

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for **First Energy Nuclear Operating Company / Davis-Besse Nuclear Power Station**

Public Notice No.: 11-04-072
Public Notice Date: April 26, 2011
Comment Period Ends: May 26, 2011

OEPA Permit No.: **2IB00011**
Application No.: **OH0003786**

Name and Address of Applicant:

**First Energy Nuclear Operating Company
5501 North State Route 2
Oak Harbor, Ohio 43449**

Name and Address of Facility Where
Discharge Occurs:

**First Energy Davis-Besse Plant
5501 North State Route 2
Oak Harbor, Ohio 43449
Ottawa County**

Receiving Water: **Lake Erie and Navarre Marsh**

Subsequent
Stream Network: **Lake Erie**

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations, Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency, as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the Clean Water Act. Many of these have already been established by U.S. EPA in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

*Fact Sheet for NPDES Permit Renewal, First Energy Nuclear Operating Company / Davis-Besse Nuclear Power Station
March 2011*

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the wasteload allocation for a pollutant to a measure of the effluent quality. The measure of effluent quality is called PEQ - Projected Effluent Quality. This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

Summary of Permit Conditions

Monitoring requirements for asbestos at outfall 004 have been removed due to non-detectable limits.

Silver sampling detection limits used at outfall 004 in last permit was inadequate. The detection limit of 4.0 was used, while US EPA Method 272.2 uses a detection limit of 0.2 ug/l. Recommended monitoring shall continue with a more sensitive sampling method used.

Monitoring requirements for Outfall 004: Lead, Selenium, Thallium, and Zinc are being proposed per OAC 3745-33-07(A)(5) rather than limits due to the small data set for these parameters.

An interim and final table for outfall 004 will be added to address identification of source of aluminum. Interim 004 (monitoring only) will provide First Energy Davis Besse 36 months to locate the source of aluminum within the process before the Final 004 (limits) will be implemented.

A new alternate outfall to 004 will be 005 that discharges to Navarre Marsh from Drainage Pond #2.

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Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

**Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049**

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

**Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits and Compliance Section
P.O. Box 1049
Columbus, Ohio 43216-1049**

The OEPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Daniel A. Kopec, (614) 644-1987, daniel.kopec@epa.state.oh.us .

Location of Discharge/Receiving Water Use Classification

First Energy Davis-Besse discharges to Lake Erie near Oak Harbor, Ohio (outfall 001). The plant also has several discharge points to Navarre Marsh (outfalls 002, 003 and 004), which surrounds much of the plant. The approximate location of the facility is shown in Figure 1.

This segment of the Lake Erie is described by Ohio EPA River Code: 24-200, USEPA River Reach #: NA, County: Ottawa, Ecoregion: Huron-Erie Lake Plain. Lake Erie is presently designated for the following uses: Exceptional Warmwater Habitat (EWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Public Water Supply (PWS), Bathing Waters (BW) and Superior High Quality Water (SHQW).

Navarre Marsh is not specifically designated in the Ohio Water Quality Standards. As a wetland, it is subject to the standards, criteria and uses listed in OAC Rules 3745-1-51, -52 and -53.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric water quality standards are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal Clean Water Act. Ohio WQS also include aquatic life use designations for waterbodies which can not meet the Clean Water Act goals because of human-caused conditions that can not be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact) and wading only (Secondary Contact - generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural and industrial water supply.

Facility Description

The First Energy, Davis-Besse Power Plant generates electricity from Uranium-235 utilizing the nuclear steam electric power generation process. The process operations performed at this facility are classified by the Standard Industrial Classification (SIC) code 4911, "Electric Services (Limited to steam electric power plants)". Discharges resulting from process operations are therefore subject to Federal Effluent Guideline Limitations, contained in Chapter 40 of the Code of Federal Regulations, Part 423, "Steam

Electric Power Generating" Industrial Category. This power station has one unit, with a net capacity of 921 megawatts (MW).

Description of Existing Discharge

Table 1 provides a summary description of the Davis-Besse Plant outfalls 001, 002, 004, and internal monitoring stations 601 & 602.

Table 2 presents a summary of analytical results for all final outfall's 001, 002, and 004 effluent samples compiled from the NPDES application.

Table 3 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfalls 001, 002, and 004. Data are presented for the period January 2006 through December 2010, and current permit limits are provided for comparison.

Assessment of Impact on Receiving Waters

No current biological data for this area is available.

Development of Water-Quality-Based Effluent Limits

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

Parameter Selection Effluent data for the First Energy Davis-Besse Plant were used to determine what parameters should undergo wasteload allocation. The parameters discharged are identified by the data available to Ohio EPA - Discharge Monitoring Report (DMR) data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2006 through December 2010
NPDES Application data (Form 2C)	October 2010

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (WLA) values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no wasteload allocation is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a wasteload allocation is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 2 for a summary of the screening results.

Wasteload Allocation For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant

loadings/concentrations based on the Ohio Water Quality Standards (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. Wasteload allocations using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

The wasteload allocations for outfalls 002 and 004 to Navarre Marsh were done as if these were discharges to a Warmwater Habitat stream with no flow. Ohio WQS require that discharges to wetlands meet water quality criteria for the WWH use at the discharge point [OAC 3745-1-52].

The applicable waterbody uses for this facility’s discharge and the associated stream design flows are as follows:

Aquatic life (WWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 6, and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

The data used in the WLA are listed in Tables 2 and 3. The wasteload allocation results to maintain all applicable criteria are presented in Table 6.

Whole Effluent Toxicity WLA Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent. Water quality standards for WET are expressed in Ohio’s narrative “free from” WQS rule [OAC 3745-1-04(D)]. These “free froms” are translated into toxicity units (TUs) by the associated WQS Implementation Rule (OAC 3745-2-09). Wasteload allocations can then be calculated using TUs as if they were water quality criteria.

The wasteload allocation calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For (DISCHARGER), the wasteload allocation values are 1.0 TU_a and 11.0TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the IC₂₅:

$$TU_c = 100/IC_{25}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations except when the following equation is more restrictive (*Ceriodaphnia dubia* only):

$$TU_c = 100/\text{geometric mean of NOEC and LOEC}$$

The acute toxicity unit (TU_a) is defined as 100 divided by the LC_{50} for the most sensitive test species:

$$TU_a = 100/LC_{50}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum wasteload allocations are selected from Table 4. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table __, and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value [$(PEQ_{avg} \div PEL_{avg}) \times 100$, or $(PEQ_{max} \div PEL_{max}) \times 100$], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Tables 8a-c.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table's 9a-d presents the final effluent limits and monitoring requirements proposed for 2IB00011 outfall(s) 001, 002, and 004 and the basis for their recommendation.

Outfall 001

The Ohio EPA risk assessment (Table 8a) places Chlorine in group 5. The placement of this parameter along with the data in Tables 2 and 3 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters PEQ is greater than 100 percent of the wasteload allocation. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1).

Ohio EPA risk assessment (Table 8a) places Copper in group 3. The placement of this parameter along with the data in Tables 2 and 3 supports that this parameter does not have the reasonable potential to contribute to WQS exceedance, and limits are not necessary to protect water quality.

Limits proposed for pH and dissolved oxygen are based on Water Quality Standards (OAC 3745-1). These limits are a continuation of limits in the current permit.

The effluent limits for residual chlorine and chlorine/bromine duration at outfall 001 are BAT limits from the steam electric guidelines. These limits are consistent with Ohio WQS because the duration of chlorinated discharges is limited to two hours per day. By minimizing the time that aquatic life is exposed to chlorine (compared with the assumptions of the WQS), the effluent concentrations may be higher than the WQ criteria and still meet WQS in the lake.

A similar logic was used to develop the limits for residual oxidants. Residual oxidants limits are based on recommendations of USEPA/Region V for the regulation of bromine. These recommendations are based on toxicity data showing that bromine is approximately four times as toxic as chlorine. The residual oxidants limit is therefore one-fourth of the chlorine limit, based on USEPA's findings.

Outfall 002

Ohio EPA risk assessment (Table 8b) places Oil & Grease in group 3. The placement of this parameter along with the data in Tables 2 and 3 supports that this parameter does not have the reasonable potential to contribute to WQS exceedance, and limits are not necessary to protect water quality. However, limits have been applied for Oil & Grease. This limit is a BPT from the Steam Electric Power effluent guidelines. This is a concentration-based regulation with no loading limit requirements. This limit is the same as the current permit.

The limits for suspended solids, just as Oil & Grease outlined above, is a BPT limit from the Steam Electric Power effluent guidelines which is a concentration-based regulation, and loading limits are not required.

All remaining limits for outfall 002 are the same as those in the current permit.

Outfall 003

The draft permit will continue the monitoring requirement for suspended solids at this outfall and monitor the materials being returned to waters of the state.

Outfall 004

The Ohio EPA risk assessment (Table 8d) places Aluminum, Lead, Selenium, Thallium, and Zinc in group 5. The placement of these parameters as well as the data in Tables 2 and 3 indicates a reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters PEQ is greater than 100 percent of the wasteload allocation.

The Ohio EPA risk assessment (Table 8d) places Lead, Selenium, Thallium, and Zinc in group 5 which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), we are proposing monitoring, rather than limits, for these pollutants due to the small data set for these parameters.

Ohio EPA risk assessment (Table 8d) places Copper in group 4. The placement of this parameter along with the data in Tables 2 and 3 supports that this parameter does not have the reasonable potential to contribute to WQS exceedance, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC Rule 3745-33-07(A)(2).

Ohio EPA risk assessment (Table 8d) places Barium, Iron, and Nickel in group 3. The placement of these parameters along with the data in Tables 2 and 3 supports that these parameters do not have the

reasonable potential to contribute to WQS exceedance, and limits are not necessary to protect water quality.

Because this discharge is related to the cooling tower, the outfall 001 limits for residual chlorine, residual oxidants and chlorination/bromination duration are also applied to this outfall.

Internal Station 601

This is the monitoring location for the sewage treatment plant prior to mixing with other wastewaters. Limits for total suspended solids (TSS) and 5-day biochemical oxygen demand (BOD5) are based on plant design and are unchanged from the previous permit. The color, odor and turbidity severity unit observations continue so that the wastewater plant is frequently checked to make sure that it is operating correctly.

Internal Station 602

This is the monitoring location for the water treatment plant discharges. The limits for suspended solids and oil & grease are BPT limits from the Steam Electric Power effluent guidelines.

Whole Effluent Toxicity Reasonable Potential

For First Energy Davis-Besse, the chronic WLA is 11.0 TUc and acute WLA is 1.0 TUa. No current acute or chronic toxicity data exists for these discharges. Given the types of wastewater discharged, Ohio EPA believes that chemical-specific limits will adequately control the toxicity of materials in the discharge. Toxicity monitoring is not being proposed at this time.

Outfall Signage

Part II of the permit includes requirements for signs to be placed at each outfall to Lake Erie and Navarre Marsh, providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).

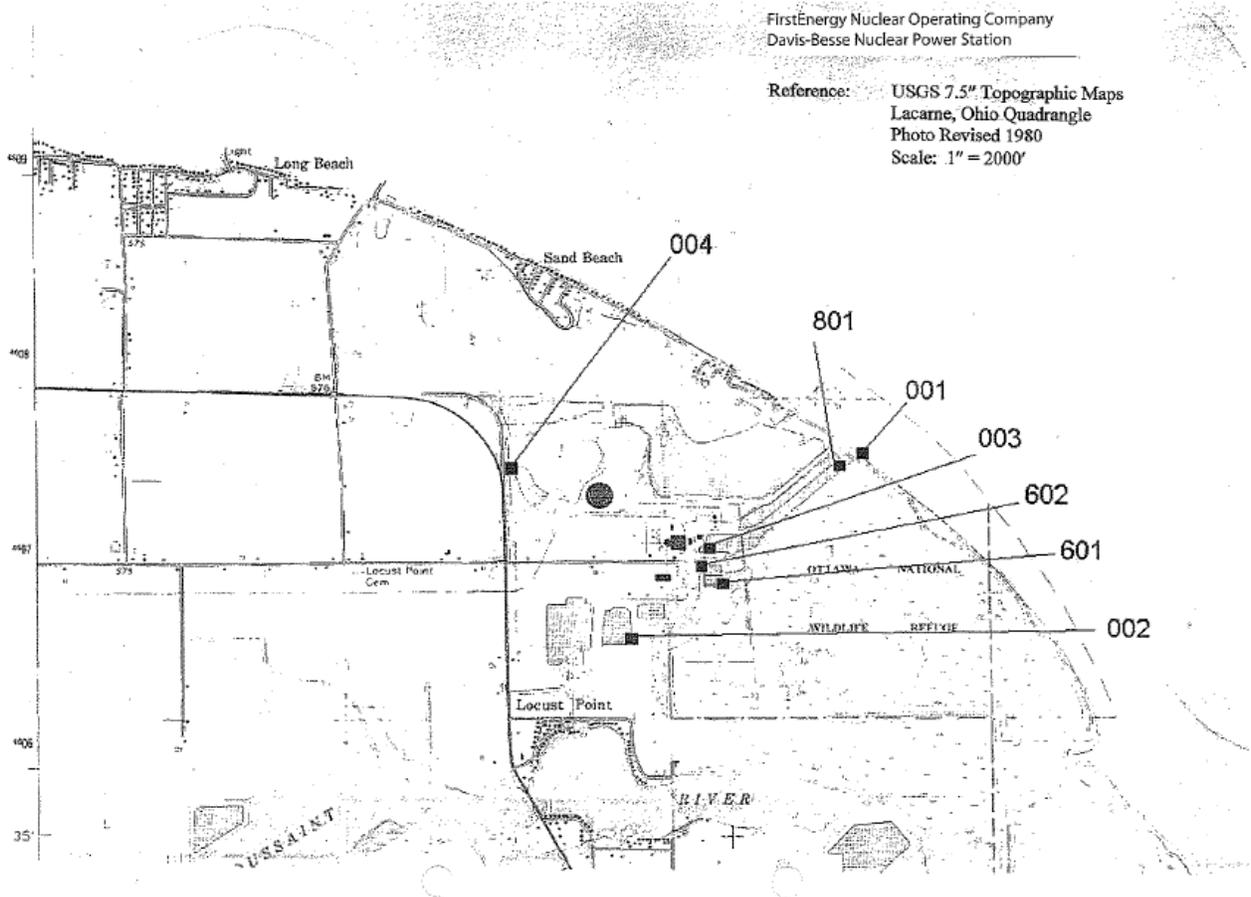


Figure 1. Approximate location of First Energy – Davis Besse

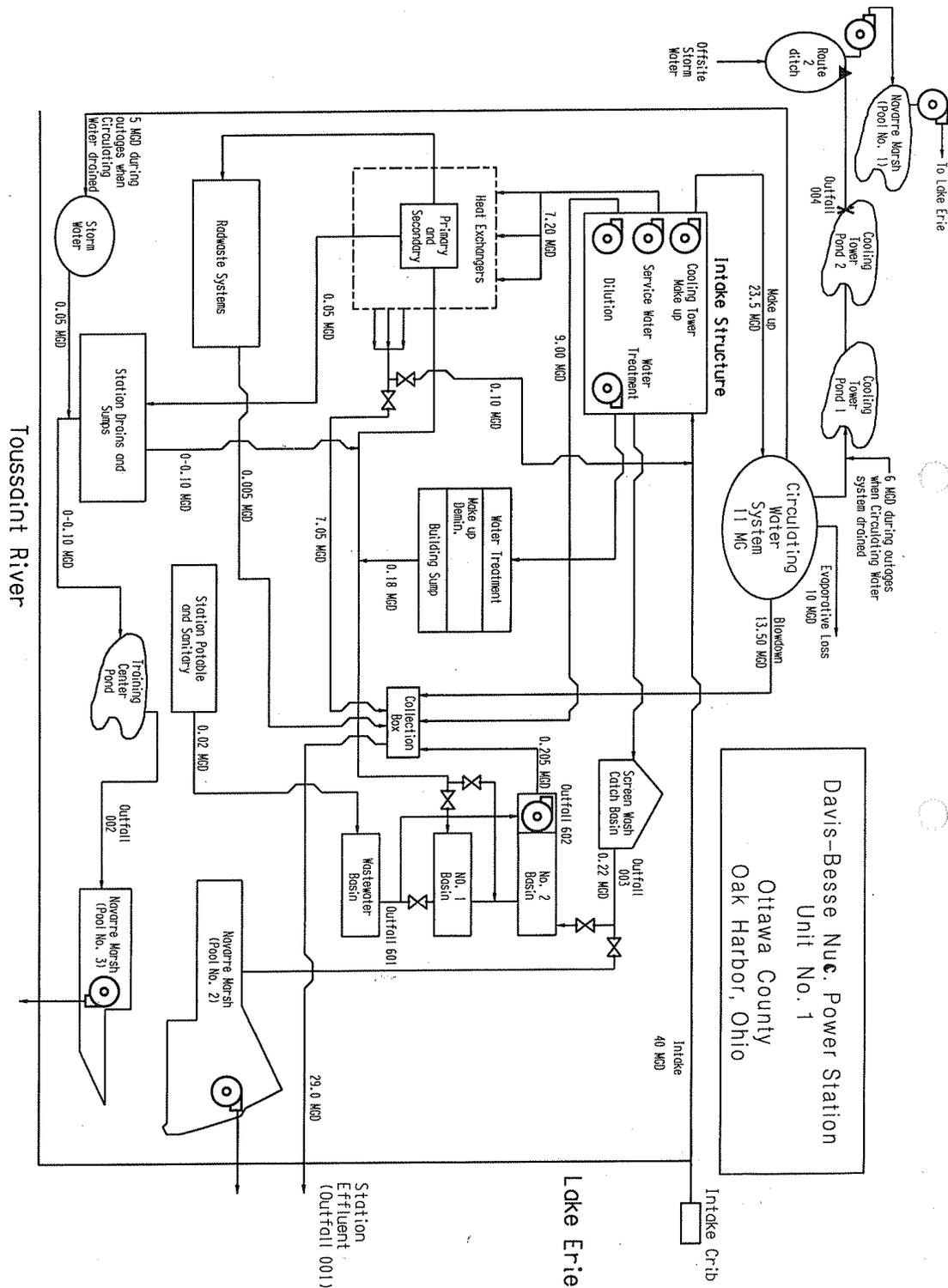


Figure 2. Diagram of Wastewater Treatment System

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Table 1. First Energy Davis-Besse Outfall and Treatment Descriptions

Outfall	Type of Wastewater	Treatment System Used	Discharge Point
001	cooling tower blowdown, sanitary, water plant regenerate wastewater, radiological wastewater	evaporation, disinfection (cooling tower), ion exchange (water plant)	Lake Erie
002	floor drains, storm runoff	settling, flotation	Navarre Marsh
003	intake screen backwash	screening, sedimentation	Navarre Marsh
004	cooling tower system drain (only during shutdowns)	disinfection	Navarre Marsh
601	sanitary wastewater	sedimentation, activated sludge aeration, stabilization ponds	Outfall 001
602	low volume wastewater	flotation, sedimentation, neutralization	Outfall 001
801	intake prior to cooling operation		

Table 2. Effluent Characterization Using Ohio EPA and Form 2C Data

Summary of analytical results for Davis Besse outfall 2IB00011(001, 002, 004). All values are in mg/l unless otherwise indicated. PT = data from, pretreatment program reports; 2C = Data from application form 2C; OEPA = data from analyses by Ohio EPA; ND = below detection (detection limit); NA = not analyzed. Decision Criteria: PEQ_{avg} = monthly averages; PEQ_{max} = daily maximum analytical results.

PARAMETER	Form 2C Data	DECISION CRITERIA	
		PEQ _{avg}	PEQ _{max}
<i>Outfall 001</i>			
Biochemical Oxygen Demand	4.5	20.36	27.9
Chemical Oxygen Demand	20.8	94.14	128.96
Total Organic Carbon	5.73	25.93	35.52
Total Suspended Solids	6.0	27.15	37.2
Bromide	0.389	1.76	2.41
Fecal Coliform (#/100 mL)	19.5	88.25	120.9
Fluoride	0.262	1.2	1.62
Nitrate + Nitrite	1.88	8.5	11.65
Total Phosphorus	0.136	0.61	0.84
Sulfate	49.6	224.5	307.5
Surfactants	0.006	0.0271	0.0372
Aluminum (ug/L)	342	1547.9	2120.4
Barium (ug/L)	41	185.5	254.2
Iron (ug/L)	397	1796.8	2461.4
Magnesium (ug/L)	17024	77050.6	105548.8
Manganese (ug/L)	18	81.5	111.6
Titanium (ug/L)	3.0	13.58	18.6
Copper (ug/L)	6.0	27.15	37.2
Lead (ug/L)	7.0	31.7	43.4
Selenium (ug/L)	28	126.7	173.6
Thallium (ug/L)	27	122.2	167.4
Zinc (ug/L)	9.0	40.7	55.8

Outfall 002			PEQ_{avg}	PEQ_{max}
Chemical Oxygen Demand	22.7		102.7	140.7
Total Organic Carbon	4.74		21.45	29.4
Total Suspended Solids	15		67.9	93
Ammonia	0.3		1.35	1.86
Fecal Coliform (#/100 mL)	147.8		668.9	916.4
Fluoride	0.21		0.95	1.3
Nitrate + Nitrite	0.36		1.63	2.23
Total Organic Nitrogen	0.39		1.76	2.42
Total Phosphorus	0.06		0.27	0.37
Sulfate	76.8		347.6	476.2
Surfactants	0.005		0.023	0.031
Aluminum (ug/L)	275		1244.6	1705
Barium (ug/L)	30		135.78	186
Iron (ug/L)	278		1258.2	1723.6
Magnesium (ug/L)	12713		57539.0	78820.6
Manganese (ug/L)	26		1176.7	161.2
Tin (ug/L)	6.0		27.15	37.2
Titanium (ug/L)	1.0		4.5	6.2
Lead (ug/L)	5.0		22.6	31
Selenium (ug/L)	17		76.94	105.4
Thallium (ug/L)	17		76.94	105.4
Zinc (ug/L)	14		63.36	86.8
Outfall 003			PEQ_{avg}	PEQ_{max}
Biochemical Oxygen Demand	6		27.15	37.2
Chemical Oxygen Demand	24.6		111.33	152.52
Total Organic Carbon	4.26		19.28	26.41
Total Suspended Solids	16		72.4	99.2
Ammonia	0.144		0.65	0.89
Fluoride	0.2		0.90	1.24
Nitrate + Nitrite	0.631		2.85	3.91

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Sulfate	36.6		165.6	226.9
<i>Outfall 004</i>			PEQ_{avg}	PEQ_{max}
Biochemical Oxygen Demand	5.4		24.4	33.48
Chemical Oxygen Demand	24.6		111.33	152.52
Total Organic Carbon	5.67		25.66	35.15
Total Suspended Solids	68		307.77	421.6
Fecal Coliform (#/100 mL)	102.5		463.9	635.5
Fluoride	0.396		1.79	2.45
Nitrate + Nitrite	0.154		0.69	0.95
Total Organic Nitrogen	0.95		4.29	5.89
Total Phosphorus	0.068		0.31	0.42
Sulfate	356.6		1613.9	2210.9
Surfactants	0.013		0.059	0.081
Aluminum (ug/L)	2246		10165.4	13925.2
Barium (ug/L)	94		425.4	582.8
Boron (ug/L)	262		1185.8	1624.4
Iron (ug/L)	2485		11247.1	15407
Magnesium (ug/L)	20650		93461.9	128030
Manganese (ug/L)	119		538.6	737.8
Titanium (ug/L)	44		199.1	272.8
Chromium (ug/L)	3.0		13.58	18.6
Lead (ug/L)	17		76.9	105.4
Nickel (ug/L)	5		22.63	31
Selenium (ug/L)	55		248.9	341
Silver (ug/L)	2		9.05	12.4
Thallium (ug/L)	33		149.3	204.6
Zinc (ug/L)	21		95.05	130.2

Table 3. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered monthly operating report (MOR) data for First Energy Nuclear Operating Company / Davis-Besse Nuclear Power Station outfalls 2IB00011 (001,002,004). All values are based on annual records unless otherwise indicated. N = Number of Analyses. * = For pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile: Decision Criteria: PEQ_{avg} = monthly average; PEQ_{max} = daily maximum analytical results.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily ¹		50 th	95 th		# Obs.	PEQ _{ave}	PEQ _{max}
Outfall 001											
Water Temperature	Annual	F			1646	59.7	80.7	33.8-87.3			
Dissolved Oxygen	Summer	mg/l	6.0 min		62	8.1	9.79	6-12	42	8.6361	9.549
Dissolved Oxygen	Winter	mg/l	6.0 min		62	11	13	6-15	31	12.908	14.969
pH	Annual	S.U.	6.5 min - 9.0 max		1265	8.4	8.7	7.1-8.9			
Copper, Total Recoverable	Annual	ug/l			20	6	8.1	0-10	20	8.4063	11.191
Oxidants, Total Residual	Annual	mg/l	0.05 max		855	0	0	0-0.28	855	0.1226	0.168
Flow Rate	Summer	MGD			920	35	39.6	10.1-48.4			
Flow Rate	Winter	MGD			893	32.4	38.9	0-44.8			
Flow Rate	Annual	MGD			1813	33.7	39.3	0-48.4			
Chlorine, Total Residual	Annual	mg/l	0.2 max		422	0	0	0-0.14	422	0.06132	0.084
Chlorination/Bromination Duration	Annual	Minutes	120 max		1826	0	1440	0-1440			
Outfall 002											
pH	Annual	S.U.	6.5 min - 9.0 max		259	7.9	8.31	7-9.1			
Total Suspended Solids	Annual	mg/l	30	100 max	251	5.4	16.5	0-33	251	13.249	19.654
Oil and Grease, Total	Annual	mg/l	15	20 max	248	0	2.36	0-18	248	2.389	2.8493

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Silver, Total Recoverable	Annual	ug/l			3	0	0	0-0	3	--	--
Flow Rate	Summer	MGD			858	0.068	0.432	0.023-3.15			
Flow Rate	Winter	MGD			896	0.068	0.374	0.011-1.38			
Flow Rate	Annual	MGD			1754	0.068	0.404	0.011-3.15			
Outfall 004											
pH	Annual	S.U.	6.5 min - 9.0 max		1220	7.9	8.4	6.7-8.9			
Fluoride, Total (F)	Annual	mg/l			18	0.35	0.415	0.25-0.44	18	0.41559	0.50067
Arsenic, Total Recoverable	Annual	ug/l			18	0	0	0-0	18	--	--
Iron, Total Recoverable	Annual	ug/l			18	512	3080	100-3170	16	2250.9	4116.2
Boron, Total Recoverable	Annual	ug/l			18	318	626	36-690	18	865.09	1499.2
Barium, Total Recoverable	Annual	ug/l			18	76.5	103	36-110	18	105.98	144.92
Silver, Total Recoverable	Annual	ug/l			18	0	0	0-0	18	--	--
Aluminum, Total Recoverable	Annual	ug/l			18	553	3390	89-4420	17	3630.3	6436.7
Copper, Total Recoverable	Annual	ug/l			18	0	1.2	0-8	18	8.176	11.2
Oxidants, Total Residual	Annual	mg/l	0.05 max		843	0	0	0-0	843	--	--
Flow Rate	Summer	MGD			905	0.005	0.005	0.005-0.005			
Flow Rate	Winter	MGD			851	0.005	0.005	0.005-0.625			
Flow Rate	Annual	MGD			1756	0.005	0.005	0.005-0.625			
Chlorine, Total Residual	Annual	mg/l	0.2 max		389	0	0	0-0	389	--	--
Chlorination/Bromination Duration	Annual	Minutes	120 max		1781	0	240	0-300			
Asbestos	Annual	Fibers/L			18	0	0	0-0			

Table 4: Effluent Data and Projected Effluent Quality Values for Outfalls 001, 002, 004

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Outfall 001					
Aluminum	ug/l	1	0	--	--
Barium	ug/l	1	0	--	--
Bromide	mg/l	1	0	--	--
Copper - TR	ug/l	20	16	8.41	11.2
Fluoride	mg/l	1	0	--	--
Iron - TR	ug/l	1	0	--	--
Lead - TR	ug/l	1	0	--	--
Magnesium	mg/l	1	0	--	--
Manganese - TR	ug/l	1	0	--	--
Nitrate-N + Nitrite-N	mg/l	1	0	--	--
Phosphorus	mg/l	1	0	--	--
Selenium - TR	ug/l	1	0	--	--
Sulfates	mg/l	1	0	--	--
Thallium	ug/l	1	0	--	--
Titanium	ug/l	1	0	--	--
Zinc - TR	ug/l	1	0	--	--
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	422	1	0.06132	0.084
Outfall 002					
Aluminum	ug/l	1	0	--	--
Ammonia-S	mg/l	1	0	--	--
Barium	ug/l	1	0	--	--
Fluoride	mg/l	1	0	--	--
Iron - TR	ug/l	1	0	--	--
Lead - TR	ug/l	1	0	--	--
Magnesium	mg/l	1	0	--	--
Manganese - TR	ug/l	1	0	--	--
Nitrate-N + Nitrite-N	mg/l	1	0	--	--
Oil & grease	mg/l	248	36	2.389	2.849
Phosphorus	mg/l	1	0	--	--
Selenium - TR	ug/l	1	0	--	--
Silver (wwh,ewh,mwh)	ug/l	3	0	--	--
Sulfates	mg/l	1	0	--	--

Thallium	ug/l	1		0		--		--
Tin	ug/l	1		0		--		--
Titanium	ug/l	1		0		--		--
Zinc - TR	ug/l	1		0		--		--
Outfall 004								
Aluminum	ug/l	17		17		3630.3		6436.7
Arsenic - TR	ug/l	18		0		--		--
Barium	ug/l	18		18		105.98		144.92
Boron	ug/l	18		18		865.09		1499.2
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	389		0		--		--
Chromium - TR	ug/l	1		1		13.578		18.6
Copper - TR	ug/l	18		1		8.176		11.2
Fluoride	mg/l	18		18		0.415		0.5
Iron - TR	ug/l	16		16		2250.9		4116.2
Lead - TR	ug/l	1		1		76.942		105.4
Magnesium	mg/l	1		1		93.4619		128.03
Manganese - TR	ug/l	1		1		538.594		737.8
Nickel - TR	ug/l	1		1		22.63		31
Nitrate-N + Nitrite-N	mg/l	1		1		0.697004		0.9548
Phosphorus	mg/l	1		1		0.307768		0.4216
Selenium - TR	ug/l	1		1		248.93		341
Silver (wwh,ewh,mwh)	ug/l	18		0		--		--
Sulfates	mg/l	1		1		1613.9716		2210.92
Thallium	ug/l	1		1		149.358		204.6
Titanium	ug/l	1		1		199.144		272.8
Zinc - TR	ug/l	1		1		95.046		130.2

Table 5: Water Quality Criteria in the Study Area: Outfall 001, 002, 004

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average						
		Wildlife	Human Health	Agri-culture	Aquatic Life			
<i>Outfall 001</i>								
Aluminum	ug/l	--	4500	--	--	--	--	
Barium	ug/l	--	160000	--	220	2000	4000	
Bromide	mg/l	--	--	--	--	--	--	
Copper - TR	ug/l	--	64000	500	12	19	38	
Fluoride	mg/l	--	--	2	--	--	--	
Iron - TR	ug/l	--	--	5000	--	--	--	
Lead - TR	ug/l	--	--	100	9.9	190	380	
Magnesium	mg/l	--	--	--	--	--	--	
Manganese - TR	ug/l	--	61000	--	--	--	--	
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	3100	50	5	--	--	
Sulfates	mg/l	--	--	--	--	--	--	
Thallium	ug/l	--	--	--	17	79	160	
Titanium	ug/l	--	--	--	--	--	--	
Zinc - TR	ug/l	--	35000	25000	160	160	320	
Chlorine (wwh,ewh,mwh,cwh) - TRes	mg/l	--	--	--	0.011	0.019	0.038	
<i>Outfall 002</i>								
Aluminum	ug/l	--	4500	--	--	--	--	
Ammonia-S	mg/l	--	--	--	--	--	--	
Barium	ug/l	--	160000	--	220	2000	4000	
Fluoride	mg/l	--	--	2	--	--	--	
Iron - TR	ug/l	--	--	5000	--	--	--	
Lead - TR	ug/l	--	--	100	9.9	190	380	
Magnesium	mg/l	--	--	--	--	--	--	
Manganese - TR	ug/l	--	61000	--	--	--	--	
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--	
Oil & grease	mg/l	--	--	--	--	10	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	3100	50	5	--	--	
Silver (wwh,ewh,mwh)	ug/l	--	11000	--	1.3	2.9	5.7	
Sulfates	mg/l	--	--	--	--	--	--	
Thallium	ug/l	--	--	--	17	79	160	
Tin	ug/l	--	--	--	180	1600	3200	
Titanium	ug/l	--	--	--	--	--	--	
Zinc - TR	ug/l	--	35000	25000	160	160	320	

Outfall 004							
Aluminum	ug/l	--	4500	--	--	--	--
Arsenic - TR	ug/l	--	580	100	150	340	680
Barium	ug/l	--	160000	--	220	2000	4000
Boron	ug/l	--	200000	--	3900	33000	65000
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.011	0.019	0.038
Chromium - TR	ug/l	--	14000	100	110	2400	4800
Copper - TR	ug/l	--	64000	500	12	19	38
Fluoride	mg/l	--	--	2	--	--	--
Iron - TR	ug/l	--	--	5000	--	--	--
Lead - TR	ug/l	--	--	100	9.9	190	380
Magnesium	mg/l	--	--	--	--	--	--
Manganese - TR	ug/l	--	61000	--	--	--	--
Nickel - TR	ug/l	--	43000	200	69	620	1200
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--
Selenium - TR	ug/l	--	3100	50	5	--	--
Silver (wwh,ewh,mwh)	ug/l	--	11000	--	1.3	2.9	5.7
Sulfates	mg/l	--	--	--	--	--	--
Thallium	ug/l	--	--	--	17	79	160
Titanium	ug/l	--	--	--	--	--	--
Zinc - TR	ug/l	--	35000	25000	160	160	320

Table 6: Summary of Effluent Limits to Maintain Applicable WQ Criteria for Outfall 001, 002, 004

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average						
		Wildlife	Human Health	Agri-culture	Aquatic Life			
Outfall 001								
Aluminum	ug/l	--	46200	--	--	--	--	
Barium	ug/l	--	1759390	--	1810	--	4000	
Bromide	mg/l	--	--	--	--	--	--	
Copper - TR	ug/l	--	703950	5450	82	--	38	
Fluoride	mg/l	--	--	22	--	--	--	
Iron - TR	ug/l	--	--	48500	--	--	--	
Lead - TR	ug/l	--	--	1064	73	--	380	
Magnesium	mg/l	--	--	--	--	--	--	
Manganese - TR	ug/l	--	669860	--	--	--	--	
Nitrate-N + Nitrite-N	mg/l	--	--	1093	--	--	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	34074	524	29	--	--	
Sulfates	mg/l	--	--	--	--	--	--	
Thallium	ug/l	--	--	--	187	--	160	
Titanium	ug/l	--	--	--	--	--	--	
Zinc - TR	ug/l	--	384660	274660	1420	--	320	
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.12	--	0.038	
Outfall 002								
Aluminum	ug/l	--	4500	--	--	--	--	
Ammonia-S	mg/l	--	--	--	--	--	--	
Barium	ug/l	--	160000	--	220	2000	4000	
Fluoride	mg/l	--	--	2	--	--	--	
Iron - TR	ug/l	--	--	5000	--	--	--	
Lead - TR	ug/l	--	--	100	9.9	190	380	
Magnesium	mg/l	--	--	--	--	--	--	
Manganese - TR	ug/l	--	61000	--	--	--	--	
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--	
Oil & grease	mg/l	--	--	--	--	10	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	3100	50	5	--	--	
Silver (wwh,ewh,mwh)	ug/l	--	11000	--	1.3	2.9	5.7	
Sulfates	mg/l	--	--	--	--	--	--	
Thallium	ug/l	--	--	--	17	79	160	
Tin	ug/l	--	--	--	180	1600	3200	
Titanium	ug/l	--	--	--	--	--	--	
Zinc - TR	ug/l	--	35000	25000	160	160	320	

Outfall 004							
Aluminum	ug/l	--	4500	--	--	--	--
Arsenic - TR	ug/l	--	580	100	150	340	680
Barium	ug/l	--	160000	--	220	2000	4000
Boron	ug/l	--	200000	--	3900	33000	65000
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.011	0.019	0.038
Chromium - TR	ug/l	--	14000	100	110	2400	4800
Copper - TR	ug/l	--	64000	500	12	19	38
Fluoride	mg/l	--	--	2	--	--	--
Iron - TR	ug/l	--	--	5000	--	--	--
Lead - TR	ug/l	--	--	100	9.9	190	380
Magnesium	mg/l	--	--	--	--	--	--
Manganese - TR	ug/l	--	61000	--	--	--	--
Nickel - TR	ug/l	--	43000	200	69	620	1200
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--
Selenium - TR	ug/l	--	3100	50	5	--	--
Silver (wwh,ewh,mwh)	ug/l	--	11000	--	1.3	2.9	5.7
Sulfates	mg/l	--	--	--	--	--	--
Thallium	ug/l	--	--	--	17	79	160
Titanium	ug/l	--	--	--	--	--	--
Zinc - TR	ug/l	--	35000	25000	160	160	320

Table 7. Instream Conditions and Discharger Flow for Outfalls 001, 002, 004

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Hardness</i>	mg/l	annual	140	Lake Erie BWQR
<i>First Energy Davis Besse flow</i>	cfs	annual		
<i>Outfall 001</i>			51.82	eDMR Jan 2006 – Dec 2010 95 th percentile
<i>Outfall 002</i>			0.201	eDMR Jan 2006 – Dec 2010 95 th percentile
<i>Outfall 004</i>			0.008	eDMR Jan 2006 – Dec 2010 95 th percentile
<i>Background Water Quality</i>				
<i>Outfall 001</i>				
Aluminum	ug/l		330	BWQR; ; n=640; 146<MDL; Statewide 50th percentile
Barium	ug/l		61	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Bromide	mg/l		0	No representative data available.
Copper - TR	ug/l		5	BWQR; ; n=2867; 1597<MDL; Statewide 50th percentile
Fluoride	mg/l		0	No representative data available.
Iron - TR	ug/l		650	BWQR; ; n=3018; 15<MDL; Statewide 50th percentile
Lead - TR	ug/l		3.6	BWQR; ; n=6; 3<MDL; Statewide 50th percentile
Magnesium	mg/l		22.5	BWQR; ; n=2604; 3<MDL; Statewide 50th percentile
Manganese - TR	ug/l		114	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Nitrate-N + Nitrite-N	mg/l		0.73	BWQR; ; n=5852; 515<MDL; Statewide 50th percentile
Phosphorus	mg/l		0.06	BWQR; ; n=5850; 1769<MDL; Statewide 50th percentile
Selenium - TR	ug/l		2.6	BWQR; ; n=6; 5<MDL; Statewide 50th percentile
Sulfates	mg/l		137	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Thallium	ug/l		0	No representative data available.
Titanium	ug/l		0	No representative data available.
Zinc - TR	ug/l		34	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l		0	No representative data available.
<i>Outfall 002</i>				
Aluminum	ug/l		330	BWQR; ; n=640; 146<MDL; Statewide 50th percentile
Ammonia-S	mg/l		0.095	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Barium	ug/l		61	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Fluoride	mg/l		0	No representative data available.
Iron - TR	ug/l		650	BWQR; ; n=3018; 15<MDL; Statewide 50th percentile
Lead - TR	ug/l		3.6	BWQR; ; n=6; 3<MDL; Statewide 50th percentile
Magnesium	mg/l		22.5	BWQR; ; n=2604; 3<MDL; Statewide 50th percentile
Manganese - TR	ug/l		114	BWQR; ; n=6; 0<MDL; Statewide 50th percentile

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Nitrate-N + Nitrite-N	mg/l		0.73	BWQR; ; n=5852; 515<MDL; Statewide 50th percentile
Oil & grease	mg/l		18	BWQR; ; n=248; 36<MDL; Statewide 50th percentile
Phosphorus	mg/l		0.244	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Selenium - TR	ug/l		2.6	BWQR; ; n=6; 5<MDL; Statewide 50th percentile
Silver (wwh,ewh,mwh)	ug/l		0	No representative data available.
Sulfates	mg/l		137	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Thallium	ug/l		0	No representative data available.
Tin	ug/l		0	No representative data available.
Titanium	ug/l		0	No representative data available.
Zinc - TR	ug/l		34	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Outfall 004				
Aluminum	ug/l		330	BWQR; ; n=640; 146<MDL; Statewide 50th percentile
Arsenic - TR	ug/l		4	BWQR; ; n=6; 5<MDL; Statewide 50th percentile
Barium	ug/l		61	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Boron	ug/l		0	No representative data available.
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l		0	No representative data available.
Chromium - TR	ug/l		0	BWQR; ; n=6; 6<MDL; Statewide 50th percentile
Copper - TR	ug/l		0	BWQR; ; n=6; 6<MDL; Statewide 50th percentile
Fluoride	mg/l		0	No representative data available.
Iron - TR	ug/l		650	BWQR; ; n=3018; 15<MDL; Statewide 50th percentile
Lead - TR	ug/l		3.6	BWQR; ; n=6; 3<MDL; Statewide 50th percentile
Magnesium	mg/l		22.5	BWQR; ; n=2604; 3<MDL; Statewide 50th percentile
Manganese - TR	ug/l		114	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Nickel - TR	ug/l		0	No representative data available.
Nitrate-N + Nitrite-N	mg/l		0.73	BWQR; ; n=5852; 515<MDL; Statewide 50th percentile
Phosphorus	mg/l		0.244	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Selenium - TR	ug/l		2.6	BWQR; ; n=6; 5<MDL; Statewide 50th percentile
Silver (wwh,ewh,mwh)	ug/l		0	No representative data available.
Sulfates	mg/l		137	BWQR; ; n=6; 0<MDL; Statewide 50th percentile
Thallium	ug/l		0	No representative data available.
Titanium	ug/l		0	No representative data available.
Zinc - TR	ug/l		34	BWQR; ; n=6; 0<MDL; Statewide 50th percentile

Table 8a. Parameter Assessment for Outfall 001

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Bromide	Magnesium	Phosphorus
Sulfates	Titanium	

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit. WLA not required. No limit recommended; monitoring optional.

Aluminum	Barium	Fluoride
Iron - TR	Lead - TR	Manganese - TR
Nitrate-N + Nitrite-N	Selenium - TR	Thallium
Zinc - TR		

Group 3: PEQ_{max} < 50 percent of maximum PEL and PEQ_{avg} < 50 percent of average PEL. No limit recommended; monitoring optional.

Copper - TR

Group 4: PEQ_{max} >= 50 percent, but < 100 percent of the maximum PEL or PEQ_{avg} >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

N/A

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l		--	0.038

Table 8b. Parameter Assessment for Outfall 002

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Magnesium
Titanium

Phosphorus

Sulfates

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit. WLA not required. No limit recommended; monitoring optional.

Aluminum
Iron - TR
Nitrate-N + Nitrite-N
Thallium

Barium
Lead - TR
Selenium - TR
Tin

Fluoride
Manganese - TR
Silver (wwh,ewh,mwh)
Zinc - TR

Group 3: PEQ_{max} < 50 percent of maximum PEL and PEQ_{avg} < 50 percent of average PEL. No limit recommended; monitoring optional.

Oil & grease

Group 4: PEQ_{max} >= 50 percent, but < 100 percent of the maximum PEL or PEQ_{avg} >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

N/A

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>

Table 9a. Final Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day)		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----Monitor-----				M ^c , EP
Water Temperature	°F	-----Monitor-----				M ^c , EP
Dissolved Oxygen	mg/L	-----6.0 min-----				WQS
pH	S.U.	-----6.5 to 9.0-----				WQS
Chlorine Residual	mg/L	--	0.2	--	--	BPJ/WLA/IMZM
Oxidants Residual	mg/L	--	0.05	--	--	BPJ/WLA/IMZM
Chlorine/Bromine Duration	Mins		120			BAT

^a Effluent loadings based on average design discharge flow of 33.5 MGD

^b Definitions: BAT = Best Available Control Technology Currently Available, 40 CFR Part 423, Steam Electric Power Generating Point Source Category; BPJ = Best Professional Judgment; EP = Existing Permit; M = Monitoring; RP WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio Water Quality Standards (OAC 3745-1).

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

Table 9b. Final Effluent Limits and Monitoring Requirements for Outfall 002

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day)		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----Monitor-----				M ^c , EP
Dissolved Oxygen	mg/L	--	6.0 min	--	--	WQS
pH	S.U.	-----6.5 to 9.0-----				WQS
Suspended Solids	mg/L	30	100	--	--	BPT
Oil & Grease	mg/L	15	20	--	--	BPT

^a Effluent loadings based on average design discharge flow of 0.13 MGD.

^b Definitions: BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 423, Steam Electric Power Generating Point Source Category; EP = Existing Permit; M = Monitoring; WQS = Ohio Water Quality Standards (OAC 3745-1).

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

Table 9c. Final Effluent Limits and Monitoring Requirements for Outfall 003

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day)		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----Monitor-----				M ^c , EP
Suspended Solids	mg/L	-----Monitor-----				M ^c , EP

^b Definitions: EP = Existing Permit; M = Monitoring;

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

Table 9d. Final Effluent Limits and Monitoring Requirements for Outfall 004

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day)		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----Monitor-----				M ^c , EP
Water Temperature	°F	-----Monitor-----				M ^c , EP
pH	S.U.	-----6.5 to 9.0-----				WQS
Chlorine Residual	mg/L	--	0.2	--	--	BPJ/WLA/IMZM
Oxidants Residual	mg/L	--	0.05	--	--	BPJ/WLA/IMZM
Chlorine/Bromine Duration	Mins		120			BAT
Aluminum	ug/L	4500	--	0.0852	--	WLA
Lead	ug/L	-----Monitor-----				WLA
Selenium	ug/L	-----Monitor-----				WLA
Thallium	ug/L	-----Monitor-----				WLA
Zinc	ug/L	-----Monitor-----				WLA
Barium	ug/L	-----Monitor-----				M ^c /RP
Boron	ug/L	-----Monitor-----				M ^c /RP
Iron	ug/L	-----Monitor-----				M ^c /RP
Silver	ug/L	-----Monitor-----				M ^c /RP
Fluoride	mg/L	-----Monitor-----				M ^c /RP

^a Effluent loadings based on average design discharge flow of 0.005 MGD.

^b Definitions: BAT = Best Available Control Technology Currently Available, 40 CFR Part 423, Steam Electric Power Generating Point Source Category; BPJ = Best Professional Judgment; EP = Existing Permit; M = Monitoring; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio Water Quality Standards (OAC 3745-1).

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

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