Prepared for

DTE Electric Company
One Energy Plaza
Detroit, Michigan 48226

2023 ANNUAL INSPECTION REPORT VERTICAL EXTENSION LANDFILL

MONROE POWER PLANT

Monroe, Michigan

Prepared by

Geosyntec consultants

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1. INTRODUCTION

1.1 Overview

This 2023 Annual Inspection Report (AIR) was prepared by Geosyntec Consultants of Michigan, Inc. (Geosyntec) to provide the results of the annual inspection of the coal combustion residuals (CCR) vertical extension landfill (Landfill) at DTE Electric Company's (DTE) Monroe Power Plant disposal facility. The annual inspection has been prepared to comply with the United States Environmental Protection Agency (USEPA) CCR Rule published on April 17, 2015, as amended July 30, 2018 (40 CFR Parts 257 and 261), August 28, 2020 (Part A Rule), and November 12, 2020 (Part B Rule). Under the CCR Rule, the Landfill is an "existing landfill" per 40 CFR 257.53 and must be inspected by a qualified professional engineer on a periodic basis, not to exceed one year.

The Landfill is located about one mile southwest of the Monroe Power Plant near Monroe, Michigan, and is bounded on the east by Lake Erie and the Plant discharge canal, on the west by Interstate Highway 75 (I-75), on the south by an agricultural field, and on the north by residential properties and Plum Creek (see Figure 1). It is constructed on top of fly ash that was previously deposited in the Monroe Ash Basin (Ash Basin); the Ash Basin is a separate CCR surface impoundment. The combined Landfill and Ash Basin are considered the "Permitted Area".

Landfill Phase 1 construction began in August 2015. The Michigan Department of Environment, Great Lakes, and Energy (EGLE, formerly Michigan Department of Environmental Quality [MDEQ]), licensed the area for disposal via email communication on October 14, 2015, and CCR was placed in the unit beginning October 16, 2015.

1.2 Purpose

The objective of the inspection is to detect indications of instability in time to allow planning, design, and implementation of appropriate mitigation measures. The purpose of the inspection under the CCR Rule [40 CFR 257.84(b)(1)] is:

> "…to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards."

The inspection must, at a minimum, include:

(i) A review of the available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of an inspection by a qualified person, and results of previous annual inspections); and

(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

The purpose is accomplished through periodic visual inspection (and photo-documentation) of the Landfill, review of the previous inspection, review of instrumentation monitoring data, and discussions with site personnel about the history of the site and general operations at the Landfill. Observations from the visual inspection, document and instrumentation data review, and discussions are summarized in an inspection report. The inspection report addresses the following under the CCR Rule [40 CFR 257.84(b)(2)]:

(i) Any changes in geometry of the structure since the previous annual inspection;

(ii) The approximate volume of CCR contained in the unit at the time of the inspection;

(iii) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and

(iv) Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.

1.3 Report Organization

The remainder of this report is organized as follows:

- Section 2 – Review of Available Information: summarizes various historical documents that were reviewed as part of this inspection.
- Section 3 – Facility Description: provides information about the facility.
- Section 4 – Observations from Annual Inspection: summarizes visual observations recorded during the 2023 inspection of the Landfill.
- Section 5 – Instrumentation Monitoring: provides information about the instrumentation monitoring of the Landfill.
- Section 6 – Current Operations: describes DTE's current operations.
- Section 7 – Evaluation of Observations: based on the inspection results, evaluates if the design, construction, operation, and maintenance of the Landfill are consistent with recognized and generally accepted good engineering standards.

- Section 8 – Conclusions: provides the overall conclusions of the annual inspection and certification of the AIR.

1.4 Terms of Reference

The annual visual inspection was performed on May 3, 2023, by Dr. Clinton Carlson, Ph.D., P.E., and Dr. Jorge Romaña Giraldo, Ph.D. of Geosyntec[1], with assistance from DTE staff.

This report was prepared by Dr. Carlson and Dr. Romaña Giraldo and reviewed by Mr. John Seymour, P. E. of Geosyntec.

[1] Clinton Carlson, Ph.D., P.E., is the qualified professional engineer per the requirements of §257.53 of the CCR Rule. He has nine years of experience with coal ash related projects. His resume is provided in Appendix A.

2. REVIEW OF AVAILABLE INFORMATION

Geosyntec reviewed the following documents for the annual inspection. These documents are summarized in the table below.

Table 1: Available Information Reviewed for Annual Inspection

Title	Prepared by	Date	Content
Post-Closure Plan	AECOM	October 17, 2016	Documenting how the plan will meet the CCR Rule. Plan remains unchanged.
Groundwater Monitoring System Summary Report	TRC	October 2017	Information on groundwater monitoring system components and details for the Monroe Ash Basin and Vertical Extension Landfill.
Groundwater Statistical Evaluation Plan	TRC	October 2017	Basis for statistical evaluation for groundwater monitoring events for the Monroe Ash Basin and Vertical Extension Landfill.
Location Restrictions Demonstration	TRC	September 2018	Provides details of location restrictions demonstration for the Landfill per the CCR Rule.
Run-on/Run-off Control System Plan for CCR Disposal Facility - Monroe Fly Ash Basin Vertical Extension, Existing Landfill	AECOM	October 15, 2021	Describes the run-on and run-off control features for the vertical extension. Documenting how the plan meets the CCR Rule. Provides a five-year update to the original plan submitted in October 2016.
Fugitive Dust Control Plan	DTE	November 9, 2021	Presents fugitive dust control measures. Added operating license information, updated process for the inactive bottom ash impoundment, and further defined activities for assessing and monitoring effectiveness of dust control measures.

Table 1: Available Information Reviewed for Annual Inspection

Title	Prepared by	Date	Content
Instrumentation Monitoring and Maintenance Manual, Rev. D.	Geosyntec	November 2021	Provides details of operations, monitoring, action levels and items for the Landfill
Weekly Inspection Reports	DTE	April 2022 to May 2023	Qualified person inspections from April 2022 through May 2023.
2022 Annual Inspection Report	Geosyntec	January 9, 2023	Provides the results of the 2022 annual inspection.
Annual Groundwater Monitoring Report	TRC	January 31, 2023	Summary of annual groundwater monitoring results for 2022 for the Monroe Ash Basin and Vertical Extension Landfill.
Closure Plan	Burns & McDonnell	October 5, 2023	Documenting how the plan will meet the CCR Rule.
Annual Fugitive Dust Report	DTE	November 17, 2023	Annual report of dust control actions, any complaints, and corrective actions taken, if any. Completed pursuant to 40 CFR 257.80(c).

3. FACILITY DESCRIPTION

3.1 Overall Site Description

The facility includes a 79-acre vertical extension landfill (Landfill) and a 331-acre fly ash basin impoundment (Ash Basin) for a permitted area of 410 acres. The permitted area is in Section 16, Township 7 South, Range 9 East, of Monroe Township, Michigan shown in Figure 1. The Landfill is a coal ash landfill, and the Ash Basin is a coal ash surface impoundment under Michigan Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994, Operating License No. 9579. The entire Landfill, including the perimeter berms and swales, are located within the interior drainage area of the Ash Basin. Any potential sediments from erosion will be deposited in the Ash Basin. Any potential run-off will be managed under the NPDES permit for the Ash Basin.

The Landfill is designated as a 79-acre "dry" disposal area located on top of an area of the Ash Basin filled with CCR approximately to the originally planned final grade. The site investigation conducted in 2015 identified the fly ash below the Landfill to be approximately 50-feet-thick to an elevation of approximately 563 feet[2]. The water level in the Ash Basin is maintained at or below an elevation of 609 feet.

The Landfill is licensed to receive bottom ash, fly ash, flue gas desulfurization (FGD) scrubber wastewater sludge (solidified with fly ash or bottom ash), synthetic gypsum, inert material, and any other waste allowed by the CCR Rule or obtained through specific regulatory approval. The Permit Modification Report, prepared by Golder & Associates (Golder) dated April 16, 2015, includes regulatory requests for placement of materials within the Landfill.

3.2 Design

The design was provided by Golder in the Permit Modification Report. The components of the Landfill include the following.

- Prepared subgrade consisting of in-situ sluiced fly ash and general fill.
- 30-inch-thick pore pressure relief layer, comprised of (from top to bottom):
    - 24-inch-thick layer of bottom ash or limestone aggregate;
    - perforated collection pipes encased in a filter fabric ("sock") within the 24-inch-thick bottom ash/limestone aggregate layer;

[2] Elevations in this AIR are reported in the National Geodetic Vertical Datum of 1929 (NGVD29).

  - separation geotextile made of non-woven, needle-punched geotextile; and
  - 6-inch-thick embedment layer.

- Monitoring system consisting of 12 settlement plates, 13 vibrating wire piezometers, and six slope inclinometers.
- Perimeter berm.
- Perimeter collection swale.

3.3 Construction

Phase 1 of the Landfill is the western 11-acre portion shown in Figure 1. Construction of Phase 1 of the Landfill was certified by David List, P.E., of Golder on September 16, 2015; the certification is contained in the Phase 1 Construction Documentation Report. Record drawings of the construction were provided in Appendix B of the 2015 AIR.

Construction for Phase 2 of the Landfill, the remaining 68 acres shown in Figure 1, has been completed and the certification report was sent to EGLE in November 2017. EGLE provided approval on January 24, 2018, for CCR disposal. CCR material began being placed within Phase 2 of the Landfill in 2020.

As of May 2023, the total estimated volume of CCR in the Landfill above the geotextile separation embedment layer was approximately 260,000 cubic yards (cy), based on data provided by DTE.

4. OBSERVATIONS FROM ANNUAL INSPECTION

Inspection results and photographs from the annual visual inspection are provided in Appendix B. The visual observations are summarized below.

1. The perimeter berms were covered in grass and generally in good condition (Photographs 3, 7, 11, and 19). Some erosion was observed on the toe of the south perimeter berm (Photograph 16).

2. The pressure relief layer was observed to be in good condition where CCR has not yet been placed (Photographs 5 and 17). The CCR in Phases 1 and 2 of the Landfill appeared to be placed and stacked in accordance with generally accepted engineering practices (Photographs 17, 24, and 26).

3. Geosyntec attempted to locate the pore pressure relief pipe outlets and assess whether the pipes had any flow or blockages (Photograph 1). Several outlets could not be located due to heavy vegetation and water levels within the swales (Photograph 15), particularly within the south perimeter swales (R3 and R4).

4. Only one pore pressure relief pipe was observed to be actively flowing during the inspection, though the flow was minimal (Photograph 21). There was some algae growth around this pore pressure relief pipe outlet. This pipe is located on the northwest side of the Landfill below Phase 1 where CCR material has been placed. Some of the other pore pressure relief pipe outlets were observed to be wet during the inspection (Photographs 10, 18, 22, and 23); however, these pipes were not observed to be actively flowing.

5. In general, minimal or no sediments were observed in the pore pressure relief pipes (Photographs 2, 10, and 18). A couple pipes were observed to have vegetation and other debris within the outlets (Photographs 4, 20, 22, and 23). One pore pressure relief pipe on the west side of the Landfill, where CCR material has been placed, had some sediments within the pipe and below the outlet (Photograph 20). The vegetation, debris, and sediments did not appear to affect the drainage capacity of the pipes that could be observed.

6. Standing water was observed in all the perimeter swales (R1 through R4) of the Landfill during the inspection (Photographs 6, 9, 12, and 25). The water level in the east, north, and west perimeter swales (R1 and R2) was lower than the pressure relief pipe outlets. The water level in portions of the south perimeter swales (R3 and R4), especially on the east end of R3, was above the bottom of the pressure relief pipe outlets (Photograph 14). The water level did not appear to affect the drainage capacity of the pipes that could be observed.

7. Heavy vegetation was observed within the perimeter swales of the Landfill (Photographs 3, 6, 7, 9, 11, 12, 15, and 19). Vegetation was observed within some of the pore pressure relief pipe outlets (Photographs 4, 22, and 23). However, the vegetation in the swales and that which was in the pore pressure relief pipes did not appear to affect the drainage capacity of the pipes that could be observed.

8. The culvert on the southeast side of the Landfill was in good condition (Photograph 8). Water was observed in the perimeter swale and flowing towards the discharge into the Ash Basin.

9. The access road on the north side of the Landfill (Photograph 24) and reinforced concrete culvert beneath the access road to the Landfill were in good condition (Photograph 25). Water was observed to be flowing through the culvert during the inspection. The riprap located at the inlet and outlet of the culvert was in good condition without sediments.

10. One continuous monitoring system box (datalogger [DL]-1) exhibited high moisture intrusion, and insects/ants were observed inside the box (Photograph 13). The desiccant canister inside the enclosure and sealing material were in poor condition. The other instruments observed during the inspection (DLs, slope inclinometers, piezometers, and settlement plates) appeared to be in good condition. Section 5 and Figure 2 present more details on the monitoring instruments at the Landfill.

5. INSTRUMENTATION MONITORING

5.1 Slope Inclinometers

Six slope inclinometers (SIs) are present along the west and south sides of the Landfill perimeter. The SIs were constructed within the existing CCR material in the Monroe Ash Basin. The SIs are designated as FI-1 through FI-4, SI-9, and SI-10, as shown on Figure 2. Readings for the SIs are generally collected twice per month.

5.2 Piezometers

There are 13 piezometers (PZs) present below the Landfill pressure relief layer at the locations shown on Figure 2. PZs have been incorporated into the existing continuous monitoring system established for the Monroe Ash Basin. PZ readings are collected and automatically uploaded to the Cloud system and interpreted as part of the continuous monitoring system for the Monroe Ash Basin. Readings for the PZs are collected and reviewed at least every other week (minimum of twice per month).

PZ-4 went offline in June 2021. Connectivity could not be restored with PZ-4, so it was left in-place and decommissioned at the end of 2021. PZ-8 has continuously reported erroneous readings since October 2022. Geosyntec conducted a diagnostic test on PZ-8 in January 2023 and believes the instrument is faulty. No active filling is currently taking place in the area of PZ-8, so the instrument has not yet been replaced. PZ-8 will be replaced prior to material placement rather than being decommissioned to maintain coverage of this area in monitoring water levels during active filling. There are currently 11 active piezometers below the Landfill.

5.3 Settlement Plates

There are 12 settlement plates (SPs) present within the footprint of the Landfill and along the northwestern perimeter as shown on Figure 2. The SPs are founded on the surface of the Landfill pressure relief layer and generally co-located with the PZs. Readings for the SPs are generally collected twice per month.

6. CURRENT OPERATIONS

6.1 Operations Organization

The Landfill is operated by DTE. The responsible personnel include:

- Ben Goehmann – DTE Energy Supply, Plant Manager, Monroe Site Operations
- Gerald Chilson and Eric Molnar – DTE Environmental Management and Safety (EM&S), Monroe Power Plant

6.2 Operation Activities

Operation details are provided in the Inspection, Monitoring, and Maintenance Manual (IMMM) Rev. D. and Operations Plan Drawings Rev. D. (Geosyntec, 2021). The following operation activities are described in the Operations Plan Drawings:

1. Hours of Operation
2. Site Access and Barriers
3. Traffic Routing
4. Nuisance (e.g., dust, odors, noise) Control
5. Emergency Services
6. Weather Events (includes inclement weather disruptions, snow removal, and dry and windy weather)
7. Reuse of CCR Material
8. Proposed Waste Types
9. Filling Operations
10. Disposal Inventory
11. Personnel and Training
12. Recordkeeping
13. Equipment

14. Intermediate Cover (includes water, bottom ash, soil, chemical sprays, and geotextiles or rolled erosion control products)

15. Perimeter Swale Maintenance

In addition, the following are currently being completed as required by the CCR Rule:

- Weekly inspections by a qualified person.
- Dust control in accordance with the Fugitive Dust Control Plan.
- Annual Fugitive Dust Control Report.
- Annual Groundwater Monitoring and Corrective Action Report.

6.3 Run-On/Run-Off Control System Plan for CCR Disposal Facility Observations

The activities specified in the Operations Plan Drawings appear to be properly followed at the Landfill. Run-on and run-off for the Landfill is controlled by the perimeter swales, which appeared to be in satisfactory condition at the time of the visual inspection.

7. EVALUATION OF OBSERVATIONS

The design, construction, maintenance, and current operations of the Landfill are consistent with recognized and generally accepted good engineering standards, based on available information. Maintenance of the Landfill berms, swales, and prepared subgrade have been conducted in accordance with the IMMM, Rev. D (Geosyntec, 2021) based on visual observations.

The Annual Fugitive Dust Report from November 2022 through October 2023 was reviewed. It was reported that no citizen complaints for fugitive dust were received during this period, so no corrective actions were necessary. Water trucks have been used to control dust on the roads. In addition, the new asphalt access road should serve to reduce fugitive dust.

Weekly inspections are completed and documented by qualified personnel. Personnel were initially trained in April 2015, and new inspectors have been trained by DTE personnel as they have been hired. Weekly inspections for the Landfill are conducted concurrently with the inspections for the Ash Basin. DTE reported no deficiencies observed for the Landfill during the weekly inspections. The inspection reports through April 2023 were reviewed by Geosyntec. No indications of structural weaknesses were identified by DTE personnel in the weekly inspections or by Geosyntec during review. The operations instrumentation monitoring data from February 2016 through April 2023 were also reviewed by Geosyntec and did not indicate any structural weaknesses in the trends.

The Landfill was not observed to have any existing structural weaknesses or conditions disrupting the operation and safety during the annual inspection. Two maintenance conditions were identified during the annual inspection:

1. Vegetation, debris, and sediments were observed in some of the pore pressure relief pipe outlets. Heavy vegetation was noted in all the perimeter swales. The heavy vegetation restricts the visibility of the pore pressure relief pipe outlets and, during heavy storm events, may limit the drainage ability of the perimeter swales leading to standing water within the swales. These observations did not appear to affect the drainage capacity of the pore pressure relief pipe outlets.

2. DL-1 for the continuous monitoring system was observed to have insects and moisture intrusion within the instrument enclosure. The desiccant canister and seal were observed to be in poor condition. However, the electronic components within the instrument box have remained functional.

Although these are maintenance conditions, they should be addressed to improve the overall efficiency of the Landfill. Geosyntec provides the following recommendations to address observed conditions:

1. Clear vegetation within the perimeter swales to at least the toe of the perimeter berm. This should help in: (i) locating the pore pressure relief pipe outlets; (ii) reducing the vegetation and other debris that has migrated into the outlets; and (iii) facilitating flow of water and lowering water within the perimeter swales.

2. Replace desiccant canisters within the instrument boxes around the Landfill (i.e., DL-1 through DL-4) and apply new sealant within DL-1.

8. CONCLUSIONS AND CERTIFICATION

The design, construction, operation, and maintenance of the Landfill is generally consistent with recognized and generally accepted good engineering standards in accordance with the CCR Rule [40 CFR 257.84(b)(1)]. The 2023 annual visual inspection did not identify any structural instabilities that would cause CCR to release into the areas outside the footprint of the Landfill. Geosyntec identified two conditions that could develop and potentially disrupt the operation of the Landfill in the future, as detailed in Section 7. Recommendations to address these maintenance conditions are provided in Section 7 for DTE's consideration.

Certified by:

Date January 9, 2024

Clinton Carlson, Ph.D., P.E.

Michigan License Number 6201066842

Project Engineer

MONROE POWER PLANT
VERTICAL EXTENSION LANDFILL SITE LOCATION

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DETROIT, MICHIGAN

FIGURE
1

PROJECT: CHE8242V

JANUARY 2024

PERIMETER CHANNEL R1

PERIMETER CHANNEL R2

PERIMETER CHANNEL R3

PERIMETER CHANNEL R4

CULVERT INSTALLED in 2020 TO ALLOW DRAINAGE FROM SOUTHERN CHANNELS INTO DISCHARGE CHANNEL

PHASE 1

PHASE 2

1 2 3 4 5

PZ-30

DL1 DL2 DL3 DL4

SP-1 SP-2 SP-3 SP-4 SP-5 SP-6 SP-7 SP-8 SP-9 SP-10 SP-11 SP-12

PZ-1S PZ-1D PZ-2S PZ-2D PZ-3S PZ-3D PZ-4 PZ-5 PZ-6 PZ-7 PZ-8 PZ-9 PZ-10

SI-9 SI-10

FI-1 FI-2 FI-3 FI-4

0.50%

0 150 300
SCALE FEET

RECORD PIEZOMETER LOCATIONS

INSTRUMENT IDENTIFICATION	NORTHING	EASTING	TOP OF PORE RELIEF ELEVATION (ft-msl)
PZ-1S PZ-1D	143,132.58	13,391,553.77	615.22
PZ-2S PZ-2D	142,791.36	13,391,744.99	616.41
PZ-3S PZ-3D	142,601.23	13,391,236.06	614.71
PZ-4	142,399.11	13,392,255.75	615.42
PZ-5	142,891.20	13,392,666.26	614.76
PZ-6	142,317.97	13,393,071.44	616.26
PZ-7	142,712.44	13,393,198.77	614.87
PZ-8	141,845.96	13,393,003.18	613.93
PZ-9	141,949.20	13,393,629.57	615.37
PZ-10	142,364.59	13,393,873.25	615.47

RECORD SLOPE INCLINOMETER LOCATIONS

INSTRUMENT IDENTIFICATION	NORTHING	EASTING	ELEVATION (ft-msl)
FI-1	141,951.23	13,392,399.02	611.90
FI-2	141,360.68	13,392,909.31	612.05
FI-3	141,570.74	13,393,467.74	613.42
FI-4	141,732.21	13,393,991.01	611.64
SI-10_Top of Pipe	142,280.24	13,391,364.86	612.45
SI-9_Top of Pipe	142,989.72	13,391,192.71	611.28

RECORD DATA LOGGER LOCATIONS

DATA LOGGER	NORTHING	EASTING	G.S. ELEV. (ft-msl)
DL1	141,531.70	13,392,823.45	611.68
DL2	141,680.06	13,393,548.90	611.38
DL3	143,022.18	13,393,244.14	613.96
DL4	142,517.07	13,391,015.54	611.82

RECORD LOCATION OF SURFACE WATER MONITORING POINTS

INSTRUMENT IDENTIFICATION	NORTHING	EASTING	ELEVATION (ft-msl)
SP-1	143,263.75	13,391,724.38	613.77
SP-2	142,948.78	13,391,164.48	610.94
SP-3_Top of Plate	143,124.35	13,391,551.76	615.34
SP-3_Top of Pipe	143,124.20	13,391,551.69	620.47
SP-4_Top of Plate	142,779.81	13,391,741.28	616.31
SP-4_Top of Pipe	142,779.97	13,391,741.18	621.48
SP-5_Top of Plate	142,591.55	13,391,231.59	614.76
SP-5_Top of Pipe	142,591.59	13,391,231.69	619.91
SP-6_Top of Plate	142,395.73	13,392,264.52	615.61
SP-6_Top of Pipe	142,395.73	13,392,264.52	620.65
SP-7_Top of Plate	142,887.18	13,392,678.86	615.04
SP-7_Top of Pipe	142,887.18	13,392,678.86	620.06
SP-8_Top of Plate	142,314.67	13,393,070.28	616.49
SP-8_Top of Pipe	142,314.67	13,393,070.28	621.50
SP-9_Top of Plate	142,709.21	13,393,207.63	615.03
SP-9_Top of Pipe	142,709.21	13,393,207.63	620.03
SP-10_Top of Plate	141,843.27	13,393,010.62	614.13
SP-10_Top of Pipe	141,843.27	13,393,010.62	619.16
SP-11_Top of Plate	141,946.56	13,393,636.15	615.51
SP-11_Top of Pipe	141,946.56	13,393,636.15	620.51
SP-12_Top of Plate	142,362.33	13,393,880.27	615.70
SP-12_Top of Pipe	142,362.33	13,393,880.27	620.74

LEGEND

- SI-1 — PHASE 1 SLOPE INCLINOMETER
- PZ-1D / PZ-1S — PHASE 1 VIBRATING WIRE PIEZOMETER (VWP) PAIR (DEEP & SHALLOW)
- SP-1 — PHASE 1 SETTLEMENT PLATE
- PHASE 1 REMOTE (CABLED) DATA LOGGER LOCATION FOR VWP
- DATA LOGGER CABLE
- RECORD LOCATION OF DRAINAGE PIPING
- FI-1 — 2017 SLOPE INCLINOMETER
- 2017 VIBRATING WIRE PIEZOMETER (VWP) PAIR (DEEP & SHALLOW) AND SETTLEMENT PLATE
- DATA TRANSMISSION LOCATION
- CABLING OUTSIDE OVERLINER
- CABLING INSIDE OVERLINER

MONROE POWER PLANT
VERTICAL EXTENSION LANDFILL
LANDFILL LAYOUT

Geosyntec consultants
Geosyntec Consultants of Michigan
DETROIT, MICHIGAN

PROJECT: CHE8242V

JANUARY 2024

FIGURE 2

APPENDIX A

Resume of Clinton Carlson, Ph.D., P.E.
(Qualified Professional Engineer)

Clinton P. Carlson, PhD, PE

Qualifications

Dr. Carlson is a geotechnical engineer with nine years of experience on projects related to design and remediation of landfills and coal combustion residual impoundments, dam safety, and geotechnical instrumentation. He is a Project Engineer with Geosyntec and part of the firm's dams and levees practice area. His work has included managerial responsibilities for project budgets and schedules and has primarily supported federal and power clients for both small and large projects. Clinton has managed and supported projects for risk assessments, slope stability analyses, and instrumentation for landfills and dams.

Specialties

Landfill and CCR Design and Remediation
Dam Safety
Geotechnical Instrumentation

Education

PhD, Civil Engineering, University of Michigan, Ann Arbor, MI, 2014
MSE, Civil Engineering, University of Michigan, Ann Arbor, MI, 2010
BSE, Civil & Environmental Engineering, University of Michigan, Ann Arbor, MI, 2009

Licenses/Certifications

Professional Engineer: MI

Relevant Project Experience

Annual Inspections of CCR Units, Confidential Client, Southeast Michigan | Inspections of CCR units are conducted annually as part of the CCR Rule to identify any site conditions that pose a concern to the safe operation and stability of the CCR units. Project manager in charge of financials and engineer in charge of performing annual inspections for three CCR units for a client in Southeast Michigan. Prepared inspection reports to summarize observed conditions at the three CCR units. Interacted with client representatives to discuss necessary actions to address potential concerns. (Mar. 2022–Present)

Monitoring and Maintenance for CCR Units, Confidential Client, Southeast Michigan | Project manager in charge of financials and engineer in charge of overseeing inspections, monitoring, and maintenance of geotechnical instrumentation system of two CCR units for a client in Southeast Michigan. The geotechnical instrumentation system included multiple monitoring wells, settlement plates, vibrating wire piezometers, manual inclinometers, and ShapeArray inclinometers. Instrumentation data were evaluated to identify near real-time concerns for the safe operation and stability of the CCR units. Provided monthly summary reports to the client representatives and met with them to discuss the monitoring data on a bi-monthly basis. Conducted site inspections of observed conditions posing concerns for the safe operation and stability of the CCR units on at the request of the client. (Mar. 2022–Present)

FERC Part 12D Periodic Inspections for Barton and Superior Dams, City of Ann Arbor, Ann Arbor, MI | The City of Ann Arbor owns and operates the Barton and Superior Hydroelectric Projects (Barton and Superior Dams) in Ann Arbor, Michigan. Barton and Superior Dams are used by the City of Ann Arbor for power generation and thus, are under regulation by the Federal Energy Regulatory Commission (FERC). FERC regulations require dam safety inspections are performed every five years by Independent Consultant (IC) Teams. Geosyntec served as the IC Team for the City of Ann Arbor for the Ninth FERC Part 12D Periodic Inspections of Barton and Superior Dams performed in 2023. Served as the project manager and point-of-contact with the City of Ann Arbor on behalf of the IC Team. Member of the IC Team (geotechnical engineering support and field inspection team) that performed the document review, developed the Inspection Plans, prepared the Pre-Inspection Preparation Reports, performed the field inspections, and prepared the Periodic Inspection Reports. The Periodic Inspection Reports were completed and submitted to FERC before the December 2023 deadline. (Jan. 2023–Dec. 2023)

Landfill Stability Evaluation, Confidential Client, Southeast US | Contacted by the client to evaluate an instability at an existing landfill including the implementation of instruments to measure and evaluate progression of instability. Project manager in charge of financials and engineer in charge of developing instrumentation plan and evaluating measurements of instrumentation. Conventional surveying stakes

and an automated monitoring total station were implemented to measure progression of instability. Evaluation of measurements was used to inform the client on progression of instability and provide recommendations for implementation of mitigation measures. Weekly summary reports of instrumentation measurements were provided to the client while implementing mitigation measures. Additional support was provided to the client in discussions with the state regulator. The monitoring systems were also utilized to provide additional safety measures during the staged temporary removal of a buttress berm in order to tie-in liner systems for new landfill cells to the existing liner system. Monitoring data are currently summarized in monthly reports and provided to the client. (Aug. 2019–Present)

Landfill Design Projects for Power Company, Confidential Client, Southeast US | Engineer in charge of coordinating and performing the geotechnical analyses for the permitting and closure of multiple sites for a power company. Geotechnical analyses performed for the sites included subsurface investigation and geotechnical material properties interpretation, slope stability analyses (including veneer and liner stability), settlement calculations for liner and cover systems, and hydrologic evaluations for liner and cover systems. The computer programs Slide and HELP were used to perform the slope stability analyses and hydrologic evaluations, respectively. (June 2015–Present)

Portsmouth Gaseous Diffusion Plant On-Site Waste Disposal Facility, Fluor-BWXT Portsmouth, Piketon, OH | The Department of Energy's Portsmouth On-Site Waste Disposal Facility is being constructed for the disposal of on-site hazardous waste materials. Engineer that aided geotechnical analyses for the design and construction of the facility. Geotechnical analyses performed during the design phase included slope stability analyses (including veneer and liner stability), settlement calculations for liner and cover systems under variable loads, and foundation design for leachate conveyance systems. During construction, performed slope stability analyses for excavation conditions and geo-structural calculations and reinforcement detailing for reinforced concrete valve houses constructed as part of a leachate transmission system and a footing for an interim transfer ramp. The computer program Slide was used to perform the slope stability analyses. (Apr. 2015–Present)

Inspections and Mitigation for CCR Landfill, Confidential Client, Southeast Michigan | Probabilistic slope stability analyses for a CCR landfill in Southeast Michigan identified unsatisfactory conditions for existing slopes that required mitigation measures. Project manager in charge of project financials and schedule and engineer in charge of developing inspection and construction plans to mitigate unsatisfactory conditions. Developed an inspection plan to identify indicators of slope instabilities and allow for safe operation conditions. The inspection plan was carried out by site personnel prior to and during construction and supported by Geosyntec. Developed a construction plan to regrade the slopes and mitigate the unsatisfactory conditions. Performed site inspections and met with client representatives and contractors during construction to verify safe working conditions and satisfactory slope conditions were achieved. (Feb. 2022–May 2022).

Probabilistic Slope Stability Assessment for CCR Landfill, Confidential Client, Southeast Michigan | Previous site inspections identified potentially unstable slopes at a CCR landfill in Southeast Michigan, so probabilistic slope stability analyses were performed to evaluate the reliability of the slope conditions given limited site information. Engineer that aided in review of probabilistic slope stability analyses and slope stability assessment report. Recommendations were developed and provided to the client to address unsatisfactory conditions for existing slopes identified in the probabilistic site response analyses. (Nov. 2021–May 2022).

Quantitative Risk Assessment for Dam in Southeast US, Confidential Client, Southeast US | The project further refines estimates of risk developed from previous potential failure mode analyses and semi-quantitative risk analyses performed for an embankment dam and its primary and auxiliary spillways located in the Southeastern U.S. Project manager in charge of financials and schedule for the Quantitative Risk Assessment (QRA) of the dam. The main objectives of the QRA are to estimate the risk, in terms of annual failure probabilities and downstream consequences, for seismic, internal erosion, and spillway hydrologic failure modes and the uncertainties associated with the risks. Actively participated in the expert elicitation process to develop risk models and meetings with the client to present the models and results of the QRA. Prepared calculation packages and reports summarizing the methods used in the

QRA and the results for the client. Aided in the ground motion selection, internal erosion evaluation, and evaluation of the erodibility of the embankment soils. (May 2018–Apr. 2022)

Field Investigation of Primary Spillway for Dam in Southeast US, Confidential Client, Southeast US | Field engineer for oversight of a visual inspection and investigation of the foundation of the primary spillway slabs and control structure for a dam in the Southeast U.S. Observations from the field investigation were used to inform a QRA performed for the dam and its spillways. The visual inspection was performed to identify vertical offsets and gaps in the joints between the slabs of the primary spillway. A field investigation consisting of shallow cores through the concrete slabs of the spillway and deep borings into competent rock below the control structure was performed to evaluate the foundation materials of the primary spillway and the presence of voids. (Jan. 2021–May 2021)

Landfill Stability Evaluation, Confidential Client, Southeast US | Contacted by the client to evaluate an instability at an existing landfill including the root cause of the instability. Project manager in charge of financials and engineer in charge of coordinating and performing slope stability analyses. Slope stability analyses were performed to evaluate the root cause of the instability and mitigation measures required to stabilize the landfill. Results of the analyses were used to support the client in discussions with the state regulator and advise the client on a path forward for stabilizing the landfill. A facility-wide stability plan was also developed based on the stability of the landfill for the existing conditions and the final planned conditions. Analyses were also performed for a staged temporary removal of a buttress berm in order to tie-in liner systems for new landfill cells to the existing liner system. Aiding in ongoing annual landfill stability assessments. (Aug. 2019–Dec. 2020)

Onondaga Lake Geotechnical Monitoring, Honeywell, Syracuse, NY | Contaminated sediments were dredged from Onondaga Lake and consolidated within geotextile tubes at an off-site landfill as part of a Superfund project. Geotechnical instrumentation systems were implemented to monitor (i) a sheetpile wall around a portion of the Lake dredged for remediation and (ii) a landfill closure comprised of geotextile tubes filled with sediments dredged from the Lake. Manager in charge of financials and engineer in charge of monitoring the instrumentation data. The monitoring systems included manual and automated inclinometers, settlement cells, vibrating wire piezometers, and surface monitoring points. (Feb. 2015–Oct. 2018)

Stability and Internal Erosion Assessment of Clear Creek Dam and Beaver Creek Dam, Tennessee Valley Authority, Bristol, TN and VA | Static and seismic stability of two earthen embankment dams in the twin cities of Bristol, TN and VA, Clear Creek Dam (BTC) and Beaver Creek Dam (BTB), were assessed along with the internal erosion for potential failure modes identified in the Potential Failure Mode Analyses (PFMA). Engineer in charge of seismic site response analyses and internal erosion evaluations for two earthen embankment dams. Performed seismic response analyses and used the results to perform the liquefaction potential evaluation. The seismic response analysis was performed using the computer program Strata. Internal erosion evaluations were performed for the critical potential failure modes identified by the project team for each dam. (Mar. 2017–Sept. 2017)

Onondaga Lake Capping and SCA Design, Honeywell, Syracuse, NY | Contaminated sediments were dredged from Onondaga Lake and consolidated within geotextile tubes at an off-site landfill as part of a Superfund project. Engineer that aided in slope stability analyses and hydrologic evaluations for: (i) a sheetpile wall around a portion of the lake dredged for remediation and (ii) a landfill closure comprised of geotextile tubes filled with sediments dredged from the lake. Stability analyses for the sheetpile wall included the internal stability (i.e., overturning and bending) of the sheetpile wall adjacent to the dredged lakebed and the global stability of the wall under the loading of an adjacent railroad line. The stability analyses of the landfill closure included the veneer stability of the liner and cover systems and the internal, interface, and global stability of the stacked geotextile tubes. The computer programs ShoringSuite, Slide, and HELP were used to perform the internal stability analyses for the sheetpile wall, global stability analyses of the wall and landfill closure, and the hydrologic evaluations, respectively. (Feb. 2015–May 2016)

APPENDIX B

2023 Annual Inspection Forms and Photos

Monroe Power Plant
Vertical Extension Landfill
2023 Annual Inspection Report

Name of Landfill: **Monroe Vertical Extension Landfill** **Qualified Professional Engineer:** Clinton Carlson, PhD, PE
EGLE Landfill ID 397800 **Date:** 5/3/2023 **Time:** 3:30 pm to 5:30 pm
Owner: **DTE Electric Company** **Weather:** 70s, Cloudy
Operator: **DTE Electric Company** **Precipitation (past week):** 0.1 in.
Site Conditions: Some wet areas from light rain during the day of the visit

I. Landfill Condition

1. Describe operations in the landfill: Disposal of bottom ash, FGD sludge

Other: CCR is placed in Phases 1 and 2 of the Landfill. CCR appeared to be placed and stacked in accordance with generally accepted engineering practices (Photographs 17, 24, 26). The pressure relief layer was observed to be in good condition where no CCR has been placed (Photographs 5, 17). The access road (Photograph 24) and culvert (Photograph 25) on the north side of the Landfill were in good condition.

2. Are any stormwater swales obstructed? ___ Yes X No

If 'Yes', describe (type of debris, reason for obstruction, etc.)

Standing water was observed in all the perimeter swales (Photographs 6, 9, 12, 25). There is heavy vegetation within the swales, but does not appear to obstruct flow within the swales (Photographs 3, 6, 7, 9, 11, 12, 15, 19).

3. Are there indications of erosion on the landfill perimeter berm? X Yes ___ No

If 'Yes', describe what type and its condition (rill, gully, dimensions, etc.)

Minor surface erosion was observed on the toe of the berm on the south side (Photograph 16).
Adequate vegetation observed on majority of the perimeter berms (Photographs 3, 7, 11, and 19).

4. Is run-off from the landfill surface contained by the perimeter ditch or Ash Basin? X Yes ___ No

If 'No', describe where runoff flow is not contained.

The observed water flow was directed to the perimeter swales then to the Ash Basin via the culvert in the southeast corner (Photograph 8).

5. Is run-on prevented from entering the landfill area? X Yes ___ No

If 'No', describe where runoff flow is not contained.

Run-on is prevented by perimeter swales and berms.

6. Is the underdrain collection system draining? X Yes ___ No

Describe flow conditions. One pore pressure relief pipe was actively flowing, though flow was minimal (Photograph 21). Algae growth was observed around the outlet. Typically, minimal or no sediments and no flow were observed (Photographs 1, 2, 10, and 18). Some pore pressure relief pipes were not flowing, but were wet (Photographs 10, 18, 22, and 23). The water level in portions of R3 was above the bottom of the pipe outlets (Photograph 14). Some pipes were observed to have vegetation or other debris within the outlets (Photographs 4, 20, 22, 23). One pore pressure relief pipe had some sediments within the pipe and below the outlet (Photograph 20). The vegetation, debris, and sediments did not appear to affect the drainage capacity of the pipes.

7. Is there any unusual settlement causing "birdbaths"? ___ Yes X No

If 'Yes', describe.

Monroe Power Plant
Vertical Extension Landfill
2023 Annual Inspection Report

Name of Landfill: **Monroe Vertical Extension Landfill** **Qualified Professional Engineer:** Clinton Carlson, PhD, PE
EGLE Landfill ID 397800 **Date:** 5/3/2023 **Time:** 3:30 pm to 5:30 pm

8. Other observations around the landfill (changes since last inspection): ___ Yes X No
If 'Yes', describe.

II. Repairs, Maintenance, Action Items

1. Has any routine maintenance been conducted since the last inspection? X Yes ___ No
If 'Yes', describe.
Regular maintenance has been implemented on the perimeter berms and swales and continuous monitoring system.

2. Have any repairs been made since the last inspection? ___ Yes X No
If 'Yes', describe.

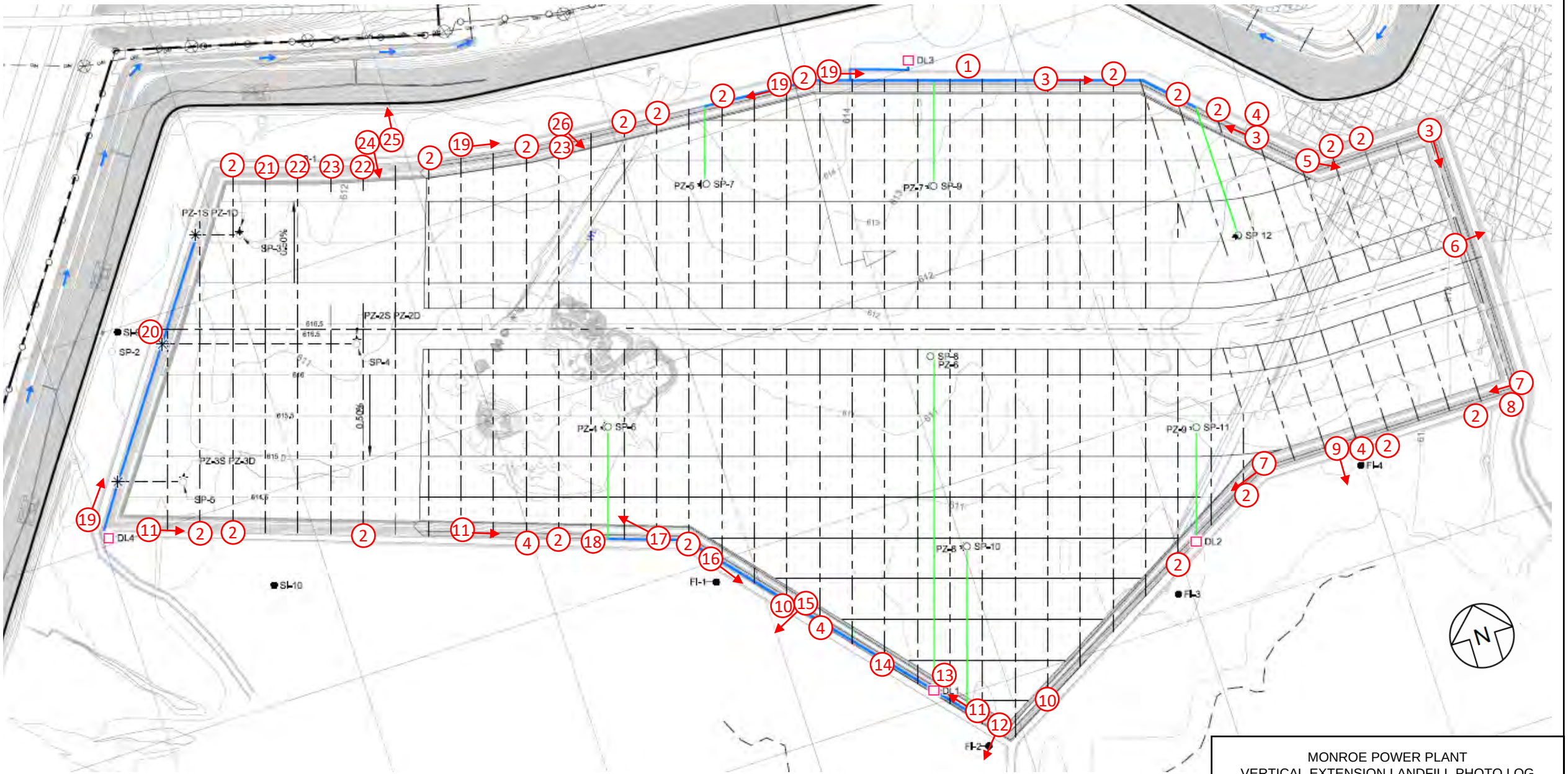
3. Has this inspection identified any need for repair or maintenance? X Yes ___ No
If 'Yes', describe and state the urgency of maintenance. "Urgent" for maintenance that should be conducted as soon as possible, "Moderate" for maintenance that should be conducted within three months, and "Not Urgent" for maintenance that can be conducted within a year.
Not Urgent - Clear vegetation within the perimeter swales to at least the toe of the perimeter berm.
Not Urgent - Replace desiccant canisters within the instrument boxes (DL-1 through DL-4) and apply new sealant within DL-1.

4. Are the instrumentation intact and functioning? ___ Yes X No
If 'No', describe conditions of instrumentation. Maintenance items identified within datalogger (Photograph 13).
PZ-4 was decommissioned at the end of 2021. PZ-8 has continuously reported erroneous readings since October since October 2022. Diagnostic tests performed by Geosyntec indicate PZ-8 may be faulty. There are currently no plans to replace PZ-8. Other instrumentation was intact (11 PZ, 12 settlement plates, six inclinometers).

III. Photography

Photographs can be taken of notable features. List of photographs:

	Location	Direction of Photo	Description
i.	SEE THE ATTACHED PHOTO LOG		
ii.			
iii.			
iv.			
v.			
vi.			
vii.			
viii.			
ix.			
x.			



MONROE POWER PLANT
VERTICAL EXTENSION LANDFILL PHOTO LOG

Geosyntec consultants
DETROIT, MICHIGAN

PROJECT: CHE8242V

JANUARY 2024

FIGURE
B1

DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company | **Project Number:** CHE8242V

Site Name: Monroe Power Plant
Vertical Extension Landfill | **Site Location:** Monroe, MI

Photograph 1 **Date:** 5/3/2023 **Direction:** - **Comments:** Pore pressure relief pipe outlet. Typically, minimal or no sediments and no flow were observed.	
Photograph 2 **Date:** 5/3/2023 **Direction:** - **Comments:** Pore pressure relief pipe outlet. Typically, minimal or no sediments and no flow observed.	

DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company | **Project Number:** CHE8242V

Site Name: Monroe Power Plant
Vertical Extension Landfill | **Site Location:** Monroe, MI

Photograph 3 **Date:** 5/3/2023 **Direction:** East **Comments:** Perimeter berm slope and crest along the north and east sides of the Landfill. Perimeter berms were generally observed to be in good condition. Perimeter swale R2 was heavily vegetated. Some standing water was observed in perimeter swale R2.	
Photograph 4 **Date:** 5/3/2023 **Direction:** - **Comments:** Some pore pressure relief pipes were observed to have vegetation and other debris within the outlets. The vegetation and other debris did not appear to affect the drainage capacity of the pipes.	

DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company | **Project Number:** CHE8242V

Site Name: Monroe Power Plant
Vertical Extension Landfill | **Site Location:** Monroe, MI

Photograph 5 **Date:** 5/3/2023 **Direction:** Southeast **Comments:** Phase 2 of the Landfill without CCR. The pressure relief layer was observed to be in good condition where no CCR has been placed.	
Photograph 6 **Date:** 5/3/2023 **Direction:** East **Comments:** Perimeter swale R2 was heavily vegetated. Some standing water was observed in perimeter swale R2.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 7 **Date:** 5/3/2023 **Direction:** West **Comments:** Perimeter berm slope and crest along south side of the Landfill. Perimeter berms were generally observed to be in good condition. Perimeter swale R4 was heavily vegetated. Standing water was observed in perimeter swale R4.	
Photograph 8 **Date:** 5/3/2023 **Direction:** South **Comments:** Southeast culvert pipe at the end of the perimeter channel R4. Water observed in perimeter swale.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 9 **Date:** 5/3/2023 **Direction:** South **Comments:** Perimeter swale R4 was heavily vegetated. Standing water was observed in perimeter swale R4.	
Photograph 10 **Date:** 5/3/2023 **Direction: -** **Comments:** Pore pressure relief pipe outlet. Typically, minimal or no sediments and no flow observed. Some outlets were wet, but not flowing during the inspection.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 11 **Date:** 5/3/2023 **Direction:** Northwest **Comments:** Perimeter berm slope and crest along south side of the Landfill. Perimeter berms were generally observed to be in good condition. Perimeter swale R3 was heavily vegetated. Standing water was observed in perimeter swale R3.	
Photograph 12 **Date:** 5/3/2023 **Direction:** Southwest **Comments:** Perimeter swale R3 was heavily vegetated. Standing water was observed in perimeter swale R3.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 13 **Date:** 5/3/2023 **Direction:** - **Comments:** Datalogger (DL)-1 had high moisture intrusion and insects/ants inside the box. The desiccant canister inside the enclosure and the sealing material were in poor condition.	
Photograph 14 **Date:** 5/3/2023 **Direction:** - **Comments:** The water level in portions of the southern swales towards the east end of R3 was above the bottom of the pressure relief pipe outlets. The water level did not appear to affect drainage capacity of the pipes.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 15 **Date:** 5/3/2023 **Direction:** Southwest **Comments:** Several outlets could not be located due to heavy vegetation and water levels within the perimeter swales, particularly the south perimeter swales (R3 shown).	
Photograph 16 **Date:** 5/3/2023 **Direction:** Southeast **Comments:** Perimeter berm slope and crest along south side of the Landfill. Minor erosion of the grass was observed on the toe of the berm.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 17 **Date:** 5/3/2023 **Direction:** Northwest **Comments:** CCR placed in Phase 1 and Phase 2 of the Landfill. The CCR appeared to be placed and stacked in accordance with generally accepted engineering practices. The pressure relief layer was observed to be in good condition where no CCR has been placed.	
Photograph 18 **Date:** 5/3/2023 **Direction:** - **Comments:** Pore pressure relief pipe outlet. Typically, minimal or no sediments and no flow observed. Some outlets were wet, but not flowing during the inspection.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 19 **Date:** 5/3/2023 **Direction:** Northeast **Comments:** Perimeter berm slope and crest along the west and north sides of the Landfill. Perimeter berms were generally observed to be in good condition. Perimeter swale R1 was heavily vegetated. Some standing water was observed in perimeter swale R1.	
Photograph 20 **Date:** 5/3/2023 **Direction:** - **Comments:** One pore pressure relief pipe on the west side of the Landfill, where CCR has been placed, had some sediments within the pipe and below the outlet. The sediments did not appear to affect the drainage capacity of the pipe.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 21	
Date: 5/3/2023	
Direction:	
Comments: One pore pressure relief pipe was observed to be actively flowing, though flow was minimal. There was some algae growth around the outlet. This pipe is located on the northwest side of the Landfill where CCR has been placed.	

Photograph 22	
Date: 5/3/2023	
Direction: -	
Comments: Some pore pressure relief pipes were observed to have vegetation and other debris within the outlets. The vegetation and other debris did not appear to affect the drainage capacity of the pipes. Some outlets were wet, but not flowing during the inspection.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 23 **Date:** 5/3/2023 **Direction:** - **Comments** Some pore pressure relief pipes were observed to have vegetation and other debris within the outlets. The vegetation and other debris did not appear to affect the drainage capacity of the pipes. Some outlets were wet, but not flowing during the inspection.	
Photograph 24 **Date:** 5/3/2023 **Direction:** South **Comments:** The access road on the north side of the Landfill was observed to be in good condition. CCR placed in Phase 1 of the Landfill. The CCR appeared to be placed and stacked in accordance with generally accepted engineering practices.	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: DTE Electric Company	**Project Number:** CHE8242V
Site Name: Monroe Power Plant Vertical Extension Landfill	**Site Location:** Monroe, MI

Photograph 25	
Date: 5/3/2023	
Direction: North	
Comments The reinforced concrete culvert beneath the access road on the north side of the Landfill. The culvert and riprap were in good condition without sediments. Some standing water was observed in perimeter swale R1.	

Photograph 26	
Date: 5/3/2023	
Direction: South	
Comments: CCR placed in Phase 2 of the Landfill. The CCR appeared to be placed and stacked in accordance with generally accepted engineering practices.	