DTE Energy
One Energy Plaza, Detroit, MI 48226-1279

DTE Energy

March 21, 2016
NRC3-16-0001

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

References: 1) Fermi 3
NRC Docket No. 52-033
NRC License No. NPF-95

Subject: DTE Electric Company Submittal of Application for Renewal of the Fermi 3 National Pollutant Discharge Elimination System (NPDES) Permit

On March 21, 2016, DTE Electric Company (DTE) submitted its application for renewal of the Fermi 3 NPDES permit to the Michigan Department of Environmental Quality (MDEQ). Section 3.0 of the Fermi 3 Environmental Protection Plan (EPP) requires that DTE provide a copy of the application for renewal of this permit to the NRC when it is submitted to the permitting agency (MDEQ). The purpose of this letter is to transmit the required copy of the renewal application.

Applications for NPDES permits and renewals are now submitted electronically to the MDEQ. The attachment to this letter contains a hardcopy version of the electronic submittal of the Fermi 3 NPDES permit renewal application.

If you have any questions, or need additional information, please contact Mr. Michael K. Brandon at (313) 235-0443.

Sincerely,

Peter W. Smith, Director
Nuclear Development – Licensing and Engineering
DTE Electric Company

D095
NRO

Attachment: Fermi 3 NPDES Permit Renewal Application

cc: Adrian Muniz, NRC Fermi 3 Project Manager
Mallecia Sutton, NRC Fermi 3 Environmental Project Manager
Fermi 2 Resident Inspector (w/o Attachment)
NRC Region III Regional Administrator (w/o Attachment)
NRC Region II Regional Administrator (w/o Attachment)
Supervisor, Electric Operators, Michigan Public Service Commission (w/o Attachment)
Michigan Department of Natural Resources and Environment
Radiological Protection Section (w/o Attachment)
Regina A. Borsh, Dominion Energy, Inc. (w/o Attachment)
Barry C. Bryant, Dominion Energy, Inc. (w/o Attachment)
Patricia L. Campbell, General Electric (w/o Attachment)

Fermi 3 NPDES Permit Renewal Application

(114 pages)

National Pollutant Discharge Elimination System (NPDES) Industrial/Commercial Application Form

version 1.7

(Submission #: 2CR-RKTN-J193, version 1)

PRINTED ON 3/21/2016

Summary

Submission #:	2CR-RKTN-J193	**Date Submitted:**	3/21/2016 2:23 PM
Form:	National Pollutant Discharge Elimination System (NPDES) Industrial/Commercial Application Form	**Status:**	Submitted
Applicant:	Nicholas	**Active Steps:**	
Reference #:			
Description:	National Pollutant Discharge Elimination System (NPDES) Industrial/Commercial Application Form		

Notes

There are currently no Submission Notes.

Details

Applicant Information

The name of the company OR individual requesting any type of authorization must be provided as part of the contact information below.

Applicant Information

Contact

Prefix: NONE PROVIDED
First Name: Nicholas
Last Name: Chuey

Company: DTE Energy, DTE Electric Company
Title: Senior Environmental Engineer
Ext: NONE PROVIDED

Phone: 3132355569
FAX: NONE PROVIDED
Email: chueyn@dteenergy.com

Address

Address Line 1: One Energy Plaza

Address Line 2: Room 655 G.O.

Description: NONE PROVIDED

City: Detroit
State: MI
Postal Code: 48226

Country: US

Section IA. – General Facility Information (Required of All Applicants)

SITE ID/DEQ Reference Number (pre-populated, if applicable)
7744842549919779824

SITE or FACILITY NAME
DECO-Fermi 3 Power Plt

Section I shall be completed by all permit applicants. Instructions for completing Section I are on Page 2 of the Appendix.

Appendix to the Permit Application

NPDES Permit Number
NONE PROVIDED

Facility Location
41.960833,-83.261944

Facility Name 1
DTE Energy, DTE Electric Company

Facility Name 2
DECO - Fermi 3 Power Plant

Facility Name 3
NONE PROVIDED

Site/Facility Physical Address
6400 North Dixie Highway
Newport, MI 48166

Facility Website Address
NONE PROVIDED

Section IB. – General Facility Contacts (Required of All Applicants) (1)

4. CONTACTS

Provide contact information for each person as required for each area; a person may be identified for more than one category.

Contact
Annual Permit Billing Contact
Application Contact
Storm Water Billing Contact

Section I shall be completed by all permit applicants. Instructions for completing Section I are on Page 2 of the Appendix.

Appendix to the Permit Application

Contact

Contact

Prefix: Mr.

First Name: Nicholas

Last Name: Chuey

Company: DTE Energy Corporate Services LLC

Title: Senior Environmental Engineer

Ext: NONE PROVIDED

Phone: 3132355569

FAX: NONE PROVIDED

Email: chueyn@dteenergy.com

Address

Address Line 1: One Energy Plaza

Address Line 2: Room 655 G.O.

Description: NONE PROVIDED

City: Detroit

State: MI

Postal Code: 48226

Country: US

Section IB. – General Facility Contacts (Required of All Applicants) (2)

4. CONTACTS

Provide contact information for each person as required for each area; a person may be identified for more than one category.

Contact
Certified Operator
DMR Contact
SW Operator

Section I shall be completed by all permit applicants. Instructions for completing Section I are on Page 2 of the Appendix.

Appendix to the Permit Application

Contact

Contact

Prefix: NONE PROVIDED

First Name: TBD

Last Name: TBD

Company: NONE PROVIDED **Title:** TBD **Ext:** NONE PROVIDED

Phone: 3132355569 **FAX:** NONE PROVIDED **Email:** chueyn@dteenergy.com

Address

Address Line 1: One Energy Plaza

Address Line 2: NONE PROVIDED

Description: NONE PROVIDED

City: Detroit **State:** MI **Postal Code:** 48226

Country: USA

Section IB. – General Facility Contacts (Required of All Applicants) (3)

4. CONTACTS

Provide contact information for each person as required for each area; a person may be identified for more than one category.

Contact
Other

Section I shall be completed by all permit applicants. Instructions for completing Section I are on Page 2 of the Appendix.

Appendix to the Permit Application

Contact

Contact

Prefix: Mr. **First Name:** Michael **Last Name:** Brandon

Company: DTE Electric Company **Title:** Manager - Licensing **Ext:** NONE PROVIDED

Phone: 3132350443 **FAX:** NONE PROVIDED **Email:** brandonm@dteenergy.com

Address

Address Line 1: One Energy Plaza

Address Line 2: Room 509 G.O.

Description: NONE PROVIDED

City: Detroit **State:** MI **Postal Code:** 48226

Country: USA

Section IC. – General Facility Information (Required of All Applicants) (1)

5. RULE 98 – ANTIDEGRADATION REQUIREMENTS.

In accordance with Rule 323.1098 of the Michigan Water Quality Standards, the applicant is required to submit an Antidegradation Demonstration for any new or increased loading of pollutants to the surface waters of the state. An Antidegradation Demonstration must contain the information specified in Rule 1098, outlined on Pages 8-9 of the Appendix. For assistance in completing this item, contact the Permits Section.

Appendix to the Permit Application

ANTIDEGRADATION REQUIREMENTS Attachment - Attachment(s)
NONE PROVIDED
Comment: NONE PROVIDED

Will this discharge be an increased loading of pollutants to the surface waters of the state?
No (You may skip the next two questions)

Select one of the following.

Select all that apply

A) A short-term (weeks to months) or temporary lowering of water quality B) Bypasses that are not prohibited by regulations set forth in 40 CFR 122.41(m) C) Response actions undertaken to alleviate a release of pollutants into the environment that may pose an imminent and substantial danger to the public health or welfare D) Discharges of pollutant quantities from the intake water at a facility if the intake and discharge are to the same body of water E) Increases in flow at a POTW if the increase is within the design flow of the facility, there is no increased loading of BCCs that are not specifically limited in the current permit, and there is no significant change expected in the characteristics of the wastewater collected F) Intermittent increased loading related to wet-weather conditions G) New or increased loading due to DEQ-approved controls related to wet-weather conditions H) Discharges authorized by Certificates of Coverage (COC) and Notices of Coverage I) Increased loadings within the authorized levels of a limit in an existing control document, except those loadings that result from actions by the permittee that would otherwise require submittal of an increased use request J) Increased loadings of a pollutant which do not involve Bioaccumulative Chemicals of Concern and which use less than 10 percent of the unused loading capacity that exists at the time of the request

Select all that apply
NONE PROVIDED

6. ADDITIONAL FACILITY LOCATION INFORMATION.

Local Unit of Government (LUG)
Frenchtown Charter Township

LUG Contact E-Mail Address
jim@frenchtownchartertwp.org

Private (French) Land Claim
NONE PROVIDED

7. CERTIFIED OPERATOR

Does the facility have a DEQ-certified operator at the appropriate level?
No

CERTIFIED OPERATOR

Contact

Prefix: NONE PROVIDED	**First Name:** TBD	**Last Name:** TBD
Company: DTE Electric Company	**Title:** TBD	**Ext:** NONE PROVIDED
Phone: 3132355569	**FAX:** NONE PROVIDED	**Email:** chueyn@dteenergy.com

Address

Address Line 1: 6400 North Dixie Highway

Address Line 2: NONE PROVIDED

Description: NONE PROVIDED

City: Newport **State:** MI **Postal Code:** 48166

Country: USA

Certification Number

TBD

Certification Classification(s)

TBD

9. OTHER ENVIRONMENTAL PERMITS

Provide the information requested in the table for any other federal, state, or local environmental permits in effect or applied for at the time of submittal of this Application, including, but not limited to, permits issued under any of the following programs: Air Pollution Control, Hazardous Waste Management, Wetlands Protection, Soil Erosion and Sedimentation Control, and other NPDES permits.

Table Data

Issuing Agency	Permit or COC Number	Permit Type
MDEQ	10-58-0011-P	Parts 303 & 325

10. WATER FLOW DIAGRAM AND NARRATIVE DESCRIPTION

Provide a flow diagram (using 8½" x 11" paper if possible) and a narrative description that explains the diagram. The diagram should show the wastewater flow through the facility (from intake through discharge), including all processes, treatment units, including any lagoons or ponds (lagoon / pond construction and liner information should be included) used for wastewater treatment or storage (identify treatment units that operate intermittently), and bypass piping. Show all operations contributing wastewater and the locations of flow meters, chemical feeds, and monitoring and discharge points. The water balance shall show the daily average flow rates at the intake and discharge points, and approximate daily flow rates between treatment units, including influent and treatment rates. Use actual measurements whenever available, otherwise use the best estimate. Show all significant losses of water to products, atmosphere, and discharge. In addition, provide a flow diagram for any storm water discharges from secondary structures that are required by state or federal law and for storm water runoff from any Site of Environmental Contamination, pursuant to Part 201 of the NREPA. Do not send blueprints. Provide black-and-white reproducible diagrams. Treatment Works Treating Domestic Sewage – The narrative description shall briefly describe the history of the wastewater treatment facility and collection system, including the initial construction, facility improvements, future plans for upgrade, location of all constructed emergency overflows, and other pertinent information. Industrial / Commercial Facilities – The diagram shall include all operations contributing wastewater, including process and production areas, sanitary flows, cooling water, and storm water runoff. Include a narrative that provides a brief description of the nature of the business and the manufacturing processes. Concentrated Animal Feeding Operations – Refer to the requirements set forth in Section V.

10. WATER FLOW DIAGRAM AND NARRATIVE DESCRIPTION - Attachment(s)

1.C.10 Water Use Diagram a.pdf

1.C.10 Water Use Narrative & Supplemental Information.pdf

Comment: NONE PROVIDED

11. MAP OF FACILITY AND DISCHARGE LOCATION - Attachment(s)

1.C.11 Map of Facility and Discharge Loc.pdf

Comment: NONE PROVIDED

12. CONTRACT LABORATORIES THAT PROVIDE ANALYTICAL SUPPORT

Provide the name and address of each contract laboratory or consulting firm that performed any analyses submitted as part of this Application. To add additional laboratory click the + at the top of the page.

Laboratory Name

Trimatrix Laboratories, Inc.

Laboratory Address

Section I.C.10 - Fermi 3 Water Use Diagram

Figure 3.3-1, Fermi 3 Environmental Report, Rev. 2
(following 3 pages: 3-21 through 3-23)

Figure 3.3-1 Water Use Diagram (Sheet 1 of 3)

NOTE:
FOR FLOWS ASSOCIATED WITH NUMBERED WATER AVENUES, PLEASE SEE SHEET 2 OF THIS DRAWING.

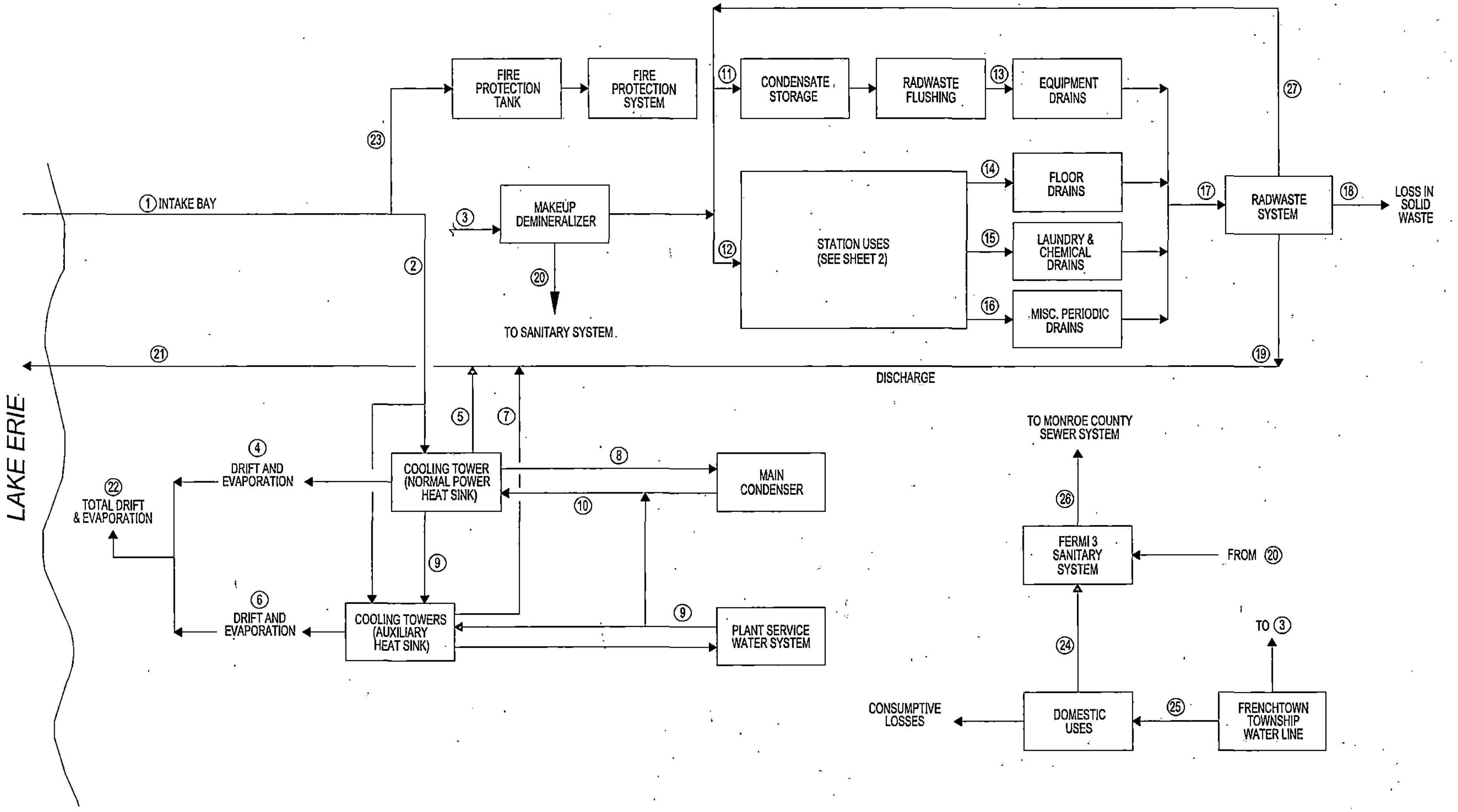


Figure 3.3-1 Water Use Diagram (Sheet 2 of 3)

Flow	Description	Value (gpm) Maximum Normal Power Operation[1] Discharged Radwaste	Value (gpm) Minimum Normal Power Operation[2] Discharged Radwaste	Value (gpm) Average Normal Power Operation[3] Discharged Radwaste	Value (gpm) Average Shutdown Operation Discharged Radwaste
1	Total Makeup Water Intake	34,264	23,780	28,993	1,166
2	Cooling Tower Makeup Water	34,234	23,750	28,963	1,136
3	Demineralizer Makeup Water	160	160	160	639
4	Normal Power Heat Sink Drift & Evaporation	17,124	11,882	14,488	0
5	Normal Power Heat Sink Discharge	17,110	11,868	14,474	0
6	Auxiliary Heat Sink Drift & Evaporation	0	0	0	569
7	Auxiliary Heat Sink Discharge	0	0	0	567
8	Inflow to Main Condenser	684,000	684,000	684,000	0
9	Total Plant Service Water System Flow	40,000	40,000	40,000	40,000
10	Total Circulating Water System Flow	724,000	724,000	724,000	0
11	Inflow to Condensate Storage	58	58	58	232
12	Inflow to Station Uses	49	49	49	196
13	Outflow to Equipment Drains	58	58	58	232
14	Outflow to Floor Drains	8	8	8	30
15	Outflow to Laundry & Chemical Drains	24	24	24	95
16	Outflow to Miscellaneous Periodic Drains	18	18	18	71
17	Inflow to the Radwaste System	107	107	107	428
18	Loss in Solid Radwaste	2	2	2	9
19	Radwaste Discharge (Liquid Radwaste Loss)	105	105	105	419
20	Makeup Demineralizer Blowdown	53	53	53	211
21	Total Discharge	17,215	11,973	14,579	987
22	Total Drift & Evaporation	17,124	11,882	14,488	569
23	Fire Protection Uses	30	30	30	30
24	Potable Water Discharge to Sewer	200	35	35	47
25	Domestic Uses	200	35	35	47
26	Total Discharge to Monroe County sewer system	253	88	88	258
27	Liquid Radwaste Recycled	0	0	0	0

Station Water Uses:

Standby Liquid Control System
Reactor Component Cooling Water System
Process Sampling System process use
HVAC system
Liquid Waste System chemical addition and line flushing
Turbine Component Cooling Water System
Auxiliary Boiler System
Isolation Condenser/Passive Containment Cooling Pool
Solid Waste System for line flushing
Chilled Water System
Post Accident Sampling station flushing

Figure 3.3-1 Water Use Diagram (Sheet 3 of 3)

Flow	Description	Value (gpm) Maximum Normal Power Operation[1] Recycled Radwaste	Value (gpm) Minimum Normal Power Operation[2] Recycled Radwaste	Value (gpm) Average Normal Power Operation[3] Recycled Radwaste	Value (gpm) Average Shutdown Operation Recycled Radwaste
1	Total Makeup Water Intake	34,264	23,780	28,993	1,166
2	Cooling Tower Makeup Water	34,234	23,750	28,963	1136
3	Demineralizer Makeup Water	3	3	3	13
4	Normal Power Heat Sink Drift & Evaporation	17,124	11,882	14,488	0
5	Normal Power Heat Sink Discharge	17,110	11,868	14,474	0
6	Auxiliary Heat Sink Drift & Evaporation	0	0	0	569
7	Auxiliary Heat Sink Discharge	0	0	0	567
8	Inflow to Main Condenser	684,000	684,000	684,000	0
9	Total Plant Service Water System Flow	40,000	40,000	40,000	40,000
10	Total Circulating Water System Flow	724,000	724,000	724,000	0
11	Inflow to Condensate Storage	58	58	58	232
12	Inflow to Station Uses	49	49	49	196
13	Outflow to Equipment Drains	58	58	58	232
14	Outflow to Floor Drains	8	8	8	30
15	Outflow to Laundry & Chemical Drains	24	24	24	95
16	Outflow to Miscellaneous Periodic Drains	18	18	18	71
17	Inflow to the Radwaste System	107	107	107	428
18	Loss in Solid Radwaste	2	2	2	9
19	Radwaste Discharge (Liquid Radwaste Loss)	0	0	0	0
20	Makeup Demineralizer Blowdown	1	1	1	4
21	Total Discharge	17,110	11,868	14,474	567
22	Total Drift & Evaporation	17,124	11,882	14,488	569
23	Fire Protection Uses	30	30	30	30
24	Potable Water Discharge to Sewer	200	35	35	47
25	Domestic Uses	200	35	35	47
26	Total Discharge to Monroe County sewer system	201	36	36	52
27	Liquid Radwaste Recycled	105	105	105	419

1. Summer months (Design/maximum)
2. Winter months (January/minimum)
3. Spring and fall months (Average)

Section I.C.10 - Water Use Narrative and Supplemental Information

Water Use Narrative (following 1 page)

Section 3.3 - Plant Water Use, Fermi 3 Environmental Report, Rev. 2
(5 pages: 3-16 through 3-20)

Section 3.4 - Cooling System, Fermi 3 Environmental Report, Rev. 2
(13 pages: 3-24 through 3-36)

Section 3.6 - Nonradioactive Waste Systems, Fermi 3 Environmental Report, Rev. 2
(8 pages: 3-42 through 3-49)

Section 1.C.10 – Fermi 3 Water Use Narrative

Fermi 3 Power Plant will be a closed-cycle steam electric power generation unit with a net electrical output of approximately 1535 ± 50 MWe. Lake Erie will provide water for cooling and operational uses. Potable water will be used as makeup water for the demineralizer and for various station uses. Attachment 2 details the water uses, discharges and recycled flows.

The predominant uses of Lake Erie water at the Fermi 3 Power Plant will be as cooling water in the Circulating Water System and in the Plant Service Water System. The maximum intake has been calculated to be approximately 50 million gallons per day (MGD). A small portion of the intake water, 43,200 gallons per day (gpd), will be used in the Fire Protection System. The maximum daily discharge to Lake Erie, which includes cooling water and miscellaneous low volume wastes, has been calculated to be approximately 25 MGD. The low volume wastes will include equipment drains and floor drains that will be treated in the plant's Radwaste System, with a calculated discharge of about 0.2 MGD. The low volume wastes that cannot be treated and discharged from the Radwaste System will be disposed of in accordance with applicable local, state and federal regulations. Approximately half (~ 25MGD) of the cooling and plant service water is used consumptively, and will be discharged as drift and evaporation via the cooling tower and reservoir.

A detailed description of all plant water uses and discharges are contained in the Fermi 3 Combined License Application on pages 3-16 to 3-23, 3-24 to 3-36, and 3-42 to 3-49, all of which are attached.

3.3 Plant Water Use

Fermi 3 requires water for cooling and operational uses. Lake Erie provides water for plant cooling, including the normal power heat sink (NPHS) and auxiliary heat sink (AHS).

Subsection 3.3.1 discusses water consumption and discharges by the various plant components and systems, including the NPHS, AHS, Ultimate Heat Sink (UHS), potable water and sanitary waste, demineralized water, and fire protection. Additionally, Figure 3.3-1 presents a water use diagram for Fermi 3 outlining normal plant power operating conditions as well as non-power/shutdown conditions.

Subsection 3.3.2 discusses methods of water treatment used in the plant and discharged back to the receiving water body (i.e., Lake Erie). Plant service water treatment is discussed in this subsection and also further discussed in FSAR Subsection 9.2.1. Makeup water is also discussed in this subsection, as well as in FSAR Subsection 9.2.3.

3.3.1 **Water Consumption**

Plant water systems discussed in this subsection include the CIRC, PSWS, Station Water System (SWS), Potable Water System (PWS), Sanitary Waste Discharge System (SWDS), demineralized system, and Fire Protection System (FPS). The CIRC, PSWS, SWS, and FPS share a common intake from Lake Erie. Potable water is being supplied for the demineralized system from the Frenchtown Township municipal water supply. The design of the intake structure is based on record low water levels for Lake Erie, thus even under these conditions plant operation is able to carry on normally. Under normal conditions, Lake Erie water levels remain relatively constant except during extreme seiche events. The intake structure is not designed for extreme seiche events. During extreme seiche events, the water supply to the SWS could be degraded and the unit operationally controlled to limit makeup requirements. The Ultimate Heat Sink (UHS) for Fermi 3, described in FSAR Subsection 9.2.5, contains a separate water supply for safety-related cooling. Lake Erie is not used for safety-related water withdrawal for Fermi 3. Therefore, a seiche event will not affect a safety-related water supply for Fermi 3. This is discussed further in Subsection 3.4.2.1. The SWS provides makeup water to the NPHS and AHS cooling tower basins, and the FPS. The SWS is further described in FSAR Subsection 9.2.10. Various drains in the plant produce effluent liquid radwaste. This flow can either be treated and discharged to Lake Erie, or recycled. Blowdown from several sources, including both NPHS and AHS cooling towers; optional treated liquid radwaste, including chemical waste is combined and shares a common discharge to Lake Erie. The demineralized water waste is discharged to the Fermi 3 SWDS.

3.3.1.1 **Circulating Water System and Normal Power Heat Sink**

The CIRC is used to remove the waste heat from the main condenser discharging to the NPHS. A more detailed description of the CIRC is presented in Subsection 3.4.1.1. During normal operation the NPHS may provide cooling to the AHS loads. Makeup water to the NPHS cooling tower replenishes water losses due to evaporation, drift, and blowdown. Figure 3.3-1 shows the water use (makeup, blowdown, evaporation, etc.) by the NPHS for Fermi 3. Figure 3.3-1 describes the flow rates for power and shutdown operations. Power operations are further subdivided into the maximum heat load (expected during summer months), minimum heat load (expected during the winter months), and the average heat load (expected during the spring and fall months). The maximum makeup water flow is approximately 34,000 gpm for the NPHS.

The maximum blowdown from the NPHS cooling tower is approximately 17,000 gpm, and the minimum blowdown is approximately 12,000 gpm. The annual average blowdown flow is approximately 14,000 gpm. The maximum blowdown value represents the design condition, at the warmest temperatures. The minimum value represents winter conditions under the coldest temperatures, which occur in the month of January. The average value represents the average of all monthly flows; this value would be representative of flows in the spring or fall months. Table 3.4-1 outlines the monthly variation in evaporation, blowdown and makeup flows. The blowdown is directed to an outfall that discharges into Lake Erie.

3.3.1.2 **Plant Service Water System and Auxiliary Heat Sink**

The PSWS provides nonsafety-related cooling to the Reactor Building and Turbine Building systems. During operation of Fermi 3, PSWS cooling is provided by either the NPHS cooling tower or the AHS cooling towers. While in shutdown condition, the PSWS is cooled by the AHS cooling towers. The AHS requires makeup water to replenish water losses due to evaporation, drift, and blowdown. Blowdown from the AHS is mixed with the NPHS cooling tower blowdown. The flow requirements for makeup flow for the PSWS are a maximum of approximately 1100 gpm. The makeup water requirements are included in the flow values stated in Subsection 3.3.1.1. A more detailed description of the PSWS is provided in Subsection 3.4.1.3.

3.3.1.3 **Ultimate Heat Sink**

The ESBWR design has no separate emergency water cooling system. The UHS function is provided by safety systems integral and interior to the reactor plant. These systems ultimately use the atmosphere as the eventual heat sink. These systems do not rely on cooling towers, basins, or cooling water intake/discharge structures external to the reactor plant. (Reference 3.3-1)

3.3.1.4 **Potable Water and Sanitary Waste Discharge System**

The PWS and SWDS are designed to provide potable water supply and sewage treatment necessary for normal plant operation and shutdown periods. The source of the potable water supply is the Frenchtown Township municipal water system. The PWS is designed to supply up to 200 gpm of potable water during peak demand period with a monthly average usage of 35 gpm, as outlined on Figure 3.3-1. The Demineralized water waste and the effluent from the auxiliary boiler are routed to the Fermi 3 SWDS. Sanitary waste is routed to the Frenchtown Township Sewage Treatment Facility.

3.3.1.5 **Demineralized Water**

The required flow for makeup water to the demineralization subsystem when using the option of discharging liquid radwaste to Lake Erie, is expected to be a monthly average of 160 gpm, with short term maximum flow expected to be 639 gpm during outages. The required flow for makeup water to the demineralization subsystem when using the option of recycling liquid radwaste is bounded by the makeup flow with liquid radwaste discharged to Lake Erie. The option to operate with liquid radwaste recycled supports zero discharge of liquid radwaste. The makeup water is supplied from the Frenchtown Township water line as depicted on Figure 3.3-1. Flows for various modes of operation, as well as liquid radwaste effluent are also outlined on this figure.

3.3.1.6 **Fire Protection**

Fire protection water is provided to the FPS from onsite storage tanks that have makeup supplied from the SWS. After the FPS is initially filled, maximum usage is about 30 gpm for activities such as maintaining the system filled and pressurized and periodic testing.

3.3.2 **Water Treatment**

As outlined in Subsection 3.3.1, plant makeup water is taken from a common intake from Lake Erie. This intake is treated with sodium hypochlorite, a biocide/algaecide, thus disseminating to the appropriate water use systems. Sodium hypochlorite is used to eradicate the presence of biologicals in the systems, both in the form of plant life such as algae and animals such as zebra mussels and corbicula. During select periods in spring and fall, sodium hypochlorite levels are elevated to ensure the absence of zebra mussels.

The SWS supplies makeup water to the PSWS, CIRC, and FPS. There are viable treatment options for mussel control in these systems, which include: chlorination and thermal shock treatment. The chlorination option will consist of isolation of the PSWS and elevation of chlorine levels within the PSWS for a specific duration of time. This will cause the eradication of any zebra mussel population within the system. Upon returning the PSWS to service, the chlorinated PSWS water will be combined with the much larger portion of blowdown from the NPHS, thus diluting the chlorine to acceptable discharge levels. The thermal shock treatment option would consist of raising the temperature of the CIRC to greater than 95°F for at least 60 minutes. This method is less practical for the PSWS due to system thermal limitations.

3.3.2.1 **Station Water System**

The SWS draws water from Lake Erie as the source of makeup to the plant. The SWS is described in FSAR Subsection 9.2.10. Makeup water to the plant is treated with a biocide, sodium hypochlorite, as it enters through the SWS pump house intake. Water treatment chemistry is provided in Table 3.3-1..

3.3.2.2 **Circulating Water**

The CIRC provides cooling water for removal of the power cycle heat from the main condensers and transfers this heat to the NPHS. The CIRC is described in FSAR Section 10.4. Chemical additions are made to both influent and effluent flows. System chemistry control is provided by the incorporation of an injection system at the inlet to the condenser that introduces a biocide, corrosion inhibitor, and scale inhibitor. The necessity of using a biocide is outlined in Subsection 3.4.2.2. The corrosion inhibitor is needed in order to reduce the effects of corrosion on the piping and condenser. The scale inhibitor is needed to reduce the build-up of scaling that could affect the efficiency of the condenser. Quantities and identification of these various chemicals are shown in Table 3.3-1. Discharge must also be treated before exiting to Lake Erie. Dehalogenation must occur in order to maintain oxidant within reasonable discharge limits. As discussed in Section 1.2, permits, e.g., National Pollution Discharge Elimination System (NPDES) permit and Section 401 Water Quality Certification, will be obtained for the discharge from Fermi 3. Additionally, Section 5.2 provides a discussion on effluent limitations and permit conditions.

3.3.2.3 **Plant Service Water System**

PSWS chemistry control is maintained in a similar fashion to that of the CIRC, i.e., with the addition of biocide, corrosion inhibitor, scale inhibitor, as well as dispersant chemicals to break up sedimentation when lake water is highly turbid. Water treatment chemistry is provided in Table 3.3-1. There are no expected changes to water treatment operating procedures based on seasonal variations. The PSWS is described in FSAR Subsection 9.2.1.

3.3.2.4 **Potable Water and Sanitary Waste**

The potable water for the Fermi site is supplied from the Frenchtown Township municipal water system. This water supply does not require any additional chemical treatment or additives. The sanitary waste system effluent is discharged to the Frenchtown Township Sewage Treatment Facility without addition of chemical treatments. FSAR Subsection 9.2.4 provides further description of the PWS and SWDS.

3.3.3 **References**

3.3-1 GE-Hitachi Nuclear Energy, "ESBWR Design Control Document – Tier 2," Revision 6, August 2009.

Table 3.3-1 Chemical Additives for Water Treatment

System/Injection Point	Chemical		Approximate Usage
Circulating Water System/ Cooling tower basin/ Station Water System	Biocide/Algaecide – Sodium Hypochlorite (15%)	1200 gal/week	Normal Power Operating Conditions/ Shutdown Conditions
Circulating Water System/ Makeup water line discharge	Corrosion Inhibitor - Sodium Silicate	400 gal/day	Normal Power Operating Conditions/ Shutdown Conditions
Circulating Water System / Makeup water line discharge	Scale Inhibitor/Dispersant	220 gal/day	Normal Power Operating Conditions/ Shutdown Conditions
Circulating Water System blowdown	Dehalogenation – Sodium Bisulfite	175 gal/day	Normal Power Operating Conditions/ Shutdown Conditions

3.4 Cooling System

Fermi 3 requires cooling water for the normal power heat sink in the CIRC and the auxiliary heat sink in the PSWS. Thermal energy is transferred via air or water through these heat sinks. Major system components include the intake and discharge portions.

Subsection 3.4.1 gives a description of the various cooling water systems and the operational modes for Fermi 3. The NPHS is discussed in this section, as well as in Section 3.3 and Subsection 5.3.2. Discharge to the air is also discussed in this section, as well as in Subsection 5.3.3.

Subsection 3.4.2 provides a description of the major components of the systems. Major components are contained within the intake structure and discharge piping. Further clarification of the intake structure is provided on Figure 3.4-1 and Figure 3.4-2. Additional discussion on the impacts of the discharge can be found in Subsection 5.3.2 and Subsection 5.3.3.

3.4.1 Description and Operational Modes

3.4.1.1 Circulating Water System

The CIRC provides cooling water during startup, normal plant operations, and hot shutdown for removal of power cycle heat from the main condensers and rejects this heat to the NPHS. The NPHS is comprised of a natural draft cooling tower. The main condensers contribute the majority of the heat to the NPHS with additional heat load introduced by the PSWS.

The main condenser rejects heat to the atmosphere at a rate of approximately 9.883×10^9 Btu/hr during normal full-power operation. Water from the NPHS basin is pumped through the main condenser and then back to the cooling tower where heat, transferred to the cooling water in the main condenser, is dissipated to the environment (the atmosphere) by evaporation.

As a result of the heat dissipation process, some water is evaporated. This results in an increase in the solids level in the NPHS cooling tower. To control solids levels or concentrations, a portion of the recirculated water is discharged. In addition to this blowdown from the CIRC, and evaporative losses, a small percentage of water in the form of droplets (drift) is lost from the cooling tower. Water pumped from Lake Erie via the intake structure is used to replace water lost by evaporation, drift and blowdown from the cooling tower. Blowdown water is returned to Lake Erie via an outfall into the lake (Subsection 3.4.2). A portion of the waste heat is thus dissipated to Lake Erie through the blowdown process.

The maximum, minimum and average Fermi 3 blowdown flow rates from the CIRC during normal full power operation are provided in Figure 3.3-1. Table 3.4-1 provides the monthly values for evaporation, blowdown, and makeup for the NPHS. The maximum temperature of the blowdown after passing through the NPHS is 86°F at the discharge to Lake Erie. The heat rejected to Lake Erie via blowdown is estimated based on these maximum blowdown flow and temperature conditions (Subsection 5.3.2). During other operating modes, heat dissipation to the environment is less than the bounding values for the normal full-power operational mode for the NPHS, except when the Turbine Bypass System (TBS) is in operation. In this condition, it is possible for the temperature of the discharge to rise to 96°F.

3.4.1.2 **Station Water System**

The SWS draws water from Lake Erie through an intake bay into the pump house located on the west shore of Lake Erie. The SWS provides makeup water to various plant systems. For example, the SWS provides makeup water to the NPHS cooling tower basin for the CIRC and to the AHS cooling tower basin for the PSWS. The pump configuration consists of three 50 percent capacity Plant Cooling Tower Makeup System (PCTMS) pumps that supply makeup to the cooling towers, and two 100 percent capacity Pretreated Water Supply System (PWSS) pumps. The PWSS pumps are capable of supplying makeup to the FPS as well as the AHS in shutdown conditions. The PCTMS pump configuration allows for one pump to be out of service and the other two maintaining design flow. This is also discussed in Subsection 3.4.2.1 and FSAR Subsection 9.2.10. The AHS can be used in conjunction with the NPHS during normal power operation. However during certain shutdown conditions, heat rejection is performed entirely with the AHS. The AHS operates during startup, hot shutdown, stable shutdown, cold shutdown, and refueling.

3.4.1.3 **Plant Service Water System**

The PSWS provides cooling water to the Turbine Component Cooling Water System (TCCWS) heat exchangers and the Reactor Component Cooling Water System (RCCWS) heat exchangers and rejects the heat back to the NPHS and/or the AHS during normal power operations. During shutdown conditions, the heat is rejected to the AHS. Further discussion of the PSWS can be found in FSAR Subsection 9.2.1. A simplified flow diagram is provided in FSAR Figure 9.2-205. Subsection 3.3.1.2 further discusses flows associated with PSWS, and Figure 3.3-1 outlines flow paths and values for maximum, minimum and average normal power conditions and average shutdown conditions. Chemical treatment of the PSWS is discussed in Subsection 3.3.2.3 and Table 3.3-1.

3.4.1.4 **Ultimate Heat Sink**

The Fermi 3 ESBWR design has no separate emergency water cooling system. The UHS function is provided by safety systems integral and interior to the reactor plant. This system ultimately uses the atmosphere as the eventual heat sink. These systems do not have cooling towers, basins, or cooling water intake/discharge structures external to the reactor plant.

3.4.1.5 **Discharges to Lake Erie**

Lake Erie is subject to liquid discharges during plant operation. Discharge from the heat dissipation system consists of blowdown from the CIRC and PSWS, as well as optional treated liquid radwaste. The thermal aspect of the discharge is covered in this subsection. Section 3.5 and Section 3.6 complete the description of the discharge characteristics.

The rate of discharge into Lake Erie is constant under normal full power operating conditions. The discharge is approximately 17,000 gpm (Figure 3.3-1), with a maximum temperature of 86°F. Table 3.4-1 contains a summary of the monthly discharge temperatures. A discussion of thermal plume predictions is contained in Subsection 5.3.2. The discharge pipe is fortified with riprap to reduce the effects of scouring; additional discussion of scouring can be found in Subsection 5.3.2.1.2. The current NPDES permit for Fermi 2 (Permit No. MI0037028) was renewed in 2005 with an expiration date in 2009. As discussed in Section 1.2, permits, e.g., NPDES permit and Section 401 Water Quality Certification, will be obtained for the discharge from Fermi 3. The discharge of chemicals that have been added to various systems as treatments such as biocide, corrosion inhibitor, and scale inhibitor are closely monitored in the NPDES permit, as well as the presence of metals and the temperature of effluent flow. Section 3.6 provides discussion and comparison to regulatory limitations on effluent flow from Fermi 3.

3.4.1.6 **Discharges to Air**

At the normal full-power design condition, the natural draft tower requires a maximum of 5.6 x 10^7 cfm of ambient air to dissipate about 10.72 x 10^9 Btu/hr of waste heat from the natural draft cooling tower at Fermi 3. Heat dissipated by the natural draft cooling tower includes contributions from the main condenser and the PSWS system. The heat load used for determining parameters associated with the natural draft cooling tower is conservative relative to the design heat loads (Reference 3.4-2).

The cooling tower used at Fermi 3 provides the only plant effluents with a potential for influencing local meteorology. The effluent types of concern are commonly described as visible plumes (fog) and cooling tower drift. Cooling tower drift is limited to no greater than 0.001 percent of the total tower water flow. Drift eliminators exist as a design feature of the natural draft cooling tower meant to reduce the volume of drift from the tower. These effluent types and their impacts on local weather are described in Subsection 5.3.3.

In addition to the heat discharged to the air, auditory discharges are considered. The noise from the NPHS is primarily the result of water splash. The sound level is estimated as being between 55 and 60 dBA at 1000 ft. Subsection 5.3.4 also discusses the estimated noise levels from the NPHS operation. The noise generated by the AHS is from water splash and fan motors. The sound level for the AHS is estimated at between 55 and 60 dBA at 1000 ft. (Reference 3.4-1)

3.4.1.7 **Operational Modes**

For the purposes of the design of the cooling systems, Fermi 3 is based on an estimated capacity factor of 96 percent (annualized). This considers a 24 month fuel cycle combined with an assumed 30-day refueling outage period. On a long term average, the heat load is 10.29 x 10^9 Btu/hr, which is 96 percent of the rated head load of 10.72 x 10^9 Btu/hr. There are six modes of plant operation; normal full-power operation, startup, hot shutdown, stable shutdown, cold shutdown and refueling. These can be generally grouped into two predominant modes, normal full power operation and shutdown operation. During normal full power operation, the NPHS, or a combination of the NPHS and the AHS, handle the heat dissipation to the atmosphere. Under normal full power operation, the heat load is rejected either entirely by the NPHS or by both the NPHS and the AHS. The AHS is capable of exchanging 2.98 x 10^8 Btu/hr. During shutdown operations, approximately 4 percent of plant operation annually, the AHS handles heat dissipation to the atmosphere.

3.4.2 **Component Description**

3.4.2.1 **Intake System**

The lake water intake and makeup water system is composed of two main parts: a wet pit pump house structure containing five vertical wet pit pumps, trash racks and traveling screens, and piping routed from the pump house structure to the cooling tower basin and the plant.

The SWS draws lake water via an intake bay (Figure 3.4-1 and Figure 3.4-2) from Lake Erie. This inlet bay is formed by two rock groins that extend 600 ft into Lake Erie. The intake bay is periodically dredged to maintain appropriate operating conditions.

At the inlet to the pump house structure a trash rack is positioned which is equipped with a trash rake. Trash collected from the trash racks is disposed of. There are three dual flow traveling screens arranged side by side to further prevent debris from entering the pump house. Aquatic organisms are first washed from the traveling screens using low pressure water spray. The remaining trash is then removed using high pressure wash sprays. Strainers are in place at the pump discharge and strainer backwash is directed back to Lake Erie. Strainer backwash is controlled to ensure that the limits of the applicable NPDES permit are adhered to.

The SWS pumps take suction from an intake bay through the makeup water pump house. The three PCTMS pumps supply makeup water to the cooling tower basins. Each pump has capacity to supply 50 percent of the total flow requirements. Two pumps are normally operated and the third is reserved for standby operation. This ensures makeup flow can be delivered in the event that one pump is out of service. The two operating pumps are capable of delivering the maximum cooling tower makeup water requirement of approximately 34,000 gpm, (Figure 3.3-1). The two PWSS pumps supply makeup water to the FPS under normal power operating conditions. They are 100 percent capacity pumps capable of supplying the necessary makeup water to the AHS and FPS in shutdown conditions.

The velocity of the water flowing through the dual flow intake traveling screens is approximately 0.5 fps at record low lake water levels, and no more than 0.5 fps under all operating conditions, as required by Section 316(b) of the Clean Water Act. The mesh size on each traveling screen is ⅜-inch. Each screen is capable of handling approximately 20,000 gpm of flow. The flow is designed to be sufficiently low that fish are not caught or trapped against the traveling screens. Fish which have entered the intake bay to this point are free to return to the lake in the same way they came. The pump house intake structure is sized such that the formation of vortices or other abnormal flow conditions that would interfere with the operation of the pumps is minimized. If fouling occurs, the screens are cleaned by backwashing. The formation of frazil ice on the screens is prevented by the low intake flow rate and by recirculating warmed water that has been rerouted from the discharge. A profile view of the intake screens and pumps suction is shown on Figure 3.4-2. This system is designed such that the intake structure has a minimal impact on the wildlife present in Lake Erie. This is consistent with good engineering design and environmental practices.

The addition of a biocide/algaecide, sodium hypochlorite, takes place as water enters the pump house structure. Once the water has passed through the trash rack and the traveling screens, a diffuser injects the biocide into the flow before the flow proceeds into the pump suction. Further chemical treatments are discussed in Subsection 3.3.2.

The elevation reference in use at Fermi is NAVD88. The elevation of the bottom of the intake bay at the entrance to the pump house is 559 ft. The record low level of Lake Erie water is 563'-11" and the record high level is 576'-6". The elevation of the base of the bay at the location of the pump suction is 553 ft. This is more than 10 ft below the record low water level for Lake Erie, thus pump suction should not be a concern. Impacts to SWS pump suction due to seiche events are discussed in Subsection 3.3.1.

3.4.2.2 **Discharge System**

Dilution and dissipation of the discharge heat as well as other effluent constituents are affected by both the design of the discharge and the flow characteristics of the receiving water, in this case Lake Erie. Normal plant effluent flow from all sources (cooling tower blowdown, and optional treated liquid radwaste) is approximately 17,000 gpm. The NPHS cooling tower blowdown is the major contributor to the total flow, and its maximum return temperature is estimated at 86°F and the average temperature is 68°F. Table 3.4-1 contains the monthly discharge flow rates and the discharge temperatures (cold water temperature) to Lake Erie. Figure 3.4-4 and Figure 3.4-5 are used in the development of Table 3.4-1. The temperature rise across the main condenser is 31.2°F.

The 4-ft diameter discharge pipe is located approximately 1300 ft into Lake Erie to avoid recirculation. Another consideration in the length of the discharge pipe was to preclude the discharge plume from intruding on environmentally sensitive onsite areas (such as wetlands) during wind-driven rises in Lake Erie water level (seiche events). The pipe is buried in the bank as it is routed into Lake Erie where the discharge is located, below the water surface, see Figure 5.3-1. The pipe discharges through a diffuser, as described in Subsection 5.3.2.1.1.1. The analysis of the thermal plume that results from the discharge is discussed in Subsection 5.3.2.1. The analysis includes consideration of seiche events. As discussed in Subsection 3.3.1 and Subsection 5.3.2.1, due to potential for the water supply to the SWS to be degraded during extreme seiche events, the unit could be operationally controlled to limit makeup water requirements. These seiche events are relatively short-lived. As part of the operational controls in response to an extreme seiche event, the discharge could be reduced and or secured.

For a total discharge flow rate of approximately 17,000 gpm, the exit jet velocity is approximately 8.5 fps. The submerged jet mixes rapidly with the ambient lake water, accompanied by a reduction of momentum and kinetic energy through turbulent action. The environmental impact of discharged heat on Lake Erie is discussed in Subsection 5.3.2. The use of cooling towers for Fermi 3 provides good engineering design and represents the best technology available under Phase I of Section 316(a) of the Clean Water Act and also acts to greatly reduce the thermal loading to Lake Erie. Discharges from the AHS are directed to the CIRC basin. As shown in Figure 3.3-1, the discharge from the AHS is small in comparison to the NPHS discharge (less than 5 percent). When the

PSWS is operating without the CIRC operating, discharges from the AHS are controlled to ensure that the resultant thermal plume is bounded by the thermal plume from operating the NPHS.

3.4.2.3 **Heat Dissipation System**

The main source of heat dissipation is the NPHS. The NPHS is a natural draft cooling tower, as shown on Figure 3.4-3. The AHS consists of two mechanical draft cooling towers. The AHS is further discussed in FSAR Subsection 9.2.1.

Makeup flow to the NPHS cooling tower basin is supplied by the SWS through the intake structure located on Lake Erie. The NPHS is located approximately 2200 ft from the pump house intake structure. At the cooling tower basin, there are four CIRC pumps, each 25 percent capacity, which supply a total flow of 744,000 gpm. The flow is directed to the main condenser, and is then directed back to the cooling towers so that the heat can be rejected to the atmosphere. The cooling tower basin is located approximately 1100 ft from the main condenser.

The NPHS cooling tower discharges water to the basin, which receives makeup from Lake Erie. Intake water temperatures from Lake Erie can be seen in Subsection 2.3.1, and meteorological data can be found in Section 2.7. Cooling tower performance curves for wet bulb temperature and evaporation, as well as wet bulb and cold water temperature are seen on Figure 3.4-4 and Figure 3.4-5. The information in Table 3.4-1 is developed using these cooling tower performance curves. The design of the heat dissipation system does not present any major departures from acceptable cooling system design practices, nor does it contain any additional components for consideration, beyond the NPHS in the form of a natural draft cooling tower. This system is consistent with good engineering practices.

The PSWS and AHS are discussed in FSAR Section 9.2 and FSAR Table 9.2-201.

3.4.3 **References**

3.4-1 Edison Electric Institute, “Electric Power Plant Environmental Noise Guide,” New York, 1978.

3.4-2 GE-Hitachi Nuclear Energy, “ESBWR Design Control Document – Tier 2,” Revision 6, August 2009.

Table 3.4-1 Monthly Cooling Tower Temperatures and Flows

Month	Wet Bulb Temperature (˚F)	Cold Water Temperature (˚F) *	Evaporation Flow rate (gpm)	Drift Flow rate (gpm)	Blowdown Flow rate (gpm)	Makeup Flow rate (gpm)
January	23.7	53.8	11875	7.2	11867.8	23750
February	25.7	55.3	12200	7.2	12192.8	24400
March	32.3	59.4	13100	7.2	13092.8	26200
April	42.6	66	14300	7.2	14292.8	28600
May	52.7	72.7	15400	7.2	15392.8	30800
June	61.7	78.4	16300	7.2	16292.8	32600
July	65.9	81.5	16750	7.2	16742.8	33500
August	65	80.8	16700	7.2	16692.8	33400
September	58.1	76.3	16100	7.2	16092.8	32200
October	47	68.8	14800	7.2	14792.8	29600
November	37.5	62.7	13750	7.2	13742.8	27500
December	28	56.6	12500	7.2	12492.8	25000

* Cold Water temperatures are calculated based on ambient wet bulb temperatures, however the temperature of the discharge from the NPHS cooling tower basin will be maintained at 55˚F or above.

Figure 3.4-1 Station Water Intake Structure

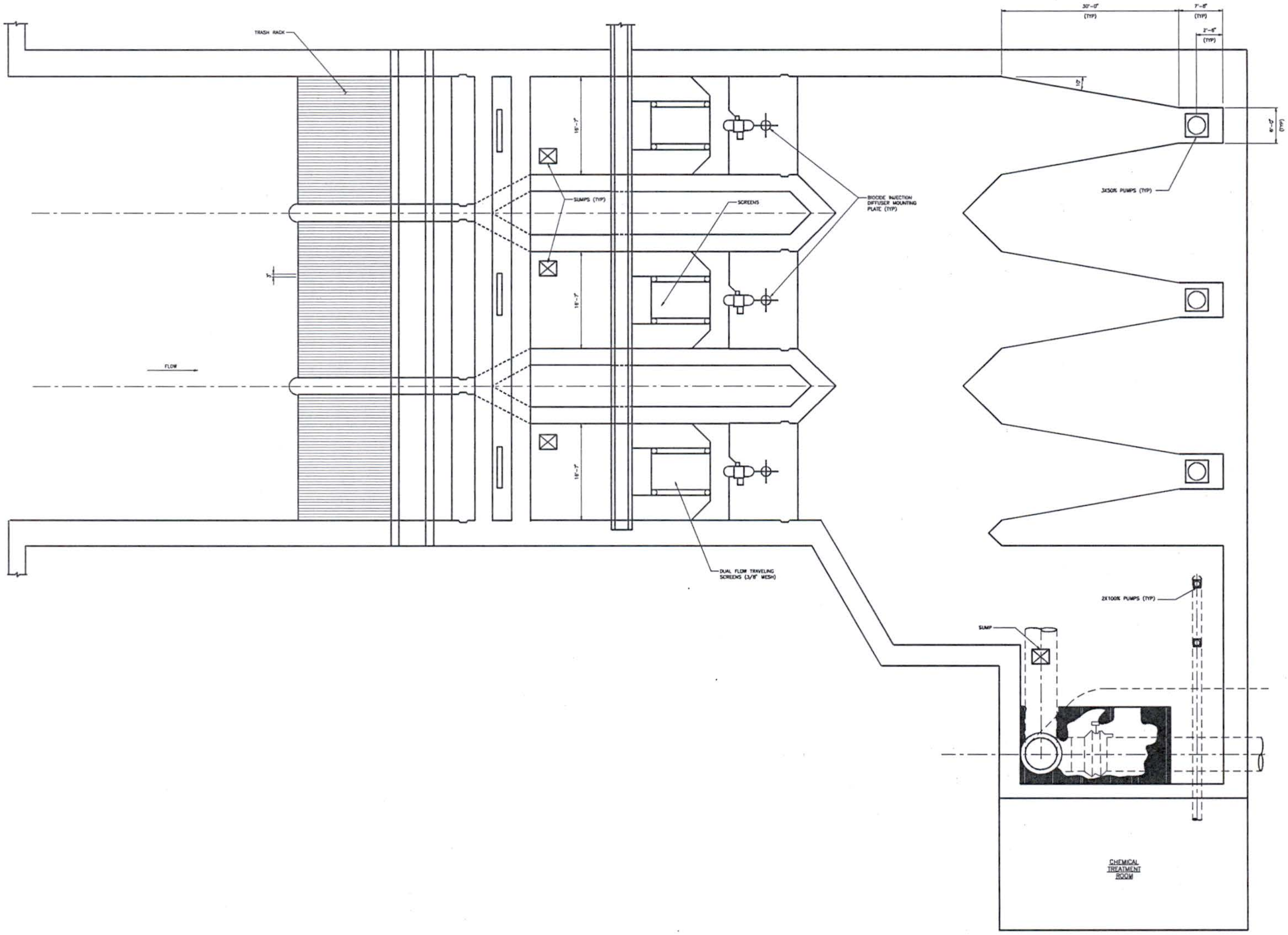


Figure 3.4-2 Station Water Intake Structure – Elevation View

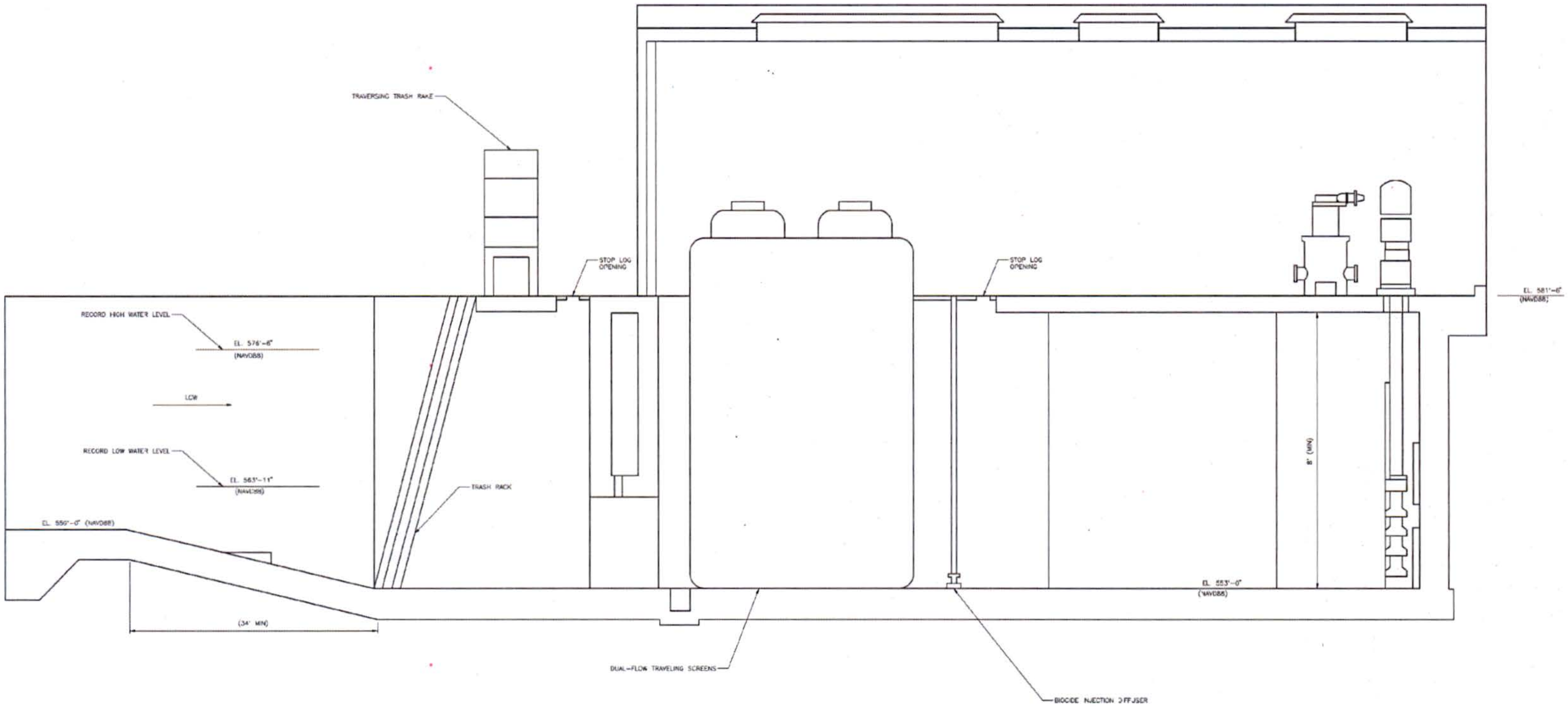


Figure 3.4-3 NPHS Cooling Tower

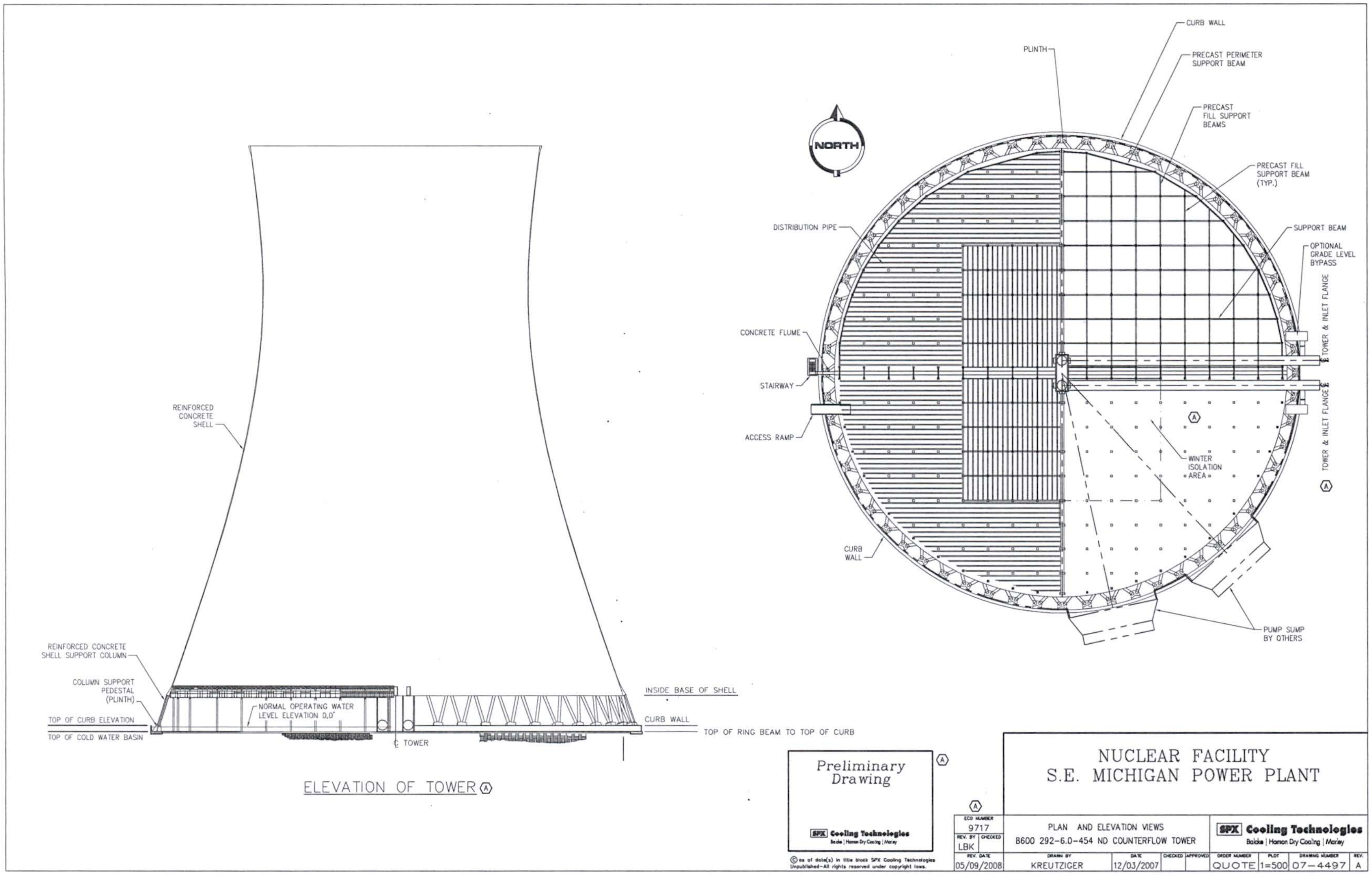
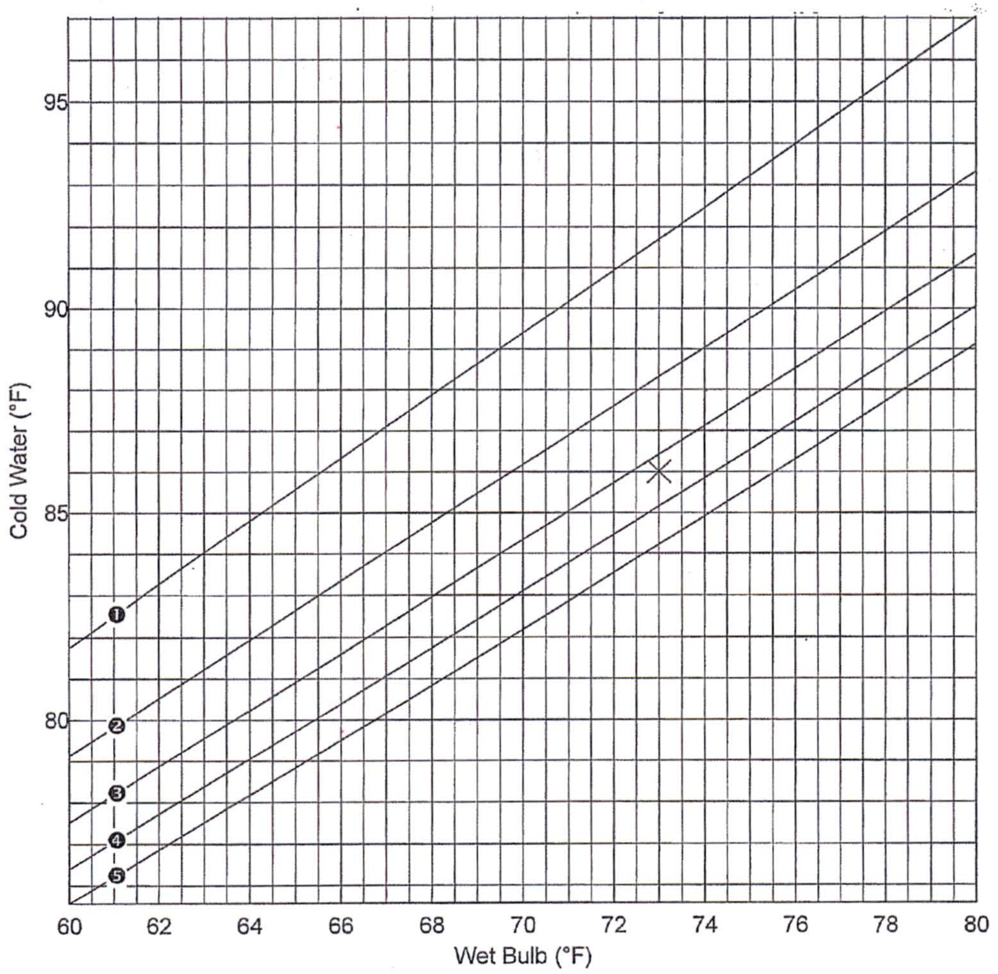


Figure 3.4-4 Cooling Tower Performance Curve

Performance Curve for



SPX Cooling Tower Co.
TRACS Version 04-AUG-06

Natural Draft Counterflow
Cooling Tower
Model 8600 292-6.0-45

Design Conditions:

Flow Rate	720000GPM
Hot Water	114.88°F
Cold Water	86.00°F
Wet-Bulb	73.00°F
Rel.Humidity	66%

Curve Conditions:

Range	28.88°F
Flow Rate	720000GPM

(100% Design Flow)

❺	100 % RH
❹	80 % RH
❸	60 % RH
❷	40 % RH
❶	20 % RH
X	Design Point

Figure 3.4-5 Cooling Tower Evaporation Curves

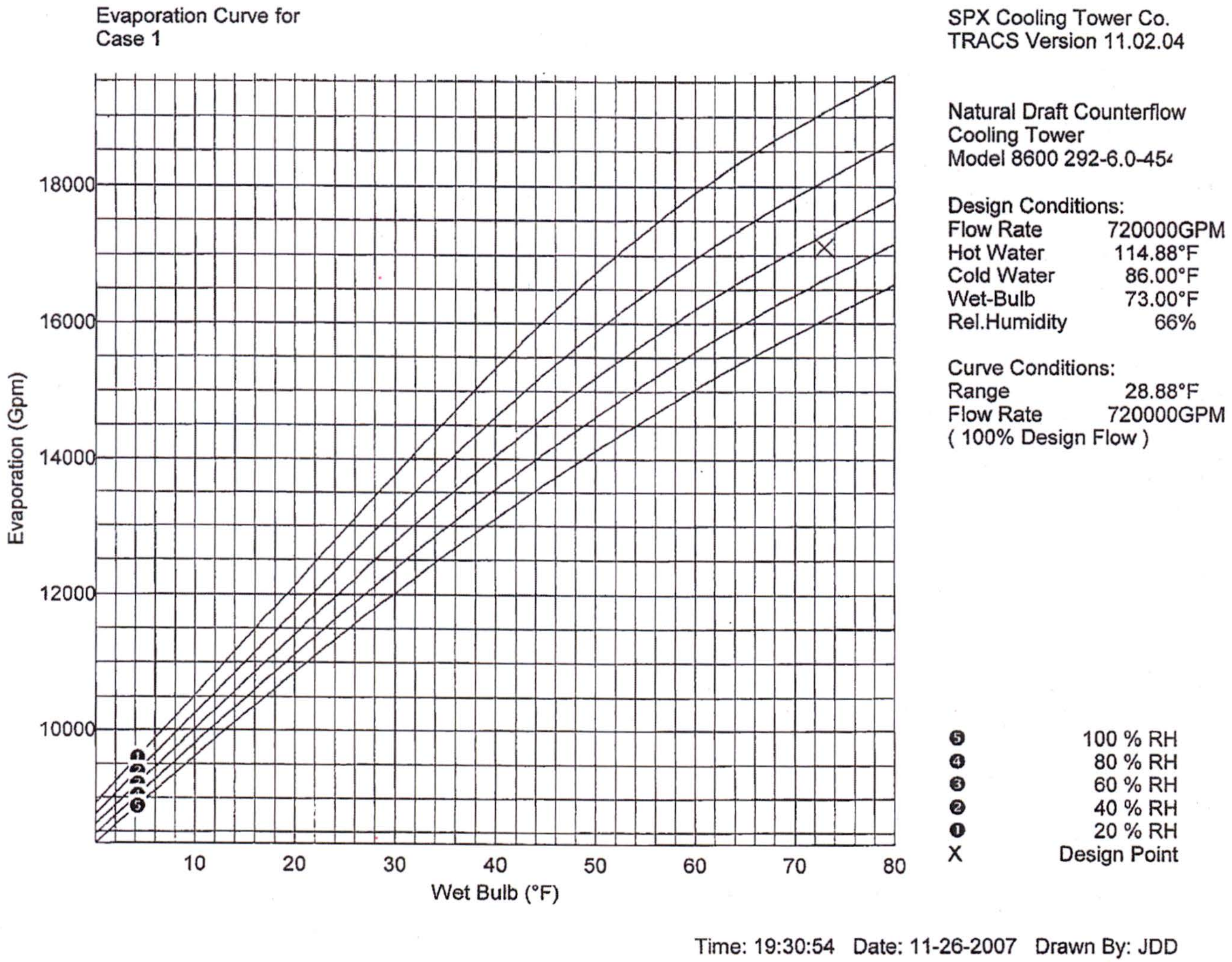
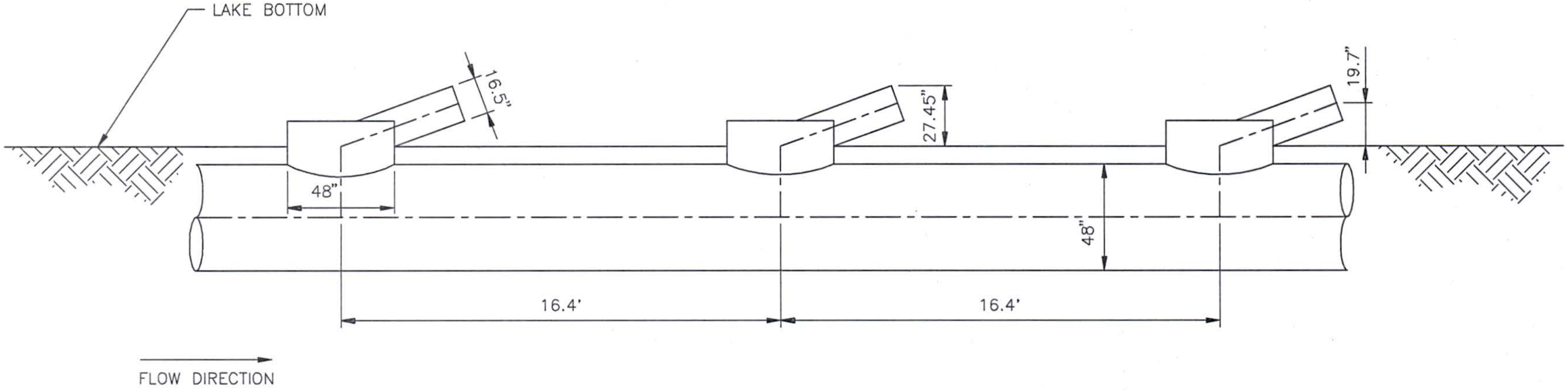


Figure 3.4-6 Outfall Diffuser Arrangement



3.6 Nonradioactive Waste Systems

The nonradioactive waste from Fermi 3 is discussed in this section. Subsection 3.6.1 describes effluent wastes expected from the CIRC, PSWS, PWS, various drains within the plant, and other miscellaneous gaseous, liquid and solid effluents. The effluent from the SWDS is discussed in Subsection 3.6.2. Subsection 3.6.3 discusses other effluent streams from Fermi 3, including gaseous effluents, stormwater, various plant drains, and other waste.

3.6.1 **Effluents Containing Chemicals or Biocides**

This subsection discusses the CIRC, PSWS, PWS, and other chemically treated systems, and for completeness, the FPS. The flows associated with these systems are outlined on Figure 3.3-1. Effluent flow from the Fermi site must remain within the limits outlined by the NPDES permit, or other appropriate limits as specified by the Michigan Department of Environmental Quality. As discussed in Section 1.2, permits, e.g., NPDES permit and Section 401 Water Quality Certification, will be obtained for the discharge from Fermi 3.

There are four categories of water treatment chemicals: biocide, algaecide, corrosion inhibitor, and scale inhibitor. Specific chemicals anticipated to be used are determined by site specific water conditions, based on a conservative determination. The amount of chemicals added per year in pounds is outlined in Table 3.6-1. Effluent chemical constituents from Fermi 3 are shown in Table 3.6-2. Values specified in the Fermi 2 NPDES permit include Total Suspended Solids (TSS) and Total Residual Chlorine (TRC). The TSS specified in the permit is 100 ppm as a daily maximum; the maximum concentration discharged from Fermi 3 (Table 3.6-2) is 15.9 ppm, well within acceptable permitting limits. The TRC specified in the NPDES permit is 38 ppb or less, the amount discharged from Fermi 3 is zero. The addition of sodium hypochlorite does introduce chlorine into the water; however the addition of sodium bisulfite nullifies the presence of the chlorine. Regardless of the water systems' sources or constituents, each constituent discharged to the environment would be limited (i.e., volume and concentration) by the NPDES permit as discussed in Section 6.6.

The main body of water that receives effluent from Fermi 3 is Lake Erie. There is one discharge from Fermi 3 that includes the blowdown from the CIRC and PSWS, as well as optional treated liquid radwaste discharge. Effluent from these sources is in liquid form; no sludge disposal is necessary from these systems. The location and other details pertaining to this discharge into Lake Erie are discussed in Subsection 3.4.2.2.

In addition to the liquid discharge paths, discharge of some chemical constituents will be entrained in the fallout from the spray from the CIRC and PSWS Cooling Towers. This effect is discussed in Subsection 5.3.3.1.

The current status of the water quality in Lake Erie, as well as other water sources in proximity to the plant, is discussed in Subsection 2.3.3. The ecology of Fermi 3 is discussed in Section 2.4. Ecology is of particular importance due to the prevalence of zebra mussels in Lake Erie. They present an additional need for the use of biocides such as sodium hypochlorite.

3.6.1.1 **Circulating Water System**

The chemical treatment of the CIRC is discussed in Subsection 3.3.2.2 and Table 3.3-1. This system is treated with a biocide, algaecide, corrosion inhibitor, and scale inhibitor. The blowdown from the CIRC is also treated with dehalogenation. The effluent from the CIRC is discharged to Lake Erie, as described in Subsection 3.4.2.2.

The CIRC operates on two cycles of concentration under normal full power operating conditions; additional operating parameters of the CIRC are discussed in Subsection 3.4.1.1. Effluent chemical constituents discharged in the blowdown from the CIRC are shown in Table 3.6-2.

3.6.1.2 **Plant Service Water System**

The chemical treatment of the PSWS is discussed in Subsection 3.3.2.3 and Table 3.3-1. This system is treated with a biocide, algaecide, corrosion inhibitor, and scale inhibitor. The effluent from the PSWS is discharged to Lake Erie. Chemical constituents discharged in the effluent from the PSWS are shown in Table 3.6-2.

3.6.1.3 **Potable Water System**

The operation of the PWS is designed to supply water for domestic use and human consumption to Fermi 3. The source of the PWS is the Frenchtown Township Municipal Water System, and any chemicals present in the water are those added by the Frenchtown Township Water Treatment Facility. The water is treated to meet applicable drinking water standards; no additional onsite treatment is provided. The water is discharged to the SWDS which is routed offsite to the Frenchtown Township Sewage Treatment Facility.

3.6.1.4 **Fire Protection System**

The FPS receives no additional chemical treatment (makeup to the FPS is discussed in Subsection 3.3.1.6) and does not normally discharge any liquid effluent.

3.6.2 **Sanitary System Effluents**

This subsection discusses the sanitary waste systems effluent, including quantities and treatment of the waste products, during construction and operation of the plant.

Sanitary waste systems needed at Fermi 3 during construction activities include portable toilets supplied and serviced by an offsite vendor. There is no sanitary waste system discharge into the effluent stream.

Permanent SWDS components at Fermi 3 include waste basin, wet well, septic tank, settling tank, wet well pumps, sewage discharge pumps and associated valves, piping, and controls. The SWDS is discussed in FSAR Subsection 9.2.4. The system is designed to accommodate 60 gallons/day/person for up to 840 people during normal power operation and 1140 people during shutdown operation. This design condition drives the flow values that are outlined on Figure 3.3-1.

In addition to sanitary waste generated by domestic uses, the demineralized water waste and effluent from the auxiliary boiler are also routed to the SWDS.

The effluent of the SWDS is sewage that is pumped from the septic tank to the Frenchtown Township Sewage Treatment Facility for ultimate disposal. The SWDS does not come into contact with any systems that may contain radioactive waste; however measures are in place to ensure that no radioactive waste could be transmitted offsite. Since the effluent from the SWDS is routed to a waste treatment facility, and not discharged to the environment, it is not necessary for the effluent to meet NPDES permit requirements. It is, however, necessary to meet the limits outlined in the Industrial/Non-domestic User Discharge permit with the Frenchtown Township Sewage Treatment Facility. Chemical treatments applied to the waste are those within the Frenchtown Township Sewage Treatment Facility, in keeping with the municipal sewage treatment standards. Further discussion of the chemical treatment of the SWDS can be found in Subsection 3.3.2.4.

3.6.3 **Other Effluents**

This subsection discusses miscellaneous solid, liquid and gaseous effluents not addressed in Subsection 3.6.1 or Subsection 3.6.2. Gaseous effluents consist of exhaust from diesel generators, diesel-driven fire pumps, and the auxiliary boiler system (Aux Boiler). Stormwater, various plant drains, and other wastes are also discussed in the following subsections.

3.6.3.1 **Gaseous Effluents**

There are four main sources of gaseous nonradioactive effluent at Fermi 3, the standby diesel generators (SDG), ancillary diesel generators (ADG), Aux Boiler, and the diesel-driven fire pumps. The applicable regulations, permits, and consultation required by Federal, State, regional, and potentially affected Native American tribal agencies are addressed in Section 1.2. Proper maintenance and operating procedures, described in FSAR Section 13.5, assure that emissions are controlled consistent with system design to meet the standards from Section 1.2.

There are two 17.1 MW SDGs that are expected to operate approximately four hours per month for each engine. The proposed SDG for Fermi 3 will meet emission standards for owners and operators listed in 40 CFR 60.4205 at the time of purchase. Emission standards for stationary compression ignition internal combustion engines with a cylinder displacement greater than 30 liters per cylinder are displayed in Table 3.6-3. The non-road diesel fuel used to operate the two SDGs will also be required by 40 CFR 80.510 to meet sulfur content levels of 15 ppm effective June 1, 2010.

There are two 1650 kW ADGs that are expected to operate for approximately two hours every three months, for an annual total of 8 hours of operation for each engine. The manufacturers of the ADGs proposed for Fermi 3 will be required to meet emission standards listed in Table 1 of 40 CFR 1039.101 at the time of purchase. Tier 4 emission standards for compression ignition internal combustion engines manufactured after the model year 2014 with a rating greater than 560 kW are displayed in Table 3.6-4. The non-road diesel fuel used to operate the two ADGs will also be required by 40 CFR 80.510 to meet sulfur content levels of 15 ppm effective June 1, 2010.

Fermi 3 has one package Aux Boiler, rated at 50 tons of steam per hour (112 MBTU/hr or about 33 MW). The maximum expected operation on an annual basis is 30 days. Emissions are shown in Table 3.6-5, based on ASTM D-975 No. 2 fuel oil (Reference 3.6-1).

The fourth source of emissions at Fermi 3 are the two diesel-driven fire pumps. Each pump is approximately 200 kW and is expected to operate approximately 48 hours annually. The manufacturers of diesel-driven fire pumps proposed for Fermi 3 will be required to meet emission standards listed in Table 4 to Subpart IIII of Part 60.4202(d) at the time of purchase. Emission standards for stationary compression ignition internal combustion engines that are fire pumps with a maximum engine rating of 200 kW manufactured after 2009 are displayed in Table 3.6-6. The non-road diesel fuel used to operate the two fire pumps will also be required by 40 CFR 80.510 to meet sulfur content levels of 15 ppm effective on June 1, 2010.

In addition to the gaseous effluents emitted from the aforementioned combustion sources, a natural draft cooling tower (NDCT) and two 4-cell mechanical draft cooling towers (MDCT) will emit solid particulates. The emission estimates of particulate matter for particle sizes of 10 and 2.5 microns (PM_{10} and $PM_{2.5}$) from the operation of the proposed NDCT and 4-cell MDCTs are displayed in Table 3.6-7 along with design parameters that were used to derive the emission estimates. It is conservatively assumed that the $PM_{2.5}$ emissions are the same as the PM_{10} emissions from the cooling towers. The drift rates for the NDCT and 4-cell MDCTs are based on the values provided by the associated manufacturers of each cooling tower. The water flow rate to the NDCT, as specified in Figure 3.3-1, will be supplied at a maximum rate of 724,000 gallons per minute (gpm). The water from the basin of the NDCT will supply the makeup water to the 4-cell MDCTs at a maximum flow rate of 40,000 gpm. Section 5.3.3.1 states that the makeup water for the NDCT is expected to have a total dissolved solids (TDS) concentration of 420 parts per million (ppm) or 0.00042 grams of salt per gram of solution. The makeup water for the 4-cell MDCTs will be supplied from the NDCT basin; therefore, the TDS concentration for the 4-cell MDCTs is also expected to be 420 ppm. The emission rate (lb/hr) for particulates emitted from the cooling towers can be calculated by taking the product of the water flow rate, weight of one gallon of water, drift rate, and TDS concentration.

For the purpose of providing a maximum bounded value for the emissions of particulates from the cooling towers, the calculations in Table 3.6-7 were developed for the operation of both the NDCT and 4-cell MDCTs simultaneously for an entire year at the maximum water flow rate. While this likely overestimates the emissions of PM_{10} and $PM_{2.5}$ from the operation of the NDCT and 4-cell MDCTs, it provides a maximum value for the assessment of impacts from the operation of the cooling towers. Therefore, the maximum hourly and annual emissions of PM_{10} and $PM_{2.5}$ from the simultaneous operation of the NDCT and 4-cell MDCTs are expected to be 1.93 lb/hr and 8.47 tons/year, respectively.

Stationary combustion sources proposed for the operation of Fermi 3 will emit carbon dioxide (CO_2). The following provides the estimated CO_2 emissions and calculation methodology for the proposed standby diesel generators, ancillary diesel generators, diesel-driven fire pumps, and auxiliary boiler.

Standby and Ancillary Diesel Generators and Diesel-Driven Fire Pumps

In order to estimate the annual emissions of CO_2 for the proposed standby diesel generators, ancillary diesel generators, and diesel-driven fire pumps, emission factors were obtained from Tables 3.3-1 and Table 3.4-1 of Reference 3.6-2. The total annual emissions of CO_2 emitted from the standby diesel generators, ancillary diesel generators, and diesel-driven fire pumps is calculated by taking the product of the emission factor, number of units, annual operating hours, and engine power rating.

Auxiliary Boiler

The estimated annual emissions of CO_2 from the proposed auxiliary boiler is calculated by taking the product of the emission factor, heat input, and the annual operating hours. The CO_2 emission factor for the auxiliary boiler is 22,300 lb/10^3 gal as displayed in Table 1.3-12 of Reference 3.6-2. Dividing the emission factor (22,300 lb/10^3 gal) by the heating value of fuel oil (140 MBtu/10^3 gal), the emission factor becomes 159.29 lb/MBtu. The heat input of the boiler is 112 MBtu/hr.

Table 3.6-6-(A) provides the emission rates and estimated annual emissions of CO_2 for each stationary source proposed for Fermi 3. Therefore, the estimated annual emission of CO_2 from stationary sources during the operation of Fermi 3 is 7,734 tons per year.

3.6.3.2 Stormwater

Stormwater, specifically flood and probable maximum flood (PMF) are discussed in FSAR Subsection 2.4.2 and FSAR Subsection 2.4.3. Stormwater from the Fermi 3 site drains to the North and South Lagoons, which are located north and south of the site respectively. Stormwater construction and operational impacts are discussed in Chapter 4 and Chapter 5.

3.6.3.3 Various Plant Drains

There are several drains at Fermi 3 including: equipment drains, floor drains, laundry and chemical drains, and other miscellaneous periodic drains. These drains are treated and the treated effluent joins the discharge from the CIRC and PSWS to be discharged to Lake Erie. Waste from the various plant drains that cannot be treated for onsite discharge are routed for handling as hazardous waste.

3.6.3.4 Other Waste

Low level mixed waste (LLMW) contains hazardous waste and a low-level radioactive source, special nuclear, or byproduct material. Hazardous waste is not necessarily LLMW; LLMW only includes hazardous waste that has been exposed to radioactive contamination. Section 5.5 provides a more detailed discussion of the environmental impacts that could result from the operation of the non-radioactive waste systems and the storage and disposal of mixed wastes.

A summary of the hazardous waste generated at Fermi 2 for several years is shown in Table 3.6-8. Some examples of LLMW generated at Fermi 2 include:

- Industrial oils and laboratory waste
- Rags/wipes
- Lead products
- Mercury products

Federal regulations governing generation, management, handling, storage, treatment, disposal and protection requirements concerning LLMW are contained in 10 CFR 10 and 10 CFR 40. Additional discussion of guidelines and standards pertaining to waste disposal is found in Section 1.2. Treatment of LLMW from Fermi 3 is handled in a similar manner as that of Fermi 2, with eventual offsite transportation and disposal by properly licensed organizations. Fermi 2 is a Small Quantity Generator, as Fermi 3 will likely be. Further discussion of LLMW is provided in Section 5.5.

Universal waste is also disposed of properly at Fermi 3. Universal waste includes:

- Batteries
- Light bulbs
- Computer monitors and equipment

Handling of universal waste is done in accordance with State of Michigan regulations, with eventual offsite disposal by a properly permitted organization. Additional discussion of guidelines and standards pertaining to waste disposal is found in Section 1.2. When possible, materials are recycled with the proper facilities.

Fermi 2 practices recycling when possible; Fermi 3 also recycles. Examples of items recycled from the Fermi site include:

- Batteries
- Circuit Boards
- Recyclable lead

Used oil is also recycled. The used oil program in use at Fermi 2 will be similarly implemented with Fermi 3. In this program the used oil from site is sent to St. Clair power station for power generation.

In addition to mixed waste and universal waste, another form of waste that must be handled at Fermi 3 is the waste that is disposed of from trash racks and traveling water screens. The trash racks and traveling water screens of the SWS pumps are discussed in Subsection 3.4.2.1. Once the racks and screens are cleaned and the trash is present in the trash cart or trash basket, it is necessary to dispose of the waste. This waste is disposed of offsite.

3.6.4 **References**

3.6-1 "Standard Specification for Diesel Fuel Oils," ASTM D 975, American Society of Testing and Materials, Philadelphia, PA, 2007.

3.6-2 U.S. Environmental Protection Agency (USEPA), "Compilation of Air Pollutant Emission Factors (AP-42)," Fifth Edition, Vol. I., Tables 1.3-1, 1.3-12, 3.3-1, and 3.4-1, October 1996.

Table 3.6-1 Chemicals Added to Liquid Effluent Streams

System	Chemical	Maximum Amount	Average Amount	Frequency of Use	Concentration in Waste Streams
CIRC/ SWS	Biocide/Algaecide - Sodium Hypochlorite (15%)	620,000 lb/year	620,000 lb/year	Approximately 4.5 hour/week	Non-detectable, neutralized by sodium bisulfite TRC < 38ppb*
CIRC	Corrosion Inhibitor – Sodium Silicate	1,700,000 lb/year	1,400,000 lb/year	Continuous	Non-detectable, dissociates in system
CIRC	Scale Inhibitor/Dispersant	830,000 lb/year	700,000 lb/year	Continuous	Non-detectable, dissociates in system
CIRC	Dehalogenation – Sodium Bisulfite	650,000 lb/year	550,000 lb/year	Continuous	Non-detectable, neutralizes sodium hypochlorite

*Fermi 2 NPDES permit

Table 3.6-2 Effluent Chemical Constituents*

Ion/Chemical	As	Max Conc. (ppm)	Avg Conc. (ppm)
Sodium	Na	46.6	34.3
Calcium	Ca	71.9	71.9
Magnesium	Mg	17.4	17.4
Silica	SiO_2	19.9	19.5
Chloride	Cl	61.3	42.5
Sulphate	SO_4	38.5	38.5
Potassium	K	3.6	3.6
Scale Inhibitor/Dispersant	Chemical	11.6	11.6
Bicarbonate Alk.	$CaCO_3$	167.8	167.7
TDS	-	428.5	397.4
TSS	-	16.0	16.0

*Based on 2 cycles of concentration

Section I.C.11 – Map of Facility

Figure 2.1-4, Fermi 3 Environmental Report, Rev. 2
(following 1 page)

	FACILITY LEGEND
01	REACTOR BUILDING
02	AUXILIARY BOILER
03	TURBINE BUILDING
04	CONTROL ROOM
05	ELECTRICAL BLDG/TECH SUPPORT CENTER
06	MAIN TRANSFORMERS
07	UNIT AUXILIARY TRANSFORMER
08	RESERVE AUXILIARY TRANSFORMER
09	SPARE TRANSFORMER
10	ADB
11	RADWASTE BUILDING
12	FUEL BUILDING
13	DIESEL FUEL OIL STORAGE TANK
14	WATER TREATMENT/SERVICE WATER BLDG
15	NOT USED
16	SERVICE WATER COOLING TOWER
17	FIRE WATER TANK AND PUMPS
18	WATER STORAGE TANKS
19	CONDENSATE STORAGE TANK
20	SERVICE BUILDING/OPERATION SUPPORT CENTER
21	HOT MACHINE SHOP AND STORAGE
22	WASH DOWN BAYS
23	NPHS COOLING TOWER
24	PUMPHOUSE
25	SECURITY BOUNDARY
26	STATION WATER INTAKE
27	CIRC WATER OUTFALL
28	EF3 SWITCHYARD
29	EF2/EF3 ADMIN BUILDING
30	EF3 SIMULATOR
31	PARKING GARAGE
32	EF2/EF3 HAZARDOUS WASTE WAREHOUSE
33	BARGE SLIP
34	RAD MATERIAL WAREHOUSE
35	EF2/EF3 MAINTENANCE SHOPS
36	NOT USED
37	EF2/EF3 COMMON WAREHOUSE
38	PARKING GARAGE AND EFS SHOPS
39	FERMI 2 ISFSI
40	PAP/VIB

5560 Corporate Exchange Court SE
Grand Rapids, MI 49512

Laboratory Phone

6169754500

Laboratory Email

ricejl@trimatrixlabs.com

Analysis Performed

See Additional Information section - Attached analysis from Fermi 2 Plt NPDES Application (3-31-14)

13. LIST ADJACENT PROPERTY OWNERS

List the names and mailing addresses of all property owners for all properties adjacent to the facility, treatment systems, and discharge locations. For vacant lots or empty buildings, supply the owner's mailing address – NOT the lot or building property address.

Table Data

Business or Lake Board / Lake Association (if applicable)	Individual Property Owner or Business Contact	Address	City	State	ZIP Code	Country
	MASSERANT ROBERT D & LISA S	5645 TROMBLEY	NEWPORT	MI	48166	USA
	PARKER ORVAL	5121 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	NOTHNAGEL DARLIN EDWARD	4704 ST CLAIR ST	NEWPORT	MI	48166	USA
	MCCARTY GORDON M	5194 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
MICHIGAN LAND CONTRACT VENDOR	HUDICK MARY LOU	P 0 BOX 351	NEWPORT	MI	48166	USA
	VEY MATTHEW & PLUFF ASHLYN FAYE	5182 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	ELLISON MICHAEL & LAURIE	4702 LONG	NEWPORT	MI	48166	USA
CITY OF MONROE WATER WORKS		120 E FIRST	MONROE	MI	48161	USA
LYON SAND & GRAVEL COMPANY		8800 DIX AVE	DETROIT	MI	48209	USA
	HOLMES JIMMY & REBECCA	6200 LANGTON	NEWPORT	MI	48166	USA
UNITED STATES OF AMERICA AND IT'S ASSIGNS, WASHINGTON D C		5600 AMERICAN BLVD WEST STE 990	BLOOMINGTON	MN	55437-1458	USA
INTERNATIONAL TRANSMISSION CO ITC TRANSMISSION 0/0 TAX DEPT		27175 ENERGY WAY	NOVI	MI	48377	USA
UNITED STATES FISH & WILDLIFE SERV BISHOP HENRY WHIPPLE FED BLDG	C/O LOIS A LAWSON	1 FEDERAL DRIVE	FORT SMELLING	MN	55111-4056	USA
MICHIGAN NATURE ASSOCIATION		2310 SCIENCE PARKWAY, SUITE 100	OKEMOS	MI	48864	USA
	MASSERANT RANDY	6001 TOLL	NEWPORT	MI	48166	USA
	BARCZEWSKI JAMIE DON	5701 TOLL	NEWPORT	MI	48166	USA

	YOUNG DAVID & DEBRA	4957 RAYMOND	NEWPORT	MI	48166	USA
	CHILDRESS CHARLES & BARBARA	6170 LEROUX	NEWPORT	MI	48166	USA
DEWEYS STONY POINT ASSOC INC		P 0 BOX 66272	NEWPORT	MI	48166	USA
SQUIER BETH E ESTATE	C/O DONALD SQUIER	5820 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	STERLING DAVID L	5838 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	MCDEVITT KAY	2682 NADEAU RD	NEWPORT	MI	48162	USA
CAPITAL ONE N A		7933 PRESTON RD	PLANO	TX	75024	USA
	BOERNER LAUREN & KELLY	5884 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	RORKE MICHAEL JAMES JR	5908 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	GONZALEZ MARIA D & GONZALEZ SHIRLEY	3276 CHIPPEWA	MONROE	MI	48162	USA
	WRIGHT JUSTIN C	5944 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	QASSIS JULIET	37119 MUIRFIELD DRIVE	LIVONIA	MI	48152	USA
	BONDY ERIC & ROBIN	6211 HIGHLAND	NEWPORT	MI	48166	USA
	DRUMMONDS PATRICIA	6148 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	MAMAU MICHELLE ANN	4720 LONG	NEWPORT	MI	48166	USA
	C/O: JOHN J QUALEY	4730 LONG	NEWPORT	MI	48166	USA
	DIEHL JOHN H & DEBORAH L	4772 LONG	NEWPORT	MI	48166	USA
	LIEDEL THOMAS D & ANNA L	4802 LONG	NEWPORT	MI	48166	USA
	SERES LONNY & LINDA	4834 LONG	NEWPORT	MI	48166	USA
MONROE FRENCHTOWN RAW WATER SUPPLY CO-PARTNERSHIP		120 E FIRST ST	MONROE	MI	48161	USA
LONG EST SUMMER RESORT ASSOC	C/O TREASURER	4720 LONG	NEWPORT	MI	48166	USA
	MCLAUGHLIN MICHAEL & BRIDGET	6108 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	CARTWRIGHT ROBERT & VALERIE	6098 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
	C/O LOWELL & SHELLY YOAS	6900 WILLIAMS	NEWPORT	MI	48166	USA
	FLIPPIN TODD D & DIANA	9147 DOLD DRIVE	FINDLAY	OH	45840-1684	USA
	OLIVER ROXANNE D	3938 LAKESHORE	NEWPORT	MI	48166	USA
	BODENMILLER EDWARD J	4771 POINTE AUX PEAUX	NEWPORT	MI	48166	USA

FRENCHTOWN CHARTER TOWNSHIP FIRE HALL #4		2744 VIVIAN	MONROE	MI	48162	USA
LANGTON VALARIAN (LL) LIFE LEASE ESTATE HOLDER		6445 LEROUX	NEWPORT	MI	48166	USA
FIX FAMILY FARM LLC	C/O MICHAEL S FIX	6394 LEROUX	NEWPORT	MI	48166	USA
	BASIC APRELL	5928 POINTE AUX PEAUX	NEWPORT	MI	48166	USA
MICHIGAN DEPT OF NATURAL RESOURCES	MICHIGAN DEPT OF TREASURY	PO BOX 30722	LANSING	MI	48909	USA
	MADISH JON W & KAREN E	6394 STERLING	NEWPORT	MI	48166	USA

This completes Section I.

Section IIIA. Facility Information – Industrial / Commercial Facilities (1)

A. Facility Information

1. BUSINESS INFORMATION

A. Provide up to four Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) codes, in order of economic importance, which best describe the major products or services provided by this facility

4911

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B. Indicate if this facility is a primary industry (refer to Table 1 of the Appendix to determine if this facility is a primary industry).

Yes, this facility is a primary industry. Indicate the primary industry (see Table 1 of the Appendix)

Indicate the primary industry (see Table 1 of the Appendix):

Steam Electric Power

2. Water Sources

A. Identify all water sources entering the facility and treatment systems, and provide average flows. The volume may be estimated from water supply meter readings, pump capacities, etc. Provide the name of the source where appropriate (i.e., Grand River, Lake Michigan, City of, Millpond).

Table Data

Water Supply Type	Name and Location of Source	Average Volume or Flow Rate	Units
Municipal Supply	Frenchtown Township	0.52	MGD
Surface Water Intake	Lake Erie	50	MGD
Private Well			

Other	Precipitation	5	MGD/event

3. Discharge Types

B. Identify water discharged by the facility and treatment systems, and provide average flows. If water is first used for one purpose and then is subsequently used for another purpose, indicate the type and amount of the last use. For example, if water is initially used for noncontact cooling water and then for process water, indicate the amount of process water. The amount of water from sources should approximate the amount of water usage. If the amounts are different, provide an explanation. Enter the information in excel.

Table Data

Type	Average Flow Rate	Units
Process Wastewater	9,125	MGY
Contact Cooling Water	None	
Noncontact Cooling Water	None	
Groundwater Cleanup	None	
Sanitary Wastewater	365,000	GPD
Regulated Storm Water	2.6	MGD
High Pressure Test Water	None	
Other	None	

Note: For A. and B. above, indicate units as MGD (million gallons per day), MGY (million gallons per year), GPD (gallons per day), or other appropriate unit.

Section IIIB. Outfall Information – Industrial / Commercial Facilities (1)

Use the "+" (repeat section) button on the top of the page for each outfall present.

A. Receiving Water
Lake Erie

Feature Type
Outfall

Outfall Number or ID
001

Outfall Description
DECO-Fermi 3 Power Plt

Outfall Location
41.9608,-83.2619

1. OUTFALL INFORMATION.

Instructions for this item are on Page 3 of the Appendix. Use the "+" button on the top of this section to repeat this section and add additional outfalls.

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B. Hydrologic Unit Code
04100001

Type of Wastewater Discharged (check all that apply to this outfall):

Process Wastewater

Storm Water - regulated

E. Comment: identify the storm water effluent guideline category or describe the wastewaters included in the 'other' category selected above.

NONE PROVIDED

F. The Maximum Design Flow Rate for this outfall is (MGD)

25

G. What is the Maximum Authorized Daily Discharge Flow for this outfall for the next five years? (Seasonal dischargers should enter flow using MGY and continue to Item H.; continuous discharges should enter flow using MGD and continue to Item I.)

25

H. Seasonal Discharge

List the discharge periods by month and the volume discharged using the excel template below. Then enter the Actual Annual Total volume discharged in the field below.

Table Data

NONE PROVIDED

Actual Annual Total

NONE PROVIDED

I. Continuous Discharge

How often is there a discharge from this outfall (on average)? Hours/Day

24

How often is there a discharge from this outfall (on average)? Days/Year

365

Batch dischargers are required to provide the following additional information. Is there effluent flow equalization?

What is the batch peak flow rate?

NONE PROVIDED

How many batches are discharged per day?

NONE PROVIDED

Batch Discharge Volumes and Duration

Enter the information into excel.

Table Data

NONE PROVIDED

2. PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

The information requested below is used to determine the applicable federal regulations for this facility. For each industrial process at the facility, provide the name, the SIC or the NAICS code, and a brief description of the process. As part of each description, identify a reasonable measure of the facility's actual long-term daily production and average number of production days per year. In many cases, this is the average daily or average annual production rate from the last five years. Some federal regulations require that certain industries report different information, depending on the type of process. The Summary of

Information to Be Reported by Industry Type, pages 10-11 of the Appendix, includes an abbreviated list of industrial categories and their specific Application requirements. If the industrial process does not have specific Application requirements and recent long-term production rates are not an appropriate measure of future production, report the expected annual production rate for the next five (5) years, or for the life of the permit.

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PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

Enter the information into excel.

Table Data

Name of the process contributing to the discharge	SIC or NAICS code	Describe the process and provide measures of production
Closed-cycle Cooling System Blowdown	4911	Blowdown from the plant's closed-cycle condenser cooling system cooling tower blowdown. Maxium total expected discharge = 25 MGD.
Processed Radwaste System Discharge	4911	Process radwaste from the plant floor drafins and equipment drains. Maximum expected discharge (included in total above) = 0.2 MGD

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3. EFFLUENT CHARACTERISTICS - CONVENTIONAL POLLUTANTS. Instructions for this item are on Page 4 of the Appendix.
Check this box if additional information is included as an attachment.

Please Note: Rule 323.1062 allows the use of either Escherichia coli or Fecal Coliform Bacteria as an indicator that effluent has been disinfected. The DEQ will use the indicator selected below in the permit issued based on this Application.
NONE PROVIDED

3. EFFLUENT CHARACTERISTICS - CONVENTIONAL POLLUTANTS

Enter the information into excel.

Table Data

Submitted via e-DMRs	Waiver Request and the Rationale Behind the Request	Parameter	Maximum Monthly Concentration	Maximum Daily Concentration	Units	Number of Analyses	Sample Type
		Biochemical Oxygen Demand – five day (BOD5)			mg/l		Grab / 24-Hr Comp
		Chemical Oxygen Demand (COD)			mg/l		Grab / 24-Hr Comp
		Total Organic Carbon (TOC)			mg/l		Grab / 24-Hr Comp
		Ammonia Nitrogen (as N)			mg/l		Grab / 24-Hr Comp
		Total Suspended Solids			mg/l		Grab / 24-Hr Comp
	Waiver Request Not Required	Total Dissolved Solids			mg/l		Grab / 24-Hr Comp

	Waiver Request Not Required	Total Phosphorus (as P)			mg/l		Grab / 24-Hr Comp
	Waiver Request Not Required	Fecal Coliform Bacteria (report geometric means)		Maximum 7-day	counts/100ml		Grab
	Waiver Request Not Required	Escherichia coli (report geometric means)		Maximum 7-day	counts/100 ml		Grab
X	Waiver Request Not Required	Total Residual Chlorine			mg/l or mg/l		Grab
	Waiver Request Not Required	Dissolved Oxygen	Do Not Use	Minimum Daily	mg/l		Grab
X	(See Fermi 2 DMRs - Permit MI0037028)	pH (report maximum and minimum of individual samples)	Minimum	Maximum	standard units		Grab
X		Temperature, Summer			°F °C		Grab
X		Temperature, Winter			°F °C		Grab
	Waiver Request Not Required	Oil & Grease			mg/l		Grab

Note: For the following questions, Tables 1 – 6 are located in the Appendix.

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4. PRIMARY INDUSTRY PRIORITY POLLUTANT INFORMATION

Existing primary industries that discharge process wastewater are required to submit the results of at least one permittee-collected effluent analysis for selected organic pollutants identified in Table 2 (as determined from Table 1, Testing Requirements for Organic Toxic Pollutants by Industrial Category), and all of the pollutants identified in Table 3. Existing primary industries are required to also provide the results of at least one permittee-collected effluent analysis for any other chemical listed in Table 2 known or believed to be present in the facility's effluent. In addition, submit the results of all other effluent analyses performed within the last three years for any chemical listed in Tables 2 and 3. New primary industries that propose to discharge process wastewater are required to provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in the facility's effluent.

5. DIOXIN AND FURAN CONGENER INFORMATION

Existing industries that use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T); 2-(2,3,5-trichlorophenoxy) propanoic acid, (Silvex, 2,3,5-TP); 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon); 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnel); 2,4,5-trichlorophenol (TCP); or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in the facility's effluent, are required to submit the results of at least one effluent analysis for the dioxin and furan congeners listed in Table 6. All effluent analyses for dioxin and furan congeners shall be conducted using USEPA Method 1613. In addition, submit the results of all other effluent analyses performed within the last three (3) years for any dioxin and furan congener listed in Table 6. New industries that expect to use or manufacture 2,3,5-trichlorophenoxy acetic acid (2,4,5-T); 2-(2,3,5-trichlorophenoxy) propanoic acid (Silvex, 2,3,5-TP); 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon); 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothionate (Ronnel); 2,4,5-trichlorophenol (TCP); or hexachlorophrene (HCP), or knows or has reason to believe that 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is present in the facility's effluent, shall provide estimated effluent concentrations for the dioxin and furan congeners listed in Table 6.

6. OTHER INDUSTRY PRIORITY POLLUTANT INFORMATION

Existing secondary industries or existing primary industries that discharge nonprocess wastewater are required to submit the results of at least one effluent analysis for any chemical listed in Tables 2 and 3 known or believed to be present in the facility's effluent. In addition, submit the results of all other effluent analyses performed within the last three years for any chemical listed in Tables 2 and 3. New secondary industries or new primary industries that propose to discharge nonprocess wastewater are required to provide an estimated effluent concentration for any chemical listed in Tables 2 and 3 expected to be present in the facility's effluent.

7. ADDITIONAL TOXIC AND OTHER POLLUTANT INFORMATION

All existing industries, regardless of discharge type, are required to provide the results of at least one analysis for any chemical listed in Table 4 known or believed to be present in the facility's effluent, and a measured or estimated effluent concentration for any chemical listed in Table 5 known or believed to be present in the facility's effluent. In addition, submit the results of any effluent analysis performed within the last three years for any chemical listed in Tables 4 and 5. New industries, regardless of discharge type, are required to provide an estimated effluent concentration for any chemical listed in Tables 4 and 5 expected to be present in the facility's effluent.

8. INJURIOUS CHEMICALS NOT PREVIOUSLY REPORTED

New or existing industries, regardless of discharge type, are required to provide a measured or estimated effluent concentration for any toxic or otherwise injurious chemicals known or believed to be present in the facility's effluent that have not been previously identified in this Application. Quantitative effluent data for these chemicals that is less than five years old shall be reported.

NOTE: All effluent data submitted in response to questions 4, 5, 6, 7, and 8 above should be recorded using the excel spreadsheet below. If the effluent concentrations are estimated, place an "E" in the "Analytical Method" column. The following fields shall be completed for each data row: Parameter, CAS No., Concentration(s), Sample Type, and Analytical Method. For analytical test requirements, or if Alternate Test Procedures were approved for any parameter listed above, see Item 5 of the General Provisions section preceding the Application for additional instruction.

Appendix to the Permit Application

9. WATER TREATMENT ADDITIVES

Water treatment additives (WTAs) include any material that is added to water used at the facility or to wastewater generated by the facility to condition or treat the water. Examples of WTAs include biocides, flocculants, water conditioners, pH adjusting agents, etc. WTA approvals are authorized by the DEQ under separate correspondence. The issuance of an NPDES permit does not constitute approval to use and discharge the WTAs for which approval is requested as part of this Application.

A. Are any WTAs added to water used at the facility or to wastewater generated by the facility?

Yes. Proceed to Item 9.B.

B. Have these WTAs been previously approved by the DEQ?

No. Continue to 9.C.

If you answered yes to the previous question. - Attachment(s)

NONE PROVIDED

Comment: NONE PROVIDED

C. Submit a list of WTAs that are or may be discharged from the facility. A request to discharge WTAs shall include all of the following usage and discharge information for each WTA proposed to be discharged:

1. Safety Data Sheet (formerly known as Material Safety Data Sheet), AND product label if the product is a pesticide; 2. the proposed WTA discharge concentration with supporting calculations; 3. the discharge frequency (i.e., number of hours per day and number of days per year); 4. the outfall and monitoring point from which the product is to be discharged; 5. the type of removal treatment, if any, that the WTA receives prior to discharge; 6. the product's function (e.g., microbiocide, flocculant, etc.); 7. a 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either Ceriodaphnia sp., Daphnia sp., or Simocephalus sp.); and 8. the results of a toxicity test for one (1) other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of R 323.1057(2)(a) of the Water Quality Standards. Examples of tests that would meet this requirement include a 96-hour LC50 for rainbow trout, bluegill, or fathead minnow.

List

1) Biocide/Algaecide - Sodium Hypochlorite (15%)
2) Corrosion Inhibitor - Sodium Silicate
3) Scale Inhibitor/Dispersant
4) Dehalogenation - Sodium Bisulfite

Note: WTA requests will be made prior to using the chemicals listed above.

Appendix to the Permit Application

10. WHOLE EFFLUENT TOXICITY (WET) TESTS. Have any acute or chronic WET tests been conducted on any discharge(s) or receiving water(s) in relation to this facility's discharge within the last three (3) years? If yes, identify the tests and report the results on the forms provided in the Appendix for WET test reporting, unless the test results have been previously submitted to the DEQ within the last three (3) years. Comments:
NA

Effluent Data

Enter the information into excel.

Table Data

Outfall Number / ID: 001			**Sample Date**	**Sample Date**	**Sample Date**	**Sample Date**		
Submitted via e-DMRs?								
(Yes/No)	PARAMETER	CAS No.	Conc. (µg/l)	Conc. (µg/l)	Conc. (µg/l)	Conc. (µg/l)	Sample Type	Analytical Method
See the analytical report attached to this application. This report was previously submitted with the NPDES permit application for DECO- Fermi 2 Plt (permit no. MI0037028) on March 31, 2014.								

This completes Section III.

Section IV – Storm Water (Required of All Applicants) (1)

1. STORM WATER DISCHARGES: Storm water is defined herein as storm water runoff, snow melt runoff, and surface runoff and drainage.

A. Is this facility engaged in a regulated "industrial activity" as defined in 40 CFR 122.26(b)(14)? To make this determination, see the DEQ Storm Water website (http://www.michigan.gov/deqstormwater, then click on Industrial Program, then click on Primary Activities & Standard Industrial Classification (SIC) Codes.
Yes. Continue to question B

B. Is the storm water from this facility discharged to a surface water of the state either directly or through another conveyance (e.g., municipal separate storm sewer system)? Note: If storm water is discharged to a municipal combined storm sewer system, a municipal wastewater treatment system, or a privately-owned activated sludge treatment system, check the "No" box.
Yes. Provide the name(s) of the surface water(s) of the state: Continue to question C.

Names
Lake Erie, Swan Creek

C. Are any industrial activities or materials exposed to storm water at this facility?
Yes. Complete the remainder of Section IV.

Use the link to make a determination

Click here to see the No Exposure Certification Guidance page

D. Does this facility have an Industrial Storm Water Certified Operator who has supervision over the facility's industrial storm water treatment and control measures?
No. STOP: Applicants without an Industrial Storm Water Certified Operator cannot be authorized to discharge industrial storm water.

For information go to the link below then click on Industrial Program, then look under Storm Water Program Certified Operator Training.

For more information click here

Name and Number
TBD

E. Has a Storm Water Pollution Prevention Plan (SWPPP) been developed and implemented for this facility?
No. STOP: Applicants who have not developed and implemented a SWPPP for this facility cannot be authorized to discharge industrial storm water.

For information go to the link below, then click on Industrial Program, then look under Storm Water Pollution Prevention Plans.

For more information click here

F. READ ALL PARTS OF THE FOLLOWING QUESTION BEFORE RESPONDING: Does this facility discharge storm water to a surface water of the state or a municipal separate storm sewer system from a Special-Use Area?
Yes. 1) Check all Special-Use Area(s) that apply. Continue to question F.2):

A) Secondary containment structure(s) required by state or federal law. Attach a list of the materials stored in this area. B) Areas identified on Michigan's list of Sites of Environmental Contamination, pursuant to the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Part 201 (formerly 307) C) A facility that the DEQ has determined discharges storm water that is a significant contributor of pollutants to surface waters of the state

Check all Special-Use Area(s) that apply. Continue to question F.2):
A)

2) Has a Short-Term Storm Water Characterization Study (STSWCS) Plan been approved by the DEQ for this facility?
No. Continue to G.

Have any changes occurred at the facility which could result in the discharge of pollutants that differ from those identified in the previously approved STSWCS Plan?

G. Additional Information - Attachment(s)
section IV.4.G Material Stored in Secondary Containment Structures.pdf
Comment: NONE PROVIDED

This completes Section IV.

Section VI – Cooling Water Intake Structures (1)

1. COOLING WATER INTAKE STRUCTURES

The withdrawal of cooling water removes and kills hundreds of billions of aquatic organisms from waters of the United States each year, including fish, shellfish, fish eggs, and larvae. Aquatic organisms drawn through cooling water intake structures (CWIS) are either impinged (I) against components of the intake structure or get drawn into or entrained (E) in the cooling water system itself. Most impacts are to the early life stages of aquatic organisms. Due to the adverse environmental impact of I and E on aquatic organisms, USEPA has promulgated rules under section 316(b) of the Clean Water Act to set national performance standards to minimize the mortality of aquatic organisms from I and E for new and existing industrial facilities. Section 316(b) requires that the

Section IV.1.G – Material Stored In Secondary Containment Structures

1. No. 2 Fuel Oil
2. Sodium Hypochlorite
3. Mineral Oil

location, design, construction, and capacity of CWISs reflect the best technology available (BTA) for minimizing adverse environmental impacts (I and E). All new or existing facilities utilizing a surface water intake structure to provide cooling water shall submit information for review as specified below. Please complete the following questions, compile the requested information, and submit the information as an attachment to this Application. The rules and requirements referenced below can be accessed at http://www.michigan.gov/deqnpdes. Under the Information banner, click on 316(b) Cooling Water Intake Structure Guidance.

A. Does or will the facility use a surface water intake structure as a cooling water source for the facility? Use of an intake structure includes obtaining water by any sort of contract or arrangement with an independent supplier if the supplier is itself not a facility covered by the requirements of

Yes. Continue to question B.

B. Does or will the intake structure have a design intake flow (DIF) rate (instantaneous maximum) greater than 2 MGD and does or will the facility use at least twenty-five percent of water withdrawn exclusively for cooling purposes?

Yes. Continue to question C.

If you selected no for the previous question. In accordance with 40 CFR 125.90(b), CWISs that do not meet these threshold requirements are required to be evaluated on a case-by-case, best professional judgment (BPJ) basis. Please submit the information specified in 40 CFR 122.21(r)(2), (3), and (5). In addition, please identify the DIF rate and actual intake flow (AIF) rate, which is the annual average intake flow rate over the three previous years, and any significant changes to operations expected for the facility or CWIS over the next five years. Also include a summary of any available data for I and E for the CWIS (including data, estimates, or descriptions on the volume or number of fish removed by trash removal systems). Stop: Do not complete the rest of Section VI.

C. Check the appropriate box(es) below to identify whether the facility is new or existing, and provide the additional information as specified within each classification selected:

New Facility

If it is a new facility. In accordance with the Final Rules promulgated by USEPA under 316(b) and effective January 17, 2002, new facilities shall submit the information specified in 40 CFR 122.21(r) and 40 CFR 125.86. If it is an existing facility. In accordance with the Final Rules promulgated by USEPA under 316(b) and effective October 14, 2014, existing facilities (including those utilizing a closed-cycle recirculating cooling system) shall submit the information specified in 40 CFR 122.21(r)(2), (3), (4), (5), (6), (7), and (8), AND one or both of the following if applicable (check one or both as applicable):

A) Existing Facilities Greater than 125 MGD AIF. In addition to submitting the information listed above for existing facilities, these facilities shall also submit the information specified in §122.21(r)(9), (10), (11), (12), and (13). B) New Units at Existing Facilities. In addition to submitting or updating the information listed above for existing facilities, these facilities shall also submit the information specified in §122.21(r)(14).

Existing Facility

NONE PROVIDED

Attach the compiled information described in the previous questions. - Attachment(s)

NONE PROVIDED

Comment: NONE PROVIDED

Note: In accordance with 40 CFR 125.95, permittees whose current permit expires PRIOR to July 14, 2018, may request an alternate schedule for the submittal of these Application requirements if they can demonstrate that they could not develop all of the required information by the date of Application submission. For Applications due April 2015 through April 2017, the Application shall include the information requested in §122.21(r)(2), (3), (5), (7), and (8); the permittee may submit a demonstration and request an alternate schedule for the Application requirements specified in §122.21(r)(4), (6), (9), (10), (11), (12), or (13). Any demonstration should include a proposed alternate schedule for submission of these Application requirements; the proposed schedule should be as soon as practicable. The Department will consider the proposed schedule in setting the alternate submittal dates. Permittees whose Applications are due in April 2018, MUST submit the required Application materials with the Application for permit reissuance. If the Final Rules promulgated under 316(b) are stayed or otherwise modified, the Department may revise these Application and permitting requirements.

This completes Section VI.

Additional Information

Comments (As needed)

NONE PROVIDED

Additional Documents (As needed) - Attachment(s)

Add. Info - Resubmittal of Fermi 2 Analytical Data a.pdf

Fermi 3 2016 NPDES Application Cover Letter 3212016.pdf

Comment: NONE PROVIDED

Attachments

Date	Attachment Name	Context

Status History

Date	User	Processing Status
3/21/2016	Michael Brandon	Submitted

Processing Steps

Step Name	Assigned To/Completed By	Date Completed
Form Submitted	Michael Brandon	03/21/2016 02:23 PM

Additional Information – Fermi 3 Resubmittal of Fermi 2 2014 NPDES Renewal Application

Intake and Outfall 001 Analyses

TriMatrix Laboratories Analytical Results for Fermi 2 2014 NPDES Permit Renewal
(following 59 pages)

TRIMATRIX
LABORATORIES

December 19, 2013

DTE - Fermi-2
Attn: Ms. Mary Hana
6400 North Dixie Highway, 200 TAC
Newport, MI 48166

Project: Permit Renewal - Fermi, 2013

Dear Ms. Mary Hana,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	**Received**	**Description**
1312032	12/03/2013	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Jennifer L Rice

Jennifer L. Rice
Project Chemist

PROJECT TECHNICAL NARRATIVE(s)

Polychlorinated Biphenyls (PCBs) by EPA Method 608

Narrative: Due to sample volumes, matrix specific quality control (QC) was not performed on this batch. A blank and a Laboratory Control Sample make up the batch QC.

Analysis: USEPA-608

Sample/Analyte: 1312032-14 Intake Composite
1312032-15 001 Composite

PROJECT TECHNICAL NARRATIVE(s)

Volatile Organic Compounds by EPA Method 624

Narrative: Sample was not preserved per 40 CFR Part 136.3,Table II: a sample collected for Acrolein must be pH adjusted to a range of 4-5 or analyzed within 3 days of collection.

Analysis: USEPA-624

Sample/Analyte: 1312032-06 Outfall 001 VOC Lab Composite
1312032-13 Intake VOC Lab Composite

PROJECT TECHNICAL NARRATIVE(s)

Semivolatile Organic Compounds by EPA Method 625

Narrative: Due to sample volumes, matrix specific quality control (QC) was not performed on this batch. A blank and a Laboratory Control Sample make up the batch QC.

Analysis: USEPA-625

Sample/Analyte:	1312032-14	Intake Composite
	1312032-15	001 Composite

PROJECT TECHNICAL NARRATIVE(s)

Total Metals by EPA 200 Series Methods

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: USEPA-200.8

3L09035-CRL2	Selenium

PROJECT TECHNICAL NARRATIVE(s)

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Narrative: The CRL recovery for this analyte was outside of the laboratory control limits.

Analysis: SM 5540 C-2011

3L04037-CRL1 Surfactants, MBAS

Narrative: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control limit.

Analysis: USEPA-351.2 Rev. 2.0

Sample/Analyte: 1312032-15 001 Composite Nitrogen, Total Kjeldahl

Narrative: The RL for this analysis was elevated due to insufficient sample volume or weight received.

Analysis: USEPA-1664A

Sample/Analyte: 1312032-10 Intake Grab Day 2 HEM; Oil & Grease

Narrative: A.C.U. stands for Apparent Color Units. Color is pH dependent and its value increases proportionally with pH. The method requires that the pH of the sample be determined and reported along with the A.C.U value. The sample pH was: 7.12.

Analysis: SM 2120 B-2011

Sample/Analyte: 1312032-14 Intake Composite Color (Apparent)
1312032-15 001 Composite Color (Apparent)

Narrative: The referenced method requires analysis occur within 15 minutes of sample collection. Analysis was performed at the laboratory on 12-4-13..

Analysis: SM 4500-SO3 B-2011

Sample/Analyte: 1312032-14 Intake Composite Sulfite
1312032-15 001 Composite Sulfite

Narrative: The mg/L MBAS result reported should be considered mg MBAS/L (calculated as LAS, molecular weight 320).

Analysis: SM 5540 C-2011

Sample/Analyte: 1312032-14 Intake Composite Surfactants, MBAS
1312032-15 001 Composite Surfactants, MBAS

Narrative: Distillation pretreatment was not performed. Common interfering ions were complexed by a buffer solution. Fluoroborates (if present) may result in a low bias of the reported concentration.

Analysis: SM 4500-F C-2011

Sample/Analyte: 1312032-14 Intake Composite Fluoride
1312032-15 001 Composite Fluoride

STATEMENT OF DATA QUALIFICATIONS

Volatile Organic Compounds by EPA Method 624

Qualification: The corresponding CCV for this analytical batch had a recovery exceeding the upper control limit of the method. A positive result for this analyte in any associated samples are considered estimated. Non-detectable results are not qualified.

Analysis: USEPA-624

Sample/Analyte:	1312032-06	Outfall 001 VOC Lab Composite	Chloroethane
	1312032-13	Intake VOC Lab Composite	Chloroethane

Qualification: The chemical utilized to preserve this sample has the potential to degrade 2-chloroethyl vinyl ether through polymerization or other rapid chemical reaction. The reporting limit and/or any positive result must be considered estimated.

Analysis: USEPA-624

Sample:	1312032-06	Outfall 001 VOC Lab Composite
	1312032-13	Intake VOC Lab Composite

STATEMENT OF DATA QUALIFICATIONS

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Qualification: The following reported test methods and analyte(s) are exceptions to our NELAP Fields of Accreditation, or for which accreditation is not required, applicable, or available.

Analysis: EPA-351.2/4500-NH3G
Analyte(s): Nitrogen, Organic

Analysis: SM 4500-SO3 B-2011
Analyte(s): Sulfite

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Outfall 001 Grab Day 1**	Sampled:	12/2/13 13:00
Lab Sample ID:	**1312032-01**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Chlorine, Total Residual (Field)	<0.20	0.20	mg/L	1	HACH-8167	12/02/13 13:00	JAE	1313078
Oxygen, Dissolved (Field)	**7.57**	0.10	mg/L	1	SM 4500-O G	12/02/13 13:00	JAE	1313078
pH (Field)	**8.31**	1.00	pH Units	1	SM 4500-H B-2011	12/02/13 13:00	JAE	1313078
Temperature °C (Field)	**16.0**	0.1	°C	1	SM 2550 B	12/02/13 13:00	JAE	1313078

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Outfall 001 LLHg**	Sampled:	12/2/13 12:44
Lab Sample ID:	**1312032-02**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	**7.84**	2.50	ng/L	5	USEPA-1631E	12/05/13 12:43	MSM	1313075

TRIMATRIX
LABORATORIES

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Outfall 001 Grab Day 2**	Sampled:	12/3/13 12:35
Lab Sample ID:	**1312032-03**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Phenolics, Total	<0.0500	0.0500	mg/L	1	USEPA-420.4	12/09/13 10:39	LMA	1313065
Chlorine, Total Residual (Field)	<0.20	0.20	mg/L	1	HACH-8167	12/03/13 12:35	JAE	1313078
Oxygen, Dissolved (Field)	**6.89**	0.10	mg/L	1	SM 4500-O G	12/03/13 12:35	JAE	1313078
pH (Field)	**8.56**	1.00	pH Units	1	SM 4500-H B-2011	12/03/13 12:35	JAE	1313078
Temperature °C (Field)	**19.0**	0.1	°C	1	SM 2550 B	12/03/13 12:35	JAE	1313078
Cyanide, Available	<2.0	2.0	ug/L	1	USEPA OIA-1677	12/09/13 12:10	LMA	1313173
HEM; Oil & Grease	<5.00	5.00	mg/L	1	USEPA-1664A	12/10/13 08:00	WAH	1313184

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Outfall 001 LLHg Duplicate**	Sampled:	12/2/13 12:47
Lab Sample ID:	**1312032-04**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	**7.51**	0.500	ng/L	1	USEPA-1631E	12/05/13 12:01	MSM	1313075

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Outfall 001 Field Blank**	Sampled:	12/2/13 12:41
Lab Sample ID:	**1312032-05**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	<0.500	0.500	ng/L	1	USEPA-1631E	12/05/13 12:05	MSM	1313075

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Outfall 001 VOC Lab Composite**	Sampled:	12/3/13 12:35		
Lab Sample ID:	**1312032-06**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/6/13 7:00	By:	DLV
Dilution Factor:	1	Analyzed:	12/6/13 16:34	By:	DLV
QC Batch:	1313145	Analytical Batch:	3L09003		

*Volatile Organic Compounds by EPA Method 624

CAS Number	Analyte	Analytical Result	RL
107-02-8	Acrolein	<5.0	5.0
107-13-1	Acrylonitrile	<1.0	1.0
71-43-2	Benzene	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
74-83-9	Bromomethane	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
*75-00-3	Chloroethane	<1.0	1.0
110-75-8	2-Chloroethyl Vinyl Ether	<10	10
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
124-48-1	Dibromochloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
542-75-6	1,3-Dichloropropene (Total)	<2.0	2.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-87-5	1,2-Dichloropropane	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
75-09-2	Methylene Chloride	<5.0	5.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Continued on next page

*See Statement of Data Qualifications

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Outfall 001 VOC Lab Composite**	Sampled:	12/3/13 12:35		
Lab Sample ID:	**1312032-06**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/6/13 7:00	By:	DLV
Dilution Factor:	1	Analyzed:	12/6/13 16:34	By:	DLV
QC Batch:	1313145	Analytical Batch:	3L09003		

*Volatile Organic Compounds by EPA Method 624 (Continued)

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*98*	*85-118*
1,2-Dichloroethane-d4	*99*	*87-122*
Toluene-d8	*98*	*85-113*
4-Bromofluorobenzene	*93*	*82-110*

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Fermi LLHg Trip Blank**	Sampled:	12/2/13 0:00
Lab Sample ID:	**1312032-07**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	<0.500	0.500	ng/L	1	USEPA-1631E	12/05/13 12:08	MSM	1313075

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Intake Grab Day 1**	Sampled:	12/2/13 12:25
Lab Sample ID:	**1312032-08**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Chlorine, Total Residual (Field)	<0.20	0.20	mg/L	1	HACH-8167	12/02/13 12:25	JAE	1313078
Oxygen, Dissolved (Field)	**6.43**	0.10	mg/L	1	SM 4500-O G	12/02/13 12:25	JAE	1313078
pH (Field)	**7.51**	1.00	pH Units	1	SM 4500-H B-2011	12/02/13 12:25	JAE	1313078
Temperature °C (Field)	**5.0**	0.1	°C	1	SM 2550 B	12/02/13 12:25	JAE	1313078

TRIMATRIX
LABORATORIES

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Intake LLHg**	Sampled:	12/2/13 12:02
Lab Sample ID:	**1312032-09**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	**3.61**	0.500	ng/L	1	USEPA-1631E	12/19/13 10:56	MSM	1313536

ANALYTICAL REPORT

Client: **DTE - Fermi-2**
Project: Permit Renewal - Fermi, 2013
Client Sample ID: **Intake Grab Day 2**
Lab Sample ID: **1312032-10**
Matrix: Waste Water

Work Order: **1312032**
Description: Laboratory Services
Sampled: 12/3/13 12:00
Sampled By: J. Elsey
Received: 12/3/13 17:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Phenolics, Total	<0.0500	0.0500	mg/L	1	USEPA-420.4	12/09/13 10:39	LMA	1313065
Chlorine, Total Residual (Field)	<0.20	0.20	mg/L	1	HACH-8167	12/03/13 12:00	JAE	1313078
Oxygen, Dissolved (Field)	**7.56**	0.10	mg/L	1	SM 4500-O G	12/03/13 12:00	JAE	1313078
pH (Field)	**7.57**	1.00	pH Units	1	SM 4500-H B-2011	12/03/13 12:00	JAE	1313078
Temperature °C (Field)	**12.0**	0.1	°C	1	SM 2550 B	12/03/13 12:00	JAE	1313078
Cyanide, Available	<2.0	2.0	ug/L	1	USEPA OIA-1677	12/09/13 12:11	LMA	1313173
HEM; Oil & Grease	<5.10	5.10	mg/L	1	USEPA-1664A	12/10/13 08:00	WAH	1313184

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Intake LLHg Duplicate**	Sampled:	12/2/13 12:05
Lab Sample ID:	**1312032-11**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	**3.50**	0.500	ng/L	1	USEPA-1631E	12/19/13 09:14	MSM	1313536

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Intake LLHg Field Blank**	Sampled:	12/2/13 11:59
Lab Sample ID:	**1312032-12**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 1600 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Mercury	<0.500	0.500	ng/L	1	USEPA-1631E	12/05/13 12:19	MSM	1313075

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Intake VOC Lab Composite**	Sampled:	12/3/13 12:00		
Lab Sample ID:	**1312032-13**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/6/13 7:00	By:	DLV
Dilution Factor:	1	Analyzed:	12/6/13 17:03	By:	DLV
QC Batch:	1313145	Analytical Batch:	3L09003		

*Volatile Organic Compounds by EPA Method 624

CAS Number	Analyte	Analytical Result	RL
107-02-8	Acrolein	<5.0	5.0
107-13-1	Acrylonitrile	<1.0	1.0
71-43-2	Benzene	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
74-83-9	Bromomethane	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
*75-00-3	Chloroethane	<1.0	1.0
110-75-8	2-Chloroethyl Vinyl Ether	<10	10
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
124-48-1	Dibromochloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
542-75-6	1,3-Dichloropropene (Total)	<2.0	2.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-87-5	1,2-Dichloropropane	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
75-09-2	Methylene Chloride	<5.0	5.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Continued on next page

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Intake VOC Lab Composite**	Sampled:	12/3/13 12:00		
Lab Sample ID:	**1312032-13**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/6/13 7:00	By:	DLV
Dilution Factor:	1	Analyzed:	12/6/13 17:03	By:	DLV
QC Batch:	1313145	Analytical Batch:	3L09003		

*Volatile Organic Compounds by EPA Method 624 (Continued)

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*98*	*85-118*
1,2-Dichloroethane-d4	*98*	*87-122*
Toluene-d8	*99*	*85-113*
4-Bromofluorobenzene	*95*	*82-110*

*See Statement of Data Qualifications

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Intake Composite**	Sampled:	12/3/13 12:20		
Lab Sample ID:	**1312032-14**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/6/13 7:31	By:	ALK
Dilution Factor:	1	Analyzed:	12/13/13 3:08	By:	ASC
QC Batch:	1313086	Analytical Batch:	3L13025		

Polychlorinated Biphenyls (PCBs) by EPA Method 608

CAS Number	Analyte		Analytical Result	RL
12674-11-2	PCB-1016		<0.20	0.20
11104-28-2	PCB-1221		<0.20	0.20
11141-16-5	PCB-1232		<0.20	0.20
53469-21-9	PCB-1242		<0.20	0.20
12672-29-6	PCB-1248		<0.20	0.20
11097-69-1	PCB-1254		<0.20	0.20
11096-82-5	PCB-1260		<0.20	0.20
Surrogates:		*% Recovery*	***Control Limits***	
Decachlorobiphenyl		*86*	*45-134*	
Tetrachloro-m-xylene		*71*	*27-126*	

TRIMATRIX
LABORATORIES

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Intake Composite**	Sampled:	12/3/13 12:20		
Lab Sample ID:	**1312032-14**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/5/13 8:00	By:	ALK
Dilution Factor:	1	Analyzed:	12/11/13 6:36	By:	DWJ
QC Batch:	1313027	Analytical Batch:	3L11050		

Semivolatile Organic Compounds by EPA Method 625

CAS Number	Analyte	Analytical Result	RL
83-32-9	Acenaphthene	<5.0	5.0
208-96-8	Acenaphthylene	<5.0	5.0
120-12-7	Anthracene	<5.0	5.0
92-87-5	Benzidine	<50	50
56-55-3	Benzo(a)anthracene	<5.0	5.0
50-32-8	Benzo(a)pyrene	<5.0	5.0
205-99-2	Benzo(b)fluoranthene	<5.0	5.0
207-08-9	Benzo(k)fluoranthene	<5.0	5.0
191-24-2	Benzo(g,h,i)perylene	<5.0	5.0
101-55-3	4-Bromophenyl Phenyl Ether	<5.0	5.0
85-68-7	Butyl Benzyl Phthalate	<5.0	5.0
59-50-7	4-Chloro-3-methylphenol	<5.0	5.0
111-91-1	Bis(2-chloroethoxy)methane	<5.0	5.0
111-44-4	Bis(2-chloroethyl) Ether	<5.0	5.0
108-60-1	Bis(2-chloroisopropyl) Ether	<5.0	5.0
91-58-7	2-Chloronaphthalene	<5.0	5.0
95-57-8	2-Chlorophenol	<5.0	5.0
7005-72-3	4-Chlorophenyl Phenyl Ether	<5.0	5.0
218-01-9	Chrysene	<5.0	5.0
53-70-3	Dibenz(a,h)anthracene	<5.0	5.0
84-74-2	Di-n-butyl Phthalate	<5.0	5.0
95-50-1	1,2-Dichlorobenzene	<5.0	5.0
541-73-1	1,3-Dichlorobenzene	<5.0	5.0
106-46-7	1,4-Dichlorobenzene	<5.0	5.0
91-94-1	3,3´-Dichlorobenzidine	<20	20
120-83-2	2,4-Dichlorophenol	<5.0	5.0
84-66-2	Diethyl Phthalate	<5.0	5.0
105-67-9	2,4-Dimethylphenol	<5.0	5.0
131-11-3	Dimethyl Phthalate	<5.0	5.0

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ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Intake Composite**	Sampled:	12/3/13 12:20		
Lab Sample ID:	**1312032-14**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/5/13 8:00	By:	ALK
Dilution Factor:	1	Analyzed:	12/11/13 6:36	By:	DWJ
QC Batch:	1313027	Analytical Batch:	3L11050		

Semivolatile Organic Compounds by EPA Method 625 (Continued)

CAS Number	Analyte	Analytical Result	RL
534-52-1	4,6-Dinitro-2-methylphenol	<20	20
51-28-5	2,4-Dinitrophenol	<20	20
121-14-2	2,4-Dinitrotoluene	<5.0	5.0
606-20-2	2,6-Dinitrotoluene	<5.0	5.0
117-84-0	Di-n-octyl Phthalate	<5.0	5.0
122-66-7	1,2-Diphenylhydrazine	<5.0	5.0
117-81-7	Bis(2-ethylhexyl) Phthalate	<5.0	5.0
206-44-0	Fluoranthene	<5.0	5.0
86-73-7	Fluorene	<5.0	5.0
118-74-1	Hexachlorobenzene	<5.0	5.0
87-68-3	Hexachlorobutadiene	<5.0	5.0
77-47-4	Hexachlorocyclopentadiene	<5.0	5.0
67-72-1	Hexachloroethane	<5.0	5.0
193-39-5	Indeno(1,2,3-cd)pyrene	<5.0	5.0
78-59-1	Isophorone	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
98-95-3	Nitrobenzene	<5.0	5.0
100-02-7	4-Nitrophenol	<20	20
88-75-5	2-Nitrophenol	<5.0	5.0
62-75-9	N-Nitroso-dimethylamine	<5.0	5.0
86-30-6	N-Nitroso-diphenylamine	<5.0	5.0
621-64-7	N-Nitroso-di-n-propylamine	<5.0	5.0
87-86-5	Pentachlorophenol	<20	20
85-01-8	Phenanthrene	<5.0	5.0
108-95-2	Phenol	<5.0	5.0
129-00-0	Pyrene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
88-06-2	2,4,6-Trichlorophenol	<5.0	5.0

Continued on next page

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**Intake Composite**	Sampled:	12/3/13 12:20		
Lab Sample ID:	**1312032-14**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/5/13 8:00	By:	ALK
Dilution Factor:	1	Analyzed:	12/11/13 6:36	By:	DWJ
QC Batch:	1313027	Analytical Batch:	3L11050		

Semivolatile Organic Compounds by EPA Method 625 (Continued)

CAS Number	Analyte			Analytical Result	RL
	Surrogates:	*% Recovery*	*Control Limits*		
	2-Fluorophenol	40	18-74		
	Phenol-d6	26	12-47		
	Nitrobenzene-d5	80	34-122		
	2-Fluorobiphenyl	81	36-136		
	2,4,6-Tribromophenol	56	19-131		
	o-Terphenyl	84	27-138		

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**Intake Composite**	Sampled:	12/3/13 12:20
Lab Sample ID:	**1312032-14**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 200 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	**0.65**	0.050	mg/L	1	USEPA-200.7	12/09/13 12:12	KLV	1313073
Antimony	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Arsenic	**1.1**	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Barium	**26**	5.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Beryllium	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Boron	**27**	20	ug/L	1	USEPA-200.8	12/10/13 10:19	MSM	1313011
Cadmium	<0.20	0.20	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Chromium	<10	10	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Cobalt	<10	10	ug/L	1	USEPA-200.7	12/09/13 12:12	KLV	1313073
Copper	**3.7**	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Iron	**1.0**	0.010	mg/L	1	USEPA-200.7	12/09/13 15:40	CKD	1313073
Lead	**1.2**	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Magnesium	**11**	0.50	mg/L	1	USEPA-200.7	12/09/13 15:40	CKD	1313073
Manganese	**0.031**	0.010	mg/L	1	USEPA-200.7	12/09/13 12:12	KLV	1313073
Molybdenum	<0.10	0.10	mg/L	1	USEPA-200.7	12/05/13 09:54	KLV	1312991
Nickel	<5.0	5.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Selenium	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Silver	<0.50	0.50	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Thallium	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011
Tin	<0.20	0.20	mg/L	1	USEPA-200.7	12/05/13 09:54	KLV	1312991
Titanium	<0.10	0.10	mg/L	1	USEPA-200.7	12/05/13 09:54	KLV	1312991
Zinc	**11**	10	ug/L	1	USEPA-200.8	12/09/13 13:27	MSM	1313011

ANALYTICAL REPORT

Client: **DTE - Fermi-2**
Project: Permit Renewal - Fermi, 2013
Client Sample ID: **Intake Composite**
Lab Sample ID: **1312032-14**
Matrix: Waste Water

Work Order: **1312032**
Description: Laboratory Services
Sampled: 12/3/13 12:20
Sampled By: J. Elsey
Received: 12/3/13 17:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO3	**147**	2	mg/L	1	SM 2340 C-2011	12/06/13 14:30	KAR	1313099
BOD, (5-Day)	<4.0	4.0	mg/L	1	SM 5210 B-2011	12/04/13 11:37	SKA	1313038
Bromide	<0.50	0.50	mg/L	1	ASTM D 1246-05	12/11/13 13:00	SLL	1313240
Chemical Oxygen Demand	**22**	5.0	mg/L	1	SM 5220 D-2011	12/04/13 14:59	SLL	1313025
Color (Apparent)	**15.0**	5.00	A.C.U.	1	SM 2120 B-2011	12/04/13 14:23	CAC	1313019
Fluoride	**0.16**	0.10	mg/L	1	SM 4500-F C-2011	12/13/13 10:40	SLL	1313326
Surfactants, MBAS	<0.0250	0.0250	mg/L	1	SM 5540 C-2011	12/04/13 12:14	WAH	1313020
Phosphorus, Total	**0.148**	0.0100	mg/L	1	SM 4500-P E-2011	12/10/13 10:09	KAR	1313144
Residue, Dissolved @ 180° C	**190**	50	mg/L	1	SM 2540 C-2011	12/05/13 13:00	WAH	1313033
Residue, Suspended	**25.7**	3.3	mg/L	1	SM 2540 D-2011	12/05/13 15:30	WAH	1313036
Sulfate	**30**	5.0	mg/L	1	ASTM D516-90 (07)	12/12/13 09:45	LMA	1313298
Sulfide, Total	<0.020	0.020	mg/L	1	SM 4500-S2 D-2011	12/06/13 15:28	WAH	1313149
Sulfite	<1.0	1.0	mg/L	1	SM 4500-SO3 B-2011	12/04/13 13:50	CAC	1313110
Carbon, Total Organic	**3.6**	0.50	mg/L	1	SM 5310 C-2011	12/05/13 19:16	KAR	1313095
Nitrogen, Ammonia	**0.079**	0.050	mg/L	1	SM 4500-NH3 G-2011	12/11/13 11:15	CLB	1313163
Nitrogen, Nitrate+Nitrite	**0.48**	0.050	mg/L	1	SM 4500-NO3 F-2011	12/04/13 13:19	CAC	1313118
Nitrogen, Organic	<0.50	0.50	mg/L	1	EPA-351.2/4500-NH3G	12/12/13 14:35	CLB	1313201
Nitrogen, Total Kjeldahl	<0.50	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	12/09/13 11:45	CLB	1313050
Nitrogen, Inorganic	**0.56**	0.050	mg/L	1	[CALC]	12/11/13 11:15	CAC	[CALC]

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**001 Composite**	Sampled:	12/3/13 12:55		
Lab Sample ID:	**1312032-15**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/6/13 7:31	By:	ALK
Dilution Factor:	1	Analyzed:	12/13/13 3:36	By:	ASC
QC Batch:	1313086	Analytical Batch:	3L13025		

Polychlorinated Biphenyls (PCBs) by EPA Method 608

CAS Number	Analyte			Analytical Result	RL
12674-11-2	PCB-1016			<0.20	0.20
11104-28-2	PCB-1221			<0.20	0.20
11141-16-5	PCB-1232			<0.20	0.20
53469-21-9	PCB-1242			<0.20	0.20
12672-29-6	PCB-1248			<0.20	0.20
11097-69-1	PCB-1254			<0.20	0.20
11096-82-5	PCB-1260			<0.20	0.20
	Surrogates:	***% Recovery***	***Control Limits***		
	Decachlorobiphenyl	*73*	*45-134*		
	Tetrachloro-m-xylene	*64*	*27-126*		

TRIMATRIX
LABORATORIES

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**001 Composite**	Sampled:	12/3/13 12:55		
Lab Sample ID:	**1312032-15**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/5/13 8:00	By:	ALK
Dilution Factor:	1	Analyzed:	12/11/13 7:08	By:	DWJ
QC Batch:	1313027	Analytical Batch:	3L11050		

Semivolatile Organic Compounds by EPA Method 625

CAS Number	Analyte	Analytical Result	RL
83-32-9	Acenaphthene	<5.0	5.0
208-96-8	Acenaphthylene	<5.0	5.0
120-12-7	Anthracene	<5.0	5.0
92-87-5	Benzidine	<50	50
56-55-3	Benzo(a)anthracene	<5.0	5.0
50-32-8	Benzo(a)pyrene	<5.0	5.0
205-99-2	Benzo(b)fluoranthene	<5.0	5.0
207-08-9	Benzo(k)fluoranthene	<5.0	5.0
191-24-2	Benzo(g,h,i)perylene	<5.0	5.0
101-55-3	4-Bromophenyl Phenyl Ether	<5.0	5.0
85-68-7	Butyl Benzyl Phthalate	<5.0	5.0
59-50-7	4-Chloro-3-methylphenol	<5.0	5.0
111-91-1	Bis(2-chloroethoxy)methane	<5.0	5.0
111-44-4	Bis(2-chloroethyl) Ether	<5.0	5.0
108-60-1	Bis(2-chloroisopropyl) Ether	<5.0	5.0
91-58-7	2-Chloronaphthalene	<5.0	5.0
95-57-8	2-Chlorophenol	<5.0	5.0
7005-72-3	4-Chlorophenyl Phenyl Ether	<5.0	5.0
218-01-9	Chrysene	<5.0	5.0
53-70-3	Dibenz(a,h)anthracene	<5.0	5.0
84-74-2	Di-n-butyl Phthalate	<5.0	5.0
95-50-1	1,2-Dichlorobenzene	<5.0	5.0
541-73-1	1,3-Dichlorobenzene	<5.0	5.0
106-46-7	1,4-Dichlorobenzene	<5.0	5.0
91-94-1	3,3′-Dichlorobenzidine	<20	20
120-83-2	2,4-Dichlorophenol	<5.0	5.0
84-66-2	Diethyl Phthalate	<5.0	5.0
105-67-9	2,4-Dimethylphenol	<5.0	5.0
131-11-3	Dimethyl Phthalate	<5.0	5.0

Continued on next page

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**		
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services		
Client Sample ID:	**001 Composite**	Sampled:	12/3/13 12:55		
Lab Sample ID:	**1312032-15**	Sampled By:	J. Elsey		
Matrix:	Waste Water	Received:	12/3/13 17:00		
Unit:	ug/L	Prepared:	12/5/13 8:00	By:	ALK
Dilution Factor:	1	Analyzed:	12/11/13 7:08	By:	DWJ
QC Batch:	1313027	Analytical Batch:	3L11050		

Semivolatile Organic Compounds by EPA Method 625 (Continued)

CAS Number	Analyte	Analytical Result	RL
534-52-1	4,6-Dinitro-2-methylphenol	<20	20
51-28-5	2,4-Dinitrophenol	<20	20
121-14-2	2,4-Dinitrotoluene	<5.0	5.0
606-20-2	2,6-Dinitrotoluene	<5.0	5.0
117-84-0	Di-n-octyl Phthalate	<5.0	5.0
122-66-7	1,2-Diphenylhydrazine	<5.0	5.0
117-81-7	Bis(2-ethylhexyl) Phthalate	<5.0	5.0
206-44-0	Fluoranthene	<5.0	5.0
86-73-7	Fluorene	<5.0	5.0
118-74-1	Hexachlorobenzene	<5.0	5.0
87-68-3	Hexachlorobutadiene	<5.0	5.0
77-47-4	Hexachlorocyclopentadiene	<5.0	5.0
67-72-1	Hexachloroethane	<5.0	5.0
193-39-5	Indeno(1,2,3-cd)pyrene	<5.0	5.0
78-59-1	Isophorone	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
98-95-3	Nitrobenzene	<5.0	5.0
100-02-7	4-Nitrophenol	<20	20
88-75-5	2-Nitrophenol	<5.0	5.0
62-75-9	N-Nitroso-dimethylamine	<5.0	5.0
86-30-6	N-Nitroso-diphenylamine	<5.0	5.0
621-64-7	N-Nitroso-di-n-propylamine	<5.0	5.0
87-86-5	Pentachlorophenol	<20	20
85-01-8	Phenanthrene	<5.0	5.0
108-95-2	Phenol	<5.0	5.0
129-00-0	Pyrene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
88-06-2	2,4,6-Trichlorophenol	<5.0	5.0

Continued on next page

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**001 Composite**	Sampled:	12/3/13 12:55
Lab Sample ID:	**1312032-15**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00
Unit:	ug/L	Prepared:	12/5/13 8:00 By: ALK
Dilution Factor:	1	Analyzed:	12/11/13 7:08 By: DWJ
QC Batch:	1313027	Analytical Batch:	3L11050

Semivolatile Organic Compounds by EPA Method 625 (Continued)

CAS Number	Analyte			Analytical Result	RL
	Surrogates:	*% Recovery*	*Control Limits*		
	2-Fluorophenol	*40*	*18-74*		
	Phenol-d6	*26*	*12-47*		
	Nitrobenzene-d5	*66*	*34-122*		
	2-Fluorobiphenyl	*68*	*36-136*		
	2,4,6-Tribromophenol	*51*	*19-131*		
	o-Terphenyl	*74*	*27-138*		

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**001 Composite**	Sampled:	12/3/13 12:55
Lab Sample ID:	**1312032-15**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Total Metals by EPA 200 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Aluminum	**1.0**	0.050	mg/L	1	USEPA-200.7	12/09/13 12:16	KLV	1313073
Antimony	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Arsenic	**2.3**	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Barium	**46**	5.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Beryllium	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Boron	**46**	20	ug/L	1	USEPA-200.8	12/10/13 10:20	MSM	1313011
Cadmium	<0.20	0.20	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Chromium	<10	10	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Cobalt	<10	10	ug/L	1	USEPA-200.7	12/09/13 12:16	KLV	1313073
Copper	**7.1**	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Iron	**1.6**	0.010	mg/L	1	USEPA-200.7	12/09/13 15:43	CKD	1313073
Lead	**2.1**	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Magnesium	**20**	0.50	mg/L	1	USEPA-200.7	12/09/13 15:43	CKD	1313073
Manganese	**0.047**	0.010	mg/L	1	USEPA-200.7	12/09/13 12:16	KLV	1313073
Molybdenum	<0.10	0.10	mg/L	1	USEPA-200.7	12/05/13 09:58	KLV	1312991
Nickel	<5.0	5.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Selenium	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Silver	<0.50	0.50	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Thallium	<1.0	1.0	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011
Tin	<0.20	0.20	mg/L	1	USEPA-200.7	12/05/13 09:58	KLV	1312991
Titanium	<0.10	0.10	mg/L	1	USEPA-200.7	12/05/13 09:58	KLV	1312991
Zinc	**18**	10	ug/L	1	USEPA-200.8	12/09/13 13:34	MSM	1313011

ANALYTICAL REPORT

Client:	**DTE - Fermi-2**	Work Order:	**1312032**
Project:	Permit Renewal - Fermi, 2013	Description:	Laboratory Services
Client Sample ID:	**001 Composite**	Sampled:	12/3/13 12:55
Lab Sample ID:	**1312032-15**	Sampled By:	J. Elsey
Matrix:	Waste Water	Received:	12/3/13 17:00

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Hardness as CaCO3	**248**	2	mg/L	1	SM 2340 C-2011	12/06/13 14:30	KAR	1313099
BOD, (5-Day)	<4.0	4.0	mg/L	1	SM 5210 B-2011	12/04/13 11:31	SKA	1313038
Bromide	<0.50	0.50	mg/L	1	ASTM D 1246-05	12/11/13 13:00	SLL	1313240
Chemical Oxygen Demand	**28**	5.0	mg/L	1	SM 5220 D-2011	12/04/13 14:59	SLL	1313025
Color (Apparent)	**15.0**	5.00	A.C.U.	1	SM 2120 B-2011	12/04/13 14:23	CAC	1313019
Fluoride	**0.23**	0.10	mg/L	1	SM 4500-F C-2011	12/13/13 10:40	SLL	1313326
Surfactants, MBAS	<0.0250	0.0250	mg/L	1	SM 5540 C-2011	12/04/13 12:15	WAH	1313020
Phosphorus, Total	**0.667**	0.0100	mg/L	1	SM 4500-P E-2011	12/10/13 10:09	KAR	1313144
Residue, Dissolved @ 180° C	**340**	50	mg/L	1	SM 2540 C-2011	12/05/13 13:00	WAH	1313033
Residue, Suspended	**59.4**	5.0	mg/L	1	SM 2540 D-2011	12/05/13 15:30	WAH	1313036
Sulfate	**49**	10	mg/L	2	ASTM D516-90 (07)	12/12/13 10:38	LMA	1313298
Sulfide, Total	<0.020	0.020	mg/L	1	SM 4500-S2 D-2011	12/06/13 15:31	WAH	1313149
Sulfite	<1.0	1.0	mg/L	1	SM 4500-SO3 B-2011	12/04/13 13:50	CAC	1313110
Carbon, Total Organic	**5.3**	0.50	mg/L	1	SM 5310 C-2011	12/05/13 20:20	KAR	1313095
Nitrogen, Ammonia	**0.089**	0.050	mg/L	1	SM 4500-NH3 G-2011	12/11/13 11:15	CLB	1313163
Nitrogen, Nitrate+Nitrite	**0.87**	0.050	mg/L	1	SM 4500-NO3 F-2011	12/04/13 13:19	CAC	1313118
Nitrogen, Organic	**0.51**	0.50	mg/L	1	EPA-351.2/4500-NH3G	12/12/13 14:35	CLB	1313201
Nitrogen, Total Kjeldahl	**0.59**	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	12/09/13 11:45	CLB	1313050
Nitrogen, Inorganic	**0.96**	0.050	mg/L	1	[CALC]	12/11/13 11:15	CAC	[CALC]

QUALITY CONTROL REPORT

Polychlorinated Biphenyls (PCBs) by EPA Method 608

QC Batch: 1313086 608 Liquid/Liquid Extraction/USEPA-608

Method Blank Analyzed: 12/13/2013 By: ASC
Unit: ug/L Analytical Batch: 3L13025

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
PCB-1016			<0.20			--		0.20
PCB-1221			<0.20					0.20
PCB-1232			<0.20					0.20
PCB-1242			<0.20					0.20
PCB-1248			<0.20					0.20
PCB-1254			<0.20					0.20
PCB-1260			<0.20					0.20
Surrogates:								
Decachlorobiphenyl				*98*	*45-134*			
Tetrachloro-m-xylene				*72*	*27-126*			

Laboratory Control Sample Analyzed: 12/13/2013 By: ASC
Unit: ug/L Analytical Batch: 3L13025

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
PCB-1248		0.600	**0.552**	92	38-158	--		0.20
Surrogates:								
Decachlorobiphenyl				*96*	*45-134*			
Tetrachloro-m-xylene				*70*	*27-126*			

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 624

QC Batch: 1313145 5030B Aqueous Purge & Trap/USEPA-624

Method Blank Analyzed: 12/06/2013 By: DLV

Unit: ug/L Analytical Batch: 3L09003

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Acrolein			<5.0					5.0
Acrylonitrile			<1.0					1.0
Benzene			<1.0					1.0
Bromodichloromethane			<1.0					1.0
Bromoform			<1.0					1.0
Bromomethane			<1.0					1.0
Carbon Tetrachloride			<1.0					1.0
Chlorobenzene			<1.0					1.0
Chloroethane			<1.0					1.0
2-Chloroethyl Vinyl Ether			<10					10
Chloroform			<1.0					1.0
Chloromethane			<1.0					1.0
Dibromochloromethane			<1.0					1.0
1,1-Dichloroethane			<1.0					1.0
1,2-Dichloroethane			<1.0					1.0
1,1-Dichloroethene			<1.0					1.0
1,3-Dichloropropene (Total)			<2.0					2.0
trans-1,2-Dichloroethene			<1.0					1.0
1,2-Dichloropropane			<1.0					1.0
Ethylbenzene			<1.0					1.0
Methylene Chloride			<5.0					5.0
1,1,2,2-Tetrachloroethane			<1.0					1.0
Tetrachloroethene			<1.0					1.0
Toluene			<1.0					1.0
1,1,1-Trichloroethane			<1.0					1.0
1,1,2-Trichloroethane			<1.0					1.0
Trichloroethene			<1.0					1.0
Vinyl Chloride			<1.0					1.0
Surrogates:								
Dibromofluoromethane				*101*	*85-118*			
1,2-Dichloroethane-d4				*99*	*87-122*			
Toluene-d8				*100*	*85-113*			
4-Bromofluorobenzene				*95*	*82-110*			

Continued on next page

Volatile Organic Compounds by EPA Method 624 (Continued)

QC Batch: 1313145 (Continued) 5030B Aqueous Purge & Trap/USEPA-624

Laboratory Control Sample Analyzed: 12/06/2013 By: DLV

Unit: ug/L Analytical Batch: 3L09003

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Acrolein		40.0	**44.5**	111	48-146	--		5.0
Acrylonitrile		40.0	**34.4**	86	73-129	--		1.0
Benzene		40.0	**39.7**	99	84-119	--		1.0
Bromodichloromethane		40.0	**37.6**	94	82-124	--		1.0
Bromoform		40.0	**34.8**	87	65-123	--		1.0
Bromomethane		40.0	**45.0**	113	55-142	--		1.0
Carbon Tetrachloride		40.0	**38.2**	95	79-127	--		1.0
Chlorobenzene		40.0	**38.0**	95	84-118	--		1.0
Chloroethane		40.0	**49.2**	123	76-124	--		1.0
Chloroform		40.0	**39.1**	98	82-119	--		1.0
Chloromethane		40.0	**39.5**	99	73-125	--		1.0
Dibromochloromethane		40.0	**34.9**	87	74-121	--		1.0
1,1-Dichloroethane		40.0	**39.2**	98	80-118	--		1.0
1,2-Dichloroethane		40.0	**37.8**	95	81-122	--		1.0
1,1-Dichloroethene		40.0	**42.6**	107	77-123	--		1.0
1,3-Dichloropropene (Total)		80.0	**65.5**	82	81-116	--		2.0
trans-1,2-Dichloroethene		40.0	**39.7**	99	76-126	--		1.0
1,2-Dichloropropane		40.0	**40.5**	101	82-122	--		1.0
Ethylbenzene		40.0	**38.2**	96	87-119	--		1.0
Methylene Chloride		40.0	**38.6**	97	75-129	--		5.0
1,1,2,2-Tetrachloroethane		40.0	**37.5**	94	70-137	--		1.0
Tetrachloroethene		40.0	**38.4**	96	81-117	--		1.0
Toluene		40.0	**38.5**	96	85-118	--		1.0
1,1,1-Trichloroethane		40.0	**39.8**	99	81-122	--		1.0
1,1,2-Trichloroethane		40.0	**37.9**	95	83-121	--		1.0
Trichloroethene		40.0	**39.9**	100	82-119	--		1.0
Vinyl Chloride		40.0	**42.1**	105	77-123	--		1.0
Surrogates:								
Dibromofluoromethane				*103*	*85-118*			
1,2-Dichloroethane-d4				*97*	*87-122*			
Toluene-d8				*101*	*85-113*			
4-Bromofluorobenzene				*97*	*82-110*			

QUALITY CONTROL REPORT

Semivolatile Organic Compounds by EPA Method 625

QC Batch: 1313027 625 Liquid/Liquid Extraction/USEPA-625

Method Blank Analyzed: 12/11/2013 By: DWJ
Unit: ug/L Analytical Batch: 3L11050

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Acenaphthene			<5.0					5.0
Acenaphthylene			<5.0					5.0
Anthracene			<5.0					5.0
Benzidine			<50					50
Benzo(a)anthracene			<5.0			--		5.0
Benzo(a)pyrene			<5.0					5.0
Benzo(b)fluoranthene			<5.0					5.0
Benzo(k)fluoranthene			<5.0					5.0
Benzo(g,h,i)perylene			<5.0					5.0
4-Bromophenyl Phenyl Ether			<5.0					5.0
Butyl Benzyl Phthalate			<5.0					5.0
4-Chloro-3-methylphenol			<5.0					5.0
Bis(2-chloroethoxy)methane			<5.0			--		5.0
Bis(2-chloroethyl) Ether			<5.0					5.0
Bis(2-chloroisopropyl) Ether			<5.0					5.0
2-Chloronaphthalene			<5.0					5.0
2-Chlorophenol			<5.0			--		5.0
4-Chlorophenyl Phenyl Ether			<5.0					5.0
Chrysene			<5.0			--		5.0
Dibenz(a,h)anthracene			<5.0					5.0
Di-n-butyl Phthalate			<5.0			--		5.0
1,2-Dichlorobenzene			<5.0					5.0
1,3-Dichlorobenzene			<5.0					5.0
1,4-Dichlorobenzene			<5.0					5.0
3,3´-Dichlorobenzidine			<20					20
2,4-Dichlorophenol			<5.0					5.0
Diethyl Phthalate			<5.0			--		5.0
2,4-Dimethylphenol			<5.0					5.0
Dimethyl Phthalate			<5.0					5.0
4,6-Dinitro-2-methylphenol			<20			--		20
2,4-Dinitrophenol			<20					20
2,4-Dinitrotoluene			<5.0					5.0
2,6-Dinitrotoluene			<5.0					5.0
Di-n-octyl Phthalate			<5.0					5.0
1,2-Diphenylhydrazine			<5.0					5.0
Bis(2-ethylhexyl) Phthalate			<5.0			--		5.0

Continued on next page

Semivolatile Organic Compounds by EPA Method 625 (Continued)

QC Batch: 1313027 (Continued) 625 Liquid/Liquid Extraction/USEPA-625

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank (Continued)					Analyzed:		12/11/2013	By: DWJ
Unit: ug/L					Analytical Batch:		3L11050	
Fluoranthene			<5.0					5.0
Fluorene			<5.0					5.0
Hexachlorobenzene			<5.0					5.0
Hexachlorobutadiene			<5.0					5.0
Hexachlorocyclopentadiene			<5.0					5.0
Hexachloroethane			<5.0					5.0
Indeno(1,2,3-cd)pyrene			<5.0					5.0
Isophorone			<5.0					5.0
Naphthalene			<5.0					5.0
Nitrobenzene			<5.0			--		5.0
4-Nitrophenol			<20					20
2-Nitrophenol			<5.0					5.0
N-Nitroso-dimethylamine			<5.0					5.0
N-Nitroso-diphenylamine			<5.0			--		5.0
N-Nitroso-di-n-propylamine			<5.0					5.0
Pentachlorophenol			<20					20
Phenanthrene			<5.0					5.0
Phenol			<5.0					5.0
Pyrene			<5.0					5.0
1,2,4-Trichlorobenzene			<5.0					5.0
2,4,6-Trichlorophenol			<5.0					5.0
Surrogates:								
2-Fluorophenol				*49*	*18-74*			
Phenol-d6				*31*	*12-47*			
Nitrobenzene-d5				*87*	*34-122*			
2-Fluorobiphenyl				*94*	*36-136*			
2,4,6-Tribromophenol				*69*	*19-131*			
o-Terphenyl				*98*	*27-138*			
Laboratory Control Sample					Analyzed:		12/11/2013	By: DWJ
Unit: ug/L					Analytical Batch:		3L11050	
Acenaphthene		100	**99.2**	99	47-145	--		5.0

Continued on next page

QUALITY CONTROL REPORT

Semivolatile Organic Compounds by EPA Method 625 (Continued)

QC Batch: 1313027 (Continued) 625 Liquid/Liquid Extraction/USEPA-625

Laboratory Control Sample (Continued) Analyzed: 12/11/2013 By: DWJ
Unit: ug/L Analytical Batch: 3L11050

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Acenaphthylene		100	**102**	102	33-145	--		5.0
Anthracene		100	**99.3**	99	27-133	--		5.0
Benzidine		200	**171**	86	28-120	--		50
Benzo(a)anthracene		100	**96.8**	97	33-143	--		5.0
Benzo(a)pyrene		100	**96.8**	97	17-163	--		5.0
Benzo(b)fluoranthene		100	**96.6**	97	24-159	--		5.0
Benzo(k)fluoranthene		100	**104**	104	11-162	--		5.0
Benzo(g,h,i)perylene		100	**96.5**	96	1-219	--		5.0
4-Bromophenyl Phenyl Ether		100	**83.0**	83	53-127	--		5.0
Butyl Benzyl Phthalate		100	**98.3**	98	1-152	--		5.0
4-Chloro-3-methylphenol		100	**93.9**	94	22-147	--		5.0
Bis(2-chloroethoxy)methane		100	**100**	100	33-184	--		5.0
Bis(2-chloroethyl) Ether		100	**105**	105	12-158	--		5.0
Bis(2-chloroisopropyl) Ether		100	**104**	104	36-166	--		5.0
2-Chloronaphthalene		100	**101**	101	60-118	--		5.0
2-Chlorophenol		100	**93.2**	93	23-134	--		5.0
4-Chlorophenyl Phenyl Ether		100	**93.5**	94	25-158	--		5.0
Chrysene		100	**102**	102	17-168	--		5.0
Dibenz(a,h)anthracene		100	**94.1**	94	1-227	--		5.0
Di-n-butyl Phthalate		100	**94.5**	94	1-118	--		5.0
1,2-Dichlorobenzene		100	**97.5**	98	32-129	--		5.0
1,3-Dichlorobenzene		100	**98.3**	98	1-172	--		5.0
1,4-Dichlorobenzene		100	**100**	100	20-124	--		5.0
3,3´-Dichlorobenzidine		200	**214**	107	1-262	--		20
2,4-Dichlorophenol		100	**97.4**	97	39-135	--		5.0
Diethyl Phthalate		100	**97.6**	98	1-114	--		5.0
2,4-Dimethylphenol		100	**91.0**	91	32-119	--		5.0
Dimethyl Phthalate		100	**96.5**	96	1-112	--		5.0
4,6-Dinitro-2-methylphenol		100	**100**	100	1-181	--		20
2,4-Dinitrophenol		100	**76.0**	76	1-191	--		20
2,4-Dinitrotoluene		100	**93.2**	93	39-139	--		5.0
2,6-Dinitrotoluene		100	**90.8**	91	50-158	--		5.0
Di-n-octyl Phthalate		100	**95.2**	95	4-146	--		5.0
1,2-Diphenylhydrazine		100	**96.5**	96	62-128	--		5.0
Bis(2-ethylhexyl) Phthalate		100	**99.8**	100	8-158	--		5.0
Fluoranthene		100	**99.8**	100	26-137	--		5.0

Continued on next page

Semivolatile Organic Compounds by EPA Method 625 (Continued)

QC Batch: 1313027 (Continued) 625 Liquid/Liquid Extraction/USEPA-625

Laboratory Control Sample (Continued)
Unit: ug/L
Analyzed: 12/11/2013 By: DWJ
Analytical Batch: 3L11050

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Fluorene		100	**99.8**	100	59-121	--		5.0
Hexachlorobenzene		100	**99.0**	99	1-152	--		5.0
Hexachlorobutadiene		100	**104**	104	24-116	--		5.0
Hexachlorocyclopentadiene		100	**92.3**	92	21-138	--		5.0
Hexachloroethane		100	**102**	102	40-113	--		5.0
Indeno(1,2,3-cd)pyrene		100	**92.4**	92	21-196	--		5.0
Isophorone		100	**99.7**	100	56-129	--		5.0
Naphthalene		100	**103**	103	21-133	--		5.0
Nitrobenzene		100	**99.2**	99	35-180	--		5.0
4-Nitrophenol		100	**29.1**	29	1-132	--		20
2-Nitrophenol		100	**99.7**	100	29-182	--		5.0
N-Nitroso-dimethylamine		100	**59.7**	60	22-87	--		5.0
N-Nitroso-diphenylamine		100	**82.2**	82	45-110	--		5.0
N-Nitroso-di-n-propylamine		100	**101**	101	1-230	--		5.0
Pentachlorophenol		100	**80.9**	81	14-176	--		20
Phenanthrene		100	**97.5**	98	54-120	--		5.0
Phenol		100	**41.9**	42	5-112	--		5.0
Pyrene		100	**95.9**	96	52-115	--		5.0
1,2,4-Trichlorobenzene		100	**95.1**	95	44-142	--		5.0
2,4,6-Trichlorophenol		100	**89.9**	90	37-144	--		5.0
Surrogates:								
2-Fluorophenol				*57*	*18-74*			
Phenol-d6				*38*	*12-47*			
Nitrobenzene-d5				*89*	*34-122*			
2-Fluorobiphenyl				*92*	*36-136*			
2,4,6-Tribromophenol				*82*	*19-131*			
o-Terphenyl				*93*	*27-138*			

Total Metals by EPA 200 Series Methods

Analyte: **Aluminum**/USEPA-200.7

QC Batch: 1313073 (200.2 Digestion) Analyzed: 12/09/2013 By: KLV

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<0.050	mg/L					0.050
Laboratory Control Sample		2.00	**1.87**	mg/L	93	85-115			0.050

Analyte: **Antimony**/USEPA-200.8

QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/09/2013 By: MSM

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	**52.7**	ug/L	105	85-115			1.0

Analyte: **Arsenic**/USEPA-200.8

QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/09/2013 By: MSM

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	**51.1**	ug/L	102	85-115			1.0

Analyte: **Barium**/USEPA-200.8

QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/09/2013 By: MSM

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<5.0	ug/L					5.0
Laboratory Control Sample		50.0	**53.5**	ug/L	107	85-115			5.0

Analyte: **Beryllium**/USEPA-200.8

QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/09/2013 By: MSM

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	**47.4**	ug/L	95	85-115			1.0

Analyte: **Boron**/USEPA-200.8

QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/10/2013 By: MSM

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<20	ug/L					20
Laboratory Control Sample		50.0	**45.2**	ug/L	90	85-115			20

Analyte: **Cadmium**/USEPA-200.8

QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/09/2013 By: MSM

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Method Blank			<0.20	ug/L					0.20

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QUALITY CONTROL REPORT

Total Metals by EPA 200 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Cadmium/USEPA-200.8 (Continued)									
QC Batch: 1313011 (Continued) (200.2 Digestion)						Analyzed:		12/09/2013	By: MSM
Laboratory Control Sample		50.0	**51.2**	ug/L	102	85-115			0.20
Analyte: Chromium/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)						Analyzed:		12/09/2013	By: MSM
Method Blank			<10	ug/L					10
Laboratory Control Sample		50.0	**43.8**	ug/L	88	85-115			10
Analyte: Cobalt/USEPA-200.7									
QC Batch: 1313073 (200.2 Digestion)						Analyzed:		12/09/2013	By: KLV
Method Blank			<10	ug/L					10
Laboratory Control Sample		400	**379**	ug/L	95	85-115			10
Analyte: Copper/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)						Analyzed:		12/09/2013	By: MSM
Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	**47.5**	ug/L	95	85-115			1.0
Analyte: Iron/USEPA-200.7									
QC Batch: 1313073 (200.2 Digestion)						Analyzed:		12/09/2013	By: CKD
Method Blank			<0.010	mg/L					0.010
Laboratory Control Sample		0.400	**0.391**	mg/L	98	85-115			0.010
Analyte: Lead/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)						Analyzed:		12/09/2013	By: MSM
Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	**50.3**	ug/L	101	85-115			1.0
Analyte: Magnesium/USEPA-200.7									
QC Batch: 1313073 (200.2 Digestion)						Analyzed:		12/09/2013	By: CKD
Method Blank			<0.50	mg/L					0.50

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Total Metals by EPA 200 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Magnesium/USEPA-200.7 (Continued)									
QC Batch: 1313073 (Continued) (200.2 Digestion)							Analyzed:	12/09/2013	By: CKD
Laboratory Control Sample		20.0	**19.7**	mg/L	98	85-115			0.50
Analyte: Manganese/USEPA-200.7									
QC Batch: 1313073 (200.2 Digestion)							Analyzed:	12/09/2013	By: KLV
Method Blank			<0.010	mg/L					0.010
Laboratory Control Sample		0.400	**0.378**	mg/L	94	85-115			0.010
Analyte: Molybdenum/USEPA-200.7									
QC Batch: 1312991 (200.2 Digestion)							Analyzed:	12/05/2013	By: KLV
Method Blank			<0.10	mg/L					0.10
Laboratory Control Sample		0.400	**0.422**	mg/L	106	85-115			0.10
Analyte: Nickel/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)							Analyzed:	12/09/2013	By: MSM
Method Blank			<5.0	ug/L					5.0
Laboratory Control Sample		50.0	**47.0**	ug/L	94	85-115			5.0
Analyte: Selenium/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)							Analyzed:	12/09/2013	By: MSM
Method Blank			<1.0	ug/L					1.0
Laboratory Control Sample		50.0	**48.9**	ug/L	98	85-115			1.0
Analyte: Silver/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)							Analyzed:	12/09/2013	By: MSM
Method Blank			<0.50	ug/L					0.50
Laboratory Control Sample		50.0	**51.9**	ug/L	104	85-115			0.50
Analyte: Thallium/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion)							Analyzed:	12/09/2013	By: MSM
Method Blank			<1.0	ug/L					1.0

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QUALITY CONTROL REPORT

Total Metals by EPA 200 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: **Thallium**/USEPA-200.8 (Continued)									
QC Batch: 1313011 (Continued) (200.2 Digestion) Analyzed: 12/09/2013 By: MSM									
Laboratory Control Sample		50.0	**49.8**	ug/L	100	85-115			1.0
Analyte: **Tin**/USEPA-200.7									
QC Batch: 1312991 (200.2 Digestion) Analyzed: 12/05/2013 By: KLV									
Method Blank			<0.20	mg/L					0.20
Laboratory Control Sample		2.00	**2.12**	mg/L	106	85-115			0.20
Analyte: **Titanium**/USEPA-200.7									
QC Batch: 1312991 (200.2 Digestion) Analyzed: 12/05/2013 By: KLV									
Method Blank			<0.10	mg/L					0.10
Laboratory Control Sample		0.400	**0.422**	mg/L	106	85-115			0.10
Analyte: **Zinc**/USEPA-200.8									
QC Batch: 1313011 (200.2 Digestion) Analyzed: 12/09/2013 By: MSM									
Method Blank			<10	ug/L					10
Laboratory Control Sample		50.0	**54.0**	ug/L	108	85-115			10

QUALITY CONTROL REPORT

Total Metals by EPA 1600 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: **Mercury**/USEPA-1631E									
QC Batch: 1313075 (1631E Digestion)							Analyzed:	12/05/2013	By: MSM
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Laboratory Control Sample		4.00	**4.103**	ng/L	103	77-123			0.500
1312032-02 [Outfall 001 LLHg]									
Matrix Spike	7.843	4.00	**11.74**	ng/L	98	71-125			2.50
Matrix Spike Duplicate	7.843	4.00	**11.43**	ng/L	90	71-125	3	24	2.50
QC Batch: 1313536 (1631E Digestion)							Analyzed:	12/19/2013	By: MSM
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Method Blank			<0.500	ng/L					0.500
Laboratory Control Sample		4.00	**4.065**	ng/L	102	77-123			0.500

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: BOD, (5-Day)/SM 5210 B-2011									
QC Batch: 1313038 (General Inorganic Prep)							Analyzed:	12/04/2013	By: SKA
Method Blank			<2.0	mg/L					2.0
Laboratory Control Sample		198	**189**	mg/L	96	85-115			2.0
Analyte: Bromide/ASTM D 1246-05									
QC Batch: 1313240 (Method Specific Preparation)							Analyzed:	12/11/2013	By: SLL
Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		5.00	**5.20**	mg/L	104	90-110			0.50
1312032-14 [Intake Composite]									
Matrix Spike	0.304	2.50	**2.83**	mg/L	101	80-120			0.50
Duplicate	0.304		**0.295**	mg/L			3	20	0.50
Analyte: Carbon, Total Organic/SM 5310 C-2011									
QC Batch: 1313095 (Method Specific Preparation)							Analyzed:	12/05/2013	By: KAR
Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		2.00	**2.24**	mg/L	112	84-118			0.50
1312032-14 [Intake Composite]									
Matrix Spike	3.58	2.00	**5.71**	mg/L	107	75-124			0.50
Matrix Spike Duplicate	3.58	2.00	**5.68**	mg/L	105	75-124	0.5	20	0.50
Analyte: Chemical Oxygen Demand/SM 5220 D-2011									
QC Batch: 1313025 (5220 D COD Digestion)							Analyzed:	12/04/2013	By: SLL
Method Blank			<5.0	mg/L					5.0
Laboratory Control Sample		60.0	**60.6**	mg/L	101	95-105			5.0
Analyte: Color (Apparent)/SM 2120 B-2011									
QC Batch: 1313019 (Method Specific Preparation)							Analyzed:	12/04/2013	By: CAC
Method Blank			<5.00	A.C.U.					5.00
Laboratory Control Sample		25.0	**25.0**	A.C.U.	100	80-120			5.00
1312032-14 [Intake Composite]									
Duplicate	15.0		**15.0**	A.C.U.			0	20	5.00

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Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Cyanide, Available/USEPA OIA-1677									
QC Batch: 1313173 (Method Specific Preparation)						Analyzed: 12/09/2013			By: LMA
Method Blank			<2.0	ug/L					2.0
Laboratory Control Sample		20.0	**21.5**	ug/L	108	82-132			2.0
1312032-10 [Intake Grab Day 2]									
Matrix Spike	<2.0	20.0	**20.7**	ug/L	103	82-130			2.0
Matrix Spike Duplicate	<2.0	20.0	**21.3**	ug/L	106	82-130	3	11	2.0
Analyte: Fluoride/SM 4500-F C-2011									
QC Batch: 1313326 (Method Specific Preparation)						Analyzed: 12/13/2013			By: SLL
Method Blank			<0.10	mg/L					0.10
Laboratory Control Sample		2.00	**1.98**	mg/L	99	90-110			0.10
Analyte: Hardness as CaCO3/SM 2340 C-2011									
QC Batch: 1313099 (Method Specific Preparation)						Analyzed: 12/06/2013			By: KAR
Method Blank			<2	mg/L					2
Laboratory Control Sample		86.3	**87**	mg/L	101	92-110			2
Laboratory Control Sample		200	**202**	mg/L	101	92-110			2
1312032-14 [Intake Composite]									
Matrix Spike	147	400	**545**	mg/L	100	86-113			4
Duplicate	147		**147**	mg/L			0	20	2
Analyte: HEM; Oil & Grease/USEPA-1664A									
QC Batch: 1313184 (1664A Extraction)						Analyzed: 12/10/2013			By: WAH
Method Blank			<5.00	mg/L					5.00
Laboratory Control Sample		40.0	**37.5**	mg/L	94	78-114			5.00
1312032-03 [Outfall 001 Grab Day 2]									
Duplicate	<5.00		<5.00	mg/L				18	5.00
Analyte: Nitrogen, Ammonia/SM 4500-NH3 G-2011									
QC Batch: 1313163 (4500-NH3 B Ammonia Distillation)						Analyzed: 12/11/2013			By: CLB
Method Blank			<0.050	mg/L					0.050

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Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Nitrogen, Ammonia/SM 4500-NH3 G-2011 (Continued)									
QC Batch: 1313163 (Continued) (4500-NH3 B Ammonia Distillation)						Analyzed: 12/11/2013			By: CLB
Laboratory Control Sample		1.00	**0.963**	mg/L	96	90-110			0.050
Analyte: Nitrogen, Nitrate+Nitrite/SM 4500-NO3 F-2011									
QC Batch: 1313118 (General Inorganic Prep)						Analyzed: 12/04/2013			By: CAC
Method Blank			<0.050	mg/L					0.050
Laboratory Control Sample		0.500	**0.524**	mg/L	105	90-110			0.050
Analyte: Nitrogen, Total Kjeldahl/USEPA-351.2 Rev. 2.0									
QC Batch: 1313050 (351.2 TKN Digestion)						Analyzed: 12/09/2013			By: CLB
Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		2.00	**2.09**	mg/L	104	90-110			0.50
1312032-15 [001 Composite]									
Matrix Spike	0.594	2.00	**2.87**	mg/L	**114**	90-110			0.50
Matrix Spike Duplicate	0.594	2.00	**2.80**	mg/L	110	90-110	3	20	0.50
Analyte: Phenolics, Total/USEPA-420.4									
QC Batch: 1313065 (Method Specific Preparation)						Analyzed: 12/09/2013			By: LMA
Method Blank			<0.0500	mg/L					0.0500
Laboratory Control Sample		0.250	**0.264**	mg/L	106	90-110			0.0500
Analyte: Phosphorus, Total/SM 4500-P E-2011									
QC Batch: 1313144 (4500-P B Phosphorus Digestion)						Analyzed: 12/10/2013			By: KAR
Method Blank			<0.0100	mg/L					0.0100
Laboratory Control Sample		0.800	**0.784**	mg/L	98	90-110			0.0100
Analyte: Residue, Dissolved @ 180° C/SM 2540 C-2011									
QC Batch: 1313033 (General Inorganic Prep)						Analyzed: 12/05/2013			By: WAH
Method Blank			<50	mg/L					50
Laboratory Control Sample		200	**200**	mg/L	99	85-115			50

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QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Residue, Suspended/SM 2540 D-2011									
QC Batch: 1313036 (General Inorganic Prep) Analyzed: 12/05/2013 By: WAH									
Method Blank			<3.3	mg/L					3.3
Laboratory Control Sample		200	**190**	mg/L	95	88-104			24.8
Analyte: Sulfate/ASTM D516-90 (07)									
QC Batch: 1313298 (General Inorganic Prep) Analyzed: 12/12/2013 By: LMA									
Method Blank			<5.0	mg/L					5.0
Laboratory Control Sample		20.0	**21.7**	mg/L	108	88-112			5.0
Analyte: Sulfide, Total/SM 4500-S2 D-2011									
QC Batch: 1313149 (Method Specific Preparation) Analyzed: 12/06/2013 By: WAH									
Method Blank			<0.020	mg/L					0.020
Laboratory Control Sample		0.336	**0.345**	mg/L	103	80-120			0.020
Analyte: Sulfite/SM 4500-SO3 B-2011									
QC Batch: 1313110 (Method Specific Preparation) Analyzed: 12/04/2013 By: CAC									
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		50.0	**46.0**	mg/L	92	80-120			1.0
1312032-15 [001 Composite]									
Matrix Spike	<1.0	50.0	**41.0**	mg/L	82	76-104			1.0
Duplicate	<1.0		<1.0	mg/L				20	1.0
Analyte: Surfactants, MBAS/SM 5540 C-2011									
QC Batch: 1313020 (Method Specific Preparation) Analyzed: 12/04/2013 By: WAH									
Method Blank			<0.0250	mg/L					0.0250
Laboratory Control Sample		0.125	**0.120**	mg/L	96	80-120			0.0250
1312032-15 [001 Composite]									
Duplicate	<0.0250		<0.0250	mg/L				20	0.0250

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Chain of Custody Record

COC No. 131136695

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For Lab Use Only

Cart 13

VOA Rack/Tray 624-RED

Receipt Log No. 42-22

Project Chemist ~~Lisa Harvey~~ JLR

Work Order No. 1312032

Client Name DTE - Fermi

Address 6400 North Dixie Highway

City, State Zip Newport, MI 48166

Phone/Fax 734-586-1839

Email: hanamj@dteenergy.com

Project Name Permit Renewal

Client Project No. / P.O. No.

Invoice To ● Client ○ Other (comments)

Contact/Report To Mary Hana

Analyses Requested

											VOCs	Field Tests		Total Phenol	Oil & Grease	AvCN	LLHg					
										Preservatives	D	A		C	C	E	A					
										Container Type (corresponds to Container Packing List)	1	- -		13	7	23	24					
Schedule	Matrix Code	Sample Number		Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Number of Containers Submitted										Total	Sample Comments
03	WW	01	1	Outfall 001 Grab Day 1	2503	12/2/13	1300		X	WW	2*	X									2	pH 8.31
05		02	2	outfall 001 LLHg	↓	12/2/13	1244										4				4	Temp 16 °C
			3																			TRC <0.20mg/L
			4																			DO 7.57
02	WW	03	5	Outfall 001 Grab Day 2	2503	12/3/13	1235		X	WW	2*	X		1	2	3	~~4~~ JD				11	pH 8.56
07	WW	04	6	Outfall 001 LLHg Duplicate	↓	12/2/13	1247										2				2	Temp 19 °C
07	WW	05	7	Outfall 001 Field Blank	↓	12/2/13	1241										2				2	TRC <0.20mg/L
			8																			DO 6.89
01	WW	06	9	Outfall 001 VOC Lab Composite				X		WW	4*										4	*Lab: Add Day1 +Day2 VOCs together
06	WW	07	10	Fermi LLHg Trip Blank	2503	12-2-13											2				2	

PRESERVATIVES
- A NONE pH~7
- B HNO_3 pH<2
- C H_2SO_4 pH<2
- D 1+1 HCl pH<2
- E NaOH pH>12
- F ZnAc/NaOH pH>9
- G MeOH
- H Other (note below)

Sampled By (print) ~~Jeff Elsey~~ NEIL TATE

Sampler's Signature Neil Tate

Company ~~TriMatrix Laboratory~~ DTE ENERGY

How Shipped? Hand X Carrier ________

Tracking No.

Comments 2RLM.

	Date	Time
1. Relinquished By	12/3/13	1410
1. Received By	12.3.13	1410
2. Relinquished By	12.3.13	1700
2. Received By		
3. Relinquished By		
3. Received For Lab By	12-3-13	1700

ORIGINAL - LABORATORY COPY - FIELD/SAMPLER

DTE Fermi Permit Renewal 001 Grab COC 11/25/2013

TRIMATRIX LABORATORIES

5560 Corporate Exchange Court SE
Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 131136695

Pg. 1 of 1

For Lab Use Only

Cart 13

VOA Rack/Tray 513 - RED

Receipt Log No. 42-21

Project Chemist
Lisa Harvey

Work Order No.
1312032

Client Name
DTE - ~~BRPP~~ Fermi

Address
6400 North Dixie Highway

City, State Zip
Newport, MI 48166

Phone/Fax 734-586-1839

Email: hanamj@dteenergy.com

Project Name
Permit Renewal

Client Project No. / P.O. No
Mary Ott

Invoice To ● Client ○ Other (comments)

Contact/Report To
Mary Hana

Analyses Requested

⇦ PRESERVATIVES
- A NONE pH~7
- B HNO_3 pH<2
- C H_2SO_4 pH<2
- D 1+1 HCl pH<2
- E NaOH pH>12
- F ZnAc/NaOH pH>9
- G MeOH
- H Other (note below)

Schedule	Matrix Code	Sample Number		Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	VOCs	Field Tests		Total Phenol	Oil & Grease	AvCN	LLHg				Total	Sample Comments
											D	A		C	C	E	A					
										Container Type (corresponds to Container Packing List)	1	--		13	7	23	24					
											Number of Containers Submitted											
03	WW	08	1	Intake Grab Day 1	2503	12/2/13	1225		X	WW	2*	X									2	pH 7.51
07		09	2	Intake LLHg	↓	12/2/13	1202										2				2	Temp 5 °C
			3																			TRC <0.20mg/L
			4																			DO 6.45
02	WW	10	5	Intake Grab Day 2	2503	12/3/13	1200		X	WW	2*	X		1	2	2	2				9	pH 7.57
07	WW	11	6	Intake LLHg Duplicate	↓	12/2/13	1205										2				2	Temp 12 °C
07	WW	12	7	Intake LLHg Field Blank	↓	12/2/13	1159										2				2	TRC <0.20mg/L
			8																			DO 7.56
01	WW	13	9	Intake VOC Lab Composite				X		WW	4*										4	*Lab: Add Day1 +Day2 VOCs together
			10																			

Sampled By (print)
Jeff Elsey
Neil Tate

Sampler's Signature

Company
TriMatrix Laboratory
DTE Energy

How Shipped? Hand X Carrier ____________

Tracking No.

Comments
2RLM.

1. Relinquished By Date 12/3/13 Time 1410
1. Received By Date 12-3-13 Time 1410
2. Relinquished By Date 12-3-13 Time 1700
2. Received By Date Time
3. Relinquished By Date Time
3. Received For Lab By D. Nardin Date 12-3-13 Time 1700

ORIGINAL - LABORATORY COPY - FIELD/SAMPLER

DTE Fermi Permit Renewal Intake Grab COC 11/25/2013

TRIMATRIX LABORATORIES

5560 Corporate Exchange Court SE
Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 131136695

Pg. 1 of 1

For Lab Use Only

Cart 11

VOA Rack/Tray -

Receipt Log No. 41-20

Project Chemist Lisa Harvey JLR

Work Order No. 1312032

Client Name: DTE - Fermi

Address: 6400 North Dixie Highway

City, State Zip: Newport, MI 48166

Phone/Fax 734-586-1839

Email: hanamj@dteenergy.com

Project Name: Permit Renewal

Client Project No. / P.O. No

Invoice To ● Client ○ Other (comments)

Contact/Report To: Mary Hana

Analyses Requested

											A	A	A	C	F	H	B	A	A	C		
											BOD,cBOD,MBAS	TSS,TDS,Fl,SO4,Br	MBAS, color	COD,NH3,phos,TKN,NPN	sulfide	sulfite	metals,hardness	PCB	SVOC	TOC		
											Container Type (corresponds to Container Packing List)											
Schedule	Matrix Code	Sample Number		Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	3	3	3	4	9	25	6	2	2	11	Total	Sample Comments
											Number of Containers Submitted											
04	WW	14	1	Intake Composite	2819	12/3/13	1220	X		WW	1	1	1	1	1	1	1	2	2	3	15	
04	WW	15	2	001 Composite	0440	12/3/13	1255	X		WW	1	1	1	1	1	1	1	2	2	3	15	
			3																			
			4																			
			5																			
			6																			
			7																			
			8																			
			9																			
			10																			

PRESERVATIVES
- A NONE pH~7
- B HNO_3 pH<2
- C H_2SO_4 pH<2
- D 1+1 HCl pH<2
- E NaOH pH>12
- F ZnAc/NaOH pH>9
- G MeOH
- H Other (note below)

Sampled By (print): Jeff Elsey

Sampler's Signature

Company: TriMatrix Laboratory

How Shipped? Hand X Carrier ____________

Tracking No.

Comments
2RLM. Report Total inorganic Nitrogen and Total Organic Nitrogen

1. Relinquished By	Date 12/3/13	Time 1410	2. Relinquished By	Date 12-3-13	Time 1700	3. Relinquished By	Date	Time
1. Received By	Date 12-3-13	Time 1410	2. Received By	Date	Time	3. Received For Lab By	Date 12-3-13	Time 1700

ORIGINAL - LABORATORY COPY - FIELD/SAMPLER

DTE Fermi Permit Renewal Composite COC 11/25/2013

SAMPLE RECEIVING / LOG-IN CHECKLIST

TRIMATRIX LABORATORIES

Client: DTE - FERMI
Receipt Record Page/Line #: 41-20
Work Order #: 1312032
New / Add To
Project Chemist
Sample #s

Recorded by (initials/date): DNL 12-3-13

☒ Cooler
☐ Box
☐ Other

Qty Received: 2

Thermometer Used:
☒ IR Gun (#202)
☐ Digital Thermometer (#54)
☐ Other (#_____)
☐ See Additional Cooler Information Form

Cooler #: TM3819 Time: 1810

Custody Seals:
☒ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Location:
Dispersed / Top / Middle / Bottom

Coolant/Temperature Taken Via:
☒ Loose Ice / Avg 2-3 containers
☐ Bagged Ice / Avg 2-3 containers
☐ Blue Ice / Avg 2-3 containers
☐ None / Avg 2-3 containers

Alternate Temperature Taken Via:
☒ Temperature Blank (TB)
☐ 1 Container

	Recorded °C	Correction Factor °C	Actual °C
Temp Blank		0	17
1	3.0	0	3.0
2	2.1	0	2.1
3	2.1	0	2.1
		Average °C	2.4

TB location: [✓ Representative] / Not Representative

☒ Cooler ID on COC?
☐ VOC Trip Blank received?

Cooler #: TM0410 Time: 1815

Custody Seals:
☒ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Location:
Dispersed / Top / Middle / Bottom

Coolant/Temperature Taken Via:
☒ Loose Ice / Avg 2-3 containers
☐ Bagged Ice / Avg 2-3 containers
☐ Blue Ice / Avg 2-3 containers
☐ None / Avg 2-3 containers

Alternate Temperature Taken Via:
☒ Temperature Blank (TB)
☐ 1 Container

	Recorded °C	Correction Factor °C	Actual °C
Temp Blank		0	32
1	3.5	0	3.5
2	4.8	0	4.8
3	4.9	0	4.9
		Average °C	4.4

TB location: [✓ Representative] / Not Representative

☒ Cooler ID on COC?
☐ VOC Trip Blank received?

Cooler #: Time:

Custody Seals:
☐ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Location:
Dispersed / Top / Middle / Bottom

Coolant/Temperature Taken Via:
☐ Loose Ice / Avg 2-3 containers
☐ Bagged Ice / Avg 2-3 containers
☐ Blue Ice / Avg 2-3 containers
☐ None / Avg 2-3 containers

Alternate Temperature Taken Via:
☐ Temperature Blank (TB)
☐ 1 Container

	Recorded °C	Correction Factor °C	Actual °C
Temp Blank			
1			
2			
3			
		Average °C	

TB location: Representative / Not Representative

☐ Cooler ID on COC?
☐ VOC Trip Blank received?

Cooler #: Time:

Custody Seals:
☐ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Location:
Dispersed / Top / Middle / Bottom

Coolant/Temperature Taken Via:
☐ Loose Ice / Avg 2-3 containers
☐ Bagged Ice / Avg 2-3 containers
☐ Blue Ice / Avg 2-3 containers
☐ None / Avg 2-3 containers

Alternate Temperature Taken Via:
☐ Temperature Blank (TB)
☐ 1 Container

	Recorded °C	Correction Factor °C	Actual °C
Temp Blank			
1			
2			
3			
		Average °C	

TB location: Representative / Not Representative

☐ Cooler ID on COC?
☐ VOC Trip Blank received?

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☒	☐	Chain of Custody record(s)? If No, Initiated By ______
☒		Received for Lab Signed/Date/Time?
☐	☒	Shipping document?
☒	☐	Other FIELD DATA

COC Information

☒ TriMatrix COC ☐ Other ______

COC ID Numbers: 131136695

Check COC for Accuracy

Yes	No	
☒	☐	Analysis Requested?
☒	☐	Sample ID matches COC?
☒	☐	Sample Date and Time matches COC?
☒		Container type completed on COC?
☒	☐	All container types indicated are received?

Sample Condition Summary

N/A	Yes	No	
	☐	☒	Broken containers/lids?
	☐	☒	Missing or incomplete labels?
	☐	☒	Illegible information on labels?
	☐	☒	Low volume received?
	☐	☒	Inappropriate or non-TriMatrix containers received?
☒	☐	☐	VOC vials / TOX containers have headspace?
☒	☐	☐	Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A	Yes	No	
	☒	☐	Average sample temperature ≤6° C?
☒	☐	☐	Was thermal preservation required?
☒	☐		If "No", Project Chemist Approval Intials: ______
☒	☐		If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☐	☒		Completed Sample Preservation Verification Form?
☐	☒	☐	Samples chemically preserved correctly?
☒	☐		If "No", added orange tag?
	☐	☒	Received pre-preserved VOC soils?

☐ MeOH ☐ Na_2SO_4

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological
☐ Air Bags
☐ EnCores / Methanol Pre-Preserved
☐ Formaldehyde/Aldehyde
☒ Green-tagged containers
☐ Yellow/White-tagged 1L ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)
☐ NONE RECEIVED
☒ RECEIVED, COCs TO LAB(S)

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	≤1 Hour Goal Met?
DNL 12-3-13	12-3-13	Yes / No

Log In Forms - Receiving.Log-In_Checklist

revision: 3.4

SAMPLE RECEIVING / LOG-IN CHECKLIST

TRIMATRIX LABORATORIES

Client: DTE - BRPP
Receipt Record Page/Line #: 42-21
Work Order #: 1312032
New / Add To
Project Chemist
Sample #s

Recorded by (initials/date): SN 12-3-13

☒ Cooler
☐ Box
☐ Other________

Qty Received: 1

Thermometer Used:
☒ IR Gun (#202)
☐ Digital Thermometer (#54)
☐ Other (#______)

☐ See Additional Cooler Information Form

Cooler # / Time	TN2563 / 1837	Cooler # / Time	Cooler # / Time	Cooler # / Time
Custody Seals:	☒ None ☐ Present / Intact ☐ Present / Not Intact	☐ None ☐ Present / Intact ☐ Present / Not Intact	☐ None ☐ Present / Intact ☐ Present / Not Intact	☐ None ☐ Present / Intact ☐ Present / Not Intact
Coolant Location:	[✓ Dispersed] / Top / Middle / Bottom	Dispersed / Top / Middle / Bottom	Dispersed / Top / Middle / Bottom	Dispersed / Top / Middle / Bottom
Coolant/Temperature Taken Via:	☒ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers	☐ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers	☐ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers	☐ Loose Ice / Avg 2-3 containers ☐ Bagged Ice / Avg 2-3 containers ☐ Blue Ice / Avg 2-3 containers ☐ None / Avg 2-3 containers
Alternate Temperature Taken Via:	☒ Temperature Blank (TB) ☐ 1 Container	☐ Temperature Blank (TB) ☐ 1 Container	☐ Temperature Blank (TB) ☐ 1 Container	☐ Temperature Blank (TB) ☐ 1 Container
Recorded °C / Correction Factor °C / Actual °C				
Temp Blank:	0 / 9.3			
TB location:	[✓ Representative] / Not Representative	Representative / Not Representative	Representative / Not Representative	Representative / Not Representative
1	10.7 / 0 / 10.7			
2	8.4 / 0 / 8.4			
3	8.0 / 0 / 8.0			
Average °C	9.0			
Cooler ID on COC?	☒	☐	☐	☐
VOC Trip Blank received?	☐	☐	☐	☐

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☒	☐	Chain of Custody record(s)? If No, Initiated By ________
☒		Received for Lab Signed/Date/Time?
☐	☒	Shipping document?
☐	☒	Other ________

COC Information

☒ TriMatrix COC ☐ Other ________
COC ID Numbers: 13113669 5

Check COC for Accuracy

Yes	No	
☒	☐	Analysis Requested?
☒	☐	Sample ID matches COC?
☒	☐	Sample Date and Time matches COC?
☒		Container type completed on COC?
☒	☐	All container types indicated are received?

Sample Condition Summary

N/A	Yes	No	
	☐	☒	Broken containers/lids?
	☐	☒	Missing or incomplete labels?
	☐	☒	Illegible information on labels?
	☐	☒	Low volume received?
	☐	☒	Inappropriate or non-TriMatrix containers received?
☐	☐	☒	VOC vials / TOX containers have headspace?
☒	☐	☐	Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A	Yes	No	
	☐	☒	Average sample temperature ≤6° C?
☐	☒	☐	Was thermal preservation required?
☒	☐		If "No", Project Chemist Approval Intials: ________
☒	☐		If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☐	☒		Completed Sample Preservation Verification Form?
☐	☒	☐	Samples chemically preserved correctly?
☒	☐		If "No", added orange tag?
	☐	☒	Received pre-preserved VOC soils?

☐ MeOH ☐ Na_2SO_4

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological
☐ Air Bags
☐ EnCores / Methanol Pre-Preserved
☐ Formaldehyde/Aldehyde
☒ Green-tagged containers 3-3
☐ Yellow/White-tagged 1L ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)
☒ NONE RECEIVED
☒ RECEIVED, COCs TO LAB(S)

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	≤1 Hour Goal Met?
SN 12-3-13	SN 12-3-13	Yes / No

Log In Forms - Receiving.Log-In_Checklist revision: 3.4

TRIMATRIX LABORATORIES

SAMPLE PRESERVATION VERIFICATION FORM

page 1 of 1

Client	DTE-BRPP	Work Order #	1312032
Receipt Log # 42-21	Compiled By (initials/date) JN 12-3-13	Project Chemist	

COC ID # 131136695

Adjusted by: ______

Date: ______

					DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5/23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5	✓✓		✓					
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

Ph Strip Lot #

☑ HC378115

☐ ______

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #

Adjusted by: ______

Date: ______

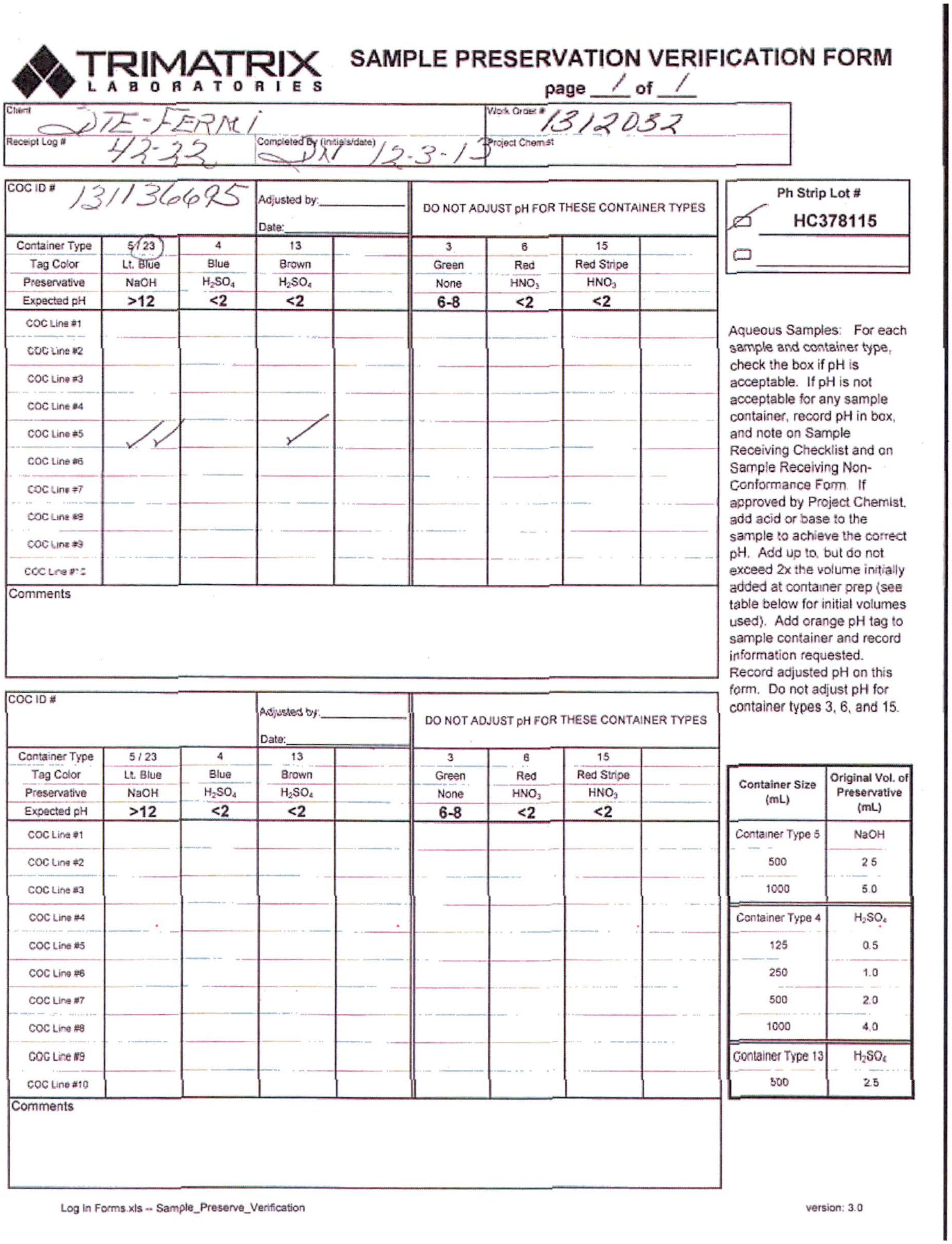
					DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H_2SO_4
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H_2SO_4
500	2.5

Log In Forms.xls -- Sample_Preserve_Verification

version: 3.0



TRIMATRIX LABORATORIES

SAMPLE PRESERVATION VERIFICATION FORM

page 1 of 1

Client: DTE-FERMI

Work Order # 1312032

Receipt Log # 42-32

Completed By (initials/date) DN 12-3-13

Project Chemist

COC ID # 1311136695

Adjusted by: ____

Date: ____

DO NOT ADJUST pH FOR THESE CONTAINER TYPES

Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5	✓ ✓		✓					
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

COC ID #

Adjusted by: ____

Date: ____

DO NOT ADJUST pH FOR THESE CONTAINER TYPES

Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

Ph Strip Lot #

☑ HC378115

☐ ____

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H_2SO_4
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H_2SO_4
500	2.5

Log In Forms.xls -- Sample_Preserve_Verification

version: 3.0

TRIMATRIX LABORATORIES

SAMPLE PRESERVATION VERIFICATION FORM

page 1 of 1

Client DTE - FERMI

Work Order # 1312032

Receipt Log # 4L-3D

Completed By (initials/date) DN 12-3-13

Project Chemist

COC ID # 131136695

Adjusted by: ______

Date: ______

DO NOT ADJUST pH FOR THESE CONTAINER TYPES

Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1		✓			✓✓✓	✓		
COC Line #2		✓			✓✓✓	✓		
COC Line #3								
COC Line #4								
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

Ph Strip Lot #

☑ HC378115

☐ ______

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #

Adjusted by: ______

Date: ______

DO NOT ADJUST pH FOR THESE CONTAINER TYPES

Container Type	5 / 23	4	13		3	6	15	
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe	
Preservative	NaOH	H_2SO_4	H_2SO_4		None	HNO_3	HNO_3	
Expected pH	>12	<2	<2		6-8	<2	<2	
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Comments

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H_2SO_4
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H_2SO_4
500	2.5

Log In Forms.xls -- Sample_Preserve_Verification

version: 3.0

DTE Electric Company
One Energy Plaza, Detroit, MI 48226

DTE Energy

March 21, 2016

Ms. Christine Alexander, Unit Chief
Lakes Erie and Huron Permits Unit
MDEQ Cashiers Office
WB – NP2
P.O. Box 30657
Lansing, Michigan 48909

Re: Application for Renewal of NPDES Permit
DECO - Fermi 3 Power Plant
NPDES Permit No. MI0058892

Dear Ms. Alexander:

In accordance with the Michigan Department of Environmental Quality Authorization to Discharge under NPDES Permit No. MI0058892, the DTE Electric Company has submitted the application via MiWaters for the renewal of the DECO - Fermi 3 Power Plant permit. The $750.00 application fee was paid at the time the application was submitted.

Comments Regarding the Application on MiWaters

- Section IA: The application did not allow the NPDES permit number to be entered.
- Additional Information: The analytical data and this cover letter are attached to the application.

The Company would appreciate your expeditious review of this application and an acknowledgement of its receipt and administrative completeness as soon as practical.

If you have any questions relative to this application or desire additional information, please contact me at (313) 235-5569 or via e-mail at chueyn@dteenergy.com.

Sincerely,
DTE Energy Corporate Services, LLC

Nicholas J. Chuey
Senior Environmental Engineer
Environmental Management & Resources