



Prepared for

DTE Electric Company
One Energy Plaza
Detroit, Michigan 48226

2024 ANNUAL INSPECTION REPORT

RANGE ROAD LANDFILL

BELLE RIVER POWER PLANT

China Township, Michigan

Prepared by

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1. INTRODUCTION

1.1 Overview

This 2024 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) Range Road Ash Disposal Facility (Landfill or RRLF) at DTE Electric Company's (DTE) Belle River Power Plant disposal facility. The annual inspection was performed 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 approximately one mile north of the Belle River Power Plant (Plant) in China Township, Michigan, and is bounded on the east by Range Road, on the south by Puttygut Road, on the east by King Road, and on the north by private properties (Figure 1). The Landfill is west of the St. Clair River between Lake Huron and Lake St. Clair.

Filling operations at the site began in the 1950s. The Landfill has had an operating license since 1966 with the Michigan Department of Environment, Great Lakes, and Energy (EGLE), formerly Michigan Department of Environmental Quality (MDEQ), as a Coal Ash Landfill. The current operating license issued to DTE is Number 9603 and the EGLE Facility waste data system (WSD) number is 392562.

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 construction certification documentation, review of available operating records, 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 Visual Inspection: summarizes visual observations recorded during the 2024 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 April 29, 2024, by Dr. Clinton Carlson, Ph.D., P.E. of Geosyntec¹, and Dr. Jorge Romaña Giraldo, Ph.D. of Geosyntec, with assistance from DTE personnel.

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 ten 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 2024 annual inspection. These documents are summarized in the table below. References refer to TRC Environmental Corporation (TRC), NTH Consultants, Ltd. (NTH), and AECOM.

Table 1: Available Information Reviewed for 2024 Annual Inspection

Title	Prepared by	Date	Content
Landfill Development Plan	TRC	November 2013	Overall development plan for Landfill including design, construction, surface water management, operation, monitoring, and site closure. Plan remains unchanged.
Construction Certification /Soil Verification (Area G2) Range Road Landfill	MDEQ	September 2015	MDEQ authorization for waste placement in Area G2 Northern Portion (Phase I).
Surface Water Flow Figure 2 (Working Copy)	TRC	December 2015	Plan of ditch and surface flow directions and staff gauge and piezometer locations. Figure 2 in annual inspection report.
Closure Plan	AECOM	October 17, 2016	Closure plan description, inventory and area estimates, schedule, and PE certification. Plan remains unchanged.
Post-Closure Plan	AECOM	October 17, 2016	Post closure plan description, monitoring and maintenance, owner operator requirements, and PE certification. Plan remains unchanged.
Groundwater Monitoring System Summary Report	TRC	October 2017	Information on groundwater monitoring system components and details for the Landfill.
Groundwater Statistical Evaluation Plan	TRC	October 2017	Basis for statistical evaluation for groundwater monitoring events for the Landfill.

Table 1: Available Information Reviewed for 2024 Annual Inspection

Title	Prepared by	Date	Content
DTE Energy Company RRLF Area G2 Phase II Base Liner Construction Plans	NTH	March 2018	Area G2 Phase II base liner construction plans. Plans remain unchanged.
Copy of Construction Drawings for G2 Phase 2 Base Liner	NTH	April 23, 2018	Area G2 Phase II baseline construction drawings.
DTE Range Road Waste Filling Sequence with RRLF Estimated Life Expectancy and Capacity Summary	NTH	April 2018	Ash volumes and estimated fill volumes for closure of Areas G2 Phases I, II & III, and Area F3/D3. Estimated dates for closure start provided. Plan remains unchanged.
Partial Closure Certification (Area F3)	MDEQ	May 22, 2018	Approval letter for partial closure of Area F3. No updates since 2018.
Certification of Base Liner Grades (Area G2-13.1 Acres) DEQ Review Letter	MDEQ	September 2018	MDEQ's review indicating certification is consistent with the requirements of Part 115. This is Area G2 Phase II reported as 13 acres in current operating license.
NPDES Permit No. MI0038172	MDEQ	October 2018	Permit for discharge from the Belle River Power Plant and Blue Waters Energy Center to the St. Clair River.
Location Restrictions Demonstration	TRC	October 2018	Provides details of location restrictions demonstration for the Landfill per the CCR Rule.
2019 Site Plan Figure 1 of DTE Range Road Operating License Number 9603	TRC & Part of Operating License Application	April 2019	Landfill area site plan showing locations, designations, status and phasing legend. Figure 1 in annual inspection report.
Range Road Solid Waste Disposal Area Operating License Renewal Application	DTE	April 2019	Operating license renewal application for the Landfill. See below.

Table 1: Available Information Reviewed for 2024 Annual Inspection

Title	Prepared by	Date	Content
Range Road Ash Disposal Operating Number and License Facility No. 392562 License No. 9603	EGLE	May 2020	Solid waste disposal area operating license, including terms and conditions. License is active and supersedes the previous operating license (No. 9395).
Run-On/Run-Off Control System Plan for CCR Disposal Facility-Range Road	AECOM	October 15, 2021	Describes the run-on and run-off control features for the Landfill. Documents 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 8, 2021	Presents fugitive dust control measures. Added operating license information and further defined activities for assessing and monitoring effectiveness of dust control measures.
Construction Documentation Report – Area G2 Phase I Closure	NTH	January 18, 2022	Construction documented and certified by licensed professional engineer.
Construction Certification/Soil Verification Area G2 Phase III	EGLE	April 7, 2022	Approval of supplemental certification of base liner grades (waste placement) for Area G2 Phase III.
Area G2 Phase I Closure Certification Approval	EGLE	May 6, 2022	Closure certification Reviewed by MMD and approved by EGLE.
2022 Annual Inspection Report	Geosyntec	January 9, 2023	Provides results of the 2022 annual inspection.
Weekly General Inspection Logs	DTE	May 2023 to April 2024	Qualified person inspections from May 2023 through April 2024.
Quarterly Hydrogeologic Monitoring and Performance Monitoring Reports	TRC	October 2023 to June 2024	Groundwater contour maps and elevations outside and inside of slurry wall. Perimeter ditch water elevations at staff gauge locations.
2023 Annual Inspection Report	Geosyntec	January 9, 2024	Provides results of the 2023 annual inspection.
Annual Groundwater Monitoring Report	TRC	January 31, 2024	Summary of annual groundwater monitoring results for 2024 for the Landfill.

Table 1: Available Information Reviewed for 2024 Annual Inspection

Title	Prepared by	Date	Content
EGLE MMD Inspection Letter	EGLE	August 15, 2024	Facility reported to be in compliance with state regulations.
Annual Fugitive Dust Report	DTE	November 18, 2024	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 property has an area of 514 acres of which, 446 acres are designated for landfill development. The Landfill has 14 operating and planned phases (or work areas) as discussed in the Landfill Development Plan, design drawings, and draft drawings and memorandums on RRLF waste filling sequence. The status and areas of the work areas are summarized in Table 2 and shown in Figure 1. Figure 1 is taken from the 2020 Site Plan provided in the Solid Waste Disposal Area Operating License effective April 22, 2019.

Table 2: Site Phasing Summary

Work Area	Status	Size (Acres)	Comments
A	Closed	7	Certified closed May 17, 2002
B	Closed	102	Certified closed prior to September 2, 1999
B1	Closed	9	Certified closed prior to September 2, 1999
C	Closed	16	Certification report approved August 25, 2009
D1	Closed	21	Certification report approved August 25, 2009
D2	Closed	10	Certification report approved August 25, 2009
D3	Active	3	Interim cover placed at time of annual inspection
E	Unconstructed	117	No construction or waste placed in Area
F1	Closed	17	Certification report approved January 4, 2010
F2	Closed	12	Certification report approved February 28, 2013

Table 2: Site Phasing Summary

Work Area	Status	Size (Acres)	Comments
F3	Closed	17	Reported certification approval
F3/D3	Active	5	Active per operating license dated April 2019
G1/G3	Unconstructed	56	No construction or waste placed in Area
G2	Active	54** (Total Permitted)	
Phase I	Closed		Certification report approved May 6, 2022
Phase II	Active		Active waste placement
Phase III	Active		Liner construction completed and permitted for waste placement

** Acreage from DTE renewal permit application

Currently, nine work areas are certified as closed and three areas are active. Areas D3, G2, and F3/D3 are active as identified in Figure 1. For construction purposes, Area G2 has been subdivided into three phases. Plans for Area G2 Phases I, II, and III have been approved by EGLE for waste placement. Area G2 Phase I was filled, capped, and certified by NTH and approved by EGLE. Area E was not included in a current waste filling sequence overall site plan (Draft September 26, 2017) and may not be needed depending on actual future volumes of CCR received by the Landfill. However, Area E is still identified in the current operating license (No. 9603), dated May 15, 2020.

The Landfill includes perimeter ditches, roadways, a perimeter slurry wall, earth berms, a 10-acre National Pollutant Discharge Elimination System (NPDES) Stormwater Detention Basin (SDB), and basin pump house. The SDB has also been referred to as the sedimentation basin in some of the reviewed documents and figures. The SDB is located in the southeast corner of the property. The Landfill has a native, in situ clay liner ranging from 86 to 188 feet (ft) thick present beneath the Landfill footprint. A thin, discontinuous, shallow sand seam is present beneath the northeastern portion of the Landfill; however, a slurry wall and perimeter ditch system were designed and installed to preclude any off-site flow from the sand seam. The slurry wall, installed to approximately 10 to 15 ft deep, surrounds the entire Landfill along the property perimeter. The perimeter ditch surrounds the entire Landfill and drains to the SDB (Figure 1).

The Landfill is a dry-handled (conditioned) CCR landfill licensed by EGLE as a coal ash landfill under Michigan Part 115 with operating license No. 9603. The Landfill has maximum final cover side slopes of four horizontal to one vertical (4H:1V) and side slopes of three horizontal to one vertical (3H:1V) or flatter for interim covers.

3.2 Design

The Landfill design and operation is summarized in the Landfill Development Plan, Remedial Action Plan, Run-on/Run-off Control System Plan and the quarterly monitoring reports. The key components of the Landfill include the following.

- Perimeter slurry wall that is approximately 10 to 15 ft deep and keyed into an 86- to 188-ft-thick native, in situ clay liner.
- Perimeter drainage ditch capturing surface stormwater and near surface groundwater.
- SDB with an area of ten acres that collects water from the perimeter drainage ditch and pumps it to the Plant.
- Two groundwater capture systems outside the facility property that collect water from the shallow sand seam.
- Final cover system that includes (from top to bottom):
 - 6-inch-thick vegetated topsoil layer (erosion layer); and
 - 24-inch-thick clay layer with hydraulic conductivity (k) less than or equal to 1×10^{-7} centimeters per second (infiltration layer).
- The final cover system has the following slopes.
 - Maximum 4H:1V side slopes.
 - Minimum 1% slopes on the top deck of closed areas.
 - Minimum 2% slopes on the top deck of areas to be closed in the future.

Landfill design and construction are supported by construction phasing plans, surface water management plans and details, site operation (waste placement) plans and details, and leachate and environmental monitoring plans and reports. Additionally, landfill monitoring systems, maintenance and inspection, and site closure and post-closure plans with long-term care procedures support the Landfill design and construction.

3.3 Construction

The Landfill has been operating since the 1950s. The Landfill operating license discusses the work areas (Section 3.1), references design, construction, and monitoring documents submitted by DTE, and includes conditions and criteria required for the Landfill operation, phase construction, and monitoring. A renewal permit (No. 9603) effective May 15, 2020, was issued to DTE by EGLE. Closure and Post Closure Plans in accordance with 40 CFR 257.102 (b) and 40 CFR 257.104, respectively, have been prepared with an operating record date of October 17, 2016. A permit for NPDES discharge of storm water from SDB has been issued by EGLE.

The Landfill Development Plan discusses site operations in Section 4 of the plan. Included are discussions on dust control, noise control, odor control, and access and security requirements, among other operating aspects. CCR fill procedures and requirements for construction observation and documentation are also included in the development plan.

During 2024, the Landfill accepted bottom ash, fly ash, and waste coal from the Belle River Power Plant. The St. Clair Power Plant is no longer operating and is expected to contribute de minimis amounts of ash to the Landfill in the future. The current revised estimated annual total CCR disposal rate is 100,000 in-place cubic yards/year; however, the disposal rate varies dependent upon volume of CCR sold for beneficial use. The currently permitted areas of the Landfill are expected to handle the anticipated volume of CCR through the life of the Landfill.

4. VISUAL INSPECTION RESULTS

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

1. The SDB was in good condition. Some cut vegetation was observed on the trash rack for the outlet of the SDB (Photograph #1), but it did not appear to affect the flow through the outlet. The side slopes of the SDB had some vegetation, but no erosion was observed (Photographs #2, #3). The water quality within the SDB appeared to be appropriate for the NPDES permit (Photographs #2, #3). The vegetation is cleared from the trash rack and the slopes of the SDB as part of the maintenance program.
2. The pumps and instrument panel for the SDB were in good condition (Photographs #4, #5), but not running during the visual inspection. No outstanding maintenance tags were observed on the pumps or instrument panel.
3. The perimeter roads were generally in good condition (Photographs #7, #15, #18, #26). Some rutting was observed on the east (Photograph #12) and northwest (Photograph #27) sides of the property. However, the ruts did not affect the ability of DTE personnel to use the roads for access around the site. The ruts are filled in with aggregate as part of the maintenance program. Along the west side of the property, the roads were not covered in aggregate (Photographs #32) but were still accessible.
4. In general, the perimeter ditch system was in good condition. Water was observed within the perimeter ditches during the inspection with minimal flow because of relatively low water levels.
 - i. The perimeter ditches on the east side of the Landfill had some vegetation on the side slopes, but no erosion was observed (Photographs #6, #11).
 - ii. The perimeter ditches on the north and northwest sides of the Landfill had heavier vegetation (Photograph #19, #21, #23) that obstructed the view of some staff gauges.
 - iii. The perimeter ditches on the west side of the Landfill were generally clear of vegetation and had riprap armoring the side slopes (Photographs #29, #33, #36). No erosion of the riprap armoring was observed.
 - iv. The perimeter ditch on the south side of the Landfill was clear of vegetation on the side slopes and no erosion was observed; however, some vegetation was observed on the bottom of the ditch (Photograph #51).

- v. Culverts on the northwest (Photograph #23) and west (Photographs #33, #36) sides of the Landfill were inspected and observed to be clear of any obstructions.
 - vi. Where vegetation was observed within the perimeter ditch system, it did not appear to impact the ability of the perimeter ditch system to convey water to the SDB. As part of the maintenance program for the Landfill, vegetation within the perimeter ditch is cleared on a rotating schedule each year (i.e., east side, then north side, then west side, then south side).
5. DTE personnel identified a beaver dam that was limiting the flow within the perimeter ditch along the southeast side of the Landfill (Photograph #8). At the time of the inspection, the retained water was not overtopping the side slopes of the perimeter ditch.
 6. All staff gauges were located and found to be in good condition. The typical condition of the staff gauges observed during the visual inspection is shown in Photograph #11. Some staff gauges were difficult to observe due to vegetation within the perimeter ditch, particularly on the north side of the Landfill (Photograph #21). However, DTE personnel have placed markers along the perimeter road to indicate the locations of the staff gauges.
 7. The security fences and gates were locked and generally in good condition (Photographs #14, #16, #20, #22, #30, #32). The perimeter fence was damaged at a few locations on the east side (Photograph #15) and north side (Photograph #18). The damage appeared to have been caused by either downed tree limbs or significant vegetation. DTE regularly inspects the perimeter fence and repairs damaged portions as part of the maintenance program.
 8. The perimeter slurry wall is located below ground and, therefore, could not be visually inspected. However, several markers for the perimeter slurry wall were observed and were in good condition (white markers in Photographs #14, #30, #32). One marker by the security gate on the west side was damaged (Photograph #31).
 9. The monitoring wells and piezometers around the perimeter road were observed to be in good condition (Photographs #10, #14, #16, #20, #30). Many of the wells and piezometers are behind bollards to prevent damage from vehicles (Photograph #9, #22).
 10. The northern and western side slopes of the Landfill in Areas A and B were covered in trees (Photographs #17, #19). MDEQ has approved leaving those trees in place. No slope instabilities, such as leaning or downed trees, were observed during the visual inspection.
 11. The lift station at the northwest corner of the property appeared to be in good condition. This includes the control panel, hoist, concrete pad (Photograph #24), the sump and pumps (Photograph #25), the lower perimeter ditch (Photograph #28), and the manhole and outlet

pipe at the upper perimeter ditch (Photographs #41, #42). DTE personnel checked the pumps and hands-on switches, and they were observed to be operating correctly.

12. The perimeter road west of the manhole lift station was observed to have a wet spots that ponded in minor ruts at the bottom of the slope (Photograph #27). However, water was not observed to be flowing along the road at the time of the visual inspection.
13. The riprap-lined stormwater downchute at the southwest side of Area F1 had some vegetation within the chute (Photograph #34) and some small woody vegetation at the top of the chute (Photograph #37). The mesh wiring was damaged near the bottom of the downchute where an erosion rill was observed within the riprap (Photograph #35).
14. The riprap-lined stormwater downchutes along the access road (Photograph #48) and southeast corner (Photograph #50) of Area G2 Phase I, the southwest corner of Area B, the northeast corner of Areas C and D1 (Photograph #44), and along the access road to Areas D3 and F3/D3 were in good condition.
15. The side slopes and top deck for the Areas D2, D3 and D3/F3 (Photographs #46, #47) Areas B, D1 and D2 (Photograph #45) Areas G2 Phase I, F1, and F2 (Photographs #38, #39, #43, #49) were in good condition with no visible evidence of slope stability problems or ponding water. The vegetation was established with only a few small woody vegetation.
16. The access roads to the top deck of the Landfill in Areas D3 and D3/F3 (Photographs #46, #47), and Area G2 (Photograph #48) were in good condition.
17. The internal detention ponds by Area D3/F3 (Photograph #47) and south of Area G2 (Photograph #54) appeared to be in good condition. The side slopes were vegetated or covered with riprap armoring, and no erosion was observed.
18. During the visual inspection, the filling of the Landfill was observed to be active in Area G2 Phase II (Photographs #40, #52). The traffic, waste unloading, and waste placement seemed to be in accordance with generally accepted engineering practices. The equipment was operating safely and at speeds designed to minimize fugitive dust. Area G2 Phase III appeared to be in good condition (Photograph #53), but no active filling was observed in this area.

5. INSTRUMENTATION MONITORING

5.1 Surface Stormwater and Groundwater Collection

Surface stormwater and groundwater monitoring are conducted under a monitoring plan approved by EGLE. The stormwater that falls within the Landfill footprint and the perimeter ditch is collected by the ditch and flows, for the most part, by gravity to the SDB, as shown in Figure 1. Water within the perimeter ditch located at the northwest corner of the property is collected and pumped to the perimeter ditch on the north side of the Landfill which then gravity drains to the SDB. The perimeter ditch also collects shallow groundwater that occurs within the shallow sand seam above the native clay layer along the east side of the property. The slurry wall along the property line outside of the perimeter ditch acts as a groundwater flow barrier and directs any shallow groundwater to the perimeter ditch along the east side of the Landfill.

Monitoring of the surface stormwater and groundwater collection is accomplished through visual inspection of the perimeter ditch slopes and bottom, maintenance of the perimeter ditch, review of water elevations from a series of thirteen (13) staff gauges, and implementation of EGLE-approved monitoring plans. Results of the monitoring are summarized in tables prepared by TRC. The water levels for the staff gauges within the perimeter ditch reported in TRC's quarterly Hydrogeologic Monitoring and Performance Monitoring Reports indicate that the water is properly flowing towards the SDB.

5.2 Groundwater Elevations and Offsite Capture System Monitoring

Monitoring well and piezometer locations and measured water elevations are presented in reports prepared by TRC. The groundwater elevations and contour maps presented in TRC's quarterly Hydrogeologic Monitoring and Performance Monitoring reports demonstrate inward gradients toward the perimeter ditch within the property. Groundwater elevations and contour maps presented in TRC's reports indicate the perimeter slurry wall and perimeter ditch continue to mitigate the shallow groundwater flow from beneath the Landfill to outside the facility property line. DTE personnel also monitor the flow within the perimeter ditch and includes a figure showing ditch flow directions as part of their quarterly inspection reports.

6. CURRENT OPERATIONS

6.1 Operations Organization

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

- Mark Chesney – DTE Energy Supply, Plant Manager, Belle River Power Plant
- Jamie Stanislawski – DTE Environmental Management and Safety (EM&S), Belle River Power Plant

6.2 Operation Activities

Operations are defined in Section 4 of the Landfill Development Plan. The following operation control measures are described in the plan:

1. Hours of Operation
2. Waste Types
3. Traffic Routing
4. Lines and Grades
5. Nuisance (e.g., dust, odors, noise) Control
6. Police and Fire Protection
7. Access Control
8. Inclement Weather Operations
9. Drainage and Erosion Control
10. Recordkeeping
11. Personnel and Equipment
12. Ash Filling Procedures
13. Leachate Management
14. Environmental Monitoring

Engineering design and construction related to the Landfill design, waste type and volumes, subbase grades, site phasing, final cover, surface water management, construction observation and documentation, and final closure and long-term care are included in the Landfill Development Plan. The activities specified in the Landfill Development Plan appeared to be properly followed at the Landfill.

In addition, the following plans and inspections are currently being completed as required by the CCR Rule.

- Weekly inspections by a qualified person.
- Dust control in accordance with a Fugitive Dust Control Plan.
- Annual Fugitive Dust Control Report.
- Run-on/Run-off Control System Plan.
- Annual Groundwater Monitoring and Corrective Action Report.
- Closure and Post-Closure Plans for the Existing CCR Unit.

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

Run-off for the Landfill is controlled by the perimeter ditches. One adverse condition was identified within the east perimeter ditch: A beaver dam was restricting the flow of water within the ditch. The remaining perimeter ditches on the north, south, and west sides of the property were observed to be in good condition during the visual inspection. Diversion berms and the grading of the cap direct stormwater flows away from active portions of the Landfill as part of the run-on control measures. Water was not observed flowing into the active portions of the Landfill during the visual inspection.

6.4 Observations

Documentation was reviewed and it was observed that the operations were being performed in a method "...to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards" in accordance with the CCR Rule.

Operating control measures appeared to be compliant with the Landfill Development Plan. There is a full-time DTE guard shack or building near the entrance of the Landfill and the Landfill is surrounded by security fencing and locked gates.

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

The Landfill pump stations and pumps, SDB, perimeter ditches, perimeter and access roads, side slopes, stormwater features, top deck, and interior ponds appeared generally well-maintained. There were stretches of the perimeter ditch that DTE personnel indicated would be cleared of vegetation (e.g., north side) as part of routine maintenance. The flow within the perimeter ditch in these areas did not appear to be impacted by the vegetation.

The following conditions were identified during the annual inspection that should be addressed to improve the overall efficiency of the Landfill.

1. The riprap-lined stormwater downchute at the boundary between Areas F1 and F2 and Area G2 had some vegetation growing within the chute and some erosion below the riprap on the slope. Woody vegetation was also observed at the top of the chute. If the erosion is not backfilled or woody vegetation is not removed, additional erosion of the riprap could occur.
2. The stormwater flow on the east side perimeter ditch was obstructed by a beaver dam. At the time of the inspection, the water was still contained within the ditch.
3. Wet spots were observed on the perimeter road west of the manhole for the upper perimeter ditch of the lift station. Water was ponding within ruts at the bottom of the perimeter road slope.
4. The perimeter fence was damaged at two locations. On the north side of the property, the top rail was bent, and the chain link had a hole that unauthorized individuals could use to access the Landfill. On the east side of the property, vegetation was encroaching on the fence, causing it to tilt.

Geosyntec provides the following recommendations to address the observed conditions.

1. The woody vegetation should be removed from the top of the stormwater downchute at the boundary between Areas F1 and F2 and Area G2. Vegetation within the chute on the slope should be addressed by using chemical sprays to limit growth. This recommendation should be implemented within the one to two years. Do not apply any chemical sprays near groundwater monitoring well locations.

2. The erosion of the riprap and the damaged wire mesh within the stormwater downchute at the boundary between Areas F1 and F2 and Area G2 should be repaired to mitigate additional erosion of the stormwater feature and potential slope instabilities. There were no indicators of increased erosion or slope instabilities at the time of the inspection. Therefore, this recommendation should be implemented within five years. The area should continue to be inspected until remediation measures are implemented.
3. The beaver dam should be removed from the perimeter ditch on the east side of the Landfill to restore the hydraulic capacity of the ditch to convey flow to the SDB. DTE personnel indicated during the inspection they were aware of the beaver dam and had a request in to remove it. It was later reported that the dam was removed in November 2024. DTE personnel should continue to monitor this area for new beaver dams as part of the routine inspections.
4. The cause of the wet spots on the perimeter road west of the manhole for the upper perimeter ditch of the lift station was not apparent during the inspection. Additionally, no flowing water was observed over the top of the road during the inspection. Therefore, no remediation is recommended at this time. The wet spot area should continue to be inspected for changing conditions (e.g., increased area of wet spots or flowing water).
5. The security fence should be repaired in the areas damaged on the east and north sides of the Landfill. DTE personnel annually inspect the perimeter fence and make repairs to damaged portions. The perimeter fence repairs are scheduled for spring of 2025.

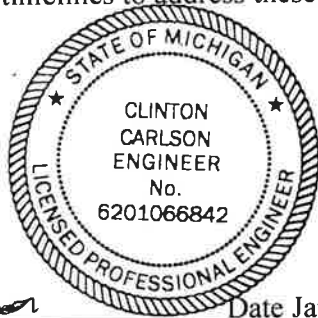
The Annual Fugitive Dust Control Report dated November 18, 2024, was reviewed. There was one citizen complaint on September 11, 2024, from the same citizen that filed a complaint in 2023. The site environmental engineer did not observe any dust when visiting the citizen on September 11, 2024. The site environmental engineer left contact information with the citizen but has not received any additional communication. DTE continues to implement current countermeasures to control 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. The inspection reports through April 2024 were reviewed by Geosyntec. No indications of structural weaknesses were identified by DTE personnel in the weekly inspections or by Geosyntec during review.

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 2024 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 four conditions detailed in Section 7 requiring maintenance or monitoring. Recommendations and timelines to address these conditions are provided in Section 7 for DTE's consideration.

Certified by:



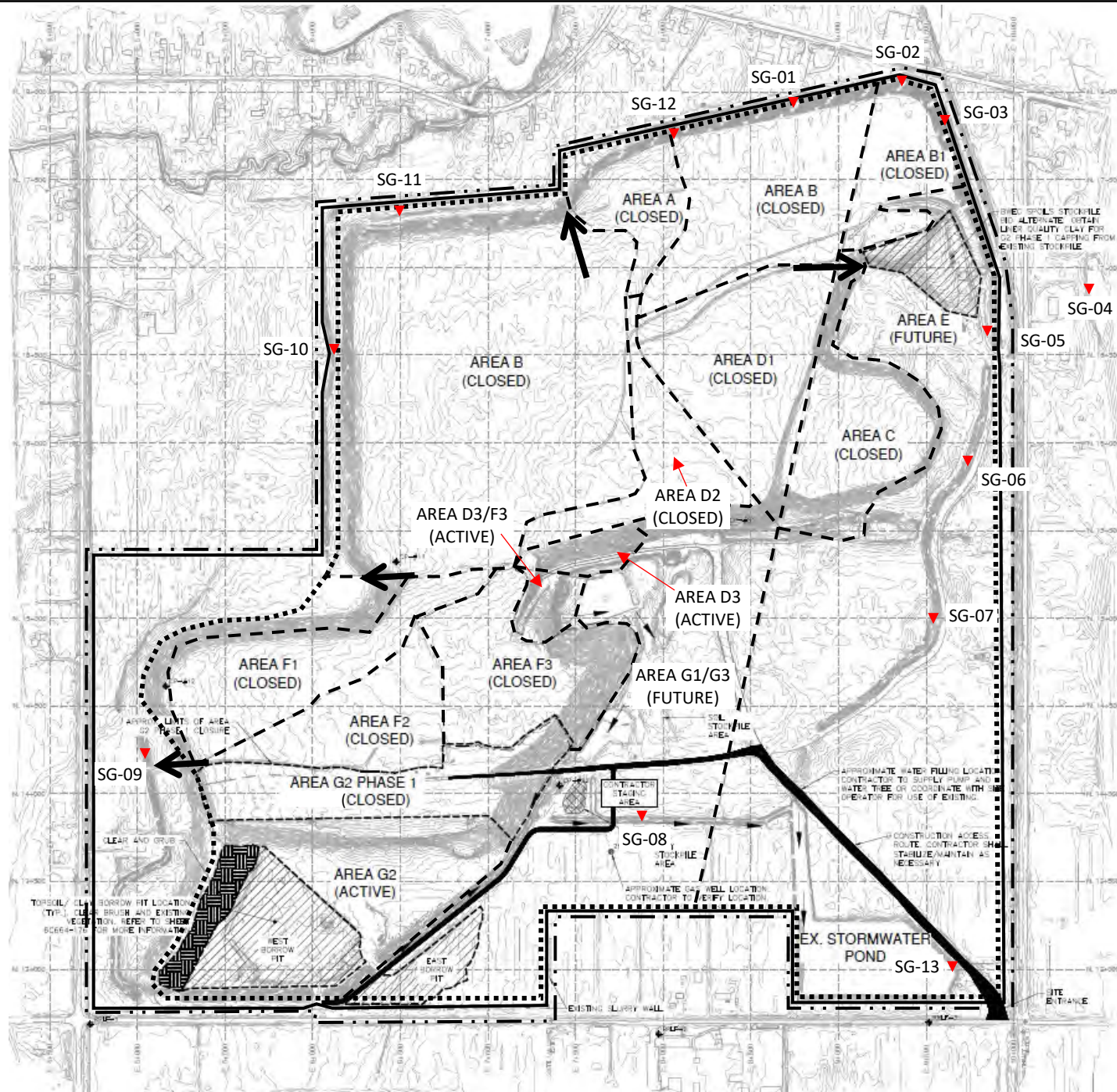
Clinton Carlson

Date January 9, 2025

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

Michigan P.E. License Number 6201066842

Project Engineer



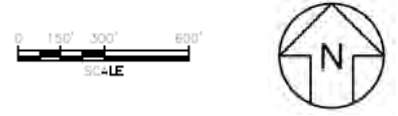
LEGEND

- PROPERTY BOUNDARY
- DESIGN LIMITS OF ASH FILL
- - - - DISPOSAL AREA BOUNDARY
- SLURRY CUTOFF WALL
- AREA A DISPOSAL AREA A
- ▼ SG-## STAFF GAUGE
- ➔ DOWNCHUTE

SITE PHASING LEGEND

Area	Status	Size (Acres)	Material Under Waste	Comments
A	Closed	7	Clay	Certified Closed, May 17, 2002.
B	Closed	102	Clay	Certified Closed prior to September 2, 1999
B1	Closed	9	Sand	Certified Closed prior to September 2, 1999
C	Closed	16	Sand	Certification Report Approved by MDEQ, August 25, 2009
D1	Closed (Interim cover on southern sideslopes)	21	Clay	Certification Report Approved by MDEQ, August 25, 2009
D2	Closed (Interim cover on southern sideslopes)	10	Clay	Certification Report Approved by MDEQ, August 25, 2009
F1	Closed	17	Clay	Certification Report Approved by MDEQ January 4, 2010
F2	Closed	12	Clay	Certification report approved by MDEQ February 28, 2013
F3	Closed	17	Clay	Certified Closed May 22, 2018
D3	Active Disposal	3	Clay	Interim Cover Area
F3/D3	Active Disposal	5	Clay	
G2	Active Disposal	54	Clay	
G1/G3	Unconstructed	56	Clay	
E	Unconstructed	117	Sand	Can be authorized to receive fill once a remediation plan is implemented

NOTE:
 SITE MAP ADAPTED FROM RANGE ROAD AREA G2 PHASE 1 FINAL CLOSURE ENGINEERING CONSTRUCTION PLANS BY NTH CONSULTANTS, LTD, NORTHVILLE, MICHIGAN



**BELLE RIVER POWER PLANT
 RANGE ROAD LANDFILL
 LANDFILL WORK AREA PHASING PLAN**

Geosyntec consultants
 DETROIT, MICHIGAN

FIGURE
 1

PROJECT: CHE8242 JANUARY 2025

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 ten 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: IN, 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 External Audits of Owner's Dam Safety Programs, Multiple Clients, MI and OH | The FERC regulations require dam owners periodically have an external consultant audit the Owner's Dam Safety Program (ODSP), which includes dam safety documents like the Dam Safety Surveillance and Monitoring Plan (DSSMP) and Emergency Action Plan (EAP). The City of Ann Arbor and American Municipal Power, Inc. contracted Geosyntec to perform the audits of the ODSP for their portfolio of dams (two and four, respectively) in 2024. Performed reviews of the dam safety documents, conducted interviews with dam safety personnel to evaluate their understanding of the dam safety program, observed site inspections conducted by personnel as part of the dam safety program, and prepared a report with the findings and conclusions on the content and implementation of the ODSP. Project manager in charge of the project financials and schedule and the point-of-contact with the owners. (Jan. 2024-Dec. 2024)

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)

APPENDIX B
2024 Annual Inspection Forms and Photos

DTE Electric Company Range Road Landfill Annual Inspection Log

Inspector: Clinton Carlson, P.E., and Jorge Romana-Giraldo, Geosyntec
 DTE: Jamie Stanislawski Provided Documents and Accompanied Field Inspection
 Date: 29 April 2024

Weather: 57-77F, mostly sunny, no recent significant precipitation

Previous P.E. Annual Inspection Date: 19 May 2023

Item	Condition			Related Photo # (s)	Notes and Comments (LDP=Landfill Development Plan, SDB = Stormwater Detention Basin)
	Good	Fair	Action Req'd.		
General Site					
1. Site Access Restricted / Attendant On-duty	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14, 16	Gates around perimeter were locked. Guard house across from main entrance to Landfill was staffed.
2. Security Fence / Gates	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14, 15, 16, 18, 20, 22, 30, 32	Gates around perimeter were locked. The perimeter fence was generally in good condition, but portions were damaged on the north (Photo #18) and east sides (Photo #15) of the Landfill.
3. Signs and Markers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14, 16, 20, 22, 30, 31, 32	Security fences had signs noting DTE property and no trespassing. Markers for the perimeter slurry wall were observed and generally in good condition. One slurry wall marker by the security gate on the west side of the Landfill was damaged (Photo #31).
4. Access Roads and Construction Site Roads	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7, 12, 15, 18, 26, 27, 32, 46, 47, 48	Perimeter roads were in overall in fair condition. Along the east side minor rutting was observed (Photo #12). The perimeter road west of the manhole lift station had wet spots with water ponding in minor ruts at the bottom of the slope (Photo #27). Along the west side of the property, the roads were not covered in aggregate but were still accessible (Photo #32). Access roads to the top deck in Areas D3 and D3/F3 (Photos #46, 47), and the north and south sides of Area G2 (Photo #48) were in good condition.
5. Traffic Flow and Waste Unloading	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	40, 52	Traffic within the active filling area (G2) was operating safely and at speeds to limit fugitive dust. Waste placement was observed to be in line with generally accepted engineering practices.

DTE Electric Company
Range Road Landfill
Annual Inspection Log

Item	Condition			Related Photo # (s)	Notes and Comments (LDP=Landfill Development Plan, SDB = Stormwater Detention Basin)
	Good	Fair	Action Reqd.		
6. AST Inspection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Not inspected
7. Universal Waste (properly labelled, container condition, less than one (1) year from accumulation start date)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Not inspected
Waste and Nuisance Control					
8. Ash Hauling Contractor On-site Safety/Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Office and training records not reviewed.
9. Ash Hauling Contractor Equipment Condition/Adequacy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Equipment was not closely inspected but appeared to be in good condition
10. Ash Hauling Contractor Filling Active Area to Appropriate Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	38, 39, 40, 49, 52, 53	Area G2 Phase I closure was in good condition (Photos #38, 39). Active filling operations were observed in Area G2 Phase II and appeared to be in line with generally accepted engineering practices (Photos #40, 52). Area G2 Phase III was in good condition but no active filling was observed during the inspection (Photo #53).
11. Waste Condition (i.e., waste from approved source, no recyclables, no MSW, no liquids, no hazardous wastes, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	40, 52	DTE personnel noted waste sources. Waste being delivered appeared acceptable during the inspection.
12. Noise Level	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Covered in LDP. Excessive noise was not observed during the inspection (near active filling or around property line).

DTE Electric Company
Range Road Landfill
Annual Inspection Log

Item	Condition			Related Photo # (s)	Notes and Comments (LDP=Landfill Development Plan, SDB = Stormwater Detention Basin)
	Good	Fair	Action Req'd.		
13. Dust Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Covered in Fugitive Dust Control Plan. 2024 annual report noted one complaint. Appropriate follow up and actions were taken by DTE.
14. Adequacy of Interim Cover and Interim Stockpile Cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	52	The interim Landfill cover on the southern slopes of Area G2 were in good condition.
Final Cover					
15. Side Slopes (i.e.-no seeps, no cracking, no settling, no burrows, adequate vegetation)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17, 19, 38, 43, 46, 47, 49	Trees on side slopes in closed Areas (A and B) have been approved by MDEQ to stay in place and were not observed to be causing stability problems during the inspection (Photos #17, 19). Side slopes of Area F1 (Photo #43), Area G2 Phase I (Photos #38, 40, 49), Areas D2 and D3 (Photos #46, 47) were in good condition.
16. Top Deck (i.e., no depressions, adequate vegetation)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	39, 45, 49	Top deck in Areas F1, F2 and G2 Phase I (Photo #39, 49) and Areas B, D1 and D2 (Photo #45) was in good condition. The vegetation had become established and was well maintained.
Leachate and Surface Water Control					
17. Stormwater Detention Pond Water Quality (unnatural films, foams, oils, etc.) and pump operating condition (panel, meter etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1, 2, 3, 4, 5	Pumps and instrument panel were in good condition (Photos #4, 5), but not running at time of inspection. No outstanding maintenance tags were observed. Some cut vegetation was observed on the trash rack at the outlet for the SDB (Photo #1), but it did not appear to affect flow into the outlet and is cleared as part of regular maintenance. No adverse conditions were observed within the SDB or in the water quality (Photos #2, 3).
18. Stormwater Detention Pond Side Slope Condition (erosion, riprap, vegetation)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2, 3	Side slopes of SDB appeared to be in good condition. Vegetation was well-maintained and no erosion was observed

DTE Electric Company
Range Road Landfill
Annual Inspection Log

Item	Condition			Related Photo # (s)	Notes and Comments (LDP=Landfill Development Plan, SDB = Stormwater Detention Basin)
	Good	Fair	Action Req'd.		
19. Internal Detention Ponds	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	47, 54	The interior ponds by Areas D3 and F3 (Photo #47) and south of Area G2 (Photo #54) appeared to be in good condition. No erosion was observed around the perimeter of these ponds and vegetation appeared to be well-maintained.
20. NW Corner Lift Station Surface Water Ditch Level & Pump and Operating Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24, 25, 27, 28, 41, 42	The manhole and outlet into the upper perimeter ditch (Photos #41, 42), pump station (control panel, hoist, concrete pad) (Photo #24), sump level controls (Photo #25), and adjacent portions of the perimeter ditch (Photo #28) were in good condition. Pumps and hands-on switches were checked by DTE personnel and appeared to be operating correctly. The perimeter road west of the manhole was observed to have a wet spot (Photo # 27).
21. NE Off-site French Drain Operating Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Control building was locked. Interior not inspected.
22. NW Off-site French Drain Operating Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Offsite. Not inspected.
23. NE/NW Off-site French Drain Outfall Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Not part of the annual inspection. Not inspected.
24. Perimeter Slurry Wall Marker Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30, 31, 32	The perimeter slurry wall is below ground and could not be visually inspected. Several markers were observed and in good condition. The marker by the security gate on the west side of the property was damaged (Photo #31).
25. Monitoring Well/Piezometer Conditions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9, 10, 13, 14, 16, 20, 22	Monitoring wells and piezometers around the perimeter road were generally in good condition. Wells and piezometers near the road were generally protected by bollards (#9, 22), which were also in

DTE Electric Company
Range Road Landfill
Annual Inspection Log

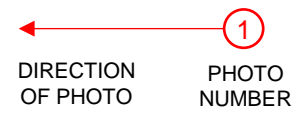
Item	Condition			Related Photo # (s)	Notes and Comments (LDP=Landfill Development Plan, SDB = Stormwater Detention Basin)
	Good	Fair	Action Req'd.		
					good condition. PZ-2 on the east side of the Landfill was in good condition (Photo #13).
26. Perimeter Ditch System (Flow & Staff Gauge Monitoring)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11, 21	All staff gauges were located and in good condition (Photo #11). Some staff gauges were harder to observe because of vegetation within the perimeter ditch, namely on the north side (Photo #21); however, these staff gauge locations were marked on the perimeter road. Minimal flow was observed within the perimeter ditch during the inspection because of the low water level conditions.
27. Perimeter Ditch System (Slope & Bottom Conditions); Includes Internal Ditch if a Main Discharge to Perimeter Ditch	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6, 8, 11, 15, 19, 21, 23, 29, 33, 36, 42, 51	<p>During the inspection, the perimeter ditch system, including the side slopes, bottom, and culverts, was found to be in good condition overall. However, a beaver dam was limiting the hydraulic capacity of the ditch on the east side of the Landfill (Photo #8).</p> <p>The side slopes of the perimeter ditch along the east side had some vegetation (Photos #6, 11).</p> <p>The perimeter ditches on the north and northwest sides had heavier vegetation (Photos #19, 21, 23).</p> <p>The side slopes of the perimeter ditch along the west side of the Landfill had some vegetation (Photos #29, 33, 36). The riprap armoring on these side slopes was in good condition without signs of erosion.</p> <p>The side slopes of the perimeter ditch along the south side of the Landfill also had some vegetation (Photo #51).</p> <p>Culverts on the northwest (Photo #23) and west sides (Photos #33, 36) were observed to be clear of any obstructions.</p> <p>Where vegetation was observed within the ditch, it did not appear to impact the ability of the perimeter ditch system to convey water</p>

DTE Electric Company
Range Road Landfill
Annual Inspection Log

Item	Condition			Related Photo # (s)	Notes and Comments (LDP=Landfill Development Plan, SDB = Stormwater Detention Basin)
	Good	Fair	Action Req'd.		
					to the SDB (Photos #11, 23, 42).
28. Stormwater Downchutes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	34, 35, 37, 44, 48, 50	The riprap-lined stormwater downchutes were generally in fair condition. The downchute on the southwest side of Area F1 had some vegetation (Photo #34), some small woody vegetation at the top of the chute (Photo #37), and erosion and damage to the wire mesh (Photo #35). The stormwater downchutes along the access road (Photo #48) and southeast corner (Photo #50) of Area G2 Phase I, the southwest corner of Area B, northeast corner of Areas C and D1 (Photo #44), and along the access roads (Photo #48) were in good condition.

Doc. Title: Range Road Ash Annual Inspection Log. Form Edited with Additions by Inspection Engineer,
Verify Original Version on Belle River Website Prior to use - UNCONTROLLED

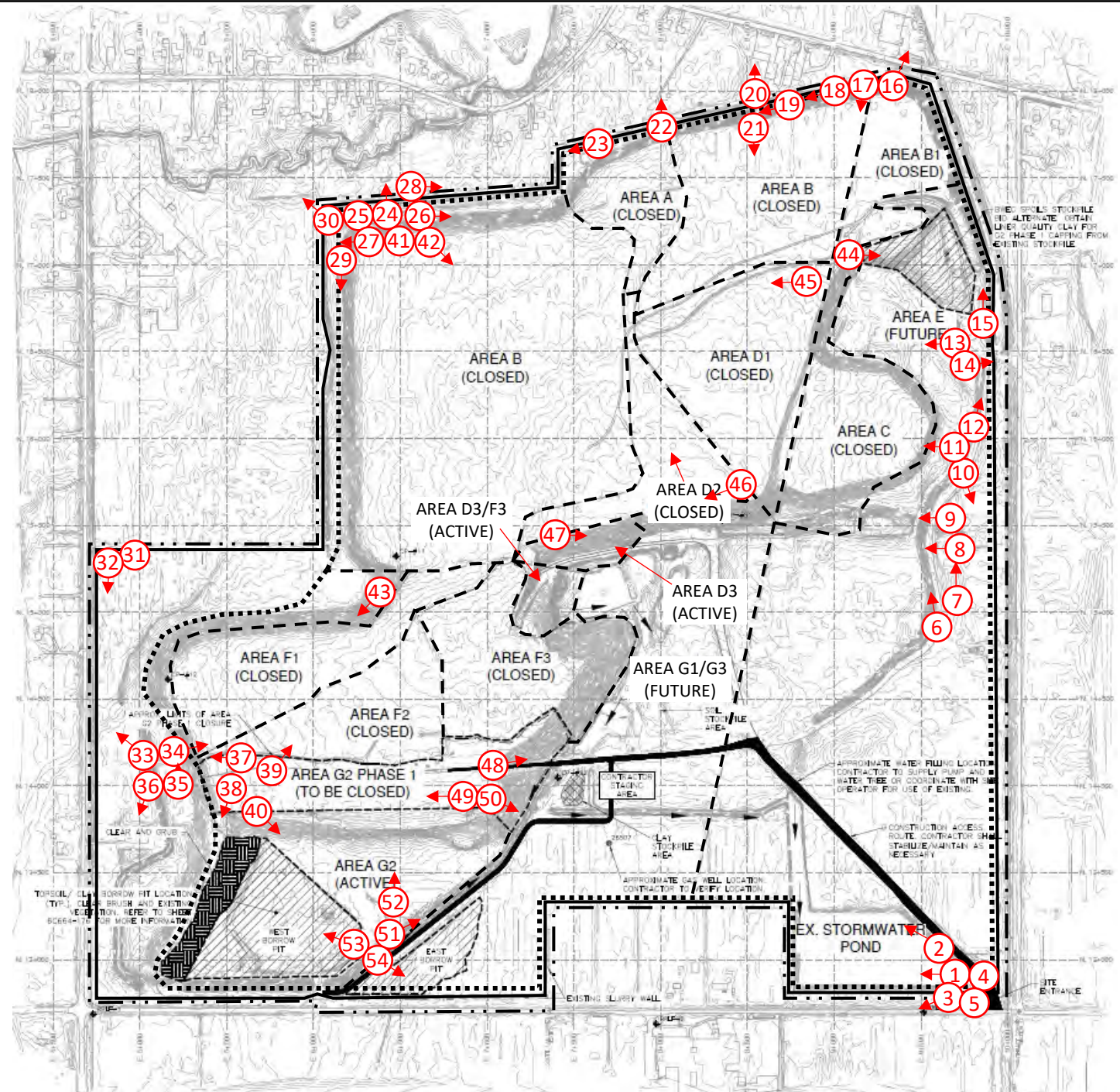
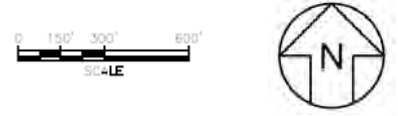
Form Original Date:
01/08/15



- LEGEND**
- PROPERTY BOUNDARY
 - DESIGN LIMITS OF ASH FILL
 - DISPOSAL AREA BOUNDARY
 - SLURRY CUTOFF WALL
 - AREA A DISPOSAL AREA A

SITE PHASING LEGEND				
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D1	Closed (Interim cover on southern sideslopes)	21	Clay	Certification Report Approved by MDEQ, August 25, 2009
D2	Closed (Interim cover on southern sideslopes)	10	Clay	Certification Report Approved by MDEQ, August 25, 2009
F1	Closed	17	Clay	Certification Report Approved by MDEQ January 4, 2010
F2	Closed	12	Clay	Certification report approved by MDEQ February 28, 2013
F3	Closed	17	Clay	Certified Closed May 22, 2018
D3	Active Disposal	3	Clay	Interim Cover Area
F3/D3	Active Disposal	5	Clay	
G2	Active Disposal	54	Clay	
G1/G3	Unconstructed	56	Clay	
E	Unconstructed	117	Sand	Can be authorized to receive fill once a remediation plan is implemented

NOTE:
 SITE MAP ADAPTED FROM RANGE ROAD AREA G2 PHASE 1 FINAL CLOSURE ENGINEERING CONSTRUCTION PLANS BY NTH CONSULTANTS, LTD, NORTHVILLE, MICHIGAN



BELLE RIVER POWER PLANT RANGE ROAD LANDFILL PHOTO LOG		FIGURE B1
 Geosyntec Consultants of Michigan DETROIT, MICHIGAN		
PROJECT: CHE8242V	JANUARY 2025	

DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 1

Date: 04/29/2024

Direction: West

Comments: Some cut vegetation on the trash rack for the outlet of the Stormwater Detention Basin (SDB) was observed but did not appear to affect the flow through the outlet.



Photograph 2

Date: 04/29/2024

Direction: Northwest

Comments: The SDB was in good condition. Some vegetation on side slopes. No visible slope erosion. The water quality within the SDB appeared to be appropriate for the NPDES permit.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 3

Date: 04/29/2024

Direction: Southwest

Comments: The SDB was in good condition. Some vegetation on side slopes. No visible slope erosion. The water quality within the SDB appeared to be appropriate for the NPDES permit.



Photograph 4

Date: 04/29/2024

Direction: West

Comments: The SDB pumps were in good condition and no outstanding maintenance tags were observed. The pumps were not running during the visual inspection.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 5

Date: 04/29/2024

Direction: --

Comments: The instrument panel for the SDB pumps was in good condition and no outstanding maintenance tags were observed. The pumps were not running during the visual inspection.



Photograph 6

Date: 04/29/2024

Direction: Northwest

Comments: The perimeter ditch on the east side of the Landfill. Minimal flow was observed within the perimeter ditch at the time of the visual inspection. Vegetation observed on the side slopes of the ditch but no erosion.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

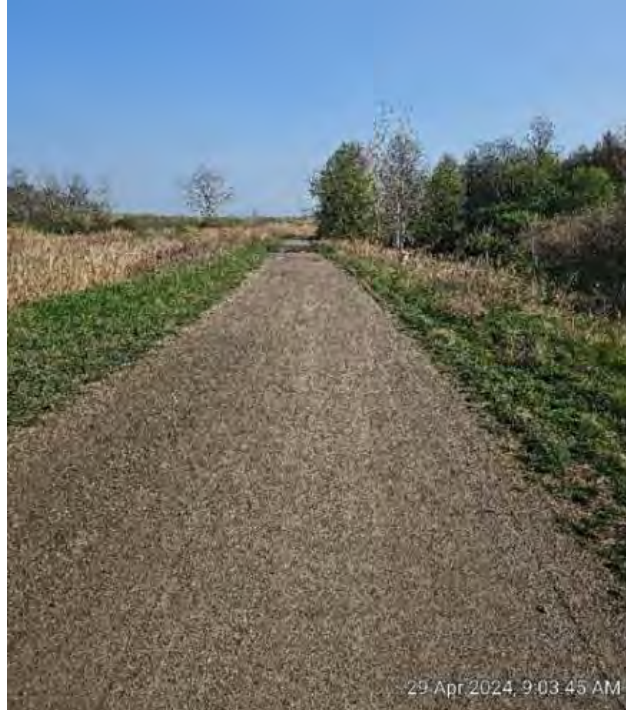
Site Location: China Township, MI

Photograph 7

Date: 04/29/2024

Direction: North

Comments: The perimeter road on the east side of the Landfill was generally in good condition.



Photograph 8

Date: 04/29/2024

Direction: West

Comments: Beaver dam observed on the east perimeter ditch. Limited flow was observed over the dam. The dam was removed by DTE personnel in November 2024.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 9

Date: 04/29/2024

Direction: West

Comments: Monitoring wells and piezometers around the perimeter road were in good condition and generally protected by bollards (typical).



Photograph 10

Date: 04/29/2024

Direction: Southeast

Comments: Monitoring wells and piezometers around the perimeter road were in good condition (typical).



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 11

Date: 04/29/2024

Direction: West

Comments: Staff gauges were located and in satisfactory condition (typical) (staff gauge-06 shown). The perimeter ditch on the east side of the Landfill had some vegetation on the side slopes but no erosion was observed. Minimal flow was observed within the perimeter ditch at the time of the visual inspection.



Photograph 12

Date: 04/29/2024

Direction: Northeast

Comments: Some rutting observed on the perimeter road on the east side of the Landfill; however, the road was generally in good condition.



**DTE ELECTRIC COMPANY
Photographic Record**

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 13

Date: 04/29/2024

Direction: West

Comments: Piezometer PZ-2 on the east side of the Landfill.



Photograph 14

Date: 04/29/2024

Direction: Southeast

Comments: Perimeter fence gates were locked and generally in good condition (gate on east side shown). Signs for DTE property and “No Trespassing” were observed at the gates. Piezometer 96-W-13 was locked and in good condition.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 15

Date: 04/29/2024

Direction: North

Comments: Perimeter road on the east side of the Landfill was in good condition. The perimeter fence in this location was tilting in towards the property.



Photograph 16

Date: 04/29/2024

Direction: Northeast

Comments: Perimeter fence gates were locked and in satisfactory condition (gate at northeast corner shown). Signs for DTE property and “No Trespassing” were observed at the gates. MW 96-W-12R was locked and in good condition.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 17

Date: 04/29/2024

Direction: South

Comments: Landfill side slopes on north side Area B were covered in trees. MDEQ (now EGLE) approved leaving the trees in place along these slopes. No observations of slope instabilities (e.g., leaning, or downed trees) were identified.



Photograph 18

Date: 04/29/2024

Direction: West

Comments: The perimeter road on the north side of the Landfill was in good condition. The perimeter fence was damaged at this location. The top rail was bent, and the link mesh was broken.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 19

Date: 04/29/2024

Direction: Southwest

Comments: Landfill side slopes on north side Area B were covered in trees. MDEQ (now EGLE) approved leaving the trees in place along these slopes. No observations of slope instabilities (e.g., leaning or downed trees) were identified. Heavier vegetation observed within the perimeter ditch on the north side, but did not appear to affect flow.



Photograph 20

Date: 04/29/2024

Direction: North

Comments: Monitoring wells and piezometers around the perimeter road were in good condition. MW 96-W-10R was locked and in good condition.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 21

Date: 04/29/2024

Direction: South

Comments: Staff gauges were located and in satisfactory condition. The perimeter ditch on the north side of the Landfill had heavy vegetation that obstructed the view of some staff gauges. The vegetation did not appear to affect flow through the perimeter ditches.



Photograph 22

Date: 04/29/2024

Direction: North

Comments: Monitoring wells and piezometers around the perimeter road were in good condition and generally protected by bollards. (96-W-01R shown).



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 23

Date: 04/29/2024

Direction: West

Comments: The perimeter ditches on the northwest side of the Landfill had some vegetation. Erosion was not observed in the riprap on the side slopes of the ditches. No obstructions were observed in the culverts.



Photograph 24

Date: 04/29/2024

Direction: North

Comments: The control panel, hoist, concrete pad, and manhole of the lift station at the northwest corner of the property were in good condition



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 25

Date: 04/29/2024

Direction: --

Comments: The sump, pump piping, and flow pipe entering the sump from the lower perimeter ditch at the northwest corner of the property were in good condition. Pumps and hands-on switches were checked by DTE personnel and appeared to be operating correctly.

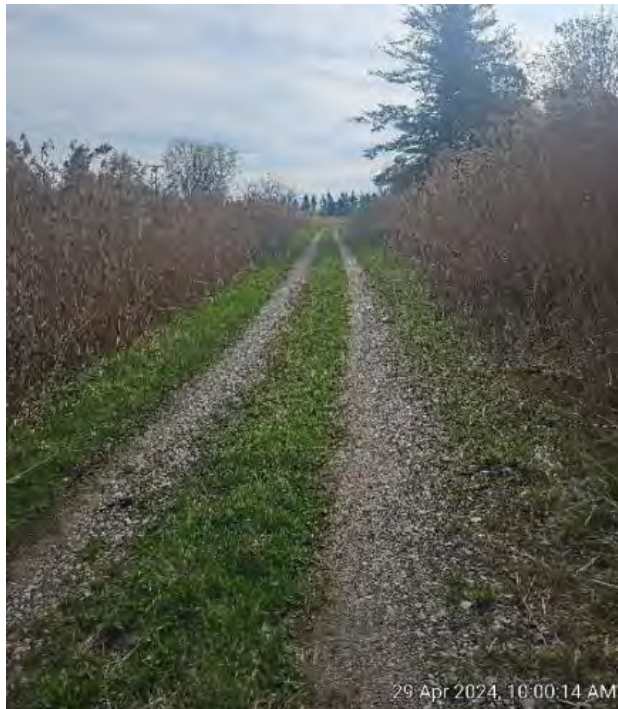


Photograph 26

Date: 04/29/2024

Direction: East

Comments: The perimeter road on the north side of the Landfill was in good condition.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 27

Date: 04/29/2024

Direction: West

Comments: Wet spots were observed on the perimeter road west of the manhole for the upper perimeter ditch of the lift station. Water was ponding in minor ruts at the bottom of the perimeter road slope. The water was not observed to be flowing along the road at the time of the visual inspection.



Photograph 28

Date: 04/29/2024

Direction: East

Comments: The lower perimeter ditch of the lift station at the northwest corner of the property was in good condition and had riprap armoring the side slopes. No erosion of riprap was observed.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 29

Date: 04/29/2024

Direction: South

Comments: The perimeter ditches on the west side of the Landfill were generally clear of vegetation and had riprap on the side slopes.



Photograph 30

Date: 04/29/2024

Direction: Northwest

Comments: Several markers for the perimeter slurry wall were observed and in good condition. Monitoring wells and piezometers around the perimeter road were in good condition.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 31

Date: 04/29/2024

Direction: --

Comments: The slurry wall marker near the security gate on the west side of the property was damaged.



Photograph 32

Date: 04/29/2024

Direction: South

Comments: The perimeter roads and fence on the west side of the Landfill were in good condition. The roads were not covered in aggregate but were still accessible.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 33

Date: 04/29/2024

Direction: Northwest

Comments: Part of the perimeter ditches on the west side of the Landfill had some vegetation. No erosion was observed in the riprap on the side slopes of the ditches. No obstructions were observed in the culverts.



Photograph 34

Date: 04/29/2024

Direction: East

Comments: The riprap-lined stormwater downchute at the southwest side of Area F1 had some vegetation growing within the riprap.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 35

Date: 04/29/2024

Direction: Northeast

Comments: Damage to the mesh wire of the stormwater downchute at the southwest side of Area F1 was observed. An erosion rill was observed below the mesh wire.



Photograph 36

Date: 04/29/2024

Direction: South

Comments: The perimeter ditches on the west side of the Landfill had some vegetation. No erosion was observed in the riprap on the side slopes of the ditches. No obstructions were observed in the culverts.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 37

Date: 04/29/2024

Direction: West

Comments: The riprap-lined stormwater downchute at the southwest side of Area F1 had some small, woody vegetation at the top of the chute. No erosion was observed in the riprap at the top of the downchute.



Photograph 38

Date: 04/29/2024

Direction: South

Comments: The side slopes of the Area G2 Phase I were in good condition. The vegetation had become established and was well maintained.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 39

Date: 04/29/2024

Direction: Northeast

Comments: The top deck of the Areas F1, F2 and G2 Phase I was in good condition. The vegetation had become established and was well maintained. No low spots with water ponding were visible.



Photograph 40

Date: 04/29/2024

Direction: Southeast

Comments: Filling was active in Area G2 Phase II during the visual inspection. The traffic, waste unloading, and waste placement appeared to be in line with generally accepted engineering practices. The equipment was operating safely and at speeds to limit fugitive dust.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 41

Date: 04/29/2024

Direction: Southeast

Comments: The manhole on the upper perimeter ditch of the lift station at the northwest corner of the property was in good condition. Outlet pipe shown with no apparent obstructions.



Photograph 42

Date: 04/29/2024

Direction: Southeast

Comments: Outlet pipe from the manhole into the upper perimeter ditch at the lift station at the northwest corner of the property. Little flow was observed during the inspection.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 43

Date: 04/29/2024

Direction: Southwest

Comments: Side slopes outside Area F1 were in good condition with no signs of erosion or slope instabilities. Vegetation was generally well maintained.



Photograph 44

Date: 04/29/2024

Direction: East

Comments: Top deck of the Landfill was in good condition. Areas B and B1 shown in the photograph. Vegetation was generally well maintained. No low spots with water ponding were visible and downchute inlets were not obstructed.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 45

Date: 04/29/2024

Direction: West

Comments: Top deck of the Landfill was in good condition. Areas B and D1 shown in the photograph. Vegetation was generally well maintained. No low spots with water ponding were visible.



Photograph 46

Date: 04/29/2024

Direction: Southwest

Comments: The access road to the top deck in Areas D3 and D3/F3 was in good condition. The side slopes of Area D2 were vegetated, and no erosion was observed.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 47

Date: 04/29/2024

Direction: East

Comments: The internal detention pond by Area D3/F3 was in good condition. The side slopes of Areas D2 and D3 were vegetated, and no erosion was observed.



Photograph 48

Date: 04/29/2024

Direction:

Comments: The access road to the Area G2 Phase I was in good condition. Stormwater downchute along the access road was in good condition.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 49

Date: 04/29/2024

Direction: West

Comments: Top deck and side slopes of the Area G2 Phase I were in good condition. Vegetation was generally well maintained. No low spots with water ponding were visible.



Photograph 50

Date: 04/29/2024

Direction: East

Comments: The riprap-lined stormwater downchute at the southeast side of Area G2 Phase I was in good condition despite some vegetation. No erosion was observed in the riprap.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 51

Date: 04/29/2024

Direction: Southwest

Comments: The perimeter ditch on the south side of the Landfill had some vegetation on the bottom of the ditch, but no erosion was observed on the side slopes. No flow was observed within the perimeter ditch because of low water levels at the time of the visual inspection.



Photograph 52

Date: 04/29/2024

Direction: North

Comments: Filling was active in Area G2 Phase II during the visual inspection. The traffic, waste unloading, and waste placement appeared to be in line with generally accepted engineering practices. The equipment was operating safely and at speeds to limit fugitive dust.



DTE ELECTRIC COMPANY
Photographic Record

Client: DTE Electric Company

Project Number: CHE8242V

Site Name: Range Road Landfill

Site Location: China Township, MI

Photograph 53

Date: 04/29/2024

Direction: Northwest

Comments: Area G2 Phase III was in good condition. No active filling was observed in this area during the visual inspection.



Photograph 54

Date: 04/29/2024

Direction: Southeast

Comments: The internal detention pond south of Area G2 was in good condition. Erosion was not observed on the side slopes.

