FINAL REPORT

DTE ENERGY

DETROIT, MICHIGAN

MONROE POWER PLANT (MPP): EU-DUMPERHS & EU-CASCADES SV-D6 PARTICULATE MATTER TESTING

RWDI #2205126

November 17, 2022

SUBMITTED TO

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EXECUTIVE SUMMARY

RWDI USA LLC (RWDI) has been retained by DTE Energy (DTE) to complete the emission sampling program at the Monroe Power Plant (MPP) located in Monroe, Michigan. RWDI performed particulate matter testing for particulate matter less than 2.5 microns in diameter in accordance with USEPA Method 201A (PM2.5 cyclone only). Triplicate 120-minute tests were conducted on the two EU-DUMPERHS stacks (Dumper North and Dumper South) as well as the EU-CASCADES Unit 6 stack (SV-D6) of EU-CASCADES. Units 1 and 6 of EU-CASCADES units are considered "like" units and only one is required to be tested as described in the testing plan submitted by DTE.

Testing on EU-DUMPERHS was conducted on October 4th, 2022. Testing on SV-D6 was conducted across October 5th and 6th, 2022. Testing for both units was conducted during the normal operating conditions.

Executive Table i: EU-DUMPERHS $PM_{2.5}$ Particulate Matter Results

Source	Test 1 (lb/hr)	Test 2 (lb/hr)	Test 3 (lb/hr)	Average (lb/hr)	ROP Limit (lb/hr)
Dumper North	0.12	0.12	0.12	0.12	--
Dumper South	0.12	0.12	0.12	0.12	--
Combined	0.24	0.24	0.24	0.24	6.44

Note: All gravimetric results were below the minimum detection limit. As a result, the minimum detection limit of 0.5 was used for each test run.

Executive Table ii: EU-CASCADES - SV-D6 $PM_{2.5}$ Particulate Matter Results

Source	Test 2	Test 3	Test 4	Average	ROP Limit
SV-D6	0.027 lb/hr	0.027 lb/hr	0.027 lb/hr	0.027 lb/hr	1.21 lb/hr
	0.0000210 lb/ton	0.0000210 lb/ton	0.0000212 lb/ton	0.0000211 lb/ton	--
Coal Transfer Data	1,289 tph	1,283 tph	1,276 tph	1,283	--

Notes: All gravimetric results were below the minimum detection limit. As a result, the minimum detection limit of 0.5 was used for each test run.

*- Test 1 filter was torn at the completion of the testing. Test 4 was completed for a complete set of valid samples. Results from Test 1 are included in Appendices.

TABLE OF CONTENTS

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LIST OF TABLES (REPORT)

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

RWDI USA LLC (RWDI) has been retained by DTE Energy (DTE) to complete the emission sampling program at the Monroe Power Plant (MPP) located in Monroe, Michigan. RWDI performed particulate matter testing for particulate matter less than 2.5 microns in diameter in accordance with USEPA Method 201A ($PM_{2.5}$ cyclone only). Triplicate 120-minute tests were conducted on the two EU-DUMPERHS stacks (Dumper North and Dumper South) as well as the EU-CASCADES Unit 6 stack (SV-D6) of EU-CASCADES. Units 1 and 6 of EU-CASCADES units are considered "like" units and only one is required to be tested as described in the testing plan submitted by DTE.

Testing on EU-DUMPERHS was conducted on October 4th, 2022. Testing on SV-D6 was conducted across October 5th and 6th, 2022. Testing for both units was conducted during the normal operating conditions.

1.1 Location and Dates of Testing

The test program was conducted October 4th-6th, 2022. EU-DUMPERHS was tested on October 4th while the testing on SV-D6 was conducted across October 5th and 6th, 2022.

1.2 Purpose of Testing

The emissions test program is required by Michigan Department of Environment, Great Lakes, and Energy (EGLE) for DTE Monroe, SRN B2916, that operates under Permit MI-ROP-B2816-2019.

1.3 Description of Source

The Monroe Power Plant (MPP) is a DTE Facility located at 3500 East Front Street, Monroe, Michigan. The plant has four (4) coal-fired electric generating units, referred to as Units 1, 2, 3, and 4. These units were placed in service between 1971 and 1974, and have a total electric generating capacity of 3,135 megawatts (gross). The boiler (Babcock & Wilcox) for each unit is a similar supercritical pressure, pulverized coal-fired cell burner boiler. Units 1-4 exhaust into dedicated, separate stacks.

Units 1 and 4 have General Electric turbine generators, each having a current capability of 817 gross megawatts (GMW). Units 2 and 3 have Westinghouse turbine generators, each having current capability of 823 GMW.

The boiler exhausts are each equipped with Research Cottrell electrostatic precipitators (ESPs), with particulate removal efficiencies of 99.6%. There is a sulfur trioxide flue gas conditioning system on each unit that is only used on an "as needed basis" to lower the resistivity of the fly ash for better collection by the ESPs. None of the four units are equipped with sulfuric acid mist control equipment.

Coal is delivered to the plant primarily by rail car, unloaded and transferred to fuel supply. There are various coal handling stages and emissions are controlled by dust collectors.

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5 TEST RESULTS

The detailed results can be found in **Appendix B –** Summary of Particulate Matter Results.

5.1 Results

Table 5.1a: EU-DUMPERHS – $PM_{2.5}$ Particulate Matter Results

Source	Test 1 (lb/hr)	Test 2 (lb/hr)	Test 3 (lb/hr)	Average (lb/hr)	ROP Limit (lb/hr)
Dumper North	0.12	0.12	0.12	0.12	--
Dumper South	0.12	0.12	0.12	0.12	--
Total	0.24	0.24	0.24	0.24	6.64

Note: All gravimetric results were below the minimum detection limit. As a result, the minimum detection limit of 0.5 was used for each test run.

Table 5.1b: EU-CASCADES - SV-D6 $PM_{2.5}$ Particulate Matter Results

Source	Test 2	Test 3	Test 4	Average	ROP Limit
SV-D6	0.027 lb/hr	0.027 lb/hr	0.027 lb/hr	0.027 lb/hr	1.21 lb/hr
	0.0000210 lb/ton	0.0000210 lb/ton	0.0000212 lb/ton	0.0000211 lb/ton	--
Coal Transfer Data	1,289 tph	1,283 tph	1,276 tph	1,283	--

Notes: All gravimetric results were below the minimum detection limit. As a result, the minimum detection limit of 0.5 was used for each test run.
*- Test 1 filter was torn at the completion of the testing. Test 4 was completed for a complete set of valid samples. Results from Test 1 are included in Appendices.

5.2 Variations in Testing Procedures

At the completion of Test 1 from SV-D6 (EU-CASCADES), it was determined that the filter was damaged and could not be used for analysis. As such, a 4th test was completed and Test 2 to 4 were used to determine the average $PM_{2.5}$ emission rate for SV-D6, EU-CASCADES.

5.3 Process Upset Conditions During Testing

There were normal process breaks during production.

5.4 Maintenance Performed in Last Three Months

Only routine general maintenance was performed in the last three (3) months.

5.5 Re-Test

This was not a re-test.

5.6 Audit Samples

This test did not require any audit samples.

5.7 Particulate, Flows and Moisture

Results can be found in **Appendix B**.

5.8 Calibration Data

Calibration can be found in **Appendix C**.

5.9 Process Data

Process data can be found in **Appendix A**.

5.10 Example Calculations

Example calculations can be found in **Appendix D**.

5.11 Field Notes

Field Notes can be found in **Appendix E**.

5.12 Laboratory Data

Laboratory data can be found in **Appendix F**.

FIGURES

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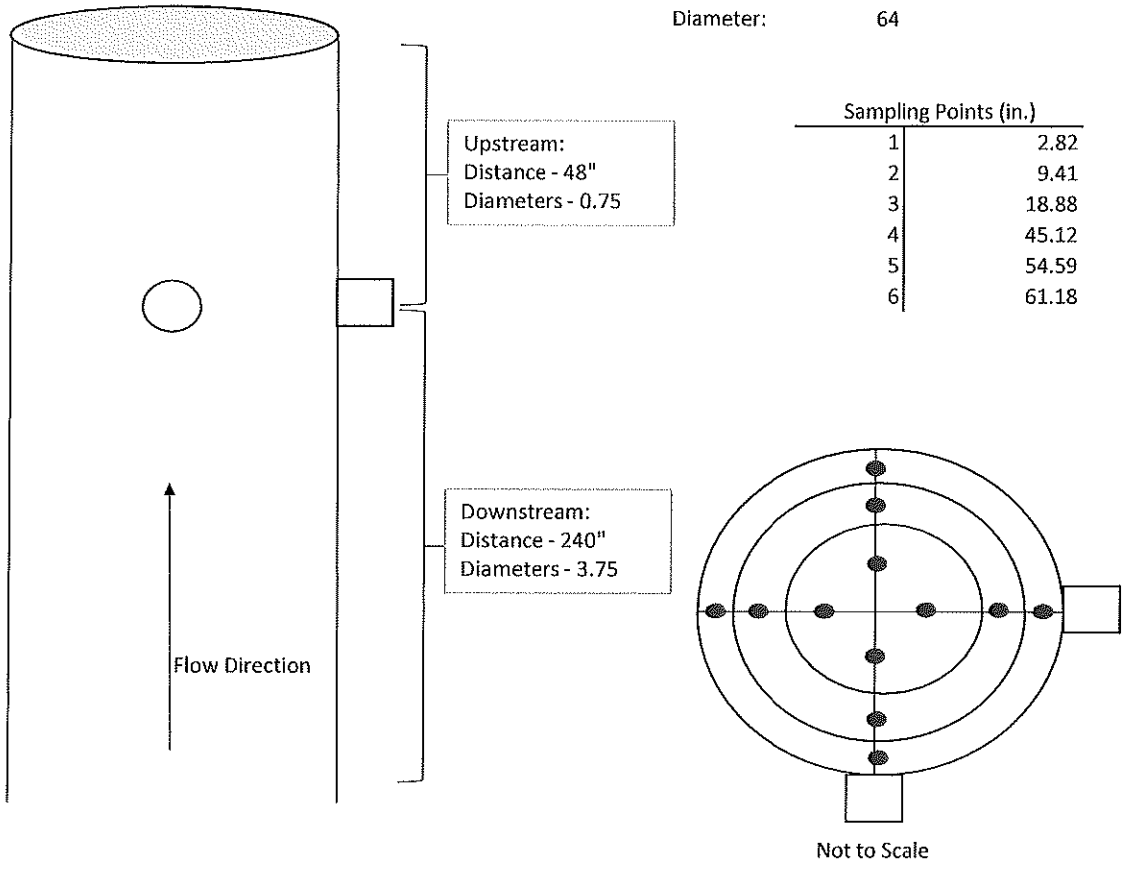
Figure No. 1



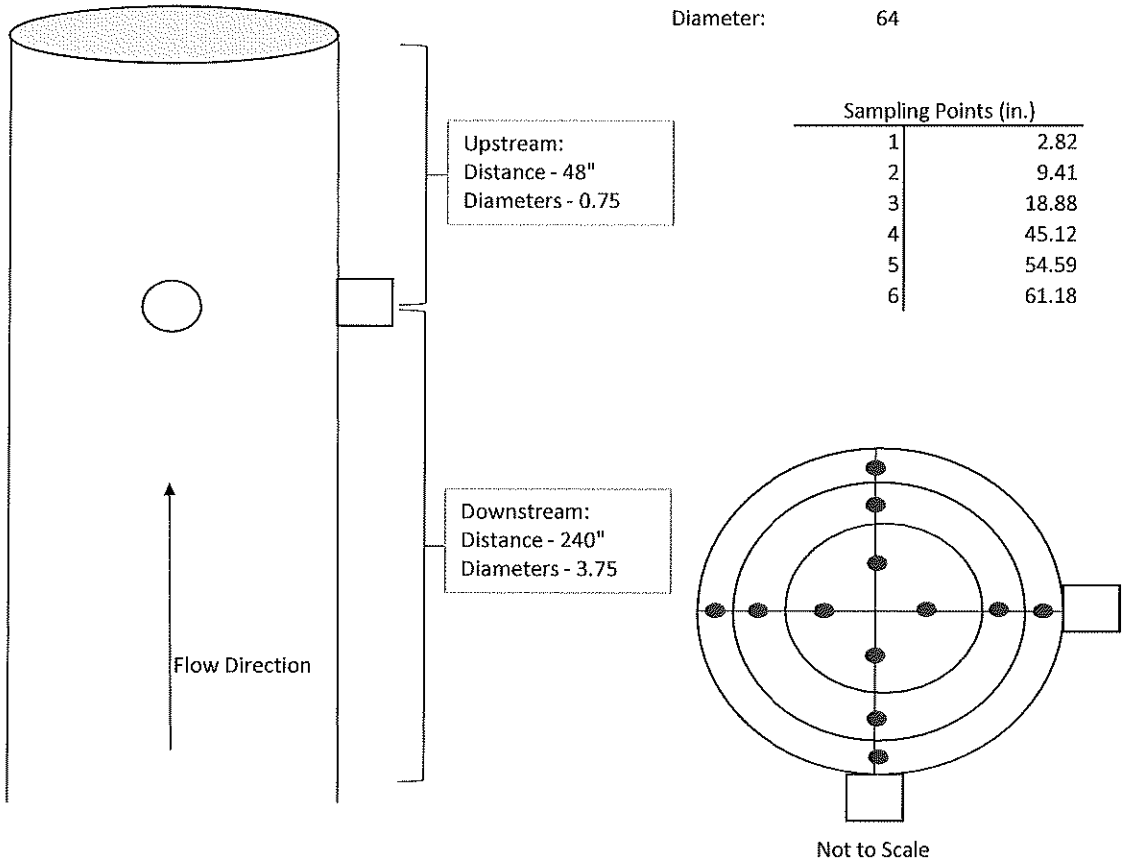
Sampling Points (in.)	
1	2.82
2	9.41
3	18.88
4	45.12
5	54.59
6	61.18

Dumper North
DTE Energy
Monroe Power Plant
Monroe, Michigan

Date:
October 4, 2022

RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

Figure No. 2



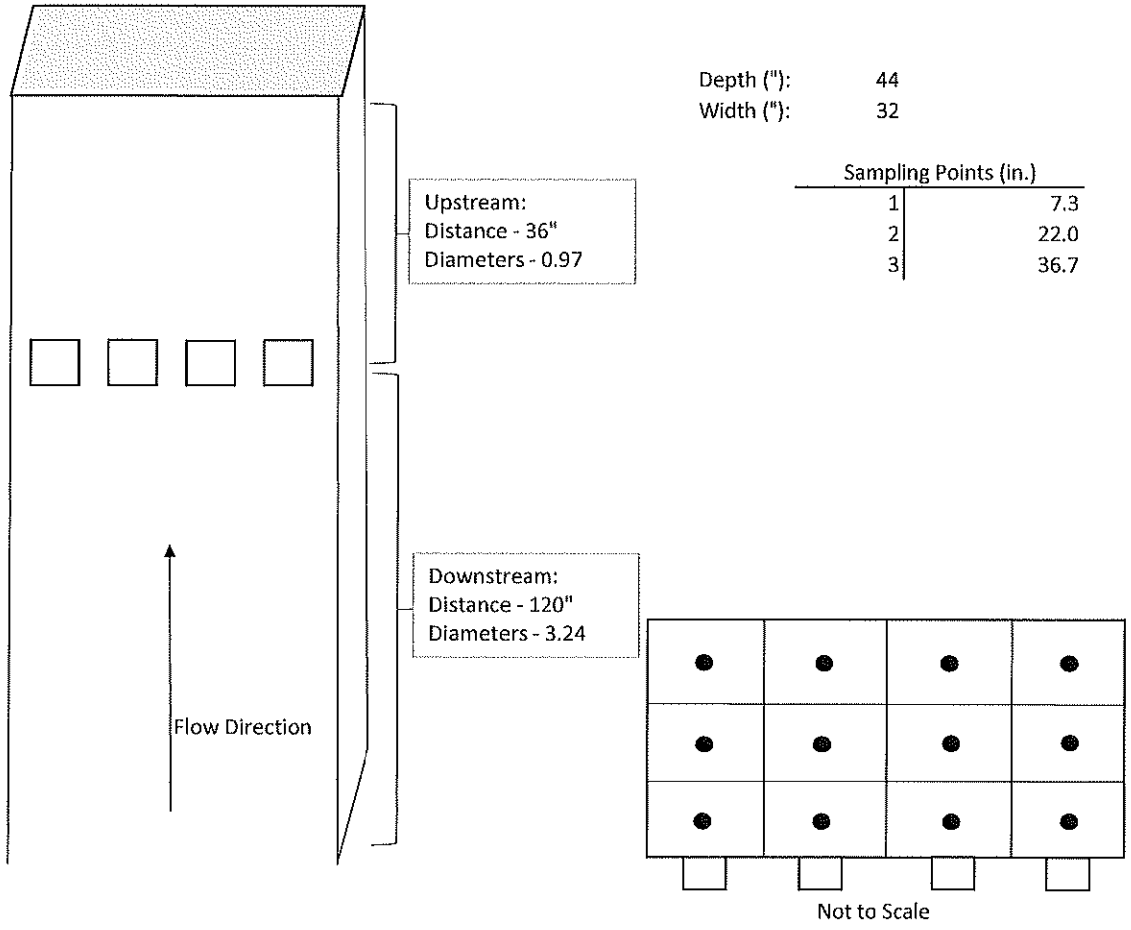
Sampling Points (in.)	
1	2.82
2	9.41
3	18.88
4	45.12
5	54.59
6	61.18

Dumper South
DTE Energy
Monroe Power Plant
Monroe, Michigan

Date:
October 4, 2022

RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

Figure No. 3



Depth ("): 44
Width ("): 32

Sampling Points (in.)	
1	7.3
2	22.0
3	36.7

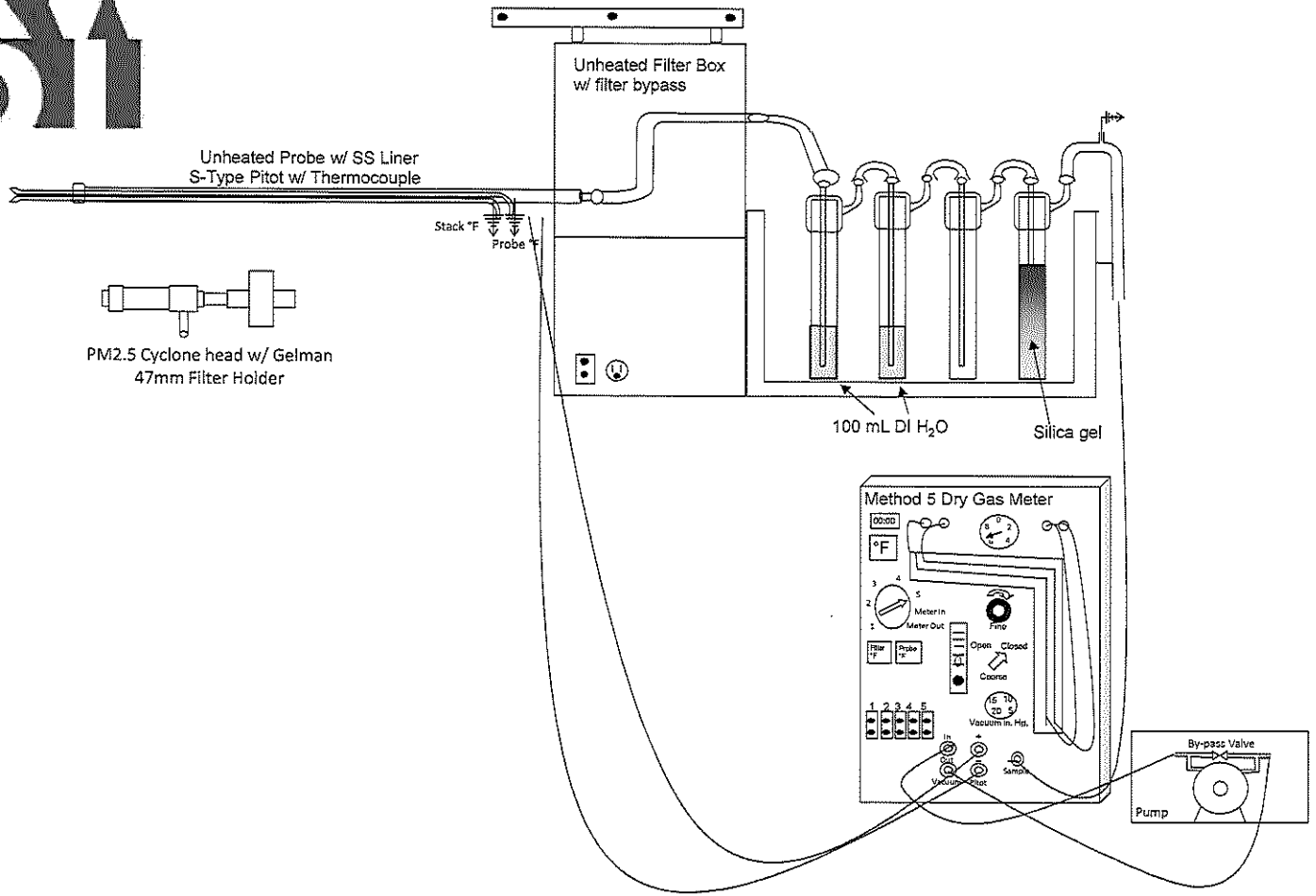
Not to Scale

Cascade SV-D6
DTE Energy
Monroe Power Plant
Monroe, Michigan

Date:
October 5-6, 2022

RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

Figure No. 4: USEPA Method 201A



USEPA Method 201A

DTE Monroe Power Plant
Dumper North & South, Cascade SV-D6
Monroe, Michigan

Project# 2205126

Date: October 4-6, 2022