September 26, 2022
KPDES No. KY0041971 Trimble County Generating Station
Permit Reissuance Request – Supplemental Information, Agency Interest # AI 4054

a PPL company
220 West Main Street
Louisville, KY 40202

September 26, 2022

Kentucky Division of Water, Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

RE: KPDES No. KY0041971 Trimble County Generating Station, Trimble County, KY;
Permit Reissuance Request
Agency Interest # A.I. 4054

The Louisville Gas and Electric Company (LGE) provides this enclosed information to the Kentucky Division of Water (KDOW) for the reissuance of the expiring Trimble County Generating Station KPDES permit KY0041971. KPDES Form 1, Form C, and an application fee check are enclosed with other related support documents.

Significant process water management and Coal Combustion Residual (CCR) impoundment changes have been initiated at the Trimble County Station to comply with CCR federal regulatory rules and Steam-Electric Effluent Limitations Guidelines (ELG) issued by the USEPA. Generally, these changes are required for:

- dewatering and closure-in-place of the site Bottom Ash Pond (BAP) and dewatering and clean-closure of the site Gypsum Storage Pond (GSP);
- construction of a dry, CCR Rule compliant landfill (phase I is complete and is expected to have an operating life of ten (10) years);
- and construction of a biological wastewater treatment system and ancillary Ultrafiltration (UF) for Flue Gas Desulfurization (FGD) process waters.

EPA recently issued communications that it will reconsider the 2020 ELG rule with potential changes to limits for FGD wastewater, bottom ash transport water, legacy wastewater, and landfill leachate. However, until such proposed rulemaking is published and finalized, steam-electric utilities must comply with the 2020 ELG rule and its compliance dates. Therefore, LGE is proceeding with ELG rule construction activities under the applicability dates granted in the Trimble County Generation Station KPDES permit KY0041971 modification with an effective date of December 1, 2021. The existing bottom ash handling systems for both Unit 1 and 2 are compliant with the Final ELG Rule and has no discharge of Bottom Ash Transport Water (BATW).

The KPDES Permit Application Synopsis, provided in **Attachment 1** of this submission, details site information and outfalls listing including categorization of outfalls discharges which contain process flows and many outfalls which consist only of uncontaminated stormwater runoff flows.

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Form 1 and the application filing fee ($7,000.00 check for a major industry) are provided in **Attachment 2** and Atta**chment 3**. The USGS (United States Geological Survey) topographic map for the area including the Trimble County Plant is provided in **Attachment 4**.
As directed by KPDES staff, Form C (provided in **Attachment 5**) has been prepared using recent 2022 samples including analyses for the Priority Pollutants constituents for KPDES Outfalls 001, 002, and 005. The sewage treatment plant effluent, discharged as internal Outfall 003 to the zero-discharge BAP, was not sampled (as it is a conventional sanitary wastewaters package treatment plant). Laboratory analyses supporting chemical information used in preparation of Form C is supplied in Attachment 6. Per KPDES staff direction, DMR analyses results from 2021 and 2022 are provided in **Attachment 7.**

The Plant water balance diagrams (**Attachment 8**) may sometimes include stormwater runoff flows from various site areas. Process flows are calculated as PMAC (Peak Monthly Average Conditions) value to reflect the average daily flow for the combination of 28 days normal operations, 1 day maximum operations and 1 day maintenance operations.

Stormwater Runoff Calculations and Diagrams (**Attachments 9** and **10**) were prepared using current best-estimate information regarding construction of new wastewater treatment buildings, impoundments removal/refurbishment, CCR landfill construction and the ultimate stormwater controls-runoff management to be installed for all the affected areas. As such, the stormwater runoff calculations for industrial activity areas reflect the plant site conditions expected in-place by end-of-2028 (i.e., appropriate for the KPDES 5-year duration and to reflect end-of-permit-conditions).

The information mentioned above and provided in **Attachment 11**, Construction Projects Work Required for USEPA CCR and for USEPA ELG Federal Rules Compliance, also illustrates details of changes in Plant process equipment, impoundments flows management and combined discharges (besides inclusion of scheduling impacts information previously mentioned).

Provided in **Attachment 12** is the § 316(b) § 122.21(r)(2)-(8) studies report detailing efforts to establish cooling water intake technologies utilized at Trimble County Generation Station as Best Available Technology (BAT) as established by USEPA.

As directed by, and discussed with KPDES staff, enclosed are:

1. Attachment 1: KPDES Permit Application Synopsis;
2. Attachment 2: KPDES Form 1;
3. Attachment 3: Check to Kentucky State Treasurer for KPDES application filing fee;
4. Attachment 4: USGS Topographic Map (noting the facility site and discharge points);
5. Attachment 5: KPDES Form C;
6. Attachment 6: Sample results for the priority pollutant analysis required for Form C from the contracted commercial laboratory – provides priority pollutant analyses performed in 2022 (per KPDES staff guidance);
7. Attachment 7: Quarterly Metals Analyses Summarized for 2021 and 2022;
8. Attachment 8: Water Balance Diagrams – 30-Day Peak Monthly Process and **Average Rainfall** conditions;
9. Attachment 9: Stormwater Runoff Calculations;
10. Attachment 10: Stormwater Runoff Diagram(s);

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11. Attachment 11: Construction Activities Required at Trimble County Generating Station to Comply with USEPA CCR Rule and USEPA ELG Rule.
12. Attachment 12: Trimble County Generation Station § 316(b) § 122.21(r)(2)-(8) Information and Factors that Must and May be Considered for the Entrainment BTA Determination

Chemical metal cleaning wastewaters (e.g. boiler chemical cleans) and non-chemical metals cleaning wastes (e.g. air heater wash waters include boiler/SCR/flue gas ductwork washing for maintenance activities, etc.) are shown on the flow diagrams and calculated as though these activities occur once in typical month.

If I may be of assistance or you have any questions concerning the attached information, please feel free to contact me at (502) 627-4144 (or by email at philip.imber@lge-ku.com) or Michael O'Guin at (502)-627-2338 (or by email at michael.o'guin@lge-ku.com).

Sincerely,

Philip A. Imber
Manager Environmental Land & Water
Louisville Gas and Electric Company

Enclosures (12)

Attachment 1

LG&E – Trimble County Plant

KPDES Permit Application Synopsis

LOUISVILLE GAS AND ELECTRIC COMPANY
TRIMBLE COUNTY GENERATING STATION

KPDES Permit No. KY0041971 Application Synopsis – 2022 Technical Update

Name and Address of Applicant

(Corporate)
Louisville Gas and Electric Company
P.O. Box 32010
Louisville, Kentucky 40232
c/o Michael O'Guin

(Facility)
Trimble County Generating Station
487 Corn Creek Road
Bedford, Kentucky 40006
c/o Haley Turner

Description of Applicants' Operation

Fossil fuel fired steam electric power plant for the generation, transmission and distribution of electricity (SIC Code 4911 and NAICS Code 221112). Located on a 2,473+ acre site along the Ohio River at mile mark 572.0.

Production Capacity of Facility

Generation of electric power is from two fossil fired units with the following nominal generating capacity:

Unit 1 – 525 MW (began operation 1989)
Unit 2 – 800 MW (began operation 2010)
Total 1,325 MW Coal-fired Steam Boilers

and,
Units 5-10 – Six, 170 MW natural gas fired simple-cycle combustion turbines
Total 1,020 MW Gas-fired Simple Cycle Combustion Turbines

Total Site MW = 2,345 MW Generation

LOUISVILLE GAS AND ELECTRIC COMPANY
TRIMBLE COUNTY GENERATING STATION

KPDES Permit No. KY0041971 Application Synopsis – 2022 Technical Update

Description of Submitted Outfalls

Note: See attached flow diagrams and rainfall runoff calculations for flow and acreage information)

Construction to close/cap the Bottom Ash Pond (BAP) and clean-close the Gypsum Storage Pond (GSP) CCR impoundments and provide FGD wastewaters treatment have begun and will continue to mid-2025. Construction for the onsite dry CCR landfill phase I is complete and is expected to have an operating life of ten (10) years. This construction is being done for compliance with the USEPA CCR regulations final rule and in accordance with the ELG final rule.

Outfall descriptions are mostly consistent with those described in the Trimble County Generating Station KPDES permit KY0041971 modification with an effective date of December 1, 2021. The only exceptions are as follows:

Outfall #009

Existing Permit Description:

Closed/Capped BAP-Bottom Ash Pond **(Proposed External Outfall 009)** To Corn Creek to Ohio River
No Flows until Construction to Close at least Parts of BAP (by end-of-2023)

New Permit Description:

Closed/Capped BAP-Bottom Ash Pond -
South Areas
(Proposed External Outfall 009) To Corn Creek to Ohio River
No Flows until Construction to Close at least Parts of BAP (by end-of-2025)

Outfall #010

Existing Permit Description:

Closed/Capped BAP-Bottom Ash Pond **(Proposed External Outfall 009)** To Corn Creek to Ohio River
No Flows until Construction to Close at least Parts of BAP (by end-of-2023)

New Permit Description:

Closed/Capped BAP-Bottom Ash Pond -
North Areas
(Proposed External Outfall 010) To Corn Creek to Ohio River
No Flows until Construction to Close at least Parts of BAP (by end-of-2025)

LOUISVILLE GAS AND ELECTRIC COMPANY
TRIMBLE COUNTY GENERATING STATION

KPDES Permit No. KY0041971 Application Synopsis – 2022 Technical Update

Outfall #011

Existing Permit Description:

Closed/Capped GSP – Gypsum Storage Pond –
Northwest Areas
(Proposed External Outfall 011)
To Corn Creek to Ohio River
No Flows until Construction to Close at least Parts of BAP (by end-of-2023)

New Permit Description:

Clean-Closed GSP – Gypsum Storage Pond –
(Proposed External Outfall 011)
To Corn Creek to Ohio River
No Flows until Construction to Close GSP (by end-of-2025)

LOUISVILLE GAS AND ELECTRIC COMPANY
TRIMBLE COUNTY GENERATING STATION

KPDES Permit No. KY0041971 Application Synopsis – 2022 Technical Update

External outfall #001 - Consists of flows from the Site Runoff Sedimentation Pond which includes stormwater runoff for Areas 1.a – 1.h, flows from natural gas combustion turbine evaporative coolers, flows from natural gas combustion turbine blade washes, and flows from natural gas combustion turbine oil-water separator to the Ohio River.

External outfall #002 - Consists of flows from Units 1 and 2 cooling tower blowdowns, Internal Outfall 003 discharge, Internal Outfall 004 discharge, Internal Outfall 006 discharge, Internal Outfall 007 discharge, and Internal Outfall 008 discharge to the Ohio River.

Internal Outfall #003 – Contains flow from the facility package sewage treatment plant (STP) as an internal stream to Outfall 002 to the Ohio River. The STP design is an activated sludge, aerobic digestion, and chlorination system.

Internal outfall #004 - Consists of intermittent flows (potentially once or twice per 5-yr period) from the boiler chemical cleans (discharge combined into the Knockout-Process Ponds to Internal Discharge outfall 008 and into Outfall 002 flows to Ohio River).

Outfall #005 – Plant intake water from the Ohio River used for service water, fire protection and cooling water.

Internal outfall #006 - Consists of Gypsum Storage Pond (GSP) dewatering flows and direct pond precipitation flows as an internal stream to Outfall 002 to the Ohio River (flows also able to be directed to Unit 1 and Unit 2 FGD to be treated in onsite Process Waters Treatment System (PWT) and discharge through Internal Outfall 007).

Internal Outfall #007 – Consists of flows from Unit 1 and Unit 2 FGD wastewaters Process Waters Treatment System (PWT) and future Effluent Limitations Guidelines Treatment System (ELT) as an internal stream to Outfall 002 to the Ohio River.

Internal Outfall #008 – Internal outfall to be combined into outfall 002 to Ohio River and containing the settled/neutralized/mixed flows from the Knockout Pond and Process Pond.

Outfall #009 – *New proposed* External outfall discharged to Corn Creek to the Ohio River and containing the stormwater runoff flows from the southern portion of the closed/capped BAP-Bottom Ash Pond.

Outfall #010 – *New proposed* External outfall discharged to Corn Creek to the Ohio River and containing the stormwater runoff flows from the northern portion of the closed/capped BAP-Bottom Ash Pond.

Outfall #011 - *New proposed* External outfall discharged to Corn Creek to the Ohio River and containing the stormwater runoff flows the clean-closed GSP-Gypsum Storage Pond.

LOUISVILLE GAS AND ELECTRIC COMPANY
TRIMBLE COUNTY GENERATING STATION

KPDES Permit No. KY0041971 Application Synopsis – 2022 Technical Update

Outfall #012 – External outfall discharged to Corn Creek to the Ohio River and containing uncontaminated stormwater runoff from undeveloped sections of the landfill (phases II – IV).

Outfall #013 – *New proposed* External outfall discharged to Barebone Creek to the Ohio River and containing Landfill Haul Road uncontaminated surface/stormwater runoff pond discharge.

Attachment 2

Kentucky Division of Water

Form 1

Form 1

KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM

Permit Application

Division of Water

NAME OF FACILITY: Trimble County Generating Station	AGENCY USE ONLY
PERMIT NO.: KY0041971	COUNTY: Trimble

This is an application to: (check one)

☐ Apply for a new permit.

☒ Apply for reissuance of expiring permit.

☐ Modify an existing permit.* (Give reason for modification under Section III)

A complete application consists of this form (Form 1), and one or more of the following: Form A, Form B, Form C, Form F, or Form SC.

I. FACILITY AND CONTACT INFORMATION

Name of business, municipality, company, etc. requesting permit:	Trimble County Generating Station
Owner Name (and Title if applicable):	Louisville Gas and Electric Company, Attn: Philip Imber (Director Environmental Affairs)
Owner Mailing Address (Street, etc.):	P.O Box 32010
Owner City, State, Zip:	Louisville, KY 40232
Owner Telephone Number:	502-627-4144
Owner Email Address:	philip.imber@lge-ku.com

Type of Ownership:	☐ Publicly Owned	☒ Privately Owned	☐ State Owned	☐ Both Publicly and Privately Owned	☐ Federally Owned

Contact Name and Title (if different):	Michael O'Guin, Environmental Engineer III
Contact Mailing Address (if different):	P.O Box 32010
Contact City, State, Zip (if different):	Louisville, KY 40232
Contact Telephone Number (if different):	502-627-2338
Contact Email Address (if different):	michael.o'guin@lge-ku.com
NetDMR Official Contact for Facility:	Rebecca Cash
NetDMR Official Contact Telephone Number:	502-627-4633
NetDMR Official Contact Email Address:	rebecca.cash@lge-ku.com

II. FACILITY LOCATION

Facility Location (street, road, highway, etc.):	487 Corn Creek Rd
Facility City, State, Zip:	Bedford, KY 40006
Facility Latitude (Decimal Degrees):	38 35' 04"
Facility Longitude (Decimal Degrees):	85 24' 50"

☒ Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features.

Business Use

III. FACILITY DESCRIPTION	
Provide a brief description of activities, products, etc.: Fossil-fuel fired steam electric generating station	
* Reason for modifying existing permit, if applicable:	
Principal SIC Code and description: 4911	
Other SIC Codes:	
IV. OPERATOR INFORMATION	
Treatment Plant Operator Name: NA	
Operator Mailing Address (Street, etc.):	
Operator City, State, Zip:	
Operator Telephone Number:	
Operator Email Address:	
Operator Certification Class:	Operator Certification Number:
V. ENVIRONMENTAL PERMITS/REGISTRATIONS FOR THIS FACILITY	
KPDES Permit Number: KY 0041971	Issue Date of Current Permit: Feb 27, 2018
Expiration Date of Current Permit: Mar 31, 2023	Date of Original Permit Issuance: Jan 1, 1979
☐ Other DOW Permits (list):	
☐ Sludge Disposal Permit Number:	
☐ Air Emission Source Control Permit Number: KYDAQ Title V Permit V-14-017 R2	
☐ Solid Waste or Special Waste Permit Number: KYDWM SW11200008 S.W. Landfill	
☐ Hazardous Waste Registration or Permit Number: KYD-991-277-096 SQG	
☐ Surface Mine or Underground Mine Permit Number:	
☐ Other (specify):	
VI. PERMIT FEE (See instructions)	
Select the type of permit being requested. See instructions for applicable fees and methods of payment. Additional information can be found in "General Instructions" at Water.Ky.Gov/Permitting/WastewaterDischarge	
☒ Major Industry	☐ Large Non-POTW
☐ Minor Industry	☐ Intermediate Non-POTW
☐ Non-Process Industry	☐ Small Non-POTW
☐ Surface Mining Operation	☐ 501(c)(3)

Business Use

☐ Agriculture	☐ Exempt Publicly Owned Facility
☐ Total Amount Enclosed $	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME AND TITLE: Steven Turner, Vice President Power Production	
SIGNATURE:	DATE:
TELEPHONE NO. 502-627-4121	EMAIL: steven.turner@lge-ku.com

Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Direct questions to: Surface Water Permits Branch at (502) 564-3410.

Business Use

KPDES FORM 1 – INSTRUCTIONS

Section A: GENERAL INSTRUCTIONS

The facility name should be the official or legal name by which the facility is commonly known and/or uniquely identified. Do not use a colloquial name. List the county where the facility is located.

With the exceptions described in Section C of these instructions, Federal and State laws prohibit you from the discharge of pollutants into the waters of the United States or waters of the Commonwealth.

Where to File: Return completed application form and attachments to:
Division of Water
Surface Water Permits Branch
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

When to File: File the application at least 180 days prior to expiration of your current KPDES permit or at least 180 days prior to startup of a new facility.

Fees: Permit Fees are listed in Section B of these instructions.

Completion of Form: Unless otherwise specified in the detailed instructions, you must answer each item in the form. To indicate that you have considered each item, enter "NA," for not applicable, if a particular item does not fit the circumstances of your facility or activity. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

Section B: COMPLETING FORM 1

Listed below are explanations of select Form 1 questions. If further information is needed concerning any section, **please contact Division of Water, Surface Water Permits Branch at (502) 564-3410.**

I. Facility and Contact Information

Use the official or legal name of the business, company, municipality, etc. requesting permit. Do not use a colloquial name. Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity that operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. This use of "operator" in many cases is not the same as the treatment plant Certified Operator.

The owner mailing address should be the legal permittee of record and is the address where correspondence regarding the application, permit, etc. for the facility will be sent unless otherwise indicated. This often is not the address used to designate the location of the facility or activity. Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by reviewing offices if necessary. The contact mailing address is to be provided if different from the owner mailing address. The name, telephone number, and email address of the facility's official contact for netDMR (Discharge Monitoring Reports) is to be provided.

II. Facility Location

The facility location should be for the actual location of the facility (i.e. road name, highway number, not the P.O. Box address). If there is no street address, identify the facility by the most accurate alternative geographic information such as direction and distance to the nearest intersection or permanent landmark (e.g., ½ mile east of intersection of KY 70 and US 127).

List the latitude and longitude for the facility site. The latitude/longitude reading for the site should be taken at the influent to the wastewater treatment plant, if applicable.

Attach a site location map with the facility and outfalls clearly marked. Provide either an aerial map, topographic map, or other map that identifies the site location and significant features including the facility's intake and discharge structures. Also mark the locations of those wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within one-quarter mile of the facility property boundary.

III. Facility Description

Briefly describe the nature of the business and the activities being conducted that require a KPDES permit.

Identify the principal 4-digit standard industrial classification (SIC) code and other applicable SIC codes that best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the discharge. The SIC codes are numbers and descriptions of activities classified by the Executive Office of the President, Office of Management and Budget. These are found in the latest edition of the Standard Industrial Classification (SIC) Manual.

If the application is for the modification of an existing permit, please provide the specific reason(s) for modifying the existing permit.

IV. Operator Information

For those facilities that require a Certified Operator, enter the name of a Certified Operator who will operate the treatment plant, or enter the name of an operator who will be certified before commencement of discharge. The operator of the treatment plant is often someone other than the operator of the facility identified in Section I.

List the Certified Operator's mailing address, telephone number, and email address. Also, provide the Certified Operator's Certification Class and Certification Number.

The operator must be currently certified with the Division of Water. For information concerning those requirements, please contact the Division of Compliance Assistance at (502) 564-0323.

V. Environmental Permits/Registrations for This Facility

List any existing environmental permits for this facility and identify any permits for which the facility will apply. KPDES permits use an NPDES generated number.

VI. Permit Fee

The payment of the permit fee, as listed below, must accompany the application for a new KPDES Permit or for reissuance of an expiring KPDES Permit in order for the permit application to be processed. For an application to modify an existing permit, the Division of Water will notify the applicant of the required permit fee to be paid prior to issuance of the permit modification. Your check must be made payable to "Kentucky State Treasurer." For permit renewals, to ensure proper credit to your account, please include the KPDES permit number on the check. The permit fee is not refundable if the application is withdrawn or the permit is denied. Listed below are the facility categories and associated base five-year permit fees. (See the separate "General Instructions" for definitions of facility categories.)

Facility Category	Five-Year Permit Fee
Major Industry	$7,000
Minor Industry	$4,500
Non-Process Industry	$2,200
Large Non-POTW	$3,700
Intermediate Non-POTW	$3,200
Small Non-POTW	$2,200
Agriculture	$1,200
Surface Mining Operation	$3,300
501(c)(3)	$100

If this application is for a new project, see separate General Instructions for the applicable Construction Permit fee.

VII. Certification

The permit application must be signed as follows:

- **Corporation:** by a principal executive officer of at least the level of vice president.
- **Partnership or sole proprietorship:** by a general partner or the proprietor respectively.
- **Municipality, state, federal, or other public agency:** by either a principal executive officer or ranking elected official.

Section C: ACTIVITIES WHICH DO NOT REQUIRE KPDES PERMITS

You are not required to obtain a KPDES permit if your discharge is one of the following categories, as provided by the Clean Water Act (CWA) and KPDES regulations (401 KAR Chapter 5).

1. Dredged or Fill Material: Discharges of dredged or fill material as defined at 33 CFR 323.2 into waters of the Commonwealth do not need KPDES permits if the dredging or filling is authorized by a permit issued by the U.S. Army Corp of Engineers.

2. Discharges into Publicly Owned Treatment Works (POTW): The introduction of sewage, industrial wastes, or other pollutants into a POTW does not need a KPDES permit. You must comply with all applicable pretreatment standards promulgated under Section 307 (b) of the CWA, which may be included in the permit issued to the POTW. If you have a plan or an agreement to switch to a POTW in the future, this does not relieve you of the obligation to apply for and receive a KPDES permit until you have stopped discharging pollutants into waters of the Commonwealth.

3. Dischargers into Privately Owned Treatment Works: Dischargers into privately owned treatment works do not have to apply for or obtain KPDES permits except as otherwise required by the Cabinet. The owner or operator of the treatment works itself, however, must apply for a permit and identify all users in its application.

4. Discharges from Agricultural and Silvicultural Activities: Most discharges from agricultural and silvicultural activities to waters of the Commonwealth do not require KPDES permits. These include runoff from orchards, cultivated crops, pastures, range lands, and forest lands. However, the discharge listed below DO require KPDES permits.
    a. Discharges from Concentrated Animal Feeding Operations.
    b. Discharges from Concentrated Aquatic Animal Production Facilities.
    c. Discharges associated with approved Aquaculture Projects.
    d. Discharges from Silvicultural Point Sources. Nonpoint source silvicultural activities are excluded from KPDES permit requirements. However, some of these activities, such as stream crossings for roads, may involve point source discharge of dredged or fill material which may require a Section 404 permit. See 33 CFR 209.120.

5. Underground Injection Control Permits Under the Safe Drinking Water Act

Attachment 3

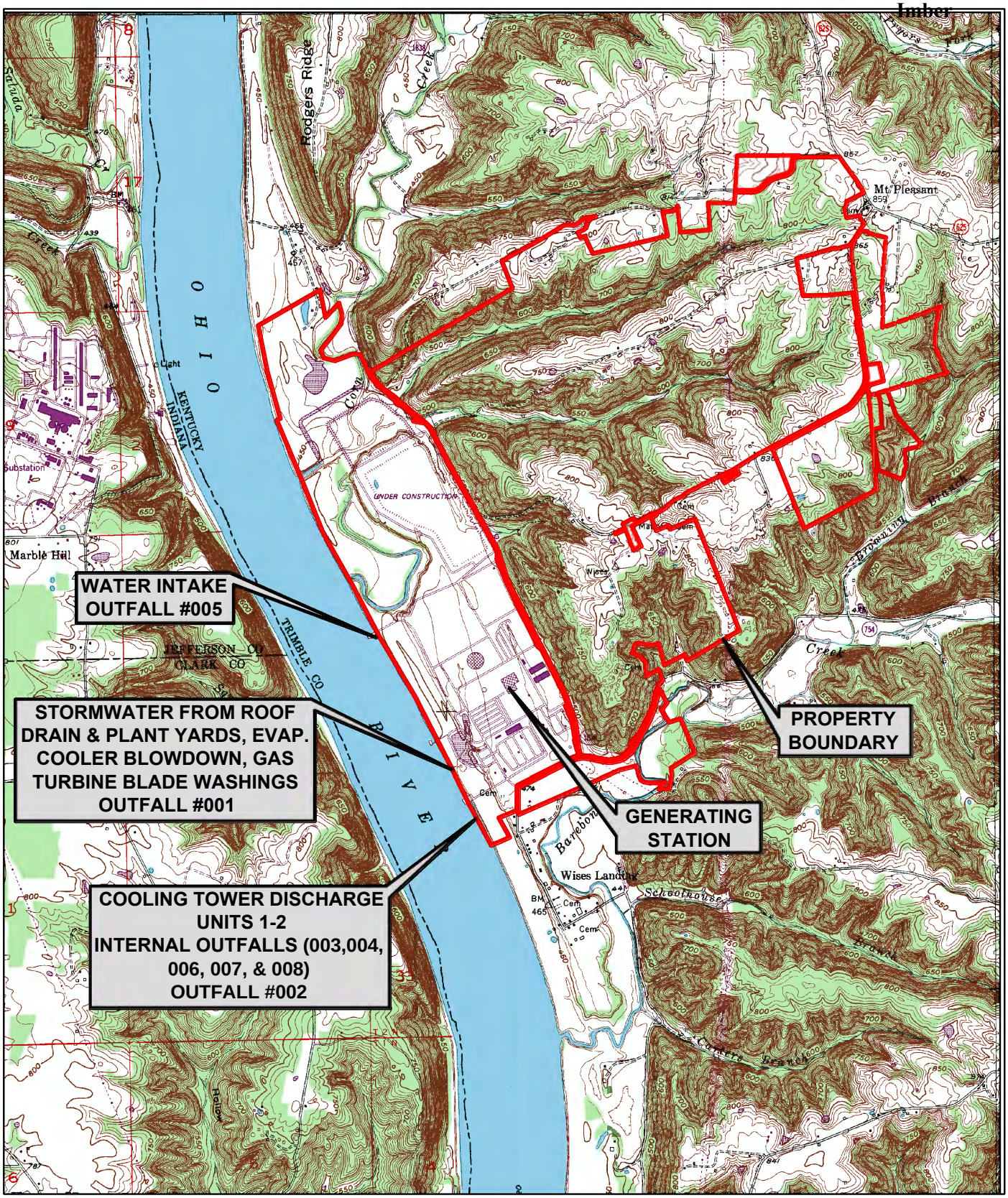
Kentucky Division of Water

KPDES

Application Filing Fee Check to State Treasurer

Attachment 4

USGS TOPOGRAPHIC MAP



TRIMBLE COUNTY GENERATING STATION

LOUISVILLE GAS AND ELECTRIC COMPANY
TRIMBLE COUNTY, WISES LANDING, KENTUCKY
BETHLEHEM, IND-KY, USGS QUADRANGLE MAP
Scale: 1"=3000'

Attachment 5

Kentucky Division of Water

KPDES – Form C

Form C	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM Permit Application	Imber Division of Water

NAME OF FACILITY: Trimble County Generating Station	AGENCY USE ONLY
PERMIT NO.: 0041971	COUNTY: Trimble

I. OUTFALL LOCATION

☐ For each outfall, list the latitude and longitude of its location to five decimal points.

OUTFALL NUMBER	LATITUDE In Decimal Degrees	LONGITUDE In Decimal Degrees	RECEIVING WATER (name)
001	38.58028	-85.41556	Ohio River
002	38.57667	-85.41500	Ohio River (thru multiport diffuser)
003	38.58639	-85.41028	Internal (to Cooling Tower Blowdown Outfall 002 to Ohio River)
004	38.58611	-85.41306	Internal (to KO-Process Ponds to New Outfall 008 to Outfall 002 to Ohio River)
005	38.58778	-85.42222	Plant Intake Water (from Ohio River)
006	38.58639	-85.41250	Internal (to Cooling Tower Blowdown Outfall 002 to Ohio River)
007	38.58639	-85.41250	Internal (to Cooling Tower Blowdown Outfall 002 to Ohio River)
008	38.58250	-85.41167	Internal (to Cooling Tower Blowdown Outfall 002 to Ohio River)
009	38.60000	-85.41833	To Corn Creek to Ohio River
010	38.60194	-85.42222	To Corn Creek to Ohio River
011	38.60056	-85.42556	To Corn Creek to Ohio River
012	38.60083	-85.40861	To Corn Creek to Ohio River
013	38.59333	85.41000	To Barebone Creek to Ohio River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfall. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.

OUTFALL NUMBER	SOURCES OF WASTEWATER		TREATMENT DESCRIPTION (from Table C-1)
	Operations Contributing to Flow	Avg/Design Flow (include units)	

001 Combined Flows	Stormwater Runoff – Areas 1.a, 1.c	0.0297 MGD	Settling (1-U), Discharge-Surface Water (4-A)
	Stormwater Runoff – Areas 1.b	0.0027 MGD	Settling (1-U), Discharge-Surface Water (4-A)
	Stormwater Runoff – Areas 1.d	0.0018 MGD	Settling (1-U), Discharge-Surface Water (4-A)
	Stormwater Runoff – Areas 1.e	0.0139 MGD	Settling (1-U), Discharge-Surface Water (4-A)
	Stormwater Runoff – Areas 1.f, 1.g	0.076 MGD	Settling (1-U), Discharge-Surface Water (4-A)
	Stormwater Runoff – Areas 1.h	0.0361 MGD	Settling (1-U), Discharge-Surface Water (4-A)
	Gas Combustion Turbines (CT) Evaporative Coolers Blowdown	0.0001 MGD	Settling (1-U), Neutralization (2-K)
	Gas CT Blade Washing Waters	0.0001 MGD	Settling (1-U), Neutralization (2-K)
	Gas CT Equipment Floor Drains & Transformers Stormwater Drains to Oil-Water Separator	0.0291 MGD	Settling (1-U), Neutralization (2-K)
002 Combined Flows	Cooling Tower Blowdown (includes 0.0093 MGD Average Precipitation Accumulated in Cooling Towers)	14.4635 MGD	Discharge -Surface Water (4-A)
	Package Sewage Treatment Plant (**Internal Outfall 003**)	0.023 MGD	Disinfection (Chlorine/tabs) (2-F), Activated Sludge (3-A), Aerobic Digestion (5-A)
	Boiler Chemical Cleaning Waste Waters (**Internal Outfall 004**)	0.0033 MGD	Settling (1-U), Mixing (1-O), Neutralization (2-K)
	Gypsum Storage Pond Dewatering Flows and Direct Pond Precipitation Flows (**Internal Outfall 006**)	.600 MGD (Dewatering)	Settling (1-U), Mixing (1-O), Neutralization (2-K)
	FGD Wastewaters Treated Effluent (**Internal Outfall 007**)	1.0799 MGD	Neutralization (2-K)Coagulation (2-D), Chemical Precipitation (2-C), Flocculation (1-G), Rapid Sand Filtration (1-R), Pressure Filtration (5-R), Denitrification (3-D), Anaerobic Treatment (3-C)
	Plant Sumps (Low Volume Wastes), Coal-Limestone Piles Stormwater Runoff Flows, CCR-Contact Flows, Landfill Leachate Flows (to Knockout-Process Ponds) and Direct Pond(s) Precipitation Flows (**Internal Outfall 008)**	2.1144 MGD	Settling (1-U), Mixing (1-O), Neutralization (2-K)
003	Package Sewage Treatment Plant	0.023 MGD	Disinfection (Chlorine/tabs) (2-F), Activated Sludge (3-A), Aerobic Digestion (5-A)
004	Boiler Chemical Cleaning Waste Waters (**Internal Outfall 004**)	0.0033 MGD	Chemical Precipitation (2-C), Neutralization (2-K)
005	Plant Intake Water	34.4121 MGD	Screening (1-T)
006 Combined Flows	Gypsum Storage Pond Dewatering Flows and Direct Pond Precipitation Flows	0.600 MGD (Dewatering)	Settling (1-U), Mixing (1-O)
007	FGD Wastewaters Treated Effluent (**Internal Outfall 007)**	1.0799 MGD	Neutralization (2-K)Coagulation (2-D), Chemical Precipitation (2-C), Flocculation (1-G), Rapid Sand Filtration (1-R), Pressure Filtration (5-R), Denitrification (3-D), Anaerobic Treatment (3-C)

008	Plant Sumps (Low Volume Wastes), Future Coal-Limestone Piles Stormwater Runoff Flows, CCR-Contact Flows, Landfill Leachate Flows (to Knockout-Process Ponds) and Direct Pond(s) Precipitation Flows (**Internal Outfall 008)**	*Flows from Outfall 008 Discharge Beginning with Phase 3* **TOTAL FLOW** 2.1144 MGD (Phase 3)	Settling (1-U), Mixing (1-O), Neutralization (2-K)
	Coal-Limestone Piles Equipment Washdown Flows	0.0176 MGD (Phase 3)	
	Water Treatment (*intake*) Building Sumps	0.4243 MGD (Phase 3)	
	Boiler Blowdown/Condensate Polishing/Quench Wastewaters	0.0871 MGD (Phase 3)	
	Coal-Limestone Piles Areas Precipitation Runoff Flows	0.1280 MGD (Phase 3)	
	CCRT-Handling Area CCR-Contact Precipitation Runoff Flows	0.0944 MGD (Phase 3)	
	Unit 1 Plant Sumps (CCR-Contact & from Oil-Water Separator)	0.6225 MGD (Phase 3)	
	Unit 2 Plant Sumps (CCR-Contact & from Oil-Water Separator)	0.5350 MGD (Phase 3)	
	Fly Ash Marketing Silo Washdown/Precipitation Runoff Sumps (CCR-Contact)	0.0006 MGD (Phase 3)	
	Landfill Leachate Pond (Stormwater Contact-Runoff Flows)	0.2018 MGD (Phase 3)	
	Boiler Chemical Cleaning Waste Waters (**Internal Outfall 004**)	0.0033 MGD	
009 (Future)	Closed/Capped BAP-Bottom Ash Pond South Areas (**Proposed External Outfall 009**) To Corn Creek to Ohio River *No Flows until Construction to Close at least Parts of BAP (by end-of-2025*)	0.0449 MGD	Discharge-Surface Water (4-A)
010 (Future)	Closed/Capped BAP-Bottom Ash Pond-North Areas (**Proposed External Outfall 010**) To Corn Creek to Ohio River *No Flows until Construction to Close at least Parts of BAP (by end-of-2025)*	0.0457 MGD	Discharge-Surface Water (4-A)
011 (Future)	Clean-Closed GSP-Gypsum Storage Pond (**Proposed External Outfall 011**) To Corn Creek to Ohio River *No Flows until Construction to Close at least Parts of BAP (by end-of-2025)*	0.0363 MGD	Discharge-Surface Water (4-A)
012	Landfill Uncontaminated Runoff (**Proposed External Outfall 012**) To Corn Creek to Ohio River	0.4885 MGD	Settling (1-U), Discharge- Surface Water (4-A)
013 (Future)	Landfill Haul Road Uncontaminated Surface/Stormwater Runoff Pond Discharge (**Proposed External Outfall 013**) To Barebone Creek to Ohio River	0.1194 MGD	Settling (1-U), Discharge- Surface Water (4-A)

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES (Continued)

C. Except for stormwater runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☐ Yes. If yes then complete the following table.

■ No. If no then go to Section III.

OUTFALL NUMBER	OPERATIONS CONTRIBUTING TO FLOW	DAYS PER WEEK (specify avg.)	MONTHS PER YEAR (specify avg.)	FLOW RATE (MGD)		TOTAL VOLUME (include units)		DURATION (days)
				Long-Term Avg.	Max Daily	Long-Term Avg.	Max Daily	

III. PRODUCTION

A. Does an effluent limitation guideline promulgated by EPA under Section 304 of the Clean Water Act apply to your facility? (40 CFR 401 – 471)

■ Yes. Complete Item III-B and list the effluent limitation guideline category(ies):

☐ No. Go to Section IV.

B. Are the limitations in the applicable effluent limitations guideline expressed in terms of production or other measures of operation? (40 CFR 401 – 471)

☐ Yes. Complete Item III-C.

■ No. Go to Section IV.

C. If you answered "Yes" to Item III-B, list the quantity which represents the actual measurement of your level of production, expressed in the terms and units used in the applicable effluent limitation guideline, and indicate the affected outfalls

AVERAGE DAILY PRODUCTION			Affected Outfalls (list outfall numbers)
Quantity Per Day	Units of Measure	Operation, Product, Material, Etc. (specify)	

IV. IMPROVEMENTS

A. Are you now required by any federal, state or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders and grant or loan conditions

☐ Yes. Complete the following table.

☐ No. Go to Section IV-B.

INDENTIFICATION OF CONDITION AGREEMENT, ETC.	AFFECTED OUTFALLS		BRIEF DESCRIPTION OF PROJECT	FINAL COMPLIANCE DATE	
	No.	Source of Discharge		Required	Projected

B. **OPTIONAL:** You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction

V. INTAKE AND EFFLUENT CHARACTERISTICS

A. Tables A, B, and C of this section are included on separate sheets numbered 5-18.

B. See instructions before proceeding.

C. Complete one set of tables for each outfall.

Place the outfall number in the space provided on each table.

D. Use the space below to list any of the pollutants (refer to SARA Title III, Section 313) listed in TABLE C-3 of the instructions which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession

POLLUTANT	SOURCE	POLLUTANT	SOURCE
Ammonia & Ammonium Hydroxide, Sodium Phosphate (dibasic & tribasic)	Boiler/Feedwater System pH Control & Buffering	Sodium Hypochlorite	Cooling Tower Makeup ELT Membrane Cleaning
Sodium Hydroxide & Sulfuric Acid	Dimineralizer Regenerant Chemicals	Phosphoric Acid	RO System Membrane Cleaner
Aluminum Sulfate	Boiler Water Treatment	Calcium Hypochlorite (tablets)	Sewage Treatment Disinfectant
Sodium Hydroxide	Water Clarification Aid for PWT	Quat-DIMAC Ammonium-Chloride	Cooling System Zebra Mussel Biocide Periodic Treatments
Ferric Chloride	PWT Coagulant	Sodium Bisulfite	Cooling Tower Dechlorination ELT Membrane Cleaning/Oxidant Neutralization
Hydrochloric Acid	PWT pH Adjustment		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

A. Is any pollutant listed in Table C of this section a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ Yes. List all such pollutants in the space provided below.

☐ No. Go to Section VII.

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge of or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

■ Yes. Identify the test(s) and describe their purposes below.

☐ No. Go to Section VIII.

Toxicity Control & Biomonitoring Program Testing was incorporated into the current KPDES for Outfall 002 discharge including:

1. A 48-hour static toxicity test with Ceriodaphnia sp.;
2. A 48-hour static toxicity test with fathead minnow

These tests were performed at least annually and indicated full compliance with the KPDES toxicity limits.

VIII. CONTRACT ANALYSIS INFORMATION

Applicants that discharge pollutants to waters of the Commonwealth must provide analytical data for the parameters shown on this Form. The analysis must be performed by a laboratory that is certified in accordance with 401 KAR 5:320
All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
Below please list any analyses reported in Section V that were performed by a contract laboratory or consulting firm.

NAME	ADDRESS	TELEPHONE	POLLUTANTS ANALYZED

IX. CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME AND TITLE: Steven Turner
Vice President Power Production

SIGNATURE:	DATE:
TELEPHONE NO. 502-627-4121	EMAIL: Steven.Turner@lge-ku.com

Return completed application form and attachments to:

Business Use

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued from Section V. INTAKE AND EFFLUENT CHARACTERISTICS)

PART A.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE A.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.
You must provide the results of at least one analysis for every pollutant in this table.

TABLE A Page 1 of 1

OUTFALL NO. 001

1. POLLUTANT	2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
1. Biochemical Oxygen Demand $(BOD)_5$	<4.17							mg/L				
2. Chemical Oxygen Demand (COD)	<50							mg/L				
3. Total Organic Carbon (TOC)	4.1							mg/L				
4. Total Suspended Solids (TSS)	10							mg/L				
5. Ammonia (as N)	<.50							mg/L				
6. Flow (MGD)	VALUE		VALUE		VALUE			MGD		VALUE		
7. Temperature (winter)			VALUE		VALUE			°C		VALUE		
8. Temperature (summer)	**28.7**		VALUE		VALUE			°C		VALUE		
9. pH	MINIMUM 7.94	MAXIMUM 7.94	MINIMUM	MAXIMUM				STANDARD UNITS				

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued)

PART B.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE B.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.

In column "2. MARK X", place an "X" in either the **Believed Present** column (2.a) for each pollutant you know or have reason to believe is present; or place an "X" in the **Believed Absent** column (2.b) for each pollutant you believe to be absent.
If you mark the **Believed Present** column for any pollutant, you must provide the results of at least one analysis for that pollutant.
Complete one table for each outfall. See the instructions for additional details and requirements.

TABLE B
Page 1 of 2

OUTFALL NO. 001

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Believed Present	b. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
1. Bromide (24959-67-9)			<0.50							mg/L				
2. Chloride			100							mg/L				
3. Chlorine, Total Residual			0.02							mg/L				
4. Color			10							CU				
5. E.coli			1.0							MPN/100mL				
6. Fluoride (16984-48-8)			<.50							mg/L				
7. Hardness ($CaCO_3$)			220							mg/L				
8.Nitrate–Nitrite (as N)			<0.75							mg/L				
9. Nitrogen, Total Organic (as N)			<1.0							mg/L				
10. Oil and Grease			<5.2							mg/L				
11. Phosphorous (as P), Total (7723-14-0)			<0.10							mg/L				
12. Radioactivity														
(1) Alpha, Total			4.09 +/-2.48							pCi/L				
(2) Beta, Total			3.78 +/-1.88							pCi/L				

(3) Radium, Total			1.22 +/-0.691							pCi/L				

TABLE B Page 2 of 2	OUTFALL NO. 001														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)			
	a. Believed Present	b. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses	
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass		
(4) Radium, 226, Total			0.348 +/-0.294							pCi/L					
(5) Strontium-90, Total			-0.053 +/-1.06							pCi/L					
(6) Uranium			.00219							mg/L					
13. Sulfate (asSO_4) (14808-79-8)			140							mg/L					
14. Sulfide (as S)			<0.20							mg/L					
15. Sulfite (asSO4) (14286-46-3)			<2.0							mg/L					
16. Surfactants			<0.50							mg/L					
17.Aluminum,Total (7429-90)			<50							ug/L					
18. Barium, Total (7440-39-3)			40							ug/L					
19. Boron, Total (7440-42-8)			1.7							mg/L					
20. Cobalt, Total (7440-48-4)			0.91							ug/L					
21. Iron, Total (7439-89-6)			51							ug/L					
22. Magnesium, Total (7439-96-4)			15							mg/L					
23. Molybdenum, Total (7439-98-7)			58							ug/L					
24. Manganese, Total (7439-96-6)			27							ug/L					
25. Tin, Total (7440-31-5)			<0.0010							mg/L					
26. Titanium, Total (7440-32-6)			<0.030							mg/L					

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued)

PART C.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE C.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.

If you are a primary industry and this outfall contains process wastewater, refer to the instructions (Table C-2) to determine which of the GC/MS fractions you must test for.
Mark "X" in the **Testing Required** column for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols.
If you are not required to mark this column (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in the **Believed Present** column for each pollutant you know or have reason to believe is present.
Mark "X: in the **Believed Absent** column for each pollutant you believe to be absent.
If you mark either the **Testing Required** or **Believed Present** columns for any pollutant, you must provide the result of at least one analysis for that pollutant. Note that there are eight pages to this part; please review each carefully. Complete one table (all eight pages) for each outfall.
See the instructions for additional details and requirements

TABLE C
Page 1 of 8

OUTFALL NO. 001

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
METALS, CYANIDE AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)				0.50							ug/L				
2M. Arsenic, Total (7440-38-2)				0.98							ug/L				
3M. Beryllium, Total (7440-41-7)				<1.0							ug/L				
4M. Cadmium, Total (7440-43-9)				<0.50							ug/L				
5M. Chromium, Total (7440-43-9)				<0.50							ug/L				
6M. Copper, Total (7550-50-8)				<5.0							ug/L				
7M. Lead, Total (7439-92-1)				<0.50							ug/L				
8M. Mercury, Total (7439-97-6)				<0.500							ng/L				
9M. Nickel, Total (7440-02-0)				14							ug/L				
10M. Selenium, Total (7782-49-2)				2.7							ug/L				

11M. Silver, Total (7440-28-0)				<0.10							ug/L				
TABLE C Page 2 of 8	**OUTFALL NO.** 001														
1. POLLUTANT and CAS NO. (if available)	**2. MARK "X"**			**3. EFFLUENT**							**4. UNITS**		**5. INTAKE (optional)**		
	a. Testing Required	**b. Believed Present**	**c. Believed Absent**	**a. Maximum Daily Value**		**b. Maximum 30-Day Avg. Value (if available)**		**c. Long-Term Avg. Value (if available)**		**d. No. of Analyses**	**a. Concentration**	**b. Mass**	**a. Long-Term Avg. Value**		**b. No of Analyses**
				(1) Concentration	**(2) Mass**	**(1) Concentration**	**(2) Mass**	**(1) Concentration**	**(2) Mass**				**(1) Concentration**	**(2) Mass**	
METALS, CYANIDE AND TOTAL PHENOLS continued															
12M Thallium, Total (7440-28-0)				<0.50							ug/L				
13M. Zinc, Total (7440-66-6)				93							ug/L				
14M. Cyanide, Total (57-12-5)				<0.010							mg/L				
15M. Phenols, Total				<0.010							mg/L				
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1784-01-6)				DESCRIBE RESULTS:											
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				<0.10							mg/L				
2V. Acrylonitrile (107-13-1)				<0.10							mg/L				
3V. Benzene (71-43-2)				<0.0050							mg/L				
4V. Bis (Chloromethyl) Ether (542-88-1)			X								mg/L				
5V. Bromoform (75-25-2)				<0.0050							mg/L				
6V. Carbon Tetrachloride (56-23-5)			X								mg/L				
7V. Chlorobenzene (108-90-7)				<0.0050							mg/L				
8V. Chlorodibromomethane (124-48-1)				<0.0050							mg/L				
9V. Chloroethane (74-00-3)				<0.010							mg/L				

10V. 2-Chloroethylvinyl Ether (110-75-8)				<0.010							mg/L				
11V. Chloroform (67-66-3)				<0.0020							mg/L				

TABLE C
Page 3 of 8

OUTFALL NO. 001

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – VOLATILE COMPOUNDS continued															
12V. Dichloro-bromomethane (75-71-8)				<0.0050							mg/L				
13V. Dichloro-difluoromethane (75-71-8)				<0.0050							mg/L				
14V. 1,1-Dichloroethane (75-34-3)				<0.0050							mg/L				
15V. 1,2-Dichloroethane (107-06-2)				<0.0050							mg/L				
16V. 1,1-Dichlorethylene (75-35-4)			X								mg/L				
17V. 1,2-Dichloropropane (78-87-5)				<0.0050							mg/L				
18V. 1,3-Dichloropropylene (452-75-6)			X								mg/L				
19V. Ethylbenzene (100-41-4)				<0.0050							mg/L				
20V. Methyl Bromide (74-83-9)			X								mg/L				
21V. Methyl Chloride (74-87-3)			X								mg/L				
22V. Methylene Chloride (75-00-2)				<0.010							mg/L				
23V. 1,1,2,2-Tetrachloroethane (79-34-5)				<0.0050							mg/L				
24V. Tetra-chloroethylene (127-18-4)			X								mg/L				

25V. Toluene (108-88-3)				<0.0050							mg/L				
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X								mg/L				
27V. 1,1,1-Trichloroethane (71-55-6)				<0.0050							mg/L				

TABLE C
Page 4 of 8

OUTFALL NO. 001

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – VOLATILE COMPOUNDS continued															
28V. 1,1,2-Trichloroethane (79-00-5)				<0.0050							mg/L				
29V. Tri-chloroethylene (79-01-6)			X								mg/L				
30V. Trichloro-fluoromethane (75-69-4)				<0.010							mg/L				
31V. Vinyl Chloride (75-01-4)				<0.0020							mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)				<0.011							mg/L				
2A. 2,4-Dichlorophenol (120-83-2)				<0.011							mg/L				
3A. 2,4-Dimethylphenol (105-67-9)				<0.011							mg/L				
4A. 4,6-Dinitro-O-Cresol (534-52-1)				<0.026							mg/L				
5A. 2,4-Dinitrophenol (51-28-5)				<0.053							mg/L				
6A. 2-Nitrophenol (88-75-5)				<0.011							mg/L				
7A. 4-Nitrophenol (100-02-7)				<0.053							mg/L				
8A. P-Chloro-M-Cresol (59-50-7)			X								mg/L				
9A. Pentachloro-phenol (87-88-5)				<0.053							mg/L				

10A. Phenol (108-05-2)				<0.011							mg/L				
11A. 2,4,6-Trichloro-phenol (88-06-2)				<0.011							mg/L				

TABLE C Page 5 of 8	OUTFALL NO. 001														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)				<0.011							mg/L				
2B. Acenaphtylene (208-96-8)				<0.011							mg/L				
3B. Anthracene (120-12-7)				<0.011							mg/L				
4B. Benzidine (92-87-5)				<0.053							mg/L				
5B . Benzo (a) Anthracene (56-55-3)				<0.011							mg/L				
6B. Benzo (a) Pyrene (50-32-8)				<0.011							mg/L				
7B. 3,4-Benzo-fluoranthene (205-99-2)			X								mg/L				
8B. .Benzo (ghi) perylene (191-24-2)				<0.011							mg/L				
9B. .Benzo (k)-fluoranthene (207-08-9)				<0.011							mg/L				
10B. Bis (2-chloroethoxy) Methane (111-91-1)				<0.011							mg/L				
11B. Bis (2-chloroethel) Ether (111-44-4)				<0.011							mg/L				
12B. Bis (2-chloroisopropyl)-Ether (102-80-1)			X								mg/L				
13B. Bis (2-ethyl-hexyl) Phthalate (117-81-7)				<0.011							mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)				<0.011							mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)				<0.011							mg/L				
16B. 2-Chloro-Naphthalene (7005-72-3)				<0.011							mg/L				

17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)				**<0.011**							**mg/L**				
TABLE C Page 6 of 8	**OUTFALL NO.** 001														
1. POLLUTANT and CAS NO. (if available)	**2. MARK "X"**			**3. EFFLUENT**							**4. UNITS**		**5. INTAKE (optional)**		
	a. Testing Required	**b. Believed Present**	**c. Believed Absent**	**a. Maximum Daily Value**		**b. Maximum 30-Day Avg. Value (if available)**		**c. Long-Term Avg. Value (if available)**		**d. No. of Analyses**	**a. Concentration**	**b. Mass**	**a. Long-Term Avg. Value**		**b. No of Analyses**
				(1) Concentration	**(2) Mass**	**(1) Concentration**	**(2) Mass**	**(1) Concentration**	**(2) Mass**				**(1) Concentration**	**(2) Mass**	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS continued															
18B. Chrysene (218-01-9)				<0.011							mg/L				
19B. Dibenzo (a,h) Anthracene (53-70-3)				<0.011							mg/L				
20B. 1,2-Dichloro-benzene (95-50-1)				<0.011							mg/L				
21B. 1,3-Dichloro-Benzene (541-73-1)				<0.011							mg/L				
22B. 1,4-Dichloro-benzene (106-46-7)				<0.011							mg/L				
23B. 3,3-Dichloro-benzidene (91-94-1)				<0.053							mg/L				
24B. Diethyl Phthalate (84-66-2)				<0.011							mg/L				
25B. Dimethyl Phthalate (131-11-3)				<0.011							mg/L				
26B. Di-N-Butyl Phthalate (84-74-2)				<0.011							mg/L				
27B. 2,4-Dinitro-toluene (121-14-2)				<0.011							mg/L				
28B. 2,6-Dinitro-toluene (606-20-2)				<0.011							mg/L				
29B. Di-N-Octyl Phthalate (117-84-0)				<0.011							mg/L				
30B. 1,2-Diphenyl-hydrazine (as Azo-benzene) (122-66-7)				<0.011							mg/L				
31B. Fluoranthene (208-44-0)				<0.011							mg/L				
32B. Fluorene (86-73-7)				<0.011							mg/L				
33B. Hexachloro-benzene (118-71-1)				<0.011							mg/L				
34B. Hexachloro-butadiene (87-68-3)				<0.011							mg/L				

35B. Hexachloro-cyclopentadiene (77-47-4)				<0.011							mg/L				

TABLE C Page 7 of 8	OUTFALL NO. 001														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS continued															
36B. Hexachloro-ethane (67-72-1)				<0.011							mg/L				
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)				<0.011							mg/L				
38B. Isophorone (78-59-1)				<0.011							mg/L				
39B. Napthalene (91-20-3)				<0.011							mg/L				
40B. Nitrobenzene (98-95-3)				<0.011							mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)				<0.011							mg/L				
42B. N-Nitrosodi-N-Propylamine (621-64-7)				<0.011							mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)				<0.011							mg/L				
44B. Phenanthrene (85-01-8)				<0.011							mg/L				
45B. Pyrene (129-00-0)				<0.011							mg/L				
46B. 1,2,4-Trichloro-benzene (120-82-1)				<0.011							mg/L				

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued from Section V. INTAKE AND EFFLUENT CHARACTERISTICS)

PART A.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE A.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.
You must provide the results of at least one analysis for every pollutant in this table.

TABLE A
Page 1 of 1

OUTFALL NO. 002

1. POLLUTANT	2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
1. Biochemical Oxygen Demand $(BOD)_5$	<4.17							mg/L				
2. Chemical Oxygen Demand (COD)	<50							mg/L				
3. Total Organic Carbon (TOC)	4.8							mg/L				
4. Total Suspended Solids (TSS)	42							mg/L				
5. Ammonia (as N)	<0.50							mg/L				
6. Flow (MGD)	8.83		VALUE		VALUE			MGD		VALUE		
7. Temperature (winter)			VALUE		VALUE			°C		VALUE		
8. Temperature (summer)	31.3		VALUE		VALUE			°C		VALUE		
9. pH	MINIMUM 7.53	MAXIMUM 7.53	MINIMUM	MAXIMUM				STANDARD UNITS				

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued)

PART B.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE B.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.

In column "2. MARK X", place an "X" in either the **Believed Present** column (2.a) for each pollutant you know or have reason to believe is present; or place an "X" in the **Believed Absent** column (2.b) for each pollutant you believe to be absent.
If you mark the **Believed Present** column for any pollutant, you must provide the results of at least one analysis for that pollutant.
Complete one table for each outfall. See the instructions for additional details and requirements.

TABLE B Page 1 of 2 — **OUTFALL NO.** 002

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Believed Present	b. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
1. Bromide (24959-67-9)			2.8							mg/L				
2. Chloride			390							mg/L				
3. Chlorine, Total Residual			<0.02							mg/L				
4. Color			25							CU				
5. E.coli			30.5							MPN/100mL				
6. Fluoride (16984-48-8)			3.9							mg/L				
7. Hardness ($CaCO_3$)			1100							mg/L				
8.Nitrate–Nitrite (as N)			2.7							mg/L				
9. Nitrogen, Total Organic (as N)			1.3							mg/L				
10. Oil and Grease			<5.3							mg/L				
11. Phosphorous (as P), Total (7723-14-0)			0.16							mg/L				
12. Radioactivity														
(1) Alpha, Total			8.28 +/-3.93							pCi/L				
(2) Beta, Total			9.55 +/-2.49							pCi/L				

(3) Radium, Total			1.33 +/-0.688							pCi/L				

TABLE B Page 2 of 2	OUTFALL NO. 002													
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Believed Present	b. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
(4) Radium, 226, Total			0.684 +/-0.408							pCi/L				
(5) Strontium-90, Total			0.73 +/-1.08							pCi/L				
(6) Uranium			0.01							mg/L				
13. Sulfate (asSO_4) (14808-79-8)			540							mg/L				
14. Sulfide (as S)			<0.20							mg/L				
15. Sulfite (asSO4) (14286-46-3)			<2.0							mg/L				
16. Surfactants			<0.50							mg/L				
17.Aluminum,Total (7429-90)			340							mg/L				
18. Barium, Total (7440-39-3)			87							ug/L				
19. Boron, Total (7440-42-8)			8.3							mg/L				
20. Cobalt, Total (7440-48-4)			1.6							ug/L				
21. Iron, Total (7439-89-6)			720							ug/L				
22. Magnesium, Total (7439-96-4)			150							mg/L				
23. Molybdenum, Total (7439-98-7)			10							ug/L				
24. Manganese, Total (7439-96-6)			1500							ug/L				
25. Tin, Total (7440-31-5)			0.0025							mg/L				
26. Titanium, Total (7440-32-6)			<0.030							mg/L				

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued)

PART C.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE C.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.

If you are a primary industry and this outfall contains process wastewater, refer to the instructions (Table C-2) to determine which of the GC/MS fractions you must test for.
Mark "X" in the **Testing Required** column for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols.
If you are not required to mark this column (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in the **Believed Present** column for each pollutant you know or have reason to believe is present.
Mark "X: in the **Believed Absent** column for each pollutant you believe to be absent.
If you mark either the **Testing Required** or **Believed Present** columns for any pollutant, you must provide the result of at least one analysis for that pollutant. Note that there are eight pages to this part; please review each carefully. Complete one table (all eight pages) for each outfall.
See the instructions for additional details and requirements

TABLE C
Page 1 of 8

OUTFALL NO. 002

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
METALS, CYANIDE AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)				0.59							ug/L				
2M. Arsenic, Total (7440-38-2)				1.7							ug/L				
3M. Beryllium, Total (7440-41-7)				<1.0							ug/L				
4M. Cadmium, Total (7440-43-9)				<0.50							ug/L				
5M. Chromium, Total (7440-43-9)				2.3							ug/L				
6M. Copper, Total (7550-50-8)				38							ug/L				
7M. Lead, Total (7439-92-1)				1.3							ug/L				
8M. Mercury, Total (7439-97-6)				<0.500							ng/L				
9M. Nickel, Total (7440-02-0)				13							ug/L				
10M. Selenium, Total (7782-49-2)				12							ug/L				

11M. Silver, Total (7440-28-0)				<0.10							ug/L				
TABLE C Page 2 of 8	**OUTFALL NO.** 002														
1. POLLUTANT and CAS NO. (if available)	**2. MARK "X"**			**3. EFFLUENT**							**4. UNITS**		**5. INTAKE (optional)**		
	a. Testing Required	**b. Believed Present**	**c. Believed Absent**	**a. Maximum Daily Value**		**b. Maximum 30-Day Avg. Value (if available)**		**c. Long-Term Avg. Value (if available)**		**d. No. of Analyses**	**a. Concentration**	**b. Mass**	**a. Long-Term Avg. Value**		**b. No of Analyses**
				(1) Concentration	**(2) Mass**	**(1) Concentration**	**(2) Mass**	**(1) Concentration**	**(2) Mass**				**(1) Concentration**	**(2) Mass**	
METALS, CYANIDE AND TOTAL PHENOLS continued															
12M Thallium, Total (7440-28-0)				<0.50							ug/L				
13M. Zinc, Total (7440-66-6)				25							ug/L				
14M. Cyanide, Total (57-12-5)				<0.010							mg/L				
15M. Phenols, Total				<0.010							mg/L				
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1784-01-6)				DESCRIBE RESULTS:											
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				<0.10							mg/L				
2V. Acrylonitrile (107-13-1)				<0.10							mg/L				
3V. Benzene (71-43-2)				<0.0050							mg/L				
4V. Bis (Chloromethyl) Ether (542-88-1)			X								mg/L				
5V. Bromoform (75-25-2)				<0.0050							mg/L				
6V. Carbon Tetrachloride (56-23-5)			X								mg/L				
7V. Chlorobenzene (108-90-7)				<0.0050							mg/L				
8V. Chlorodibromomethane (124-48-1)				<0.0050							mg/L				
9V. Chloroethane (74-00-3)				<0.010							mg/L				

10V. 2-Chloroethylvinyl Ether (110-75-8)				<0.010							mg/L				
11V. Chloroform (67-66-3)				<0.0020							mg/L				

TABLE C
Page 3 of 8

OUTFALL NO. 002

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – VOLATILE COMPOUNDS continued															
12V. Dichloro-bromomethane (75-71-8)				<0.0050							mg/L				
13V. Dichloro-difluoromethane (75-71-8)			X								mg/L				
14V. 1,1-Dichloroethane (75-34-3)				<0.0050							mg/L				
15V. 1,2-Dichloroethane (107-06-2)				<0.0050							mg/L				
16V. 1,1-Dichlorethylene (75-35-4)			X								mg/L				
17V. 1,2-Dichloropropane (78-87-5)				<0.0050							mg/L				
18V. 1,3-Dichloropropylene (452-75-6)			X								mg/L				
19V. Ethylbenzene (100-41-4)				<0.0050							mg/L				
20V. Methyl Bromide (74-83-9)			X								mg/L				
21V. Methyl Chloride (74-87-3)			X								mg/L				
22V. Methylene Chloride (75-00-2)				<0.010							mg/L				
23V. 1,1,2,2-Tetrachloroethane (79-34-5)				<0.0050							mg/L				
24V. Tetra-chloroethylene (127-18-4)			X								mg/L				

25V. Toluene (108-88-3)				<0.0050							mg/L				
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X								mg/L				
27V. 1,1,1-Trichloroethane (71-55-6)				<0.0050							mg/L				

TABLE C
Page 4 of 8

OUTFALL NO. 002

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – VOLATILE COMPOUNDS continued															
28V. 1,1,2-Trichloroethane (79-00-5)				<0.0050							mg/L				
29V. Tri-chloroethylene (79-01-6)			X								mg/L				
30V. Trichloro-fluoromethane (75-69-4)				<0.010							mg/L				
31V. Vinyl Chloride (75-01-4)				<0.0020							mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)				<0.010							mg/L				
2A. 2,4-Dichlorophenol (120-83-2)				<0.010							mg/L				
3A. 2,4-Dimethylphenol (105-67-9)				<0.010							mg/L				
4A. 4,6-Dinitro-O-Cresol (534-52-1)				<0.026							mg/L				
5A. 2,4-Dinitrophenol (51-28-5)				<0.051							mg/L				
6A. 2-Nitrophenol (88-75-5)				<0.010							mg/L				
7A. 4-Nitrophenol (100-02-7)				<0.051							mg/L				
8A. P-Chloro-M-Cresol (59-50-7)			X								mg/L				
9A. Pentachloro-phenol (87-88-5)				<0.051							mg/L				

10A. Phenol (108-05-2)				<0.010							mg/L				
11A. 2,4,6-Trichloro-phenol (88-06-2)				<0.010							mg/L				

TABLE C Page 5 of 8	OUTFALL NO. 002														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)				<0.010							mg/L				
2B. Acenaphtylene (208-96-8)				<0.010							mg/L				
3B. Anthracene (120-12-7)				<0.010							mg/L				
4B. Benzidine (92-87-5)				<0.051							mg/L				
5B . Benzo (a) Anthracene (56-55-3)				<0.010							mg/L				
6B. Benzo (a) Pyrene (50-32-8)				<0.010							mg/L				
7B. 3,4-Benzo-fluoranthene (205-99-2)			X								mg/L				
8B. .Benzo (ghi) perylene (191-24-2)				<0.010							mg/L				
9B. .Benzo (k)-fluoranthene (207-08-9)				<0.010							mg/L				
10B. Bis (2-chloroethoxy) Methane (111-91-1)				<0.010							mg/L				
11B. Bis (2-chloroethel) Ether (111-44-4)			X								mg/L				
12B. Bis (2-chloroisopropyl)-Ether (102-80-1)			X								mg/L				
13B. Bis (2-ethyl-hexyl) Phthalate (117-81-7)				<0.010							mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)				<0.010							mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)				<0.010							mg/L				
16B. 2-Chloro-Naphthalene (7005-72-3)				<0.010							mg/L				

17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)				<0.010							mg/L				
TABLE C Page 6 of 8	**OUTFALL NO.** 002														
1. POLLUTANT and CAS NO. (if available)	**2. MARK "X"**			**3. EFFLUENT**							**4. UNITS**		**5. INTAKE (optional)**		
	a. Testing Required	**b. Believed Present**	**c. Believed Absent**	**a. Maximum Daily Value**		**b. Maximum 30-Day Avg. Value (if available)**		**c. Long-Term Avg. Value (if available)**		**d. No. of Analyses**	**a. Concentration**	**b. Mass**	**a. Long-Term Avg. Value**		**b. No of Analyses**
				(1) Concentration	**(2) Mass**	**(1) Concentration**	**(2) Mass**	**(1) Concentration**	**(2) Mass**				**(1) Concentration**	**(2) Mass**	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS continued															
18B. Chrysene (218-01-9)				<0.010							mg/L				
19B. Dibenzo (a,h) Anthracene (53-70-3)				<0.010							mg/L				
20B. 1,2-Dichloro-benzene (95-50-1)				<0.010							mg/L				
21B. 1,3-Dichloro-Benzene (541-73-1)				<0.010							mg/L				
22B. 1,4-Dichloro-benzene (106-46-7)				<0.010							mg/L				
23B. 3,3-Dichloro-benzidene (91-94-1)				<0.051							mg/L				
24B. Diethyl Phthalate (84-66-2)				<0.010							mg/L				
25B. Dimethyl Phthalate (131-11-3)				<0.010							mg/L				
26B. Di-N-Butyl Phthalate (84-74-2)				<0.010							mg/L				
27B. 2,4-Dinitro-toluene (121-14-2)				<0.010							mg/L				
28B. 2,6-Dinitro-toluene (606-20-2)				<0.010							mg/L				
29B. Di-N-Octyl Phthalate (117-84-0)				<0.010							mg/L				
30B. 1,2-Diphenyl-hydrazine (as Azo-benzene) (122-66-7)				<0.010							mg/L				
31B. Fluoranthene (208-44-0)				<0.010							mg/L				
32B. Fluorene (86-73-7)				<0.010							mg/L				
33B. Hexachloro-benzene (118-71-1)				<0.010							mg/L				
34B. Hexachloro-butadiene (87-68-3)				<0.010							mg/L				

35B. Hexachloro-cyclopentadiene (77-47-4)				<0.010							mg/L				

TABLE C Page 7 of 8	OUTFALL NO. 002														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS continued															
36B. Hexachloro-ethane (67-72-1)				<0.010							mg/L				
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)				<0.010							mg/L				
38B. Isophorone (78-59-1)				<0.010							mg/L				
39B. Napthalene (91-20-3)				<0.010							mg/L				
40B. Nitrobenzene (98-95-3)				<0.010							mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)				<0.010							mg/L				
42B. N-Nitrosodi-N-Propylamine (621-64-7)				<0.010							mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)				<0.010							mg/L				
44B. Phenanthrene (85-01-8)				<0.010							mg/L				
45B. Pyrene (129-00-0)				<0.010							mg/L				
46B. 1,2,4-Trichloro-benzene (120-82-1)				<0.010							mg/L				

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued from Section V. INTAKE AND EFFLUENT CHARACTERISTICS)

PART A. PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE A.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.
You must provide the results of at least one analysis for every pollutant in this table.

TABLE A Page 1 of 1 **OUTFALL NO.** 005

1. POLLUTANT	2. EFFLUENT							3. UNITS (specify if blank)		4. INTAKE (optional)		
	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
1. Biochemical Oxygen Demand $(BOD)_5$	<4.17							mg/L				
2. Chemical Oxygen Demand (COD)	<50							mg/L				
3. Total Organic Carbon (TOC)	4.0							mg/L				
4. Total Suspended Solids (TSS)	8							mg/L				
5. Ammonia (as N)								mg/L				
6. Flow (MGD)	**45.54**		VALUE		VALUE			MGD		VALUE		
7. Temperature (winter)			VALUE		VALUE			°C		VALUE		
8. Temperature (summer)	**28.2**		VALUE		VALUE			°C		VALUE		
9. pH	MINIMUM 6.91	MAXIMUM 6.91	MINIMUM	MAXIMUM				STANDARD UNITS				

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued)

PART B.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE B.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.

In column "2. MARK X", place an "X" in either the **Believed Present** column (2.a) for each pollutant you know or have reason to believe is present; or place an "X" in the **Believed Absent** column (2.b) for each pollutant you believe to be absent.
If you mark the **Believed Present** column for any pollutant, you must provide the results of at least one analysis for that pollutant.
Complete one table for each outfall. See the instructions for additional details and requirements.

TABLE B Page 1 of 2 — **OUTFALL NO.** 005

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Believed Present	b. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
1. Bromide (24959-67-9)			<0.50							mg/L				
2. Chloride			25							mg/L				
3. Chlorine, Total Residual			<0.02							mg/L				
4. Color			10							CU				
5. E.coli			42.0							MPN/100mL				
6. Fluoride (16984-48-8)			<0.50							mg/L				
7. Hardness ($CaCO_3$)			140							mg/L				
8.Nitrate–Nitrite (as N)			**1.1**							mg/L				
9. Nitrogen, Total Organic (as N)			<1.0							mg/L				
10. Oil and Grease			<5.3							mg/L				
11. Phosphorous (as P), Total (7723-14-0)			<0.10							mg/L				
12. Radioactivity														
(1) Alpha, Total			1.73 +/-1.79							pCi/L				
(2) Beta, Total			1.72 +/-1.63							pCi/L				

(3) Radium, Total			2.37 +/-0.733							pCi/L				

TABLE B Page 2 of 2	OUTFALL NO. 005														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)			
	a. Believed Present	b. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses	
			(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass		
(4) Radium, 226, Total			0.47 +/-0.335							pCi/L					
(5) Strontium-90, Total			1.36 +/-1.12							pCi/L					
(6) Uranium			0.000535							mg/L					
13. Sulfate (asSO_4) (14808-79-8)			57							mg/L					
14. Sulfide (as S)			<0.20							mg/L					
15. Sulfite (asSO4) (14286-46-3)			<2.0							mg/L					
16. Surfactants			<0.50							**mg/L**					
17.Aluminum,Total (7429-90)			98							mg/L					
18. Barium, Total (7440-39-3)			48							ug/L					
19. Boron, Total (7440-42-8)			0.078							mg/L					
20. Cobalt, Total (7440-48-4)			0.52							ug/L					
21. Iron, Total (7439-89-6)			200							ug/L					
22. Magnesium, Total (7439-96-4)			12							mg/L					
23. Molybdenum, Total (7439-98-7)			<2.0							ug/L					
24. Manganese, Total (7439-96-6)			82							ug/L					
25. Tin, Total (7440-31-5)			0.0011							mg/L					
26. Titanium, Total (7440-32-6)			<0.030							mg/L					

V. INTAKE AND EFFLUENT CHARACTERISTICS (Continued)

PART C.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY OF TABLE C.
See instructions before proceeding.
Complete one set of tables for each outfall. Place the outfall number in the space provided on each table.

If you are a primary industry and this outfall contains process wastewater, refer to the instructions (Table C-2) to determine which of the GC/MS fractions you must test for.
Mark "X" in the **Testing Required** column for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols.
If you are not required to mark this column (secondary industries, nonprocess wastewater outfalls, and non-required GC/MS fractions), mark "X" in the **Believed Present** column for each pollutant you know or have reason to believe is present.
Mark "X: in the **Believed Absent** column for each pollutant you believe to be absent.
If you mark either the **Testing Required** or **Believed Present** columns for any pollutant, you must provide the result of at least one analysis for that pollutant. Note that there are eight pages to this part; please review each carefully. Complete one table (all eight pages) for each outfall.
See the instructions for additional details and requirements

TABLE C
Page 1 of 8

OUTFALL NO. 005

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
METALS, CYANIDE AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)				<0.50							ug/L				
2M. Arsenic, Total (7440-38-2)				0.84							ug/L				
3M. Beryllium, Total (7440-41-7)				<1.0							ug/L				
4M. Cadmium, Total (7440-43-9)				<0.50							ug/L				
5M. Chromium, Total (7440-43-9)				0.58							ug/L				
6M. Copper, Total (7550-50-8)				<5.0							ug/L				
7M. Lead, Total (7439-92-1)				<0.50							ug/L				
8M. Mercury, Total (7439-97-6)				<0.500							ng/L				
9M. Nickel, Total (7440-02-0)				1.9							ug/L				
10M. Selenium, Total (7782-49-2)				0.52							ug/L				

11M. Silver, Total (7440-28-0)				<0.10							ug/L				
TABLE C Page 2 of 8	**OUTFALL NO.** 005														
1. POLLUTANT and CAS NO. (if available)	**2. MARK "X"**			**3. EFFLUENT**							**4. UNITS**		**5. INTAKE (optional)**		
	a. Testing Required	**b. Believed Present**	**c. Believed Absent**	**a. Maximum Daily Value**		**b. Maximum 30-Day Avg. Value (if available)**		**c. Long-Term Avg. Value (if available)**		**d. No. of Analyses**	**a. Concentration**	**b. Mass**	**a. Long-Term Avg. Value**		**b. No of Analyses**
				(1) Concentration	**(2) Mass**	**(1) Concentration**	**(2) Mass**	**(1) Concentration**	**(2) Mass**				**(1) Concentration**	**(2) Mass**	
METALS, CYANIDE AND TOTAL PHENOLS continued															
12M Thallium, Total (7440-28-0)				<0.50							ug/L				
13M. Zinc, Total (7440-66-6)				73							ug/L				
14M. Cyanide, Total (57-12-5)				<0.010							mg/L				
15M. Phenols, Total				<0.010							mg/L				
DIOXIN															
2,3,7,8 Tetra-chlorodibenzo-P-Dioxin (1784-01-6)				DESCRIBE RESULTS:											
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)				<0.10							mg/L				
2V. Acrylonitrile (107-13-1)				<0.10							mg/L				
3V. Benzene (71-43-2)				<0.0050							mg/L				
4V. Bis (Chloromethyl) Ether (542-88-1)			X								mg/L				
5V. Bromoform (75-25-2)				<0.0050							mg/L				
6V. Carbon Tetrachloride (56-23-5)			X								mg/L				
7V. Chlorobenzene (108-90-7)				<0.0050							mg/L				
8V. Chlorodibromomethane (124-48-1)				<0.0050							mg/L				
9V. Chloroethane (74-00-3)				<0.010							mg/L				

10V. 2-Chloroethylvinyl Ether (110-75-8)				<0.010							mg/L				
11V. Chloroform (67-66-3)				<0.0020							mg/L				

TABLE C
Page 3 of 8

OUTFALL NO. 005

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – VOLATILE COMPOUNDS continued															
12V. Dichloro-bromomethane (75-71-8)				<0.0050							mg/L				
13V. Dichloro-difluoromethane (75-71-8)			X								mg/L				
14V. 1,1-Dichloroethane (75-34-3)				<0.0050							mg/L				
15V. 1,2-Dichloroethane (107-06-2)				<0.0050							mg/L				
16V. 1,1-Dichlorethylene (75-35-4)			X								mg/L				
17V. 1,2-Dichloropropane (78-87-5)				<0.0050							mg/L				
18V. 1,3-Dichloropropylene (452-75-6)			X								mg/L				
19V. Ethylbenzene (100-41-4)				<0.0050							mg/L				
20V. Methyl Bromide (74-83-9)			X								mg/L				
21V. Methyl Chloride (74-87-3)			X								mg/L				
22V. Methylene Chloride (75-00-2)				<0.010							mg/L				
23V. 1,1,2,2-Tetrachloroethane (79-34-5)				<0.0050							mg/L				
24V. Tetra-chloroethylene (127-18-4)			X								mg/L				

25V. Toluene (108-88-3)				<0.0050							mg/L				
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X								mg/L				
27V. 1,1,1-Trichloroethane (71-55-6)				<0.0050							mg/L				

TABLE C
Page 4 of 8

OUTFALL NO. 005

1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – VOLATILE COMPOUNDS continued															
28V. 1,1,2-Trichloroethane (79-00-5)				<0.0050							mg/L				
29V. Tri-chloroethylene (79-01-6)			X								mg/L				
30V. Trichloro-fluoromethane (75-69-4)				<0.010							mg/L				
31V. Vinyl Chloride (75-01-4)				<0.0020							mg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)				<0.010							mg/L				
2A. 2,4-Dichlorophenol (120-83-2)				<0.010							mg/L				
3A. 2,4-Dimethylphenol (105-67-9)				<0.010							mg/L				
4A. 4,6-Dinitro-O-Cresol (534-52-1)				<0.025							mg/L				
5A. 2,4-Dinitrophenol (51-28-5)				<0.050							mg/L				
6A. 2-Nitrophenol (88-75-5)				<0.010							mg/L				
7A. 4-Nitrophenol (100-02-7)				<0.050							mg/L				
8A. P-Chloro-M-Cresol (59-50-7)			X								mg/L				
9A. Pentachloro-phenol (87-88-5)				<0.050							mg/L				

10A. Phenol (108-05-2)				<0.010							mg/L				
11A. 2,4,6-Trichloro-phenol (88-06-2)				<0.010							mg/L				

TABLE C Page 5 of 8	OUTFALL NO. 005														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)				<0.010							mg/L				
2B. Acenaphtylene (208-96-8)				<0.010							mg/L				
3B. Anthracene (120-12-7)				<0.010							mg/L				
4B. Benzidine (92-87-5)				<0.050							mg/L				
5B . Benzo (a) Anthracene (56-55-3)				<0.010							mg/L				
6B. Benzo (a) Pyrene (50-32-8)				<0.010							mg/L				
7B. 3,4-Benzo-fluoranthene (205-99-2)			X								mg/L				
8B. .Benzo (ghi) perylene (191-24-2)				<0.010							mg/L				
9B. .Benzo (k)-fluoranthene (207-08-9)				<0.010							mg/L				
10B. Bis (2-chloroethoxy) Methane (111-91-1)				<0.010							mg/L				
11B. Bis (2-chloroethel) Ether (111-44-4)			X								mg/L				
12B. Bis (2-chloroisopropyl)-Ether (102-80-1)			X								mg/L				
13B. Bis (2-ethyl-hexyl) Phthalate (117-81-7)				<0.010							mg/L				
14B. 4-Bromophenyl Phenyl Ether (101-55-3)				<0.010							mg/L				
15B. Butyl Benzyl Phthalate (85-68-7)				<0.010							mg/L				
16B. 2-Chloro-Naphthalene (7005-72-3)				<0.010							mg/L				

17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)				<0.010							mg/L				
TABLE C Page 6 of 8	**OUTFALL NO.** 005														
1. POLLUTANT and CAS NO. (if available)	**2. MARK "X"**			**3. EFFLUENT**							**4. UNITS**		**5. INTAKE (optional)**		
	a. Testing Required	**b. Believed Present**	**c. Believed Absent**	**a. Maximum Daily Value**		**b. Maximum 30-Day Avg. Value (if available)**		**c. Long-Term Avg. Value (if available)**		**d. No. of Analyses**	**a. Concentration**	**b. Mass**	**a. Long-Term Avg. Value**		**b. No of Analyses**
				(1) Concentration	**(2) Mass**	**(1) Concentration**	**(2) Mass**	**(1) Concentration**	**(2) Mass**				**(1) Concentration**	**(2) Mass**	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS continued															
18B. Chrysene (218-01-9)				<0.010							mg/L				
19B. Dibenzo (a,h) Anthracene (53-70-3)				<0.010							mg/L				
20B. 1,2-Dichloro-benzene (95-50-1)				<0.010							mg/L				
21B. 1,3-Dichloro-Benzene (541-73-1)				<0.010							mg/L				
22B. 1,4-Dichloro-benzene (106-46-7)				<0.010							mg/L				
23B. 3,3-Dichloro-benzidene (91-94-1)				<0.050							mg/L				
24B. Diethyl Phthalate (84-66-2)				<0.010							mg/L				
25B. Dimethyl Phthalate (131-11-3)				<0.010							mg/L				
26B. Di-N-Butyl Phthalate (84-74-2)				<0.010							mg/L				
27B. 2,4-Dinitro-toluene (121-14-2)				<0.010							mg/L				
28B. 2,6-Dinitro-toluene (606-20-2)				<0.010							mg/L				
29B. Di-N-Octyl Phthalate (117-84-0)				<0.010							mg/L				
30B. 1,2-Diphenyl-hydrazine (as Azo-benzene) (122-66-7)				<0.010							mg/L				
31B. Fluoranthene (208-44-0)				<0.010							mg/L				
32B. Fluorene (86-73-7)				<0.010							mg/L				
33B. Hexachloro-benzene (118-71-1)				<0.010							mg/L				
34B. Hexachloro-butadiene (87-68-3)				<0.010							mg/L				

35B. Hexachloro-cyclopentadiene (77-47-4)				<0.010							mg/L				

TABLE C Page 7 of 8	OUTFALL NO. 005														
1. POLLUTANT and CAS NO. (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. Testing Required	b. Believed Present	c. Believed Absent	a. Maximum Daily Value		b. Maximum 30-Day Avg. Value (if available)		c. Long-Term Avg. Value (if available)		d. No. of Analyses	a. Concentration	b. Mass	a. Long-Term Avg. Value		b. No of Analyses
				(1) Concentration	(2) Mass	(1) Concentration	(2) Mass	(1) Concentration	(2) Mass				(1) Concentration	(2) Mass	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS continued															
36B. Hexachloro-ethane (67-72-1)				<0.010							mg/L				
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)				<0.010							mg/L				
38B. Isophorone (78-59-1)				<0.010							mg/L				
39B. Napthalene (91-20-3)				<0.010							mg/L				
40B. Nitrobenzene (98-95-3)				<0.010							mg/L				
41B. N-Nitro-sodimethylamine (62-75-9)				<0.010							mg/L				
42B. N-Nitrosodi-N-Propylamine (621-64-7)				<0.010							mg/L				
43B. N-Nitro-sodiphenylamine (86-30-6)				<0.010							mg/L				
44B. Phenanthrene (85-01-8)				<0.010							mg/L				
45B. Pyrene (129-00-0)				<0.010							mg/L				
46B. 1,2,4-Trichloro-benzene (120-82-1)				<0.010							mg/L				

KPDES FORM C – INSTRUCTIONS

Listed below are explanations of select Form C questions. If further information is needed concerning any questions, please contact the Division of Water, at (502) 564-3410.

Section I: Outfall Location

Use the map you provided for Item II of Form 1 to determine the latitude and longitude of each of your outfalls and the name of the receiving water.

Section II: Flows, Sources of Pollution, and Treatment Technologies

A. The line drawing should show generally the route taken by water in your facility from intake to discharge. Show all operations contributing wastewater, including process and production areas, sanitary flows, cooling water, and storm water runoff. Group similar operations into a single unit and label to correspond to the more detailed listing in Item II.B. The water balance should show average flows. Show all significant losses of water to products, atmosphere, and discharge. Use actual measurements whenever available. Otherwise, use your best estimate.

B. List all sources of wastewater to each outfall. Operations may be described in general terms (for example, "dye-making reactor" or "distillation tower"). Estimate the flow contributed by each source if no data are available. For storm water, use any reasonable measure of duration, volume, or frequency. For each treatment unit, indicate its size, flow rate, and retention time; and describe the ultimate disposal of any solid or liquid wastes not discharged. Treatment units should be listed in order. Select the proper code from Table C-1 to fill in the treatment code for each treatment unit. Insert "XX" for the treatment code if no code corresponds to a treatment unit you have listed.

   If the permit application is for a privately-owned treatment works, you must also identify all of your contributors in an attached listing.

C. A discharge is intermittent unless it occurs without interruption during the operating hours of the facility, except for shutdowns for maintenance, process changes, or other similar activities. A discharge is seasonal if it occurs during certain parts of the year. Fill in every applicable column in this item for each source of intermittent or seasonal discharge. Base your answers on actual data whenever available, otherwise, provide your best estimate. Report the highest daily for flow rate and total volume in the "Maximum Daily" columns. Report the average of all daily values measured during days when discharge occurred within the last year in the "Long Term Average" columns.

Section III: Production

A. All effluent guidelines promulgated by EPA appear in the Federal Register and are published annually in 40 CFR Subchapter N. A guideline applies to you if you have any operations contributing process wastewater in any subcategory covered by a BPT, BCT, or BAT guideline. If you are unsure whether you are covered by a promulgated effluent guideline, check with the Department for Environmental Protection, Division of Water. You must check "yes" if an applicable effluent guideline has been promulgated, even if the guideline limitations are being contested in court. If you believe that promulgated effluent guideline has been remanded for reconsideration by a court and does not apply to your operation, you may check "no."

B. An effluent guideline is expressed in terms of production (or other measure of operation) if the limitation is expressed as mass of pollutant per operational parameter, for example, "pounds of BOD per cubic foot of logs from which bark is removed," or "pounds of TSS per megawatt hour of electrical energy consumed by smelting furnace." An example of a guideline not expressed in terms of a measure of operation is one that limits the concentration of pollutants.

C. This item must be completed only if you check "yes" to Item III.B. The production information requested here is necessary to apply effluent guidelines to your facility and you may not claim it as confidential. However, you do not have to indicate how the reported information was calculated.

Report quantities in the units of measurements used in the applicable effluent guidelines. The figures provided must be a measure of actual operation over a one month period, such as the production for the highest month during the last twelve months, or the monthly average production for the highest year of the last five years, or other reasonable measure of actual operation. But these figures may not be based on design capacity or on predictions of future increases in operation.

If you have two or more substantially identical outfalls, request permission from the Division of Water to sample and analyze only one outfall and submit the results of the analysis for other substantially identical outfalls. If your request is granted, identify on a separate sheet attached to the application form the outfall tested, and describe why the outfalls not tested are substantially identical to the tested outfall.

Section IV: Improvements

A. If you check "yes" to this question, complete all parts of the chart or attach a copy of any previous submission you have made to the Department for Environmental Protection containing the same information.

Section V: Intake and Effluent Characteristics

This item requires you to collect and report data on the pollutants discharged for each of your outfalls. Each part of this item addresses a different set of pollutants and must be completed in accordance with the specific instructions for that part. The following general instructions apply to the entire item.

GENERAL INSTRUCTIONS

In the "Mark X" columns of Parts B and C mark only one box per pollutant. Part D requires you to list any of a group of pollutants which you believe to be present, with a brief explanation of why you believe it to be present. See specific instruction on the form and below for Parts A through D.

Base your determination that a pollutant is present in or absent from your discharge on your knowledge of your raw materials, maintenance chemicals, intermediate and final products and byproducts, and any previous analyses known to you of your effluent or of any similar effluent. (For example, if you manufacture pesticides, you should expect those pesticides to be present in contaminated storm water runoff.) If you would expect a pollutant to be present solely as a result of its presence in your intake water, you must mark "Believed Present" but "X" in that "Intake" column.

REPORTING

All levels must be reported as concentration and as total mass. Use the following abbreviations in the columns headed "Units" (column 3, Part A, and column 4, Parts B and C).

CONCENTRATIONS		MASS	
ppm	parts per million	lbs.	Pounds
mg/l	milligrams per liter	ton	Tons (english tons)
ppb	parts per billion	mg	Milligrams
µg/l	micrograms per liter	g	Grams
		kg	Kilograms
		T	Tonnes (metric tons)
		MGD	Million Gallons Per Day

If you measure only one daily value, complete only the "Maximum Daily Values" columns and insert "1" into the "Number of Analyses" columns (columns 2-a and 2-d, Part A, and columns 3-a and 3-d, Parts B and C).

For composite samples, the daily value is the total mass or average concentration found in a composite sample taken over the operating hours of the facility during a 24-hour period. For grab samples, the daily value is the arithmetic

or flow-weighted total mass or average concentration found in a series of at least four grab samples taken over the operating hours of the facility during a 24-hour period.

If you measure more than one daily value for a pollutant, determine the average of all values within the last year and report the concentration and mass under the "Long-Term Average Values" columns (column 2-c, Part A, and column 3-c, Parts B and C). Also report the total number of daily values under the "Number of Analyses" columns (column 2-d, Part A, and column 3-d, Parts B and C). Determine the average of all daily values taken during each calendar month, and report the highest average under the "Maximum 30-Day Values" columns (2-b, Part A, and column 3-b, Parts B and C).

SAMPLING

The collection of the samples for the reported analyses should be supervised by a person experienced in performing sampling of industrial wastewater. You may contact the Department for Environmental Protection or appropriate regional office for detailed guidance on sampling techniques and for answers to specific questions. Any specific requirements contained in the applicable analytical methods should be followed for sample containers, sample preservation, holding times, the collection of duplicate samples, etc. The time when you sample should be representative of your normal operation, to the extent feasible, with all processes which contribute wastewater in normal operation, and with your treatment system operating properly with no system upsets.

ANALYSIS

Use test methods promulgated in 40 CFR Part 136; however, if none have been promulgated for a particular pollutant, use any suitable methods for measuring the level of the pollutant in your discharge provided that you submit a description of the methods or a reference to a published method. Your description should include the sample holding times, preservation techniques, and the quality control measures used.

REPORTING OF INTAKE DATA

You are not required to report data under the "Intake" columns unless you wish to demonstrate your eligibility for a "net" effluent limitation for one or more pollutants, that is, effluent limitations adjusted by subtracting the average level of the pollutant(s) present in your intake water. 401 KAR 5:065, Section 3(7), allows net limitations only in certain circumstances. To demonstrate your eligibility, report the average of the results of analysis on your intake water in the "Intake" columns (if your water is treated before use, test the water after it is treated), and attach a separate sheet containing the following for each pollutant:

1. A statement that the intake and discharge are from the same water body (Otherwise, you are not eligible for net limitations);
2. A statement of the extent to which the level of the pollutant is reduced by treatment of your wastewater (Your limitations will be adjusted only to the extent that the pollutant is not removed);
3. When applicable (for example, when the pollutant represents a class of compounds), a demonstration of the extent to which the pollutants in the intake vary physically, chemically, or biologically from the pollutants contained in your discharge. (Your limitations will be adjusted only to the extent that the intake pollutants do not vary from the discharged pollutants.)

SPECIFIC INSTRUCTIONS

A. This part must be completed by all applicants for all outfalls, including outfalls containing only noncontact cooling water or storm runoff. However, at your request, the Division of Water may waive the requirements to test for one or more of these pollutants upon a determination that testing for the pollutant(s) is not appropriate for your effluents.

   Use grab samples for pH and temperature. Use composite samples for all pollutants in this part. See discussion in General Instructions to Item V for definitions of the columns in Part A. The "Long-Term

Average Values" column (column 2-c) and "Maximum 30-Day Values" column (column 2-b) are not compulsory but should be filled out if data are available.

B. This part must be completed by all applicants for all outfalls including those containing only noncontact cooling water or storm runoff.

Use composite samples for all pollutants you analyze in this part, except use grab samples for residual chlorine, oil and grease, fecal coliform, and E.coli. The "Long-Term Average Values" column (column 3-b) are not compulsory but should be filled out if data are available.

C. Table C-2 lists the 34 "primary" industry categories in the left-hand column. For each outfall, if any of your processes which contribute wastewater falls into one of those categories, you must mark "X" in "Testing Required" column (column 2-a) and test for: (A) all of the toxic metals, cyanide, and total phenols; and (B) the organic toxic pollutants contained in the gas chromatography/mass spectrometry (GC/MS) fractions indicated in Table C-2 as applicable to your category, unless you qualify as a small business (see below). The organic toxic pollutants are listed by GC/MS fractions on pages V-4 through V-10 in Part V-C. For example, the Organic Chemical industry has an "X" in all four fractions; therefore, applicants in this category must test for all organic toxic pollutants in Part V-C. If you are applying for a permit for a privately owned treatment works, determine your testing contributors. The industry category you use for testing requirements is not used to categorize you for any other purpose.

For all other cases (secondary industries, non-process wastewater outfalls, and non-required GC/MS fractions), you must mark "X" in either the "Believed Present" column (column 2-b) or the "Believed Absent" column (column 2-c) for each pollutant, and test for those you believe present (those marked "X" in column 2-b). If you qualify as a small business (see below) you are exempt from testing for the organic toxic pollutants listed on page V-4 through V-10 in Part C. For pollutants in intake water, see discussion in General Instructions to this item. The "Long-Term Average Values" column (column 3-c) and "Maximum 30-Day Values" column (column 3-b) are not compulsory but should be filled out if data are available.

Use grab samples for total phenols and cyanide. Use composite samples for all other pollutants in this part.

Mark "Testing Required" for dioxin if you use or manufacture one of the following compounds:

A. 2,4,5-trichlorophenoxy acetic acid (2,4,5-T);
B. 2-(2,4,5-trichlorophenoxy) propanoic acid (Silvex, 2,4,5,-TP);
C. 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (Erbon);
D. 0, 0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate (Ronnel);
E. 2,4,5-trichlorophenol (TCP); or
F. Hexachlorophene (HCP)

If you mark "Testing Required" or "Believed Present" you must perform a screening analysis for dioxins, using gas chromotography with an electron capture detector. A TCDD standard for quantification is not required. Describe the results of this analysis in the space provided, for example, "no measurable baseline deflection at the retention time of TCDD" or "a measurable peak within the tolerances of the retention time of TCDD." You may be required to perform a quantitative analysis if you report a positive result.

The Engineering and Analysis Division of EPA has collected and analyzed samples from some facilities for the pollutants listed in Part C in the course of its BAT guidelines development program. If your effluents were sampled and analyzed as part of this program in the last three years, you may use this data to answer Part C. This may be done provided that no process change or change in raw materials, process or operating practices has occurred since the samples were taken which would make the analyses unrepresentative of your current discharge.

Small Business Exemption

If you qualify as a "small business," under 401 KAR 5:060, Section 2(8) you are exempt from the reporting requirements for the organic toxic pollutants listed on pages 9 through 18 in Part C. If your facility is a coal mine with a probable total annual production of less than 100,000 tons, you may submit past production data or estimated future production (such as a schedule of estimated total production under 30 CFR Section 795.14(c)) instead of conducting analyses for the organic toxic pollutants. If your facility is not a coal mine, and if your gross total annual sales for the most recent three years average less than $100,000 per year (in second quarter 1980 dollars), you may submit sales data for those years instead of conducting analyses for the organic toxic pollutants.

The production or sales data must be for the facility that is the source of the discharge. The data should not be limited to production or sales for the process or processes that contribute to the discharge, unless those are the only processes of your facility. For sales data, in situations involving intra-corporate transfers of goods and services, the transfer price per unit should approximate market prices for those goods and services as closely as possible. Sales figures for years after 1980 should be indexed to the second quarter of 1980 by using the gross national product prices deflator (second quarter of 1980 = 100). This index is available in "National Income and Product Accounts of the United States" (U.S. Department of Commerce, Bureau of Economic Analysis).

D. List any pollutants in Table C-3 that you believe to be present and explain why you believe them to be present. No analysis is required, but if you have analytical data, you must report it also.

NOTE: Under 40 CFR 117.12(a)(2), certain discharges of hazardous substances (listed in Table C-3 of these instructions) may be exempted from the requirements of Section 311 of the Clean Water Act (33 USC Section 1321), which establishes reporting requirements, civil penalties, and liability for cleanup costs for spills of oil and hazardous substances. A discharge of a particular substance may be exempted if the origin, source, and amount of the discharged substance are identified in the KPDES permit application or in the permit, if the permit contains a requirement for treatment of the discharge, and if the treatment is in place. To apply for an exclusion of the discharge of any hazardous substance from the requirement of Section 311, attach additional sheets of paper to your form, setting forth the following information:

A. the substance and the amount of each substance which may be discharged;
B. the origin and source of the discharge of the substance;
C. the treatment which is provided or to be provided for the discharge by:

1. an on-site treatment system separate from any treatment system treating your normal discharge;
2. a treatment system designed to treat your normal discharge and which is additionally capable of treating the amount of the substance identified under paragraph 1 above; or
3. any combination of the above.

See 40 CFR Section 117.12(a)(2) and (c), published on August 29, 1979, or contact the Division of Water for further information on exclusions from Section 311.

Section VI. Potential Discharges Not covered by Analysis

A. You may not claim this information as confidential. However, you do not have to distinguish between use of production of the pollutants or list the amounts. Under KPDES regulations, your permit will contain limits to control all pollutants you report in answer to this question, as well as pollutants reported in Item V and VI.B at levels exceeding the technology-based limits appropriate to your facility. Your permit will also require you to report to the Department for Environmental Protection if you begin or expect to begin to use or manufacture any toxic pollutant as an immediate or final product or byproduct which you did not report here. Your permit may be modified at that time if necessary to control that pollutant.

B. Consider only those variations which may result in the concentrations of pollutants in effluents which exceed twice the maximum values you reported in Item V. These variations may be part of your routing operations, or part of your regular cleaning cycles.

Under KPDES regulations, your permit will contain limits to control any pollutant that you report in this item at levels exceeding the technology-based limits appropriate to your facility. Your permit will also

require you to report to the Department for Environmental Protection if you know or have reason to believe that any toxic pollutant two times the maximum values reported in Item V-C or in this item. Your permit may be modified at that time if necessary to control the pollutant.

Do not consider variations that are the result of bypasses or upsets. Increased levels of pollutants that are discharged as a result of bypasses or upsets are regulated separately under KPDES regulations.

C. Variation exemptions to be described here include:

Changes in raw or intermediate materials
Changes in process equipment or materials;
Changes in product lines;
Significant chemical reactions among pollutants in waste streams; and
Significant variation in removal efficiencies of pollution control equipment.

You may indicate other types of variations as well, except those that are the result of bypasses or upsets. You may be required to further investigate or document variations you report here.

Base your prediction on expected levels of these pollutants upon your knowledge of your processes, raw materials, past and projected product ranges, etc., or upon any testing of your effluent which indicates the range of variability that can be expected over the next five years.

EXAMPLE: Outfall 001 discharges water used to clean six 500-gallon tanks. These tanks are used for formulation of dispersions of synthetic resins in water (adhesives). Use of toxic pollutants which can be expected in the next 5 years is:

1. copper acetate inhibitor, 1/2 lb. per tank;
2. dibutyl phthalate, 50 lbs. per tank;
3. toluene, 5 lbs. per tank; and
4. antimony oxide, 1 lb. per tank.

Based on normal cleaning, an average of 1% and a maximum of 3% of the contents of each tank is collected and discharged once every two weeks in the 150 gallons of water used for cleaning. Treatment (pH adjustment, flocculation, filtration) removes 85% of metals and 50% of organic compounds.

Section IX: Certification

The permit application must be signed as follows:

- **Corporation:** by a principal executive officer of at least the level of vice president.
- **Partnership or sole proprietorship:** by a general partner or the proprietor respectively.
- **Municipality, state, federal, or other public agency:** by either a principal executive officer or ranking elected official.

TABLE C-1
CODES FOR TREATMENT UNITS
(For use with Form C, Item II, Part B)

PHYSICAL TREATMENT PROCESSES

1-A	Ammonia Stripping	1-M	Grit Removal
1-B	Dialysis	1-N	Microstraining
1-C	Diatomaceous Earth Filtration	1-O	Mixing
1-D	Distillation	1-P	Moving Bed Filters
1-E	Electrodialysis	1-Q	Multimedia Filtration
1-F	Evaporation	1-R	Rapid Sand Filtration
1-G	Flocculation	1-S	Reverse Osmosis (Hyperfiltration)
1-H	Flotation	1-T	Screening
1-I	Foam Fractionation	1-U	Sedimentation (Settling)
1-J	Freezing	1-V	Slow Sand Filtration
1-K	Gas-Phase Separation	1-W	Solvent Extraction
1-L	Grinding (Comminutors)	1-X	Sorption

CHEMICAL TREATMENT PROCESSES

2-A	Carbon Adsorption	2-G	Disinfection (Ozone)
2-B	Chemical Oxidation	2-H	Disinfection (Other)
2-C	Chemical Precipitation	2-I	Electrochemical Treatment
2-D	Coagulation	2-J	Ion Exchange
2-E	Dechlorination	2-K	Neutralization
2-F	Disinfection (Chlorine)	2-L	Reduction

BIOLOGICAL TREATMENT PROCESSES

3-A	Activated Sludge	3-E	Pre-Aeration
3-B	Aerated Lagoons	3-F	Spray Irrigation/Land Application
3-C	Anaerobic Treatment	3-G	Stabilization Ponds
3-D	Nitrification-Denitrification	3-H	Trickling Filtration

OTHER PROCESSES

4-A	Discharge to Surface Water	4-C	Reuse/Recycle of Treated Effluent
4-B	Ocean Discharge Through Outfall	4-D	Underground Injection

SLUDGE TREATMENT AND DISPOSAL PROCESSES

5-A	Aerobic Digestion	5-M	Heat Drying
5-B	Anaerobic Digestion	5-N	Heat Treatment
5-C	Belt Filtration	5-O	Incineration
5-D	Centrifugation	5-P	Land Application
5-E	Chemical Conditioning	5-Q	Landfill
5-F	Chlorine Treatment	5-R	Pressure Filtration
5-G	Composting	5-S	Pyrolysis
5-H	Drying Beds	5-T	Sludge Lagoons
5-I	Elutriation	5-U	Vacuum Filtration
5-J	Flotation Thickening	5-V	Vibration
5-K	Freezing	5-W	Wet Oxidation
5-L	Gravity Thickening		

TABLE C-2
TESTING REQUIREMENTS FOR ORGANIC TOXIC POLLUTANTS BY INDUSTRY CATEGORY*
(For use with Form C, Item V, Part C)

INDUSTRY CATEGORY	GC/MS FRACTION[1] Volatile	Acid	Base/Neutral	Pesticide
Adhesives and sealants	x	x	x	-
Aluminum forming	x	x	x	-
Auto and other laundries	x	x	x	x
Battery manufacturing	x	-	x	-
Coal mining	-*	-*	-*	-*
Coil coating	x	x	x	-
Copper forming	x	x	x	-
Electric and electronic compounds	x	x	x	x
Electroplating	x	x	x	-
Explosives manufacturing	-	x	x	-
Foundries	x	x	x	-
Gum and wood chemicals	x	x	x	-
Inorganic chemicals manufacturing	x	x	x	-
Iron and steel manufacturing	x	x	x	-
Leather tanning and finishing	x	x	x	-*
Mechanical products manufacturing	x	x	x	-
Nonferrous metals manufacturing	x	x	x	x
Ore mining	x	x	x	x
Organic chemicals manufacturing	x	x	x	x
Paint and ink formulation	x	x	x	-*
Pesticides	x	x	x	x
Petroleum refining	x	-	-	-
Pharmaceutical preparation	x	x	x	-
hotographic equipment and supplies	x	x	x	-*
Plastic and synthetic materials manufacturing	x	x	x	x
Plastic processing	x	-	-	-
Porcelain enameling	-*	-*	-*	-*
Printing and publishing	x	x	x	x
Pulp and paperboard mills	x	x	x	x
Rubber Processing	x	x	x	-
Soap and detergent manufacturing	x	x	x	-
Steam electric power plants	x	x	x	-
Textile mills	x	x	x	x
Timber products processing	x	x	x	x

***See note at conclusion of 40 CFR Part 122, Appendix D (1983) for explanation of effect of suspensions on testing requirements for primary industry categories. See Note 1 at 46 FR 2045, Jan. 8, 1981; Note 2 at 46 FR22585, Apr. 20, 1981; and Note 3 at FR 35090, July 1, 1981.**

[1] The pollutants in each fraction are listed in item V-C.

x = Testing required.

- = Testing not required.

TOXIC POLLUTANTS AND HAZARDOUS SUBSTANCES REQUIRED TO BE IDENTIFIED BY APPLICANTS IF EXPECTED TO BE PRESENT

(For use with Form C, Item V, Part D)

TOXIC POLLUTANT

Asbestos

HAZARDOUS SUBSTANCES

1.	Acetaldehyde	35.	Ammonium thiocyanate	69.	Calcium chromate
2.	Acetic Acid	36.	Ammonium thiosulfate	70.	Calcium cyanide
3.	Acetic anhydride	37.	Amyl acetate	71.	Calcium dodecylbenzenesulfonate
4.	Acetone cyanohydrin	38.	Aniline	72.	Calcium hypochlorite
5.	Acetyl bromide	39.	Antimony pentachloride	73.	Captan
6.	Acetyl chloride	40.	Antimony potassium tartrate	74.	Carbaryl
7.	Acrolein	41.	Antimony tribromide	75.	Carbofuran
8.	Acrylonitrile	42.	Antimony trichloride	76.	Carbon disulfide
9.	Adipic acid	43.	Antimony trifluoride	77.	Carbon tetrachloride
10.	Aldrin	44.	Antimony trioxide	78.	Chlordane
11.	Allyl alcohol	45.	Arsenic disulfide	79.	Chlorine
12.	Allyl chloride	46.	Arsenic pentoxide	80.	Chlorobenzene
13.	Aluminum sulfate	47.	Arsenic trichloride	81.	Chloroform
14.	Ammonia	48.	Arsenic trioxide	82.	Chloropyrifos
15.	Ammonium acetate	49.	Arsenic trisulfide	83.	Chlorosulfonic acid
16.	Ammonium benzoate	50.	Barium cyanide	84.	Chromic acetate
17.	Ammonium bicarbonate	51.	Benzene	85.	Chromic acid
18.	Ammonium bichromate	52.	Benzoic acid	86.	Chromic sulfate
19.	Ammonium bifluoride	53.	Benzonitrile	87.	Chromous chloride
20.	Ammonium bisulfite	54.	Benzoyl chloride	88.	Cobaltous bromide
21.	Ammonium carbamate	55.	Benzyl chloride	89.	Cobaltous formate
22.	Ammonium carbonate	56.	Beryllium chloride	90.	Cobaltous sulfamate
23.	Ammonium chloride	57.	Beryllium fluoride	91.	Coumaphos
24.	Ammonium chromate	58.	Beryllium nitrate	92.	Cresol
25.	Ammonium citrate	59.	Butylacetate	93.	Crotonaldehyde
26.	Ammonium fluoroborate	60.	n-Butylphthalate	94.	Cupric acetate
27.	Ammonium fluoride	61.	Butylamine	95.	Cupric acetoarsenite
28.	Ammonium hydroxide	62.	Butyric acid	96.	Cupric chloride
29.	Ammonium oxalate	63.	Cadmium acetate	97.	Cupric nitrate
30.	Ammonium silicofluoride	64.	Cadmium bromide	98.	Cupric oxalate
31.	Ammonium sulfamate	65.	Cadmium chloride	99.	Cupric sulfate
32.	Ammonium sulfide	66.	Cadmium arsenate	100.	Cupric sulfate ammoniated
33.	Ammonium sulfite	67.	Calcium arsenite	101.	Cupric tartrate
34.	Ammonium tartrate	68.	Calcium carbide	102.	Cyanogen chloride

HAZARDOUS SUBSTANCES (continued)

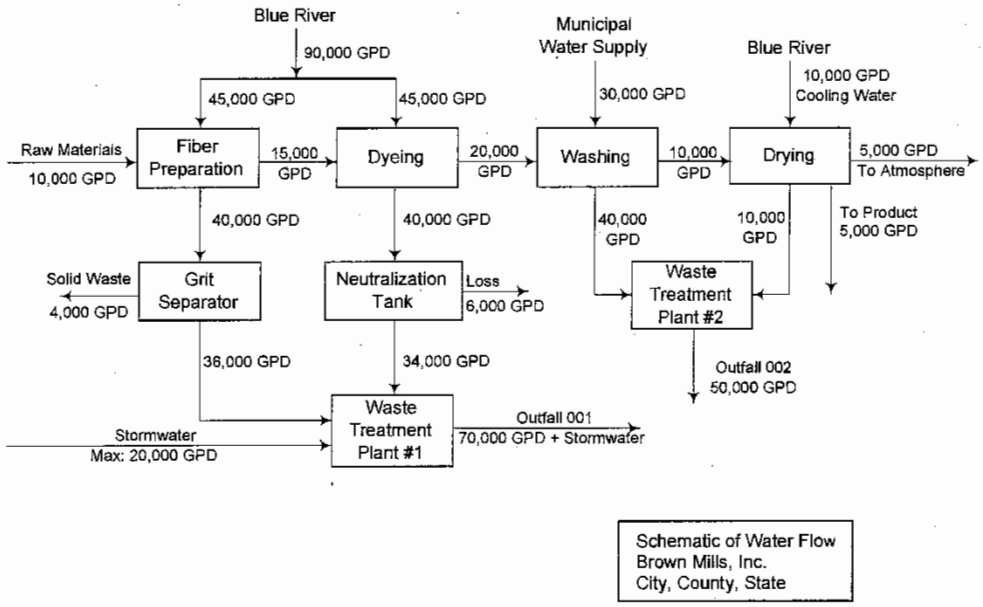
103.	Cyclohexane	134.	Ethylene dichloride	165.	Lead iodide
104.	2,4-D acid (2,4-Dichlorophenoxyacetic acid)	135.	Ethylene diaminetetracetic acid (EDTA)	166.	Lead nitrate
105.	2,4-D esters (2,4-Dichlorophenoxyacetic acid esters)	136.	Ferric ammonium citrate	167.	Lead stearate
106.	DDT	137.	Ferric ammonium oxalate	168.	Lead sulfate
107.	Diazinon	138.	Ferric chloride	169.	Lead sulfide
108.	Dicamba	139.	Ferric fluoride	170.	Lead thiocyanate
109.	Dichlobenil	140.	Ferric nitrate	171.	Lindane
110.	Dichlone	141.	Ferric sulfate	172.	Lithium chromate
111.	Dichlorobenzene	142.	Ferrous ammonium sulfate	173.	Malathion
112.	Dichloropropane	143.	Ferrous chloride	174.	Maleic acid
113.	Dichloropropene	144.	Ferrous sulfate	175.	Maleic anhydride
114.	Dichloropropene-dichloropropane mix	145.	Formaldehyde	176.	Mercaptodimethur
115.	2,2-Dichloropropionic acid	146.	Formic acid	177.	Mercuric cyanide
116.	Dichlorvos	147.	Fumaric acid	178.	Mercuric nitrate
117.	Dieldrin	148.	Furfural	179.	Mercuric sulfate
118.	Diethylamine	149.	Guthion	180.	Mercuric thiocyanate
119.	Dimethylamine	150.	Heptachlor	181.	Mercurous nitrate
120.	Dinitrobenzene	151.	Hexachlorocyclopentadiene	182.	Methoxychlor
121.	Dinitrophenol	152.	Hydrochloric acid	183.	Methyl mercaptan
122.	Dinitrotoluene	153.	Hydrofluoric acid	184.	Methyl methacrylate
123.	Diquat	154.	Hydrogen cyanide	185.	Methyl parathion
124.	Disulfoton	155.	Hydrogen sulfite	186.	Mevinphos
125.	Diuron	156.	Isoprene	187.	Mexacarbate
126.	Dodecylbenzesulfonic acid	157.	Isopropanolamine dodecylbenzenesulfonate	188.	Monoethylamine
127.	Endosulfan	158.	Kelthane	189.	Monomethylamine
128.	Endrin	159.	Kepone	190.	Naled
129.	Epichlorohydrin	160.	Lead acetate	191.	Naphthalene
130.	Ethion	161.	Lead arsenate	192.	Naphthenic acid
131.	Ethylbenzene	162.	Lead chloride	193.	Nickel ammonium sulfate
132.	Ethylenediamine	163.	Lead fluoborate	194.	Nickel chloride
133.	Ethylene dibromide	164.	Lead fluorite	195.	Nickel hydroxide

HAZARDOUS SUBSTANCES (continued)

196.	Nickel nitrate	221.	Propargite	246.	Sodium phosphate (tribasic)
197.	Nickel sulfate	222.	Propionic acid	247.	Sodium selenite
198.	Nitric acid	223.	Propionic anhydride	248.	Strontium choromate
199.	Nitrobenzene	224.	Propylene oxide	249.	Strychnine
200.	Nitrogen dioxide	225.	Pyrethrins	250.	Styrene
201.	Nitrophenol	226.	Quinoline	251.	Sulfuric acid
202.	Nitrotoluene	227.	Resorcinol	252.	Sulfur monochloride
203.	Paraformaldehyde	228.	Selenium oxide	253.	2,4,5-T acid (2,4,5-Trichlorophenoxy acetic acid)
204.	Parathion	229.	Silver nitrate	254.	2,4,5-T amines (2,4,5-Trichlorophenoxy acetic acid amines)
205.	Pentachlorophenol	230.	Sodium	255.	2,4,5-T esters (2,4,5-Trichlorophenoxy acetic acid esters)
206.	Phenol	231.	Sodium arsenate	256.	2,4,5-salts (2,4,5-Trichlorophenoxy acetic acid salts)
207.	Phosgene	232.	Sodium arsenite	257.	2,4,5-TP acid (2,4,5-Trichlorophenoxy propanoic acid)
208.	Phosphoric acid	233.	Sodium bichromate	258.	2,4,5-TP acid esters (2,4,5-Trichlorophenoxy propanoic acid esters)
209.	Phosphorus	234.	Sodium bifluoride	259.	TDE (Tetrachlorodiphenyl ethane)
210.	Phosphorus oxychloride	235.	Sodium bisulfite	260.	Tetraethyl lead
211.	Phosphorus pentasulfide	236.	Sodium chromate	261.	Tetraethyl pyrophosphate
212.	Phosphorus trichloride	237.	Sodium cyanide	262.	Thallium sulfate
213.	Polychlorinated biphenyls (PCB)	238.	Sodium dodecylbenzenesulfonate	263.	Toluene
214.	Potassium arsenate	239.	Sodium fluoride	264.	Toxaphene
215.	Potassium arsenite	240.	Sodium hydrosulfide	265.	Trichlorofon
216.	Potassium bichromate	241.	Sodium hydroxide	266.	Trichloroethylene
217.	Potassium chromate	242.	Sodium hypochlorite	267.	Trichlorophenol
218.	Potassium cyanide	243.	Sodium methylate	268.	Triethanolamine dodecylbenzenesulfonate
219.	Potassium hydroxide	244.	Sodium nitrate	269.	Triethylamine
220.	Potassium permanganate	245.	Sodium phosphate (dibasic)	270.	Trimethylamine
271.	Uranyl acetate	280.	Zinc ammonium chloride	289.	Zinc nitrate
272.	Uranyl nitrate	281.	Zinc borate	290.	Zinc phenolsulfonate
273.	Vanadium pentoxide	282.	Zinc bromide	291.	Zinc phosphate
274.	Vanadyl sulfate	283.	Zinc carbonate	292.	Zinc silicofluoride
275.	Vinyl acetate	284.	Zinc chloride	293.	Zinc sulfate
276.	Vinylidene chloride	285.	Zinc cyanide	294.	Zirconium nitrate
277.	Xylene	286.	Zinc fluoride	295.	Zirconium potassium fluoride
278.	Xylenol	287.	Zinc formate	296.	Zirconium sulfate
279.	Zinc acetate	288.	Zinc hydrosulfonate	297.	Zirconium tetrachloride

EXAMPLE

LINE DRAWING



Schematic of Water Flow
Brown Mills, Inc.
City, County, State

Attachment 6

Laboratory Results

(Form C Support Data)

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CERTIFICATE OF ANALYSIS

L2G0040

LG&E - KU ENERGY LLC.

Patty Mason
220 West Main Street
Louisville, KY 40202

Project Name: Form C - KPDES Renewal - Trimble County
Project / PO Number: 1104203
Received: 07/07/2022
Reported: 07/25/2022

Analytical Testing Parameters

Client Sample ID: Outfall 001
Sample Matrix: Wastewater
Lab Sample ID: L2G0040-01
Collected By: Xavier Bullock
Collection Date: 07/07/2022 9:40

Analyses Performed by: Microbac Laboratories, Inc. - Chicagoland

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 420.4, Rv. 1 (1993)								
Phenolics, Total Recoverable	<0.010		0.010	mg/L	B1	07/12/22 1328	07/13/22 1156	ABG

Metals Total by CVAF	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 1631E								
Mercury	<0.500		0.500	ng/L		07/14/22 0851	07/15/22 1159	JNH

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8, Rv. 5.4 (1994)								
Boron	1.7		0.50	mg/L		07/11/22 0637	07/12/22 1201	RPL
Tin	<0.0010		0.0010	mg/L		07/11/22 0637	07/11/22 1606	RPL
Titanium	<0.030		0.030	mg/L		07/11/22 0637	07/11/22 1606	RPL

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 624.1								
1,1,1-Trichloroethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,1,2,2-Tetrachloroethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,1,2-Trichloroethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,1-Dichloroethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,1-Dichloroethene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,2-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1629	JBS
1,2-Dichloroethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,2-Dichloropropane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
1,3-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1629	JBS
1,4-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1629	JBS
2-Chloroethyl vinyl ether	<0.010		0.010	mg/L	Q11		07/12/22 1629	JBS
Benzene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Dichlorobromomethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Bromoform	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Bromomethane	<0.010		0.010	mg/L			07/12/22 1629	JBS
Chlorobenzene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Chloroethane	<0.010		0.010	mg/L			07/12/22 1629	JBS
Chloroform	<0.0020		0.0020	mg/L			07/12/22 1629	JBS

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-01	**Collection Date:**	07/07/2022 9:40

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Chloromethane	<0.010		0.010	mg/L			07/12/22 1629	JBS
cis-1,3-Dichloropropene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Dibromochloromethane	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Ethylbenzene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Methylene chloride	<0.010		0.010	mg/L			07/12/22 1629	JBS
Tetrachloroethene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Toluene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
trans-1,2-Dichloroethene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
trans-1,3-Dichloropropene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Trichloroethene	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Trichlorofluoromethane	<0.010		0.010	mg/L			07/12/22 1629	JBS
Vinyl chloride	<0.0020		0.0020	mg/L			07/12/22 1629	JBS
Acrolein	<0.10		0.10	mg/L	Q10		07/12/22 1629	JBS
Acrylonitrile	<0.10		0.10	mg/L	Q10		07/12/22 1629	JBS
Total 1,2-Dichloroethene	<0.0050		0.0050	mg/L	Y		07/12/22 1629	JBS
Total 1,3 Dichloropropene	<0.0050		0.0050	mg/L	Y		07/12/22 1629	JBS
Total Xylenes	<0.0050		0.0050	mg/L			07/12/22 1629	JBS
Surrogate: 1,2-Dichloroethane-D4	98.9	Limit: 74.5-132		% Rec			07/12/22 1629	JBS
Surrogate: 4-Bromofluorobenzene	83.5	Limit: 80-120		% Rec			07/12/22 1629	JBS
Surrogate: Dibromofluoromethane	102	Limit: 80-120		% Rec			07/12/22 1629	JBS
Surrogate: Toluene-D8	107	Limit: 80-120		% Rec			07/12/22 1629	JBS

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 625.1								
1,2,4-Trichlorobenzene	<0.011		0.011	mg/L	Q	07/11/22 0615	07/12/22 0554	CLR
1,2-Dichlorobenzene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
1,2-Diphenylhydrazine	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
1,3-Dichlorobenzene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
1,4-Dichlorobenzene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,2´-oxybis(1-chloropropane)	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,4,5-Trichlorophenol	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
2,4,6-Trichlorophenol	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,4-Dichlorophenol	<0.011		0.011	mg/L	Q	07/11/22 0615	07/12/22 0554	CLR
2,4-Dimethylphenol	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,4-Dinitrophenol	<0.053		0.053	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,4-Dinitrotoluene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,6-Dichlorophenol	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2,6-Dinitrotoluene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2-Chloronaphthalene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2-Chlorophenol	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
2-Methylnaphthalene	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
2-Methylphenol	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-01	**Collection Date:**	07/07/2022 9:40

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
2-Nitroaniline	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
2-Nitrophenol	<0.011		0.011	mg/L	Q	07/11/22 0615	07/12/22 0554	CLR
3,3´-Dichlorobenzidine	<0.053		0.053	mg/L		07/11/22 0615	07/12/22 0554	CLR
3/4-Methylphenol	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
3-Nitroaniline	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
4,6-Dinitro-o-cresol	<0.026		0.026	mg/L		07/11/22 0615	07/12/22 0554	CLR
4-Bromophenyl phenyl ether	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
4-Chloro-3-methylphenol	<0.021		0.021	mg/L		07/11/22 0615	07/12/22 0554	CLR
4-Chloroaniline	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
4-Chlorophenyl phenyl ether	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
4-Nitroaniline	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
4-Nitrophenol	<0.053		0.053	mg/L		07/11/22 0615	07/12/22 0554	CLR
Acenaphthene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Acenaphthylene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Acetophenone	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Aniline	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Anthracene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzidine	<0.053		0.053	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzo[a]anthracene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzo[a]pyrene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzo[b]fluoranthene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzo[g,h,i]perylene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzo[k]fluoranthene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Benzoic acid	<0.053		0.053	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Benzyl alcohol	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Bis(2-chloroethoxy)methane	<0.011		0.011	mg/L	Q	07/11/22 0615	07/12/22 0554	CLR
Bis(2-chloroethyl)ether	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Bis(2-ethylhexyl)phthalate	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Butyl benzyl phthalate	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Carbazole	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Chrysene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Dibenz[a,h]anthracene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Dibenzofuran	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Diethyl phthalate	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Dimethyl phthalate	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Di-n-butyl phthalate	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Di-n-octyl phthalate	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Fluoranthene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Fluorene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Hexachlorobenzene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Hexachlorobutadiene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Hexachlorocyclopentadiene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Hexachloroethane	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-01	**Collection Date:**	07/07/2022 9:40

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Indeno[1,2,3cd]pyrene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Isophorone	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Naphthalene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Nitrobenzene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
N-Nitrosodimethylamine	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
N-Nitrosodi-n-propylamine	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
N-Nitrosodiphenylamine	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Pentachlorophenol	<0.053		0.053	mg/L		07/11/22 0615	07/12/22 0554	CLR
Phenanthrene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Phenol	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Pyrene	<0.011		0.011	mg/L		07/11/22 0615	07/12/22 0554	CLR
Pyridine	<0.011		0.011	mg/L	Y	07/11/22 0615	07/12/22 0554	CLR
Surrogate: 2,4,6-Tribromophenol	25.6	Limit: 47.8-138		% Rec	A7, S2	07/11/22 0615	07/12/22 0554	CLR
Surrogate: 2-Fluorobiphenyl	35.0	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0554	CLR
Surrogate: 2-Fluorophenol	7.26	Limit: 10-110		% Rec	A7, S2	07/11/22 0615	07/12/22 0554	CLR
Surrogate: Nitrobenzene-d5	33.9	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0554	CLR
Surrogate: Phenol-d5	10.3	Limit: 10-60.8		% Rec		07/11/22 0615	07/12/22 0554	CLR
Surrogate: Terphenyl-d14	74.5	Limit: 16.8-110		% Rec		07/11/22 0615	07/12/22 0554	CLR

Analyses Performed by: Microbac Laboratories, Inc., Louisville

Field Parameters	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	0.02		0.02	mg/L			07/07/22 0940	XDB
Method: SM 2550 B-2010								
Temperature	28.7		1.0	°C			07/07/22 0940	XDB
Method: SM 4500-H+ B-2011								
pH (at 25°C)	7.94		1.00	S.U.			07/07/22 0940	XDB

Microbiology	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM 9223 B (Colilert-18)-1997								
E. coli	1.0		1.0	MPN/100mL		07/07/22 1553	07/08/22 1007	GEA

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: Calculation								
Total Organic Nitrogen	<1.0		1.0	mg/L		07/13/22 1051	07/14/22 1502	SSL
Method: EPA 1664B								
Oil & Grease	<5.2		5.2	mg/L			07/11/22 0957	RMT

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-01	**Collection Date:**	07/07/2022 9:40

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 351.2, Rv. 2 (1993)								
Nitrogen, Total Kjeldahl	<1.0		1.0	mg/L		07/13/22 0923	07/14/22 1502	SSL
Method: EPA 365.1, Rv. 2 (1993)								
Phosphorus	<0.10		0.10	mg/L	**M1a**	07/08/22 1016	07/11/22 1552	NWW
Method: SM 2120 B-2011								
Color, Pt-Co (Apparent)	10		5	CU	**,N**		07/07/22 1905	NWW
pH at Color	9		1	S.U.			07/07/22 1905	NWW
Method: SM 4500-CN^- E-2011								
Cyanide	<0.010		0.010	mg/L		07/12/22 1143	07/13/22 1619	SSL
Method: SM 4500-NH3 G-2011								
Nitrogen, Ammonia	<0.50		0.50	mg/L		07/13/22 1051	07/13/22 2057	SSL
Method: SM 4500-$S2^-$ D-2011								
Sulfide	<0.20		0.20	mg/L			07/12/22 1955	NWW
Method: SM 4500-$SO3^-$ B-2011		**Method Notes:** P1						
Sulfite	<2.0		2.0	mg/L	**H1**	07/15/22 1603	07/15/22 1608	NWW
Method: SM 5210 B-2011								
BOD, 5 Day	<4.17 mg/L			mg/L	**B3, BOD1**	07/07/22 1710	07/12/22 1440	SZH
Method: SM 5220 D-2011								
COD	<50		50	mg/L		07/08/22 1101	07/08/22 1257	SZH
Method: SM 5310 C-2011								
Carbon, Total Organic	4.1		1.0	mg/L		07/13/22 1838	07/14/22 2200	SSL
Method: SM 5540 C-2011								
MBAS (as LAS MW 340)	<0.50		0.50	mg/L			07/07/22 1522	NWW
Method: USGS I-3765-85								
Solids, Total Suspended	10		5	mg/L		07/12/22 1528	07/12/22 1611	DKB

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	62		0.20	mg/L		07/15/22 1245	07/16/22 1901	SSL
Magnesium	15		0.20	mg/L		07/15/22 1245	07/16/22 1901	SSL
Method: SM 2340 B-2011								

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L2G0040

Client Sample ID:	Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-01	**Collection Date:**	07/07/2022 9:40

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Hardness, Total as CaCO3	220		0.82	mg/L		07/15/22 1245	07/16/22 1901	SSL

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8, Rv. 5.4 (1994)								
Aluminum	<50		50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Antimony	0.50		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Arsenic	0.98		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Beryllium	<1.0		1.0	ug/L		07/13/22 1046	07/15/22 1558	JSW
Cadmium	<0.50		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Chromium	<0.50		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Copper	<5.0		5.0	ug/L		07/13/22 1046	07/15/22 1558	JSW
Iron	51		50	ug/L		07/13/22 1046	07/18/22 1817	JSW
Lead	<0.50		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Molybdenum	58		2.0	ug/L		07/13/22 1046	07/15/22 1558	JSW
Nickel	14		1.0	ug/L		07/13/22 1046	07/15/22 1558	JSW
Selenium	2.7		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Silver	<0.10		0.10	ug/L		07/13/22 1046	07/15/22 1558	JSW
Thallium	<0.50		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Zinc	93		10	ug/L		07/13/22 1046	07/18/22 1817	JSW
Barium	40		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Cobalt	0.91		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW
Manganese	27		0.50	ug/L		07/13/22 1046	07/15/22 1558	JSW

Anions by IC	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 300.0, Rv. 2.1 (1993)								
Bromide	<0.50		0.50	mg/L		07/07/22 2008	07/08/22 0958	NWW
Chloride	100		1.0	mg/L	B	07/07/22 2008	07/08/22 1520	NWW
Fluoride	<0.50		0.50	mg/L		07/07/22 2008	07/08/22 0958	NWW
Nitrogen, Nitrate + Nitrite	<0.75		0.75	mg/L		07/07/22 2003	07/08/22 1146	NWW
Sulfate	140		1.0	mg/L	B	07/07/22 2008	07/08/22 1520	NWW

Analyses Performed by: GEL Laboratories, LLC

Radiochemistry	Result	UNC	Limit(s)	MDA	Units	Note	Prepared	Analyzed	Analyst
Method: Calculation									
Radium-226+228 Sum	1.22	+/-0.691		1.22	pCi/L		07/07/22 0000	07/18/22 0000	NXL
Method: EPA 900.0/SW846 9310									
ALPHA	4.09	+/-2.48		3	pCi/L		07/07/22 0000	07/14/22 0000	JE1
BETA	3.78	+/-1.88		4	pCi/L		07/07/22 0000	07/14/22 0000	JE1
Method: EPA 903.1 Modified									

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L2G0040

Client Sample ID:	Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-01	**Collection Date:**	07/07/2022 9:40

Radiochemistry	Result	UNC	Limit(s)	MDA	Units	Note	Prepared	Analyzed	Analyst
Radium-226	0.348	+/-0.294		1	pCi/L	U	07/07/22 0000	07/18/22 0000	LXP
Method: EPA 904.0/SW846 9320 Modified									
Radium-228	0.876	+/-0.626		1	pCi/L	U	07/07/22 0000	07/15/22 0000	JXC
Method: EPA 905.0 Modified/DOE RP501 Rev. 1 Modified									
Strontium-90	-0.053	+/-1.06		2	pCi/L	U	07/07/22 0000	07/14/22 0000	KP1

Uranium	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8								
Uranium	0.00219		0.0002	mg/L		07/12/22 0000	07/13/22 0000	BAJ

Client Sample ID:	HG LL Blank -Outfall 001		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-02	**Collection Date:**	07/07/2022 9:47

Analyses Performed by: Microbac Laboratories, Inc. - Chicagoland

Metals Total by CVAF	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 1631E								
Mercury	0.823		0.500	ng/L		07/14/22 0851	07/15/22 1201	JNH

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L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Analyses Performed by: Microbac Laboratories, Inc. - Chicagoland

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 420.4, Rv. 1 (1993)								
Phenolics, Total Recoverable	<0.010		0.010	mg/L	B1	07/12/22 1328	07/13/22 1157	ABG

Metals Total by CVAF	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 1631E								
Mercury	<0.500		0.500	ng/L		07/14/22 0851	07/15/22 1203	JNH

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8, Rv. 5.4 (1994)								
Boron	8.3		1.0	mg/L		07/11/22 0637	07/12/22 1205	RPL
Tin	0.0025		0.0010	mg/L		07/11/22 0637	07/11/22 1620	RPL
Titanium	<0.030		0.030	mg/L		07/11/22 0637	07/11/22 1620	RPL

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 624.1								
1,1,1-Trichloroethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,1,2,2-Tetrachloroethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,1,2-Trichloroethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,1-Dichloroethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,1-Dichloroethene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,2-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1651	JBS
1,2-Dichloroethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,2-Dichloropropane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
1,3-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1651	JBS
1,4-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1651	JBS
2-Chloroethyl vinyl ether	<0.010		0.010	mg/L	Q11		07/12/22 1651	JBS
Benzene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Dichlorobromomethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Bromoform	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Bromomethane	<0.010		0.010	mg/L			07/12/22 1651	JBS
Chlorobenzene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Chloroethane	<0.010		0.010	mg/L			07/12/22 1651	JBS
Chloroform	<0.0020		0.0020	mg/L			07/12/22 1651	JBS
Chloromethane	<0.010		0.010	mg/L			07/12/22 1651	JBS
cis-1,3-Dichloropropene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Dibromochloromethane	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Ethylbenzene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Methylene chloride	<0.010		0.010	mg/L			07/12/22 1651	JBS
Tetrachloroethene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Toluene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS

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L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
trans-1,2-Dichloroethene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
trans-1,3-Dichloropropene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Trichloroethene	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Trichlorofluoromethane	<0.010		0.010	mg/L			07/12/22 1651	JBS
Vinyl chloride	<0.0020		0.0020	mg/L			07/12/22 1651	JBS
Acrolein	<0.10		0.10	mg/L	Q10		07/12/22 1651	JBS
Acrylonitrile	<0.10		0.10	mg/L	Q10		07/12/22 1651	JBS
Total 1,2-Dichloroethene	<0.0050		0.0050	mg/L	Y		07/12/22 1651	JBS
Total 1,3 Dichloropropene	<0.0050		0.0050	mg/L	Y		07/12/22 1651	JBS
Total Xylenes	<0.0050		0.0050	mg/L			07/12/22 1651	JBS
Surrogate: 1,2-Dichloroethane-D4	100	Limit: 74.5-132		% Rec			07/12/22 1651	JBS
Surrogate: 4-Bromofluorobenzene	84.7	Limit: 80-120		% Rec			07/12/22 1651	JBS
Surrogate: Dibromofluoromethane	101	Limit: 80-120		% Rec			07/12/22 1651	JBS
Surrogate: Toluene-D8	108	Limit: 80-120		% Rec			07/12/22 1651	JBS

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 625.1								
1,2,4-Trichlorobenzene	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0616	CLR
1,2-Dichlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
1,2-Diphenylhydrazine	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
1,3-Dichlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
1,4-Dichlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,2´-oxybis(1-chloropropane)	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,4,5-Trichlorophenol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
2,4,6-Trichlorophenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,4-Dichlorophenol	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0616	CLR
2,4-Dimethylphenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,4-Dinitrophenol	<0.051		0.051	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,4-Dinitrotoluene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,6-Dichlorophenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2,6-Dinitrotoluene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2-Chloronaphthalene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2-Chlorophenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
2-Methylnaphthalene	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
2-Methylphenol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
2-Nitroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
2-Nitrophenol	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0616	CLR
3,3´-Dichlorobenzidine	<0.051		0.051	mg/L		07/11/22 0615	07/12/22 0616	CLR
3/4-Methylphenol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
3-Nitroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
4,6-Dinitro-o-cresol	<0.026		0.026	mg/L		07/11/22 0615	07/12/22 0616	CLR
4-Bromophenyl phenyl ether	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR

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L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
4-Chloro-3-methylphenol	<0.020		0.020	mg/L		07/11/22 0615	07/12/22 0616	CLR
4-Chloroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
4-Chlorophenyl phenyl ether	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
4-Nitroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
4-Nitrophenol	<0.051		0.051	mg/L		07/11/22 0615	07/12/22 0616	CLR
Acenaphthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Acenaphthylene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Acetophenone	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Aniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Anthracene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzidine	<0.051		0.051	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzo[a]anthracene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzo[a]pyrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzo[b]fluoranthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzo[g,h,i]perylene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzo[k]fluoranthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Benzoic acid	<0.051		0.051	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Benzyl alcohol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Bis(2-chloroethoxy)methane	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0616	CLR
Bis(2-chloroethyl)ether	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Bis(2-ethylhexyl)phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Butyl benzyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Carbazole	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Chrysene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Dibenz[a,h]anthracene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Dibenzofuran	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Diethyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Dimethyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Di-n-butyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Di-n-octyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Fluoranthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Fluorene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Hexachlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Hexachlorobutadiene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Hexachlorocyclopentadiene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Hexachloroethane	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Indeno[1,2,3cd]pyrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Isophorone	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Naphthalene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Nitrobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
N-Nitrosodimethylamine	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
N-Nitrosodi-n-propylamine	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
N-Nitrosodiphenylamine	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR

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L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Pentachlorophenol	<0.051		0.051	mg/L		07/11/22 0615	07/12/22 0616	CLR
Phenanthrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Phenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Pyrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0616	CLR
Pyridine	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0616	CLR
Surrogate: 2,4,6-Tribromophenol	57.1	Limit: 47.8-138		% Rec		07/11/22 0615	07/12/22 0616	CLR
Surrogate: 2-Fluorobiphenyl	27.1	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0616	CLR
Surrogate: 2-Fluorophenol	15.5	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0616	CLR
Surrogate: Nitrobenzene-d5	25.8	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0616	CLR
Surrogate: Phenol-d5	13.7	Limit: 10-60.8		% Rec		07/11/22 0615	07/12/22 0616	CLR
Surrogate: Terphenyl-d14	61.3	Limit: 16.8-110		% Rec		07/11/22 0615	07/12/22 0616	CLR

Analyses Performed by: Microbac Laboratories, Inc., Louisville

Field Parameters	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	<0.02		0.02	mg/L			07/07/22 1010	XDB
Method: NA								
Flow by Measurement & Calc.	8.83		0	MGD			07/07/22 1010	XDB
Method: SM 2550 B-2010								
Temperature	31.3		1.0	°C			07/07/22 1010	XDB
Method: SM 4500-H+ B-2011								
pH (at 25°C)	7.53		1.00	S.U.			07/07/22 1010	XDB

Microbiology	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM 9223 B (Colilert-18)-1997								
E. coli	30.5		1.0	MPN/100mL		07/07/22 1553	07/08/22 1007	GEA

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: Calculation								
Total Organic Nitrogen	1.3		1.0	mg/L		07/13/22 1051	07/14/22 1504	SSL
Method: EPA 1664B								
Oil & Grease	<5.3		5.3	mg/L			07/11/22 0957	RMT
Method: EPA 351.2, Rv. 2 (1993)								
Nitrogen, Total Kjeldahl	1.3		1.0	mg/L		07/13/22 0923	07/14/22 1504	SSL
Method: EPA 365.1, Rv. 2 (1993)								

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Phosphorus	0.16		0.10	mg/L	**M1a**	07/08/22 1016	07/11/22 1553	NWW
Method: SM 2120 B-2011								
Color, Pt-Co (Apparent)	25		5	CU	**,N**		07/07/22 1905	NWW
pH at Color	8		1	S.U.			07/07/22 1905	NWW
Method: SM 4500-CN^- E-2011								
Cyanide	<0.010		0.010	mg/L		07/12/22 1143	07/13/22 1621	SSL
Method: SM 4500-NH3 G-2011								
Nitrogen, Ammonia	<0.50		0.50	mg/L		07/13/22 1051	07/13/22 2100	SSL
Method: SM 4500-$S2^-$ D-2011								
Sulfide	<0.20		0.20	mg/L			07/12/22 1955	NWW
Method: SM 4500-$SO3^-$ B-2011		**Method Notes:** P1						
Sulfite	<2.0		2.0	mg/L	**H1**	07/15/22 1603	07/15/22 1608	NWW
Method: SM 5210 B-2011								
BOD, 5 Day	<4.17 mg/L			mg/L	**BOD1**	07/07/22 1710	07/12/22 1452	SZH
Method: SM 5220 D-2011								
COD	<50		50	mg/L		07/08/22 1101	07/08/22 1257	SZH
Method: SM 5310 C-2011								
Carbon, Total Organic	4.8		1.0	mg/L		07/13/22 1838	07/14/22 2223	SSL
Method: SM 5540 C-2011								
MBAS (as LAS MW 340)	<0.50		0.50	mg/L			07/07/22 1522	NWW
Method: USGS I-3765-85								
Solids, Total Suspended	42		5	mg/L		07/12/22 1326	07/12/22 1453	DKB

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	180		0.20	mg/L		07/15/22 1006	07/16/22 1623	SSL
Magnesium	150		0.20	mg/L		07/15/22 1006	07/16/22 1623	SSL
Method: SM 2340 B-2011								
Hardness, Total as CaCO3	1100		0.82	mg/L		07/15/22 1006	07/16/22 1623	SSL

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8, Rv. 5.4 (1994)								
Aluminum	340		50	ug/L		07/15/22 1109	07/18/22 1922	JSW

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L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Antimony	0.59		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Arsenic	1.7		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Beryllium	<1.0		1.0	ug/L		07/15/22 1109	07/18/22 1922	JSW
Cadmium	<0.50		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Chromium	2.3		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Copper	38		5.0	ug/L		07/15/22 1109	07/18/22 1922	JSW
Iron	720		50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Lead	1.3		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Molybdenum	10		2.0	ug/L		07/15/22 1109	07/18/22 1922	JSW
Nickel	13		1.0	ug/L		07/15/22 1109	07/18/22 1922	JSW
Selenium	12		0.50	ug/L		07/15/22 1109	07/20/22 1543	JSW
Silver	<0.10		0.10	ug/L		07/15/22 1109	07/18/22 1922	JSW
Thallium	<0.50		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Zinc	25		10	ug/L		07/15/22 1109	07/18/22 1922	JSW
Barium	87		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Cobalt	1.6		0.50	ug/L		07/15/22 1109	07/18/22 1922	JSW
Manganese	1500		50	ug/L		07/15/22 1109	07/20/22 1547	JSW

Anions by IC	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 300.0, Rv. 2.1 (1993)								
Bromide	2.8		0.50	mg/L		07/07/22 2008	07/08/22 1014	NWW
Chloride	390		5.0	mg/L	B	07/07/22 2008	07/08/22 1535	NWW
Fluoride	3.9		0.50	mg/L		07/07/22 2008	07/08/22 1014	NWW
Nitrogen, Nitrate + Nitrite	2.7		0.75	mg/L		07/07/22 2003	07/08/22 1201	NWW
Sulfate	540		5.0	mg/L	B	07/07/22 2008	07/08/22 1535	NWW

Analyses Performed by: GEL Laboratories, LLC

Radiochemistry	Result	UNC	Limit(s)	MDA	Units	Note	Prepared	Analyzed	Analyst
Method: Calculation									
Radium-226+228 Sum	1.33	+/-0.688		1.33	pCi/L		07/07/22 0000	07/18/22 0000	NXL
Method: EPA 900.0/SW846 9310									
ALPHA	8.28	+/-3.93		3	pCi/L		07/07/22 0000	07/14/22 0000	JE1
BETA	9.55	+/-2.49		4	pCi/L		07/07/22 0000	07/14/22 0000	JE1
Method: EPA 903.1 Modified									
Radium-226	0.684	+/-0.408		1	pCi/L		07/07/22 0000	07/18/22 0000	LXP
Method: EPA 904.0/SW846 9320 Modified									
Radium-228	0.649	+/-0.554		1	pCi/L	U	07/07/22 0000	07/15/22 0000	JXC
Method: EPA 905.0 Modified/DOE RP501 Rev. 1 Modified									

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L2G0040

Client Sample ID:	Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-03	**Collection Date:**	07/07/2022 10:10

Radiochemistry	Result	UNC	Limit(s)	MDA	Units	Note	Prepared	Analyzed	Analyst
Strontium-90	0.73	+/-1.08		2	pCi/L	U	07/07/22 0000	07/14/22 0000	KP1

Uranium	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8								
Uranium	0.01		0.0002	mg/L		07/12/22 0000	07/13/22 0000	BAJ

Client Sample ID:	HG LL Blank -Outfall 002		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-04	**Collection Date:**	07/07/2022 10:20

Analyses Performed by: Microbac Laboratories, Inc. - Chicagoland

Metals Total by CVAF	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 1631E								
Mercury	2.10		0.500	ng/L		07/14/22 0851	07/15/22 1206	JNH

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L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Analyses Performed by: Microbac Laboratories, Inc. - Chicagoland

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 420.4, Rv. 1 (1993)								
Phenolics, Total Recoverable	<0.010		0.010	mg/L	B1	07/12/22 1328	07/13/22 1158	ABG

Metals Total by CVAF	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 1631E								
Mercury	<0.500		0.500	ng/L		07/14/22 0851	07/15/22 1208	JNH

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8, Rv. 5.4 (1994)								
Boron	0.078		0.0050	mg/L		07/11/22 0637	07/11/22 1625	RPL
Tin	0.0011		0.0010	mg/L		07/11/22 0637	07/11/22 1625	RPL
Titanium	<0.030		0.030	mg/L		07/11/22 0637	07/11/22 1625	RPL

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 624.1								
1,1,1-Trichloroethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,1,2,2-Tetrachloroethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,1,2-Trichloroethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,1-Dichloroethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,1-Dichloroethene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,2-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1713	JBS
1,2-Dichloroethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,2-Dichloropropane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
1,3-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1713	JBS
1,4-Dichlorobenzene	<0.010		0.010	mg/L			07/12/22 1713	JBS
2-Chloroethyl vinyl ether	<0.010		0.010	mg/L	Q11		07/12/22 1713	JBS
Benzene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Dichlorobromomethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Bromoform	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Bromomethane	<0.010		0.010	mg/L			07/12/22 1713	JBS
Chlorobenzene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Chloroethane	<0.010		0.010	mg/L			07/12/22 1713	JBS
Chloroform	<0.0020		0.0020	mg/L			07/12/22 1713	JBS
Chloromethane	<0.010		0.010	mg/L			07/12/22 1713	JBS
cis-1,3-Dichloropropene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Dibromochloromethane	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Ethylbenzene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Methylene chloride	<0.010		0.010	mg/L			07/12/22 1713	JBS
Tetrachloroethene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Toluene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS

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L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
trans-1,2-Dichloroethene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
trans-1,3-Dichloropropene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Trichloroethene	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Trichlorofluoromethane	<0.010		0.010	mg/L			07/12/22 1713	JBS
Vinyl chloride	<0.0020		0.0020	mg/L			07/12/22 1713	JBS
Acrolein	<0.10		0.10	mg/L	Q10		07/12/22 1713	JBS
Acrylonitrile	<0.10		0.10	mg/L	Q10		07/12/22 1713	JBS
Total 1,2-Dichloroethene	<0.0050		0.0050	mg/L	Y		07/12/22 1713	JBS
Total 1,3 Dichloropropene	<0.0050		0.0050	mg/L	Y		07/12/22 1713	JBS
Total Xylenes	<0.0050		0.0050	mg/L			07/12/22 1713	JBS
Surrogate: 1,2-Dichloroethane-D4	98.5	Limit: 74.5-132		% Rec			07/12/22 1713	JBS
Surrogate: 4-Bromofluorobenzene	84.4	Limit: 80-120		% Rec			07/12/22 1713	JBS
Surrogate: Dibromofluoromethane	101	Limit: 80-120		% Rec			07/12/22 1713	JBS
Surrogate: Toluene-D8	106	Limit: 80-120		% Rec			07/12/22 1713	JBS

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 625.1								
1,2,4-Trichlorobenzene	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0637	CLR
1,2-Dichlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
1,2-Diphenylhydrazine	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
1,3-Dichlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
1,4-Dichlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,2´-oxybis(1-chloropropane)	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,4,5-Trichlorophenol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
2,4,6-Trichlorophenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,4-Dichlorophenol	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0637	CLR
2,4-Dimethylphenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,4-Dinitrophenol	<0.050		0.050	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,4-Dinitrotoluene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,6-Dichlorophenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2,6-Dinitrotoluene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2-Chloronaphthalene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2-Chlorophenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
2-Methylnaphthalene	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
2-Methylphenol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
2-Nitroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
2-Nitrophenol	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0637	CLR
3,3´-Dichlorobenzidine	<0.050		0.050	mg/L		07/11/22 0615	07/12/22 0637	CLR
3/4-Methylphenol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
3-Nitroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
4,6-Dinitro-o-cresol	<0.025		0.025	mg/L		07/11/22 0615	07/12/22 0637	CLR
4-Bromophenyl phenyl ether	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR

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L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
4-Chloro-3-methylphenol	<0.020		0.020	mg/L		07/11/22 0615	07/12/22 0637	CLR
4-Chloroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
4-Chlorophenyl phenyl ether	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
4-Nitroaniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
4-Nitrophenol	<0.050		0.050	mg/L		07/11/22 0615	07/12/22 0637	CLR
Acenaphthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Acenaphthylene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Acetophenone	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Aniline	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Anthracene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzidine	<0.050		0.050	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzo[a]anthracene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzo[a]pyrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzo[b]fluoranthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzo[g,h,i]perylene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzo[k]fluoranthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Benzoic acid	<0.050		0.050	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Benzyl alcohol	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Bis(2-chloroethoxy)methane	<0.010		0.010	mg/L	Q	07/11/22 0615	07/12/22 0637	CLR
Bis(2-chloroethyl)ether	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Bis(2-ethylhexyl)phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Butyl benzyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Carbazole	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Chrysene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Dibenz[a,h]anthracene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Dibenzofuran	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Diethyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Dimethyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Di-n-butyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Di-n-octyl phthalate	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Fluoranthene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Fluorene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Hexachlorobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Hexachlorobutadiene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Hexachlorocyclopentadiene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Hexachloroethane	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Indeno[1,2,3cd]pyrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Isophorone	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Naphthalene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Nitrobenzene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
N-Nitrosodimethylamine	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
N-Nitrosodi-n-propylamine	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
N-Nitrosodiphenylamine	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Semivolatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Pentachlorophenol	<0.050		0.050	mg/L		07/11/22 0615	07/12/22 0637	CLR
Phenanthrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Phenol	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Pyrene	<0.010		0.010	mg/L		07/11/22 0615	07/12/22 0637	CLR
Pyridine	<0.010		0.010	mg/L	Y	07/11/22 0615	07/12/22 0637	CLR
Surrogate: 2,4,6-Tribromophenol	65.5	Limit: 47.8-138		% Rec		07/11/22 0615	07/12/22 0637	CLR
Surrogate: 2-Fluorobiphenyl	38.2	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0637	CLR
Surrogate: 2-Fluorophenol	21.7	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0637	CLR
Surrogate: Nitrobenzene-d5	36.8	Limit: 10-110		% Rec		07/11/22 0615	07/12/22 0637	CLR
Surrogate: Phenol-d5	18.0	Limit: 10-60.8		% Rec		07/11/22 0615	07/12/22 0637	CLR
Surrogate: Terphenyl-d14	77.2	Limit: 16.8-110		% Rec		07/11/22 0615	07/12/22 0637	CLR

Analyses Performed by: Microbac Laboratories, Inc., Louisville

Field Parameters	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	<0.02		0.02	mg/L			07/07/22 0925	XDB
Method: NA								
Flow by Measurement & Calc.	45.54		0	MGD			07/07/22 0925	XDB
Method: SM 2550 B-2010								
Temperature	28.2		1.0	°C			07/07/22 0925	XDB
Method: SM 4500-H+ B-2011								
pH (at 25°C)	6.91		1.00	S.U.			07/07/22 0925	XDB

Microbiology	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM 9223 B (Colilert-18)-1997								
E. coli	42.0		1.0	MPN/100mL		07/07/22 1553	07/08/22 1007	GEA

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: Calculation								
Total Organic Nitrogen	<1.0		1.0	mg/L		07/13/22 1051	07/14/22 1506	SSL
Method: EPA 1664B								
Oil & Grease	<5.3		5.3	mg/L			07/11/22 0957	RMT
Method: EPA 351.2, Rv. 2 (1993)								
Nitrogen, Total Kjeldahl	<1.0		1.0	mg/L		07/13/22 0923	07/14/22 1506	SSL
Method: EPA 365.1, Rv. 2 (1993)								

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Phosphorus	<0.10		0.10	mg/L		07/08/22 1016	07/11/22 1554	NWW
Method: SM 2120 B-2011								
Color, Pt-Co (Apparent)	10		5	CU	,N		07/07/22 1905	NWW
pH at Color	8		1	S.U.			07/07/22 1905	NWW
Method: SM 4500-CN⁻ E-2011								
Cyanide	<0.010		0.010	mg/L	L3, M1a	07/19/22 1205	07/19/22 1640	SSL
Method: SM 4500-NH3 G-2011								
Nitrogen, Ammonia	<0.50		0.50	mg/L		07/13/22 1051	07/13/22 2103	SSL
Method: SM 4500-S2⁻ D-2011								
Sulfide	<0.20		0.20	mg/L			07/12/22 1955	NWW
Method: SM 4500-SO3⁻ B-2011		**Method Notes:** P1						
Sulfite	<2.0		2.0	mg/L	H1	07/15/22 1603	07/15/22 1608	NWW
Method: SM 5210 B-2011								
BOD, 5 Day	<4.17 mg/L			mg/L	BOD1	07/07/22 1710	07/12/22 1449	SZH
Method: SM 5220 D-2011								
COD	<50		50	mg/L		07/08/22 1101	07/08/22 1257	SZH
Method: SM 5310 C-2011								
Carbon, Total Organic	4.0		1.0	mg/L		07/13/22 1838	07/15/22 1918	SSL
Method: SM 5540 C-2011								
MBAS (as LAS MW 340)	<0.50		0.50	mg/L			07/07/22 1522	NWW
Method: USGS I-3765-85								
Solids, Total Suspended	8		5	mg/L		07/12/22 1528	07/12/22 1611	DKB

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	36		0.20	mg/L		07/15/22 1006	07/16/22 1628	SSL
Magnesium	12		0.20	mg/L		07/15/22 1006	07/16/22 1628	SSL
Method: SM 2340 B-2011								
Hardness, Total as CaCO3	140		0.82	mg/L		07/15/22 1006	07/16/22 1628	SSL

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8, Rv. 5.4 (1994)								
Aluminum	98		50	ug/L		07/15/22 1109	07/18/22 1926	JSW

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Metals Total by ICPMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Antimony	<0.50		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Arsenic	0.84		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Beryllium	<1.0		1.0	ug/L		07/15/22 1109	07/18/22 1926	JSW
Cadmium	<0.50		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Chromium	0.58		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Copper	<5.0		5.0	ug/L		07/15/22 1109	07/18/22 1926	JSW
Iron	200		50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Lead	<0.50		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Molybdenum	<2.0		2.0	ug/L		07/15/22 1109	07/18/22 1926	JSW
Nickel	1.9		1.0	ug/L		07/15/22 1109	07/18/22 1926	JSW
Selenium	0.52		0.50	ug/L		07/15/22 1109	07/20/22 1551	JSW
Silver	<0.10		0.10	ug/L		07/15/22 1109	07/18/22 1926	JSW
Thallium	<0.50		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Zinc	73		10	ug/L		07/15/22 1109	07/18/22 1926	JSW
Barium	48		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Cobalt	0.52		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW
Manganese	82		0.50	ug/L		07/15/22 1109	07/18/22 1926	JSW

Anions by IC	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 300.0, Rv. 2.1 (1993)								
Bromide	<0.50		0.50	mg/L		07/13/22 1801	07/13/22 2116	NWW
Chloride	25		0.50	mg/L		07/13/22 1801	07/13/22 2116	NWW
Fluoride	<0.50		0.50	mg/L		07/13/22 1801	07/13/22 2116	NWW
Nitrogen, Nitrate + Nitrite	1.1		0.15	mg/L		07/13/22 1801	07/13/22 2116	NWW
Nitrogen, Nitrate + Nitrite	0.98		0.75	mg/L		07/07/22 2003	07/08/22 1217	NWW
Sulfate	57		0.50	mg/L	M2	07/13/22 1801	07/13/22 2116	NWW

Analyses Performed by: GEL Laboratories, LLC

Radiochemistry	Result	UNC	Limit(s)	MDA	Units	Note	Prepared	Analyzed	Analyst
Method: Calculation									
Radium-226+228 Sum	2.37	+/-0.733		2.37	pCi/L		07/07/22 0000	07/18/22 0000	NXL
Method: EPA 900.0/SW846 9310									
ALPHA	1.73	+/-1.79		3	pCi/L	U	07/07/22 0000	07/14/22 0000	JE1
BETA	1.72	+/-1.63		4	pCi/L	U	07/07/22 0000	07/14/22 0000	JE1
Method: EPA 903.1 Modified									
Radium-226	0.47	+/-0.335		1	pCi/L	U	07/07/22 0000	07/18/22 0000	LXP
Method: EPA 904.0/SW846 9320 Modified									
Radium-228	1.9	+/-0.651		1	pCi/L		07/07/22 0000	07/15/22 0000	JXC

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CERTIFICATE OF ANALYSIS

L2G0040

Client Sample ID:	Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-05	**Collection Date:**	07/07/2022 9:25

Radiochemistry	Result	UNC	Limit(s)	MDA	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 905.0 Modified/DOE RP501 Rev. 1 Modified									
Strontium-90	1.36	+/-1.12		2	pCi/L	**U**	07/07/22 0000	07/15/22 0000	KP1

Uranium	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.8								
Uranium	0.000535		0.0002	mg/L		07/12/22 0000	07/13/22 0000	BAJ

Client Sample ID:	LL HG Blank -Outfall 005 (River Intake for Baseline Data)		
Sample Matrix:	Wastewater	**Collected By:**	Xavier Bullock
Lab Sample ID:	L2G0040-06	**Collection Date:**	07/07/2022 9:28

Analyses Performed by: Microbac Laboratories, Inc. - Chicagoland

Metals Total by CVAF	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 1631E								
Mercury	<0.500		0.500	ng/L		07/14/22 0851	07/15/22 1210	JNH

*Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.*

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CERTIFICATE OF ANALYSIS

L2G0040

Definitions

°C:	Degrees Celsius
A7:	Insufficient sample.
B:	Analyte found in the blank at or above the method acceptance criteria.
B1:	Target analyte is detected in the method blank at or above the reporting limit. There is no impact on the reported value.
B3:	BOD blank is above specifications. The reported result may be an overestimate.
BOD1:	BOD result estimated due to insufficient oxygen depletion.
CU:	Color Unit
H1:	Sample received outside of holding time for these analytes.
L3:	Lab control sample (LCS) recovery above upper Control Limit, analyte not detected.
M1a:	Matrix Spike recovery outside Control Limits due to sample matrix interference; biased high.
M2:	Matrix spike recovery outside Control Limits due to sample matrix interference; biased low.
mg/L:	Milligrams per Liter
MGD:	Millions Of Gallons per Day
MPN/100mL	Most Probable Number per 100 Milliliters
N:	Tentatively identified compound (TIC).
ng/L:	Nanograms per Liter
P1:	Sample as received was improperly preserved for this analyte.
pCi/L:	Picocuries per Liter
Q:	One or more quality control criteria failed.
Q10:	Analysis of acrolein and/or acrylonitrile was performed from a sample that was field preserved to pH < 2, which is less than the pH range of 4-5 specified in the test method and required for NPDES compliance per 40CFR Part 136.
Q11:	Analysis of 2-chloroethyl vinyl ether was performed from a sample that was field preserved to pH < 2 with HCl. Acid preservation is not allowed for this parameter by the test method or for NPDES compliance per 40CFR Part 136.
RL:	Reporting Limit
S.U.:	Standard Units
S2:	Surrogate recovery is below acceptance limits.
U:	Result not detected above the detection limit
ug/L:	Micrograms per Liter
ug/mL:	Micrograms per Milliliter
Y:	This analyte is not on the laboratory's current scope of accreditation.

Project Requested Certification(s)

Microbac Laboratories, Inc. - Chicagoland

E-10397	Kansas Dept Health & Env. NELAP
108202	Kentucky UST-Energy and Environment Cabinet
90147	Kentucky Wastewater Laboratory Certification Program

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

JOAN HEINSOHN
Customer Relationship Specialist
Reported: 07/25/2022 13:53

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Chain of Custody

Microbac Laboratories, Inc., Louisville

Lab Contact: JOAN HEINSOHN

Number: L2G0040

TAT 7 days

LG&E - KU ENERGY LLC.

Patty Mason
220 West Main Street
Louisville, KY 40202
Phone: (502) 627-4809
patricia.mason@lge-ku.com

Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

Client Sample ID: Outfall 001
Lab Sample ID: L2G0040-01
Matrix: Wastewater
Type: Grab

Sampled Date & Time: 7-7-22 9:40

Analysis	Method	Field Results/Comments	Hold Time
1631E Hg	EPA 1631E		14 days
200.7 Hardness CALC PKG	varies		180 days
200.8 Ag	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Al	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 As	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 B	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ba	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Be	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cd	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Co	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cr	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cu	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Fe	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Mn	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Mo	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ni	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Pb	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Sb	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Se	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Sn	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ti	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Tl	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 U	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Zn	EPA 200.8, Rv. 5.4 (1994)		180 days
BOD5 SM5210-B	SM 5210 B-2011		2 days
Bromide E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
Chloride E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
CHLORINE, TOTAL RESIDUAL-FIELD	HACH 8167	Instrument: C-14 Result: 0.02 Unit: mg/L	
CN Total SM4500-CN-E	SM 4500-CN^- E-2011		14 days
COD SM5220-D	SM 5220 D-2011		28 days

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Microbac Laboratories, Inc., Louisville

Lab Contact: JOANN EINSOHN

Number: L2G0040

LG&E - KU ENERGY LLC.

Patty Mason
220 West Main Street
Louisville, KY 40202
Phone: (502) 627-4809
patricia.mason@lge-ku.com

Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

Color True pH SM2120-B PKG	varies		2 days
E coli MPN 18hr SM9223B-Colilert	SM 9223 B (Colilert-18)-19		8 hrs
FLOW BY MEASUREMENT & CALC. - MGD	NA	Instrument: Client Result: N/A Unit: MGD Grab sample from pond	
Fluoride E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
GROSS ALPHA	*** DEFAULT SPECIFIC MI		180 days
GROSS BETA	*** DEFAULT SPECIFIC MI		180 days
HEM-OG E1664B	EPA 1664B		28 days
HOLD - SEE JOAN	NA	Change hourly labor $	365 days
MBAS SM5540-C	SM 5540 C-2011		2 days
Nitrate Nitrite E300.0 CALC	EPA 300.0, Rv. 2.1 (1993)		28 days
Nitrogen Organic E351.2 SM4500-NH3 G CALC PKG	varies		28 days
PH, FIELD	SM 4500-H+ B-2011	Instrument: P-99 Result: 7.94 Unit: SU	
Phenolics E420.4	EPA 420.4, Rv. 1 (1993)		28 days
Phos Total E365.1	EPA 365.1, Rv. 2 (1993)		28 days
RADIUM 226	*** DEFAULT SPECIFIC MI		180 days
RADIUM 228	*** DEFAULT SPECIFIC MI		180 days
Strontium-90 E905.0	*** DEFAULT SPECIFIC MI		365 days
Sulfate SO4 E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
Sulfide S2 SM4500-S2-D	SM 4500-$S2^{-}$ D-2011		7 days
Sulfite SO3 SM4500-SO3-B	SM 4500-$SO3^{-}$ B-2011		0.00 mins
SVOC - 625	EPA 625		7 days
TEMPERATURE AT PH READING, ° C - FIELD	SM 2550 B-2010	Instrument: P-99 Result: 28.7 Unit: °C	
TOC SM5310-C	SM 5310 C-2011		28 days
TSS USGS I-3765	USGS I-3765-85		7 days
VOC - 624	EPA 624.1		14 days

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Microbac Laboratories, Inc., Louisville

Lab Contact: JOAN FEINSOHN

L2G0040

LG&E - KU ENERGY LLC.

Patty Mason
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patricia.mason@lge-ku.com

Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

Container(s)	Designator	Container(s)	Designator
1L-Bottle HDPE	A	1L-Bottle Glass Amber	B
1L-Bottle Glass Amber	C	50ml-Digestion Tube HDPE	D
500ml-Bottle NM Glass Amber-Ultra C	E	1L-Bottle HDPE-HNO3	F
1L-Bottle HDPE-HNO3	G	1L-Bottle HDPE-HNO3	H
1L-Bottle HDPE-HNO3	I	1L-Bottle HDPE-HNO3	J
250ml-Bottle HDPE-HNO3	K	250ml-Bottle HDPE-HNO3	L
250ml-Bottle Glass Amber-H2SO4	M	1L-Bottle Glass Amber-H2SO4	N
250ml-Bottle HDPE-H2SO4	O	40ml-Vial Amber-H2SO4	P
40ml-Vial Amber-H2SO4	Q	120ml-Bottle LDPE-Sterile, Na2S2O3	R
40ml-Vial-HCL	S	40ml-Vial-HCL	T
40ml-Vial-HCL	U	40ml-Vial-HCL	V
250ml-Bottle HDPE-NaOH	W	250ml-Bottle HDPE-ZnAc NaOH	X

Client Sample ID: **HG LL Blank -Outfall 001**
Lab Sample ID: **L2G0040-02**
Matrix: **Wastewater**
Type: **Grab**
Sampled Date & Time: 7-7-22 9:47

Analysis	Method	Field Results/Comments	Hold Time
1631E Hg	EPA 1631E		14 days

Container(s)	Designator	Container(s)	Designator
500ml-Bottle NM Glass Amber-Ultra C	A		

Client Sample ID: **Outfall 002**
Lab Sample ID: **L2G0040-03**
Matrix: **Wastewater**
Type: **Grab**
Sampled Date & Time: 7-7-22 10:10

Analysis	Method	Field Results/Comments	Hold Time
1631E Hg	EPA 1631E		14 days
200.7 Hardness CALC PKG	varies		180 days
200.8 Ag	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Al	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 As	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 B	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ba	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Be	EPA 200.8, Rv. 5.4 (1994)		180 days

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Microbac Laboratories, Inc., Louisville

LG&E - KU ENERGY LLC.

Patty Mason
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Louisville, KY 40202
Phone: (502) 627-4809
patricia.mason@lge-ku.com

Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

200.8 Cd	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Co	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cr	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cu	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Fe	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Mn	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Mo	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ni	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Pb	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Sb	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Se	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Sn	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ti	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Tl	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 U	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Zn	EPA 200.8, Rv. 5.4 (1994)		180 days
BOD5 SM5210-B	SM 5210 B-2011		2 days
Bromide E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
Chloride E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
CHLORINE, TOTAL RESIDUAL-FIELD	HACH 8167	Instrument: Cl-14 Result: 0.01 Unit: mg/L	
CN Total SM4500-CN-E	SM 4500-CN⁻ E-2011		14 days
COD SM5220-D	SM 5220 D-2011		28 days
Color True pH SM2120-B PKG	varies		2 days
E coli MPN 18hr SM9223B-Colilert	SM 9223 B (Colilert-18)-19		8 hrs
FLOW BY MEASUREMENT & CALC. - MGD	NA	Instrument: Client Result: 8.83 Unit: MGD	
Fluoride E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
GROSS ALPHA	*** DEFAULT SPECIFIC MI		180 days
GROSS BETA	*** DEFAULT SPECIFIC MI		180 days
HEM-OG E1664B	EPA 1664B		28 days
HOLD - SEE JOAN	NA	Change hourly labor $	365 days
MBAS SM5540-C	SM 5540 C-2011		2 days
Nitrate Nitrite E300.0 CALC	EPA 300.0, Rv. 2.1 (1993)		28 days
Nitrogen Organic E351.2 SM4500-NH3 G CALC PKG	varies		28 days
PH, FIELD	SM 4500-H+ B-2011	Instrument: P-99 Result: 7.53 Unit: SU	
Phenolics E420.4	EPA 420.4, Rv. 1 (1993)		28 days
Phos Total E365.1	EPA 365.1, Rv. 2 (1993)		28 days

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Lab Contact: JOANNE INSOHN

Number L2G0040

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Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

RADIUM 226	*** DEFAULT SPECIFIC MI		180 days
RADIUM 228	*** DEFAULT SPECIFIC MI		180 days
Strontium-90 E905.0	*** DEFAULT SPECIFIC MI		365 days
Sulfate SO4 E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
Sulfide S2 SM4500-S2-D	SM 4500-$S2^{-}$ D-2011		7 days
Sulfite SO3 SM4500-SO3-B	SM 4500-$SO3^{-}$ B-2011		0.00 mins
SVOC - 625	EPA 625		7 days
TEMPERATURE AT PH READING, ° C - FIELD	SM 2550 B-2010	Instrument: P-99 Result: 31.3 Unit: °C	
TOC SM5310-C	SM 5310 C-2011		28 days
TSS USGS I-3765	USGS I-3765-85		7 days
VOC - 624	EPA 624.1		14 days

Container(s)	Designator	Container(s)	Designator
1L-Bottle HDPE	A	1L-Bottle Glass Amber	B
1L-Bottle Glass Amber	C	50ml-Digestion Tube HDPE	D
500ml-Bottle NM Glass Amber-Ultra C	E	1L-Bottle HDPE-HNO3	F
1L-Bottle HDPE-HNO3	G	1L-Bottle HDPE-HNO3	H
1L-Bottle HDPE-HNO3	I	1L-Bottle HDPE-HNO3	J
250ml-Bottle HDPE-HNO3	K	250ml-Bottle HDPE-HNO3	L
250ml-Bottle Glass Amber-H2SO4	M	1L-Bottle Glass Amber-H2SO4	N
250ml-Bottle HDPE-H2SO4	O	40ml-Vial Amber-H2SO4	P
40ml-Vial Amber-H2SO4	Q	120ml-Bottle LDPE-Sterile, Na2S2O3	R
40ml-Vial-HCL	S	40ml-Vial-HCL	T
40ml-Vial-HCL	U	40ml-Vial-HCL	V
250ml-Bottle HDPE-NaOH	W	250ml-Bottle HDPE-ZnAc NaOH	X

Client Sample ID: **HG LL Blank -Outfall 002**

Lab Sample ID: **L2G0040-04**

Matrix: **Wastewater**

Sampled Date & Time: 7-7-22 10:20

Type: **Grab**

Analysis	Method	Field Results/Comments	Hold Time
1631E Hg	EPA 1631E		14 days

Container(s)	Designator	Container(s)	Designator
500ml-Bottle NM Glass Amber-Ultra C	A		

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Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

Client Sample ID: **Outfall 005 (River Intake for Baseline Data)**

Lab Sample ID: **L2G0040-05**

Matrix: **Wastewater**

Sampled Date & Time: 7-7-22 9:25

Type: **Grab**

Analysis	Method	Field Results/Comments	Hold Time
1631E Hg	EPA 1631E		14 days
200.7 Hardness CALC PKG	varies		180 days
200.8 Ag	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Al	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 As	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 B	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ba	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Be	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cd	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Co	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cr	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Cu	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Fe	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Mn	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Mo	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ni	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Pb	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Sb	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Se	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Sn	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Ti	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Tl	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 U	EPA 200.8, Rv. 5.4 (1994)		180 days
200.8 Zn	EPA 200.8, Rv. 5.4 (1994)		180 days
BOD5 SM5210-B	SM 5210 B-2011		2 days
Bromide E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
Chloride E300.0	EPA 300.0, Rv. 2.1 (1993)		28 days
CHLORINE, TOTAL RESIDUAL-FIELD	HACH 8167	Instrument: CI-14 Result: 0.00 Unit: mg/L	
CN Total SM4500-CN-E	SM 4500-CN⁻ E-2011		14 days
COD SM5220-D	SM 5220 D-2011		28 days

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Microbac Laboratories, Inc., Louisville

Lab Contact: JOAN HEINSOHN

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Project Name: Form C - KPDES Renewal - Trimble County

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Color True pH SM2120-B PKG	varies					2 days
E coli MPN 18hr SM9223B-Colilert	SM 9223 B (Colilert-18)-19					8 hrs
FLOW BY MEASUREMENT & CALC. - MGD	NA 7-7-22 X03	Instrument: Client	Result: 45.54	Unit: MGD		
Fluoride E300.0	EPA 300.0, Rv. 2.1 (1993)					28 days
GROSS ALPHA	*** DEFAULT SPECIFIC MI					180 days
GROSS BETA	*** DEFAULT SPECIFIC MI					180 days
HEM-OG E1664B	EPA 1664B					28 days
HOLD - SEE JOAN	NA	Change hourly labor $				365 days
MBAS SM5540-C	SM 5540 C-2011					2 days
Nitrate Nitrite E300.0 CALC	EPA 300.0, Rv. 2.1 (1993)					28 days
Nitrogen Organic E351.2 SM4500-NH3 G CALC PKG	varies					28 days
PH, FIELD	SM 4500-H+ B-2011	Instrument: P-99	Result: 6.91	Unit: SU		
Phenolics E420.4	EPA 420.4, Rv. 1 (1993)					28 days
Phos Total E365.1	EPA 365.1, Rv. 2 (1993)					28 days
RADIUM 226	*** DEFAULT SPECIFIC MI					180 days
RADIUM 228	*** DEFAULT SPECIFIC MI					180 days
Strontium-90 E905.0	*** DEFAULT SPECIFIC MI					365 days
Sulfate SO4 E300.0	EPA 300.0, Rv. 2.1 (1993)					28 days
Sulfide S2 SM4500-S2-D	SM 4500-$S2^{-}$ D-2011					7 days
Sulfite SO3 SM4500-SO3-B	SM 4500-$SO3^{-}$ B-2011					0.00 mins
SVOC - 625	EPA 625					7 days
TEMPERATURE AT PH READING, ° C - FIELD	SM 2550 B-2010	Instrument: P-99	Result: 28.2	Unit: °C		
TOC SM5310-C	SM 5310 C-2011					28 days
TSS USGS I-3765	USGS I-3765-85					7 days
VOC - 624	EPA 624.1					14 days

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Microbac Laboratories, Inc., Louisville

Lab Contact: JOAN HEINSOHN

Number: **L2G0040**

LG&E - KU ENERGY LLC.

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Project Name: Form C - KPDES Renewal - Trimble County

Project/PO Number: 1104203
Tenatively Scheduled: 7/5/2022
Route: PAD - Specified Date

Container(s)	Designator	Container(s)	Designator
1L-Bottle HDPE	A	1L-Bottle Glass Amber	B
1L-Bottle Glass Amber	C	50ml-Digestion Tube HDPE	D
500ml-Bottle NM Glass Amber-Ultra C	E	1L-Bottle HDPE-HNO3	F
1L-Bottle HDPE-HNO3	G	1L-Bottle HDPE-HNO3	H
1L-Bottle HDPE-HNO3	I	1L-Bottle HDPE-HNO3	J
250ml-Bottle HDPE-HNO3	K	250ml-Bottle HDPE-HNO3	L
250ml-Bottle Glass Amber-H2SO4	M	1L-Bottle Glass Amber-H2SO4	N
250ml-Bottle HDPE-H2SO4	O	40ml-Vial Amber-H2SO4	P
40ml-Vial Amber-H2SO4	Q	120ml-Bottle LDPE-Sterile, Na2S2O3	R
40ml-Vial-HCL	S	40ml-Vial-HCL	T
40ml-Vial-HCL	U	40ml-Vial-HCL	V
250ml-Bottle HDPE-NaOH	W	250ml-Bottle HDPE-ZnAc NaOH	X

Client Sample ID: **LL HG Blank -Outfall 005 (River Intake for Baseline Data)**

Lab Sample ID: **L2G0040-06**

Matrix: **Wastewater**

Sampled Date & Time: 7-7-22 9:28

Type: **Grab**

Analysis	Method	Field Results/Comments	Hold Time
1631E Hg	EPA 1631E		14 days

Container(s)	Designator	Container(s)	Designator
500ml-Bottle NM Glass Amber-Ultra C	A		

Sampled/Relinquished by: [signature]	Date/Time: 7-7-22 12:12	Received by: [signature]
Printed Name: Xavier Bullock		Printed Name: [signature]
Relinquished by:	Date/Time:	Received by:
Printed Name:		Printed Name:
Relinquished by:	Date/Time:	Received by:
Printed Name:		Printed Name:

As Received at Laboratory: On Ice: (Yes) / No Temp: 2.4 °C Thermometer ID: L-24 Custody Seal: (Yes) / No / NA

Total Containers: 75

Microbac Laboratories may be unable to perform a portion of the requested testing in which case we will subcontract the analysis to an appropriately accredited laboratory. By signing this document you are acknowledging that you have been informed by Microbac that testing could be subcontracted and agree with this arrangement.

Notes:

Home Facility: Louisville
icing is per outfall for anlaytical cost. Labor charge per hour will vary based upon time in the field for each facility.
Mercury 1631E cost is for a Sample and a Blank

Attachment 7

DMR Analyses

Data Table

Outfall	Discharge#	Effluent Characteristic	Report Value	Permit Limit	Unit Code	Units	2021-01	2021-02	2021-03	2021-04	2021-05	2021-06	2021-07	2021-08	2021-09	2021-10	2021-11	2021-12
001	001-2	pH	Concentrations -	6.0	12	SU	#N/A	#N/A	**7.2**	#N/A	#N/A	**7.2**	#N/A	#N/A	7.9	#N/A	#N/A	7.9
001	001-2	pH	Concentrations -	9.0	12	SU	#N/A	#N/A	**7.2**	#N/A	#N/A	**7.2**	#N/A	#N/A	7.9	#N/A	#N/A	7.9
001	001-2	Total Suspended Solids	Concentrations - Monthly	30	19	mg/l	#N/A	#N/A	**7**	#N/A	#N/A	**4.0**	#N/A	#N/A	4.0	#N/A	#N/A	12
001	001-2	Total Suspended Solids	Concentrations - Daily	60	19	mg/l	#N/A	#N/A	**7**	#N/A	#N/A	**4.0**	#N/A	#N/A	4.0	#N/A	#N/A	12
001	001-2	Oil & Grease	Concentrations - Monthly	10	19	mg/l	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B
001	001-2	Oil & Grease	Concentrations - Daily	15	19	mg/l	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B
001	001-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	**6.19**	#N/A	#N/A	**6.31**	#N/A	#N/A	5.37	#N/A	#N/A	6.21
001	001-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	**6.19**	#N/A	#N/A	**6.31**	#N/A	#N/A	5.37	#N/A	#N/A	6.21
002A	002A-1	Oxidant Discharge Time	Concentrations - Daily Maximum	120	5B	Min/unit/day	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**NODI-C**	**0**	**0**
002A	002A-1	Total Residual Oxidants	Concentrations - Monthly	Report	19	mg/l	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**NODI-C**	**0**	**0**
002A	002A-1	Total Residual Oxidants	Concentrations - Daily	0.2	19	mg/l	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**NODI-C**	**0**	**0**
002A	002A-1	Flow	Loadings - Monthly	Report	03	MGD	**3.5077**	**3.4304**	**1.9903**	**3.5433**	**3.5468**	**3.5097**	**3.7358**	**3.6326**	**2.2863**	**NODI-C**	**3.1543**	**3.6594**
002A	002A-1	Flow	Loadings - Daily	Report	03	MGD	**4.03**	**3.75**	**4.19**	**3.94**	**3.68**	**3.77**	**4.31**	**3.93**	**3.9**	**NODI-C**	**3.83**	**3.98**
002A	002A-1	Free Available Chlorine	Concentrations - Monthly	0.2	19	mg/l	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-C	NODI-9	NODI-9
002A	002A-1	Free Available Chlorine	Concentrations - Daily	0.5	19	mg/l	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-C	NODI-9	NODI-9
002A	002A-4	Priority Pollutants	Concentrations - Daily Maximum	NDA	73	TU_A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NODI-9
002A	002A-4	Total Recoverable Zinc	Concentrations - Monthly	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.02
002A	002A-4	Total Recoverable Zinc	Concentrations - Daily	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.02
002A	002A-4	Total Recoverable	Concentrations - Monthly	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.002
002A	002A-4	Total Recoverable	Concentrations - Daily	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.002
002B	002B-1	Oxidant Discharge Time	Concentrations - Daily Maximum	120	5B	Min/unit/day	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
002B	002B-1	Total Residual Oxidants	Concentrations - Monthly	Report	19	mg/l	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
002B	002B-1	Total Residual Oxidants	Concentrations - Daily	0.2	19	mg/l	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
002B	002B-1	Flow	Loadings - Monthly	Report	03	MGD	**1.7994**	**1.9525**	**1.8755**	**0.4337**	**2.0052**	**2.0317**	**2.0439**	**1.9803**	**2.077**	**1.9832**	**1.959**	**2.0023**
002B	002B-1	Flow	Loadings - Daily	Report	03	MGD	**2.15**	**2.03**	**2.19**	**2.2**	**2.06**	**2.2**	**2.23**	**2.07**	**2.15**	**2.17**	**2.03**	**2.21**
002B	002B-1	Free Available Chlorine	Concentrations - Monthly	0.2	19	mg/l	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002B	002B-1	Free Available Chlorine	Concentrations - Daily	0.5	19	mg/l	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002B	002B-4	Priority Pollutants	Concentrations - Daily Maximum	NDA	73	TU_A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NODI-9
002B	002B-4	Total Recoverable Zinc	Concentrations - Monthly	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.02
002B	002B-4	Total Recoverable Zinc	Concentrations - Daily	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.02
002B	002B-4	Total Recoverable	Concentrations - Monthly	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.003
002B	002B-4	Total Recoverable	Concentrations - Daily	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.003
002_T2	002T-1	Temperature	Concentrations - Monthly Average	Report	15	°F	**66.4**	**68.2**	**64.7**	**73.8**	**80**	**84.3**	**85.8**	**90.2**	**85.8**	**77.1**	**62.4**	**59.5**
002_T2	002T-1	Temperature	Concentrations - Daily Maximum	100	15	°F	**74.5**	**72.3**	**74.5**	**78.5**	**88.8**	**89.8**	**91.6**	**94.3**	**93.6**	**87**	**71.8**	**71.6**
002_T2	002T-1	pH	Concentrations -	6.0	12	SU	**7.5**	**8.0**	**7.9**	**6.9**	**7.3**	**7.5**	**7.5**	**7.6**	**7.4**	**7.3**	**7.4**	**7.3**
002_T2	002T-1	pH	Concentrations -	9.0	12	SU	**8.0**	**8.1**	**8.1**	**8.2**	**7.8**	**8.0**	**8.3**	**7.9**	**7.7**	**7.7**	**7.9**	**7.9**
002_T2	002T-1	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	**380**	**830**	**1420**	**340**	**1930**	**930**	**690**	**720**	**2140**	**1340**	**450**	**870**
002_T2	002T-1	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	**380**	**830**	**1420**	**340**	**1930**	**930**	**690**	**720**	**2140**	**1340**	**450**	**870**
002_T2	002T-1	Total Recoverable Arsenic	Concentrations - Monthly	3.03	19	mg/l	**0.002**	**0.003**	**0.004**	**0.002**	0.002	0.002	0.003	0.002	0.002	0.003	0.002	0.003
002_T2	002T-1	Total Recoverable Arsenic	Concentrations - Daily	3.03	19	mg/l	**0.002**	**0.003**	**0.004**	**0.02**	0.002	0.002	0.003	0.002	0.002	0.003	0.002	0.003
002_T2	002T-1	Total Recoverable Iron	Concentrations - Monthly	35.1	19	mg/l	**4.36**	**6.64**	**11.2**	**5.2**	2.2	1.02	2.07	0.579	2.45	1.63	2.71	1.63
002_T2	002T-1	Total Recoverable Iron	Concentrations - Daily	35.1	19	mg/l	**4.36**	**6.64**	**11.2**	**5.2**	2.2	1.02	2.07	0.579	2.45	1.63	2.71	1.63
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	0.051	19	mg/l	*0.005*	**0.007**	**0.013**	0.005	0.021	0.013	0.013	0.021	0.027	0.023	0.005	0.023

002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	*0.005*	**0.007**	**0.013**	0.005	0.021	0.013	0.013	0.021	0.027	0.023	0.005	0.023
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	0.083	19	mg/l	*0.001*	*0.001*	*0.001*	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	*0.001*	*0.001*	*0.001*	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	1.38	19	mg/l	*0.002*	*0.002*	*0.003*	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	*0.002*	*0.002*	*0.003*	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
002_T2	002T-1	Total Recoverable Nickel	Concentrations - Monthly	7.87	19	mg/l	**0.018**	**0.024**	**0.028**	0.028	0.045	0.025	0.028	0.063	0.03	0.033	0.018	0.033
002_T2	002T-1	Total Recoverable Nickel	Concentrations - Daily	7.87	19	mg/l	**0.018**	**0.024**	**0.028**	0.028	0.045	0.025	0.028	0.063	0.03	0.033	0.018	0.033
002_T2	002T-1	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	**0.005**	*0.005*	*0.005*	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
002_T2	002T-1	Total Recoverable Silver	Concentrations - Daily	0.12	19	mg/l	**0.005**	*0.005*	*0.005*	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
002_T2	002T-1	Total Recoverable Zinc	Concentrations - Monthly	2.106	19	mg/l	**0.057**	**0.038**	**0.09**	0.022	0.056	0.028	0.027	0.063	0.049	0.044	0.021	0.044
002_T2	002T-1	Total Recoverable Zinc	Concentrations - Daily	2.106	19	mg/l	**0.057**	**0.038**	**0.09**	0.022	0.056	0.028	0.027	0.063	0.049	0.044	0.021	0.044
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	0.04	19	mg/l	*0.001*	*0.001*	*0.001*	0.001	0.001	0.004	0.003	0.001	0.001	0.001	0.001	0.001
002_T2	002T-1	Total Recoverable	Concentrations - Daily	0.04	19	mg/l	*0.001*	*0.001*	*0.001*	0.001	0.001	0.004	0.003	0.001	0.001	0.001	0.001	0.001
002_T2	002T-1	Total Recoverable Lead	Concentrations - Monthly	0.84	19	mg/l	**0.004**	**0.005**	**0.008**	0.005	0.002	0.002	0.002	0.001	0.003	0.001	0.003	0.001
002_T2	002T-1	Total Recoverable Lead	Concentrations - Daily	1.88	19	mg/l	**0.004**	**0.005**	**0.008**	0.005	0.002	0.002	0.002	0.001	0.003	0.001	0.003	0.001
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	34.3	19	mg/l	**0.006**	**0.007**	**0.013**	0.013	0.003	0.003	0.006	0.001	0.003	0.002	0.004	0.002
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	**0.006**	**0.007**	**0.013**	0.013	0.003	0.003	0.006	0.001	0.003	0.002	0.004	0.002
002_T2	002T-1	Total Recoverable Copper	Concentrations - Monthly	0.25	19	mg/l	**0.032**	**0.069**	**0.012**	0.097	0.059	0.039	0.058	0.04	0.043	0.009	0.065	0.009
002_T2	002T-1	Total Recoverable Copper	Concentrations - Daily	0.25	19	mg/l	**0.032**	**0.069**	**0.012**	0.097	0.059	0.039	0.058	0.04	0.043	0.009	0.065	0.009
002_T2	002T-1	Total Recoverable Selenium (Fish Tissue)	Concentrations - Maximum	8.6	69	mg/kg dry wt	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	1.93	19	mg/l	*0.005*	*0.005*	*0.005*	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	*0.005*	*0.005*	*0.005*	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
002_T2	002T-1	Chloride	Concentrations - Monthly	Report	19	mg/l	**134.9**	**378.3**	**624.4**	85.1	1152	534.8	293.1	1507.5	1218.7	583.2	131.6	337.8
002_T2	002T-1	Chloride	Concentrations - Daily	Report	19	mg/l	**134.9**	**378.3**	**624.4**	85.1	1152	534.8	293.1	1507.5	1218.7	583.2	131.6	337.8
002_T2	002T-1	Flow	Loadings - Monthly	Report	03	MGD	**6.4694**	**3.5775**	**6.1332**	4.9283	6.5639	6.49	6.9077	6.5955	8.2997	5.4058	6.4867	7.1284
002_T2	002T-1	Flow	Loadings - Daily	Report	03	MGD	**8.53**	**7.56**	**9.24**	6.68	7.75	8.27	12.09	8.14	8.93	7.19	7.57	8.7
002_T2	002T-1	Acute WET	Concentrations - Daily Maximum	1.00	73	TU_A	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	4.6E-05	19	mg/l	**9E-06**	*5E-06*	**2.5E-05**	0.00001	1.1E-05	3.5E-05	1.4E-05	5E-06	5E-06	5E-06	5E-06	5E-06
002_T2	002T-1	Total Recoverable	Concentrations - Daily	0.0013	19	mg/l	**9E-06**	*5E-06*	**2.5E-05**	0.00001	1.1E-05	3.5E-05	1.4E-05	5E-06	5E-06	5E-06	5E-06	5E-06
002_T3	002T3-1	Temperature	Concentrations - Monthly Average	Report	15	°F	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T3	002T3-1	Temperature	Concentrations - Daily Maximum	100	15	°F	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T3	002T3-1	pH	Concentrations -	6.0	12	SU	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T3	002T3-1	pH	Concentrations -	9.0	12	SU	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T3	002T3-1	Flow	Loadings - Monthly	Report	03	MGD	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T3	002T3-1	Flow	Loadings - Daily	Report	03	MGD	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9
002_T3	002T3-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable	Concentrations - Monthly	0.051	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable	Concentrations - Monthly	0.04	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable	Concentrations - Daily	0.04	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable	Concentrations - Monthly	34.3	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable Copper	Concentrations - Monthly	0.25	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Total Recoverable Copper	Concentrations - Daily	0.25	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9

002_T3	002T3-2	Total Recoverable Selenium (Fish Tissue)	Concentrations - Maximum	8.6	69	mg/kg dry wt	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Chloride	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Chloride	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
002_T3	002T3-2	Acute WET	Concentrations - Daily Maximum	1.00	73	TU_A	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
003	003-1	BOD_5	Concentrations - Monthly Average	30	19	mg/l	**7.0**	**29.0**	**5.0**	**9.7**	**6.0**	NODI-C	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**5.0**
003	003-1	BOD_5	Concentrations - Daily Maximum	45	19	mg/l	**7.0**	**56.0**	**5.0**	**9.7**	**6.0**	NODI-C	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**5.0**
003	003-1	Total Suspended Solids	Concentrations - Monthly	30	19	mg/l	**16**	**13**	**17**	**24**	**18**	NODI-C	**5.0**	**5.0**	**5.0**	**9.0**	**12.0**	**28.0**
003	003-1	Total Suspended Solids	Concentrations - Daily	45	19	mg/l	**16**	**13**	**17**	**27**	**18**	NODI-C	**5.0**	**5.0**	**5.0**	**9.0**	**12.0**	**28.0**
003	003-1	Flow	Loadings - Monthly	Report	03	MGD	**0.038**	**0.028**	**0.032**	**0.039**	**0.01**	NODI-C	**0.0072**	**0.0095**	**0.0065**	**0.0024**	**0.0065**	**0.0045**
003	003-1	Flow	Loadings - Daily	Report	03	MGD	**0.038**	**0.028**	**0.032**	**0.039**	**0.01**	NODI-C	**0.0072**	**0.0095**	**0.0065**	**0.0024**	**0.0065**	**0.0045**
003	003-1	Total Residual Chlorine	Concentrations -	0.2	19	mg/l	**3.5**	**1.85**	**5.52**	**3.5**	**2.44**	NODI-C	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**
004	004-1	Total Copper	Concentrations - Monthly	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C
004	004-1	Total Copper	Concentrations - Daily	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C
004	004-1	Total Iron	Concentrations - Monthly	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C
004	004-1	Total Iron	Concentrations - Daily	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C
004	004-1	Flow	Loadings - Monthly	Report	03	MGD	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C
004	004-1	Flow	Loadings - Daily	Report	03	MGD	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C
005	005-1	Temperature	Concentrations - Monthly Average	Report	15	°F	**45.5**	**38.8**	**49.4**	**63.5**	**70.1**	**78.1**	**78.4**	**81**	**75.4**	**65.3**	**60.8**	**61.2**
005	005-1	Temperature	Concentrations - Daily Maximum	Report	15	°F	**50**	**41**	**59**	**68**	**79.7**	**83.3**	**79.7**	**81.5**	**77.9**	**71.6**	**72.5**	**64.4**
005	005-1	Flow	Loadings - Monthly	Report	03	MGD	**39.5775**	**40.46**	**26.2017**	**22.7475**	**44.8325**	**44.842**	**44.84**	**44.8375**	**36.04**	**22.49**	**44.8325**	**44.88**
005	005-1	Flow	Loadings - Daily	Report	03	MGD	**45.04**	**45.02**	**44.81**	**23.29**	**44.84**	**44.85**	**44.85**	**44.86**	**45.57**	**22.67**	**44.85**	**44.92**
005	005-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	**124**	#N/A	#N/A	147.0	#N/A	#N/A	200	#N/A	#N/A	190
005	005-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	**124**	#N/A	#N/A	160.0	#N/A	#N/A	280	#N/A	#N/A	190
005	005-2	Total Recoverable Metals	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	**0.0438**	#N/A	#N/A	0.4585	#N/A	#N/A	1.495	#N/A	#N/A	1.218
005	005-2	Total Recoverable Metals	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	**0.0438**	#N/A	#N/A	0.4585	#N/A	#N/A	1.495	#N/A	#N/A	1.218
006	006-1	Total Suspended Solids	Concentrations - Monthly	30.0	19	mg/l	NODI-C	NODI-C	**4.0**	4.0	5.5	8.0	NODI-C	NODI-C	NODI-C	NODI-C	3	NODI-C
006	006-1	Total Suspended Solids	Concentrations - Daily	91.8	19	mg/l	NODI-C	NODI-C	**4.0**	6.0	7.0	8.0	NODI-C	NODI-C	NODI-C	NODI-C	3	NODI-C
006	006-1	Oil & Grease	Concentrations - Monthly	14.0	19	mg/l	NODI-C	NODI-C	NODI-B	4.5	NODI-B	NODI-B	NODI-C	NODI-C	NODI-C	NODI-C	NODI-B	NODI-C
006	006-1	Oil & Grease	Concentrations - Daily	18.8	19	mg/l	NODI-C	NODI-C	NODI-B	8.4	NODI-B	NODI-B	NODI-C	NODI-C	NODI-C	NODI-C	NODI-B	NODI-C
006	006-1	Flow	Loadings - Monthly	Report	03	MGD	NODI-C	NODI-C	**0.3751**	0.152	1.36	1.48	NODI-C	NODI-C	NODI-C	NODI-C	0.187	NODI-C
006	006-1	Flow	Loadings - Daily	Report	03	MGD	NODI-C	NODI-C	**0.383**	0.2	1.48	1.48	NODI-C	NODI-C	NODI-C	NODI-C	0.187	NODI-C
007	007-1	Total Suspended Solids	Concentrations - Monthly	30.0	19	mg/l	**4.0**	**5.0**	**6.0**	**8.0**	**18.0**	**8.0**	**5.0**	**10.0**	**8.0**	**2.0**	**21**	**2**
007	007-1	Total Suspended Solids	Concentrations - Daily	100.0	19	mg/l	**4.0**	**7.0**	**7.0**	**10.0**	**28.0**	**10.0**	**5.0**	**15.0**	**14.0**	**3.0**	**54**	**3**
007	007-1	Oil & Grease	Concentrations - Monthly	15.0	19	mg/l	NODI-B	NODI-B	NODI-B	3.8	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	2.75	NODI-B
007	007-1	Oil & Grease	Concentrations - Daily	20.0	19	mg/l	NODI-B	NODI-B	NODI-B	6.1	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	5	NODI-B
007	007-1	Total Recoverable Arsenic	Concentrations - Monthly	8	28	ug/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Total Recoverable Arsenic	Concentrations - Daily	11	28	ug/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Total Recoverable	Concentrations - Monthly	12	28	ug/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Total Recoverable	Concentrations - Daily	23	28	ug/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Flow	Loadings - Monthly	Report	03	MGD	**0.284**	**0.311**	**0.515**	**0.82**	**1.51**	**1.405**	**0.3**	**0.405**	**1.36**	**0.55**	**0.225**	**0.16**
007	007-1	Flow	Loadings - Daily	Report	03	MGD	**0.346**	**0.461**	**0.87**	**1.02**	**2**	**2**	**0.44**	**0.81**	**2.28**	**0.81**	**0.29**	**0.16**
007	007-1	Total Recoverable	Concentrations - Monthly	356	3M	ng/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Total Recoverable	Concentrations - Daily	788	3M	ng/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Nitrate/nitrite as N	Concentrations - Monthly	4.4	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
007	007-1	Nitrate/nitrite as N	Concentrations - Daily	17.0	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

008	008-1	Total Suspended Solids	Concentrations - Monthly	30.0	19	mg/l	6	15	14	4.5	5	3.5	4.5	4.5	8	15	5	11.5
008	008-1	Total Suspended Solids	Concentrations - Daily	95.4	19	mg/l	8	21	18	5	8	4	5	6	12	19	5	17
008	008-1	Oil & Grease	Concentrations - Monthly	14.3	19	mg/l	NODI-B	NODI-B	NODI-B	2.8	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B
008	008-1	Oil & Grease	Concentrations - Daily	19.1	19	mg/l	NODI-B	NODI-B	NODI-B	4.5	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B
008	008-1	Flow	Loadings - Monthly	Report	03	MGD	0.8125	0.567	2.9865	0.733	0.517	0.4235	0.8775	0.938	3.336	2.618	1.1665	0.594
008	008-1	Flow	Loadings - Daily	Report	03	MGD	0.838	0.732	3.234	0.776	0.638	0.462	1.37	1.007	5.94	3.19	1.26	0.715
009	009-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
009	009-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9

010	010-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
010	010-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
011	011-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	pH	Concentrations -	6.0	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	pH	Concentrations -	9.0	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Iron	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Iron	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9

012	012-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9
012	012-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9

Outfall	Discharge#	Effluent Characteristic	Report Value	Permit Limit	Unit Code	Units	2022-01	2022-02	2022-03	2022-04	2022-05	2022-06	2022-07	2022-08	2022-09	2022-10	2022-11	2022-12
001	001-2	pH	Concentrations -	6.0	12	SU	#N/A	#N/A	**8.7**	#N/A	#N/A	**7.2**	#N/A	#N/A		#N/A	#N/A	
001	001-2	pH	Concentrations -	9.0	12	SU	#N/A	#N/A	**8.7**	#N/A	#N/A	**7.2**	#N/A	#N/A		#N/A	#N/A	
001	001-2	Total Suspended Solids	Concentrations - Monthly	30	19	mg/l	#N/A	#N/A	**4**	#N/A	#N/A	**4**	#N/A	#N/A		#N/A	#N/A	
001	001-2	Total Suspended Solids	Concentrations - Daily	60	19	mg/l	#N/A	#N/A	**4**	#N/A	#N/A	**4**	#N/A	#N/A		#N/A	#N/A	
001	001-2	Oil & Grease	Concentrations - Monthly	10	19	mg/l	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B	#N/A	#N/A		#N/A	#N/A	
001	001-2	Oil & Grease	Concentrations - Daily	15	19	mg/l	#N/A	#N/A	NODI-B	#N/A	#N/A	NODI-B	#N/A	#N/A		#N/A	#N/A	
001	001-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	**6.21**	#N/A	#N/A	**6.01**	#N/A	#N/A		#N/A	#N/A	
001	001-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	**6.21**	#N/A	#N/A	**6.01**	#N/A	#N/A		#N/A	#N/A	
002A	002A-1	Oxidant Discharge Time	Concentrations - Daily Maximum	120	5B	Min/unit/day	**0**	**0**	**0**	**0**	**0**	**0**	**0**					
002A	002A-1	Total Residual Oxidants	Concentrations - Monthly	Report	19	mg/l	**0**	**0**	**0**	**0**	**0**	**0**	**0**					
002A	002A-1	Total Residual Oxidants	Concentrations - Daily	0.2	19	mg/l	**0**	**0**	**0**	**0**	**0**	**0**	**0**					
002A	002A-1	Flow	Loadings - Monthly	Report	03	MGD	**3.7306**	**3.7661**	**3.7623**	**3.6887**	**3.6439**	**4.0877**	**4.8519**					
002A	002A-1	Flow	Loadings - Daily	Report	03	MGD	**4.08**	**4.11**	**4.12**	**4.06**	**4.18**	**5.91**	**6**					
002A	002A-1	Free Available Chlorine	Concentrations - Monthly	0.2	19	mg/l	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002A	002A-1	Free Available Chlorine	Concentrations - Daily	0.5	19	mg/l	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002A	002A-4	Priority Pollutants	Concentrations - Daily Maximum	NDA	73	TU_A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002A	002A-4	Total Recoverable Zinc	Concentrations - Monthly	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002A	002A-4	Total Recoverable Zinc	Concentrations - Daily	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002A	002A-4	Total Recoverable	Concentrations - Monthly	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002A	002A-4	Total Recoverable	Concentrations - Daily	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002B	002B-1	Oxidant Discharge Time	Concentrations - Daily Maximum	120	5B	Min/unit/day	**0**	**0**	NODI-C	**0**	**0**	**0**	**0**					
002B	002B-1	Total Residual Oxidants	Concentrations - Monthly	Report	19	mg/l	**0**	**0**	NODI-C	**0**	**0**	**0**	**0**					
002B	002B-1	Total Residual Oxidants	Concentrations - Daily	0.2	19	mg/l	**0**	**0**	NODI-C	**0**	**0**	**0**	**0**					
002B	002B-1	Flow	Loadings - Monthly	Report	03	MGD	**2.0087**	**2.0561**	NODI-C	**2.072**	**1.9716**	**2.0347**	**2.04**					
002B	002B-1	Flow	Loadings - Daily	Report	03	MGD	**2.21**	**2.21**	NODI-C	**2.2**	**2.05**	**2.14**	**2.06**					
002B	002B-1	Free Available Chlorine	Concentrations - Monthly	0.2	19	mg/l	NODI-9	NODI-9	NODI-C	NODI-9	NODI-9	NODI-9	NODI-9					
002B	002B-1	Free Available Chlorine	Concentrations - Daily	0.5	19	mg/l	NODI-9	NODI-9	NODI-C	NODI-9	NODI-9	NODI-9	NODI-9					
002B	002B-4	Priority Pollutants	Concentrations - Daily Maximum	NDA	73	TU_A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002B	002B-4	Total Recoverable Zinc	Concentrations - Monthly	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002B	002B-4	Total Recoverable Zinc	Concentrations - Daily	0.2	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002B	002B-4	Total Recoverable	Concentrations - Monthly	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002B	002B-4	Total Recoverable	Concentrations - Daily	0.212	19	mg/l	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
002_T2	002T-1	Temperature	Concentrations - Monthly Average	Report	15	°F	**53.8**	**51.4**	**57**	**58.2**	**65.5**	**67.8**	**71**					
002_T2	002T-1	Temperature	Concentrations - Daily Maximum	100	15	°F	**59**	**57.3**	**62.3**	**64.2**	**70.8**	**73.7**	**78.2**					
002_T2	002T-1	pH	Concentrations -	6.0	12	SU	**7.3**	**8.2**	**7.6**	**7.6**	**7.7**	**7.7**	**7.8**					
002_T2	002T-1	pH	Concentrations -	9.0	12	SU	**7.8**	**8.3**	**8.3**	**8.4**	**8.1**	**8.0**	**8.3**					
002_T2	002T-1	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	**1280**	**870**	**1520**	**1010**	**860**	**2600**	**1180**					
002_T2	002T-1	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	**1280**	**870**	**1520**	**1010**	**860**	**2600**	**1180**					
002_T2	002T-1	Total Recoverable Arsenic	Concentrations - Monthly	3.03	19	mg/l	**0.004**	**0.002**	**0.007**	**0.001**	**0.002**	**0.003**	**0.002**					
002_T2	002T-1	Total Recoverable Arsenic	Concentrations - Daily	3.03	19	mg/l	**0.004**	**0.002**	**0.007**	**0.001**	**0.002**	**0.003**	**0.002**					
002_T2	002T-1	Total Recoverable Iron	Concentrations - Monthly	35.1	19	mg/l	**11.6**	**2.26**	**14.4**	**1.21**	**2.3**	**3.4**	**1.08**					
002_T2	002T-1	Total Recoverable Iron	Concentrations - Daily	35.1	19	mg/l	**11.6**	**2.26**	**14.4**	**1.21**	**2.3**	**3.4**	**1.08**					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	0.051	19	mg/l	**0.02**	**0.009**	**0.022**	**0.013**	**0.02**	**0.039**	**0.009**					

002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	**0.02**	**0.009**	**0.022**	**0.013**	**0.02**	**0.039**	**0.009**					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	0.083	19	mg/l	0.001	0.001	0.002	0.001	0.001	**0.003**	0.001					
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	0.001	0.001	0.002	0.001	0.001	**0.003**	0.001					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	1.38	19	mg/l	0.002	0.001	0.002	0.002	0.002	0.001	0.002					
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	0.002	0.001	0.002	0.002	0.002	0.001	0.002					
002_T2	002T-1	Total Recoverable Nickel	Concentrations - Monthly	7.87	19	mg/l	**0.039**	**0.017**	**0.062**	**0.013**	**0.027**	**0.04**	**0.011**					
002_T2	002T-1	Total Recoverable Nickel	Concentrations - Daily	7.87	19	mg/l	**0.039**	**0.017**	**0.062**	**0.013**	**0.027**	**0.04**	**0.011**					
002_T2	002T-1	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	0.005	0.005	0.01	0.005	0.005	0.005	0.005					
002_T2	002T-1	Total Recoverable Silver	Concentrations - Daily	0.12	19	mg/l	0.005	0.005	0.01	0.005	0.005	0.005	0.005					
002_T2	002T-1	Total Recoverable Zinc	Concentrations - Monthly	2.106	19	mg/l	**0.106**	**0.038**	**0.19**	**0.043**	**0.038**	**0.123**	**0.026**					
002_T2	002T-1	Total Recoverable Zinc	Concentrations - Daily	2.106	19	mg/l	**0.106**	**0.038**	**0.19**	**0.043**	**0.038**	**0.123**	**0.026**					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	0.04	19	mg/l	0.001	0.001	0.002	0.001	**0.001**	**0.007**	0.001					
002_T2	002T-1	Total Recoverable	Concentrations - Daily	0.04	19	mg/l	0.001	0.001	0.002	0.001	**0.001**	**0.007**	0.001					
002_T2	002T-1	Total Recoverable Lead	Concentrations - Monthly	0.84	19	mg/l	**0.01**	0.002	**0.018**	**0.001**	**0.003**	**0.003**	**0.001**					
002_T2	002T-1	Total Recoverable Lead	Concentrations - Daily	1.88	19	mg/l	**0.01**	0.002	**0.018**	**0.001**	**0.003**	**0.003**	**0.001**					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	34.3	19	mg/l	**0.009**	0.003	**0.015**	**0.007**	**0.003**	**0.006**	**0.002**					
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	**0.009**	0.003	**0.015**	**0.007**	**0.003**	**0.006**	**0.002**					
002_T2	002T-1	Total Recoverable Copper	Concentrations - Monthly	0.25	19	mg/l	**0.055**	0.03	**0.157**	**0.018**	**0.048**	**0.011**	**0.041**					
002_T2	002T-1	Total Recoverable Copper	Concentrations - Daily	0.25	19	mg/l	**0.055**	0.03	**0.157**	**0.018**	**0.048**	**0.011**	**0.041**					
002_T2	002T-1	Total Recoverable Selenium (Fish Tissue)	Concentrations - Maximum	8.6	69	mg/kg dry wt	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	1.93	19	mg/l	0.005	0.005	0.01	0.005	0.005	0.005	0.005					
002_T2	002T-1	Total Recoverable	Concentrations - Daily	Report	19	mg/l	0.005	0.005	0.01	0.005	0.005	0.005	0.005					
002_T2	002T-1	Chloride	Concentrations - Monthly	Report	19	mg/l	**507**	**404.1**	**423**	**552**	**238.9**	**1492.1**	**413**					
002_T2	002T-1	Chloride	Concentrations - Daily	Report	19	mg/l	**507**	**404.1**	**423**	**552**	**238.9**	**1492.1**	**413**					
002_T2	002T-1	Flow	Loadings - Monthly	Report	03	MGD	**7.4194**	**7.825**	**6.4242**	**8.252**	**8.1397**	**8.6797**	**9.05**					
002_T2	002T-1	Flow	Loadings - Daily	Report	03	MGD	**9.59**	**10.05**	**8.46**	**11.15**	**11.59**	**10.84**	**11.63**					
002_T2	002T-1	Acute WET	Concentrations - Daily Maximum	1.00	73	TU_A	1.0	1.0	1.0	1.0	**1.0**	1.0	1.0					
002_T2	002T-1	Total Recoverable	Concentrations - Monthly	4.6E-05	19	mg/l	**1.4E-05**	**7E-06**	**2.4E-05**	**8E-06**	**7E-06**	**0.00001**	**5E-06**					
002_T2	002T-1	Total Recoverable	Concentrations - Daily	0.0013	19	mg/l	**1.4E-05**	**7E-06**	**2.4E-05**	**8E-06**	**7E-06**	**0.00001**	**5E-06**					
002_T3	002T3-1	Temperature	Concentrations - Monthly Average	Report	15	°F	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T3	002T3-1	Temperature	Concentrations - Daily Maximum	100	15	°F	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T3	002T3-1	pH	Concentrations -	6.0	12	SU	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T3	002T3-1	pH	Concentrations -	9.0	12	SU	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T3	002T3-1	Flow	Loadings - Monthly	Report	03	MGD	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T3	002T3-1	Flow	Loadings - Daily	Report	03	MGD	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9	NODI-9					
002_T3	002T3-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable	Concentrations - Monthly	0.051	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable	Concentrations - Monthly	0.04	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable	Concentrations - Daily	0.04	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable	Concentrations - Monthly	34.3	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable Copper	Concentrations - Monthly	0.25	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable Copper	Concentrations - Daily	0.25	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Total Recoverable Selenium (Fish Tissue)	Concentrations - Maximum	8.6	69	mg/kg dry wt	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	

002_T3	002T3-2	Chloride	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Chloride	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
002_T3	002T3-2	Acute WET	Concentrations - Daily Maximum	1.00	73	TU_A	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
003	003-1	BOD_5	Concentrations - Monthly Average	30	19	mg/l	**6.0**	**6.0**	**5.2**	**4.2**	**3.0**	**3.0**	**11.0**					
003	003-1	BOD_5	Concentrations - Daily Maximum	45	19	mg/l	**6.0**	**6.0**	**5.2**	**4.2**	**3.0**	**3.0**	**11.0**					
003	003-1	Total Suspended Solids	Concentrations - Monthly	30	19	mg/l	**17**	**9**	**12**	**13**	**5**	**10**	**5.0**					
003	003-1	Total Suspended Solids	Concentrations - Daily	45	19	mg/l	**17**	**9**	**12**	**13**	**5**	**10**	**5.0**					
003	003-1	Flow	Loadings - Monthly	Report	03	MGD	**0.0085**	**0.069**	**0.007**	**0.0085**	**0.019**	**0.01**	**0.016**					
003	003-1	Flow	Loadings - Daily	Report	03	MGD	**0.0085**	**0.069**	**0.007**	**0.0085**	**0.019**	**0.01**	**0.016**					
003	003-1	Total Residual Chlorine	Concentrations -	0.2	19	mg/l	**4.04**	**0.057**	**4.35**	**5**	**3.86**	**4.12**	**5.0**					
004	004-1	Total Copper	Concentrations - Monthly	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C					
004	004-1	Total Copper	Concentrations - Daily	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C					
004	004-1	Total Iron	Concentrations - Monthly	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C					
004	004-1	Total Iron	Concentrations - Daily	1.0	19	mg/l	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C					
004	004-1	Flow	Loadings - Monthly	Report	03	MGD	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C					
004	004-1	Flow	Loadings - Daily	Report	03	MGD	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C	NODI-C					
005	005-1	Temperature	Concentrations - Monthly Average	Report	15	°F	**58.6**	**54.5**	**50.8**	**70**	**80.6**	**78.1**	**82.8**					
005	005-1	Temperature	Concentrations - Daily Maximum	Report	15	°F	**60.8**	**61.7**	**63.5**	**75.2**	**86**	**84.2**	**84.2**					
005	005-1	Flow	Loadings - Monthly	Report	03	MGD	**39.2525**	**39.7075**	**22.66**	**45.2025**	**50.515**	**45.836**	**46.6675**					
005	005-1	Flow	Loadings - Daily	Report	03	MGD	**44.89**	**44.89**	**23.29**	**46.1**	**67.29**	**47.39**	**48.31**					
005	005-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	**190**	#N/A	#N/A	**153**	#N/A	#N/A		#N/A	#N/A	
005	005-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	**250**	#N/A	#N/A	**170**	#N/A	#N/A		#N/A	#N/A	
005	005-2	Total Recoverable Metals	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	**1.018**	#N/A	#N/A	**0.4845**	#N/A	#N/A		#N/A	#N/A	
005	005-2	Total Recoverable Metals	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	**1.018**	#N/A	#N/A	**0.4845**	#N/A	#N/A		#N/A	#N/A	
006	006-1	Total Suspended Solids	Concentrations - Monthly	30.0	19	mg/l	**5**	**4**	**5.0**	**6.5**	**4.5**	**4.5**	NODI-C					
006	006-1	Total Suspended Solids	Concentrations - Daily	91.8	19	mg/l	**7**	**4**	**6.0**	**8.0**	**5.0**	**5.0**	NODI-C					
006	006-1	Oil & Grease	Concentrations - Monthly	14.0	19	mg/l	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-C					
006	006-1	Oil & Grease	Concentrations - Daily	18.8	19	mg/l	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-C					
006	006-1	Flow	Loadings - Monthly	Report	03	MGD	**0.81**	**0.81**	**1.025**	**0.7**	**0.65**	**1.13**	NODI-C					
006	006-1	Flow	Loadings - Daily	Report	03	MGD	**0.81**	**0.81**	**1.24**	**1.24**	**1.24**	**1.24**	NODI-C					
007	007-1	Total Suspended Solids	Concentrations - Monthly	30.0	19	mg/l	**6.0**	**10.0**	**9.0**	**14.0**	**3.0**	**4.0**	**4.0**					
007	007-1	Total Suspended Solids	Concentrations - Daily	100.0	19	mg/l	**7.0**	**12.0**	**11.0**	**18.0**	**5.0**	**5.0**	**4.0**					
007	007-1	Oil & Grease	Concentrations - Monthly	15.0	19	mg/l	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B					
007	007-1	Oil & Grease	Concentrations - Daily	20.0	19	mg/l	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B					
007	007-1	Flow	Loadings - Monthly	Report	03	MGD	**1.13**	**0.3**	**1.27**	**1.025**	**1.36**	**1.88**	**1.62**					
007	007-1	Flow	Loadings - Daily	Report	03	MGD	**1.24**	**0.44**	**1.73**	**1.24**	**1.48**	**2.28**	**2**					
008	008-1	Total Suspended Solids	Concentrations - Monthly	30.0	19	mg/l	**7.5**	**4.5**	**7.5**	**6.5**	**11.5**	**7.5**	**4.0**					
008	008-1	Total Suspended Solids	Concentrations - Daily	95.4	19	mg/l	**8.0**	**5.0**	**8.0**	**10**	**13.0**	**9.0**	**6.0**					
008	008-1	Oil & Grease	Concentrations - Monthly	14.3	19	mg/l	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B					
008	008-1	Oil & Grease	Concentrations - Daily	19.1	19	mg/l	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B	NODI-B					
008	008-1	Flow	Loadings - Monthly	Report	03	MGD	**0.9655**	**0.806**	**0.564**	**0.9135**	**0.8005**	**0.6645**	**0.4045**					
008	008-1	Flow	Loadings - Daily	Report	03	MGD	**1.007**	**0.842**	**0.946**	**1.007**	**0.825**	**0.773**	**0.721**					
009	009-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	

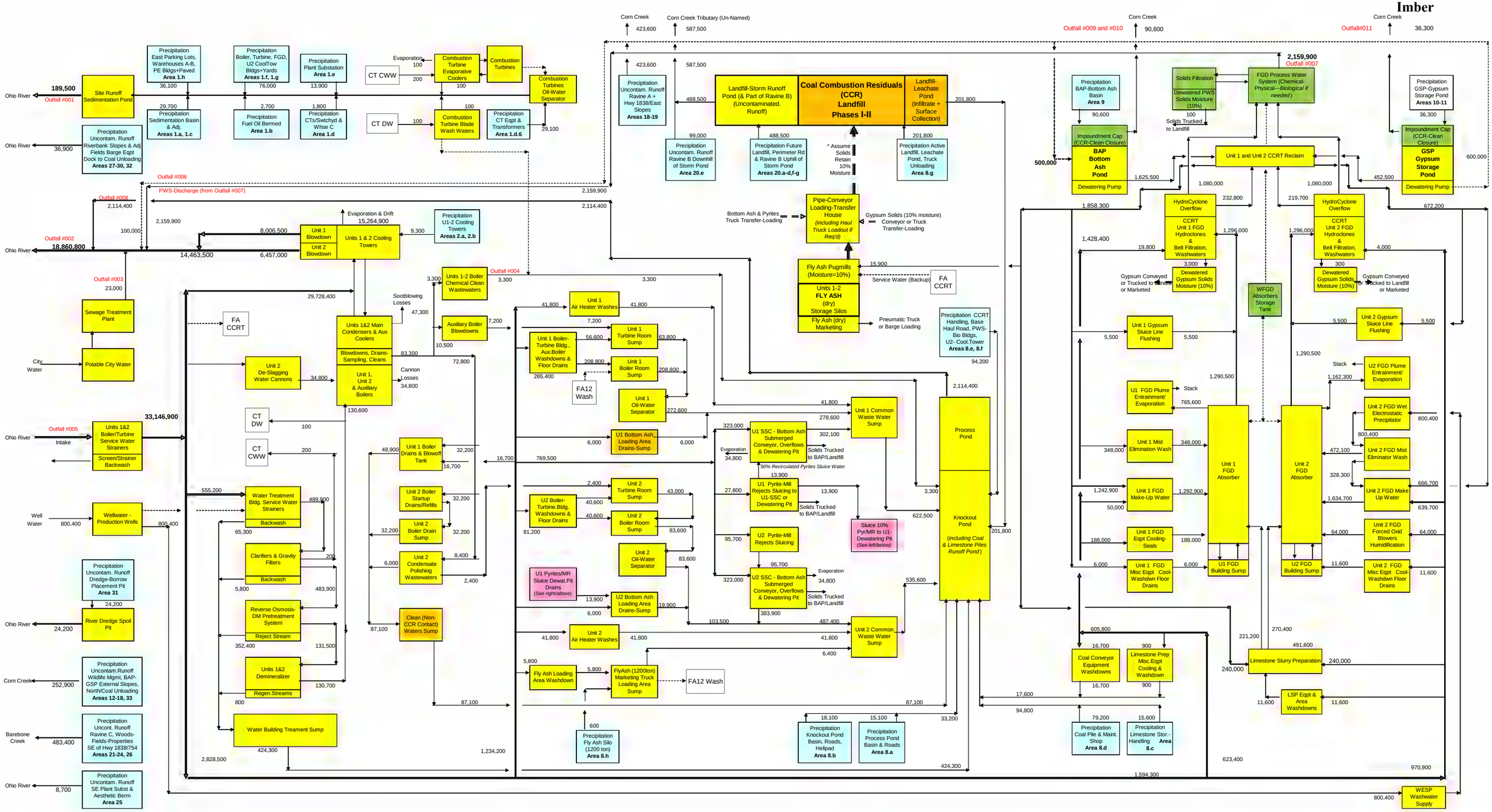
009	009-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
009	009-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
010	010-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	pH	Concentrations -	Report	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	

011	011-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
011	011-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	pH	Concentrations -	6.0	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	pH	Concentrations -	9.0	12	SU	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Suspended Solids	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Suspended Solids	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Flow	Loadings - Monthly	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Flow	Loadings - Daily	Report	03	MGD	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Hardness (as mg/l CaCO3)	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Hardness (as mg/l CaCO3)	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Arsenic	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Arsenic	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Iron	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Iron	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Nickel	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Nickel	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Silver	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Silver	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Zinc	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Zinc	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Lead	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Lead	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Copper	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable Copper	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable	Concentrations - Monthly	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	
012	012-2	Total Recoverable	Concentrations - Daily	Report	19	mg/l	#N/A	#N/A	NODI-9	#N/A	#N/A	NODI-9	#N/A	#N/A		#N/A	#N/A	

Attachment 8

Water Balance Diagrams

Diagrams for Process Operations and Average Stormwater Runoff



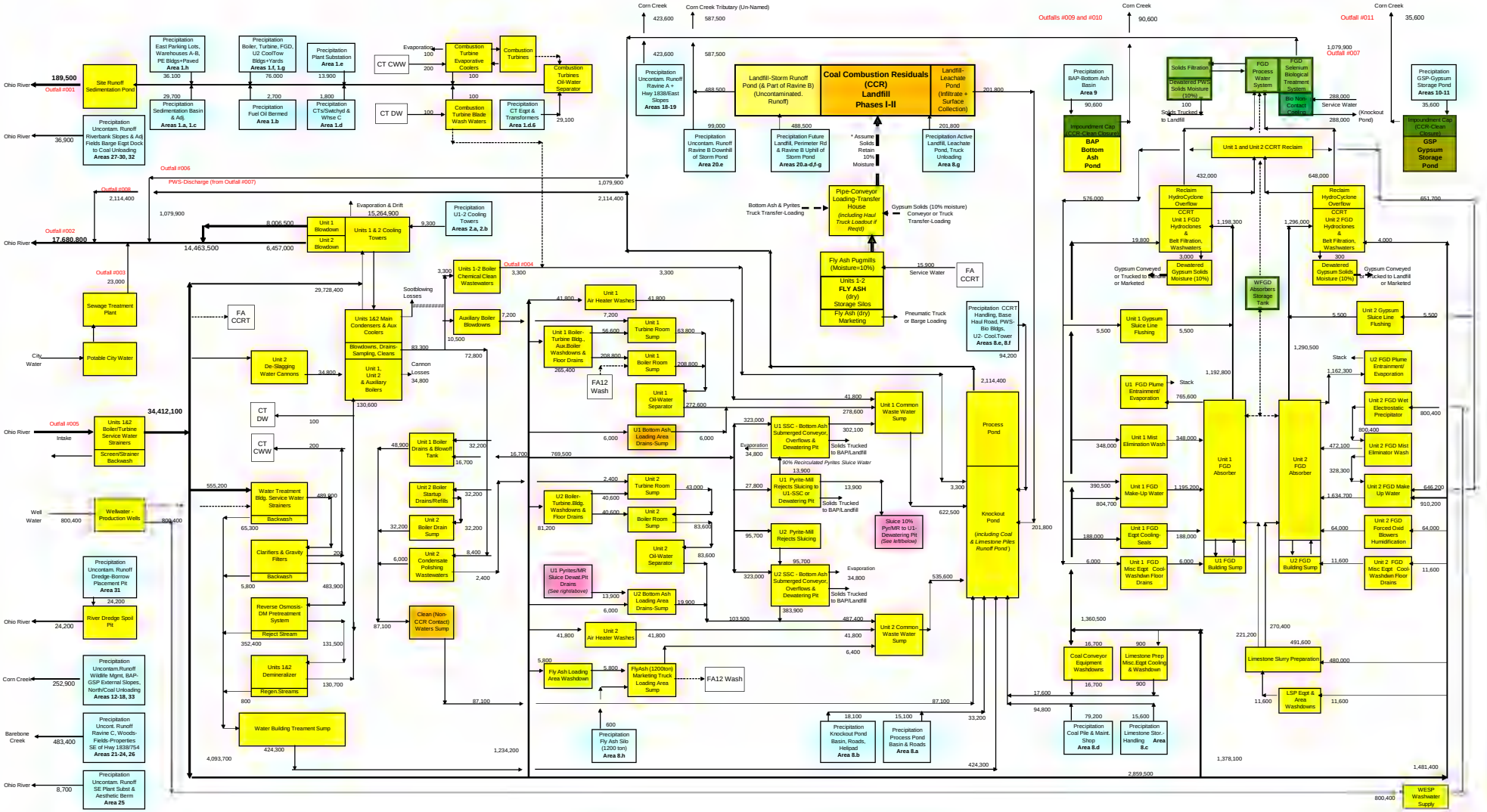
TRIMBLE COUNTY GENERATING STATION - KDPES WATER BALANCE DIAGRAM
PEAK MONTHLY AVERAGE CONDITIONS (PMAC) - PROCESS FLOWS
PWS, BAP-to-FGD & GSP: PMAC CONDITIONS + **AVERAGE** RAINFALL RUNOFF FLOWS

NOTES:
1. All Flows expressed in gallons per day, *Dashed Lines Show Alternative/Temporary Conditions*
2. Diagram Flows Include PMAC Flows and Precipitiation Runoff Flows Added
3. PMAC (Peak Monthly Average Conditions) Process Flows Are Representative of Monthly Conditions Calculated as a Daily Average = 28 days Average Operational Flows + 1 Day Maximum Flows + 1 Day Maintenance Flows

PREPARED BY: MFO
DATE: Sep 23, 2022
Revision 2022-1

LG&E a PPL company

TRIMBLE COUNTY GENERATING STATION
WATER BALANCE DIAGRAM
PMAC PROCESS CONDITIONS AND AVERAGE RAINFALL
PERMIT NO. KY 0041971



TRIMBLE COUNTY GENERATING STATION - KDPES WATER BALANCE DIAGRAM
PEAK MONTHLY AVERAGE CONDITIONS (PMAC) - PROCESS FLOWS
PWS/BIO, BAP/GSP Closed: PMAC CONDITIONS + **AVERAGE** RAINFALL RUNOFF FLOWS

NOTES:
1. All Flows expressed in gallons per day, *Dashed Lines Show Alternative/Temporary Conditions*
2. Diagram Flows Include PMAC Flows and Precipitation Runoff Flows Added
3. PMAC (Peak Monthly Average Conditions) Process Flows Are Representative of Monthly Conditions Calculated as a Daily Average = 28 days Average Operational Flows + 1 Day Maximum Flows + 1 Day Maintenance Flows

PREPARED BY: MFO
DATE: Sep 23, 2022
Revision 2022-1

LG&E a PPL company

TRIMBLE COUNTY GENERATING STATION
WATER BALANCE DIAGRAM
PMAC PROCESS CONDITIONS AND AVERAGE RAINFALL
PERMIT NO. KY 0041971

Attachment 9

Stormwater Runoff Calculations

Louisville Gas & Electric Co
TRIMBLE COUNTY GENERATING STATION

September 14, 2022

Rainfall Runoff Calculations

Data

Area	# Acres	
Coefficient for Rainfall Runoff	Cr	
10 Year 24 Hour Rainfall	**4.5**	inch/24 hours
Annual Average Rainfall	**43.56**	inch/year

Runoff Equations:

1-Day Flow:
(#Acres)(43560 ft2)/Acre)(Cr)(4.1 in/day)(1 ft/12 inch)(7.48 gal/ft3)(1MG/1000000 gal)
MGD = (# Acres) x (Cr) x **0.1221858**

30-Day Flow:
(#Acres)(43560 ft2)/Acre)(Cr)(43.56 in/yr)(1 ft/12 inch)(7.48 gal/ft3)(1MG/1000000 gal)
MGD = (# Acres) x (Cr) x **0.003240434**

Definition of Runoff Coefficients:

	Cr
Vegetated Areas (without slope considerations)	0.25
Gypsum & Loose Gravel (substations, rail beds, dam face, rock-faced slopes, etc.)	0.25
Packed Surfaces (Coal, Bare Soil, Packed Gravel [Roads, Parking Areas, etc.])	0.5
Impervious Surfaces (Pavement, Roofs, Cooling Tower Direct Precip)	0.85
Basin Surfaces	1

KPDES OUTFALLS DESCRIPTION		***Outfall Location***
001	Sedimentation Basin Stormwater Runoff Flows (plant roof & yard areas) and Combution Turbine Process Flows	Sedimentation Retention Pond
002	Unit 1-2 Cooling Tower Blowdown & FGD-Gypsum Decant Waters	Southside Eqpt Unloading Dock
003	Sanitary Wastewater (internal outfall)	SE of Main Guard Gate
004	Metal Cleaning Wastes (internal outfall)	(Frac Tanks)
005	Plant Intake	River Water Intake Structure
006	GSP-Gypsum Storage Pond Discharge to 002	Sample Structure @ Piperack Road North of Gate 3
007	PWS-Process Water System Discharge to 002	Adjacent 006 Sample Structure
008	PWS-Process Water System Discharge to 002	Sample Structure @ Warehouse C/Spare Transfromer
009	PROPOSED - South Storm Water Runoff from Future/Capped BAP-Bottom Ash Pond	Drainage Sample point at BAP Southwest Corner
010	PROPOSED - North Storm Water Runoff from Future/Capped BAP-Bottom Ash Pond	Drainage Sample point at BAP Northeast Corner
011	PROPOSED - Storm Water Runoff from Future/Clean-Closed GSP-Gypsum Storage Pond Pond	Drainage Sample point at GSP North
012	Storm Water Runoff from Undeveloped Sections of the Landfill (phases II - IV)	Drainage Sample point at Landfill Stormwater Pond
013	PROPOSED - Storm Water Runoff from Landfill Haul Road	Drainage Sample point at CCR-Haul Road Runoff Pond

Louisville Gas & Electric Co
TRIMBLE COUNTY GENERATING STATION

STORMWATER RUNOFF AREAS	*DISCHARGE TO:*

AREA	
1	**Outfall 001 - Plant Stormwater Runoff Waters and Combustion Turbine Process Flows to Ohio River**
1.a	Site Sediment Pond
1.b	Fuel Oil Storage Tanks Bermed Area
1.c	Field East of Entrance Gate 2, Adjacent CT Site and North of Aesthetic Berm
1.d	CT Site, CT Switchyard and Warehouse C Areas
1.e	Plant Transmission Substation
1.f	Units 1-2 Boiler-Turbine Building, Ammonia Tanks, Limestone Slurrp Prep Area and Adjacent Roads/Gravel Areas
1.g	Unit 2 Cooling Tower Adjacent Areas Draining to Site Runoff Sediment Pond
1.h	Warehouses A-B and Parking Areas
2	**Outfall 002 - Unit 1-2 Cooling Tower Blowdown, Gypsum Storage Pond Waters & Stormwaters to Ohio River**
2.a	Unit 1 Cooling Tower Direct Precipitation
2.b	Unit 2 Cooling Tower Direct Precipitation
	Outfalls 006 and 008 (Discharges from GSP and Area 8) Process-Stormwaters Combined into Outfall 002
3	**Outfall 003 - Sewage Treatment Plant - *Area Not Designated***
4	**Outfall 004 - Boiler Chemical Cleans - *Area Not Designated***
5	**Outfall 005 - Plant Ohio River Water Intake - *Area Not Designated***
6	**Outfall 006 - GSP-Gypsum Storage Pond Discharge - *New Construction to Close & Cap starting 2018***
	Outfall 006 is the GSP Discharge (Currently Existing) but GSP Closure/Cap Activities are scheduled in 2018 - Future Cap Stormwater Drainage will be monitored in Proposed Outfalls 010 and 011 - ***See Area 10***
7	**Outfall 007 - PWS-Process Water System Discharge of Treated FGD Wastewaters**
	- Area Not Designated
8	**Outfall 008 -Process Knockout-Surge Ponds Discharge of Plant Sumps and CCR- Contact Waters**
8.a	Process Surge Pond
8.b	Process Knock-out Pond including Heli-Pad
8.c	Limestone Pile
8.d	Coal Pile, Conveyor-Buildings, and Maintenance Garage Areas
8.e	CCRT Handling, TC-1 Cooling Tower, Lower Landfill Haul Road, Process Water System and Bio-Treatment Buildings-Areas
8.f	Unit 2 Cooling Tower Adjacent Area and Water Treatment Building Areas (including Roads & Parking) Draining to Process Knockout Pond
8.g	Landfill Leachate Pond Drainage Areas - Active Landfill Area, Internal Haul Road and Pipe-Conveyor Truck Unloading Loop Area
8.h	Fly Ash Silos (1500 ton) Truck Loading and Washdown Area
9	**PROPOSED Outfall 009 - BAP (Bottom Ash Pond CAP S) - *New Construction to Close & Cap starting 2021***
	South-Future Cap Area Drainage through Proposed Outfall 009
10	**PROPOSED Outfall 010 - BAP (Bottom Ash Pond Cap N) - *New Construction to Close & Cap starting 2021***
	North-Future Capped Area Drainage through Proposed Outfall 010
11	**PROPOSED Outfall 011 - GSP (Gypsum Storage Pond Cap) - *New Construction to Close & Cap starting 2021***
	Future Capped Area Drainage through Proposed Outfall 011
	Wildlife Management Area Drainage - Non-Point Discharge Drainage to Corn Creek and to Ohio River
12	Sloped Field Between Coal Pile and BAP (Bottom Ash Pond) SouthWest Outer Berm Slopes incl Access Road
13	Bottom Ash Pond Outer Berm Slope Area - SouthWest corner to Northwest Corner
14	Wildlife Management Area
15	Gypsum Storage Pond Outer Slopes-West/North/East
	Corn Creek Areas (West/Riverside of State Hwy 1838) Drainage to Ohio River - Non-Point Discharges
16	Northwest PlantProperty (formerly Dickey Farm)
17	Bottom Ash Pond Outer Berm Slope Area - NorthEast corner to Eastside Highpoint along State Hwy 1838
	Landfill and Ravines A-B Areas Drainage to Corn Creek to Ohio River (via culvert pipe under Hwy 1838)
18	Hillside Areas Drainage (East along State Hwy 1838) Between Ravines A-C to Corn Creek
19	Ravine A (Northmost Property) Areas to Corn Creek
20	Landfill and Ravine B Areas
	Areas Draining to Barebone Creek to Ohio River
21	Ravine C Areas including Pipe Conveyor-Haul Road Drainage Control Pond
22	Bottom Ash Pond Outer Berm Slope Area - SouthEast corner to Eastside Highpoint along State Hwy 1838
23	West Property Areas South/West of Ogden Ridge Road (formerly Middleton, Bowling Nacke Properties)
24	Wooded Hillside Areas West of State Hwy 1838 and North KY Hwy 754
25	Plant Entrance/Gate 5 (southeast field along State Hwy 1838) & Aesthetic Berm Drainage (east half)
26	Plant Property South of Highway 754 & Transmission Lines Area (Rowlett Farm)
	Riverbank Areas Draining to Ohio River
27	Southwest Plant Property (adjacent Barge Eqpt Unloading Dock) & Aesthetic Berm (west half) Runoff
28	Barged Equipment Unloader Dock Yard Area
29	Plant Yard - North/Adjacent Barge Equipment Unloading Dock
30	Riverbank South of Limestone Barge Unloader to Barge Equipment Unloader Area (adj.Area 20)
31	Borrow Area "C" (dredged silt placement) Runoff
32	Riverbank Area Between Coal Barge Unloader and LBU (Limestone Barge Unloader)
33	Riverbank Area North of Coal Barge Unloader to Wildlife Refuge Area
34	**Outfall 012 - Landfill Uncontaminated Runoff**
	- Area Not Designated
35	**Proposed Outfall 013 - Landfill Haul Road Uncontaminated Surface/Stormwater Runoff Pond Discharge**
	- Area Not Designated

TOTAL SITE PROPERTY **2598.60** **acres**

Plant Property Areas - Rainfall Runoff Calculations

September 14, 2022

(Organized by Outfalls to River, Ponds and Contributing Areas Flows)

Outfall 001 - Plant Stormwater Runoff Waters and Combustion Turbine Process Flows to Ohio River

Area #	New #	Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
		Sedimentation Basin & Adjacent Yard Runoff Area					
Area 1.a	1	Basin Surface	Basin Surface	1.0	6.37	0.7777	0.0206
	2	Grass Berm & Inner Slope Areas	Vegetated Area	0.25	6.22	0.1901	0.0050
	3	Asphalt Perimeter Roadway	Impervious Surface	0.85	0.78	0.0808	0.0021
		TOTAL AREA			13.37	1.0487	0.0278
		Fuel Oil Storage Tanks & Bermed Areas					
Area 1.b	1	Storage Tanks & Fuel Oil Pumphouse Roofs	Impervious Surface	0.85	0.05	0.0048	0.0001
	2	Parking and Fuel Oil Truck Unloading Pads	Impervious Surface	0.85	0.17	0.0174	0.0005
	3	Grass Berm & Inner Slope Areas	Vegetated Area	0.25	2.09	0.0640	0.0017
	4	Perimeter Roadway Area	Packed Surface	0.5	0.26	0.0157	0.0004
		TOTAL AREA			2.56	0.1018	0.0027
		Sedimentation Basin & Adjacent Yard Runoff Area					
Area 1.c	1	Grass Field Areas	Vegetated Area	0.25	2.40	0.0733	0.0019
		TOTAL AREA			2.40	0.0733	0.0019
		Combustion Turbines, CT-Switchyard & Warehouse C Area					
Area 1.d	1	Combustion Turbines Equipment & Auxilliary Building Roofs	Impervious Surface	0.85	2.76	0.2862	0.0076
	2	Warehouse C Roof & Transformer/Containment	Impervious Surface	0.85	1.07	0.1115	0.0030
	3	Pavement Perimeter/Access Roadways (Comb.Turbines & Warehouse C Areas)	Impervious Surface	0.85	2.72	0.2825	0.0075
	4	Gravelled CT-Switchyard & Adjacent Areas	Loose Gravel	0.25	7.03	0.2147	0.0057
	5	Grass Areas	Vegetated Area	0.25	8.82	0.2694	0.0071
	6	Bermed Transformers & Equipment	Impervious Surface	0.85	0.66	0.0685	0.0018
		TOTAL AREA			23.06	1.1643	0.0309
		Plant Substation					
Area 1.e	1	Building Roofs	Impervious Surface	0.85	0.10	0.0107	0.0003
	2	Asphalt Roadway Entrance	Impervious Surface	0.85	0.32	0.0335	0.0009
	3	Gravelled Equipment & Roadway Areas	Packed Surface	0.5	7.85	0.4796	0.0127
	4	Grassy Areas	Vegetated Area	0.25	3.92	0.1198	0.0032
		TOTAL AREA			12.20	0.6436	0.0139
		Powerhouse Roof & Adjacent Yard Runoff Areas					
Area 1.f	1	Powerhouse & Outside Equipment Roofs (include roads with/between bldgs)	Impervious Surface	0.85	14.29	1.4841	0.0394
	2	Asphalt Roadway - perimeter, parking lot & access roads (but not with/between bldgs)	Vegetated Area	0.25	5.84	0.1783	0.0047
	3	Gravel Areas	Loose Gravel	0.25	3.33	0.1016	0.0027
	4	Grass Field Areas	Vegetated Area	0.25	13.49	0.4121	0.0109
	5	Limestone-Reactant Supply & Ammonia Facility Building Roofs	Impervious Surface	0.85	1.31	0.1362	0.0036
		TOTAL AREA			38.25	2.3123	0.0613
		Unit 2 Cooling Tower (hyperbolic), Water Treatment Building Area & Yard Runoff Areas					
Area 1.g	1	Gravel Areas South/West adjacent Unit 2 Cooling Tower	Packed Surface	0.5	2.04	0.1246	0.0033
		TOTAL AREA			2.04	0.1246	0.0033
		Warehouses A-B/Construction Office-Shops Buildings Area					
Area 1.h	1	Building Roofs	Impervious Surface	0.85	2.27	0.2355	0.0062
	2	Asphalt Roadway & Parking Areas	Impervious Surface	0.85	6.63	0.6890	0.0183
	3	Gravel Parking Areas	Packed Surface	0.5	7.15	0.4371	0.0116
	4	Sewage Treatment Plant (i.e., STP Building Roof)	Impervious Surface	0.85	0.02	0.0019	0.0001
		TOTAL AREA			16.07	1.3634	0.0362

Outfall 002 - Unit 1-2 Cooling Tower Blowdown, Gypsum Storage Pond Waters & Stormwaters to Ohio River

Area #	Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
	Unit 1 Cooling Tower Direct Precipitation					
Area 2.a	Unit 1 Cooling Tower Roof	Impervious Surface	0.85	0.96	0.0994	0.0026
	Unit 2 Cooling Tower Direct Precipitation					
Area 2.b	Unit 2 (hyperbolic) Basin Footprint	Impervious Surface	0.85	2.45	0.2544	0.0067

PROPOSED Outfall 008 -Process Knockout-Surge Ponds Discharge of Plant Sumps & CCR-Contact Waters to Outfall 002/Ohio River

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
		Process Surge Pond					
Area 8.a	1	Basin Surface	Basin Surface	1.0	4.09	0.4997	0.0133
	2	Asphalt Perimeter Roadway (excluding Sed.Pond perimeter)	Impervious Surface	0.85	0.44	0.0459	0.0012
	3	Inner Slopes (vegetated and exposed/deposited solids)	Loose Gravel	0.25	0.82	0.0251	0.0007
		TOTAL AREA			5.35	0.5707	0.0151
		Process Knock-out Pond Area including Heli-Pad					
Area 8.b	1	Basin Surface	Basin Surface	1.0	4.62	0.5646	0.0150
	2	Inner Slopes including Helipad concrete	Packed Surface	0.5	1.42	0.0870	0.0023
		Grass Yard Area	Vegetated Area	0.25	0.00	0.0000	0.0000
	3	Asphalt Roadway	Impervious Surface	0.85	0.30	0.0312	0.0008
		TOTAL AREA			6.35	0.6828	0.0181
		Limestone Pile & Handling Area					
Area 8.c	1	Outside Limestone Pile Storage	Loose Gravel	0.25	1.33	0.0406	0.0011
	2	Building Roofs	Impervious Surface	0.85	1.36	0.1416	0.0038
	3	Asphalt Roadway	Impervious Surface	0.85	0.82	0.0855	0.0023
	4	Gravel Roadway Areas	Packed Surface	0.5	1.57	0.0958	0.0025
	5	Gravel Field Areas	Loose Gravel	0.25	2.16	0.0659	0.0017
	6	Grass Areas	Vegetated Area	0.25	5.16	0.1575	0.0042
		TOTAL AREA			12.40	0.5869	0.0156
		Coal Pile, Coal Handling and Material Handling Maintenance Area					
Area 8.d	1	Coal Pile Storage	Packed Surface	0.5	42.21	2.5788	0.0684
	2	Building Roofs	Impervious Surface	0.85	1.63	0.1696	0.0045
	3	Materials Handling Maintenance Area (gravel)	Packed Surface	0.5	0.76	0.0463	0.0012
	4	Roof of Materials Handling Maintenance Building	Impervious Surface	0.85	0.12	0.0125	0.0003
	5	Asphalt Perimeter Roadway	Impervious Surface	0.85	1.44	0.1496	0.0040
	6	Gravel Perimeter Roadway	Packed Surface	0.5	0.48	0.0295	0.0008
		TOTAL AREA			46.65	2.9863	0.0792
		CCRT Handling, TC-1 Cooling Tower, Lower Landfill Haul Road, Process Water System and Bio-Treatment Buildings-Areas					
Area 8.e		*Cooling Tower Structure ---SEE Runoff Area 2.a (CT excluded from Area 8.e)*					
	1	CCRT Ash/Gypsum Buildings & Paved Roads	Impervious Surface	0.85	7.82	0.8121	0.0215
	2	Gravel-Fields Adjacent CCRT Area	Packed Surface	0.5	5.91	0.3612	0.0096
	3	PWS (Phys-Chem-Bio System) Buildings & Paved Roads	Impervious Surface	0.85	5.01	0.5202	0.0138
	4	Pavement - CCRT-PWS-Piperack Roadways, around Unit 1 cooling tower/chemical unloading areas and Landfill Haul Ramp Road on BAP External South Slopes	Impervious Surface	0.85	4.52	0.4697	0.0125
	5	Grass & Fields Adjacent Unit 1 Cooling Tower and BAP Southern Slope Areas	Vegetated Area	0.25	21.68	0.6622	0.0176
	6	Landfill Haul Road West of Hwy 1838 (Bermed Draining down/back to 8.e areas) Paved Road Area	Impervious Surface	0.85	1.21	0.1255	0.0033
		TOTAL AREA			46.15	2.9509	0.0783
		Unit 2 Cooling Tower Adjacent & Water Treatment Areas Draining to Process Knockout Pond					
Area 8.f	1	Water Treatment Building Roofs and Pavement including Unit 2 cooling tower/chemical unloading area	Impervious Surface	0.85	2.85	0.2955	0.0078
	2	Gravel Areas North & East adjacent Unit 2 Cooling Tower	Packed Surface	0.5	4.09	0.2497	0.0066
		TOTAL AREA			6.93	0.5452	0.0145
		Landfill Leachate Pond Drainage Areas - Active Landfill Area, Internal Haul Road and Pipe-Conveyor Truck Unloading Loop Area					
Area 8.g	1	Pond Surface	Basin Surface	1.00	1.28	0.1560	0.0041
	2	Pond Inner Berm and Drainage Channel Areas to Active Landfill Area	Vegetated Area	0.25	0.80	0.0245	0.0006
	3	Active Landfill	Impervious Surface	0.85	68.24	7.0869	0.1879
	4	Pipe-Conveyor Truck Unloading Area & Turnaround Loop	Impervious Surface	0.85	3.30	0.3428	0.0091
		TOTAL AREA			73.62	7.6102	0.2018
		Fly Ash Silos (1500 ton) Truck Loading and Washdown Area					
Area 8.h		Fly Ash Silos & Handling Area bermed/sumped drainage	Impervious Surface	0.85	0.23	0.0244	0.0006
		TOTAL AREA			0.23	0.0244	0.0006

Bottom Ash Pond (BAP) - CLOSED/CAPPED

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
PROPOSED Outfall 009 - BAP South- New Construction to Close & Cap (Started in 2021) Stormwater Runoff to Corn Creek/Ohio River							
Area 9		**BAP Southern Half Closed/Capped Bottom Ash & Fly Ash Treatment Basin (BAP-ATB) Stormwater Runoff**					
	a	BAP Cap	Vegetated Area	0.25	42.64	1.3023	0.0345
	b	Perimeter Runoff Drainage Channel (Both Vegetated & Rip-Rap)	Vegetated Area	0.25	5.81	0.1774	0.0047
	c	Perimeter Paved Road (full roadway area)	Impervious Surface	0.85	2.06	0.2135	0.0057
		TOTAL AREA			50.50	1.6933	0.0449
PROPOSED Outfall 010 - BAP North- New Construction to Close & Cap (Starting in 2021) Stormwater Runoff to Corn Creek/Ohio River							
Area 10		**BAP Northern Half Closed/Capped Bottom Ash & Fly Ash Treatment Basin (BAP-ATB) Stormwater Runoff**					
	a	BAP Cap	Vegetated Area	0.25	43.36	1.3244	0.0351
	b	Perimeter Runoff Drainage Channel (Both Vegetated & Rip-Rap)	Vegetated Area	0.25	5.91	0.1804	0.0048
	c	Perimeter Paved Road (full roadway area)	Impervious Surface	0.85	2.09	0.2171	0.0058
		TOTAL AREA			51.35	1.7219	0.0457

Gypsum Storage Pond (GSP) - CLEAN-CLOSED

PROPOSED Outfall 011 - GSP (Gypsum Storage Pond Cap/West) - New Construction to Close & Cap starting 2021

FUTURE Conditions Starting in 2019

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
Area 11		**GSP-Western Half Closed/Capped Area Stormwater Runoff**					
	a	GSP Cap	Vegetated Area	0.25	30.78	0.9402	0.0249
	b	Perimeter Runoff Drainage Channel (Both Vegetated & Rip-Rap)	Vegetated Area	0.25	6.91	0.2112	0.0056
	c	Perimeter Paved Road (full roadway area)	Impervious Surface	0.85	2.10	0.2179	0.0058
		TOTAL AREA			39.79	1.3693	0.0363

Wildlife Management Area Drainage - Non-Point Discharge Drainage to Corn Creek and to Ohio River

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
Area 12		**Upland Yard Adjacent Wildlife Refuge Area & Coal Pile & BAP-ATB**					
	a	Grass-Vegetated Areas	Vegetated Area	0.25	6.68	0.2042	0.0054
	b	Gravel Roadway	Packed Surface	0.5	0.11	0.0068	0.0002
	c	Asphalt Roadway	Impervious Surface	0.85	0.28	0.0296	0.0008
		TOTAL AREA			7.08	0.2406	0.0064
Area 13		**West (riverside) External Slopes of Ash Treatment Basin (BAP-ATB)**					
	a	Grass-Vegetated Areas	Vegetated Area	0.25	9.30	0.2841	0.0075
	b	Asphalt Roadway	Impervious Surface	0.85	0.07	0.0073	0.0002
		TOTAL AREA			9.37	0.2841	0.0075
Area 14		**Wildlife Management Area (Nature Preserve)**					
		Grass-Vegetated Areas	Vegetated Area	0.25	132.19	4.0379	0.1071
		TOTAL AREA			132.19	4.0379	0.1071
Area 15		**North & West External Slopes of Gypsum Storage Basin**					
	a	Grass-Vegetated Areas	Vegetated Area	0.25	10.67	0.3260	0.0086
	b	Gravel Roadway	Packed Surface	0.5	0.25	0.0155	0.0004
		TOTAL AREA			10.93	0.3415	0.0091

Corn Creek Areas (West/Riverside of State Hwy 1838) Drainage to Ohio River - Non-Point Discharges

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
		Northwest PlantProperty (including former Dickey Farm)					
Area 16	a	Grass-Vegetated Areas	Vegetated Area	0.25	99.26	3.0320	0.0804
	b	Gravel Roadway (interior)	Packed Surface	0.5	0.87	0.0529	0.0014
	c	Contruction Ponds	Basin Surface	1.0	0.84	0.1030	0.0027
	d	Concrete Bridge	Impervious Surface	0.85	0.13	0.0130	0.0003
		TOTAL AREA			101.09	3.2009	0.0849
		Bottom Ash Pond Outer Berm Slope Area - NorthEast corner to Eastside Highpoint along State Hwy 1838					
Area 17		Grass-Vegetated Areas		0.25	4.45	0.1358	0.0036
		TOTAL AREA			4.45	0.1358	0.0036

Landfill and Ravines A-B Areas Drainage to Corn Creek to Ohio River (via culvert pipe under Hwy 1838)

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
		Hillside Areas Drainage (East along State Hwy 1838) Between Ravines A-C to Corn Creek					
Area 18		Fields/Woods West along Hwy 1838 Between Ravine A-C Areas	Vegetated Area	0.25	39.83	1.2166	0.0323
		TOTAL AREA			39.83	1.2166	0.0323
		Ravine A (Northmost Property) Areas to Corn Creek					
Area 19	a	Fields and Wooded Areas in Ravine A Areas	Vegetated Area	0.25	466.52	14.2505	0.3779
	b	Middleton-North Property Fields & Woods	Vegetated Area	0.25	16.51	0.5043	0.0134
		TOTAL AREA			483.03	14.7549	0.3913
		Landfill and Ravine B Areas to Corn Creek					
Area 20	a.	Landfill Stormwater Runoff Pond	Basin Surface	1	2.81	0.3431	0.0091
	b	Landfill Stormwater Runoff Pond Flow Inlet Area	Packed Surface	0.5	0.59	0.0363	0.0010
	c	Landfill Area Stormwater Perimeter Drainage Channel	Packed Surface	0.5	137.29	8.3874	0.2224
	d.	Fields/Wooded Areas Excluded from Landfill and Haul Road Areas	Vegetated Area	0.25	408.77	12.4865	0.3311
	e	LG&E Property - Tract 4	Vegetated Area	0.25	0.82	0.0251	0.0007
	f	Fields/Wooded Areas Southeast of Ogden Ridge Cemetary Areas	Vegetated Area	0.25	8.40	0.2567	0.0068
		TOTAL AREA			558.69	0.3431	0.0091

Areas Draining to Barebone Creek to Ohio River

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
		Ravine C and Wooded Hillside Areas East of Highway 1838 (areas draining to Barebone Creek)					
Area 21	a	Ravine C Fields/Woods Excluded from Landfill Haul Road/Pond	Vegetated Area	0.25	130.17	3.9762	0.1055
	b	Ravine C Area Landfill Haul Road	Packed Surface	0.5	3.61	0.2204	0.0058
	c	Ravine C Area Between Haul Road-Runoff Pond Areas and Draining into Runoff Pond	Packed Surface	0.5	3.83	0.2339	0.0062
	d	Ravine C Area Landfill Haul Road Drainage Pond	Basin Surface	1	0.28	0.0344	0.0009
		TOTAL AREA			137.89	3.9762	0.1055
		Bottom Ash Pond Outer Berm Slope Area - SouthEast corner to Eastside Highpoint along State Hwy 1838					
Area 22		Grass-Vegetated Areas	Vegetated Area	0.25	0.46	0.0139	0.0004
		TOTAL AREA			0.46	0.0139	0.0004
		Southeast Ogden Ridge Road Properties Fields/Woods (areas draining to Barebone Creek)					
Area 23	a	Middleton-South Property Fields & Woods	Vegetated Area	0.25	89.29	2.7276	0.0723
	b	Bowling Property	Vegetated Area	0.25	23.08	0.7049	0.0187
	c	Nacke Property Fields & Woods	Vegetated Area	0.25	3.00	0.0917	0.0024
		TOTAL AREA			115.37	3.5242	0.0935
		Wooded Hillside Areas Adjacent Ravine C and East of Highway 1838 (areas draining to Barebone Creek)					
Area 24		Fields/Woods adjacent Ravine C extending to Hwy 754	Vegetated Area	0.25	272.29	8.3175	0.2206
		TOTAL AREA			272.29	8.3175	0.2206
		Plant Entrance (southeast field) & Aesthetic Berm Drainage (east half)					
Area 25	a	Berm/Grass Areas west of Highway 1838 & north of Highway 754	Vegetated Area	0.25	10.44	0.3189	0.0085
	b	Gravel Road Area (Interior)	Packed Surface	0.5	0.15	0.0095	0.0003
		TOTAL AREA			10.59	0.3283	0.0087
		Plant Property South of Highway 754 & Transmission Lines Area (Rowlett Farm)					
Area 26	a	Grass-Vegetated Areas	Vegetated Area	0.25	54.88	1.6765	0.0445
	b	Gravel Areas	Loose Gravel	0.25	6.27	0.1914	0.0051
		TOTAL AREA			61.15	1.8679	0.0495

Riverbank Areas Draining to Ohio River

Area #		Source	Runoff Description	Cr	# Acres	1-Day Max (MGD)	Daily (Annual Average) (MGD)
		Southwest Plant Property (adjacent Barge Eqpt Unloading Dock) & Aesthetic Berm (west half) Runoff					
Area 27	a	a. Grass-Vegetated Areas (including riverbank)	Vegetated Area	0.25	18.34	0.5602	0.0149
	b	b. Asphalt Roadway	Impervious Surface	0.85	0.21	0.0214	0.0006
		TOTAL AREA			18.55	0.5817	0.0154
		Barged Equipment Unloader Dock Yard Area					
Area 28		Gravel Yard Area	Packed Surface	0.5	0.32	0.0193	0.0005
		TOTAL AREA			0.32	0.0193	0.0005
		Plant Yard - North/Adjacent Barge Equipment Unloading Dock					
Area 29	a	Grass Area & External Slopes of Sediment Pond (Area 12)	Vegetated Area	0.25	6.97	0.2130	0.0056
	b	Barge Dock Access Area (gravel)	Packed Surface	0.5	0.96	0.0584	0.0015
	c	Asphalt Roadway	Impervious Surface	0.85	0.16	0.0169	0.0004
		TOTAL AREA			8.09	0.2882	0.0076
		Riverbank South of Limestone Barge Unloader to Barge Equipment Unloader Area (adj.Area 20)					
Area 30	a	Grass-Vegetated Areas	Impervious Surface	0.85	2.59	0.2688	0.0071
	b	Gravel Roadway	Packed Surface	0.5	1.56	0.0955	0.0025
	c	TOTAL AREA			4.15	0.3643	0.0097
		Borrow Area "C" (dredged silt placement) Pit					
Area 31	a	Borrow Area and Internal Slopes	Vegetated Area	0.25	25.97	0.7933	0.0210
	b	Perimeter Gravel Roadway (full road area, inward draining)	Packed Surface	0.5	1.97	0.1206	0.0032
		TOTAL AREA			27.94	0.9139	0.0242
		Riverbank Area South of Coal Barge Unloader to LBU					
Area 32	a	Grass-Vegetated Areas	Vegetated Area	0.25	9.02	0.2756	0.0073
	b	Building Roof	Impervious Surface	0.85	0.37	0.0381	0.0010
	c	Gravel Roadway	Packed Surface	0.5	0.43	0.0265	0.0007
	d	Asphalt Roadway	Impervious Surface	0.85	0.46	0.0475	0.0013
		TOTAL AREA			10.28	0.3876	0.0090
		Riverbank Area North of Coal Barge Unloader to Wildlife Refuge Area					
Area 33	a	Grass-Vegetated Areas	Vegetated Area	0.25	132.19	4.0378	0.1071
		Gravel Roadway	Packed Surface	0.5	0.00	0.0000	0.0000
		TOTAL AREA			132.19	4.0378	0.1071

TOTAL SITE PROPERTY	2598.60	acres

Revisions

0 150' 300' 600'
APPROX. SCALE: 1"=300'
STRUCTURES NOT TO SCALE

N

16 CORN CREEK 15 11 CLEAN-CLOSED GYPSUM STORAGE POND 17 10 CLOSE-CAPPED BOTTOM ASH POND 14 WILDLIFE MANAGEMENT AREA 18 9 13 OHIO RIVER 22 12 33 COAL UNLOADER KPDES OUTFALL #005 RIVER INTAKE 32 2.a COALYARD 8.d 2.b 31 8.b 8.c KNOCKOUT POND 100 TON FLYASH LOADING SYSTEM DREDGE MATERIAL AREA DRAIN (PREVIOUS OUTFALL) LIMESTONE BARGE UNLOADER 30 GYPSUM BARGE LOADOUT 1.a SEDIMENT RETENTION BASIN KPDES OUTFALL #001 29 28 BARGE EQUIPMENT UNLOADING DOCK 27 KPDES OUTFALL #002 TO OHIO RIVER 1.b FUEL OIL STORAGE 1.d CT SUBSTATION 1.e PLANT SUBSTATION 1.c GATE 2 KY 754 25 GATE 5 26 ROWLETT PROPERTY (LG&E) BAREBONE CREEK 8.e.e CCR-PIPE CONVEYOR AND HAUL ROAD 21.a 21.c 21.d CCR-HAUL ROAD RUNOFF POND 21.b 8.e UNIT 1 COOLING TOWER PWS BIO BLDG 8.f UCRT FLY-ASH SILOS UNIT 2 COOLING TOWER LIMESTONE PILE 1.g CT WATER TANK GATE 4 PWS-PHYSICHEM BLDG KY 1838 GATE 1 PARKING UNIT 2 UNIT 1 GATE 7 PROCESS POND 8.a AMMONIA FACILITY 1.f 8.h PARKING 1.h PARKING GUARD HOUSE GATE 3 24 RAVINE C RAVINE B 20.e 19.a RAVINE A 19.b MIDDLETON NORTH PROPERTY (LG&E) OUTFALL 012 LANDFILL STORMWATER POND LANDFILL LEACHATE POND 20.a 20.b 8.g.1 8.g.2 20.d LANDFILL PHASE I 8.g.3 20.b LANDFILL PHASE II 20.c ACCESS ROAD 20.b 20.c LANDFILL PHASE III-IV 20.d 8.g.4 CCR-PIPE CONVEYOR TRUCK UNLOADING AREA 20.d 20.f LG&E PROPERTY (TRACT 4) 20.g 23.a MIDDLETON SOUTH PROPERTY (LG&E) 23.c NACKE PROPERTY (LG&E) 23.b BOWLING PROPERTY (LG&E)

STORMWATER RUNOFF AREA DESCRIPTION	COEFFICIENT OF RUNOFF
- VEGETATED - WOODS & GRASS AREAS	0.25
- UNCOMPACTED GRAVEL/LIMESTONE & GYPSUM	0.25
- COMPACTED GRAVEL, COALPILE, TRAFFIC AREAS	0.50
- IMPERVIOUS PAVEMENT, ROOFS, COOLING TOWER	0.85
- IMPOUNDMENT BASIN SURFACES	1.0

LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS.

- CEMETERY
- EMERGENCY RESPONSE EQUIPMENT
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- VALVE
- WELL (PRODUCTION, MONITORING)
- ABOVEGROUND FUEL OIL SUPPLY
- DRAINAGE FLOW
- OVERLAND FLOW
- PROCESS WATER PIPELINE / DITCH
- SPILL-FLOW PATH BY SYMBOL COLOR
- STORM SEWER
- SECONDARY CONTAINMENT
- OIL-WATER SEPARATOR
- CATCH BASIN
- RR TRACKS
- PLANT PROPERTY BOUNDARY

DOTTED OR DASHED = UNDERGROUND DOUBLE LINES = GENERAL FLOW DIRECTION
TANKS/EQUIPMENT SPILL DIRECTIONS INTO DRAINS WHERE SYMBOL OVERLAPS LINES (e.g.,SEWERS etc.)

DIGITAL ORTHO IMAGERY PROVIDED BY: AGE Engineers Inc., DATED August 2016

Location and Plant: TRIMBLE CO. COMMON		LG&E/KU	Drawn: Michael Suarez
Scale: 1"=600'	Contract No. n/a		Checked: 05-15-17
Engineering discipline: Environmental	Drawing type: MISC.		Approved: Megan Mathews
Title: KPDES STORMWATER – LG&E TRIMBLE CO. STATION RUNOFF AREAS IDENTIFICATIONS TOTAL SITE AREAS			Released for: SUBMITTAL
			Alternate Drawing No:
Originator: ENVIRONMENTAL AFFAIRS	Job or Project No:	Drawing No: TCO-KPDES	

DWG Version.2.0

Revisions

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS.

LEGEND

- CEMETERY
- EMERGENCY RESPONSE EQUIPMENT
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- VALVE
- WELL (PRODUCTION, MONITORING)
- ABOVEGROUND FUEL OIL SUPPLY
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- STORM SEWER
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TANKS/EQUIPMENT SPILL DIRECTIONS INTO DRAINS WHERE SYMBOL OVERLAPS LINES (e.g.,SEWERS etc.)

STORMWATER RUNOFF AREA DESCRIPTION	COEFFICIENT OF RUNOFF
- VEGETATED - WOODS & GRASS AREAS	0.25
- UNCOMPACTED GRAVEL/LIMESTONE & GYPSUM	0.25
- COMPACTED GRAVEL, COALPILE, TRAFFIC AREAS	0.50
- IMPERVIOUS PAVEMENT, ROOFS, COOLING TOWER	0.85
- IMPOUNDMENT BASIN SURFACES	1.0

DIGITAL ORTHO IMAGERY PROVIDED BY: AGE Engineers Inc., DATED August, 2016

Location and Unit:	TRIMBLE CO. COMMON
Scale:	1"=200'
Computer No.	n/a
Engineering discipline:	Environmental
Drawing type:	MISC
Drawn:	Kyle Mahoney
Checked:	05-05-22
Approved:	-
Released for:	SUBMITTAL
Alternate Drawing No:	

Title
KPDES STORMWATER – LG&E TRIMBLE CO. STATION
RUNOFF AREAS IDENTIFICATIONS
MAIN PLANT – UNITS AREAS

Originator:	ENVIRONMENTAL AFFAIRS
Job or Project No:	
Drawing No:	TCO-KPDES

BMS Version 2.0

DISCHARGE TO RAVINE STREAM (TO CORN CREEK)

LANDFILL STORMWATER POND

LANDFILL LEACHATE POND

LANDFILL PHASE I

LANDFILL PONDS ACCESS ROAD

LANDFILL PHASE II-IV

CCR-PIPE CONVEYOR TRUCK UNLOADING AREA

LG&E PROPERTY (TRACT 4)

CCR PIPE CONVEYOR / HAUL ROAD

CCR HAUL ROAD RUNOFF POND (DISCHARGE TO RAVINE STREAM TO CORN CREEK)

KY 1638

LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS.

- CEMETERY
- EMERGENCY RESPONSE EQUIPMENT
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- SANITARY SEWER MANHOLE
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- IMPOUNDMENT BASIN SURFACES	1.0

DIGITAL ORTHO IMAGERY PROVIDED BY: AGE Engineers Inc.. DATED August, 2016

Revisions

Location and Unit: TRIMBLE CO. COMMON
Scale: 1"=200
Contract No.: n/a
Engineering discipline: Environmental
Drawing type: MISC.
Drawn: Michael Imber
Checked: 05-18-17
Approved: Megan Madison
Released for: SUBMITTAL
Alternate Drawing No.:

Title
KPDES STORMWATER – LG&E TRIMBLE CO. STATION RUNOFF AREAS IDENTIFICATIONS LANDFILL – HAUL ROAD AREAS

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No.:
Drawing No.: TCO-KPDES

SMS Version 2.0

Revisions

CORN CREEK

OUTFALL 010

BOTTOM ASH POND (DURING DEWATERING)

GYPSUM STORAGE POND (DURING DEWATERING)

OUTFALL 012

ASH POND ELEC BLDG

UNIT 1 COOLING TOWER

COAL DOCK ELEC BLDG

COALYARD

FUEL

EQPT HNDL MAINT SHED

AS-DELIVERED SAMPLE HOUSE

WILDLIFE MANAGEMENT AREA
APPROXIMATE BOUNDARY SHOWN

AS-DELIVERED TRANSFER HOUSE

COAL UNLOADER

SCREEN HOUSE

KPDES OUTFALL #005-RIVER INTAKE

OHIO RIVER

Photo Taken April 2020

LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS.

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- EMERGENCY RESPONSE EQUIPMENT
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DIGITAL ORTHO IMAGERY PROVIDED BY: AGE Engineers Inc., DATED August, 2016

Location and Unit: TRIMBLE CO. COMMON
Scale: 1"=200'
Engineering discipline: Environmental
Contract No.: n/a
Drawing type: MISC
Drawn: Mukul Anand
Checked: 06-13-17
Approved: Ryan Mahon
Released for: SUBMITTAL
Alternate Drawing No.:

Title
KPDES STORMWATER – LG&E TRIMBLE CO. STATION
RUNOFF AREAS IDENTIFICATIONS
BAP-ATB/GYPSUM POND AREAS

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No.:
Drawing No.: TCO-KPDES
Rev.:

LKD Version 2.0

Revisions

CORN CREEK

OUTFALL 010

CLOSE-CAPPED BOTTOM ASH POND

CLEAN-CLOSED GYPSUM STORAGE POND

OUTFALL 011

ASH POND ELEC BLDG

UNIT 1 COOLING TOWER

COAL YARD

FUEL OIL TANK

CONVEYOR ELEC BLDG

OUTFALL 009

AS-DELIVERED SAMPLE HOUSE

EQPT HNDL MAINT. SHED

COAL DOCK ELEC BLDG

WILDLIFE MANAGEMENT AREA
APPROXIMATE BOUNDARY SHOWN

AS-DELIVERED TRANSFER HOUSE

OHIO RIVER

COAL UNLOADER

SCREEN HOUSE

KPDES OUTFALL #005-RIVER INTAKE

N

LEGEND

PLANT LAYOUT, BUILDINGS AND EQUIPMENT SHOWN CONSISTENT WITH SPCC/BMP/GPP SERIES DRAWINGS.

- CEMETERY
- EMERGENCY RESPONSE EQUIPMENT
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
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- IMPERVIOUS PAVEMENT, ROOFS, COOLING TOWER	0.85
- IMPOUNDMENT BASIN SURFACES	1.0

DIGITAL ORTHO IMAGERY PROVIDED BY: AGE Engineers Inc., DATED August, 2016

Location and Unit: TRIMBLE CO. COMMON
Scale: 1"=200'
Engineering discipline: Environmental
Contract No.: n/a
Drawing type: MISC
LG&E/KU — Kentucky Utilities Company

Drawn: Michael Bourne
Checked: 06-13-17
Approved: Roger Mathews
Released for: SUBMITTAL
Alternate Drawing No.:

Title
KPDES STORMWATER – LG&E TRIMBLE CO. STATION
RUNOFF AREAS IDENTIFICATIONS
BAP-ATB/GYPSUM POND AREAS

Originator: ENVIRONMENTAL AFFAIRS
Job or Project No.:
Drawing No.: TCO-KPDES
Rev.:

LMO Version 2.0

Attachment 11

Construction Activities Required at Trimble County

To Comply With

USEPA CCR Rule and

USEPA ELG Rule

LG&E-Trimble County Station – *KPDES Permit Renewal Information*

Construction Projects Work Required for CCR and ELG Federal Rules Compliance

Rev September 26, 2022

SUMMARY

To update the renewal of the Louisville Gas & Electric Company (LG&E) Trimble County Generating Station (Plant) KPDES permit, this description of construction activities provides technical and scheduling information to support retaining applicability dates for KPDES permit conditions to meet Federal Coal Combustion Residual (CCR) Rule regulations and Federal Effluent Limitations Guidelines (ELG) regulations. EPA recently issued communications that it will reconsider the 2020 ELG rule with potential changes to limits for FGD wastewater, bottom ash transport water, legacy wastewater, and landfill leachate. However, until such proposed rulemaking is published and finalized, steam-electric utilities must comply with the 2020 ELG rule and its compliance dates. Therefore, LGE is proceeding with ELG rule construction activities under the applicability dates granted in the Trimble County Generation Station KPDES permit KY0041971 modification with an effective date of December 1, 2021. The existing bottom ash handling systems for both Unit 1 and Unit 2 are compliant with the Final ELG Rule and has no discharge of Bottom Ash Transport Water (BATW).

Therefore, to comply with CCR Rule and ELG, LG&E is continuing activities to:

- dewater and close-in-place the site Bottom Ash Pond (BAP);
- dewater and clean-close the site Gypsum Storage Pond (GSP);
- construct a dry, CCR Rule compliant landfill (phase I is complete and is expected to have an operating life of ten (10) years;
- construct a biological wastewater treatment system and ancillary Ultrafiltration (UF) for Flue Gas Desulfurization (FGD) process waters.

Specifically at the Trimble County Plant, construction of new biological wastewater treatment facilities for FGD (Flue Gas Desulfurization) systems wastewaters and other plant process waters require:

- Construction of a biological treatment system building to house tanks, chemical storage, equipment, electrical components, controls, etc.;
- procurement and installation of a sophisticated, modular biological treatment system which includes multiple biological fluidized bed reactors and ancillary pumps, piping, valving, electrical, and controls as well as a large Ultrafiltration system;
- A complex design to retrofit new equipment with the existing physical-chemical wastewater treatment facility;
- Complex construction scheduling sequencing to construct while units operate and install tie-ins when outages are scheduled;

With the intent to reduce the discharge of wastewater contaminants as expeditiously and economically as possible, the description and schedule provided here are accelerated and represent a current best-estimate, but it must be recognized that construction activities are still in the early stages and all-weather construction activities may have a profound effect upon the final completion date. Accordingly, LG&E-Trimble County will contact KDOW-KPDES staff to provide updated information if the actual schedule significantly deviates from that provided here including if adjustment in ELG applicability dates are required.

LG&E-Trimble County Station – *KPDES Permit Renewal Information*

Construction Projects Work Required for CCR and ELG Federal Rules Compliance

Rev September 26, 2022

CONSTRUCTION ACTIVITIES DESCRIPTION

Construction activities for the following projects are currently underway.

Flue Gas Desulfurization Wastewater (FGDWW) Project

For the FGDWW project, discreet steps of the engineering-procurement-installation contract include multiple overlapping phases which are not specifically sequential but highly interdependent so that delays of any step likely lead to delays of completing the entire project.

For the FGDWW specific-activities, these phases and general expected durations include:

- Detailed engineering: beginning March 2021
- Procurement: beginning Q2 2021
- Construction -multi-discipline and multi-trades: beginningQ3 2021
- Mechanical startup, troubleshooting and testing: beginning Q2 2023
- Commercial completion and performance test: beginning Q3 2023
- Plant testing and optimization: beginning Q4 2023
- Applicability Date: April 1, 2024

Construction – FGDWW

Engineering and procurement activities, associated with changes or impacts of the finalized ELG Rule, are already underway for the Flue Gas Desulfurization Wastewater (FGDWW) treatment system.

FGDWW System Design

Specifically, the Trimble County Station existing FGDWW treatment system will be modified by constructing a new selenium/biological treatment system (ELG System) to post-treat the existing physical-chemical equipment flows. Included in the ELG System are outdoor bioreactors, sump and a new building housing additional process equipment, electrical switchgear, control panels, laboratory and chemical storage tanks. The solids from the ELG System will be integrated into the existing FGDWW solids flows for management in existing onsite CCR storage facility.

Treated effluent flows will continue to be discharge through internal Outfall 007 and combined with other plant process flows to the multiport diffuser external Outfall 002 to the Ohio River.

LG&E-Trimble County Station – *KPDES Permit Renewal Information*

Construction Projects Work Required for CCR and ELG Federal Rules Compliance

Rev September 26, 2022

BAP and GSP Dewatering and Closure Projects

For the BAP project, discreet steps of the engineering-construction contract include multiple overlapping phases which are not specifically sequential but highly interdependent so that delays of any step likely lead to delays of completing the entire project.

For the BAP and GSP Dewatering and Closure Projects specific activities, these phases and general expected durations include:

- Detailed Engineering: began Q1 2016
- BAP Dewatering: began Q2 2021
- GSP Dewatering: began Q1 2022
- BAP Close-Capped: Q3 2025
- GSP Clean-Closed: Q4 2024

BAP and GSP Closure Descriptions

Currently, the BAP and GSP are being dewatered by pumping flows from the pond to the site FGD reclaim system and used as makeup for the Unit 1 and Unit 2 FGDs. Blowdowns from the FGDs are sent to the site Coal Combustion Residual Treatment (CCRT) system where gypsum is dewatered and the filtrate is then subsequently treated in the site wastewater physical-chemical treatment system. Treated effluent flows discharge through internal Outfall 007 and combine with other plant process flows to the multiport diffuser external Outfall 002 to the Ohio River.

Once dewatering activities are complete, closure activities will begin. Generally, closure activities will consist of completely excavating gypsum from the GSP and using it as fill for the closure-in-place of the BAP. A CCR compliant cap will be constructed for the BAP and both ponds will be graded with soil and vegetated. Non-contact stormwater runoff from these areas will be collected and discharged through KPDES monitored outfalls to Corn Creek.

LG&E-Trimble County Station – *KPDES Permit Renewal Information*

Construction Projects Work Required for CCR and ELG Federal Rules Compliance

Rev September 26, 2022

Landfill Project

For the Landfill project, discreet steps of the engineering-construction contract include multiple overlapping phases which are not specifically sequential but highly interdependent so that delays of any step likely lead to delays of completing the entire project.

For the Landfill Project specific activities, these phases and general expected durations include:

- Detailed Engineering: 2006
- Landfill Phase I Construction: began Q3 2017
- Landfill Phase I Completion: Q4 2021
- Landfill Phase I Operational: TBD based on date Operating Permit is received from KY-DWM
- Landfill Phase I End-of-Life: 10 years from beginning of Phase I operation

Landfill Construction Description

Phase I of the landfill construction project was completed in Q4 2021. Phase I consists of approximately 53 acres and is situated on the north-east portion of the total landfill footprint in Ravine B of the Trimble County Generating Station property. LG&E is currently pursuing a permit to allow disposal of CCRs in the active portion of the landfill and is expecting issuance by the end of 2022.

Once operational, the landfill will be the final disposal location for site fly ash, bottom ash, gypsum, and other permitted wastes. Once the landfill is operational, leachate will be collected in the adjacent Landfill Leachate Pond and pumped to the site Knock-Out Pond where it will combine with other site wastewaters. From there it will flow to the site Process Pond and discharge through internal outfall 008 and combine with other plant process flows to the multiport diffuser external Outfall 002 to the Ohio River.

Attachment 12

Trimble County Generation Station § 316(b) § 122.21(r)(2)-(8)

Information and Factors that Must and May be Considered for the

Entrainment BTA Determination

Trimble County Generation Station Creek § 316(b) § 122.21(r)(2)-(8) Information and Factors that Must and May be Considered for the Entrainment BTA Determination

Final Report, June 2022

ACKNOWLEDGMENTS

The following organizations, under contract to the Electric Power Research Institute (EPRI), prepared this report:

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The authors wish to thank Jon Black for his overall management and support of this project.

This report describes research sponsored by EPRI.

ACRONYMS

AIF – Actual Intake Flow
AOI- Area of Influence
BAT – Best Available Technology
BPJ – Best Professional Judgement
BTA - Best Technology Available
CCRS – Closed-cycle Recirculating System
CFS – Cubic Feet Per Second
CWA – Clean Water Act
CWIS – Cooling Water Intake Structure
DIF- Design Intake Flow
EPA - United States Environmental Protection Agency
EPRI – Electric Power Research Institute
FGD- Flue-Gas Desulfurization
GPM- Gallons per Minute
IMEA – Illinois Municipal Electric Agency
IMPA – Indiana Municipal Power Agency
KDEP – Kentucky Department for Environmental Protection
KDFWR – Kentucky Department of Fish and Wildlife Resources
KSNPC – Kentucky State Nature Preserves Commission
KU – Kentucky Utilities
LG&E – Louisville Gas and Electric Company
MDCT – Mechanical Draft Cooling Tower
MGD – Million Gallons per Day
mORFIn – Modified Ohio River Fish Index
NGVD- National Geodetic Vertical Datum
NPDES – National Pollutant Discharge Elimination System
O & M – Operation and Maintenance
ORSANCO- Ohio River Valley Sanitation Commission
ORM – Ohio River Mile
OVEC – Ohio Valley Electric Corporation
PSI- Pounds per Square inch
RFLP - Restriction Fragment Length Polymorphisms
RM- River Mile
TDS – Total Dissolved Solids
T&E – Threatened and Endangered
USACE- United States Army Corps of Engineers
USFWS – United States Fish and Wildlife Service
YOY – Young of the Year

EXECUTIVE SUMMARY

This document is submitted in compliance with U.S. Environmental Protection Agency (USEPA) final § 316(b) regulations (Rule) for existing facilities that became effective on October 14, 2014 (USEPA 2014). The Trimble County Generating Station (Trimble County) is owned by Louisville Gas and Electric Company (LG&E) and Kentucky Utilities (KU). Trimble County is covered by the Rule that requires all facilities using >2 MGD to use best technology available (BTA) for entrainment and impingement. All facilities are required to submit the § 122.21(r)(2) and (3) information and applicable provisions of the (r)(4) through (8) information for impingement that includes:
(r)(2) – Source Water Physical Data
(r)(3) – Cooling Water Intake Structure Data
(r)(4) – Source Water Baseline Biological Characterization Data
(r)(5) – Cooling Water System Data
(r)(6) – Chosen Method of Compliance with the Impingement Mortality Standard
(r)(7) – Entrainment Performance Studies
(r)(8) – Operational Status

The BTA determination for entrainment is based on information provided to the NPDES permitting authority, the Kentucky Department of Environmental Protection (KDEP) for Trimble County. The BTA determination for entrainment is made on a site-specific basis. At a minimum, all facilities using >125 MGD actual intake flow (AIF) are required to submit entrainment information that includes the § 122.21(r)(9)-(12) information as follows:
(r)(9) – Entrainment Characterization Study
(r)(10) – Comprehensive Technical Feasibility and Cost Evaluation Study
(r)(11) – Benefits Valuation Study
(r)(12) – Non-water Quality Environmental and Other Impacts Study

The § 122.21(r)(10) – (12) information must be peer reviewed as required at § 122.21(r)(13) of the Rule.

Trimble County uses a closed-cycle recirculating system (CCRS) for both Unit 1 and Unit 2 as defined in the Rule (§ 125.92(c)(1)) with a maximum design intake flow (DIF) of 64.8 MGD and has an actual intake flow (AIF) of 38 MGD, based on pump hours of operation.

The major findings regarding BTA for both entrainment and impingement are as follows:

Flow Reductions – Trimble County achieves a major reduction in cooling water flow by using CCRSs instead of once-through cooling for the facility design. Relative to use of a CCRS, the Rule preamble makes the following statements:

1. *"Closed-cycle cooling is indisputably the most effective technology at reducing entrainment." (pg. 48342, column 1, 14 lines from bottom of the page)*
2. *"EPA concluded that site-specific proceedings are the appropriate forum for weighing all relevant considerations in establishing BTA entrainment requirements. Closed-cycle*

cooling is indisputably the most effective technology at reducing entrainment. Closed-cycle reduces flows by 95 percent and entrainment is similarly highly reduced." (pg. 48344, column 1, last paragraph)

3. *"EPA agrees that facilities employing a closed-cycle recirculating system for entrainment should also be deemed in compliance with the impingement mortality standard, as long as the system is properly operated. While a closed-cycle recirculating system is the most effective technology for reducing entrainment, EPA has not established BTA based on closed-cycle cooling because EPA concluded it was not BTA, for the reasons specified in Section VI." Regarding the definition of closed-cycle cooling*…(pg. 48355, Column 3, Response at bottom of page)
4. *"The cost estimates reflect the incremental costs attributed only to this final rule. For example, facilities already having closed-cycle recirculating systems as defined at § 125.92 will meet the impingement mortality and entrainment standards of today's rule and, therefore, will not incur costs to retrofit new technologies."* (48384, column 1, first full paragraph)

Federally Protected Species – Potential risks to federally protected species are discussed in Section 4.6 of this document. Currently, there is a low risk of entrainment, impingement or designated critical habitat impacts as a result of current operations. This is due to the facility not withdrawing any cooling water from designated critical habitat and minimizing withdrawals from the Ohio River through use of CCRSs on all operating units that has reduced cooling water flow by an estimated 95%, when compared to once-through cooled units.

Conclusion

As a result of using CCRSs, that the EPA considers to be the most effective BTA to address both entrainment and impingement, the existing design and operation of Trimble County should be determined to represent BTA for both impingement and entrainment.

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LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

1.1 *General § 316(b) Rule Overview*

The U.S. Environmental Protection Agency (USEPA) issued final § 316(b) regulations (Rule) for existing facilities that became effective on October 14, 2014. These regulations require all facilities using >2 MGD to use best technology available (BTA) for entrainment and impingement. All facilities are required to submit the § 122.21(r)(2) and (3) information and applicable provisions of the (r)(4) through (8) information for impingement that includes:
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(r)(11) – Benefits Valuation Study
(r)(12) – Non-water Quality Environmental and Other Impacts Study
The § 122.21(r)(10) – (12) information must be peer reviewed as required at § 122.21(r)(13) of the Rule.

The Rule includes a number of potential exemptions that include:

- a de minimis exemption for low levels of impingement,
- a provision for less stringent standards for low capacity utilization,
- an exemption for some or all of the §122.21(r) information for facilities that withdraw cooling water from manmade lakes and reservoirs and have stocked or managed fisheries and
- an exemption from use of technologies at nuclear facilities that conflict with federal nuclear safety requirements.
- an exemption from submitting entrainment information for facilities retiring in the current or next NPDES permit cycle.

The Rule provides broad discretionary authority to KDEP to deny exemptions or even impose additional requirements, especially if federally protected threatened or endangered species or their designated critical habitat are at risk.

1.2 *Compliance Approach for Trimble County*

In this document, LG&E is providing the § 122.21(r)(2) through (8) information for Trimble County. The plant's generating assets currently consist of Trimble County 1, a pulverized-coal-fired unit with a net rated capacity of 514 megawatts; Trimble County 2, a pulverized-coal-fired unit with a net rated capacity of 760 megawatts; and TC5 through TC10, which are natural gas-fired, simple cycle combustion turbines, each with a nominal rating of 160 megawatts.
Trimble County Unit 1 went into commercial operation in December 1990, Trimble County Unit 2 began commercial operation in January 2011. The combustion turbine units TC5 and TC6 went into commercial operation in May 2002; TC7 through TC10 began commercial operation in July 2004.
Unit 1 uses a mechanical draft CCRS and Unit 2 uses a natural draft CCRS. The Rule considers that a CCRS is BTA for both impingement and entrainment

> *"EPA agrees that facilities employing a closed-cycle recirculating system for entrainment should also be deemed in compliance with the impingement mortality standard, as long as the system is properly operated"* (pg. 48355, Column 3, last paragraph).

Because the AIF of Trimble County is well below 125 MGD, the entrainment information from § 122.21(r)(9) – (12) and (r)(13) peer review, are not required. However, LG&E recognizes that KDEP is still required to make an entrainment BTA determination based on factors that must and may be considered as required at §125.98(f) of the Rule. LG&E provides information in Chapter 9 to support KDEP in making the entrainment determination relative to those factors.

1.3 *Report Organization*

The report is organized such that the § 122.21(r)(2) through (8) information is presented in Chapters 2 through 8 of this report, respectively. Chapter 9 provides information to KDEP to inform the entrainment BTA determination that is based on the factors that must and may be considered in making that determination. Chapter 10 provides a list of references used in this document.

2 § 122.21(R)(2) SOURCE WATERBODY PHYSICAL DATA

The Rule at § 122.21(r)(2) requires LG&E to provide the following source waterbody physical data for Trimble County:

(i) A narrative description and scaled drawings showing the physical configuration of all source water bodies used by your facility, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports your determination of the water body type where each cooling water intake structure is located:

(ii) Identification and characterization of the source waterbody's hydrological and geomorphological features, as well as the methods you used to conduct any physical studies to determine your intake's area of influence within the waterbody and the results of such studies; and

(iii) Locational maps.

The required source water physical data is provided in this chapter to characterize the source waterbody in the vicinity of Trimble County. This information is used, in part, to evaluate the various measures that LG&E are required to consider to meet the BTA requirements of the Rule. The following sections describe the Ohio River's dimensions, key physical and chemical characteristics, and provides the figures and maps required under 40 CFR 122.21(r)(2).

2.1 *Narrative Description of Source Waterbody*

The Ohio River is nearly 1,000 miles long, flowing from the confluence of the Allegheny and the Monongahela Rivers in Pittsburgh, Pennsylvania to where it joins the Mississippi River in Cairo, Illinois. The drainage area of the Ohio River and approximate location of Trimble County is shown on Figure 2-1. The Ohio River is divided into a series of pools by 20 locks and dams. These locks and dams were installed to improve navigation and control flooding on the river and are managed by the U.S. Army Corps of Engineers (USACE).

Trimble County is located on the eastern/southern shore of the Ohio River in Bedford, Kentucky at River Mile (RM) 572.0 within the McAlpine Pool. This pool is 75.3 miles long, extending from the Markland Locks and Dam (RM 531.5) downstream to McAlpine Locks and Dam (RM 606.8) as shown on Figure 2-2. The pool has a gradient drop of 0.3 feet per mile (ft/mi.) and averages 2,040 feet wide and 25 feet deep (ORSANCO 2015).

The McAlpine pool receives water from one of the larger tributaries in the basin, the Kentucky River (KY), which has a drainage area of nearly 7,000 square miles (ORSANCO 2015). The

Kentucky River empties into the McAlpine pool of the Ohio River approximately 24.5 miles upstream of Trimble County.

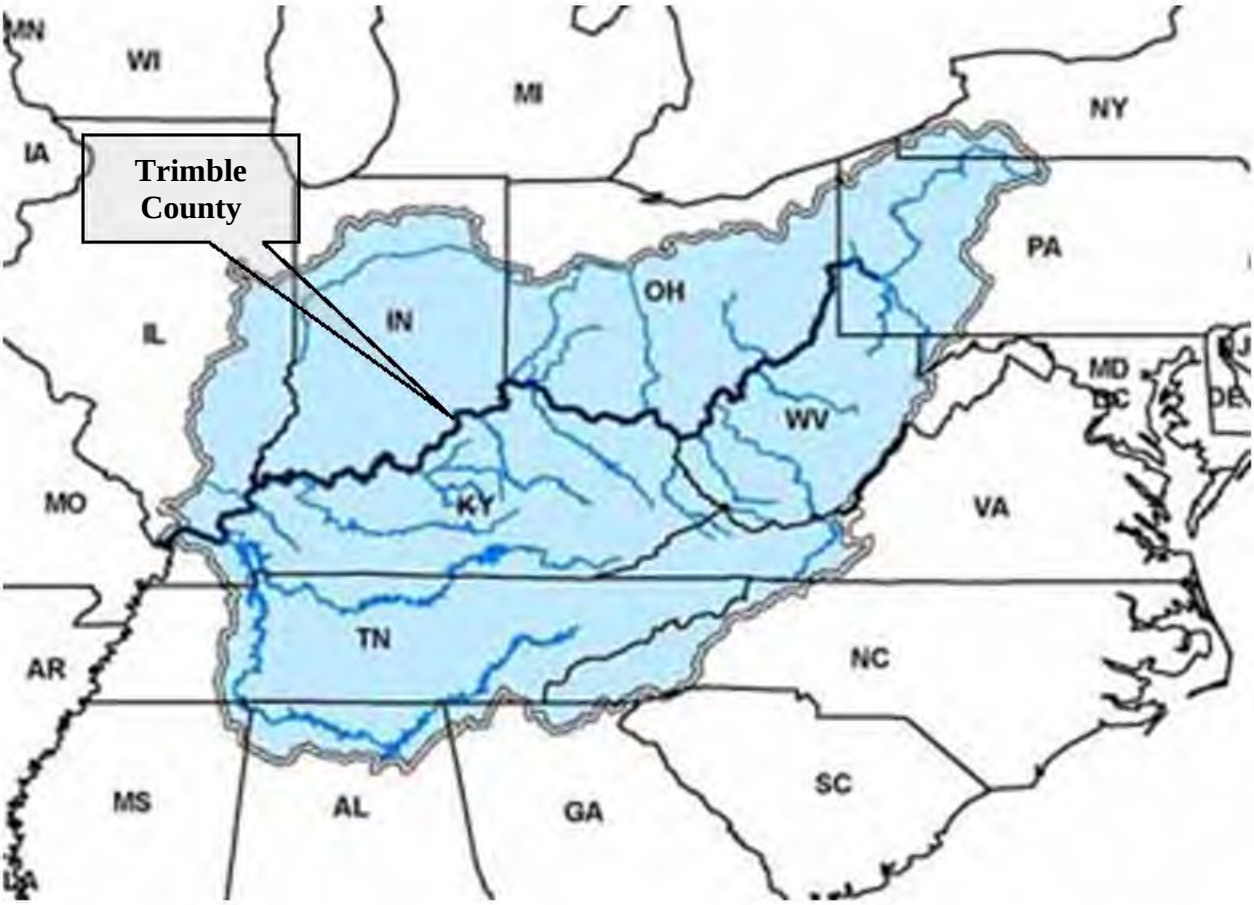

Figure 2-1 Ohio River Watershed (ORSANCO 2021a)

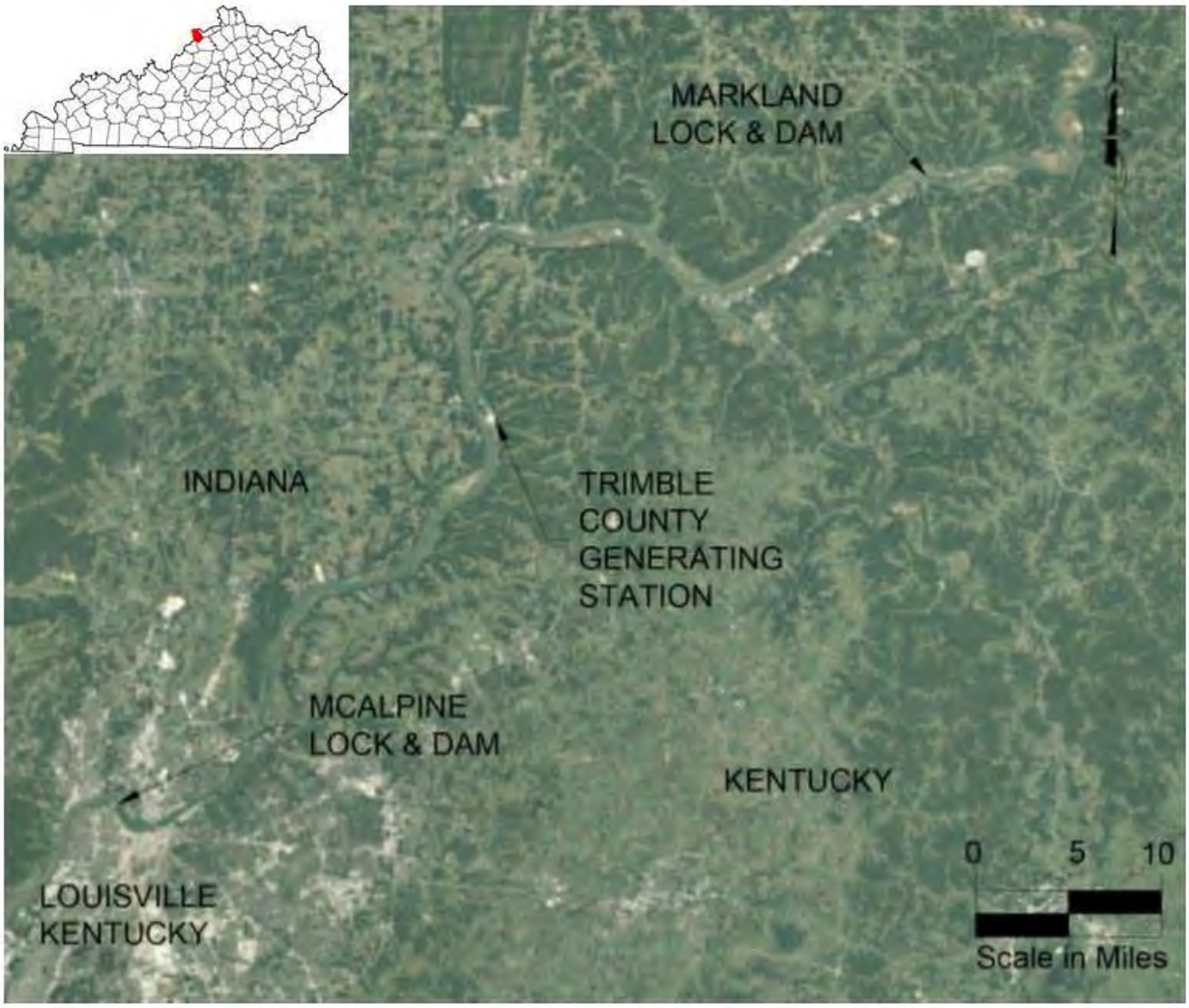

Figure 2-2 Locational Map of Trimble County

2.2 *Aerial Dimensions*

The Trimble County CWIS is located on the eastern/southern side of the Ohio River at RM 572.0. The river, in the vicinity of the CWIS, is approximately 2,000 ft wide and flows in a southern direction, as shown in Figure 2-3.

Figure 2-3 River Width Near Trimble County

2.3 *Depths*

Limited information is available on the water levels and river bathymetry in the McAlpine Pool near Trimble County. The normal pool level in the McAlpine Pool is El. 420.0 ft (Ohio River Datum) or 419.16 ft (NGVD29). The surface elevation corresponds to the normal water level used during the design of the Trimble County CWIS. At the normal water level, the river has a depth of 23.67 ft in front of the CWIS. Water depths at Trimble County are estimated to range from a low of 11.5 ft during low water (El. 407.0 ft) to a high of 79.5 ft during high water (El. 475.0 ft). All elevations are given in NGVD29.

Bathymetric data is not available for the Ohio River near Trimble County. The only information on water depths is provided in the navigation chart for the Ohio River near Trimble County (Figure 2-4). The white sections of river in the navigation chart indicate a water depth of 9 ft or more at the project pool elevation of 420.0 ft (Ohio River Datum), and the blue sections represent water depths less than 9 ft at the project pool.

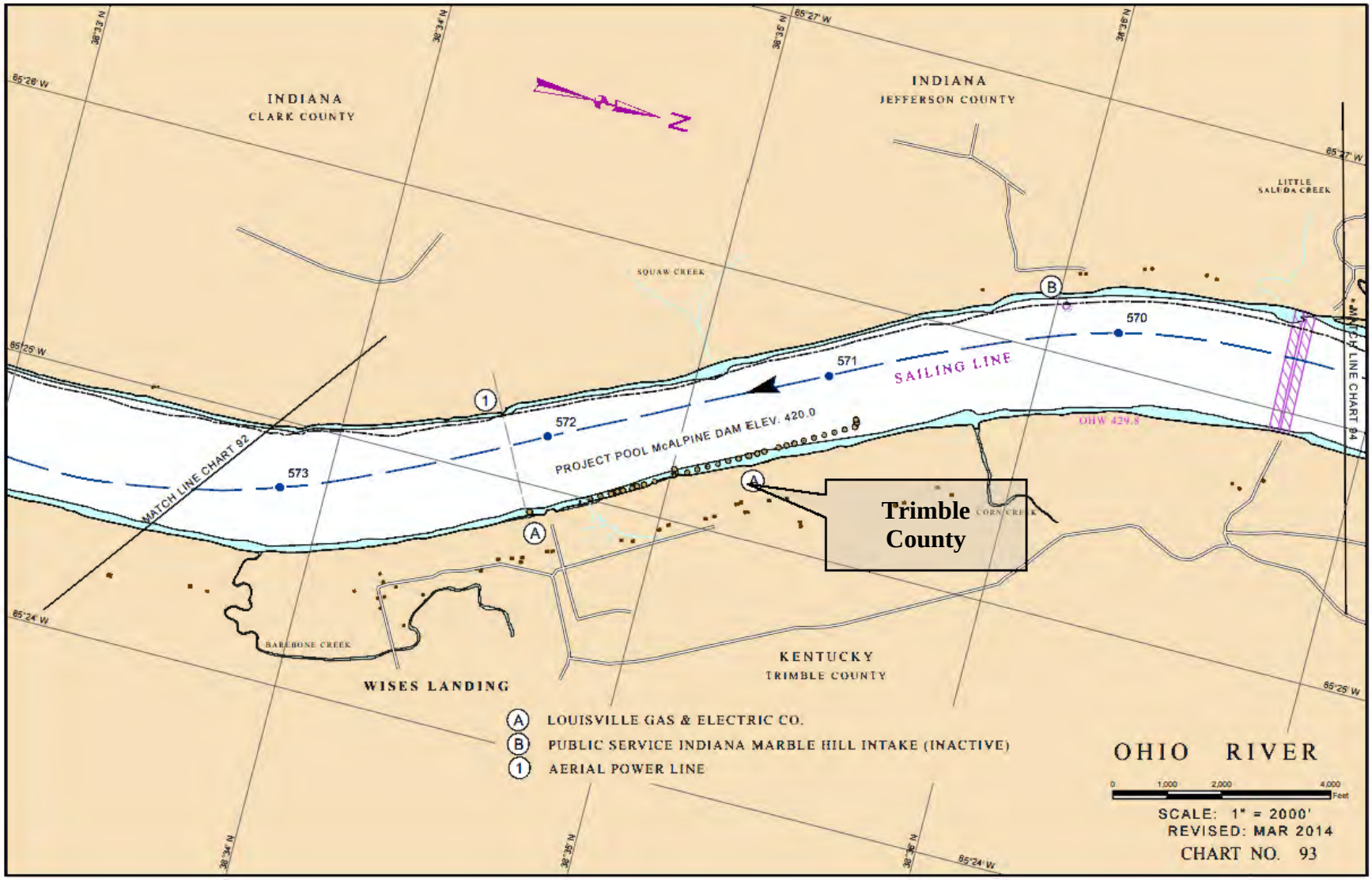

Figure 2-4 Ohio River Navigation Chart for Trimble County and Surrounding River (USACE 2014)

2.4 *Flows*

River flows in the Ohio River near Trimble County are based on river flows recorded at the United States Geological Survey (USGS) gage 03294500 at Louisville, KY (USGS 2021). River flows at this site have been recorded since January 1, 1928, however only information from the last 21 water years on record 2001-2021 were used for this report. Alden limited the data to the last 20 years, because this period is expected to be a good representation of existing land use, water use and climactic conditions on the Ohio River. Only months, and years with complete data sets were used in this report, as a result the 2015 water years were not reported. Daily average flows were used to estimate the maximum and minimum river flows and are based on the same water years but may include provisional data and data from incomplete months. For the period of record daily mean flows ranged from a high of 720,000 cubic feet per second (cfs) measured March 5, 2021, to the low of 877 cfs measured in September 21, 2010. The average daily mean river flow was approximately 141,363 cfs and the median flow (50% exceedance) was 104,000 cfs. The average annual flows for the period of record are provided in Table 2-1. The flows in this stretch of the river follow seasonal trends with higher flows occurring in the late winter and lower flows in the late summer as shown in Table 2-2 and Figure 2-5.

Table 2-1 Mean Annual Flow as Measured at Louisville, KY (Water years 2001-2020*)

Year	Mean Annual Flow (cfs)
2001	87,430
2002	110,400
2003	158,100
2004	184,400
2005	144,500
2006	100,600
2007	132,400
2008	145,300
2009	106,400
2010	118,700
2011	152,700
2012	134,200
2013	130,300
2014	140,300
2015	NA
2016	116,900
2017	133,500
2018	174,000
2019	205,300
2020	164,600
2021	122,500
Average	138,127

* Annual flows are not available for 2015

Table 2-2 Average Monthly Ohio River Flows as Measured at Louisville, Ky (October 1, 2021, through September 30, 2021*)

Month	Monthly Average Flow (cfs)
January	200,013
February	214,400
March	252,915
April	216,858
May	184,246
June	111,550
July	77,036
August	48,256
September	60,015
October	58,681
November	109,000
December	172,716

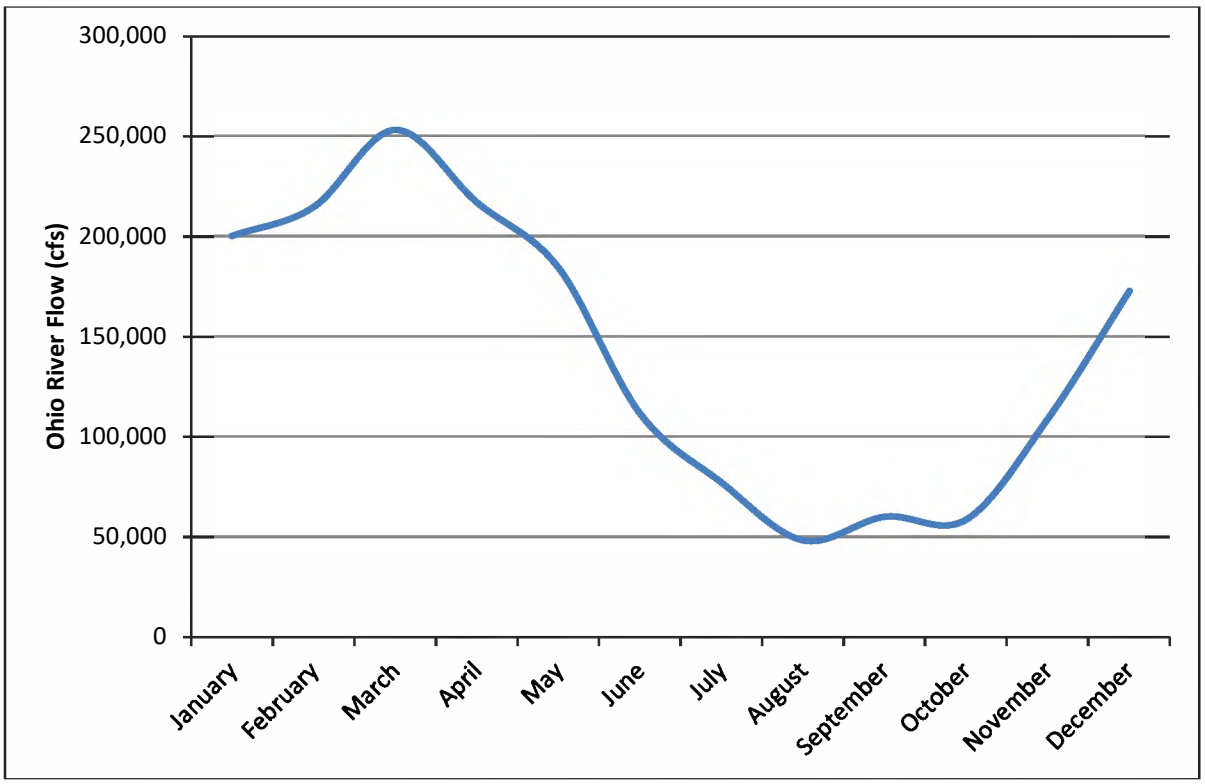

Figure 2-5 Average Monthly Ohio River Flows as Measured at Louisville, KY (October 1, 2021, through September 30, 2021)

2.5 *Salinity*

The Ohio River is characterized as freshwater and therefore has very low salinity (i.e., <1 ppt).

2.6 *Temperature*

Daily average water temperatures for the Ohio River from Greenup Lock and Dam to McAlpine Lock and Dam (RM 341.0 to RM 606.8) are available from 1995 to 2003 (ORSANCO 2021b). The months of May through October river temperatures, measured at McAlpine Lock and Dam, are available from 2006 through 2020. The daily average river water temperatures, from Greenup Lock and Dam to McAlpine Lock and Dam while older, is presented in this analysis because it includes all twelve months. During this time, the daily average river water temperature ranged from 39.1°F in January to 81.7°F in August with an average daily temperature of 60.6°F (Table 2-3). The seasonal change in water temperature is shown on Figure 2-6.

Table 2-3 Average Monthly Ohio River Temperatures Near Trimble County

Month	Monthly River Temperatures (°F) in the Ohio River from Greenup Lock and Dam to McAlpine Lock and Dam (1995-2003)
January	39.1
February	39.7
March	45.6
April	55.2
May	64.3
June	72.8
July	81.0
August	81.7
September	78.2
October	67.6
November	55.7
December	45.4
Average	60.6

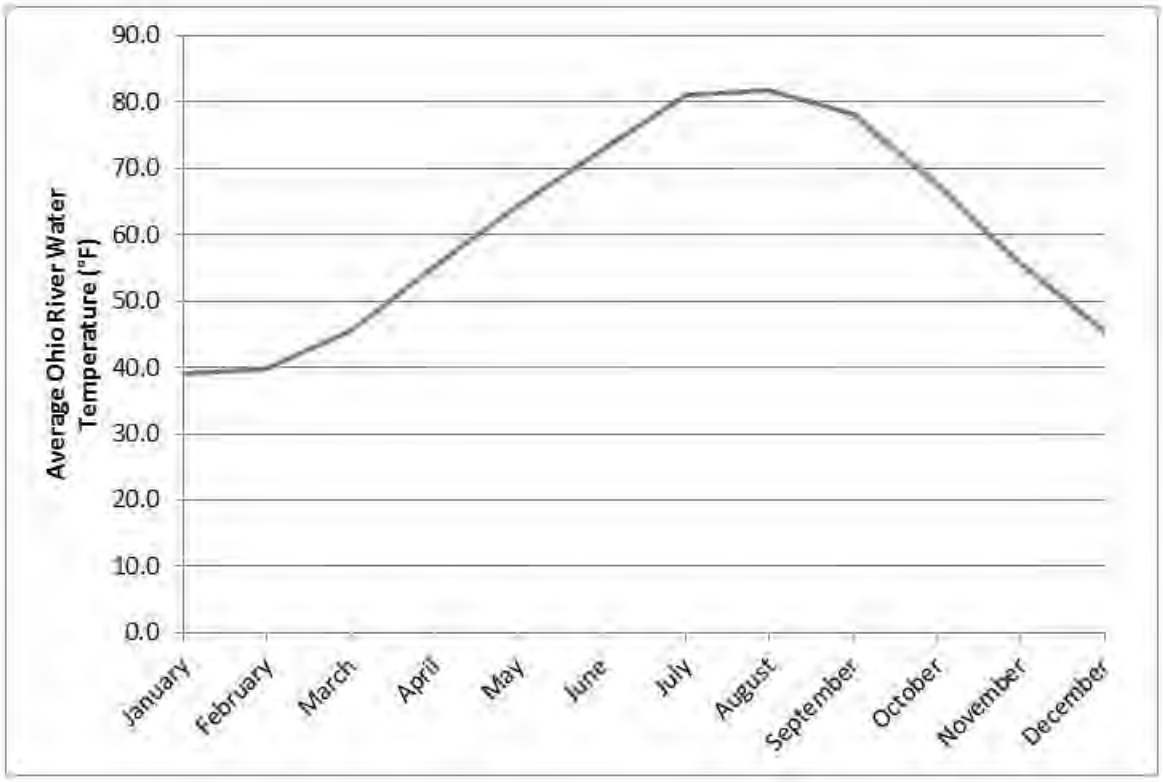

Figure 2-6 Average Ohio River Water Temperatures in Degrees Fahrenheit for Greenup L&D to McAlpine L&D (1995-2003)

2.7 *Area of Influence*

The area of influence (AOI) of a CWIS represents the portion of the source waterbody that is affected by the CWIS cooling water withdrawal (i.e., area in the source waterbody where organisms are potentially subject to entrainment or impingement by the CWIS). This information is needed to indicate the potential area of adverse environmental impact on the source waterbody and appropriateness of any design or technologies proposed by the applicant. The AOI differs depending on whether it is considered for impingement or entrainment. From an impingement standpoint, the AOI can be defined as the area where a healthy fish is not able to swim against and escape the intake flow. The AOI, from an entrainment standpoint, is the chance of a particle within the source waterbody becoming entrained. This area can vary depending on the number of cooling water pumps in operation.

Simple desktop models, using available information, can provide sufficient AOI estimates for the purpose of designing entrainment and/or source waterbody studies and evaluating fish protection technologies and/or operational measures.

2.7.1 Impingement AOI

From an impingement standpoint, the AOI estimated in this analysis was defined as the approximate area within the 0.5 ft/sec velocity contour around the CWIS. The USEPA considers this velocity to be a de minimis value and is one of the seven impingement BTA compliance alternatives. That is, a fish can swim freely in a flow of this velocity and avoid impingement. The velocity at the face of the CWIS, approaching the trash racks and approaching the traveling water screens at Trimble County was calculated to be 0.3 ft/sec at the design intake flow (DIF) of 100.3 cfs, (45,000 gpm) and the design low water level of El. 407.0 ft. This water level represents the lowest water level that the CWIS is designed to operate. Therefore, impingeable sized fish can swim freely at and within the intake opening without being drawn into the CWIS as the velocities are less than 0.5 ft/sec. With no discernable influence of the CWIS on impingeable sized fish at the face of the intake, there is no AOI for impingement within the Ohio River. Background information and the engineering calculations used to estimate the intake velocities are provided in Table 5-3.

2.7.2 Entrainment AOI

The AOI from an entrainment standpoint is the area in the river within which a suspended particle is likely to become drawn into the Trimble County CWIS along with the cooling water. In the Rule preamble (see Footnote 48), EPA states that "*Entrainment is generally considered to be proportional to flow and therefore a reduction in flow results in a proportional reduction in entrainment, as EPA assumes for purposes of national rulemaking that entrainable organisms are uniformly distributed throughout the source water"*.

Based on EPA's assumptions for entrainment, the chance of an entrainable sized organisms becoming entrained at the Trimble County CWIS is analogous to the proportion of the source waterbody withdrawn by Trimble County. An estimation of the proportion of the source waterbody withdrawn by Trimble County is required as part of the 122.21(r)(5) study, which is presented in Section 5.3.

3 § 122.21(R)(3) COOLING WATER INTAKE STRUCTURE DATA

The Rule at § 122.21(r)(3) requires LG&E to provide the following cooling water intake information for Trimble County:

(i) A narrative description of the configuration of each of your cooling water intake structures and where it is located in the water body and in the water column;

(ii) Latitude and longitude in degrees, minutes and seconds for each of your cooling water structures;

(iii) A narrative description of the operation of each of your cooling water intake structures, including design intake flows, daily hours of operation number of days of the year in operation and seasonal changes, if applicable;

(iv) A flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges; and

(v) Engineering drawings of the cooling water intake structure.

The following CWIS data are being provided to characterize the Trimble County CWIS and evaluate the potential for impingement and entrainment of aquatic organisms.

3.1 *CWIS Configuration*

Trimble County withdraws service and cooling tower makeup water from the eastern bank of the Ohio River, in Bedford, Kentucky, as shown on Figure 2-2. The station has two coal-fired units that use cooling water, each having a separate closed-cycle cooling system. Unit 1 utilizes a mechanical draft cooling tower and Unit 2 has a natural draft cooling tower. There are also six natural gas-fired, simple cycle combustion turbines that do not use cooling water.

The cooling water intake structure (CWIS) is comprised of a screen house structure for the traveling water screens and service water pumps. The water withdrawn through the CWIS is used to provide make-up water for the closed-cycle cooling systems along with other plant equipment and fire suppression. A layout of the facility is shown on Figure 3-1. Unit 1 has a net capacity of 514 MW and Unit 2 has a net capacity of 750 MW, resulting in a combined capacity of 1,264 MW.

The CWIS is approximately 86 ft wide with a top deck at El. 520.0 ft and invert at El. 397.0 ft. The area around the CWIS is dredged annually due to the high sediment loading and barge traffic

on the river. The CWIS is divided into three, 12.5 ft wide bays, each equipped with a trash rack, traveling water screen and a service water pump. The trash rack is made of iron bar grids with 12 inch on-center spacing. A fish escape, or fish channel, is located between the trash racks and the traveling water screens. The fish channel is approximately 41 inches wide by 60 inches high and allows fish that are in front of the traveling screens a means of egress to the river without having to swim against the intake flow.

The three traveling water screens are located approximately 42 ft downstream of the face of the intake. The screens are 10 ft wide and 82 ft high. The screen baskets are equipped with 0.375 inch (3/8 inch) square mesh with 14 gauge (0.08 inch) wires. Each screen has a high-pressure back wash system with a spray wash ratings at 228 gpm (0.5 cfs) at 60 psi, 264 gpm (0.6 cfs) at 80 psi and 294 gpm (0.7 cfs) at 100 psi. The screens can rotate at speeds of approximately 3, 5, 7, or 10 fpm, depending on debris loading conditions. Fish and debris removed by the spray wash are collected in a return trough that discharges into the Ohio River downstream of the intake. A plan and section of the CWIS is shown on Figure 3-2 and Figure 3-3, respectively.

Three service water pumps, one per bay, are located approximately 20 ft downstream of the traveling water screens. Water discharged from the facility is routed back to the Ohio River through an outfall located downstream of the intake structure, as shown on Figure 3-1.

Figure 3-1 Site Configuration of Trimble County

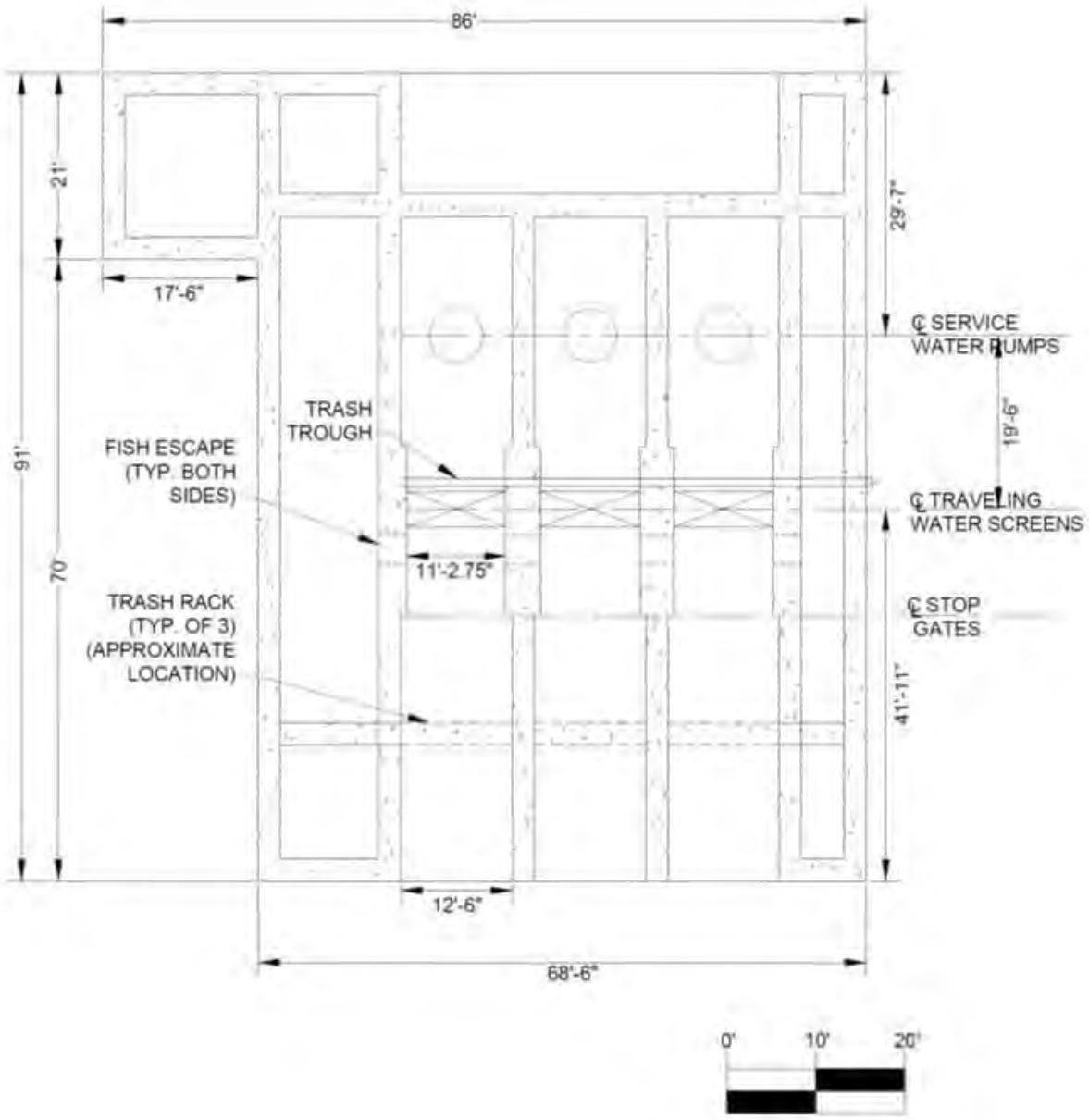

Figure 3-2 Trimble County Intake Structure – Plan

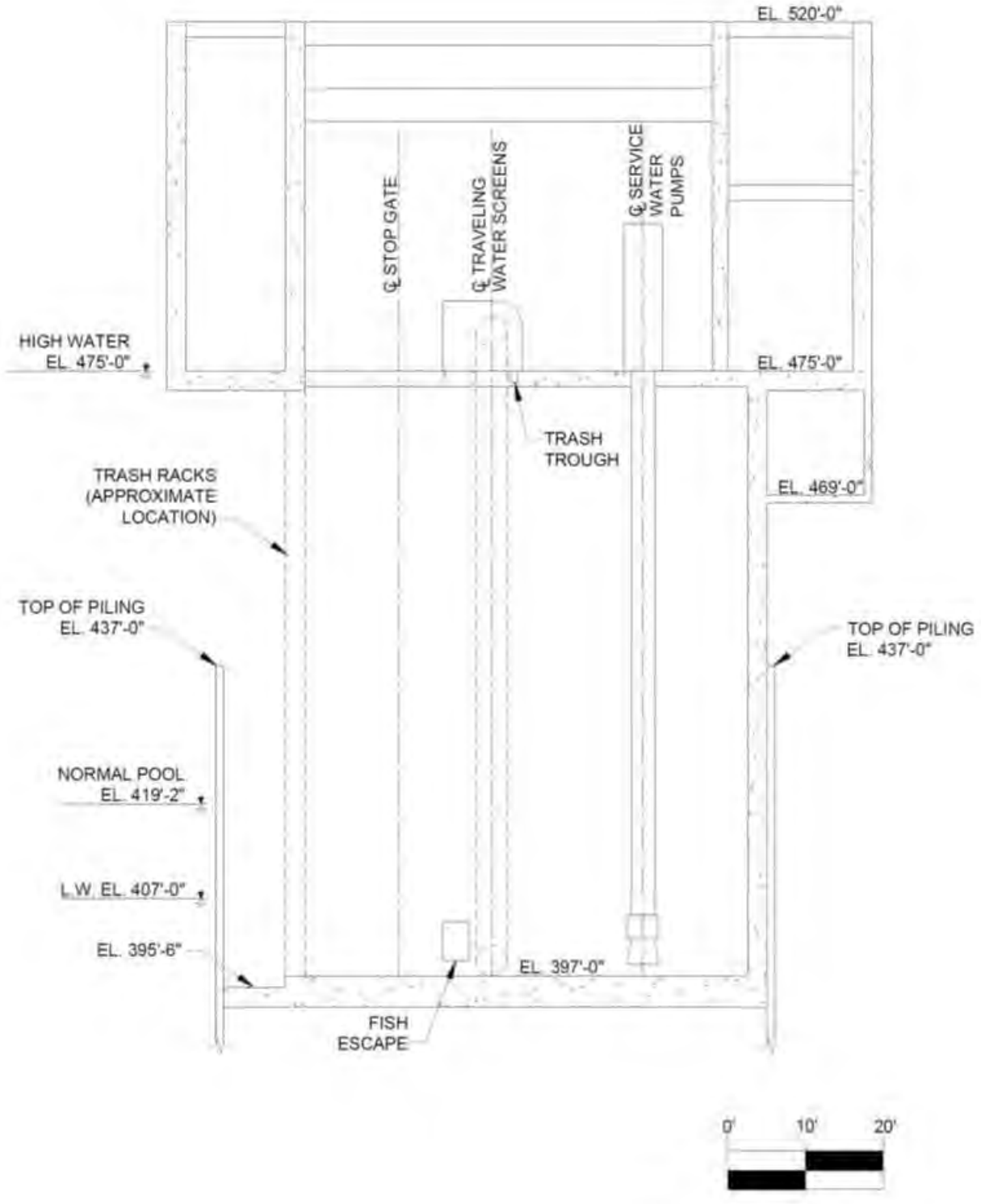

Figure 3-3 Trimble County Intake Structure – Section

3.2 *CWIS Operation and Intake Flows*

Three service water pumps, one per bay, are located approximately 20 ft downstream of the traveling water screens. Two of the three service water pumps have variable frequency drives allowing them to be operated at reduced speeds. The service water pumps are each rated for 15,000 gpm (33.4 cfs, 21.6 MGD) at 220 ft of total head. The maximum design intake flow (DIF) withdrawn through the intake structure is 45,000 gpm (100.3 cfs, 64.8 MGD). Typically, two pumps operate when both units are in service resulting in a maximum flow of 30,000 gpm (66.8 cfs, 43.2 MGD) during normal operations. The design intake flow through the Trimble County CWIS is summarized in Table 3-1.

The annual pump hours of operation for the three service water pumps over the past 5 years (2017 thought 2021) are show in Table 3-2. The average daily intake flow based on the pump hours of operation and the percent of maximum design intake flow for the intake (2017-2021) are provided in Table 3-3. As shown in this table, the actual intake flow (AIF) for the facility over the last five years ranged from 28.5 MGD to 37.9 MGD, or 44% to 59% of the DIF.

The average monthly daily intake flow, number of days per month and total monthly and annual withdrawal by Trimble County from June 2017 through 2021 is provided in Table 3-4.

Table 3-1 Pump Design Capacities for the Trimble County CWIS

Pump Description	DIF (gpm)	DIF (MGD)	DIF (cfs)
Single Pump Operations	15,000	21.6	33.4
Two Pump Operations (Typical Operations)	30,000	43.2	66.8
Three Pump Operation (Maximum Possible Flow	45,000	64.8	100.3

Table 3-2 Annual Pump Hours of Operation for Trimble County (2017-2021)

Year	2017	2018	2019	2020	2021	5 Year Average
Service Water Pump A	5,468.0	8,527.0	5,062.2	2,726.4	5,796.0	5,515.9
Service Water Pump B	4,216.3	3,205.8	4,540.5	7,481.4	5,425.0	4,973.8
Service Water Pump C	5,183.1	4,549.5	4,113.5	6,069.6	3,063.0	4,595.7

Table 3-3 Annual Intake Flows for Trimble County (2017-2021)

Year	2017	2018	2019	2020	2021	5 Year Average
Average Daily Intake Flow (MGD)[1]	28.5	32.1	28.7	37.9	37.9	31.7
Actual Intake Capacity (MGD)	64.8	64.8	64.8	64.8	64.8	64.8
Percent of Actual Intake Capacity	44%	50%	44%	58%	59%	49%

1. Calculated from the average monthly withdrawal rate.

Table 3-4 Estimated Actual Monthly Intake Flow for the Trimble County Intake (2017-2021)

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Yearly Total
2017													
Daily Average Intake Flow (MGD)[1]	35.9	37.0	15.5	19.3	32.4	30.3	33.6	35.3	25.0	18.8	25.2	34.5	28.5
Days in Operation	31	28	31	30	31	30	31	31	30	31	30	31	365
Intake Flow (Millions of Gallons)	1,114	1,037	482	578	1,004	908	1,041	1,095	749	581	755	1,069	10,411
2018													
Daily Average Intake Flow (MGD)	32.7	30.3	31.2	23.9	25.3	35.6	36.2	36.4	27.2	36.7	33.3	35.8	32.1
Days in Operation	31	28	31	30	31	30	31	31	30	31	30	31	365
Intake Flow (Millions of Gallons)	1,015	847	966	717	784	1,069	1,121	1,129	815	1,138	1,000	1,108	11,711
2019													
Daily Average Intake Flow (MGD)	36.3	35.5	28.0	22.7	28.2	17.6	17.3	32.2	36.1	28.1	25.4	37.4	28.7
Days in Operation	31	28	31	30	31	30	31	31	30	31	30	31	365
Intake Flow (Millions of Gallons)	1,124	993	867	681	876	528	537	998	1,083	871	762	1,158	10,478

Table 3-4 (Continued)

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Yearly Total
2020													
Daily Average Intake Flow (MGD)	37.7	17.3	34.2	45.0	34.4	45.4	45.6	45.1	36.3	22.8	45.3	45.0	37.9
Days in Operation	31	29	31	30	31	30	31	31	30	31	30	31	366
Intake Flow (Millions of Gallons)	1,168	502	1,061	1,349	1,067	1,362	1,413	1,398	1,090	706	1,358	1,395	13,870
2021													
Daily Average Intake Flow (MGD)	36.3	43.6	28.0	24.7	44.4	43.2	44.9	44.5	35.5	23.2	42.3	44.9	37.9
Days in Operation	31	28	31	30	31	30	31	31	30	31	30	31	365
Intake Flow (Millions of Gallons)	1,127	1,220	869	742	1,378	1,297	1,391	1,379	1,066	720	1,269	1,391	13,850
2017-2020													
Daily Average Intake Flow (MGD)	35.8	32.7	27.4	27.1	33.0	34.4	35.5	38.7	32.0	25.9	34.3	39.5	31.7
Days in Operation	31	28	31	30	31	30	31	31	30	31	30	31	365
Intake Flow (Millions of Gallons)	1,105	845	844	832	932	882	1,010	1,141	963	831	967	1,200	11,553

3.3 *Flow Distribution and Water Balance Diagrams*

The water balance diagram for the Trimble County is shown below in Figure 3-4. The water balance diagram is also provided as a separate PDF that is attached to this submittal as appendix A.

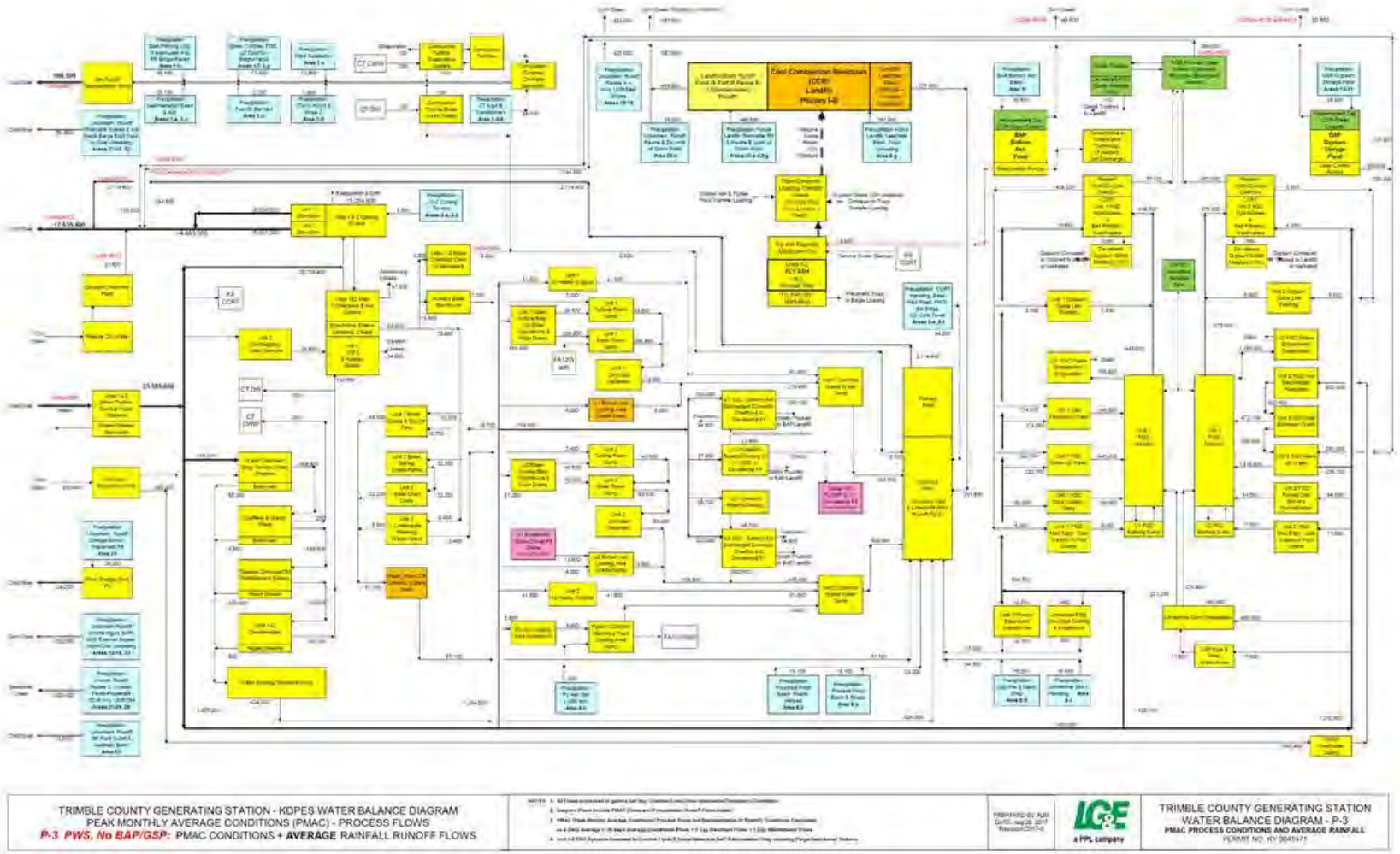

Figure 3-4 Water Balance Diagram for the Trimble County

4 § 122.21(R)(4) SOURCE WATER BASELINE BIOLOGICAL CHARACTERIZATION DATA

This section includes the source water baseline biological characterization data for Trimble County, required at § 122.21(r)(4) of the Rule. Since there are twelve subsections for this information, the requirement for each subsection will be stated followed by information responsive to the required information.

Source water baseline biological characterization data. *This information is required to characterize the biological community in the vicinity of the cooling water intake structure and to characterize the operation of the cooling water intake structures. The Director may also use this information in subsequent permit renewal proceedings to determine if your Design and Construction Technology Plan as required in § 125.86(b)(4) or § 125.136(b)(3) of this chapter should be revised. This supporting information must include existing data (if they are available). However, you may supplement the data using newly conducted field studies if you choose to do so. The information you submit must include:*

4.1 *Missing Data*

(i) A list of the data in paragraphs (r)(4)(ii) through (vi) of this section that are not available, and efforts made to identify sources of the data.

Except for information describing the source water crayfish community in the vicinity of Trimble County, data required in paragraphs (r)(4)(ii) through (r)(4)(vi) were not available for crayfish. However, other information and the site-specific impingement and entrainment study at a nearby facility (Clifty Creek Station also located in the McAlpine Pool located approximately 11 miles upstream of Trimble County) was used to determine susceptibility of fish and shellfish including crayfish to entrainment.

4.2 *List of Relevant Taxa in the Vicinity of the CWIS*

(ii) A list of species (or relevant taxa) for all life stages and their relative abundance in the vicinity of the cooling water intake structure.

4.2.1 Shellfish

Surveys of mussels were conducted in 2009 as part of the aquatic baseline assessment of the Milton-Madison Bridge Replacement near Ohio River Mile (ORM) 557.0. Thirty-one live mussels representing 10 species were collected (Table 4-1; EPRI 2012a). The dominant mussel species was Pink Heelsplitter, which represented 26% of the catch, followed by Threeridge with 19%. All other mussel species each represented less than 10% of the catch.

In addition, a mussel survey was conducted approximately 20 miles upstream of Clifty Creek Station in 2016 by Lewis Environmental Consulting (LEC) for the U.S. Army Corps of

Engineers (USACE) and U.S. Fish and Wildlife (USFWS). This survey covered a mussel bed that historically spanned from ORM 537.7 to 540.5 on the Indiana side of the river. The 2016 survey found two mussel beds: a main mussel bed from ORM 539.9 to 540.5 with high diversity and a smaller bed with lower diversity from ORM 537.0 to 537.2. These mussel beds represent the most recently surveyed known beds near the Clifty Creek Station cooling water intake structure (CWIS) at ORM 560.0. A total of 345 live mussels was collected during the 2016 mussel survey representing 19 species (Table 4-1). The most common species were Pimpleback (19%), Ebonyshell (12%), Threeridge (12%), Washboard (11%), Threehorn Wartyback (9%), and Wabash Pigtoe (8%) (Table 4-1). Each of the remaining species composed less than 6% of the catch and four species were represented by a single specimen. The mussel community in the direct vicinity of the Clifty Creek Station CWIS is unknown.

Table 4-1 Summary of Live Mussel Collections near Clifty Creek Generating Station (EPRI 2012a and LEC 2016)

Scientific Name[a]	Common Name[a]	2009 ORM 557.0		2016 ORM 536.3–540.5	
		Number Collected	Percent Abundance	Number Collected	Percent Abundance
Amblema plicata	Threeridge	6	19.4%	42	12.2%
Cyclonaias pustulosa	Pimpleback	2	6.5%	66	19.1%
Cyclonaias nodulata	Wartyback	--[b]	--	8	2.3%
Cyclonaias tuberculata	Purple Wartyback	--	--	1	0.3%
Ellipsaria lineolata	Butterfly	--	--	4	1.2%
Elliptio crassidens	Elephantear	--	--	8	2.3%
Eurynia dilatata	Spike	--	--	1	0.3%
Fusconaia flava	Wabash Pigtoe	--	--	29	8.4%
Fusconaia subrotunda	Longsolid	--	--	1	0.3%
Lampsilis cardium	Plain Pocketbook	1	3.2%	--	--
Lampsilis ovata	Pocketbook	2	6.5%	6	1.7%
Leptodea fragilis	Fragile Papershell	--	--	1	0.3%
Ligumia recta	Black Sandshell	3	9.7%	15	4.3%
Megalonaias nervosa	Washboard	2	6.5%	37	10.7%
Obliquaria reflexa	Threehorn Wartyback	1	3.2%	32	9.3%
Pleurobema cordatum	Ohio Pigtoe	3	9.7%	19	5.5%
Potamilus alatus	Pink Heelsplitter	8	25.8%	18	5.2%
Quadrula quadrula	Mapleleaf	--	--	9	2.6%
Reginaia ebenus	Ebonyshell	3	9.7%	43	12.5%
Theliderma metanevra	Monkeyface	--	--	5	1.5%

[a] Naming convention follows Williams et al. 2017.

[b] "--" indicates none collected.

Information describing the source water crayfish community in the vicinity of Clifty Creek Station was not identified. However, crayfish were a target organism during the 2005-2007

impingement study at the facility (see Section 4.3.1), but were not identified to species (i.e., they were recorded only as "crayfish").

4.2.2 Fish

A list of fish species in the vicinity of the Clifty Creek Station was compiled from 2012-2016 seasonal seining and electrofishing surveys conducted upstream and downstream of the facility between ORM 556.9 and ORM 561.7. Those surveys were conducted under the Ohio River Ecological Research Program (ORERP), which is currently administered by the Electric Power Research Institute (e.g., EPRI 2017a). In addition, the Ohio River Valley Water Sanitation Commission (ORSANCO) performs periodic (every five years) electrofishing surveys of each Ohio River Pool[1]. The most recent ORSANCO electrofishing fish survey in McAlpine Pool was performed in 2014 and included two locations that were near the Clifty Creek Station, ORM 549.9 and 561.1. These data collectively represent the most recent and complete information on the fish assemblage near the facility.

The list of adult and juvenile fish from the ORERP and ORSANCO surveys (ORM 549.9 to 561.7) is comprised of 69 species and two hybrids that represent 14 fish families (Table 4-2). Families with the most species were the carps and minnows (17 species), suckers (13), sunfishes (12), and darters and perches (8). Thirty-two of the 69 species, as well as hybrid striper and *Lepomis* hybrid, were encountered each year. Seven of those common species accounted for 86.5% of the five-year total: Emerald Shiner (39.5%), Gizzard Shad (27.3%), Channel Shiner (10.5%), Bluegill (2.9%), Freshwater Drum (2.2%), Longear Sunfish (2.1%), and Sauger (1.9%).

[1] http://www.orsanco.org/data/fish-population/

Table 4-2 Number and Relative Abundance of Fish Collected by Electrofishing and Seining in the McAlpine Pool (ORMs 556.9 to 561.7) during the ORERP and by ORSANCO (ORM 549.9 and 561.1), 2012–2016 (EPRI 2018a and ORSANCO 2015)

	2012		2013		2014[a]		2015		2016		Years Combined	
Species	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lepisosteus sp.	3	0.0	2	0.0	--	--	2	0.0	--	--	7	0.0
LONGNOSE GAR	30	0.2	28	0.6	41	0.4	47	0.5	36	0.6	182	0.4
SHORTNOSE GAR	1	0.0	--	--	--	--	--	--	--	--	1	0.0
CLUPEIDAE sp.	--	--	--	--	--	--	1	0.0	--	--	1	0.0
SKIPJACK HERRING	173	1.3	2	0.0	15	0.1	--	--	9	0.2	199	0.5
Dorosoma sp.	--	--	--	--	--	--	8	0.1	--	--	8	0.0
GIZZARD SHAD	7,671	55.7	532	11.1	2,189	19.8	1,085	12.6	465	8.3	11,942	27.3
THREADFIN SHAD	6	0.0	10	0.2	--	--	1	0.0	1	0.0	18	0.0
MOONEYE	5	0.0	1	0.0	3	0.0	--	--	--	--	9	0.0
MUSKELLUNGE	--	--	--	--	--	--	1	0.0	1	0.0	2	0.0
COMMON CARP	2	0.0	1	0.0	4	0.0	2	0.0	4	0.1	13	0.0
SILVER CARP	--	--	--	--	--	--	--	--	1	0.0	1	0.0
GOLDEN SHINER	1	0.0	--	--	--	--	--	--	--	--	1	0.0
Notropis sp.	--	--	50	1.0	--	--	2	0.0	--	--	52	0.1
STRIPED SHINER	1	0.0	--	--	51	0.5	9	0.1	3	0.1	64	0.1
CHANNEL SHINER	474	3.4	299	6.2	1,337	12.1	1,521	17.6	969	17.4	4,600	10.5
SPOTFIN SHINER	28	0.2	16	0.3	24	0.2	44	0.5	26	0.5	138	0.3
EMERALD SHINER	3,437	25.0	2,085	43.4	5,298	48.0	3,796	44.0	2,707	48.5	17,323	39.5
SILVER SHINER	--	--	--	--	1	0.0	--	--	--	--	1	0.0
GHOST SHINER	7	0.1	8	0.2	2	0.0	5	0.1	5	0.1	27	0.1
RIVER SHINER	139	1.0	158	3.3	129	1.2	221	2.6	126	2.3	773	1.8
SILVER CHUB	2	0.0	40	0.8	127	1.2	73	0.8	39	0.7	281	0.6
CENTRAL STONEROLLER	8	0.1	5	0.1	14	0.1	4	0.0	1	0.0	32	0.1
SUCKERMOUTH MINNOW	--	--	3	0.1	2	0.0	--	--	--	--	5	0.0
BLUNTNOSE MINNOW	12	0.1	26	0.5	13	0.1	73	0.8	8	0.1	132	0.3
BULLHEAD MINNOW	17	0.1	18	0.4	16	0.1	17	0.2	38	0.7	106	0.2
STREAMLINE CHUB	--	--	--	--	1	0.0	--	--	--	--	1	0.0
CREEK CHUB	--	--	--	--	1	0.0	--	--	--	--	1	0.0
CATOSTOMINAE sp.	2	0.0	1	0.0	--	--	172	2.0	--	--	175	0.4
WHITE SUCKER	1	0.0	--	--	--	--	--	--	--	--	1	0.0

Table 4-2 (Continued)

Species	2012		2013		2014[a]		2015		2016		Years Combined	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Carpiodes sp.	--	--	1	0.0	2	0.0	2	0.0	--	--	5	0.0
ICTIOBINAE sp.	--	--	--	--	1	0.0	--	--	--	--	1	0.0
QUILLBACK	14	0.1	21	0.4	40	0.4	41	0.5	31	0.6	147	0.3
RIVER CARPSUCKER	26	0.2	33	0.7	119	1.1	38	0.4	42	0.8	258	0.6
HIGHFIN CARPSUCKER	2	0.0	--	--	1	0.0	--	--	--	--	3	0.0
SMALLMOUTH REDHORSE	28	0.2	36	0.7	45	0.4	96	1.1	77	1.4	282	0.6
Moxostoma sp.	1	0.0	--	--	1	0.0	--	--	--	--	2	0.0
SILVER REDHORSE	3	0.0	3	0.1	15	0.1	22	0.3	10	0.2	53	0.1
RIVER REDHORSE	--	--	1	0.0	1	0.0	17	0.2	1	0.0	20	0.0
BLACK REDHORSE	1	0.0	--	--	3	0.0	1	0.0	--	--	5	0.0
GOLDEN REDHORSE	59	0.4	32	0.7	64	0.6	103	1.2	86	1.5	344	0.8
NORTHERN HOG SUCKER	9	0.1	7	0.1	18	0.2	17	0.2	2	0.0	53	0.1
Ictiobus sp.	--	--	--	--	--	--	1	0.0	--	-	1	0.0
SMALLMOUTH BUFFALO	13	0.1	22	0.5	29	0.3	6	0.1	26	0.5	96	0.2
BIGMOUTH BUFFALO	--	--	--	--	--	--	2	0.0	--	--	2	0.0
BLACK BUFFALO	--	--	--	--	1	0.0	--	--	--	--	1	0.0
YELLOW BULLHEAD	--	--	--	--	2	0.0	--	--	--	--	2	0.0
CHANNEL CATFISH	66	0.5	87	1.8	111	1.0	39	0.5	63	1.1	366	0.8
FLATHEAD CATFISH	19	0.1	8	0.2	18	0.2	12	0.1	11	0.2	68	0.2
BANDED KILLIFISH	--	--	1	0.0	--	--	--	--	--	--	1	0.0
WESTERN MOSQUITOFISH	--	--	1	0.0	--	--	1	0.0	--	--	2	0.0
BLACKSTRIPE TOPMINNOW	--	--	1	0.0	--	--	--	--	--	--	1	0.0
MISSISSIPPI SILVERSIDE	--	--	--	--	--	--	1	0.0	--	--	1	0.0
BROOK SILVERSIDE	13	0.1	1	0.0	8	0.1	6	0.1	2	0.0	30	0.1
Morone sp.	22	0.2	8	0.2	48	0.4	7	0.1	2	0.0	87	0.2
STRIPED BASS	3	0.0	--	--	--	--	4	0.0	--	--	7	0.0
HYBRID STRIPER	29	0.2	81	1.7	139	1.3	48	0.6	44	0.8	341	0.8
WHITE PERCH	--	--	1	0.0	--	--	--	--	--	--	1	0.0
WHITE BASS	87	0.6	9	0.2	16	0.1	15	0.2	19	0.3	146	0.3
ROCK BASS	1	0.0	--	--	--	--	4	0.0	4	0.1	9	0.0
Lepomis HYBRID	3	0.0	2	0.0	1	0.0	2	0.0	1	0.0	9	0.0
Lepomis sp.	102	0.7	1	0.0	41	0.4	6	0.1	6	0.1	156	0.4
GREEN SUNFISH	14	0.1	6	0.1	4	0.0	2	0.0	6	0.1	32	0.1
WARMOUTH	--	--	1	0.0	--	--	3	0.0	1	0.0	5	0.0
BLUEGILL	227	1.6	370	7.7	244	2.2	270	3.1	167	3.0	1,278	2.9
ORANGESPOTTED SUNFISH	--	--	--	--	4	0.0	2	0.0	1	0.0	7	0.0
LONGEAR SUNFISH	338	2.5	388	8.1	77	0.7	76	0.9	63	1.1	942	2.1
REDEAR SUNFISH	--	--	1	0.0	4	0.0	2	0.0	--	--	7	0.0
Micropterus sp.	--	--	--	--	--	--	--	--	1	0.0	1	0.0
SMALLMOUTH BASS	66	0.5	34	0.7	38	0.3	49	0.6	58	1.0	245	0.6
LARGEMOUTH BASS	45	0.3	33	0.7	8	0.1	40	0.5	15	0.3	141	0.3
SPOTTED BASS	193	1.4	121	2.5	41	0.4	142	1.6	54	1.0	551	1.3
WHITE CRAPPIE	--	--	--	--	6	0.1	7	0.1	3	0.1	16	0.0
BLACK CRAPPIE	5	0.0	1	0.0	2	0.0	3	0.0	6	0.1	17	0.0
Etheostoma sp.	--	--	--	--	1	0.0	--	--	--	--	1	0.0
GREENSIDE DARTER	--	--	1	0.0	1	0.0	--	--	--	--	2	0.0
RAINBOW DARTER	2	0.0	7	0.1	7	0.1	4	0.0	--	--	20	0.0
FANTAIL DARTER	1	0.0	--	--	1	0.0	--	--	--	--	2	0.0
BANDED DARTER	1	0.0	--	--	--	--	--	--	--	--	1	0.0
LOGPERCH	--	--	10	0.2	14	0.1	30	0.3	8	0.1	62	0.1
SLENDERHEAD DARTER	1	0.0	--	--	1	0.0	--	--	--	--	2	0.0
Sander sp.	9	0.1	--	--	10	0.1	63	0.7	--	--	82	0.2
WALLEYE	--	--	--	--	--	--	1	0.0	2	0.0	3	0.0
SAUGER	49	0.4	64	1.3	241	2.2	270	3.1	203	3.6	827	1.9
FRESHWATER DRUM	292	2.1	128	2.7	344	3.1	92	1.1	123	2.2	979	2.2
TOTAL FISH	13,764	100.0	4,807	100.0	11,040	100.0	8,631	100.0	5,577	100.0	43,819	100.0
TOTAL SPECIES	47		46		50		49		44		69	

[a] INCLUDES TWO ORSANCO ELECTROFISHING EVENTS FROM JULY 2014 (ORSANCO 2015).
NOTE: 0.0 DENOTES VALUES LESS THAN 0.05; No. = number collected; % = relative abundance; "--" indicates none collected.

A two-year entrainment study was conducted at Clifty Creek in 2015 and 2016 to fulfill 40 CFR 122.21(r)(9) of the Rule. Sampling was conducted in the AOI in front of the CWIS at multiple

depths and during two diel periods to characterize annual, seasonal, and diel variations in entrainment. Sampling was conducted every two weeks from March through September in 2015. In 2016, sampling was also conducted every two weeks from April through early May and July through August, but every week from early May through June to gather more data during times of highest ichthyoplankton density. This study provides the most recent data describing the early life stage ichthyofauna in the McAlpine Pool.

In 2015, 40,935 fish juveniles, larvae, and eggs, representing 18 distinct taxa[2], were collected (Table 4-3). The 2016 collections yielded 20,007 fish adults, juveniles, larvae, and eggs, representing 26 distinct identifications (Table 4-3). For 2015 and 2016 combined, 60,942 specimens were collected that represented 27 distinct identifications across nine fish families.

The most abundant ichthyoplankton taxa collected in 2015 were, in decreasing order of abundance, Gizzard Shad (+*Dorosoma*), Clupeidae sp. (+type) (may include Gizzard Shad, Threadfin Shad, and Skipjack Herring), *Morone* sp. (includes *Morone* sp. [not Striped Bass] identifications), Ictiobinae sp. (carpsucker/buffalo species), and Freshwater Drum. These taxa composed 97% of the specimens collected at Clifty Creek in 2015. In 2016, dominant taxa were Ictiobinae sp., Gizzard Shad (+*Dorosoma*), Freshwater Drum, Clupeidae sp. (+type), Skipjack Herring, and Emerald Shiner (+type). These taxa composed 92% of the specimens collected at Clifty Creek in 2016.

Table 4-3 Number and Relative Abundance of Taxa Collected by Entrainment Sampling in the McAlpine Pool at Clifty Creek Generating Station in 2015 and 2016 (EPRI 2018b)

Family	Taxa	2015		2016		Years Combined	
		#	%	#	%	#	%
Clupeidae	Clupeidae sp. (+type)	7,411	18.1%	1,960	9.8%	9,371	15.4%
	Gizzard Shad (+*Dorosoma*)	26,901	65.7%	5,222	26.1%	32,123	52.7%
	Skipjack Herring	4	<0.05%	861	4.3%	865	1.4%
	Threadfin Shad	--	--	2	<0.05%	2	<0.05%
Hiodontidae	Mooneye	--	--	16	0.1%	16	<0.05%
Cyprinidae	Central Stoneroller	--	--	2	<0.05%	2	<0.05%
	Grass Carp (+type)	121	0.3%	59	0.3%	180	0.3%
	Ccommon Carp	32	0.1%	19	0.1%	51	0.1%
	Asian Carp (+type)	13	<0.05%	58	0.3%	71	0.1%
	Hypophthalmichthys sp.	11	<0.05%	122	0.6%	133	0.2%
	Shiner type	--	--	3	<0.05%	3	<0.05%
	Emerald Shiner (+type)	638	1.6%	634	3.2%	1,272	2.1%
	Channel Shiner	--	--	1	<0.05%	1	<0.05%

[2] Distinct taxa counts do not include higher level identifications (e.g., family or subfamily) when lower (e.g., genus or species) identifications were made.

Table 4-3 (Continued)

Family	Taxa	2015		2016		Years Combined	
		#	%	#	%	#	%
Cyprinidae (cont.)	*Notropis* sp.	--	--	3	<0.05%	3	<0.05%
	Suckermouth Minnow type	--	--	6	<0.05%	6	<0.05%
	Bluntnose Minnow	--	--	1	<0.05%	1	<0.05%
	Pimephales type	245	0.6%	285	1.4%	530	0.9%
	Cyprinidae (+type)	49	0.1%	64	0.3%	113	0.2%
Catostomidae	*Moxostoma*/Northern Hog Sucker	--	--	1	<0.05%	1	<0.05%
	Moxostoma sp.	2	<0.05%	6	<0.05%	8	<0.05%
	Catostominae sp.	1	<0.05%	1	<0.05%	2	<0.05%
	Ictiobinae sp.[(a)]	1,149	2.8%	5,895	29.5%	7,044	11.6%
	Catostomidae sp.	--	--	2	<0.05%	2	<0.05%
Ictaluridae	Channel Catfish	1	<0.05%	7	<0.05%	8	<0.05%
	Flathead Catfish	1	<0.05%	--	--	1	<0.05%
Moronidae	Striped Bass type	--	--	21	0.1%	21	<0.05%
	Morone sp. (+not Striped Bass)	3,035	7.4%	440	2.2%	3,475	5.7%
Centrarchidae	*Lepomis* sp.	10	<0.05%	8	<0.05%	18	<0.05%
	Smallmouth Bas	--	--	2	<0.05%	2	<0.05%
	Micropterus sp. (not Smallmouth Bass)	--	--	1	<0.05%	1	<0.05%
	Pomoxis sp.	1	<0.05%	3	<0.05%	4	<0.05%
Percidae	*Ammocrypta* type	1	<0.05%	--	--	1	<0.05%
	Etheostoma type	--	--	1	<0.05%	1	<0.05%
	Sauger	42	0.1%	75	0.4%	117	0.2%
	Walleye	--	--	2	<0.05%	2	<0.05%
	Sander sp.	23	0.1%	7	<0.05%	30	<0.05%
	Logperch type	102	0.2%	173	0.9%	275	0.5%
	Darter sp.	14	<0.05%	4	<0.05%	18	<0.05%
	Darter (not Logperch) sp.	1	<0.05%	2	<0.05%	3	<0.05%
	Percidae sp. (+type)	2	<0.05%	2	<0.05%	4	<0.05%
Sciaenidae	Freshwater Drum	1,036	2.5%	3,924	19.6%	4,960	8.1%
	Unidentified	89	0.2%	112	0.6%	201	0.3%
Grand Total		**40,935**	**100.0%**	**20,007**	**100.0%**	**60,942**	**100.0%**

Note: # = number collected; % = relative abundance; "--" indicates none collected.

(a) Includes *Ictiobus* sp.

4.3 *Species and Life Stages Most Susceptible to Impingement and Entrainment*

Identification of the species and life stages that would be most susceptible to impingement and entrainment. Species evaluated should include the forage base as well as those most important in terms of significance to commercial and recreational fisheries.

Impingeable sized organisms are defined at § 125.92(n) of the Rule and are individuals sufficiently large to not pass through 3/8-inch square or 1/2 x 1/4-inch rectangular mesh screens. They are trapped against the screen by the force of intake water flowing through the screen. Organisms that pass through the mesh are entrained (see Rule definition at § 125.92(h)). Entrained specimens will pass through the condenser cooling water systems and do not impact facility operation. Generally, a fish species vulnerability to impingement and/or entrainment is a function of life history such as habitat preference, water column distribution, reproductive behavior, early life history characteristics, swimming ability, natural mortality, or physical influences such as water body hydraulics and ambient water temperature, and is not dictated by their abundance in the source water body.

4.3.1 Shellfish

Adult and juvenile Unionida mussels reside in the sediment and have very limited mobility; therefore, it can reasonably be concluded that they are not susceptible to entrainment nor are they readily susceptible to impingement. Larval Unionida mussels, glochidia, require temporary attachment to a "host" (almost exclusively fish) to survive beyond the larval stage. Some Unionida species use active methods to ensnare or attract a host: 1) they release "webs" or "trot lines" of mucus containing glochidia that ensnare passing fishes; 2) they bind glochidia into matrices called conglutinates that can resemble fish larvae, worms, insect larvae, or other food items that attract fish, which are subsequently infested with glochidia when they attempt to feed on the conglutinates; or 3) they have modified their mantle into lures resembling fishes, insects, and other food items such that when it is struck by a predatory fish, females snap their shells closed on the protruded marsupia, causing the marsupia to rupture and release clouds of glochidia (Watters et al. 2003). It is reasonable to assume that glochidia of such species would not be susceptible to entrainment since they are released directly into a host. Other Unionida species are broadcast spawners that expel the glochidia along with water and waste products. Hosts either take in suspended glochidia and pass them over their gills, where they attach, or the hosts contact glochidia on the substrate, where they attach to the fins or skin (Watters et al. 2009). Although these broadcasted glochidia may be more susceptible to entrainment, it would be challenging or impossible to: 1) effectively and efficiently collect them; 2) identify them to species; and 3) determine whether they are viable or moribund. For example, glochidia range in size from 50 to 450 µ (Williams et al. 2008) and therefore would require a net with a minimum mesh size of 50 µ, which would become clogged quickly upon deployment (water will not passively flow through 50 µ). Little is known about host use in nature for most mussel species because using morphological characters to identify encysted glochidia is difficult. Morphological characters have been used with some success when only one or a few mussel species are present in a location; however, in species rich communities, only a fraction of glochidia are identifiable based on morphology and some are not identifiable below the genus or subfamily levels. Molecular identification keys, using restriction fragment length polymorphisms (RFLPs) for species identification of encysted glochidia, have been created in response to the difficulty of identifying glochidia; however, these keys have not been used frequently in nature (Kneeland

and Rhymer 2008). Most importantly, once shed by the female, glochidia must acquire a suitable host or die, usually within 24-48 hours (Watters et al. 2009). As such, glochidia collected during entrainment sampling are likely moribund because they would have drifted past hundreds or thousands of potential host fish before being entrained. Given the above information, all life stages of Unionida mussels would **not** be considered among "*the species and life stages that would be **most susceptible** to impingement and entrainment*" (emphasis added). For example, Unionida mussels were a target organism during the 2005-2007 impingement study at Clifty Creek and only four were collected during the two-year study (Table 4-4). Additionally, the IDEM did not request that mussels be a target organism during the 2015-2016 entrainment study.

Crayfish do not appear in entrainment samples due to their reproductive behavior. Females retain and protect eggs attached to her swimmerets. After hatching, the young may stay with the mother until after the second or third molt[3]. Therefore, crayfish are not susceptible to entrainment and have limited susceptibility to impingement. For example, they composed only 0.08% of the 2005-2007 impingement catch (Table 4-4).

[3] http://www.uky.edu/Ag/CritterFiles/casefile/relatives/crayfish/crayfish.htm

Table 4-4 Number and Relative Abundance of Fish and Shellfish Collected during Impingement Studies at the Clifty Creek Generating Station, June 2005 - June 2007 (EPRI 2009)

	June 2005 – June 2006		June 2006 – June 2007		Years Combined	
Species	**Number**	**%**	**Number**	**%**	**Number**	**%**
Crayfish	48	0.07	12	0.09	61	0.08
Unionida mussel	2	0.00	2	0.02	4	0.01
Paddlefish	21	0.03	--	--	21	0.03
Longnose Gar	1	0.00	2	0.02	3	0.00
Skipjack Herring	1,657	2.48	46	0.35	1,703	2.13
Gizzard Shad	59,352	88.75	9,194	69.88	68,546	85.64
Mooneye	29	0.04	1	0.01	31	0.04
Common Carp	--	--	2	0.02	2	0.00
Silver Chub	5	0.01	3	0.02	8	0.01
Emerald Shiner	66	0.10	3	0.02	69	0.09
River Shiner	3	0.00	--	--	3	0.00
Hybrid shiner	--	--	1	0.01	1	0.00
River Carpsucker	2	0.00	23	0.17	24	0.03
Quillback	48	0.07	36	0.28	85	0.11
Carpiodes sp.	1	0.00	--	--	1	0.00
Blue Sucker	2	0.00	--	--	2	0.00
Northern Hog Sucker	2	0.00	--	--	2	0.00
Smallmouth Buffalo	6	0.01	3	0.02	9	0.01
Spotted Sucker	2	0.00	--	--	2	0.00
Silver Redhorse	4	0.01	2	0.02	6	0.01
Smallmouth Redhorse	5	0.01	1	0.01	6	0.01
Golden Redhorse	3	0.00	12	0.09	15	0.02
Blue Catfish	9	0.01	359	2.72	367	0.46

Table 4-4 (Continued)

Species	June 2005 – June 2006		June 2006 – June 2007		Years Combined	
	Number	%	Number	%	Number	%
Black Bullhead	--	--	4	0.03	4	0.01
Channel Catfish	41	0.06	202	1.53	243	0.30
Ictalurus sp.	--	--	1	0.01	1	0.00
Flathead Catfish	43	0.06	7	0.06	51	0.06
White Perch	18	0.03	6	0.05	24	0.03
White Bass	145	0.22	21	0.16	167	0.21
Striped Bass	2	0.00	6	0.05	8	0.01
Hybrid striper	2	0.00	--	--	2	0.00
Morone sp.	7	0.01	--	--	7	0.01
Rock Bass	1	0.00	--	--	1	0.00
Green Sunfish	2	0.00	10	0.08	12	0.01
Orangespotted Sunfish	2	0.00	--	--	2	0.00
Bluegill	97	0.15	368	2.80	465	0.58
Longear Sunfish	2	0.00	4	0.03	6	0.01
Smallmouth Bass	2	0.00	2	0.02	4	0.01
Spotted Bass	3	0.00	2	0.02	5	0.01
Largemouth Bass	--	--	4	0.03	4	0.01
White Crappie	15	0.02	3	0.02	19	0.02
Black Crappie	13	0.02	2	0.02	15	0.02
Greenside Darter	1	0.00	--	--	1	0.00
Logperch	3	0.00	3	0.02	6	0.01
River Darter	3	0.00	1	0.01	4	0.01
Sauger	488	0.73	14	0.10	501	0.63
Freshwater Drum	4,719	7.06	2,793	21.23	7,512	9.39
Total Number	**66,879**	**100.00**	**13,158**	**100.00**	**80,037**	**100.00**
Number of Fish Species	**37**		**32**		**40**	
24-hr sampling events	**19**		**20**		**39**	

Note: 0.00 denotes values less than 0.005; % = relative abundance; "--" indicates none collected.

4.3.2 Fish Impingement

A two-year impingement study conducted from June 2005 through June 2007 provided recent data that addressed the species and life stages susceptible to impingement at Clifty Creek (EPRI 2009). That study consisted of thirty-nine, 24-hour sampling events during which 40 fish species were impinged (Table 4-4). Over 99% of the impinged organisms were fish; the remainder consisted of unidentified crayfish and Unionida mussels that accounted for 0.08% and 0.01% of the two-year catch, respectively. All impinged fish species except Paddlefish, Blue Sucker, Spotted Sucker, Blue Catfish, Black Bullhead, and River Darter were collected during recent in-river surveys near the facility (Table 4-2 and Table 4-4); whereas, 35 of the 69 species collected during the in-river surveys and were not seen in impingement sampling. Impingement collections were dominated by Gizzard Shad and, to a lesser extent, Freshwater Drum that collectively

accounted for 95% of the fish impinged during the two-year study (Table 4-4). The Indiana Administrative code classifies Gizzard Shad as a baitfish[4] and Freshwater Drum as a commercial fish[5]. Gizzard Shad was the second most abundant species during the in-river surveys and Freshwater Drum was the fifth most abundant (Table 4-2). The relative abundance of Gizzard Shad was much lower in the in-river surveys, indicating they are disproportionately susceptible to impingement, which can be attributed to their abundance in the river and pelagic schooling behavior of young-of-the-year (YOY). Freshwater Drum composed 2.2% of the in-river catch compared to 9.4% of the impinged fish (Table 4-2 and Table 4-4). Emerald Shiner ranked first in the in-river catch but ranked tenth in the impingement collections as only 69 specimens were collected during the two-year impingement study. The in-river collections showed that cyprinids were much more abundant than indicated by the impingement collections, suggesting that they are not susceptible to impingement. Similarly, Bluegill and Sauger had higher relative abundances in the in-river surveys compared to impingement collections. Sport fish[6] species contributed less than 1% to the impingement catch. White Bass and Sauger were the most commonly impinged sport fish species, composing 92% of the sport fish catch. Lower numbers of all other impinged species during the two-year study suggests low susceptibility to impingement.

Commercial harvest data from 1999 through 2007 for the portion of the Ohio River bordering Indiana and Kentucky was dominated by Paddlefish (51.6 %) followed by catfish (Channel Catfish, Blue Catfish, and Flathead Catfish) and buffalo that accounted for 24.2% and 23.2% of the total harvest, respectively (Stefanavage 2009). These dominant commercial species accounted for only 0.9% of the fish impinged during the two-year study.

4.3.3 Fish Entrainment

The two-year study conducted in 2015 and 2016 provided recent data that addressed the taxa and life stages susceptible to entrainment at the Clifty Creek Station (EPRI 2018b). The sampling periods during both years encompassed the vast majority of the time when ichthyoplankton were present in the Ohio River near the facility. Twenty-seven unique taxa were collected during the study with Clupeidae taxa (Clupeidae sp. [+type] and Gizzard Shad [+*Dorosoma*]) and *Morone* sp. (not Striped Bass) accounting for 91% of the catch in 2015, and Clupeidae taxa, Ictiobinae sp., and Freshwater Drum accounting for 85% of the catch in 2016 (Table 4-3 and Table 4-5).

[4] At 312 IAC 9-6-8(b)(1)(H), http://www.in.gov/legislative/iac/T03120/A00090.PDF, an individual may collect live Gizzard Shad or Threadfin Shad for use as bait from the Ohio River main stem, excluding all embayments.
[5] At 312 IAC 9-6-8(d), http://www.in.gov/legislative/iac/T03120/A00090.PDF, a (commercial) license holder under this section may take and sell all species of fish from the Ohio River except the following: (1) Largemouth Bass, (2) Smallmouth Bass, (3) Spotted Bass, (4) Rock Bass, (5) White Crappie, (6) Black Crappie, (7) Walleye, (8) Sauger, (9) Saugeye, (10) Striped Bass, (11) White Bass, (12) hybrid Striped Bass, (13) Yellow Bass, (14) Muskellunge, (15) Northern Pike, (16) Tiger Muskellunge, (17) Chain Pickerel, (18) Lake Sturgeon, (19) trout, (20) salmon, (21) Blue Catfish less than thirteen (13) inches long, (22) Channel Catfish less than thirteen (13) inches long, (23) Flathead Catfish less than thirteen (13) inches long, (24) Shovelnose Sturgeon less than twenty-five (25) inches measured in accordance with 312 IAC 9-6-2(b) and taken from June 1 through September 30, and (25) Paddlefish less than thirty-two (32) inches measured in accordance with 312 IAC 9-6-2(c) and taken from May 1 through October 31.
[6] 312 IAC 9-6-1(87) defines sport fish as: (A) Largemouth Bass, (B) Smallmouth Bass, (C) Spotted Bass, (D) Rock Bass, (E) White Crappie, (F) Black Crappie, (G) Walleye, (H) Sauger, (I) Saugeye, (J) Striped Bass, (K) White Bass, (L) hybrid Striped Bass, (M) Yellow Bass, (N) Muskellunge, (O) Tiger Muskellunge, (P) Northern Pike, (Q) Chain Pickerel, and (R) trout or salmon (http://www.in.gov/legislative/iac/T03120/A00090.PDF).

Collectively, these five taxa composed 87% to 97% of the catch each year. These taxa are considered baitfish or commercial fish by the Indiana Administrative Code[4,5] except for *Morone* sp. (not Striped Bass), which is most likely represented by White Bass, a sport fish[6]. *Morone* sp. (not Striped Bass) composed from 2.2% to 7.4% of the catch each year (Table 4-5).

In 2015, specimen density for all taxa combined was 39.3 specimens per ten cubic meters (#/10m^3) (Table 4-5). Gizzard Shad (+*Dorosoma*) and Clupeidae sp. (+type) dominated (84%) the 2015 catch with a combined density of 32.9/10m^3. *Morone* sp. (not Striped Bass) was the next most abundant taxon, accounting for 7.4% (2.9/10m^3) of the 2015 catch. Ictiobinae sp. (2.8%; 1.1/10m^3) and Freshwater Drum (2.5%; 1.0/10m^3) were the only other taxa that contributed greater than 1.5% to the 2015 catch (Table 4-5; EPRI 2018b).

In 2016, specimen density for all taxa combined was 18.1/10m^3 (Table 4-5). Ictiobinae sp. (29.5%) and Gizzard Shad (+*Dorosoma*) (26.1%) were the two most abundant taxa with densities of 5.3/10m^3 and 4.7/10m^3, respectively. Freshwater Drum and Clupeidae sp. (+type) were the next most abundant taxa, contributing 19.6% and 9.8% to the 2016 catch with densities of 3.6/10m^3 and 1.8/10m^3, respectively (Table 4-5). Collectively, these four taxa accounted for 85% of specimens collected in 2016. Among the other taxa collected, only Skipjack Herring (4.3%; 0.8/10m^3), Emerald Shiner type (3.1%; 0.6/10m^3), *Morone* sp. (not Striped Bass) (2.2%; 0.4/10m^3), and *Pimephales* type (1.4%; 0.3/10m^3) contributed greater than 1.0% to the 2016 catch (EPRI 2018b).

Table 4-5 Number, Density, and Relative Abundance of Common and Abundant Taxa Collected in Entrainment Samples at Clifty Creek Generating Station in 2015 and 2016 (EPRI 2018b)

Year	**2015**			**2016**		
Volume Sampled (m^3)	**10,429.3**			**11,032.9**		
Taxa	**#**	**%**	**Density**	**#**	**%**	**Density**
Clupeidae sp. (+type)	7,411	18.1%	7.11	1,960	9.8%	1.78
Gizzard Shad (+*Dorosoma*)	26,901	65.7%	25.79	5,222	26.1%	4.73
Ictiobinae sp.	1,149	2.8%	1.10	5,895	29.5%	5.34
Morone sp. (not Striped Bass)	3,035	7.4%	2.91	440	2.2%	0.40
Freshwater Drum	1,036	2.5%	0.99	3,924	19.6%	3.56
Other Identified Taxa	1,314	3.2%	1.26	2,454	12.3%	2.22
Unidentified	89	0.2%	0.09	112	0.6%	0.10
Total	40,935	100.0%	39.25	20,007	100.0%	18.13

Note: # = number collected; % = relative abundance; and Density = #/10m^3.

In 2015, post yolk-sac larvae were the dominant life stage collected (82% of the catch) followed by larvae[7] (11%) and yolk-sac larvae (6%) (Table 4-6). Gizzard Shad (+*Dorosoma*) post yolk-sac larvae alone composed 65% of the 2015 catch (EPRI 2018b). Clupeidae sp. (+type) were co-dominated by larvae and post yolk-sac larvae, which collectively composed 18% of the 2015 catch. The most abundant life stage for *Morone* sp. (not Striped Bass) was post yolk-sac larvae and the most abundant life stages for the other two common taxa collected in 2016 were yolk-sac larvae for Ictiobinae sp. and viable eggs, yolk-sac larvae, and post yolk-sac larvae for Freshwater Drum (EPRI 2018b).

In 2016, yolk-sac larvae and post yolk-sac larvae were the dominant life stages collected (44% and 33% of the catch, respectively), followed by larvae[7] and viable eggs (11% of the catch each) (Table 4-6). The two most abundant taxa–life stages were Ictiobinae sp. yolk-sac larvae and Gizzard Shad (+*Dorosoma*) post yolk-sac larvae, which composed 27% and 25% of the 2016 catch, respectively (EPRI 2018b). The Freshwater Drum catch was co-dominated by viable eggs and yolk-sac larvae that composed 10% and 8% of the 2016 catch, respectively. For the remaining two common taxa, the most abundant life stages were larvae for Clupeidae sp. (+type) and yolk-sac larvae for *Morone* sp. (not Striped Bass) (EPRI 2018b).

Table 4-6 Number and Relative Abundance of Life Stages Collected at Clifty Creek Station in 2015 and 2016 (EPRI 2018b)

	2015		2016	
Life Stage	**# Collected**	**% Composition**	**# Collected**	**% Composition**
Eggs (non-viable)	32	0.1%	14	0.1%
Eggs (viable)	477	1.2%	2,241	11.2%
Not Determined	--	--	6	<0.05%
Yolk-sac Larvae	2,363	5.8%	8,805	44.0%
Larvae	4,301	10.5%	2,270	11.3%
Post Yolk-sac Larvae	33,733	82.4%	6,636	33.2%
Juveniles	29	0.1%	34	0.2%
Adult	--	--	1	<0.05%
Total	**40,935**	**100.0%**	**20,007**	**100.0%**

Based on information summarized above and considering the purpose of this subsection, the taxa most susceptible to impingement and entrainment in the McAlpine Pool are Gizzard Shad, Freshwater Drum, Ictiobinae sp. (surrogates are Quillback, River Carpsucker, and Smallmouth Buffalo), *Morone* sp. (surrogate is White Bass), and Sauger. Gizzard Shad and Freshwater Drum were the most abundant species collected in the recent impingement and entrainment studies (Table 4-3 and Table 4-4). Ictiobinae species collected during the in-river and impingement studies include Quillback, River Carpsucker, and Smallmouth Buffalo (Table 4-2 and Table 4-4). However, *Ictiobus* sp. (buffalo species) was the only lower taxonomic Ictiobinae identification

[7] The "larvae" life stage is defined as yolk-sac and/or post yolk-sac larvae that cannot not be differentiated, e.g., larvae that are in a transitional (T) phase between yolk-sac and post yolk-sac (T1) or between post yolk-sac and juvenile (T2).

made during the entrainment study. Due to the similar relative abundance of each species in the in-river studies (Table 4-2), Quillback, River Carpsucker, and Smallmouth Buffalo will be discussed for Ictiobinae sp. It should be noted that Stefanavage (2009) listed buffalo species as an important commercial fish group in the Kentucky/Indiana portion of the Ohio River. Gizzard Shad is a baitfish and Freshwater Drum, Quillback, River Carpsucker, and Smallmouth Buffalo are commercial fish as defined by the Indiana Administrative Code[4,5]. *Morone* taxa were the most abundant sport fish taxa group in the entrainment study, though this group composed less than 0.3% of impinged fish. White Bass was the most abundantly impinged *Morone* species and the most abundant *Morone* species collected during the in-river studies (except for the sterile hybrid striper). Though Sauger was not abundant during the entrainment study, accounting for only 0.2% of the catch, it was the most abundant sport fish collected during the impingement study and composed 0.6% of the catch. White Bass and Sauger are classified as a sport fish species by the Indiana Administrative Code[6] and therefore are subject to statewide and regional recreational fishing regulations of the Indiana Department of Natural Resources (IDNR 2018a).

4.4 *Primary Period of Reproduction, Larval Recruitment, and Period of Peak Abundance for Relevant Taxa*

Identification and evaluation of the primary period of reproduction, larval recruitment, and period of peak abundance for relevant taxa.

In the Ohio River, there is a marked seasonality to ichthyoplankton in the water column (ESE 1992). Most species have a limited spawning season, outside of which individuals are not susceptible to entrainment due to growth beyond the size that can pass through traveling screens. Some taxa have a defined single spawning season that is temporally compressed and measured in days or weeks, while others may spawn over a longer season, measured in months. Ichthyoplankton are effectively absent in the winter months. Ichthyoplankton densities begin to increase mid-spring, peak in late spring or early summer, and then decline in July and August. During the Clifty Creek entrainment study, this pattern occurred in 2015 when the peak density was observed in early June and a similar but bimodal pattern was observed in 2016 when peak densities were observed in early May and June (Figure 4-1).

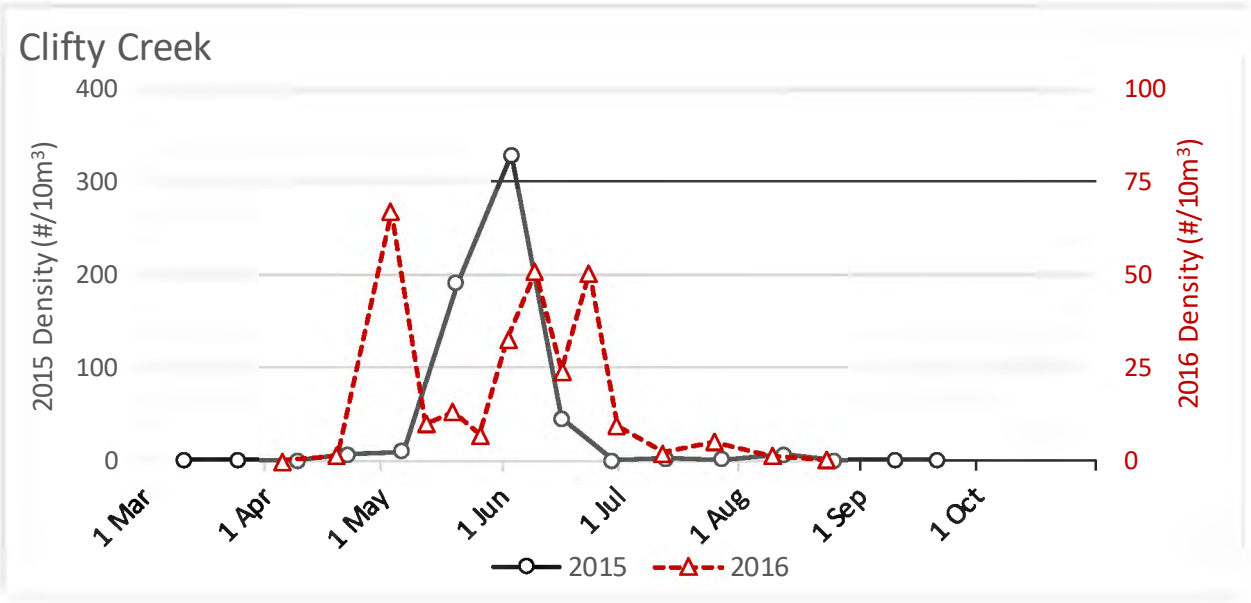

Figure 4-1 Ichthyoplankton Density by Sampling Event at Clifty Creek Generating Station in 2015 and 2016

In 2015, the temporal pattern consisted of increasing densities beginning in early May, peak densities occurring in mid-May and early June, sharply decreasing densities in mid-June, followed by low and variable densities through August with few ichthyoplankton collected in late August and none in September (Figure 4-1). In 2016, an initial density peak was observed in early May; densities thereafter decreased until early to mid-June when another peak was observed. Elevated densities were also observed through later June, after which densities decreased and remained low through August. In 2015, the maximum density was observed in early June (329.4/10m^3). Gizzard Shad, Clupeidae sp., and *Dorosoma* sp. were the dominant taxa during this peak (EPRI 2018b). In 2016, the peak density in early May was primarily due to Ictiobinae sp. yolk-sac larvae, whereas the peaks in June were largely composed of Gizzard Shad and Freshwater Drum (Figure 4-1; EPRI 2018b). Based on Figure 4-1, the primary period of reproduction in the McAlpine Pool begins in mid-April and ends in August, and the period of peak abundance extends from early May through latter June. Temporal characteristics of the taxa most susceptible to entrainment at Clifty Creek are presented below.

4.4.1 Gizzard Shad (+Dorosoma)

In 2015, Gizzard Shad (+*Dorosoma*), primarily post yolk-sac larvae, were collected between mid-May and mid-August, and their peak densities occurred in latter May and early June (Figure 4-2; EPRI 2018b). Gizzard Shad (+*Dorosoma*) densities were low during the other five events in which they were collected in 2015. In 2016, Gizzard Shad (+*Dorosoma*) larvae were identified in samples from May through July, a slightly narrower period of occurrence than in 2015 (Figure 4-2; EPRI 2018b). Peak abundance occurred in June, approximately two weeks later than the observed timing of peak abundance in 2015 (Figure 4-2; EPRI 2018b). Based on Figure 4-2, the primary period of reproduction for Gizzard Shad (+*Dorosoma*) begins in early May and ends in mid-August, and the period of peak abundance extends from latter May through June.

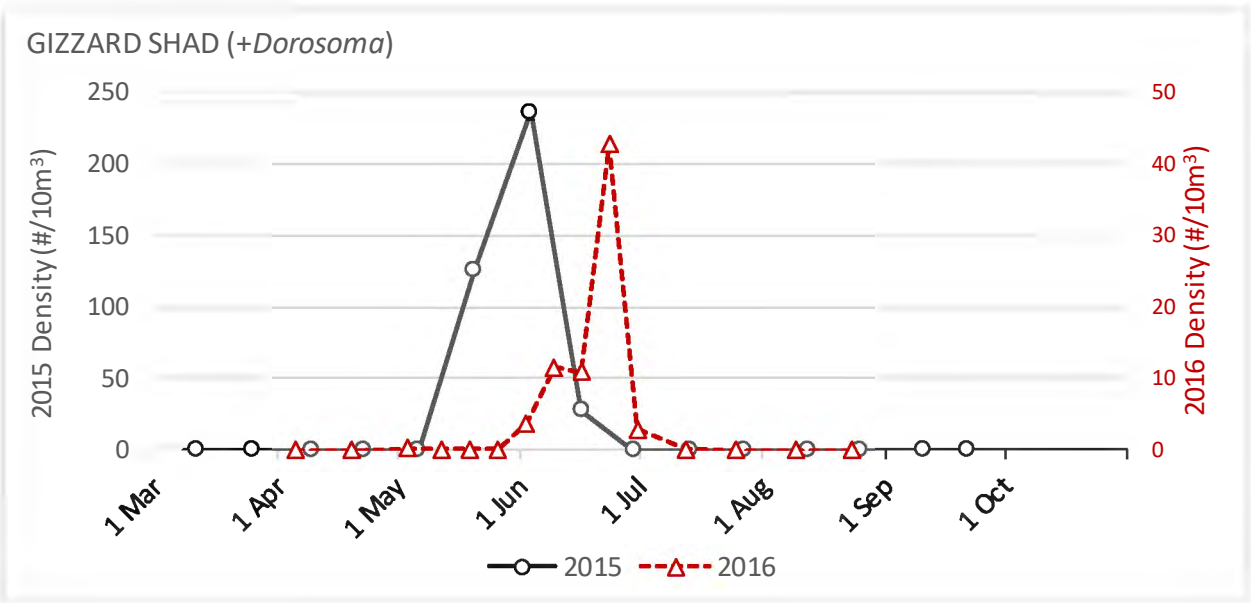

Figure 4-2 Gizzard Shad (+Dorosoma) Ichthyoplankton Density by Sampling Event in the McAlpine Pool in 2015 and 2016

4.4.2 Freshwater Drum

In 2015, Freshwater Drum was collected from latter May through September, and its greatest densities occurred from later May through mid-June and in mid-August (Figure 4-3; EPRI 2018b). The late peak in mid-August was likely the result of Freshwater Drum spawning being interrupted by the historic high river flow conditions that occurred from late June through mid-July (USACE 2015). A mixture of eggs and larvae was often collected during each event (EPRI 2018b). In 2016, Freshwater Drum was collected from May through August, but it was most abundant during the first half of June (Figure 4-3). Although Freshwater Drum displayed a clear prolonged period of peak densities during the first half of June, an additional smaller peak occurred in late July (Figure 4-3). As in 2015, the primary life stages collected in 2016 were eggs and yolk-sac larvae (EPRI 2018b). Based on Figure 4-3, the primary period of reproduction for Freshwater Drum near Clifty Creek begins in May and ends at the end of August, and the period of peak abundance is bimodal; it extends from later May through mid-June, and from later July through mid-August.

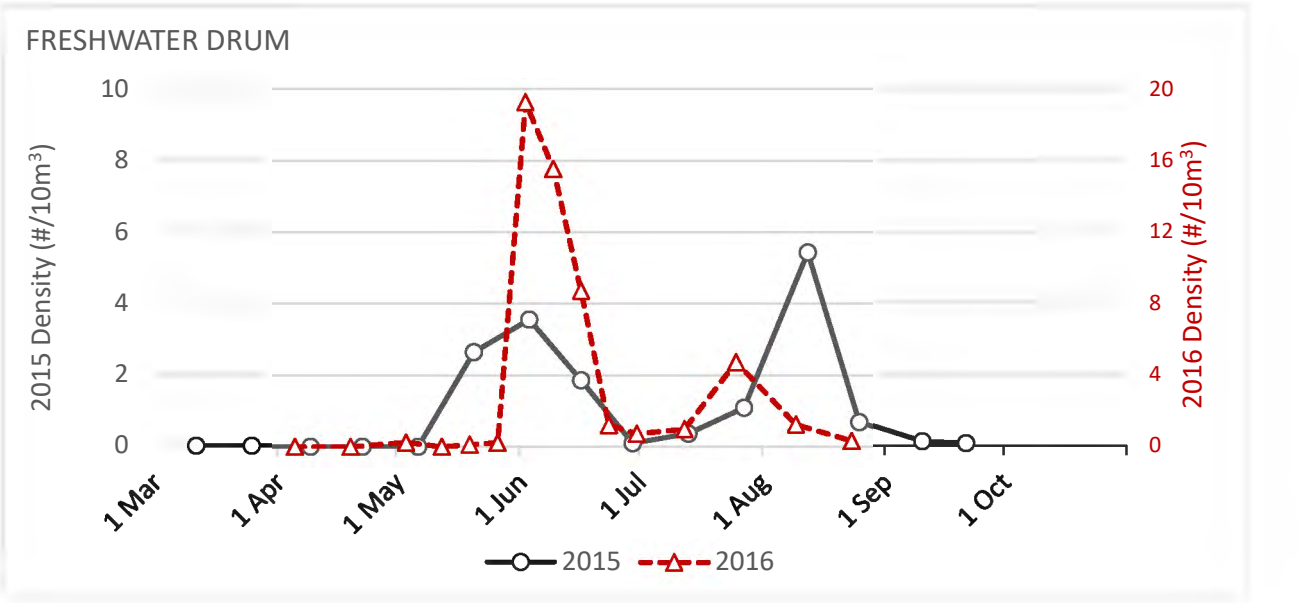

Figure 4-3 Freshwater Drum Ichthyoplankton Density by Sampling Event in the McAlpine Pool in 2015 and 2016

4.4.3 Ictiobinae sp.

In 2015, Ictiobinae sp., primarily yolk-sac larvae, were collected from later April through late July and peak densities occurred in mid-April and early May (Figure 4-4). Approximately 93% of entrainment for this taxon occurred during the peak period (EPRI 2018b). In 2016, Ictiobinae sp. (almost exclusively yolk-sac larvae) were collected from May through mid-July, but they were most abundant in early May (Figure 4-4). In fact, 72% of its annual entrainment estimate occurred during this peak (Figure 4-4; EPRI 2018b). The timing of peak abundance was similar between 2015 and 2016 (EPRI 2018b). Based on Figure 4-4, the primary period of reproduction for Ictiobinae sp. in the McAlpine Pool begins in mid-April and ends in late July, and the period of peak abundance occurs from mid-April through early May.

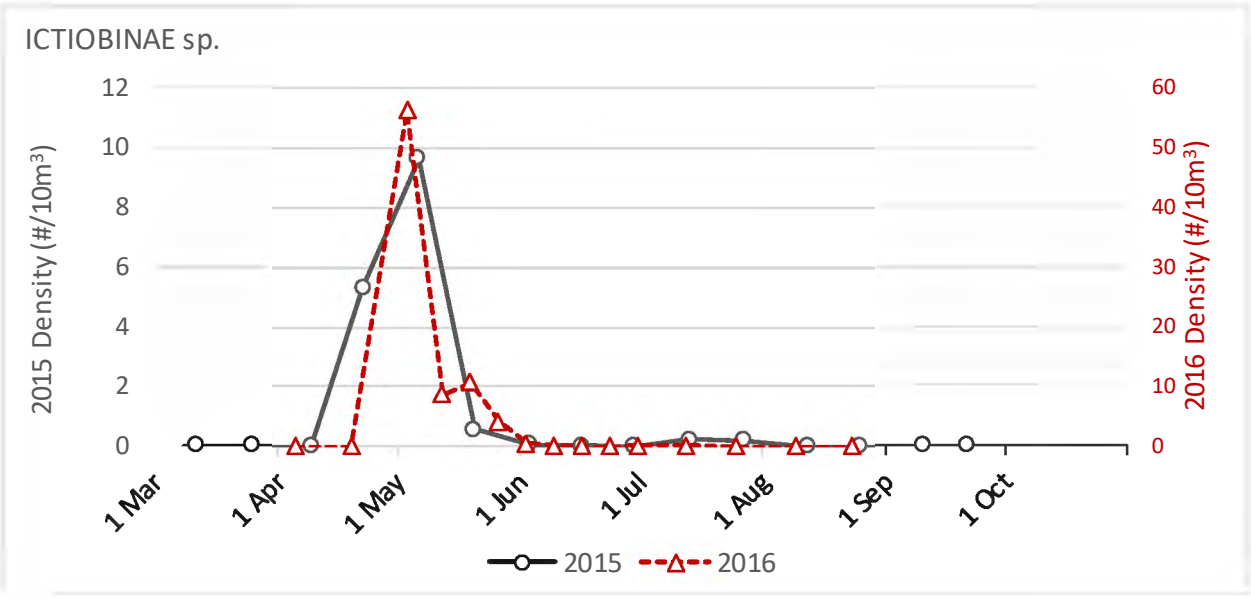

Figure 4-4 Ictiobinae sp. Ichthyoplankton Density by Sampling Event in the McAlpine Pool in 2015 and 2016

4.4.4 Morone sp.

In 2015, *Morone* sp. (includes *Morone* sp. and *Morone* sp. [not Striped Bass]) were collected during a narrow timeframe from late April through mid-June. However, 97% of all *Morone* sp. specimens were collected during one event in mid-May (Figure 4-5; EPRI 2018b). As such, this event produced 96% of the annual estimated entrainment for this group (EPRI 2018b). Post yolk-sac larvae was the dominant life stage collected. In 2016, *Morone* sp. were collected in May and June. Two peak periods of elevated densities were apparent in 2016, one in early May and another in early June, which occurred earlier and later that the mid-May 2015 peak (Figure 4-5). The early May peak in 2016 was primarily composed of yolk-sac larvae, while the second peak was dominated by post yolk-sac and yolk-sac larvae (EPRI 2018b). The primary period of reproduction for *Morone* sp. near Clifty Creek Station begins in late April and ends in mid-June, and the period of peak abundance extends from early May through the first half of June (Figure 4-5).

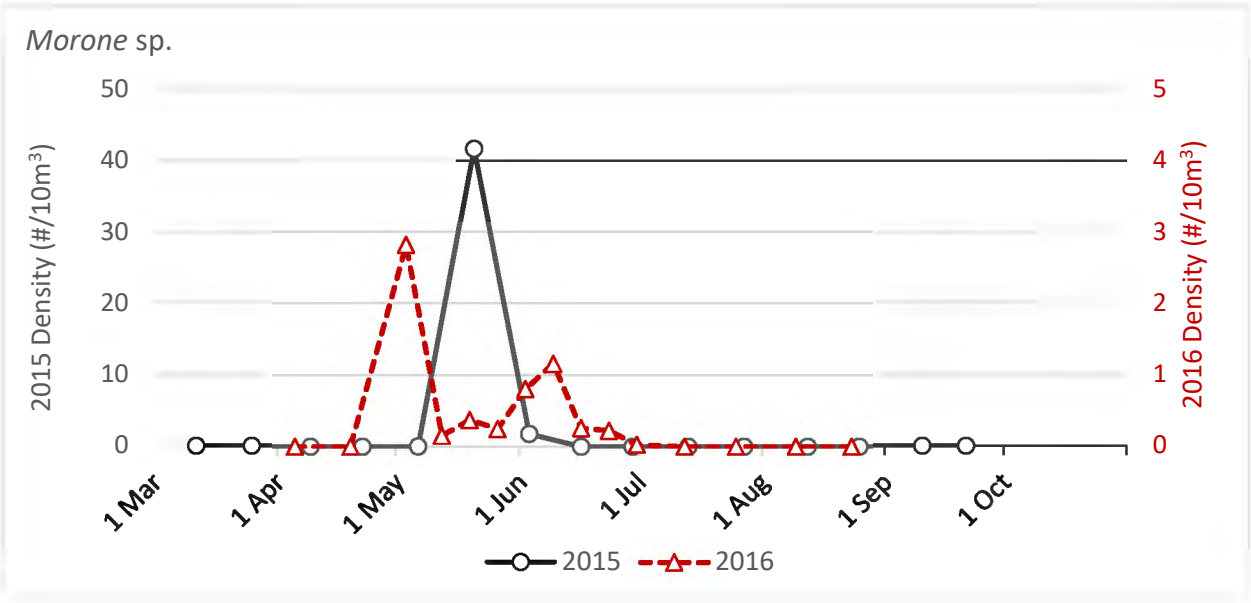

Figure 4-5 Morone sp. Ichthyoplankton Density by Sampling Event in the McAlpine Pool in 2015 and 2016

4.4.5 Sauger

In 2015, Sauger (includes *Sander* sp.), primarily yolk-sac larvae, were collected from later April through early May; greatest densities occurred in later April (Figure 4-6; EPRI 2018b). In 2016, Sauger were collected from mid-April through mid-May, a temporal range slightly greater than observed in 2015. A single peak in density occurred in early May, approximately two weeks later than the peak observed in 2015 (Figure 4-6; EPRI 2018b). The primary period of reproduction for Sauger in the McAlpine Pool begins in mid-April and ends in mid-May, and the period of peak abundance extends from later April through early May (Figure 4-6).

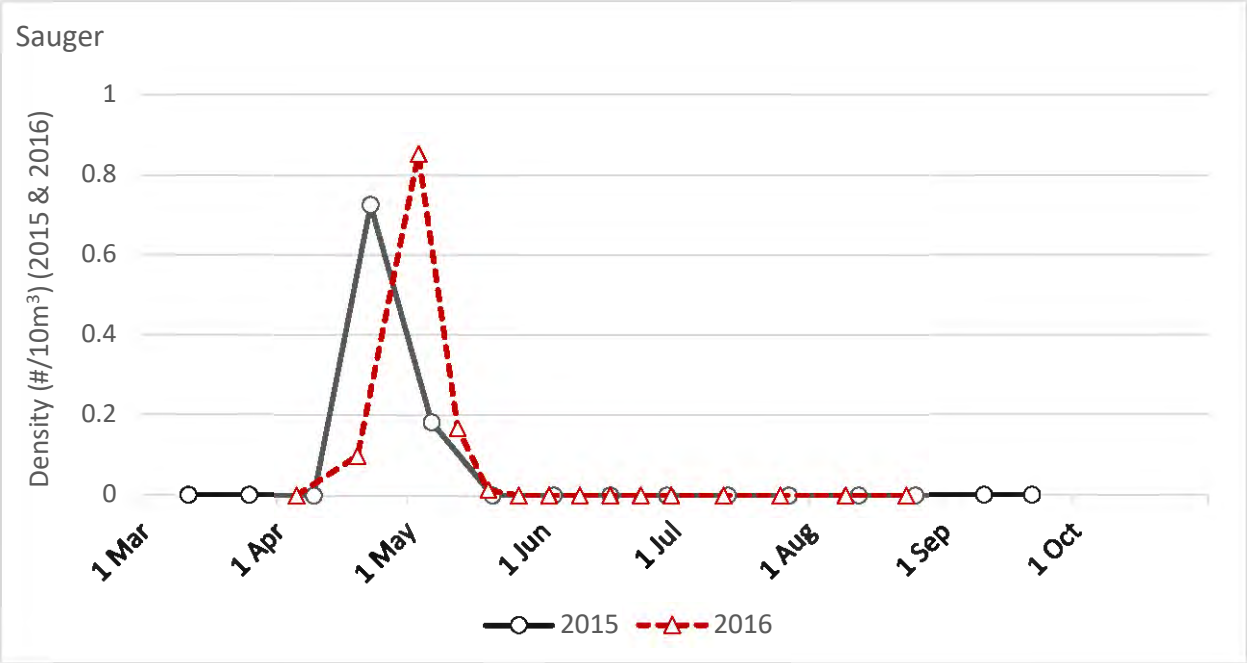

Figure 4-6 Sauger Ichthyoplankton Density by Sampling Event in the McAlpine Pool in 2015 and 2016

4.5 *Seasonal and Daily Activities of Relevant Taxa*

Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure.

The studies conducted in the McAlpine Pool at Clifty Creek Station during 2005-2007 and 2015-2016 determined that Gizzard Shad, Freshwater Drum, Ictiobinae sp. (surrogates are Quillback, River Carpsucker, and Smallmouth Buffalo), *Morone* sp. (surrogate is White Bass), and Sauger were the taxa most susceptible to impingement and/or entrainment. Therefore, the seasonal and daily activities such as feeding and water column migration are discussed below for these five taxa.

4.5.1 Gizzard Shad

Gizzard Shad is classified as a baitfish by the Indiana Administrative Code[4]. It is a pelagic species, usually living in schools at or near the surface, and inhabits large rivers, reservoirs, lakes, swamps, bays, sloughs, and similar quieter open waters (Becker 1983). Although Gizzard Shad is not considered a migratory species, spring and fall runs as well as winter migrations have been noted (Wallus et al. 1990). Spawning occurs from April through June in the Midwest (Smith 2002), which is consistent with the primary collection periods of its early life stages in upper McAlpine Pool. They usually spawn at night in shallow shoreline areas over a variety of substrates (Wallus et al. 1990). Gizzard Shad egg production is highest in age-2 females, averaging about 380,000 per individual. Fertilized eggs are demersal and adhesive, and therefore adhere to submerged vegetation and various benthic-scape (Becker 1983), which makes them less susceptible to entrainment. Conversely, their pelagic larval stages are highly susceptible to

entrainment (Table 4-3; EPRI 2011). Yolk-sac larvae can move vertically in the water column soon after hatching and after three or four days, they begin active horizontal movements. However, larvae are weak swimmers for at least several weeks after hatching (Becker 1983). Yolk-sac and post yolk-sac larvae appear to feed primarily on protozoans, but transition to zooplankton as juveniles and greater percentages of phytoplankton as they grow older (Becker 1983). Within its range, Gizzard Shad is usually among the most abundant species entrained and tends to dominate impingement collections (EPRI 2011; Table 4-3 and Table 4-4). Its prevalence in impingement studies is largely associated with winter-die offs (EPRI 2008a and 2008b). The Rule at 40 CFR 125.92(m) classifies Gizzard Shad as a fragile species.

4.5.2 Freshwater Drum

Freshwater Drum is classified as a commercial fish by the Indiana Administrative Code[5]. It is a bottom dweller and often found over mixed substrates such as sand, silt, and mud, and prefers moderately deep water. Freshwater Drum is considered a mobile species and tends to travel long distances downstream and much shorter distances upstream. In large rivers, it may travel distances up to approximately 100 miles (Wallus and Simon 2006). Spawning occurs from May through mid-summer (Mettee et al. 1996; Figure 4-3). Freshwater Drum spawns pelagically in main channel areas of large rivers and reservoirs, usually far from shore, in schools of a few to several hundred individuals (Wallus and Simon 2006; Becker 1983). Fecundity of females varies greatly from about 27,000 to 850,000 eggs per individual, but most females tend to produce between 200,000 and 400,000 eggs (Wallus and Simon 2006). Fertilized, water-hardened eggs are buoyant or semibuoyant; eggs and newly hatched yolk-sac larvae float at or near the surface and are scattered by currents and wind (Wallus and Simon 2006; Becker 1983), which makes these early life stages of Freshwater Drum highly susceptible to river drift and entrainment (Table 4-3; EPRI 2011). At approximately 25 mm in length, Freshwater Drum juveniles are found on or near the bottom where they remain for most of their lives. Feeding often begins before the yolk-sac is completely absorbed; the early diet consists primarily of copepods and cladocerans, though early piscivory on clupeids and cyprinids has been observed (Wallus and Simon 2006; Becker 1983). Larger Freshwater Drum feed primarily on aquatic insects, along with snails, crayfish, and fish (Mettee et al. 1996; Becker 1983). Freshwater Drum is also susceptible to impingement. For example, EPRI (2011a) summarized the results of 2004 Phase II EPA Rule § 316(b) impingement data for large rivers such as the Ohio River, and Freshwater Drum was the third most frequently impinged species. During the Clifty Creek impingement study, it was the second most abundant species (Table 4-4).

4.5.3 Ictiobinae sp.

Ictiobinae sp. were the third most abundant taxon collected during the 2015-2016 entrainment study at Clifty Creek (Table 4-3). Quillback, River Carpsucker, and Smallmouth Buffalo were the Ictiobinae species collected during the 2005-2007 impingement study at Clifty Creek (Table 4-4). All three species are classified as commercial fish by the Indiana Administrative Code[5], and buffalo are noted as an important commercial fish on the Kentucky/Indiana portion of the Ohio River (Stefanavage 2009). Quillback, River Carpsucker, and Smallmouth Buffalo are bottom-dwelling species found in pools, oxbow lakes, and deeper water of large rivers (Smith 2002; Becker 1983). All three species can tolerate turbid and silty waters (Smith 2002; Kay et al. 1994). Peak spawning occurs in the spring, typically starting in April or May, but may continue into September in its southern range (Smith 2002; Kay et al. 1994; Becker 1983).

These species are broadcast spawners with adhesive eggs that attach to the substrate, woody debris, and vegetation (Smith 2002; Kay et al. 1994). Fecundity has been estimated to be 18,200 eggs per age-2 female to over 500,000 per age-15 female for Smallmouth Buffalo, 15,000 to 64,000 per female for Quillback, and 18,000 to 196,000 per female for River Carpsucker (Kay et al. 1994; Becker 1983). No parental care is provided to the early life stages. Immediately after hatching, planktonic yolk-sac larvae repeatedly swim to the surface and drift back to the bottom of the water column (Kay et al. 1994). As such, these species are susceptible to entrainment during the yolk-sac larval life stage. For example, over 98% of collected Ictiobinae sp. specimens were yolk-sac larvae or larvae[7] during the two-year entrainment study at Clifty Creek (EPRI 2018b). Young Smallmouth Buffalo feed on small planktonic invertebrates such as copepods and cladocerans, but algae and duckweed may also be consumed. Smallmouth Buffalo become more opportunistic as they grow, feeding on algae and associated invertebrates (Becker 1983). Quillback and River Carpsucker are bottom feeders that typically consume algae, insects, and small invertebrates from bottom substrate (Becker 1983). Ictiobinae taxa composed only 1.2% of the fish collected during electrofishing/seining surveys near Clifty Creek from 2012 through 2016 (Table 4-2). Based on this community composition, they appear to be less susceptible to impingement, composing less than 0.2% of all specimens impinged during the 2005-2007 study (Table 4-4), but more susceptible to entrainment as they composed 12% of all specimens entrained during the 2015-2016 (Table 4-3).

4.5.4 Morone sp.

Morone taxa collectively composed less than 0.5% of impinged fish, but composed up to 7.4% of the entrained ichthyoplankton during the 2015 and 2016 entrainment study (Table 4-3 and Table 4-4). They were the most abundant sport fish group collected in the entrainment study, and White Bass was the most abundantly impinged *Morone* species. White Bass is classified as a sport fish by the Indiana Administrative Code[6], and therefore is subject to statewide and regional recreational fishing regulations (IDNR 2018a). White Bass is a schooling pelagic species that prefers open water of lakes, reservoirs, and large rivers. This species is capable of large movements (up to 1 mile per day) and in one study of post-spawning adults, the average distance traveled prior to recapture was 21 miles (Becker 1983). Spawning primarily occurs from April through June and is temperature dependent with peak spawning occurring at 16.9-22.6°C. Spawning takes place mid-water with spawning groups rising to the surface where eggs are scattered. Eggs are adhesive and attach to vegetation, gravel, and rocks. The average female produces 565,000 eggs per season, but larger individuals may produce over 900,000 (Becker 1983; Wallus and Simon 2006). Young White Bass feed on planktonic crustaceans and insect larvae such as cladocerans, chironomid larvae, and copepods. As they grow, White Bass incorporate fish as a food item, though small invertebrates still compose an important portion of their diet (Becker 1983). *Morone* taxa composed 1.3% of the fish collected during electrofishing/seining surveys near Clifty Creek from 2012 through 2016 (Table 4-2). Based on this community composition, *Morone* taxa appear to be less susceptible to impingement, composing 0.3% of all specimens impinged during the 2005-2007 study (Table 4-4), but more susceptible to entrainment as they composed 5.7% of all specimens entrained during the 2015-2016 entrainment study (Table 4-3).

4.5.5 Sauger

Sauger is classified as a sport fish by the Indiana Administrative Code[6] and is subject to statewide and regional recreational fishing regulations (IDNR 2018a). Sauger inhabits rivers and smaller tributaries and is tolerant of silty substrate and turbid waters (Simon and Wallus 2006; Smith 2002). Sauger is a mobile species and readily passes lock and dams. They have been recorded traveling upwards of 65 miles along a waterway (Becker 1983). Spawning occurs in April and early May over a short period of time (Smith 2002; Becker 1983), which is consistent with observations made during the 2015-2016 entrainment study (Figure 4-6; EPRI 2018b). Sauger spawn in shallow sandy, gravel, or rubble shoals and shorelines where eggs are scattered over the substrate. Fecundity of females varies with size and larger females may produce more than 100,000 eggs per year, but most females produce between 20,000-60,000 eggs per year (Simon and Wallus 2006). Fertilized, water-hardened eggs are semibuoyant and adhesive (Simon and Wallus 2006; Becker 1983). Young Sauger feed on small invertebrates such as *Daphnia* and *Cyclops* but transition to a piscivorous diet as they mature (Becker 1983). Sauger composed 1.9% of the fish collected during electrofishing/seining surveys in upper McAlpine Pool from 2012 through 2016 (Table 4-2). Based on this community composition, they appear to be less susceptible to impingement and entrainment at Clifty Creek as they composed 0.6% of all specimens impinged during the 2005-2007 study (Table 4-4), and 0.2% of all specimens entrained during the 2015-2016 study (Table 4-3). Nonetheless, Sauger was the most abundant sport fish collected during the Clifty Creek impingement study.

4.6 *Threatened, Endangered, and Other Protected Species that Might be Susceptible to Impingement and Entrainment*

Identification of all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at your cooling water intake structures.

Federally-listed and state-listed Threatened or Endangered (T&E) species were identified that are known to or believed to occur in Jefferson County, Indiana, where Clifty Creek is located and Trimble County, Kentucky, which is across the river from the facility. Although the Kentucky State Nature Preserves Commission (KSNPC 2012)[8] lists taxa as T&E, the definition of endangered species in the Kentucky Administrative Regulations (Title 301, Chapter 3, Part 061, Section 2)[9] states:

> *Any species or subspecies designated as endangered by the Secretary of the Interior on a current United States List of Endangered and Threatened Wildlife as recorded in 50 Code of Federal Regulations, Part 17, is considered an endangered species in Kentucky under the provisions of KRS 150.183. Those species described as "threatened" on the above federal list are not included under KRS 150.183 or this administrative regulation.*

The definition does not include a state list of T&E species; nonetheless, the KSNPC T&E designations are presented here with the federal- and Indiana state-level listings.

[8] http://naturepreserves.ky.gov/
[9] http://www.lrc.ky.gov/kar/301/003/061.htm

4.6.1 Federally-listed Species

Federally-listed species for Jefferson County, Indiana, and Trimble County, Kentucky were gathered from the USFWS Environmental Conservation Online System (ECOS)[10] and Information for Planning and Consultation (IPaC)[11] websites (USFWS 2018a and 2018b). The IPaC Project area encompasses 640 acres (1 mi^2) and includes the Ohio River at Clifty Creek and surrounding terrestrial habitat on both sides of the river (Figure 4-7). There are no designated critical habitats for T&E species located near the Clifty Creek Station CWIS (USFWS 2018b).

Figure 4-7 Project Area Designated for Investigation in the IPaC Website (https://ecos.fws.gov/ipac/; USFWS 2018b).

USFWS lists 13 species as endangered and two as threatened under the Endangered Species Act (Table 4-7; USFWS 2018a and 2018b). Five freshwater mussel species are listed as endangered in Jefferson County, Indiana, or Trimble County, Kentucky, and six additional endangered mussels and one threatened mussel were identified through the IPaC website search. The Snuffbox (*Epioblasma triquetra*), a federally endangered mussel, is identified on the state list of T&E species for Jefferson County, Indiana. However, it was not identified on the USFWS county lists nor the IPaC website search. Although the occurrence of these mussel species in the immediate vicinity of the Clifty Creek CWIS is unknown, the recent mussel surveys conducted upstream of the facility (ORMs 557.0 and 537.2 to 540.5) encountered 20 mussel species, none of which are federally-listed (Table 4-1; EPRI 2012a; LEC 2016). The other federally-listed species consist of the endangered Running Buffalo Clover (*Trifolium stoloniferum*), Indiana Bat (*Myotis sodalis*), and Gray Bat (*Myotis grisescens*), and the threatened Northern Long-eared Bat (*Myotis septentrionalis*) (Table **4-7**). There is no nexus between these four species and operation

[10] https://ecos.fws.gov/ecp/
[11] https://ecos.fws.gov/ipac/

of the Clifty Creek CWIS. Federally-listed fish species are not known to occur in the action area based on the county listings (USFWS 2018a) and the IPaC website search (USFWS 2018b).

Table 4-7 Species Listed by the USFWS Known to or Believed to Occur in Jefferson County, Indiana, and Trimble County, Kentucky, and Species Listed in Jefferson County by the Indiana Department of Natural Resources and in Trimble County by the Kentucky Department of Fish and Wildlife Resources

Common Name	Scientific Name	Status (E=Endangered, T=Threatened)				
		Federal			State	
		Jefferson, IN	Trimble, KY	IPaC Search	Jefferson, IN	Trimble, KY[a]
Mussels						
Spectaclecase	*Margaritifera monodonta*	NL[b]	NL	E	--	--
Fanshell	*Cyprogenia stegaria*	NL	NL	E	--	--
Catspaw	*Epioblasma obliquata*	NL	NL	E	--	--
Northern Riffleshell	*Epioblasma rangiana*	NL	NL	E	--	--
Snuffbox	*Epioblasma triquetra*	NL	NL	NL	E	--
Longsolid	*Fusconaia subrotunda*	--	--	--	E[c]	--
Pink Mucket	*Lampsilis abrupta*	NL	E	NL	--	--
Pocketbook	*Lampsilis ovata*	--	--	--	--	E[d]
Ring Pink	*Obovaria retusa*	NL	NL	E	--	E
Round Hickorynut	*Obovaria subrotunda*	--	--	--	E	--
Orangefoot Pimpleback	*Plethobasus cooperianus*	NL	NL	E	--	E
Sheepnose	*Plethobasus cyphyus*	E	NL	E	E	--
Clubshell	*Pleurobema clava*	NL	E	E	--	--
Rough Pigtoe	*Pleurobema plenum*	NL	E	E	--	--
Pyramid Pigtoe	*Pleurobema rubrum*	--	--	--	--	E
Rabbitsfoot	*Theliderma cylindrica*	NL	NL	T	--	T
Fish						
Mississippi Silverside	*Menidia audens*	--	--	--	--	T[e]
Amphibians						
Eastern Hellbender	*Cryptobranchus alleganiensis alleganiensis*	--	--	--	E	E
Crawfish Frog	*Lithobates areolatus*	--	--	--	E	--
Reptile						
Kirtland's Snake	*Clonophis kirtlandii*	--	--	--	E	--

Table 4-7 (Continued)

Common Name	Scientific Name	Status (E=Endangered, T=Threatened)				
		Federal			State	
		Jefferson, IN	Trimble, KY	IPaC Search	Jefferson, IN	Trimble, KY[a]
Mammals						
Indiana Bat	*Myotis sodalis*	E	E	E	E	E
Gray Bat	*Myotis grisescens*	NL	E	E	--	T
Northern Long-eared Bat	*Myotis septentrionalis*	T	T	T	--	--
Birds						
Henslow's Sparrow	*Ammodramus henslowii*	--	--	--	E	--
Sedge Wren	*Cistothorus platensis*	--	--	--	E	--
Loggerhead Shrike	*Lanius ludovicianus*	--	--	--	E	--
Cerulean Warbler	*Setophaga cerulea*	--	--	--	E	--
Barn Owl	*Tyto alba*	--	--	--	E	--
Peregrine Falcon	*Falco peregrinus*	--	--	--	--	E
Bald Eagle	*Haliaeetus leucocephalus*	--	--	--	--	T
Crustaceans						
Indiana Groundwater Copepod	*Diacyclops indianensis*	--	--	--	E	--
Lewis' Groundwater Copepod	*Diacyclops lewisi*	--	--	--	E	--
Collembola						
Fountain Cave Springtail	*Pseudosinella fonsa*	--	--	--	T	--
Insect						
Northern Metalmark	*Calephelis borealis*	--	--	--	--	T
Plants[f]						
Running Buffalo Clover	*Trifolium stoloniferum*	NL	NL	E	--	--

[a] The Trimble County, KY, list of T&E species is compiled by KDFWR (2018) from the state-wide list of T&E species generated by the KSNPC (2012).
[b] NL denotes that the federally-listed species was not on either or both USFWS county lists and/or the IPaC search list. All federally-listed species are shaded in gray.
[c] The Longsolid mussel is listed as endangered in Indiana (IDNR 2017), but was not on the Jefferson County list (IDNR 2018b); it was collected during a recent mussel survey upstream of Clifty Creek Station (LEC 2016).
[d] The Pocketbook mussel is listed as endangered by the KSNPC (2012) for Kentucky, but was not on the Trimble County list (KDFWR 2018); it was collected during both recent mussel surveys upstream of Clifty Creek Station (EPRI 2012a; LEC 2016).
[e] Mississippi Silverside (historically known in the region as Inland Silverside [*Menidia beryllina*]) is listed by the KSNPC (2012) as threatened for Kentucky, but did not appear on the Trimble County list of T&E species (KDFWR 2018); it was collected near Clifty Creek Station during the 2015 in-river surveys (Table 4-2).
[f] Only the federally-listed plant species is presented.
Source: USFWS 2018a; USFWS 2018b; KDFWR 2018; IDNR 2018b; mussel scientific nomenclature follows Williams et al. 2017.

As discussed in Section 4.3.1, mussels are not among organisms that are most susceptible to impingement and entrainment. However, impingement of host fish likely represents the highest risk among all potential CWIS impact pathways for mussels (EPRI 2017b). Most common host species for listed mussels are bottom-dwelling species, as they provide the greatest opportunity for interaction with mussels and provide the greatest success rates for glochidia attachment (EPRI 2017b). Known host fish species for the 12 federally-listed mussel species are given in Table 4-8; this is an incomplete list because all mussel species have not been tested with all fish species presented and hosts are not known for three of the mussels.

With the exception of Spectaclecase (*Margaritifera monodonta*) and those mussels for which hosts have not been identified, host fish for each mussel have been collected during in-river surveys in the McAlpine Pool near Clifty Creek (Table 4-8 and Table 4-2). Additionally, at least one fish host species for seven of these eight mussel species was collected during the 2005-2007 impingement study at Clifty Creek (Table 4-8 and Table 4-4). Only two species (Shorthead Redhorse and Bigeye Chub) have been identified as hosts for Spectaclecase, which occurs primarily under slab rocks and bedrock shelves or among boulders. However, it is likely that Smallmouth Redhorse (*Moxostoma breviceps*), a former Shorthead Redhorse subspecies, is a host species for Spectaclecase. The Fanshell (*Cyprogenia stegaria*), which prefers coarse sand or gravel that is stable and silt free, typically uses darter species as hosts. The Catspaw (*Epioblasma obliquata*) uses Rock Bass, Mottled Sculpin, Stonecat, and darter species as hosts. It prefers shallow water and requires swift current; it is found in substrates from sand to boulders and is intolerant of siltation. The Northern Riffleshell (*Epioblasma rangiana*) requires swiftly moving, well-oxygenated water; riffle and run areas with fine to coarse gravel are its preferred habitats. Its potential host fish species include Mottled Sculpin, Bluebreast Darter, Rainbow Darter, Banded Darter, and Brown Trout. The Snuffbox mussel is usually found in small- to medium-sized streams within areas of swift current and sand, gravel, or cobble substrates. Laboratory trials have determined that the Snuffbox can utilize three sculpin species, Blackspotted Topminnow, and three *Percina* species as hosts. The Pink Mucket (*Lampsilis abrupta*) utilizes Walleye, Sauger, Freshwater Drum, black bass species, and White Crappie as hosts and prefers silt-free substrates in areas with swift currents and riffles. Host species are not known for Ring Pink (*Obovaria retusa*) or Orangefoot Pimpleback (*Plethobasus cooperianus*); both of these species prefer sand and gravel substrates. Sheepnose (*Plethobasus cyphyus*), which may occur in gravel and cobble riffles or areas with mixtures of sand, gravel, and mud, is known to use Sauger, Central Stoneroller, and Mimic Shiner as hosts, but may be able to utilize a wide array of small cyprinid species based on laboratory studies. The Clubshell (*Pleurobema clava*) is generally found in medium to small rivers and streams within clean, coarse sand and gravel of runs, often just downstream of a riffle and uses Blackside Darter, Central Stoneroller, Logperch, and Striped Shiner as hosts. Hosts are not known for Rough Pigtoe (*Pleurobema plenum*), which requires stable substrates composed of a mixture of firm and clean gravel and sand. The Rabbitsfoot mussel (*Theliderma cylindrica*) is typically found in small to medium streams but may be found in larger rivers in areas with sand and gravel. Whitetail Shiner, Spotfin Shiner, Bigeye Chub, and Rainbow Darter have been confirmed hosts of Rabbitsfoot glochidia.

In summary, the federally-listed mussel species discussed above are unlikely to be present in the Ohio River near Clifty Creek or Trimble County due to their habitat requirements and that none of these species were collected during recent Clifty Creek surveys upstream of the facility.

Therefore, it can be reasonably concluded that the host fish species susceptible to impingement by Clifty Creek's CWIS would not be infested with glochidia from these mussel species.

Table 4-8 Known Host Fish Species of Federally-listed Mussel Species Known to or Believed to Occur in Jefferson County, Indiana, and Trimble County, Kentucky

Mussel Species	**Host Species** (from EPRI [2017b] unless otherwise noted)
Spectaclecase (*Margaritifera monodonta*)	Shorthead Redhorse (*Moxostoma macrolepidotum*) and Bigeye Chub (*Hybopsis amblops*)
Fanshell (*Cyprogenia stegaria*)	**Greenside Darter (*Etheostoma blennioides*)**, Mottled Sculpin (*Cottus bairdii*), Snubnose Darter (*Etheostoma simoterum*), **Banded Darter (*Etheostoma zonale*)**, Tangerine Darter (*Percina aurantiaca*), Blotchside Logperch (*Percina burtoni*), **Logperch (*Percina caprodes*)**, and Roanoke Logperch (*Percina rex*)
Catspaw (*Epioblasma obliquata*)	**Rock Bass (*Ambloplites rupestris*)**, Mottled Sculpin (*Cottus bairdii*), Stonecat (*Noturus flavus*), Blackside Darter (*Percina maculata*), and **Logperch** (USFWS 2015)
Northern Riffleshell (*Epioblasma rangiana*)	Potential hosts: Mottled Sculpin, Bluebreast Darter (*Etheostoma camurum*), **Rainbow Darter (*Etheostoma caeruleum*)**, **Banded Darter**, and Brown Trout (*Salmo trutta*) (Watters et al. 2009)
Snuffbox (*Epioblasma triquetra*)	Black Sculpin (*Cottus baileyi*), Mottled Sculpin, Banded Sculpin (*Cottus carolinae*), Blackspotted Topminnow (*Fundulus olivaceus*), **Logperch**, Blackside Darter, and Roanoke Darter (*Percina roanoka*), as determined by laboratory trials
Pink Mucket (*Lampsilis abrupta*)	**Walleye (*Sander vitreus*)**, **Sauger (*Sander canadensis*)**, **Freshwater Drum (*Aplodinotus grunniens*)**, **Smallmouth Bass (*Micropterus dolomieu*)**, **Spotted Bass (*Micropterus punctulatus*)**, **Largemouth Bass (*Micropterus salmoides*)**, and **White Crappie (*Pomoxis annularis*)**
Ring Pink (*Obovaria retusa*)	None Identified
Orangefoot Pimpleback (*Plethobasus cooperianus*)	None Identified
Sheepnose (*Plethobasus cyphyus*)	Primary hosts: **Sauger**, **Central Stoneroller (*Campostoma anomalum*)**, and Mimic Shiner (*Notropis volucellus*) Potential hosts: Blackspotted Topminnow, Blacktail Shiner (*Cyprinella venusta*), Bleeding Shiner (*Luxilus zonatus*), **Bluntnose Minnow (*Pimephales notatus*)**, Brassy Minnow (*Hybognathus hankinsoni*), **Bullhead Minnow (*Pimephales vigilax*)**, Common Shiner (*Luxilus cornutus*), Eastern Blacknose Dace (*Rhinichthys atratulus*), Fathead Minnow (*Pimephales promelas*), Longnose Dace (*Rhinichthys cataractae*), Ozark Minnow (*Notropis nubilus*), Pearl Dace (*Margariscus margarita*), Red Shiner (*Cyprinella lutrensis*), **River Shiner (*Notropis blennius*)**, **Silver Chub (*Macrhybopsis storeriana*)**, Southern Redbelly Dace (*Chrosomus erythrogaster*), **Spotfin Shiner (*Cyprinella spiloptera*)**, Steelcolor Shiner (*Cyprinella whipplei*), **Striped Shiner (*Luxilus chrysocephalus*)**, **Suckermouth Minnow (*Phenacobius mirabilis*)**, **Western Mosquitofish (*Gambusia affinis*)**, and Whitetail Shiner (*Cyprinella galactura*)
Clubshell (*Pleurobema clava*)	Blackside Darter, **Central Stoneroller**, **Logperch**, and **Striped Shiner** (O'Dee and Watters 2000)
Rough Pigtoe (*Pleurobema plenum*)	None Confirmed
Rabbitsfoot	Whitetail Shiner, **Spotfin Shiner**, Bigeye Chub, and **Rainbow Darter**

(*Theliderma cylindrica*)	(NatureServe 2017)

Note: Bolded taxa were collected during in-river surveys near Clifty Creek Station from 2012 to 2016 (Table 4-2). Underlined taxa were impinged at Clifty Creek Station during 2005-2007 (Table 4-4).

4.6.2 State-listed Species

The list of T&E species for Jefferson County, Indiana, was obtained from the Indiana Department of Natural Resources (IDNR 2018b). Four mussel species, two amphibian species, one snake (reptile) species, one bat species, five bird species, two groundwater copepod species, and one Collembola species are Indiana state-listed T&E species in Jefferson County or are known to occur upstream of Clifty Creek (Table 4-7). As stated earlier in this section, the Kentucky Administrative Regulations definition of endangered species of fish and wildlife[9] does not include a state list of T&E species. However, the KSNPC's list of T&E species is considered here for completeness. KDFWR compiles wildlife T&E species by county from the KSNPC's state-encompassing list (KDFWR 2018; KSNPC 2012)[12]. Five mussel species, one fish species, one amphibian species, two bat species, two bird species, and one insect species are listed as T&E by the KSNPC in Trimble County, Kentucky, or are known to occur near Clifty Creek Station (Table 4-7). Plant species are not considered here because of the lack of nexus with operation of the Clifty Creek Station CWIS. Similarly, the terrestrial snake species, bat species, bird species, subterranean copepod species, the cave-dwelling Collembola species, and the butterfly (insect) species are also not considered because they are not susceptible to entrainment nor impingement. The remaining state-listed T&E species are one fish, two amphibian, and nine mussel species (Table 4-7).

Inland Silverside (*Menidia beryllina*) is listed as threatened by the KSNPC (2012). In 2013, the form that inhabits freshwater, non-tidal habitats was recognized as a separate species, Mississippi Silverside (*Menidia audens*) (Page et al. 2013). Neither Inland Silverside nor Mississippi Silverside were listed specifically by the KDFWR (2018) for Trimble County, Kentucky. However, a single Mississippi Silverside was collected in 2015 during in-river surveys near Clifty Creek Station (Table 4-2; EPRI 2017a). The Mississippi Silverside is a small, elongate, translucent fish that typically inhabits the upper 2 m of the water column (Ross 2001). They primarily consume small crustaceans and spawn in March through mid-summer in their southern extent but may spawn later in their northern range (Ross 2001; Mettee et al. 1996). This species was not entrained nor impinged at Clifty Creek's CWIS (Table 4-3 and Table 4-4).

The two amphibian species are the Eastern Hellbender (*Cryptobranchus a. alleganiensis*) and the Crawfish Frog (*Lithobates areolatus*). The Eastern Hellbender is listed as endangered in Indiana and as endangered by the KSNPC for Kentucky. Its native habitat consists of large slab rocks in clear and well-aerated streams and rivers (Burgmeier et al. 2011), habitat that is lacking in the impounded Ohio River in the vicinity of the Clifty Creek. Although its occurrence near the facility is unknown, no amphibians were collected during the entrainment study at Clifty Creek (EPRI 2018b). Crawfish Frog is listed as endangered in Indiana. It occurs in a range of habitats including open damp areas, wooded mountain valleys, woodlands, and brushy fields, but in Indiana it appears to favor grasslands (Engbrecht 2010). Based on habitat use in Indiana, there would be no nexus with the operation of Clifty Creek's CWIS.

[12] http://app.fw.ky.gov/speciesinfo/SpeciesInfo.asp

Of the nine mussel species listed for Indiana or by the KSNPC for Kentucky, Snuffbox, Ring Pink, Orangefoot Pimpleback, and Sheepnose are state- and federally-endangered, and the Rabbitsfoot is state- and federally-threatened. Among the four remaining state-only listed mussel species, Longsolid (*Fusconaia subrotunda*) and Round Hickorynut (*Obovaria subrotunda*) are state-endangered for Indiana, and Pocketbook (*Lampsilis ovata*) and Pyramid Pigtoe (*Pleurobema rubrum*) are listed as endangered by the KSNPC for Kentucky (Table 4-7). As discussed above for the federally-listed mussel species, two recent mussel surveys were conducted upstream of Clifty Creek (EPRI 2012a; LEC 2016). Both surveys produced one species listed as endangered by the KSNPC for Kentucky (Pocketbook), and the LEC (2016) survey collected one Indiana state-endangered species (Longsolid). The Longsolid mussel did not appear on the Jefferson County list (IDNR 2018b), but is endangered in Indiana (IDNR 2017); it is not listed by the KSNPC (2012) for Kentucky. Conversely, the Pocketbook is listed as endangered by the KSNPC for Kentucky but is not listed in Indiana. Information for the host fish of these mussel species could not be identified. The Longsolid can inhabit small to large rivers with moderate to strong current; as long as there is sufficient current to prevent siltation, the Longsolid can utilize areas of gravel and sand (Cummings and Cordeiro 2012). The Pocketbook mussel adapts well to variable waterbody characteristics including strong currents or standing water. It may be found in big rivers (reservoirs) at depths of 5 to 6 m and in small streams in less than 0.6 m water. It prefers mixed substrates of gravel, coarse sand, and silt or mud (Woolnough and Seddon 2017). Occurrence of these mussel species in the immediate vicinity of Clifty Creek's CWIS is unknown but unlikely to occur in the CWIS forebay due to the frequency of dredging.

4.7 *Public Participation*

Documentation of any public participation or consultation with Federal or State agencies undertaken in development of the plan.

This part of the Rule apparently refers to the Design and Construction Technology Plan for new facilities and for offshore oil and gas facilities that was previously required in the 2011 proposed EPA Rule, but does not apply to existing facilities under the new Rule. There is no required plan submittal associated with the § 122.21(r) studies, nor are there requirements for public participation or consultation with Federal or State agencies in completion of the required studies in this section.

4.8 *Methods and Quality Assurance Procedures for Supporting Field Studies*

If you supplement the information requested in paragraph (r)(4)(i) of this section with data collected using field studies, supporting documentation for the Source Water Baseline Biological Characterization must include a description of all methods and quality assurance procedures for sampling, and data analysis including a description of the study area; taxonomic identification of sampled and evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods. The sampling and/or data analysis methods you use must be appropriate for a quantitative survey and based on consideration of methods used in other biological studies performed within the same source water body. The study area should include, at a minimum, the area of influence of the cooling water intake structure.

No new field studies were conducted in the McAlpine Pool because information for Trimble County was available to address § 122.21(r)(4). Methods for the collection of juvenile and adult fish from the Ohio River near the Trimble County Station are described in EPRI (2018a) and ORSANCO (2015), entrainment sampling methods are described in EPRI (2020c), and the Cane Run Plant impingement study methods can be found in EPRI (2009).

4.9 *Source Water Baseline Biological Characterization Data Affirmation*

In the case of the owner or operator of an existing facility or new unit at an existing facility, the Source Water Baseline Biological Characterization Data is the information in paragraphs (r)(4)(i) through (xii) of this section.

This provision simply contains a statement of clarification and does not call for specific information. This report provides the information required under §122.21(r)(4)(i-xii).

4.10 *Protective Measures and Stabilization Activities near the CWIS*

For the owner or operator of an existing facility, identification of protective measures and stabilization activities that have been implemented, and a description of how these measures and activities affected the baseline water condition in the vicinity of the intake.

There have been no protective measures and stabilization activities performed by IKEC near the Trimble County intake that would affect fish populations or baseline water conditions.

4.11 *Fragile Species*

For the owner or operator of an existing facility, a list of fragile species, as defined at 40 CFR 125.92(m), at the facility. The applicant need only identify those species not already identified as fragile at 40 CFR 125.92(m). New units at an existing facility are not required to resubmit this information if the cooling water withdrawals for the operation of the new unit are from an existing intake.

IKEC has not identified fragile species that are not presented in 40 CFR 125.92(m). Gizzard Shad is the only fragile species that occurs at Clifty Creek CWIS (Table 4-2). As per the definition of fragile species, additional fragile species with impingement survival rates less than 30% may be identified during optimization studies should IKEC elect to employ fish protection-modified traveling water screens or a system of technologies as BTA for impingement.

4.12 *USFWS Incidental Take Exemption or Authorization*

For the owner or operator of an existing facility that has obtained incidental take exemption or authorization for its cooling water intake structure(s) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, any information submitted in order to obtain that exemption or authorization may be used to satisfy the permit application information requirement of paragraph 40 CFR 125.95(f) if included in the application.

This part is not applicable to Trimble County because it does not hold an incidental take exemption or authorization from the USFWS.

5 § 122.21(R)(5) COOLING WATER SYSTEM DATA

The Rule at § 122.21(r)(5) requires that LG&E provide the following cooling water system data for Trimble County:

(i) A narrative description of the operation of the cooling water system and its relationship to cooling water intake structures; the proportion of the design intake flow that is used in the system; the number of days of the year the cooling water system is in operation and seasonal changes in the operation of the system, if applicable; the proportion of design intake flow for contact cooling, non-contact cooling, and process uses; a distribution of water reuse to include cooling water reused as process water, process water reused for cooling, and the use of gray water for cooling; a description of reductions in total water withdrawals including cooling water intake flow reductions already achieved through minimized process water withdrawals; a description of any cooling water that is used in a manufacturing process either before or after it is used for cooling, including other recycled process water flows; the proportion of the source waterbody withdrawn (on a monthly basis);

(ii) Design and engineering calculations prepared by a qualified professional and supporting data to support the description required by paragraph (r)(5)(i) of this section; and

(iii) Description of existing impingement and entrainment technologies or operational measures and a summary of their performance, including but not limited to reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage.

The data presented in this section is used to evaluate the existing cooling water system and potential designs of entrainment BTAs that would apply to Trimble County.

5.1 *Cooling Water System Design and Operation*

Trimble County has two generating units that use cooling water, Unit 1 and Unit 2. Unit 1 utilizes an induced wet- mechanical draft, counter flow cooling tower. The Unit 1 cooling tower sits approximately 2,300 ft back from the river bank, and 1,500 ft north of the units. The Unit 2 cooling tower is a natural draft cooling tower, located approximately 1,500 ft from the shoreline and 450 ft north of the generating units. These two towers can be seen in Figure 3-1. Make-up cooling water for both cooling towers is withdrawn from a single CWIS on the Ohio River.

There are three service water pumps in the CWIS, that are used to provided make-up water to the cooling towers. The service water pumps are each rated for 15,000 gpm (21.6 MGD) at 220 ft of total head. Typically, two pumps operate when both units are in service. Two of the three service water pumps have variable frequency drives allowing them to be operated at reduced speeds and therefore reduced flows. The service water pumps also provide water for the screen wash system, the water treatment building, and other various plant and equipment uses.

The Unit 1 cooling tower is a 12-cell, induced draft, counter flow design cooling tower that is approximately 654 ft long, 60 ft wide, and stands 36.5 ft tall from the basin curb to the fan deck. Each of the 12 cells contains a twelve bladed, 32.8 ft diameter fan with a 237.5 hp motor. The cooling tower is designed for an internal circulating water flow of 173,250 gpm (386.0 cfs, 246.5 MG,) with an inlet temperature of 119.9 °F and an outlet temperature of 88.7 °F from the cooling tower at a wet bulb temperature of 79 °F. According to the water balance diagram (Figure 3-4), the Unit 1 cooling tower has an average make-up water flow rate of approximately 11,428 gpm (25.5 cfs, 16.5 MGD). Approximately 5,868 gpm (13.1 cfs, 8.5 MGD) is lost to evaporation and drift and another 5,560 gpm (12.4 cfs, 8.0 MGD) is discharged as blowdown. The water balance diagram does not break out the make-up water, and evaporation and drift flows by unit, therefore these flows were assumed to be proportional to each units blowdown.

The Unit 2 cooling tower consists of a single hyperbolic natural draft cooling tower. The tower is approximately 500 ft tall, with a bottom diameter of approximately 344.5 ft, at the bottom and 234.6 ft at the top. The cooling tower is designed for an internal circulating water flow of 251,500 gpm (560.3 cfs, 363.2 MGD) with an inlet temperature of 92.2 °F and an outlet temperature of 68.0 °F at a wet bulb temperature of 51.4 °F. Based on the daily average flows in the water balance diagram (Figure 3-4), the Unit 2 cooling tower has an average make-up water flow rate of approximately 9,217 gpm (20.5 cfs, 13.3 MGD). Approximately 4,732 gpm (10.5 cfs, 6.8 MGD) is lost to evaporation and drift and another 4,484 gpm (10.0 cfs, 6.5 MGD) is returned to the Ohio River as blowdown.

5.2 *Proportion of Design Intake Flow for Contact Cooling, Non-contact Cooling, and Process Uses*

Trimble County has a DIF of 45,000 gpm (100.3 cfs, 64.8 MGD). Based on the water balance diagram, the average peak monthly withdrawal rate for Trimble County is 23,184 gpm (51.7 cfs, 33.4 MGD). Approximately 89% of this water is used to provide makeup water for the closed-cycle cooling systems. Approximately 5% of the water is used for the Units 1 and 2 flue gas desulfurization systems, 4% is used for miscellaneous wash-downs and 2% goes to the water treatment system. None of the cooling tower blowdown water is reused for any purpose.

Trimble County is an electrical generating facility and does not use any water for manufacturing processes.

5.3 *Proportion of Source Waterbody Withdrawn*

The actual intake flow (AIF) for Trimble County varies throughout the year, based on power demands and environmental factors as shown in Table 3-4. The DIF and average monthly AIFs, were used for calculating the percent of the Ohio River flow withdrawn by Trimble County.

Average monthly Ohio River flows were estimated using daily flow data from October 1999 through September 2021, the last 20 water years on record for flows measured at USGS 03294500 at Louisville, KY. The average monthly river flow was compared to the DIF and the average monthly AIFs from January 1, 2017 through December 2021 estimate the percent of river flow withdrawn. The following equation was used to determine the proportion of the Ohio River flow withdrawn by Trimble County;

$$Proportion\ of\ Source\ Waterbody = \frac{Trimble\ County\ Intake\ flow\ (cfs)}{Ohio\ River\ Flow\ (cfs)} \times 100$$

The average monthly proportion of the Ohio River withdrawn by Trimble County for both the combined DIF and monthly AIF is provided in Table 5-1. As can be seen from this table, if operated at its current DIF, Trimble County would withdraw a maximum of 0.21% of the Ohio River occurring in the month of August, September, and October. Based on the average monthly flows, Trimble County withdrew between 0.02% and 0.12% of the Ohio River, with the highest percentage being withdrawn during the month of August.

Table 5-1 Average Monthly River Flow (October 2001 through August 2021) and Percent of Ohio River Flow Withdrawn by Trimble County.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Ohio River Discharge at Trimble County (cfs)	200,013	214,400	252,915	216,858	184,246	111,550	77,036	48,256	60,015	58,681	109,000	172,716
Design Intake Flow (64.8 MGD)												
Design Intake Flow (cfs)	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3
Percent of River Flow	0.05%	0.05%	0.04%	0.05%	0.05%	0.09%	0.13%	0.21%	0.17%	0.17%	0.09%	0.06%
Monthly Daily Average Intake Flow (2017-2021)												
Actual Intake Flow (cfs)	55.4	50.6	42.4	42.0	51.0	53.3	54.9	59.9	49.5	40.1	53.1	61.1
Percent of River Flow	0.03%	0.02%	0.02%	0.02%	0.03%	0.05%	0.07%	0.12%	0.08%	0.07%	0.05%	0.04%

5.4 *Intake Velocities*

Velocities at the Trimble County CWIS were calculated through the trash rack, along with approaching and through the traveling water screens. All the velocities were calculated at the Trimble County DIF of 100.3 cfs (45,000 gpm) and both the low water elevation of 407.0 ft and the normal pool elevation of 419.2 ft. Through-screen velocities were calculated at 100% clean condition.

The entrance to each intake bay is 12.5 ft wide with an invert at elevation 397.0 ft. The bay's necked down to approximately 11.2 ft wide to accommodate the 10 ft wide traveling water screens. The traveling water screens have a 0.375 inch square mesh with 14 gauge wires. This mesh has a 67.9 percent open area. In lieu of a measured percent open area for the Trimble County traveling water screen frames, percent open area values provided by screen vendors for similar screens were used for determining the through-screen velocities. The traveling water screens are standard, 10 ft wide through-flow traveling water screens with an assumed framing open area of 72.5%. Taking into account the screen mesh and framing, the traveling water screens are estimated to have a 49.2% combined open area. The results of the intake velocity calculations are summarized in Table 5-2. The velocity calculations are provided in Table 5-3.

Table 5-2 Estimated Intake Velocities (within the Trimble County CWIS

Location	Velocity (ft/sec)	
	Low Water (El. 407.0 ft)	**Normal Pool (El. 419.167 ft)**
Face of the Intake Bays	0.2	0.1
Approaching the Trash Rack	0.3	0.1
Approaching the Traveling Water Screens	0.3	0.2
Through the Traveling Water Screens	0.7	0.3

Table 5-3 Analytical Method Used to Estimate Intake Velocity

Formulas Used

Approach Velocity

$$V(approach) = \frac{Q(flow)}{A\ (area)}$$

Through Screen Velocity

$$V(through\ screen) = \frac{V_{approach}}{Screen\ open\ area}$$

Data Used

Flow (Q): 100.3 cfs
Low Water Level: El. 407.0 ft
Normal Water Level: El. 419.167 ft
Intake Entrance
- Number of Openings: 3
- Opening Width: 12.5 ft
- Invert: El. 395.5 ft

Trash Rack
- Number of Bays: 3
- Bay Width: 12.5 ft
- Invert: El. 397.0 ft

Traveling Water Screens
- Number of Screens: 3
- Screen Width: 10.0 ft
- Invert: El. 397.0 ft
- Estimated open area: 49.2% (3/8 inch square mesh with 14 gauge wire)

Calculations

Intake Entrance

$$V_{Low\ water} = \frac{100.3\ cfs}{3 \times 12.5ft\ \times (407.0\ ft - \ 395.5ft)} = 0.2\ \frac{ft}{sec}$$

$$V_{Normal\ water} = \frac{100.3\ cfs}{3 \times 12.5ft\ \times (419.167\ ft - \ 395.5ft)} = 0.1\ \frac{ft}{sec}$$

Trash rack

$$V_{Low\ water} = \frac{100.3\ cfs}{3 \times 12.5ft\ \times (407.0\ ft - \ 397.0ft)} = 0.3\ \frac{ft}{sec}$$

$$V_{Normal\ water} = \frac{100.3\ cfs}{3 \times 12.5ft\ \times (419.167\ ft - \ 397.0ft)} = 0.1\ \frac{ft}{sec}$$

Traveling screen

$$V_{Approach\ (Low\ water)} = \frac{100.3\ cfs}{3 \times 10.0ft\ \times (407.0\ ft - \ 397.0ft)} = 0.3\ \frac{ft}{sec}$$

$$V_{Through\ screen\ (\ Low\ water)} = \frac{0.3\ \frac{ft}{sec}}{0.49} = 0.7\ \frac{ft}{sec}$$

$$V_{Approach\ (Normal\ water)} = \frac{100.3\ cfs}{3 \times 10.0ft\ \times (417.167\ ft - \ 397.0ft)} = 0.2\ \frac{ft}{sec}$$

$$V_{Through\ screen\ (\ Normal\ water)} = \frac{0.2\ \frac{ft}{sec}}{0.49} = 0.3\ \frac{ft}{sec}$$

5.5 *Existing I&E Reduction Measures*

The existing design and operation of Units 1 and 2 at Trimble County provide a significant reduction in impingement and entrainment. Both units utilize a closed-cycle cooling system, Unit 1 with a mechanical draft cooling tower and Unit 2 with a natural draft cooling tower. The use of closed-cycle cooling greatly reduces the amount of condenser cooling water withdrawn from the Ohio River and is considered BTA for both impingement and entrainment under 316(b).

The design of the CWIS and circulating water system incorporated several additional I&E reduction measures. The CWIS incorporates fish escape ways between the intake bays and outer wall of the CWIS. These allow fish to exit the CWIS by swimming latterly to the current instead of against it. Additionally, the intake bays and screens are sized to provide intake bay velocities' of less than 0.5 ft/sec under all operating conditions and through-screen velocity of less than 0.5 ft/sec at normal pool levels and slightly over 0.5 ft/sec at the design low water level. These low velocities along with the fish escapes should prevent healthy fish from becoming impinged on the screens.

Two of the three service water pumps that provide cooling tower makeup water have variable frequency drives. This allows them to be operated at reduced speeds, and therefore reduced flows. When conditions allow the service water pumps to be operated at lower speeds, withdrawal from the Ohio River are reduced beyond what would be achieved through the use of cooling towers alone.

6 § 122.21(R)(6) CHOSEN METHOD OF COMPLIANCE WITH IMPINGEMENT MORTALITY IMPINGEMENT STANDARD

The Rule at § 122.21(r)(6) requires LG&E to discuss the chosen method of compliance with the impingement mortality standard for Trimble County. Facilities must select one of the seven alternatives at § 125.95(c)(1) through (7) unless the facility qualifies for an exemption or less stringent standard. The owner/operator must identify the chosen compliance method for the entire facility; alternatively, the applicant must identify the chosen compliance method for each cooling water intake structure.

LG&E selects use of § 125.94(c)(1); operate a closed-cycle recirculating system as defined at § 125.92(c). This alterative was selected because the two units at Trimble Creek that use cooling water minimize their intake flows through the use of closed-cycle recirculating systems.

7 § 122.21(R)(7) ENTRAINMENT PERFORMANCE STUDIES

7.1 *Entrainment Performance Studies at §122.21(r)(7)*

The Rule at § 122.21(r)(7) requires LG&E to discuss entrainment performance studies for Trimble County. Specifically, the Rule requires "*The owner or operator of an existing facility must submit any previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies. Any such submittals must include a description of each study, together with underlying data, and a summary of any conclusions or results. Any studies conducted at other locations must include an explanation as to why the data from other locations are relevant and representative of conditions at your facility. In the case of studies more than 10 years old, the applicant must explain why the data are still relevant and representative of conditions at the facility and explain how the data should be interpreted using the definition of entrainment at 40 CFR 125.92(h).*"

LG&E has never conducted entrainment performance studies at Trimble County. LG&E did participate in an EPRI § 316(b) supplemental project that included conducting a literature survey of all impingement and entrainment performance studies that could be located. The final report for the literature survey is titled "*Narrative Descriptions of Impingement and Entrainment Survival Studies" (*EPRI 2014a). This study identified 16 entrainment survival studies, some of which were through plant survival studies and some of which were survival after collection on fine-mesh traveling water screens. However, 13 of the studies were conducted at facilities located on oceans and estuaries where species are not representative of Trimble County's source waterbody and two of the studies were conducted on the Great Lakes and are also not considered representative for Trimble County's species. A single study that is potentially relevant for Trimble County was conducted at Fort Calhoun, located on the main stem Missouri River from 1974 – 1977. This was a through plant entrainment survival study that compared intake larval fish survival with discharge larvae survival. Freshwater Drum is a pelagic species commonly found in the mainstem Ohio River where it spawns. Therefore, it is likely to be entrained at Trimble County. Following is a summary of the Missouri River entrainment survival study taken from the report.

"Freshwater Drum (*Aplodinotus grunniens*) was the most abundant species collected ranging from 43.7% (1974) to 88.2% (1977) of the total yearly larval collection. Catostomids; consisting of carpsucker (*Carpiodes* spp.), White Sucker (*Catostomus commersoni*), buffalo (*Ictiobus* sp.), and redhorse (*Moxostoma* spp.) were the only other taxa collected in sufficient number for survival analysis. Discharge mortalities of all species averaged 86.4% over the four-year study, with a range of 57 to 95% in June and July during peak seasonal larval abundance. Freshwater Drum which accounted for nearly 75% of the entrained larvae, experience 96% entrainment mortality, while Catostomids experience nearly 49% mortality at the discharge. Collection in

1977 samples indicated that nearly 62% of the larvae collected at the intake were dead. The author attributed the high intake mortality to net- and naturally-induced mortality. Additionally, the data obtained from separation of opaque and transparent dead larvae indicated that natural mortality was less than 60% at the intake."

8 § 122.21(R)(8) OPERATIONAL STATUS

The Rule at § 122.21(r)(8) requires LG&E to discuss the operational status of Trimble County. Specifically, *"the owner or operator of an existing facility must submit a description of the operational status of each generating, production, or process unit that uses cooling water, including but not limited to:*

(i) For power production or steam generation, descriptions of individual unit operating status including age of each unit, capacity utilization rate (or equivalent) for the previous 5 years, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, including identification of any operating unit with a capacity utilization rate of less than 8 percent averaged over a 24-month block contiguous period, and any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type;
(ii) Descriptions of completed, approved, or scheduled uprates and Nuclear Regulatory Commission relicensing status of each unit at nuclear facilities;
(iii) For process units at your facility that use cooling water other than for power production or steam generation, if you intend to use reductions in flow or changes in operations to meet the requirements of 40 CFR 125.94(c), descriptions of individual production processes and product lines, operating status including age of each line, seasonal operation, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, any major upgrades completed within the last 15 years, and plans or schedules for decommissioning or replacement of process units or production processes and product lines;
(iv) For all manufacturing facilities, descriptions of current and future production schedules; and
(v) Descriptions of plans or schedules for any new units planned within the next 5 years."

The section provides information on the operation of the Trimble County as required by § 122.21(r)(8).

8.1 *Operating Status*

Trimble County Units 1 and 2 are owned and operated by LG&E and KU. These two units are owned in partnership with the Illinois Municipal Electric Agency (IMEA) and the Indiana Municipal Power Agency (IMPA). IMEA and IMPA share a 25% ownership interest in both units, as well as in the assets supporting the operation of the coal-fired plant. Unit 1 is a pulverized-coal-fired unit with a net rated capacity of 514 megawatts; Unit 2, a pulverized-coal-fired unit with a net rated capacity of 760 megawatts. Units 1 and 2 are the only units that use cooling water. Both utilize closed-cycle cooling systems, Unit 1 with a mechanical draft cooling tower and Unit 2 with a natural draft tower. Unit 1 entered service in 1990 and has an estimated retirement date of 2045. Unit 2 started operating in 2011 and has an estimated retirement date of 2066. The retirement dates in this section are estimates of remaining service life because

retirement dates have not been set for any of the currently operating Trimble County units. The annual net capacity factor for Unit 1 and 2, from 2017 through 2021 is summarized in Table 8-1.

In addition to the two coal-fired units, there are six natural gas-fired, simple cycle combustion turbines. Each turbine has a nominal rating of 160 megawatts, for a combined net generating capacity of 960 MW. These units do not use any cooling water. The combustion turbine units TC5 and TC6 went into commercial operation in May 2002; TC7 through TC10 began commercial operation in July 2004. These turbines are typically used as peaking units.

Table 8-1 Average Annual Net Capacity Factor for Units 1 and 2 at Trimble County (2017-2021)

Year	Net Capacity Factor		
	Unit 1	Unit 2	Combined
2017	66%	73%	70%
2018	82%	68%	74%
2019	75%	72%	73%
2020	81%	76%	78%
2021	68%	80%	75%
Average	75%	74%	74%

8.2 *Major Upgrades in Last 15 Years*

In 2008, all three traveling water screens were replaced. This was followed by Unit 2 started operation in 2011. Other than these modifications, there have been no major structural or operational changes to Trimble County's CWIS or cooling water systems in the last fifteen years.

8.3 *Other Cooling Water Uses*

The Trimble County generating station is a coal-fired steam electric generating facility and does not use water for manufacturing purposes.

8.4 *Plans or Schedules for New Units within Five Years*

There are no plans for any new units at Trimble County in the next five years.

9 FACTORS THAT MUST AND MAY BE CONSIDERED FOR ENTRAINMENT BTA AT TRIMBLE COUNTY STATION AT § 125.98(F) OF THE RULE

KDEP is required to make an entrainment BTA determination for Trimble County as discussed in §125.98(f) of the Rule which states:

"(f) Site-specific entrainment requirements. The Director must establish site-specific requirements for entrainment after reviewing the information submitted under 40 CFR 122.21(r) and § 125.95. These entrainment requirements must reflect the Director's determination of the maximum reduction in entrainment warranted after consideration of factors relevant for determining the best technology available for minimizing adverse environmental impact at each facility. These entrainment requirements may also reflect any control measures to reduce entrainment of Federally-listed threatened and endangered species and designated critical habitat (e.g., prey base). The Director may reject an otherwise available technology as a basis for entrainment requirements if the Director determines there are unacceptable adverse impacts including impingement, entrainment, or other adverse effects to Federally-listed threatened or endangered species or designated critical habitat. Prior to any permit reissuance after July 14, 2018, the Director must review the performance of the facility's installed entrainment technology to determine whether it continues to meet the requirements of § 125.94(d).

(1) The Director must provide a written explanation of the proposed entrainment determination in the fact sheet or statement of basis for the proposed permit under 40 CFR 124.7 or 124.8. The written explanation must describe why the Director has rejected any entrainment control technologies or measures that perform better than the selected technologies or measures, and must reflect consideration of all reasonable attempts to mitigate any adverse impacts of otherwise available better performing entrainment technologies.

(2) The proposed determination in the fact sheet or statement of basis must be based on consideration of any additional information required by the Director at § 125.98(i) and the following factors listed below. The weight given to each factor is within the Director's discretion based upon the circumstances of each facility.

(i) Numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of Federally-listed, threatened and endangered species, and designated critical habitat (e.g., prey base);

(ii) Impact of changes in particulate emissions or other pollutants associated with entrainment technologies;

(iii) Land availability in as much as it relates to the feasibility of entrainment technology;

(iv) Remaining useful plant life; and

(v) Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.

(3) The proposed determination in the fact sheet or statement of basis may be based on consideration of the following factors to the extent the applicant submitted information under 40 CFR 122.21(r) on these factors:

(i) Entrainment impacts on the waterbody;

(ii) Thermal discharge impacts;

(iii) Credit for reductions in flow associated with the retirement of units occurring within the ten years preceding October 14, 2014;

(iv) Impacts on the reliability of energy delivery within the immediate area;

(v) Impacts on water consumption; and

(vi) Availability of process water, gray water, waste water, reclaimed water, or other waters of appropriate quantity and quality for reuse as cooling water.

(4) If all technologies considered have social costs not justified by the social benefits, or have unacceptable adverse impacts that cannot be mitigated, the Director may determine that no additional control requirements are necessary beyond what the facility is already doing. The Director may reject an otherwise available technology as a BTA standard for entrainment if the social costs are not justified by the social benefits."

Each of these factors is discussed below.

9.1 *Factors That Must Be Considered:*

These factors are addressed below in subsections 9.1.1 through 9.1.5

9.1.1 Numbers and Types of Organisms Entrained

The Rule states for this factor *"(i) Numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of Federally-listed, threatened and endangered species, and designated critical habitat (e.g., prey base)*;"

As discussed in Chapter 4, no site-specific entrainment studies were required nor conducted at Trimble County. The results of a study conducted at the Clifty Creek Station located approximately 11 miles upstream and also withdrawing cooling water from the McAlpine Pool was used to identify the types of organisms susceptible to entrainment. However, the Clifty Creek entrainment estimates cannot be used to estimate numbers of organisms entrained at Trimble County, since flows at Clifty Creek are well above 125 MGD and its intake velocities are also significantly higher (i.e., well above 0.5 fps).

9.1.2 Impact of Particulate Emissions or Other Pollutants

The Rule states for this factor "*(ii) Impact of changes in particulate emissions or other pollutants associated with entrainment technologies;"*

The purpose of this information is to consider the impacts of technologies such as a CCRS that result in increased air emissions to the biological benefits of reducing cooling water flow and

therefore entrainment. Since Trimble County is already equipped with CCRS this evaluation is unnecessary.

9.1.3 Land Availability

The Rule states for this factor "*(iii) Land availability in as much as it relates to the feasibility of entrainment technology.*

The purpose of this provision is to determine if there is adequate space for a closed-cycle cooling system on the property. Since the two units that use cooling water currently use CCRSs, land availability is not an issue.

9.1.4 Remaining Useful Plant Life

The Rule states for this factor "*(iv) Remaining useful plant life;*

Unit 1 has an estimated retirement date of 2045 and Unit 2 has an estimated retirement date of 2066. These retirement dates are estimates of remaining service life because retirement dates have not been set for any of the currently operating Trimble County units.

9.1.5 Quantified Benefits and Costs

The Rule states for this factor *"(v) Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision."*

Since all currently operating units employ BTA in the form of CCRS, it was unnecessary to evaluate additional technologies.

9.1.5.1. Trimble County's Use of CCRSs

As noted throughout this document Trimble County operates CCRSs as defined in the Rule at § 125.92(c)(1). Relative to use of a CCRS, the Rule preamble makes the following statements:

- *"Closed-cycle cooling is indisputably the most effective technology at reducing entrainment." (pg. 48342, column 1, 14 lines from bottom of the page)*
- *"EPA concluded that site-specific proceedings are the appropriate forum for weighing all relevant considerations in establishing BTA entrainment requirements. Closed-cycle cooling is indisputably the most effective technology at reducing entrainment. Closed-cycle reduces flows by 95 percent and entrainment is similarly highly reduced."* (pg. 48344, column 1, last paragraph)
- *"EPA agrees that facilities employing a closed-cycle recirculating system for entrainment should also be deemed in compliance with the impingement mortality standard, as long as the system is properly operated. While a closed-cycle recirculating system is the most effective technology for reducing entrainment, EPA has not established BTA based on closed-cycle cooling because EPA concluded it was not BTA, for the reasons specified in Section VI." Regarding the definition of closed-cycle cooling…*(pg. 48355, Column 3, Response at bottom of page)

- *"The cost estimates reflect the incremental costs attributed only to this final rule. For example, facilities already having closed-cycle recirculating systems as defined at § 125.92 will meet the impingement mortality and entrainment standards of today's rule and, therefore, will not incur costs to retrofit new technologies."* (48384, column 1, first full paragraph)

The EPA states in the Rule Preamble that properly operated CCRSs in freshwater can achieve a flow reduction of 97.5% (pg. 38338, column 3, last paragraph). Since Trimble County employs a CCRS that meets the Rule's definition at § 125.92(c)(1) of the Rule and that in EPA's opinion is *"indisputably the most effective technology at reducing entrainment"*, Trimble County should be determined to employ BTA for entrainment on this basis alone.

9.1.5.2 Expected Biological Benefits Relative to Cost

(v) Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.

Since Trimble County already utilizes CCRSs on the two units that use cooling water and there is no significant risk to federally protected species (see Chapter 4.6.1), there was no need to evaluate additional fish protection technologies and their associated benefits.

9.2 *Factors That May Be Considered*

Each of the five factors that **<u>may be considered</u>** in making the entrainment BTA determination are discussed below.

9.2.1 Entrainment Waterbody Impacts

The Rule states for this factor "*(i) Entrainment impacts on the waterbody;"*

Trimble County has minimized flow through use of CCRS on all operating units that use cooling water. EPA estimates that the use of CCRS in freshwater environments results in a flow reduction of approximately 97.5%, when compared to once-though cooling. The makeup water flow for Trimble County is not likely to have any significant impacts to the Ohio River.

9.2.2 Thermal Discharge Impacts

The Rule states for this factor "*(ii) Thermal discharge impacts;*

Trimble County employ CCRS that are considered best available technology for thermal discharges.

9.2.3 Credit for Retired Unit Flow Reductions

The Rule states for this factor "*(iii) Credit for reductions in flow associated with the retirement of units occurring within the ten years preceding October 14, 2014;*

No units were retired at Trimble County prior to October 14, 2014.

9.2.4 Impacts on Energy Delivery

The Rule states for this factor "*(iv) Impacts on the reliability of energy delivery within the immediate area;*

Since Trimble County already employs BTA for both impingement and entrainment via use of CCRSs, there is no additional impact to energy delivery within the immediate area.

9.2.5 Impacts on Water Consumption

The Rule states for this factor "*(v) Impacts on water consumption;"*

As Trimble County already employs BTA for both impingement and entrainment, there will be no impact on water consumption as a result of a change in fish protection technologies.

9.2.6 Availability of Other Cooling Water Sources

The Rule States "*(vi) Availability of process water, gray water, waste water, reclaimed water, or other waters of appropriate quantity and quality for reuse as cooling water."*

Since Trimble County already has minimized flow through use of CCRS, there was no need to evaluate alternative sources of cooling water.

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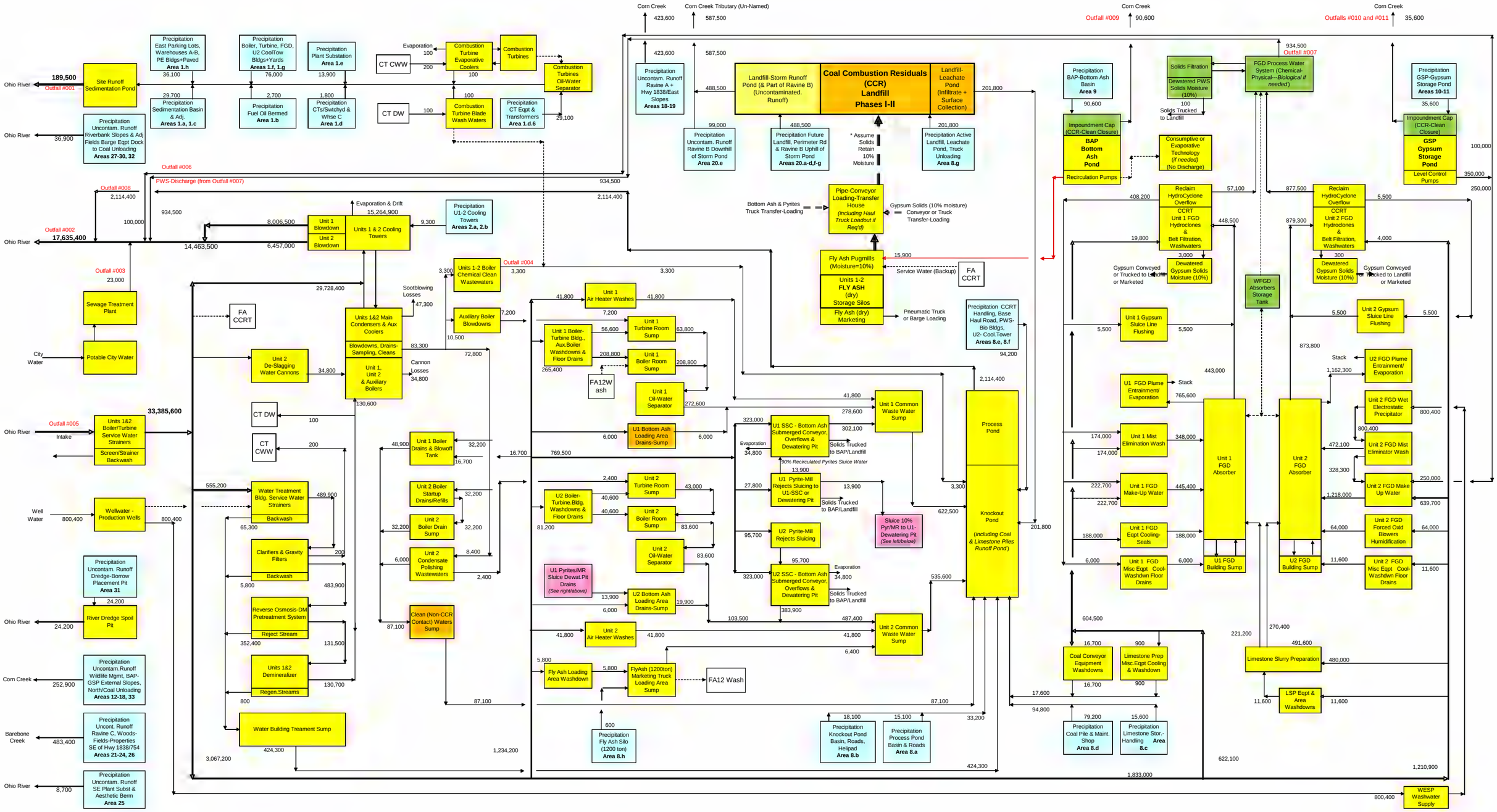
Appendix A: Water Balance Diagram



TRIMBLE COUNTY GENERATING STATION - KDPES WATER BALANCE DIAGRAM
PEAK MONTHLY AVERAGE CONDITIONS (PMAC) - PROCESS FLOWS
P-3 PWS, No BAP/GSP: PMAC CONDITIONS + **AVERAGE** RAINFALL RUNOFF FLOWS

NOTES:
1. **All Flows expressed in gallons per day, *Dashed Lines Show Alternative/Temporary Conditions***
2. **Diagram Flows Include PMAC Flows and Precipitation Runoff Flows Added**
3. **PMAC (Peak Monthly Average Conditions) Process Flows Are Representative of Monthly Conditions Calculated as a Daily Average = 28 days Average Operational Flows + 1 Day Maximum Flows + 1 Day Maintenance Flows**
4. **Unit 1-2 FGD Systems Operated to Confine Fly-Ash Sluice Waters to BAP-Recirculation Only Including Purge-Switchover Streams**

PREPARED BY: RJM
DATE: Aug 28, 2017
Revision 2017-8

LG&E a PPL company

TRIMBLE COUNTY GENERATING STATION
WATER BALANCE DIAGRAM - P-3
PMAC PROCESS CONDITIONS AND AVERAGE RAINFALL
PERMIT NO. KY 0041971