

DTE ELECTRIC COMPANY

# VERTICAL EXTENSION LANDFILL CLOSURE PLAN

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MONROE POWER PLANT

PROJECT NO. 151630

REVISION 3

OCTOBER 6, 2023

# CONTENTS

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<b>1.0 Introduction .....</b>	<b>1-1</b>
<b>2.0 Details of Closure .....</b>	<b>2-1</b>
2.1 Impoundment Description.....	2-1
2.1.1 CCR Inventory and Extent.....	2-1
2.2 Closure Method .....	2-1
2.3 Post-Closure Conditions.....	2-2
2.4 Closure Schedule .....	2-2
2.4.1 Closure Completion .....	2-3
<b>3.0 Revisions and Amendments .....</b>	<b>3-1</b>
<b>4.0 Record of Revisions and Updates .....</b>	<b>4-1</b>

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## APPENDIX A - CONCEPTUAL CLOSURE DESIGN

# TABLES

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Table 2-1: Closure Schedule .....	2-2
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## List of Abbreviations

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Abbreviation	Term/Phrase/Name
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
DTE	DTE Electric Company
EGLE	Michigan Department of Environment, Great Lakes, and Energy
EPA	Environmental Protection Agency
FAB	Fly Ash Basin
MAC	Michigan Administrative Code
Monroe	Monroe Power Plant
RCRA	Resource Conservation and Recovery Act
U.S.C.	United States Code
VEL	Vertical Extension Landfill

# Index and Certification

**DTE Electric Company**  
**Vertical Extension Landfill Closure Plan**  
**Project No. 151630**

## Report Index

Chapter Number	Chapter Title	Number of Pages
1.0	Introduction	1
2.0	Details of Closure	3
3.0	Revisions and Amendments	1
4.0	Record of Revisions and Updates	1
Appendix A	Conceptual Closure Design	2

## Certification

I hereby certify, as a Professional Engineer in the state of Michigan, that the information in this document was assembled under my direct personal charge and meets the requirements of 40 CFR § 257.102. This report is not intended or represented to be suitable for reuse by the DTE Electric Company or others without specific verification or adaptation by the Engineer.



10/05/2023

*Allyson Myers*

Allyson Myers, P.E.  
 (Michigan License No. 6201312005)

Date: October 5, 2023

# 1.0 Introduction

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On April 17, 2015, the Environmental Protection Agency (EPA) issued the final version of the federal Coal Combustion Residuals (CCR) Rule to regulate the disposal of coal combustion residual materials generated at coal-fired electric generating units. The rule is administered as part of the Resource Conservation and Recovery Act (RCRA, 42 United States Code [U.S.C.] §6901 et seq.), under Subtitle D. DTE Electric Company (DTE) is subject to the CCR Rule. As such, DTE must develop a Closure Plan for the CCR units at Monroe Power Plant (Monroe) per 40 Code of Federal Regulations (CFR) §257.102. This document serves as DTE's revised Closure Plan for the Vertical Extension Landfill (VEL).

According to §257.102(b)(1), the Closure Plan must contain the following:

- A description of how the CCR unit will be closed.
  - For in-place closure: A description of the final cover system, the methods for installing the final cover system, and the methods for achieving compliance with the standards outlined in §257.102(d).
  - For closure by removal: A description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with §257.102(c).
- An estimate of the maximum amount of material ever stored in the CCR unit over its active life.
- An estimate of the largest area of the CCR unit ever requiring a final cover as required by §257.102(d) at any time during the CCR unit's active life.
- A schedule for completing closure activities, including the anticipated year of closure and major milestones for permitting and construction activities.

The seal on this report certifies that this document meets the requirements of 40 CFR §257.102. This closure plan is in addition to, not in place of, any other applicable site permits, environmental standards, or work safety practices.

Because the VEL is being closed by removal of CCR, a Post-Closure Plan is not required per 40 CFR §257.104(b).

## 2.0 Details of Closure

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### 2.1 Impoundment Description

DTE owns and operates Monroe Power Plant, a four-unit, 3,300-megawatt coal-fired facility located in Monroe, Michigan. In addition to the VEL, Monroe has one active CCR surface impoundment, known as the Fly Ash Basin (FAB). This CCR closure plan outlines the plan to close the VEL by removing CCR. Note, this document is a revision to the current “Closure Plan for the Existing CCR Unit,” which was last revised by AECOM in March of 2023.

#### 2.1.1 CCR Inventory and Extent

The VEL is approximately 79 acres and was constructed over existing CCR material within the FAB. CCR material stored within the VEL will be removed to the underlying ash subgrade and consolidated within the FAB to achieve closure grades prior to installing the final cover system and closing the FAB in place.

The maximum storage capacity of the VEL was calculated to be 3,600,000 cubic yards. The design maximum fill elevation of the VEL is approximately 672 ft (NGVD29). Neither the maximum storage capacity nor maximum fill elevation for the VEL will be exceeded as part of the closure design.

### 2.2 Closure Method

Both the CCR Rule and Michigan Public Act 451, Part 115 Rules, allow for coal ash landfills to be closed through removal of CCR or by leaving CCR material in-place. Per the Part 115 rules, closure by removal is complete when either of the following requirements are met per Section 324.11519b(9):

- The owner or operator certifies compliance with the requirements of 40 CFR 257.102(c).
- The owner or operator certifies that testing confirms that constituent concentrations remaining in the coal ash impoundment or landfill unit and any concentrations of soil or groundwater affected by releases therefrom do not exceed the lesser of the applicable standards adopted by the department pursuant to section 20120a or the groundwater protection standards established pursuant to 40 CFR 257.95(h) and the department accepts the certification, or, if the constituent concentrations do exceed those standards, the department has approved a remedy consistent with R 299.4444 and R 299.4445 of the MAC.

The VEL will be closed by removal of CCR. Material will be removed from the VEL using standard earthmoving equipment and loaded into dump trucks to be hauled and placed within the FAB to support in-place closure of the FAB. CCR material will be removed to the underlying subgrade. A conceptual design drawing for closure of the VEL is provided in Appendix A. The VEL subgrade will be visually inspected by a professional engineer to confirm removal of CCR and liner materials placed above the CCR within the FAB.

### 2.3 Post-Closure Conditions

The bottom of CCR will be documented by survey. The underlying FAB will be re-graded and closed in place. Groundwater monitoring for the FAB will be conducted as part of the FAB post-closure maintenance activities.

### 2.4 Closure Schedule

According to §257.102 of the CCR Rule, closure of VEL must commence no later than 6 months following the date on which a closure event is triggered, or no later than 30 days following the last known receipt of CCR or non-CCR wastestream. Similarly, §324.11519b(5) requires the following:

The owner or operator of a coal ash landfill shall place landfill cover materials that are described in R 299.4304 of the MAC, over the entire surface of each portion of the final lift not more than 6 months after the final placement of coal ash within the landfill or landfill unit. A notification of intent to initiate closure of the VEL will be placed in the facility’s CCR Operating Record and on DTE’s CCR public website prior to commencing closure. Pre-closure construction activities, including closure design and permitting, are underway. The closure of both the VEL and FAB will be conducted in parallel, and each unit’s closure process is dependent on the activities to occur in the other unit. Closure activities for the FAB will include the removal of bulk free water (unwatering), dewatering of CCR pore water, grading of CCR and soil, placement of the final cover system, and establishing the stormwater drainage infrastructure. The VEL is expected to be closed by removal of CCR at an appropriate time during the overall project timeline as one of the earlier/initial tasks.

A Closure Timeline Variance Request was prepared per Michigan Administrative Code R. 229.4317(1). This code requires that the coal ash facility be completely covered within six months after the final placement of coal ash under Part 115 of R 299.4317(1) for Type III Landfills. DTE intends to close the Vertical Extension Landfill (VEL), a Type III Coal Ash Landfill. DTE is seeking a variance from Part 115 of R 299.4317(1) requesting that the deadline for the completion of closure activities be extended.

Closure construction for the VEL is anticipated to commence in the second quarter of 2025. Closure construction is anticipated to take a minimum of six months. The estimated closure schedule is as indicated in Table 2-1.

**Table 2-1: Closure Schedule**

Activity	Schedule
Anticipated date of last known receipt of CCR or non-CCR wastestream	Q4 2023
Begin closure construction	Q2 2025
Removal of CCR material	Q2 2025 – Q4 2025
Target to complete closure	Q4 2025

### 2.4.1 Closure Completion

The federal CCR rule requires that closure of the VEL be completed within six months of commencing closure activities. The rule also allows the timeframe for completing closure of the CCR unit to be extended by up to two, one-year extensions if DTE can substantiate the factual circumstances demonstrating the need for the extension. If needed, a demonstration for an extension of the closure timeframe shall be completed pursuant to §257.102(f)(2).

For the purposes of this Closure Plan, closure of the VEL is considered complete when CCR has been removed from the unit in accordance with 40 CFR §257.102(c), and the applicable construction completion documentation is finalized.

Within 30 days of completion of closure of the VEL, DTE must prepare a notification of closure of the VEL and place it in the facility's CCR Operating Record and on DTE's CCR public website. This notification shall include certification by a qualified professional engineer in the State of Michigan verifying that closure has been completed in accordance with this Closure Plan and the requirements of §257.102.



## 3.0 Revisions and Amendments

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The initial Closure Plan for the VEL was placed in the CCR Operating Record in October 2016 and was subsequently revised in April 2019 and March 2023. This update replaces the latest revision to the Closure Plan. If the Closure Plan is further revised, the written Closure Plan will be amended no later than 30 days following the triggering event. Additionally, the written Closure Plan will be amended at least 60 days prior to a planned change in the operation of the VEL, or no later than 60 days after an unanticipated event. The initial Closure Plan and any amendment will be certified by a qualified professional engineer in the State of Michigan for meeting the requirements of §257.102 of the CCR Rule. All amendments and revisions must be placed on the CCR public website within a reasonable amount of time following placement in the facility's CCR Operating Record. A record of revisions made to this document is included in Section 4.0 of this document.



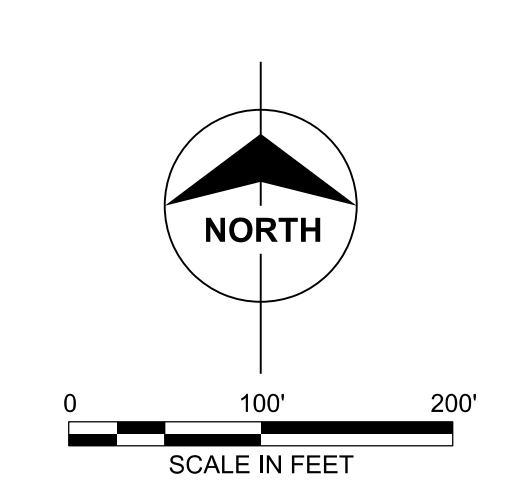
## **APPENDIX A - CONCEPTUAL CLOSURE DESIGN**

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- NOTES:**
1. REMOVE MATERIAL WITHIN THE LIMITS OF THE VEL TO THE DESIGN SUBGRADE ELEVATION (I.E., TO UNDERLYING SLICED ASH) AS INDICATED AND AS SHOWN ON REFERENCE DWG FIGURE 400-1. MATERIAL REMOVAL GRADE SHALL BE DOCUMENTED BY SURVEY AND APPROVED BY OWNER IN WRITING PRIOR TO COMPLETING FINISH GRADING WITHIN THE VEL FOOTPRINT.



**6C695H-356**  
LATEST REVISION "D"

6			
5			
4			
3	06OCT23	ISSUED FOR PERMITTING	ENR AMM
2	18AUG23	ISSUED FOR 60% REVIEW	ENR AMM
1	30JUN23	ISSUED FOR 30% REVIEW	ENR AMM
NO.	DATE	ISSUED FOR	DISPLN/RSP ENG PRJ ENG
PROJECT ENGINEER: -		APPROVALS	
PRECONSTRUCTION REVISION BLOCK - REV. D			

Vendor:  
**BURNS & MCDONNELL**  
2111 Woodland Avenue, Suite 202  
Farmington Hills, MI 48334  
Burns & McDonnell Michigan, Inc.

**DTE ELECTRIC COMPANY**

**PRELIMINARY - NOT FOR CONSTRUCTION**

THIS IS A CAD PRODUCED DRAWING. ANY CHANGES OR REVISIONS TO THIS DRAWING MUST BE COMPLETED USING THE CAD SYSTEM

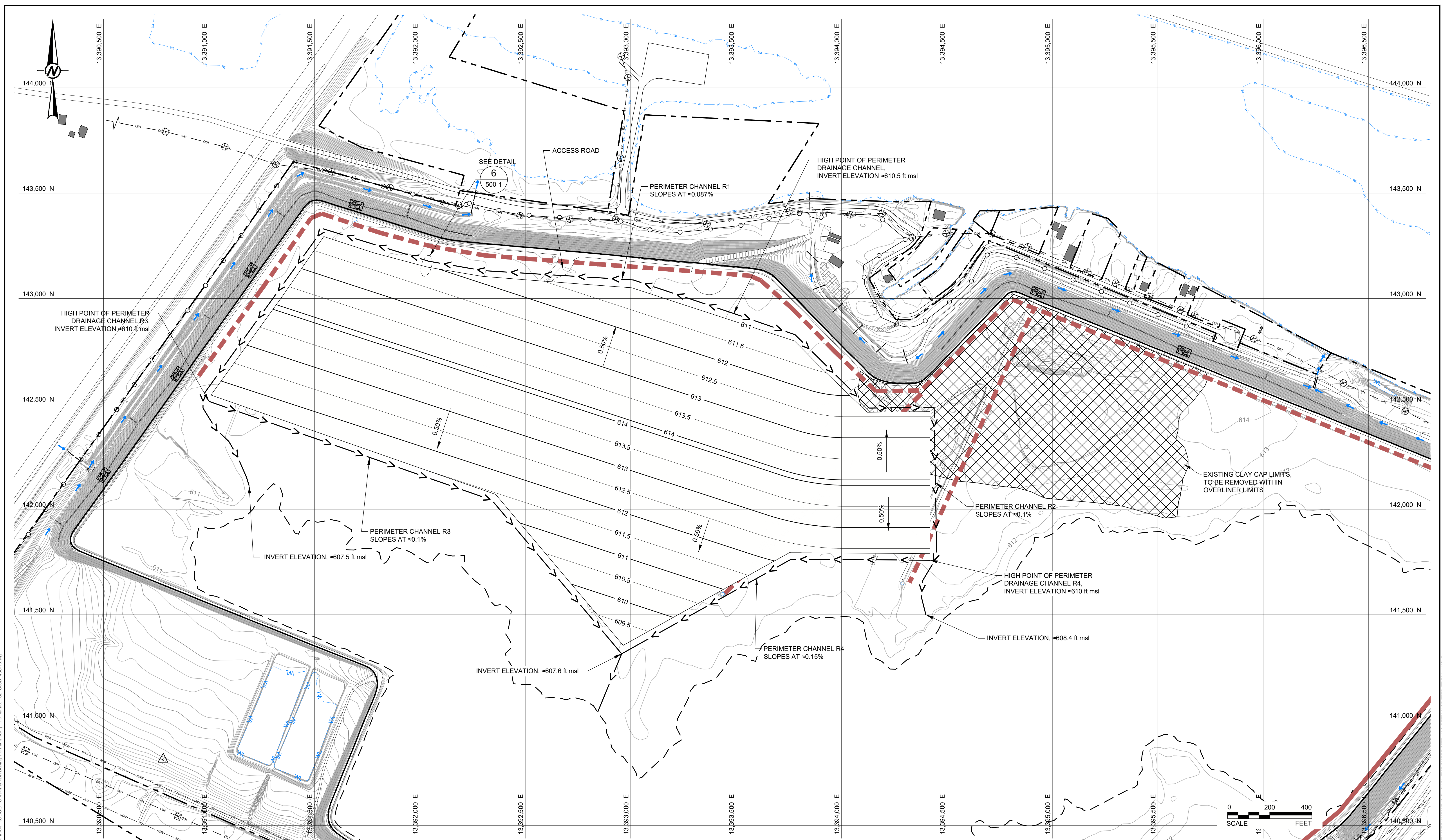
TITLE  
**FLY ASH BASIN CLOSURE PROJECT VEL EXCAVATION PLAN**

LOCATION NAME	MONROE POWER PLANT	UNIT NUMBER	1
ORIGINATING SOURCE	BURNS & MCDONNELL MICHIGAN, INC.	SCALE	AS SHOWN
DTE ELECTRIC COMPANY DRAWING NUMBER	6C695H-356	USE DIMENSIONS ONLY	DO NOT SCALE

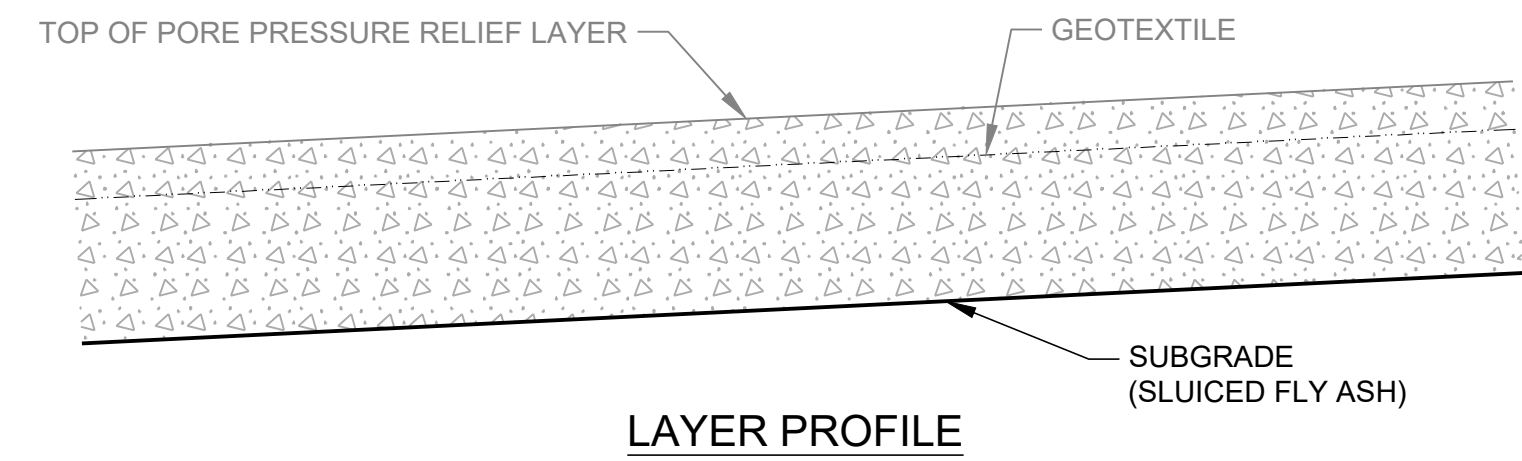
J				H				G				F				E				D				C				B				A			
PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.			PROJ. ENG.	PROJ. MGR.						
MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.	MADE BY	DATE	INC	ELECT.
CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY	CHK BY	DATE	MECH.	APPROVED BY

REVISION DESCRIPTION	DTE ELECTRIC APPROVALS	DATE	OTHER APPROVALS	DATE	DESIGNED BY	DATE
	ENR		VERIFYER		A. MYERS	19MAY23
	ENR		ARCH		J. RIDDER	19MAY23
	ENR		CIVIL			
	ENR		MECH			
	ENR		ELEC			
	ENR		INC			





- NOTE(S)**
1. ABANDONED PIPING WITHIN LIMITS OF SUBGRADE TO BE REMOVED.
  2. CLAY COVER WITHIN LIMITS OF SUBGRADE TO BE REMOVED.



CLIENT  
**DTE ENERGY**  
**MONROE POWER PLANT**  
**MONROE, MI**  
 CONSULTANT



YYYY-MM-DD	2015-03-20
PREPARED	JJS
DESIGN	JJS
REVIEW	TDJ
APPROVED	DML

PROJECT  
**MONROE POWER PLANT ASH BASIN**  
**PERMIT MODIFICATION**

TITLE  
**TOP OF SUBGRADE PLAN**

PROJECT No.	CONTROL	Rev.
1521809B		

FIGURE  
**400-1**

Path: \\laning\CAD\Projects\1521809B\_DTE Monroe\PRODUCTION\Fly Ash Basin\Permit Mod\1 File Name: 1521809B\_400-1.dwg

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