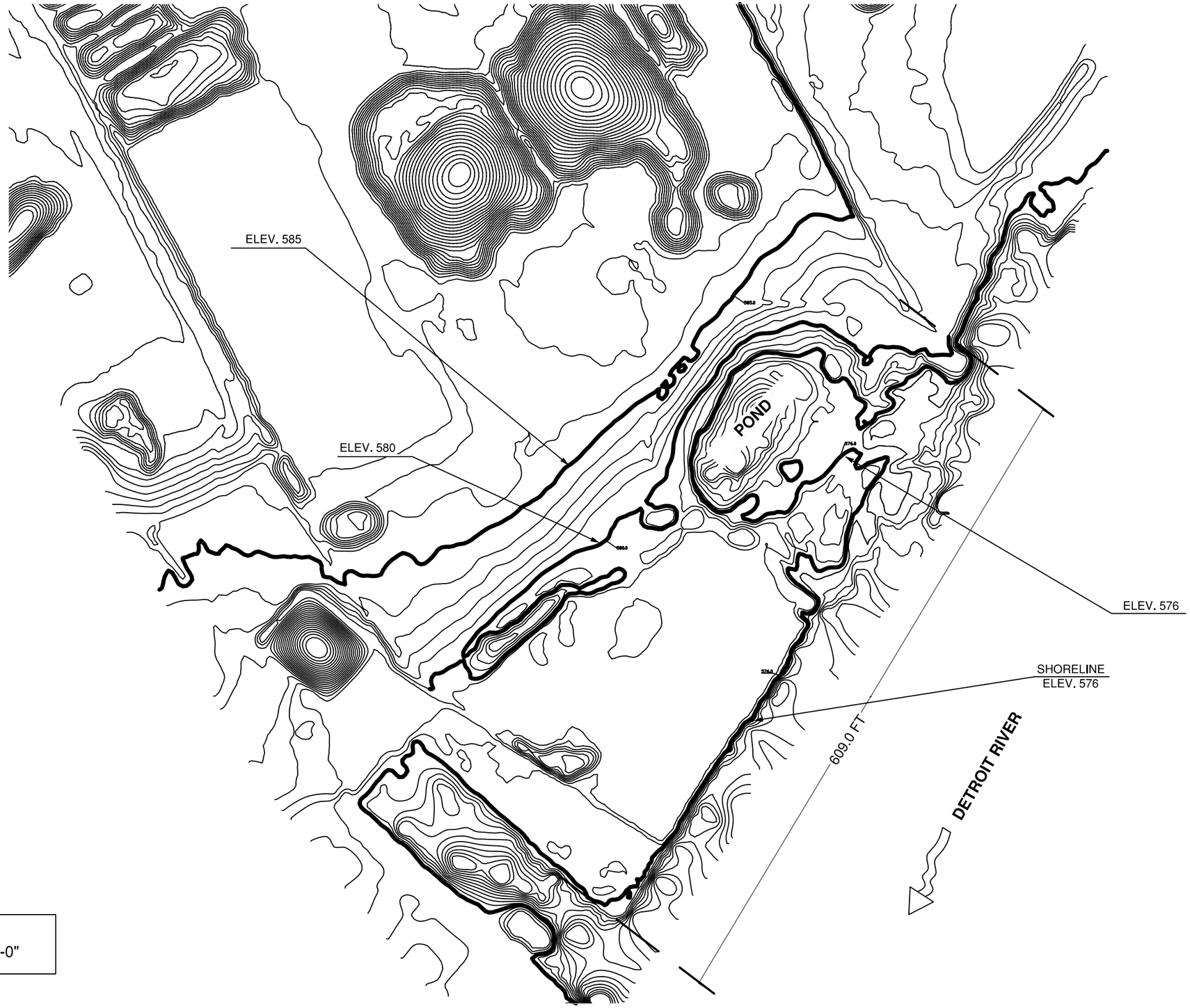
Sincerely,

G2 Consulting Group

Zahraa Roudan
Staff Engineer

Mark S. Stapleton, P.E.
Associate / Project Manager

Encl.



12/13/2019
SCALE: 1/8" = 1'-0"

N

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 01-31-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
12/13/2019

PLATE NO.
1

N

01/17/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Elsenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 01-31-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
1/17/2020

PLATE NO.
2

N

01/21/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 01-31-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
1/21/2020

PLATE NO.
3

Appendix C

PM ENVIRONMENTAL Environmental & Engineering Services

CONSULTING GROUP

February 27, 2020

Mr. Steve Erickson
Revere Dock LLC
3128 Three Mile Road NW
Grand Rapids, Michigan 49534

RE: February 19, 2020 Flight and Status Report
Revere Dock Shoreline Evaluation
5851 West Jefferson Avenue
City of Detroit, Wayne County, Michigan
G2 Project No. 193662

Dear Mr. Erickson:

The purpose of this letter is to provide a status report of the observed site conditions at the above referenced project site. Subsequent to reported deep seated rotational slope movements at the project site, we have conducted Unmanned Aerial Vehicle (UAV) operations of the property to observe and document visual conditions of the site. These operations capture images and these data were used to prepare topographic information. Based on review of the data we collected, it appears that site contours have not deviated much and the surface of the ponded area within the reported failure continues to fluctuate somewhat.

Flight Date	River Elevation at USGS Fort Wayne Station
December 13, 2019	+/- 575.2 feet (NOAA Fort Wayne IGLD 85)
January 17, 2020	+/- 576.0 feet (NOAA Fort Wayne IGLD 85)
January 21, 2020	+/- 575.5 feet (NOAA Fort Wayne IGLD 85)
February 3, 2020	+/- 575.7 feet (NOAA Fort Wayne IGLD 85)
February 12, 2020	+/- 575.7 feet (NOAA Fort Wayne IGLD 85)
February 19, 2020	+/- 575.5 feet (NOAA Fort Wayne IGLD 85)

For the purpose of this report, the site is divided into two areas; The Disturbed Zone where ponded area is visible, and the Undisturbed Zone located downstream from the Disturbed Zone. Review of Plates 1 through 6 show the contour maps of the project site in the near vicinity of the Detroit River shoreline. In the Disturbed Zone, a ponded area is identified and is located about 100 feet landward of the Detroit River shoreline. We have also highlighted the topographic lines representing Elevations 576, 580, and 585. Further, we have simplified the presentation by indicating the shoreline to be at Elevation 576.

Based on analysis of the Ponded Area, our calculations indicate the following:

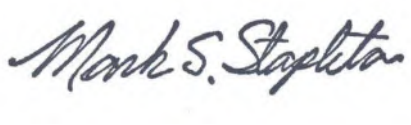
Flight Date	Approximate Surface Area of Water in Failure Dep
December 13, 2019	+/- 16,830 sq. ft.
January 17, 2020	+/- 16,381 sq. ft.
January 21, 2020	+/- 16,160 sq. ft.
February 3, 2020	+/- 16,004 sq. ft.
February 12, 2020	+/- 16,180 sq. ft.
February 12, 2020	+/- 15,370 sq. ft.

Based on this information, we do not detect any large-scale ground surface movements on site.

We hope the information contained in this letter is sufficient for your present needs. If you have questions of require additional information, please contact us.

Sincerely,

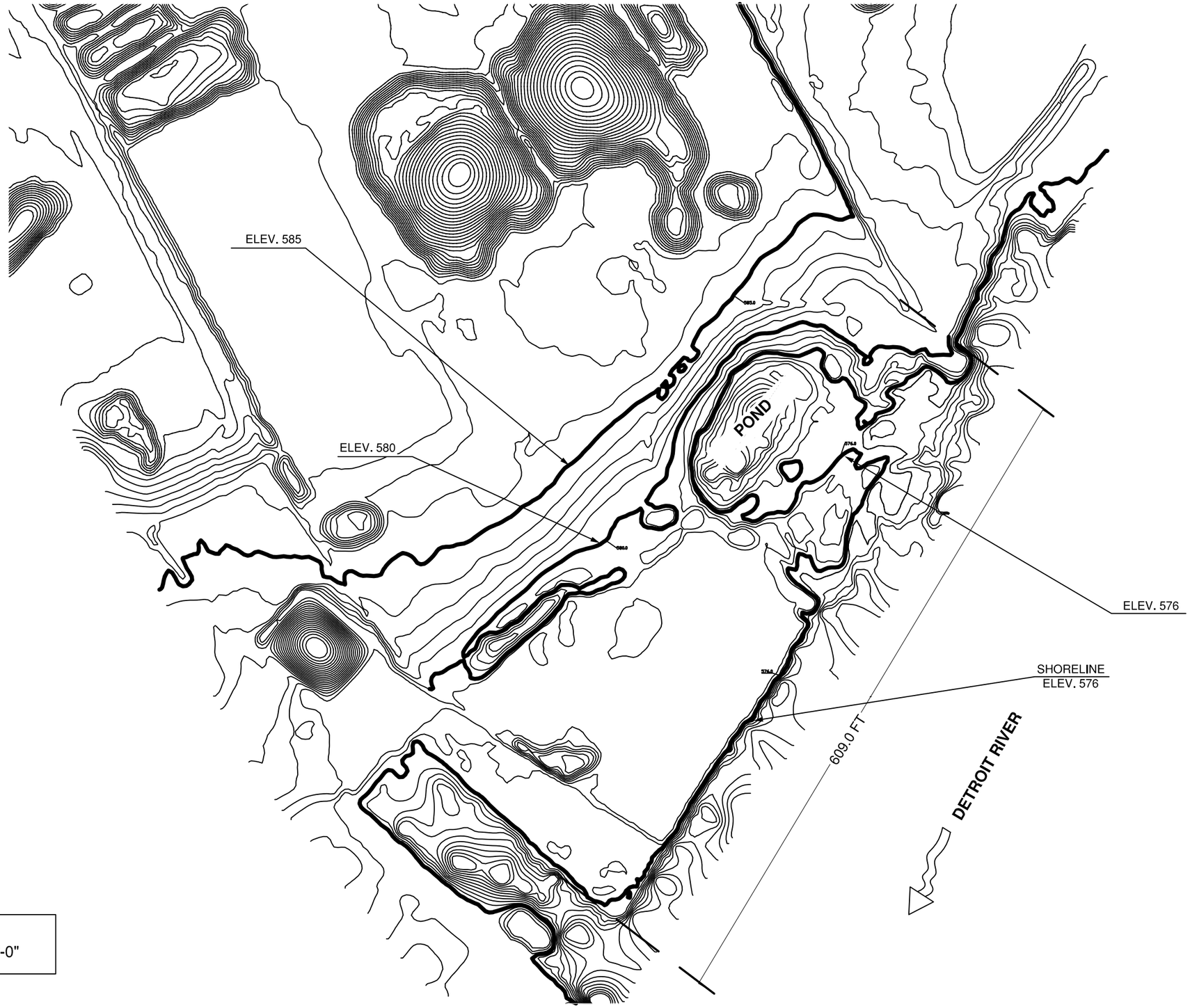
G2 Consulting Group



Zahraa Roudan
Staff Engineer

Mark S. Stapleton, P.E.
Associate / Project Manager

Encl.



12/13/2019
SCALE: 1/8" = 1'-0"

N

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 02-14-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
12/13/2019

PLATE NO.
1

N

01/17/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Elsenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 02-14-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
1/17/2020

PLATE NO.
2

N

01/21/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 02-07-2020

DRAWN BY: ZR

CHECKED BY: MSS

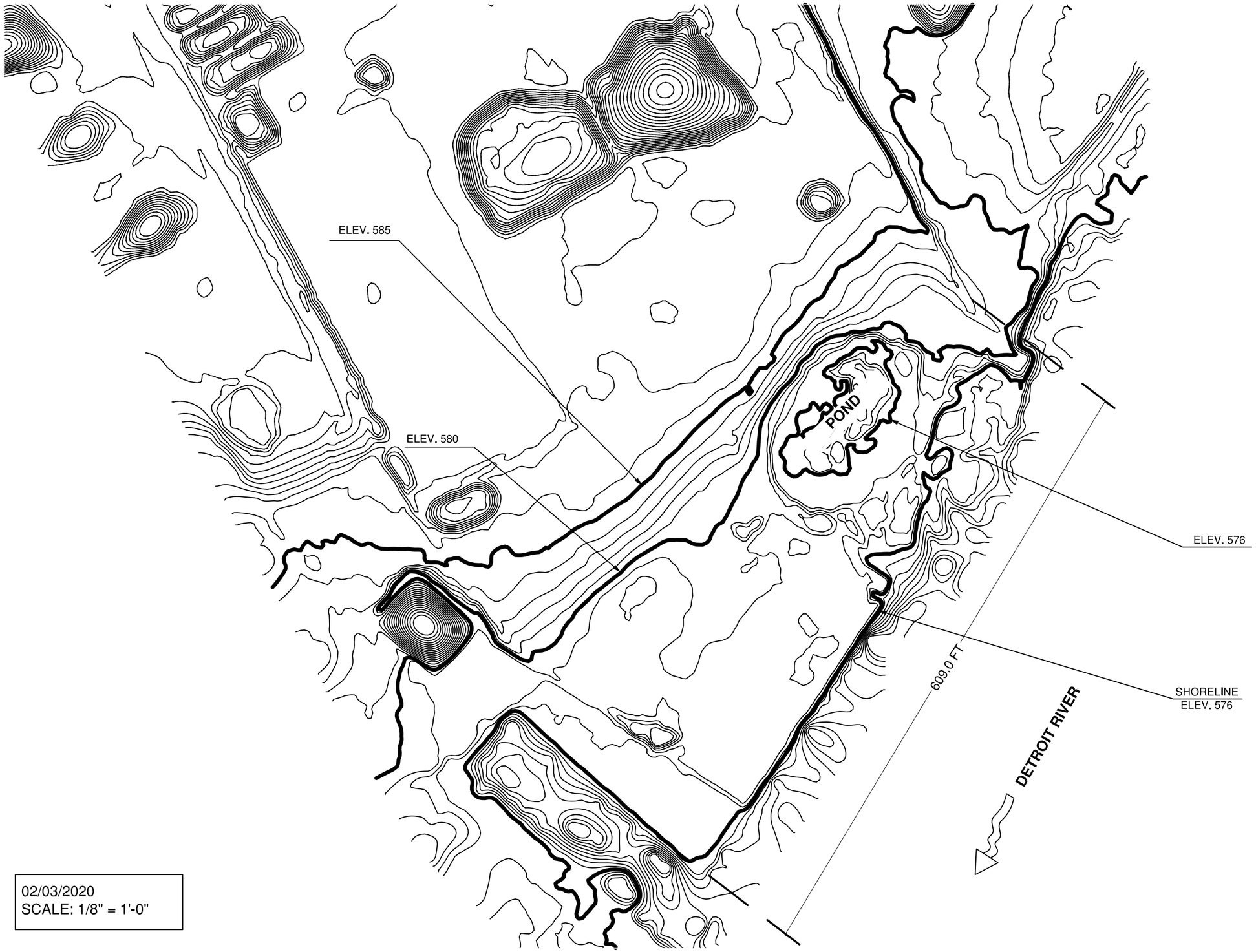
No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
1/21/2020

PLATE NO.
3



N

02/03/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 02-14-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
02/03/2020

PLATE NO.
4

02/12/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 02-14-2020

DRAWN BY: ZR

CHECKED BY: MSS

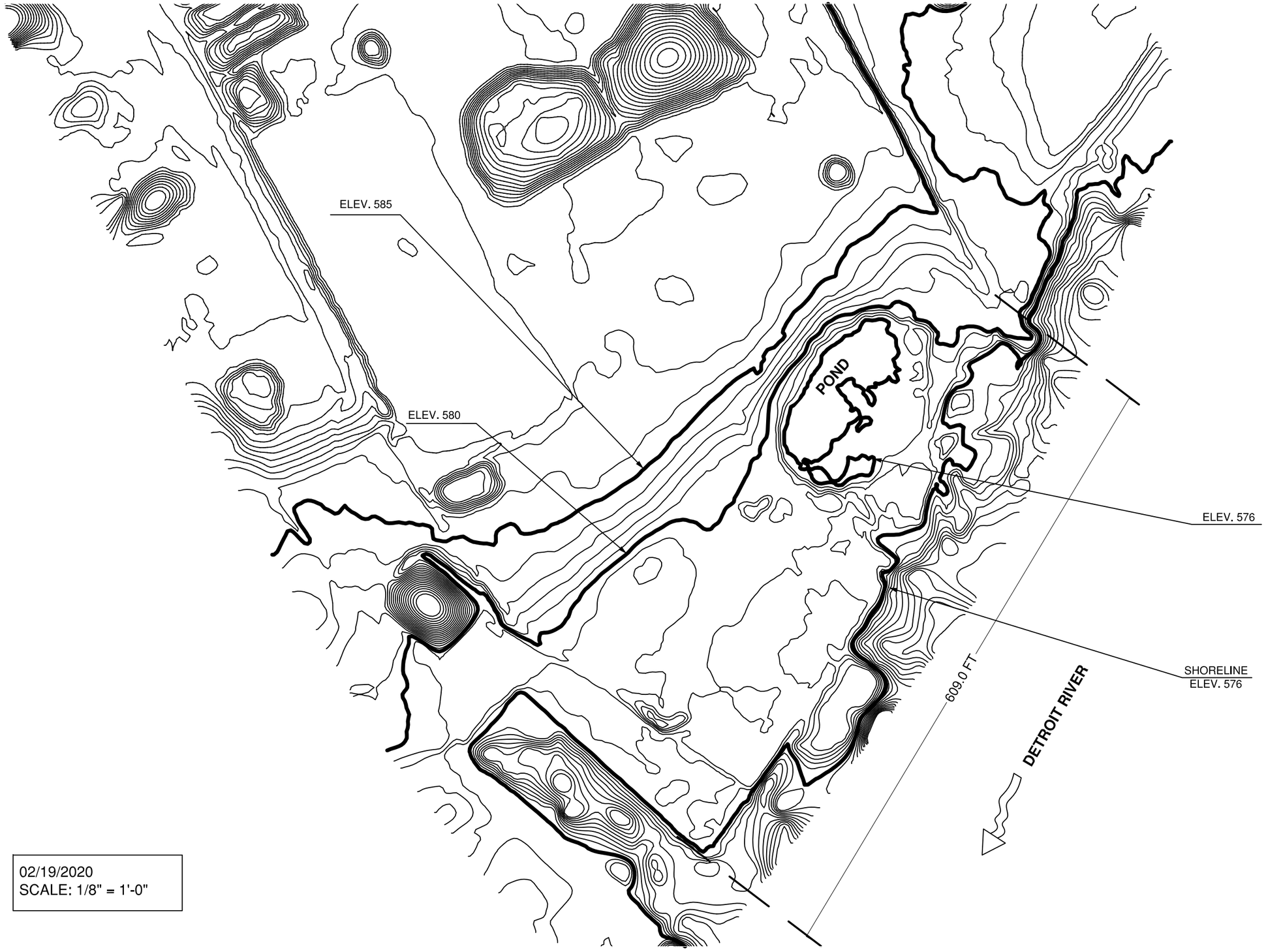
No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
02/12/2020

PLATE NO.
5



N

02/19/2020
SCALE: 1/8" = 1'-0"

CONSULTING GROUP

1350 Eisenhower Place
Ann Arbor, Michigan 48108
office (734) 390-9330
fax (734) 390-9331

PROJECT NO.: 193662

DATE: 02-27-2020

DRAWN BY: ZR

CHECKED BY: MSS

No.:	REVISION DESCRIPTION	DATE:

PROJECT NAME:
REVERE DOCK, LLC

ADDRESS:
5851 W. JEFFERSON AVE.
DETROIT, MICHIGAN

SHEET TITLE
CONTOUR MAP
02/19/2020

PLATE NO.
6

Appendix D

PM ENVIRONMENTAL Environmental & Engineering Services

CONSULTING GROUP

February 18, 2020
Mr. Steve Erickson
Revere Dock LLC
3128 Three Mile Road NW
Grand Rapids, Michigan 49534

RE: Site Stability Evaluations
Revere Dock Shoreline Evaluation
5851 West Jefferson Avenue
City of Detroit, Wayne County, Michigan
G2 Project No. 193662

Dear Mr. Erickson:

We have completed our site stability evaluations of the subject property. It should be noted that the geotechnical parameters used in our analyses are estimates based on our previous investigations along with observations reported to us shortly after slope failures occurred in November of 2019. Based on our analyses, it appears that the site is relatively stable provided any surface surcharging activities (such as aggregate stockpiling) are not within 400 feet of the original property shoreline. The following paragraphs summarize our analyses along with our conclusions and recommendations.

Before Failure Condition

Photo 1 – Site Conditions Before Failure October 17, 2019

Photo 1 shows the subject property site along the existing shoreline, at the upstream (north) property line, looking downstream (south). The concrete box structure in the foreground is the GLWA outfall box structure. Downstream, the photograph shows the intact Pile Supported Concrete Cap structure that we investigated in 2016. Between the two aforementioned structures in a slope shoreline into the Detroit River.

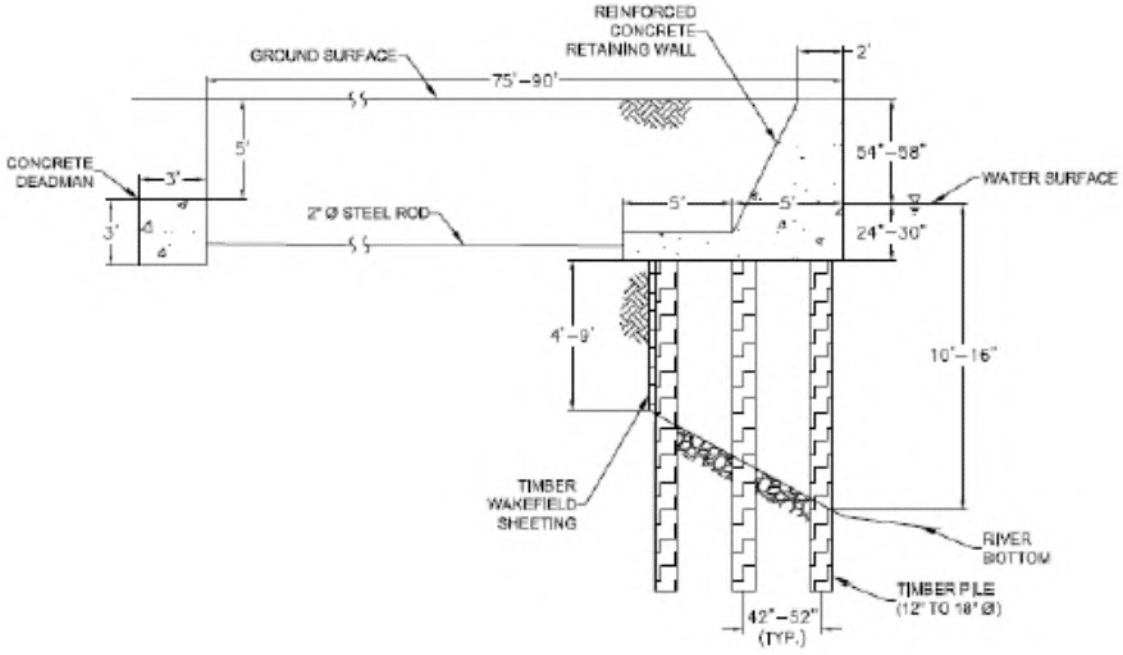


Figure 1 – Cross Section Along Pile Support Concrete Cap

Figure 1 presents a cross section of the Pile Supported Concrete Cap structure. This cross section is looking upstream (north). It should be noted that the existing shoreline structure is not a vertical wall, but rather, a pile support concrete slab and cap over natural shoreline.

We performed slope stability evaluations for this condition. This analysis is based on our preliminary findings which includes our previous investigations along with the reported stockpiling operations before December 13, 2019. The Following Figure summarizes our slope stability analysis:

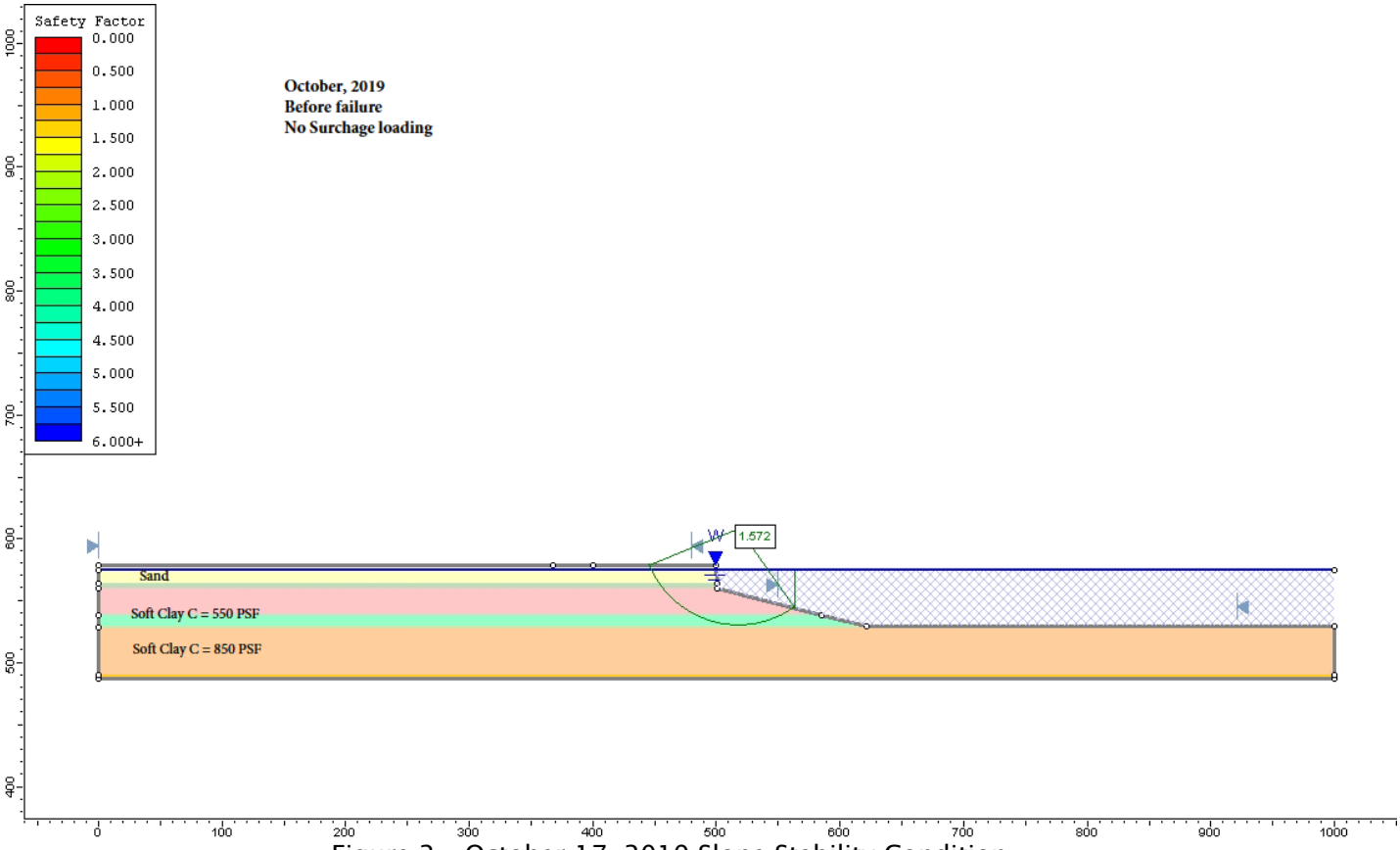


Figure 2 – October 17, 2019 Slope Stability Condition

For the purpose of this study, we performed slope stability analyses using the compute program SLIDE using the Simplified Bishop Method option. Slope stability is the potential of soil slopes to withstand movement. Stability is determined by the balance of shear stress caused by loadings and the shear strength of the underlying soils. The above figure indicates the conditions as of October 17, 2019 with no surface loadings had a Factor of Safety against movement (slope failure) of 1.57. That is, the resisting forces of the soil are 57% greater than the driving forces. The circular arc indicated in Figure 2 shows the potential failure path.

Stability During Stockpiling Operations

Based on the information provided, we understand that aggregate stockpiling operations took place during the month of November 2019. Self-unloading vessels moored in the vicinity of the subject property shoreline and placed aggregate material on land. Based on review of aerial photography, it appears that stockpiles as high as 30 feet were placed within 100 feet of the shoreline.

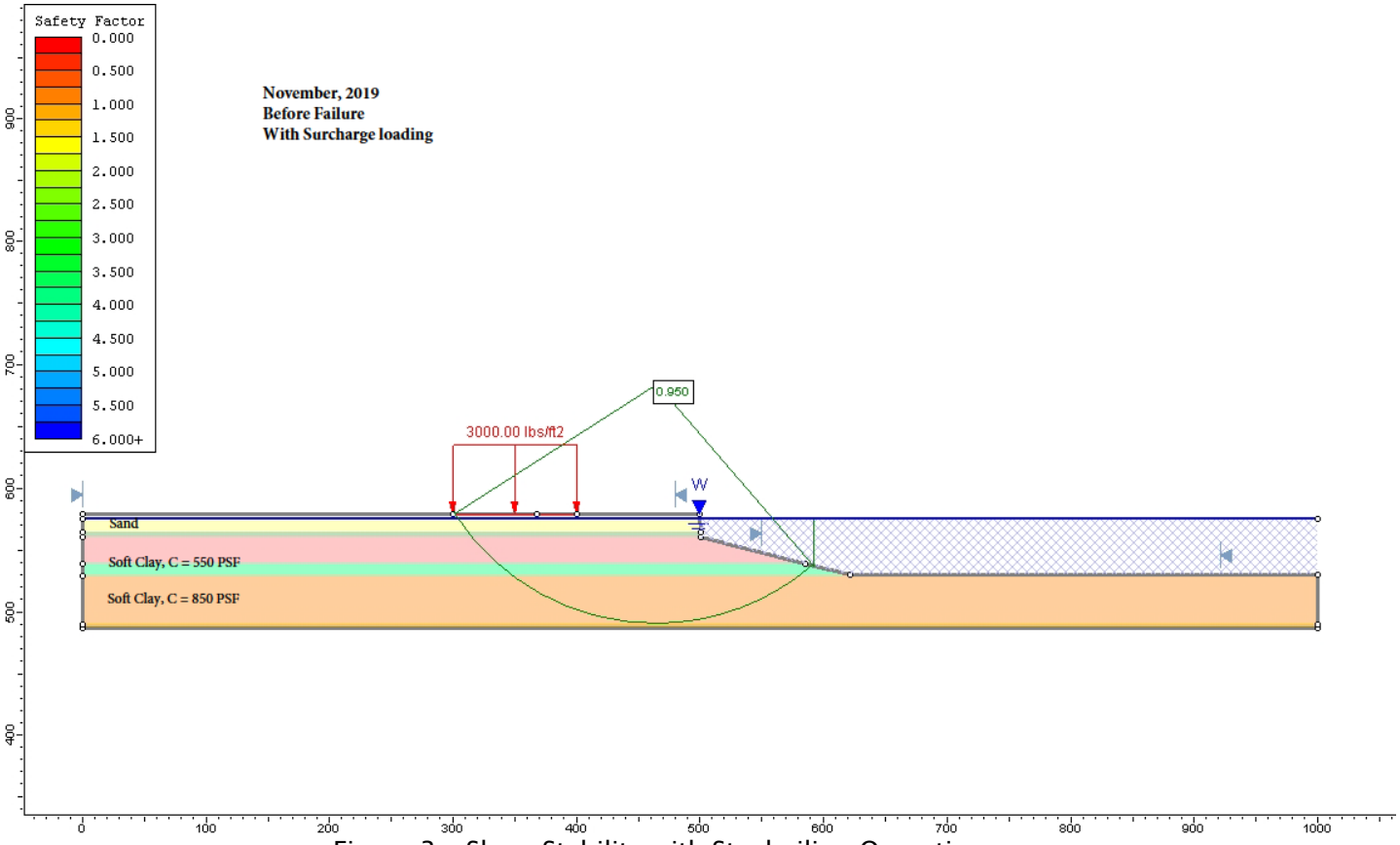


Figure 3 – Slope Stability with Stockpiling Operations

The above figure indicates the conditions under stockpiling conditions. Our analysis shows a Factor of Safety against movement (slope failure) of less than 1 meaning large scale deep rotational slope movements are imminent.

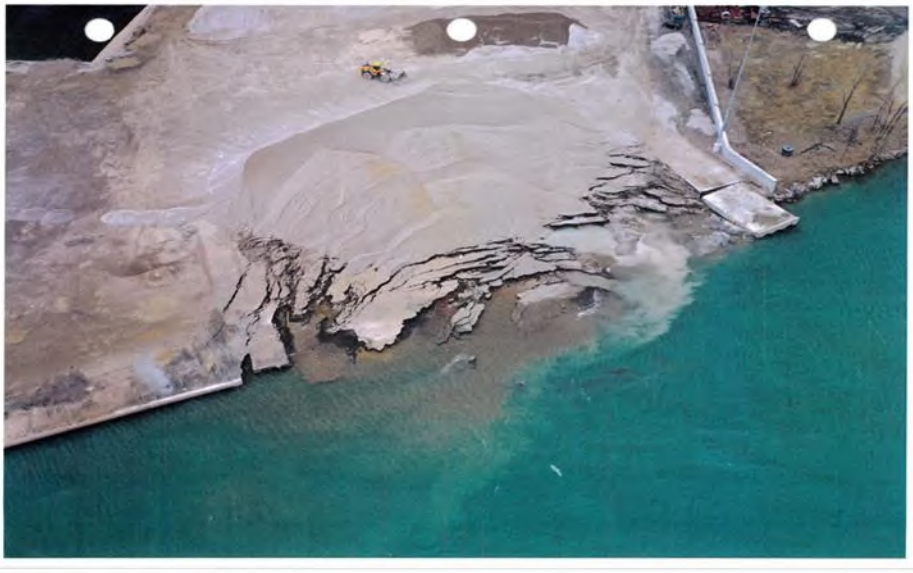


Photo 2 – Site Conditions November 27, 2019

The above Photo 2 is an aerial photograph taken on November 27, 2019. Large scale movements between the stockpile areas and the shoreline are apparent. These movements cause a reduction of soil strength from peak conditions to remolded conditions. The result is a large circular mass slide toward the Detroit river bottom. The result of soil mass moving into the Detroit River is a flattening of slope into the Detroit River.

It is our understanding that aggregate transport operations followed, and the stockpiles were removed from the vicinity of the property shoreline.

Stability of Failed Area with Stockpiles Removed

We again performed stability analyses of the area shown in Photo 2. We will refer to this area as the Disturbed Area from now on in the report. In our analysis we used remolded shear strength parameters and utilized the survey data provided which showed the reduction of soil slope into the Detroit River.

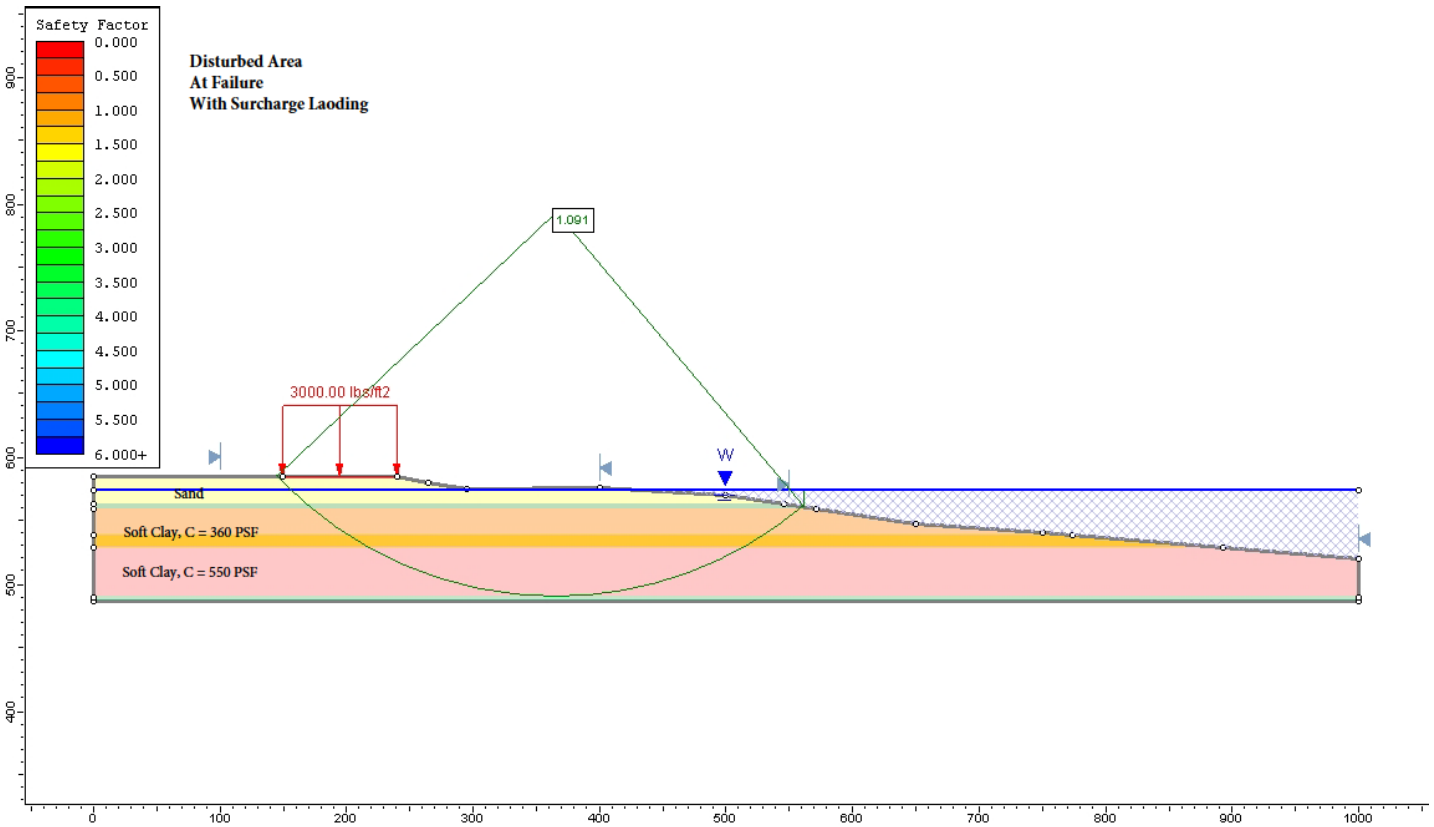


Figure 4 – Slope Stability with Stockpiling Operations Immediately After Failure

The above figure indicates the condition immediately after failure. Remolded soil strengths were used in the analysis along with the milder soil slope into the Detroit River as was reported to us. Our analysis indicates a Factor of Safety against failure for this condition is slightly above 1, indicating the slope movements should stop even with stockpile surcharge loadings.

Recommendations

We performed additional slope stability evaluations to make recommendation relative to ongoing stockpiling operations. For the Disturbed Zone, we used remolded strength conditions, while in the Undisturbed zone downstream, we used undisturbed parameters.

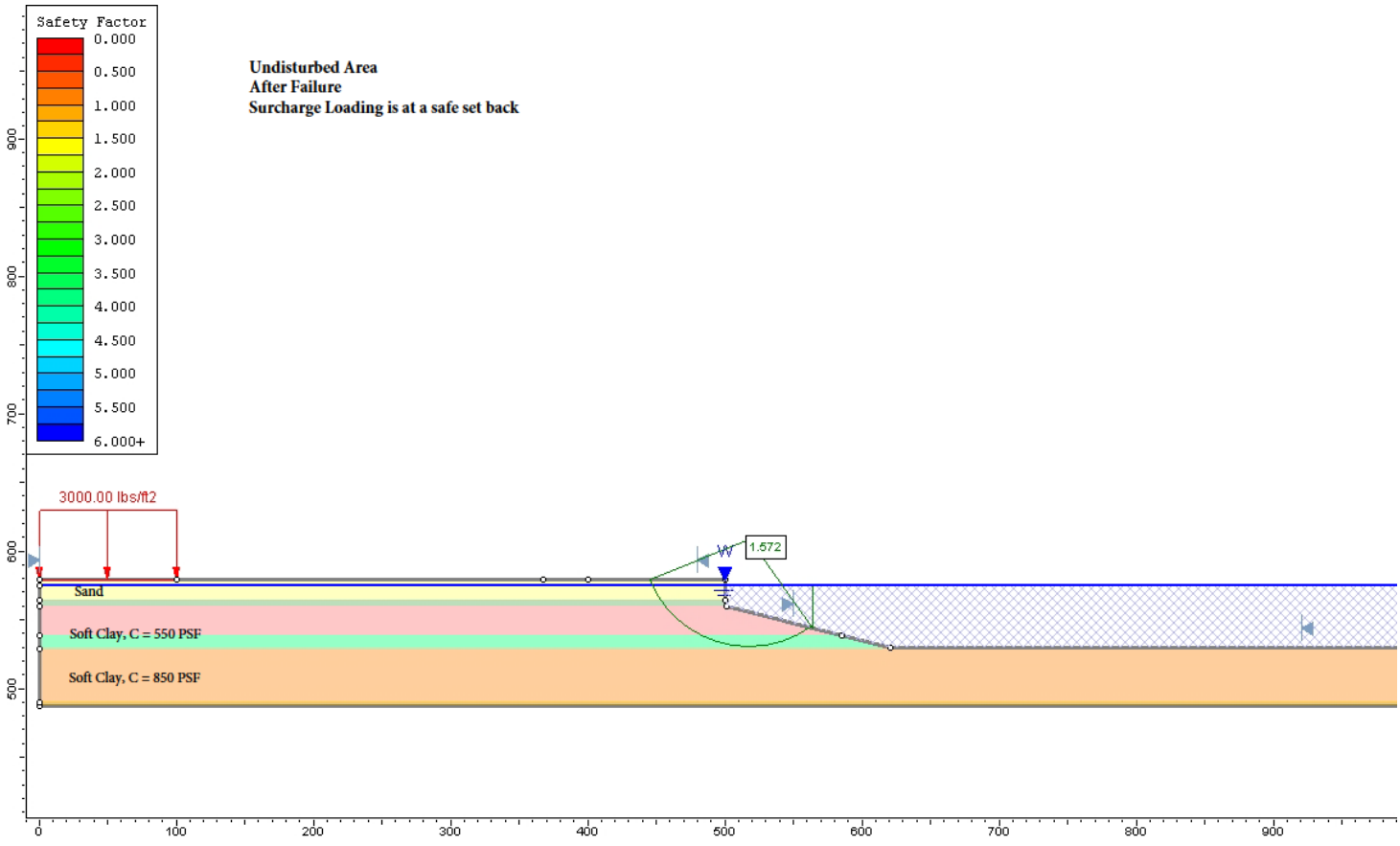


Figure 5 – Undisturbed Zone Stockpiling Operations 400 Feet from Shoreline

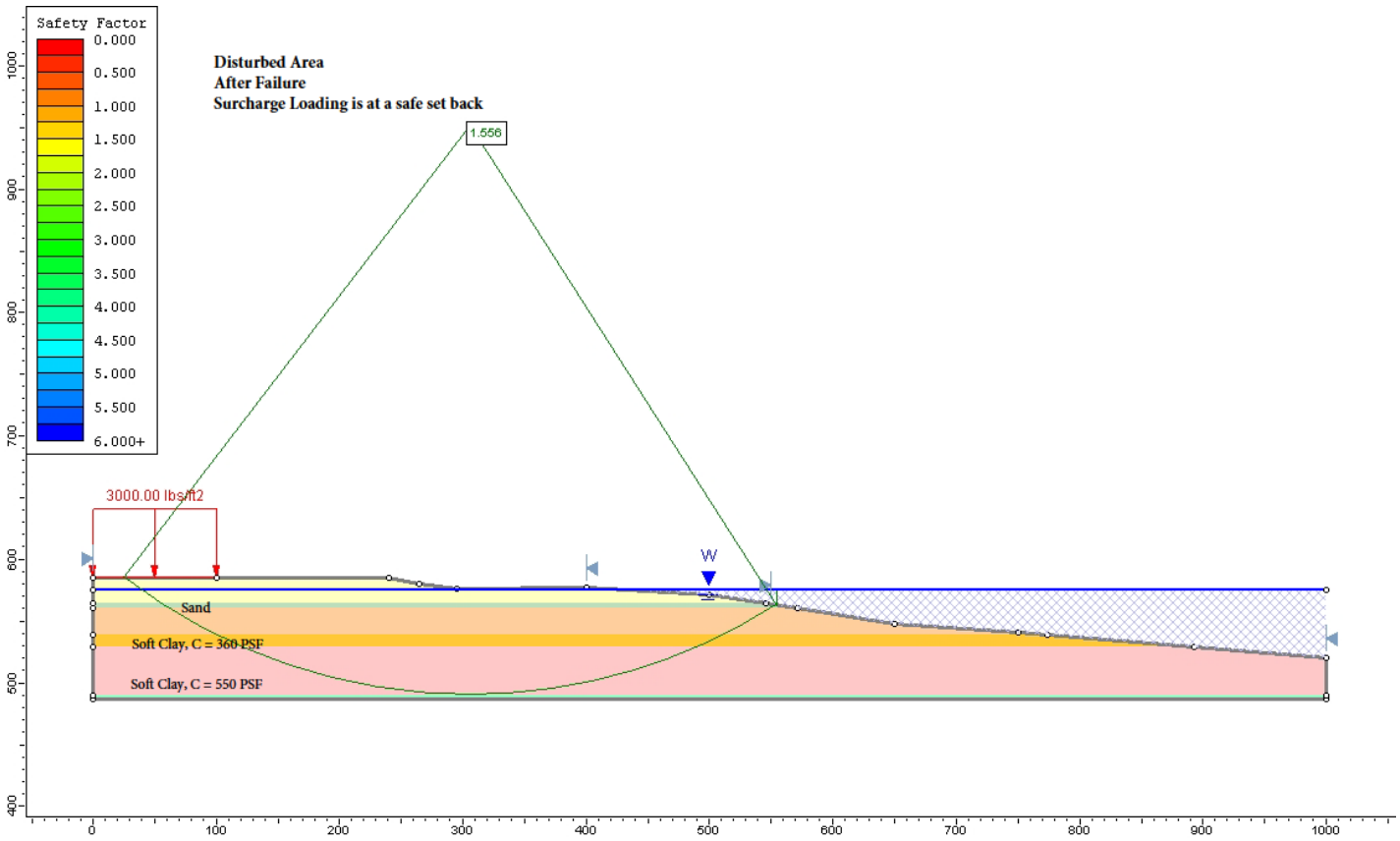


Figure 6 - Disturbed Zone Stockpiling Operations 400 Feet from Shoreline

The above Figures show that Factors of Safety should be acceptable with stockpiling operations greater than 400 feet from the existing shoreline.

We hope the information contained in this letter is sufficient for your present needs. If you have questions or require additional information, please contact us.

Sincerely,

G2 Consulting Group

Zahraa Roudhan
Staff Engineer

Mark S. Stapleton, P.E.
Associate / Project Manager

Encl.