Goss Samford

ATTORNEYS AT LAW | PLLC

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November 19, 2018

Via Hand Delivery

Ms. Gwen Pinson
Executive Director
Kentucky Public Service Commission
P.O. Box 615
211 Sower Boulevard
Frankfort, KY 40602

RECEIVED
NOV 19 2018
PUBLIC SERVICE
COMMISSION

Re: *In the Matter of: The Application of East Kentucky Power Cooperative, Inc. for Approval to Amend Its Environmental Compliance Plan and Recover Costs Pursuant to Its Environmental Surcharge, and for the Issuance of a Certificate of Public Convenience and Necessity*, Case No. 2018-00270

Dear Ms. Pinson:

Enclosed, please find an original and six copies of the Responses to Commission Staff's and the Attorney General's First Sets of Information Requests, to be filed on behalf of East Kentucky Power Cooperative, Inc. in the above-styled docket. Please return a file-stamped copy of this filing to my office.

Should you have any questions or require additional information, please let me know.

Sincerely,

David S. Samford

Enc.

RECEIVED
NOV 19 2018
PUBLIC SERVICE COMMISSION

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

RESPONSES TO ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION TO EAST KENTUCKY POWER COOPERATIVE, INC.

DATED NOVEMBER 5, 2018

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Craig A. Johnson, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Attorney General's Initial Request for Information in the above-referenced case dated November 5, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

Craig A. Johnson

Subscribed and sworn before me on this 19th day of November 2018.

Gwyn M. Willoughby #580767
Notary Public

GWYN M. WILLOUGHBY
Notary Public
Kentucky – State at Large
My Commission Expires Nov 30, 2021

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Jerry B. Purvis, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Attorney General's Initial Request for Information in the above-referenced case dated November 5, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

Jerry Purvis

Subscribed and sworn before me on this 19th day of November 2018.

Gwyn M. Willoughby #590567
Notary Public

GWYN M. WILLOUGHBY
Notary Public
Kentucky – State at Large
My Commission Expires Nov 30, 2021

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

CERTIFICATE

STATE OF Missouri)
)
COUNTY OF Jackson)

Sam Yoder, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Attorney General's Initial Request for Information in the above-referenced case dated November 5, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

Sam Yoder

Subscribed and sworn before me on this 12 day of November 2018.

Sara Beth Acton

Notary Public

SARA BETH ACTON
Notary Public - Notary Seal
STATE OF MISSOURI
Jackson County
My Commission Expires April 20, 2019
Commission # 15634903

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 1
RESPONSIBLE PARTY: Jerry B. Purvis

Request 1. Has EKPC undertaken any measures, both throughout the course of the instant docket and other ECR dockets, to analyze issues involving and implicating the CCR and ELG rules, as well as KDOW requirements, together in a comprehensive manner? If so:

Request 1a. Describe any and all efforts EKPC undertook to develop solutions and, strategies that would- minimize duplication of compliance efforts with regard to both the CCR, ELG, and KDOW regulations and requirements.

Response 1a. EKPC did develop a comprehensive plan for Coal Combustion Residuals ("CCR") and Effluent Limitation Guidelines ("ELG") and it was presented in PSC Case No. 2017-00376. Subsequently, Kentucky Division of Water ("KDOW") issued the new KPDES permit for Spurlock on October 23, 2018 incorporating ELG requirements into the new permit limitations that resulted in the need for the Coal Pile Runoff ("CPR").

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 2
RESPONSIBLE PARTY: Craig Johnson and Sam Yoder

Request 2. With regard to the proposed CPR Project, identify where in the ELG regulation, and/ or in the KDOW requirements the particular requirement that the CPR must be capable of containing a 100-year, 24-hour storm event can be found.

Response 2. There is no specific requirement in the ELG regulation and Spurlock's new KDOW permit requirements to meet a 100-year, 24-hour storm event. However, good engineering practice for ponds and containment basins routinely call for adequate freeboard to avoid overtopping the dam for a 100–year, 24-hour storm event. This commonly accepted storm water basin design criteria provides for protection of the embankments by ensuring the combined control of the principle spillway and emergency spillway for a 100-year, 24-hour storm will not allow stormwater to overtop the crest and threaten the structural integrity of the embankment. The basis for application of this criteria is found in numerous sources including the Kentucky Construction Erosion Sediment Control Handbook, stormwater design guidelines for municipalities and local governments in Kentucky, and Department for Natural Resources and Environmental Protection Division of Water, Engineering Memorandum No. 5.

Request 2a. Identify all alternatives the Company considered. Of those, which ones would have still allowed the Company to comply with all of the relevant regulations?

Response 2a. EKPC vetted a number of options for addressing the insufficient capacity in the existing CPR pond, as regulations evolved and preliminary scoping occurred for the CCR/ELG Project. Those alternatives are discussed and outlined in the Spurlock Station Storm Water Summary memo on the enclosed CD. This evaluation did not deal with water permit compliance for alternatives, but focused on physical modifications to address the containment and conveyance of stormwater. Pros and cons for each of the alternatives are indicated in the memo.

Request 2b. Does EKPC have any documentation establishing how frequently 100-year, 24-hour storm events have occurred at Spurlock? If so provide that documentation.

Response 2b. The 100-year, 24-hour design storm criteria is a common benchmark for establishing outlet elevations and freeboard for normal stormwater containment basins for commercial and even residential development in Kentucky. EKPC does not have documentation regarding the occurrence of this specific design storm event at Spurlock. Past rainfall events have met and exceeded the intensity of the 100-year event, but durations of those events were not measured. The following information is available from NOAA based on rainfall data collected at a water treatment plant near the Spurlock Station.

The NOAA Atlas 14 100-year storm has not occurred during the recorded period March 1896 – September 2018. The memo 2 100-year storm has occurred twice:

7/23/2017 – 6.34"

7/14/1938 – 6.28"

Ten-year return period events have occurred four times:

2/24/1909 – 4.68"

3/1/1997 – 4.6"

3/2/1997 – 4.57"

7/26/1935 – 4.24"

These 6 events are the highest recorded at the weather station during the period.

The table below indicates relative design storm criteria.

Design Storm		
Return Period	**NOAA Atlas 14**	**Memo 2***
1-Year	2.44	2.5
2-Year	2.92	2.9
5-Year	3.63	3.6
10-Year	4.22	4.1
25-Year	5.05	4.8
50-Year	5.76	5.3
100-Year	6.52	5.8

*Rainfall Frequency Values for Kentucky Engineering Memorandum No. 2 Revised: 6/1/1979
Values Provided for Mason County

Spurlock Station Stormwater Summary

Date: October 1, 2018

To: Patrick Bischoff, East Kentucky Power Cooperative

From: Sam Yoder, Burns & McDonnell

Subject: Spurlock Station Stormwater Summary

Foreword

Prior to the development of the Spurlock Station – Coal Pile Runoff Pond Supplemental Storage – Project Scoping Report, seven alternatives were evaluated in 2016 and 2017 for feasibility with screening level costs (+/-30%) but that work was never formally documented together in a report. Based on East Kentucky Power Cooperative's (EKPC) recent decision to move forward with seeking Kentucky Public Service Commission approval for the Coal Pile Runoff Pond project, EKPC requested that the feasibility analysis with the screening level costs of the seven alternatives be formally documented together in a report for their records, and possible use in support of the regulatory activity. This memorandum report will summarize the seven alternatives reviewed in 2016 and 2017 which resulted in the selection of the alternative that is scoped and estimated in the Spurlock Station – Coal Pile Runoff Pond Supplemental Storage – Project Scoping Report.

Overview

EKPC owns and operates the Hugh L. Spurlock Generating Station (Spurlock) in Maysville, Kentucky. Spurlock consists of four operating coal-fired units: Unit 1 is a 300-net megawatt (MW) pulverized coal fired unit built in 1977, Unit 2 is a 510 net MW pulverized coal fired unit built in 1981, Unit 3 is a 268 net MW circulating fluidized bed (CFB) unit built in 2005, and Unit 4 is a 268 net MW CFB unit built in 2009. Spurlock burns a range of eastern bituminous coals.

EKPC retained Burns & McDonnell (BMcD) to evaluate the existing storm drainage system at Spurlock and to assess options for improvements. BMcD identified a number of scenarios to modify and improve the existing plant storm drainage.

The purpose of this memorandum is to summarize the scenarios evaluated. This memorandum will discuss the following for each scenario:

- Scenario Description
- Pros and Cons
- Opinion of Probable Costs (screening level costs +/-30%)
- Schedule

Spurlock Stormwater Scenario Descriptions

BMcD has identified seven potential scenarios to address the insufficient storage volume at the existing Coal Pile Runoff (CPR) Pond for storms in excess of a 2-year, 24-hour design storm. The following is a brief description of the scenarios, and evaluation of the pros and cons associated with each. A preliminary

general arrangement drawing outlining the proposed scope of each of the projects is provided in Appendix A.

Scenario 1 – Reduced Contributing Area to Existing CPR Pond

Scenario 1 considered diversion of non-coal pile runoff away from the existing CPR Pond. This scenario was a proof of concept exercise to determine if the existing coal pile runoff pond had sufficient storage for just the coal pile and Plant Drainage Area[1].

Scenario 1 examined how the reduction in the contributing area would impact the existing CPR Pond performance. For this scenario, only the coal pile and the Plant Drainage Area systems were routed to the CPR Pond. Approximately 24.6 acres were removed as indicated on SK-001 in Appendix A; those removed areas represented diverting runoff from green space areas that are currently directed to the CPR pond.

Previous modeling efforts indicated the CPR Pond would still lack sufficient storage if only the coal pile and the Plant Drainage Area sources of runoff were routed to the existing CPR Pond. Therefore, this scenario was not further investigated.

Scenario 2 – Increased Pumping Capacity at CPR Pond (100-year)

Scenario 2 considered the option to allow the existing CPR Pond to function as a collection point within the context of the overall system. For this scenario, pumps would convey the runoff from a 100-year, 24-hour precipitation event through the pond without discharge from the emergency spillway. See SK-002 in Appendix A.

This scenario sought to maximize the height of the stop logs and determine the associated maximum discharge from the principal spillway. The peak discharge over the stop log structure was estimated at approximately 47,000 gallons per minute (gpm) for a 100-year, 24-hour precipitation event. This is the combined capacity of the pumps required to maintain approximately two feet of freeboard.

The force main size to convey this flow was determined to be four 18-inch lines based on a maximum velocity of 7 fps. The existing 10-inch force main would be abandoned under this scenario and replaced with four 18-inch force mains. This scenario requires a new electrical power control module (PCM) to power the new equipment.

[1] The "Plant Drainage Area" is used to describe the area around Units 1, 2, 3, 4.

Scenario 2 –Pros and Cons

Pros associated with Scenario 2 are the following:

- Additional space for storage would not be required.
- No modifications would be necessary to the existing Kentucky Pollutant Discharge Elimination System (KPDES) permit as no new outfalls are required.

Cons associated with Scenario 2 are the following:

- The CPR Pond would not provide significant water quality benefits.
- Requires new pumps, a new pump structure, and four new pipes.
- Requires new electrical PCM and associated electrical lines.

Scenario 3 – CPR Pond Supplemental Storage

Scenario 3 is the CPR Pond Supplemental Storage Project. This scenario included new pumps to convey a 10-year, 24-hour design storm event, modifications to existing piping and the north coal pile ditch, a new supplemental storage concrete wall, and a new electrical power control module PCM to power the new equipment. See SK-003 in Appendix A.

During the development of this scenario, it was determined that by increasing the CPR Pond pump capacity and lowering the stoplog structure elevation, the runoff for a 10-year, 24-hour design storm event was contained in the existing CPR Pond without a discharge through the emergency spillway. Four pumps (three operating and one spare) were selected with a design discharge of approximately 2,400 gpm for each pump. This scenario requires a new electrical PCM to power the new equipment.

This scenario also evaluated utilizing four 10-inch existing pipes along with one 6-inch existing pipe that are planned to be removed from service with the completion of the proposed Spurlock CCR/ELG Compliance Project. These five pipes are currently routed to the existing Ash Pond.

To provide EKPC with additional storage and operational flexibility, a supplemental CPR Pond storage wall and modifications to the emergency spillway were included in the scenario. This supplemental storage wall and the emergency spillway modifications would provide additional retention time to achieve sedimentation in the CPR Pond and additional freeboard during larger storm events. The 100-year, 24-hour storm event was used as the design basis for the emergency spillway and also used to check for overtopping of the supplemental CPR Pond storage wall.

Scenario 3 – Pros and Cons

Pros associated with Scenario 3 are the following:

- The proposed 3-foot knee wall would provide additional storage within the existing CPR Pond and ditch. Additional space for separate storage would not be required.
- Existing piping could be used to convey flow from the CPR Pond to the Ash Pond, with some new piping to complete tie-ins.

- No modifications would be necessary to the existing KPDES permit as no new outfalls are required.
- Uses existing pump structure.

Cons associated with Scenario 3 are the following:

- Unknown condition of existing pipes to be reused as part of this scenario.
- Requires new PCM and transformers and associated electrical lines.
- Requires new pumps.

Scenario 4 – New Coal Pile Runoff Pond with Discharge to Existing CPR Pond

Scenario 4 considered a new coal pile runoff pond. This pond would be located directly west of the coal pile and discharge to the existing CPR Pond as indicated on SK-004 in Appendix A. Drainage area contributing to the new pond would include both the coal pile and undeveloped areas around the coal pile.

The proposed pond would require a new lift station, pumps, and a 15-inch force main to convey flows to the existing CPR Pond. Preliminary sizing indicated two pumps would be necessary: one pump with a design discharge of 1,400 gpm, and one pump with a design discharge of 2,600 gpm. Hydraulically, only the two pumps would be required; however, additional pumps would be recommended for backup/redundancy purposes. Other components of this scenario were a series of inlets and pipes around the perimeter of the coal pile to convey flows to the new pond.

Modifications to the existing CPR Pond would include lowering the emergency spillway pipes, increasing pumping capacity, and replacement of the existing 10-inch force main to the Ash Pond with a 30-inch force main. Preliminary sizing showed two new pumps, each having a design discharge of 2,600 gpm, would be necessary, in conjunction with the existing pumps. This scenario requires a new electrical PCM to power the new equipment.

Scenario 4 –Pros and Cons

Pros associated with Scenario 4 are the following:

- No modifications would be necessary to the existing KPDES permit as no new outfalls are required.

Cons associated with Scenario 4 are the following:

- Additional space would be required for the new pond.
- Additional lift station, pumps, and associated piping would be required for the new runoff pond and to convey flow from the existing CPR Pond to the existing Ash Pond.
- Requires new PCM and transformers and associated electrical lines.

Scenario 5 – Tank Option

Scenario 5 considered a steel tank for supplemental storage in conjunction with the existing CPR Pond. Several potential sites were evaluated with the selected site located north of the existing CPR Pond. SK-005 in Appendix A depicts the preferred tank location of the five potential options evaluated.

This scenario would require an additional lift station, pumps and associated piping in addition to the new tank. Additional pumps at the proposed tank would also be required to empty the tank and underground utility modifications may be required as well.

Scenario 5 – Pros and Cons

Pros associated with Scenario 5 are the following:

- The storage tank could be located at any of several different locations.

Cons associated with Scenario 5 are the following:

- In addition to the tank, additional lift station, pumps, and electrical systems would be required for the new storage. Emptying the tank would be by gravity flow back to the CPR Pond.
- Additional piping, potential excavation, and potential utility rack.
- Additional space would be required for the tank.
- Potential utility conflicts.
- Requires new PCM, transformers and associated electrical lines.

Ultimately this scenario was not further pursued as it contains similar scope to Scenario 3 with the addition of a tank, lift station and pumps and would not be as cost effective. Therefore, an opinion of probable cost and schedule were not further developed for Scenario 5.

Scenario 6 – Diversion of Runoff from Plant Drainage Area

This scenario considered a new coal pile runoff pond and underground storage. The new coal pile runoff pond would be located southwest of the coal pile and divert contributing area away from the existing CPR Pond. It would manage runoff from the western portions of the coal pile. Approximately 32.3 acres of undeveloped areas around the coal pile would be diverted to a new outfall. See SK-006 in Appendix A.

The proposed pond would require a new lift station, pumps, and a 10-inch force main to convey flows to the existing CPR Pond. Preliminary sizing looked at one pump with a design discharge of 1,400 gpm. Hydraulically, only one pump would be necessary; however, a second pump would be recommended for backup/redundancy purposes. Other components of this scenario were reconfiguration of existing channels and an enclosed system, where space is limited, to convey flows to the new pond. This scenario requires a new electrical PCM to power the new equipment.

Additionally, a portion of the Plant Drainage Area flows would be diverted to underground storage, including a new KPDES outfall. The new coal pile runoff pond and new underground storage would be

required along with the operation of the existing CPR Pond. Approximately 12.1 acres of the Plant Drainage Area would be diverted to the new underground tank located under the existing limestone pile.

In addition, the existing 10-inch force main from the CPR Pond to the Ash Pond would be replaced with a 12-inch force main.

Scenario 6 –Pros and Cons

Pros associated with Scenario 6 are the following:

- The underground storage could provide a source of water for processes associated with conditioning at ash storage silos.

Cons associated with Scenario 6 are the following:

- Additional space would be required for the new pond.
- Additional lift station, pumps, electrical systems, and associated piping would be required for the new coal pile runoff pond along with the new underground storage.
- The suggested space for underground storage is currently being utilized.
- Modifications would be necessary to the existing KPDES permit since a new outfall would be required.
- Requires new PCM and transformers and associated electrical lines.
- Difficulty with cleaning out solids deposited in the tank.

Scenario 7 – Gravity Basin

Scenario 7 reviewed additional storage in the vicinity of the CPR Pond. The storage would be provided via a concrete basin located along the north berm of the existing pond.

The basin would be 270 feet x 50 feet with a depth of 13 feet. There would be two sets of overflow pipes and one backflow pipe between the existing CPR Pond and the proposed basin. The concrete basin would be emptied by gravity, so additional pumping would not be required.

Scenario 7 – Pros and Cons

Pros associated with Scenario 7 are the following:

- No pumping would be associated with the additional storage basin.

Cons associated with Scenario 7 are the following:

- Potential existing utility conflicts.
- Road would need to be relocated.
- Operationally, EKPC would need to minimize existing CPR Pond storage during construction. The existing pond elevation would need to remain low to open the north berm.
- Additional excavation and concrete wall would be required for the new storage basin.
- Potential impact to the existing rail spur at the rail unloading and may need to be rerouted.

Ultimately, this scenario was not further pursued as it was not considered a constructible option, given the site constraints. Therefore, an opinion of probable cost and schedule were not developed for Scenario 7.

Opinion of Probable Costs

An initial opinion of probable cost was developed for scenarios 2, 3, 4, and 6. The estimated costs include contingency and escalation. All estimated values were rounded to the nearest ten-thousand-dollar value. No financing fees for interest during construction were included in the project costs.

Several major assumptions were used in developing the capital cost estimates. These assumptions include the following:

- Labor was assumed to be open shop and available without excessive hourly incentives or incentive packages.
- Cost for Builder's Risk Insurance was based on 0.45% of the direct costs.
- Cost of escalation was based on 6% of the direct costs.
- Contingency was included at 15% for estimate accuracy and 15% for project estimate.
- Sales tax at 6% is included based on direct costs. These scenarios will likely not meet a sales tax exemption in Kentucky. No financing fees or interest during construction were included.

Scenario 1 Opinion of Probable Costs – Reduced Contributing Area to Existing CPR Pond

Not applicable as noted previously.

Scenario 2 Opinion of Probable Costs – Increased Pumping Capacity at CPR Pond (100-year)

The opinion of probable cost estimate for Scenario 2 is detailed in

Table **1** below. The estimated capital cost for the project, inclusive of contingency and fee, is $17.85 million dollars.

Table 1: Scenario 2 Capital Cost Summary

Total Direct Cost	**$9,700,000**
Construction Management, 10%	$970,000
Engineering, 14%	$1,360,000
Commercial - Builders Risk Insurance, 0.45%	$100,000
Escalation - 6%	$580,000
Total Indirect Cost	**$2,950 ,000**
Total Direct and Indirect Costs	**$12,650,000**
Estimate Accuracy Contingency, 15%	$1, 900,000
Project Estimate Contingency, 15%	$1, 900,000
Total Project Cost	**$16,450,000**
Owner Costs- General, 5%	$820,000
Owner Costs- Sales Tax, 6% of Direct Cost	$580,000
Total Project Cost Including Owner's Cost	**$17,850,000**

Scenario 3 Opinion of Probable Costs – CPR Pond Supplemental Storage

The opinion of probable cost estimate for Scenario 3 is detailed in Table 2 below. The estimated capital cost for the project, inclusive of contingency and fee, is $13.20 million dollars.

Table 2: Scenario 3 - Capital Cost Summary

Total Direct Cost	**$7,200,000**
Construction Management, 10%	$700,000
Engineering, 14%	$1,000,000
Commercial - Builders Risk Insurance, 0.45%	$100,000
Escalation - 6%	$400,000
Total Indirect Cost	**$2,200,000**
Total Direct and Indirect Costs	**$9,400,000**
Estimate Accuracy Contingency, 15%	$1,400,000
Project Estimate Contingency, 15%	$1,400,000
Total Project Cost	**$12,200,000**
Owner Costs- General, 5%	$600,000
Owner Costs- Sales Tax, 6% of Direct Cost	$400,000
Total Project Cost Including Owner's Cost	**$13,200,000**

Scenario 4 Opinion of Probable Costs - New Coal Pile Runoff Pond with Discharge to Existing CPR Pond

The opinion of probable cost estimate for Scenario 4 is detailed in Table 3 below. The estimated capital cost for the project, inclusive of contingency and fee, is $19.46 million dollars.

Table 3: Scenario 4 - Capital Cost Summary

Total Direct Cost	**$10,570,000**
Construction Management, 10%	$1,060,000
Engineering, 14%	$1,480,000
Commercial - Builders Risk Insurance, 0.45%	$100,000
Escalation - 6%	$630,000
Total Indirect Cost	**$3,220,000**
Total Direct and Indirect Costs	**$13,790,000**
Estimate Accuracy Contingency, 15%	$2,070,000
Project Estimate Contingency, 15%	$2,070,000
Total Project Cost	**$17,930,000**
Owner Costs- General, 5%	$900,000
Owner Costs- Sales Tax, 6% of Direct Cost	$630,000
Total Project Cost Including Owner's Cost	**$19,460,000**

Scenario 5 Opinion of Probable Costs- Tank Option

Not evaluated as noted previously.

Scenario 6 Opinion of Probable Costs – Diversion of Runoff from Plant Drainage Area

The opinion of probable cost estimate for Scenario 6 is detailed in Table 4 below. The estimated capital cost for the project, inclusive of contingency and fee, is $16.24 million dollars.

Table 4: Scenario 6 - Capital Cost Summary

Total Direct Cost	**$8,820,000**
Construction Management, 10%	$880,000
Engineering, 14%	$1,230,000
Commercial - Builders Risk Insurance, 0.45%	$100,000
Escalation - 6%	$530,000
Total Indirect Cost	**$2,680,000**
Total Direct and Indirect Costs	**$11,500,000**
Estimate Accuracy Contingency, 15%	$1,730,000
Project Estimate Contingency, 15%	$1,730,000
Total Project Cost	**$14,960,000**
Owner Costs- General, 5%	$750,000
Owner Costs- Sales Tax, 6% of Direct Cost	$530,000
Total Project Cost Including Owner's Cost	**$16,240,000**

Scenario 7 Opinion of Probable Costs – Gravity Basin

Not applicable as noted previously.

Scenario Schedules

An estimated project schedule was developed for each scenario. Each project schedule is based on an arbitrary start date of May 1, 2019. The following is a brief summary of each project's major milestones.

Scenario 1 Schedule - Reduced Contributing Area to Existing CPR Pond

Not applicable as noted previously.

Scenario 2 Schedule – Increased Pumping Capacity at CPR Pond (100-year)

The estimated schedule for Scenario 2 reflects the following milestones:

Table 5: Scenario 2 – Estimated Schedule

Project Phase	Start Date	End Date
Notice to Proceed	May 1, 2019	N/A
Permitting	N/A	N/A
Field Surveys and Geotechnical	May 1, 2019	May 31, 2019
Engineering Design	June 1, 2019	December 31, 2019
Procurement	January 1, 2020	July 30, 2020
Construction Phase	March 1, 2020	November 30, 2020

Scenario 3 Schedule – CPR Pond Supplemental Storage

The estimated schedule for Scenario 3 reflects the following milestones:

Table 6: Scenario 3 – Estimated Schedule

Project Phase	Start Date	End Date
Notice to Proceed	May 1, 2019	N/A
Permitting	N/A	N/A
Field Surveys and Geotechnical	July 21, 2019	October 12, 2019
Engineering Design	May 1, 2019	September 12, 2020
Procurement	August 25, 2019	March 26, 2021
Construction Phase	December 26, 2020	July 30, 2021

Scenario 4 Schedule - New Coal Pile Runoff Pond with Discharge to Existing CPR Pond

The estimated schedule for Scenario 4 reflects the following milestones:

Table 7: Scenario 4 – Estimated Schedule

Project Phase	Start Date	End Date
Notice to Proceed	May 1, 2019	N/A
Permitting	May 1, 2019	October 31, 2019
Field Surveys and Geotechnical	November 1, 2019	December 31, 2019
Engineering Design	January 1, 2020	July 31, 2020
Procurement	August 1, 2020	February 28, 2021
Construction Phase	October 1, 2020	April 30, 2021

Scenario 5 Schedule – Tank Option

Not evaluated as noted previously.

Scenario 6 Schedule – Diversion of Runoff from Plant Drainage Area

The estimated schedule for Scenario 6 reflects the following milestones:

Table 8: Scenario 6 – Estimated Schedule

Project Phase	Start Date	End Date
Notice to Proceed	May 1, 2019	N/A
Permitting	May 1, 2019	October 31, 2019
Field Surveys and Geotechnical	November 1, 2019	December 31, 2019
Engineering Design	January 1, 2020	July 31, 2020
Procurement	August 1, 2020	February 28, 2021
Construction Phase	October 1, 2020	April 30, 2021

Scenario 7 Schedule – Gravity Basin

Not evaluated as noted previously.

Limitations and Qualifications

Estimates and projections prepared by BMcD relating to schedule and capital costs are based on our experience, qualifications and judgment as a professional consultant in the industry for coal-fired power plants. Since BMcD has no control over weather, cost and availability of labor, material and equipment, labor productivity, construction contractor's procedures and methods, unavoidable delays, construction contractor's method of determining prices, economic conditions, government regulations and laws (including interpretation thereof), competitive bidding and market conditions or other factors affecting such estimates or projections, BMcD does not guarantee that actual rates, costs, performance, schedules, etc., will not vary from the estimates and projections prepared by BMcD.

Summary

In summary, BMcD has reviewed seven scenarios to address potential improvements to the stormwater drainage system contributing to the CPR Pond at Spurlock Station. Schedule and budgetary opinion of probable cost estimates were developed for Scenarios 2 through 4 and Scenario 6.

Table 9 provides a brief summary of the projects considered, and an associated opinion of probable cost.

Table 9: Stormwater Scenario Summary

Project	Description	Opinion of Cost
Scenario 1	Reduce contributing drainage of coal pile runoff pond to coal pile and Plant Drainage Area drainage systems.	N/A
Scenario 2	Increase pumping capacity at existing CPR Pond to convey 100-year, 24-hour precipitation event. New pumps, pump structure, piping, PCM and electrical.	$17,850,000
Scenario 3	Increase pumping capacity at existing CPR Pond, modify outlet works of existing pond, modifications to north coal pile ditch, add new supplemental storage concrete wall, and add new PCM and transformers to power new equipment.	$13,200,000
Scenario 4	Add new coal pile runoff pond, capture runoff from coal pile via reinforced concrete pipe and storm inlets, capture green space runoff, pump flows to CPR Pond and then to the existing Ash Pond, modify outlet works of existing pond, and increase pumping capacity at existing pond. New pumps, pump structure, piping, PCM, transformers, and electrical.	$19,460,000
Scenario 5	Add new steel tank for supplementary storage, add new lift station, add new pumps and associated piping, add new PCM, transformers, and electrical.	N/A
Scenario 6	Add new coal pile runoff pond, capture runoff from coal pile via reconfiguration of existing channels and enclosed system, divert green space runoff, pump flows to existing CPR Pond, modify outlet works of existing pond, add underground storage at the Plant Drainage Area. New pumps, pump structure, piping, PCM, transformers, and electrical.	$16,240,000
Scenario 7	Add new gravity basin and associated concrete walls and piping for supplementary storage and relocate existing road.	N/A

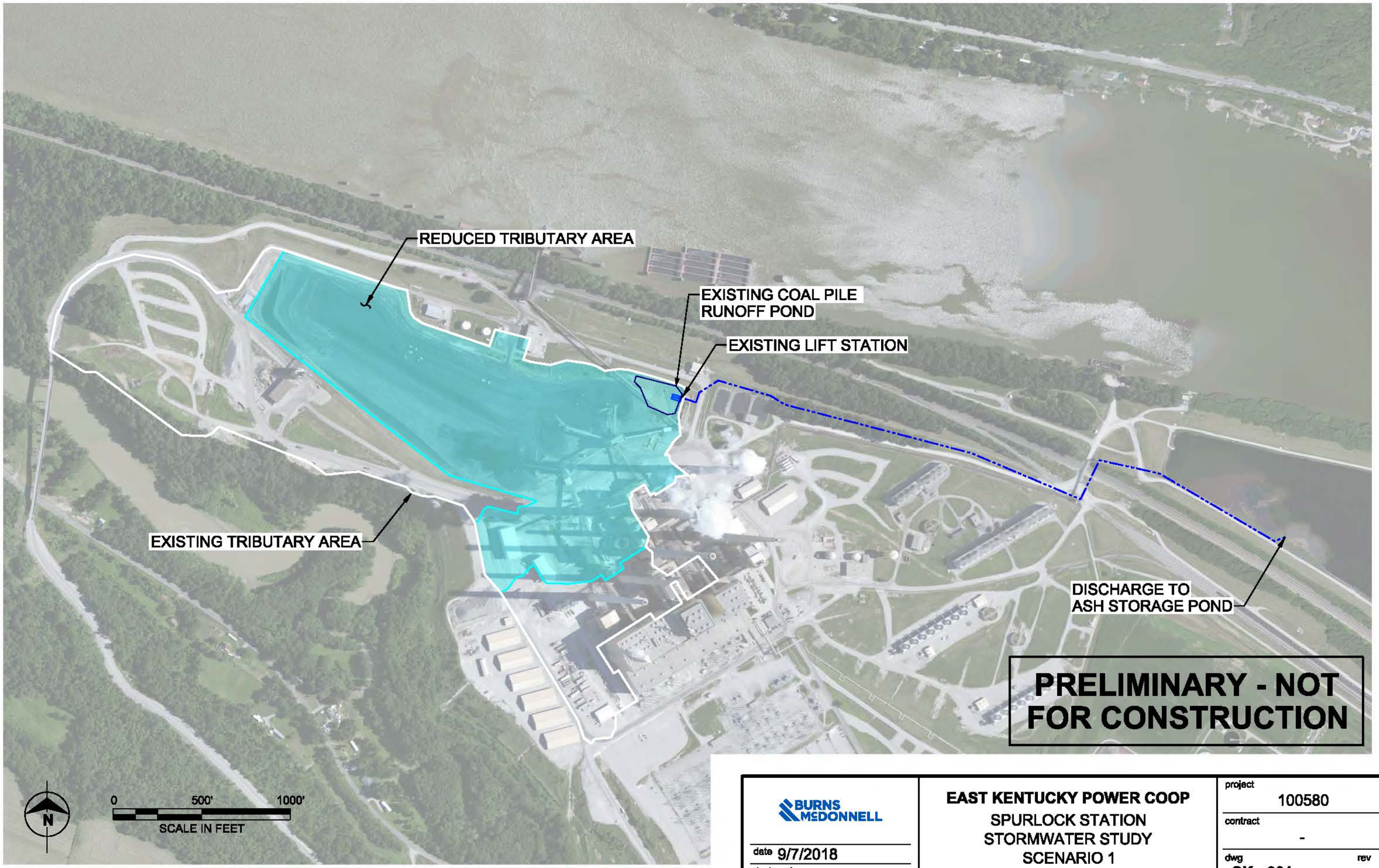
Enclosure Attachments:
Appendix A – Preliminary General Arrangement Drawings

Certification

I hereby certify, as a Professional Engineer in the Commonwealth of Kentucky, that the information in this document was assembled under my direct supervisory control. This report is not intended or represented to be suitable for reuse by East Kentucky Power Cooperative or others without specific verification or adaptation by the Engineer.

Samuel Yoder (Kentucky License No. 31964)

Date: October 1, 2018



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designed A. MYERS

EAST KENTUCKY POWER COOP

SPURLOCK STATION
STORMWATER STUDY
SCENARIO 1

project 100580

contract -

dwg SK - 001

rev -

9/14/2018

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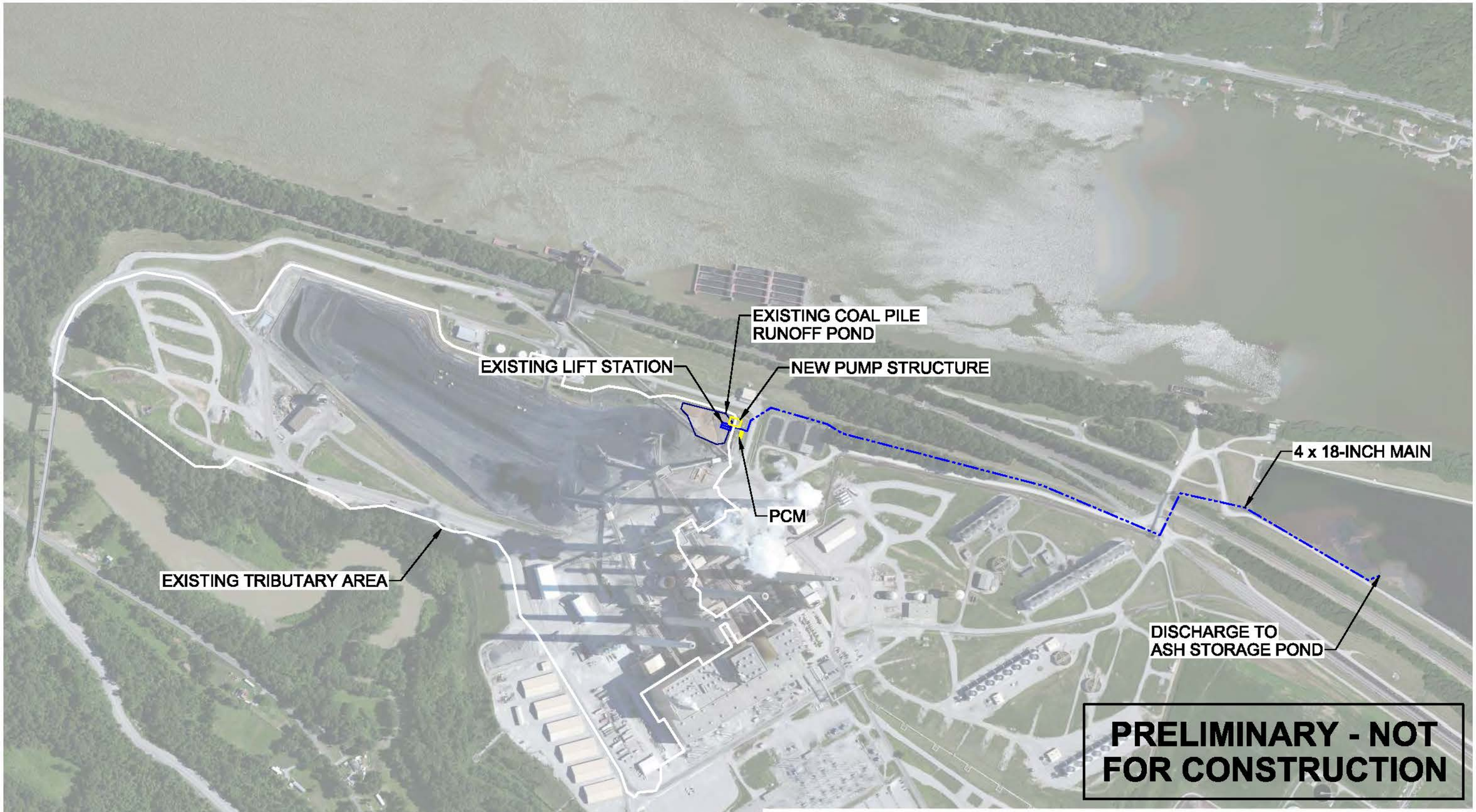

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EAST KENTUCKY POWER COOP
SPURLOCK STATION
STORMWATER STUDY
SCENARIO 2

project 100580

contract -

dwg **SK - 002**

rev -

9/14/2018

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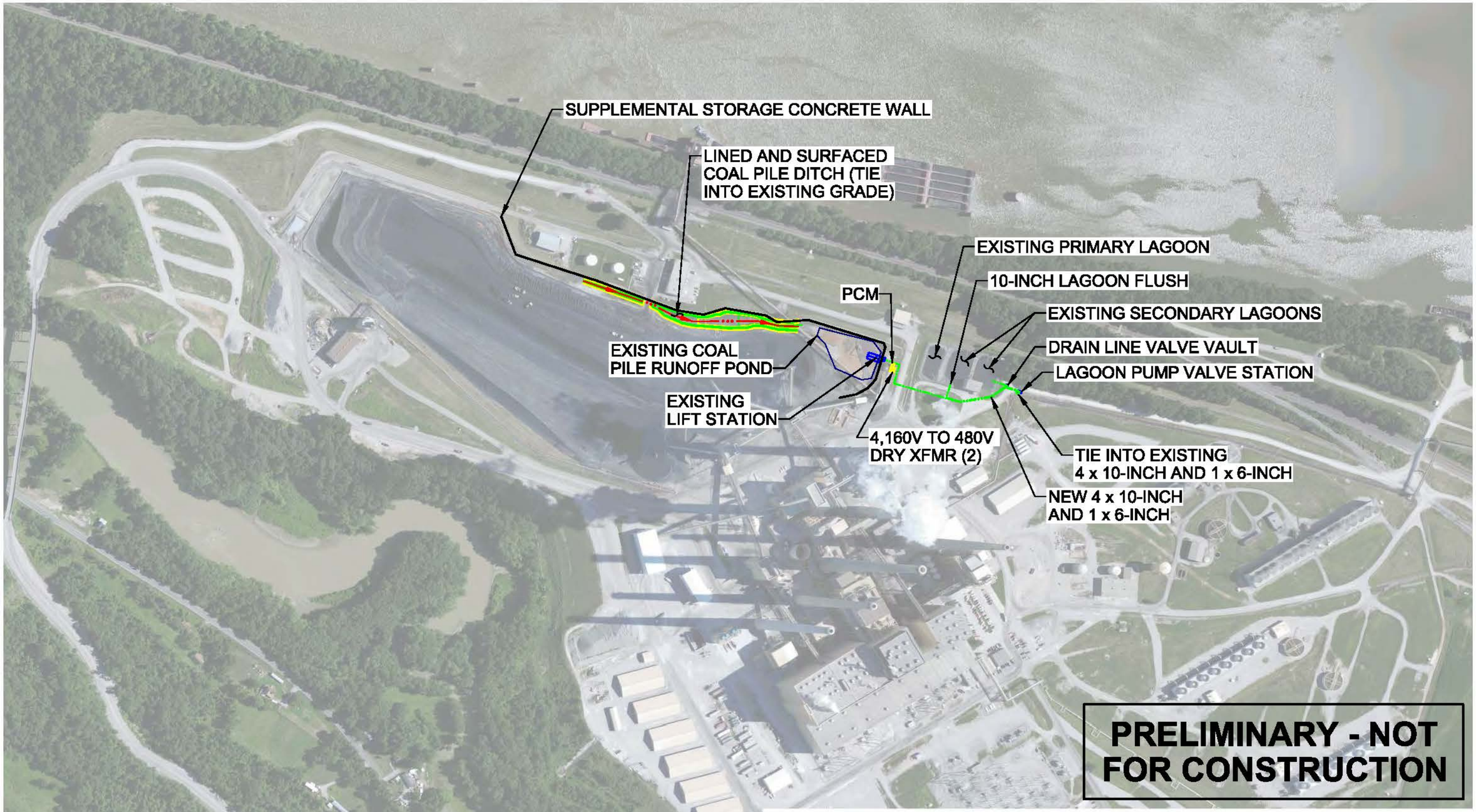

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EAST KENTUCKY POWER COOP

SPURLOCK STATION
STORMWATER STUDY
SCENARIO 3

project 100580

contract -

dwg SK - 003

rev -

9/14/2018

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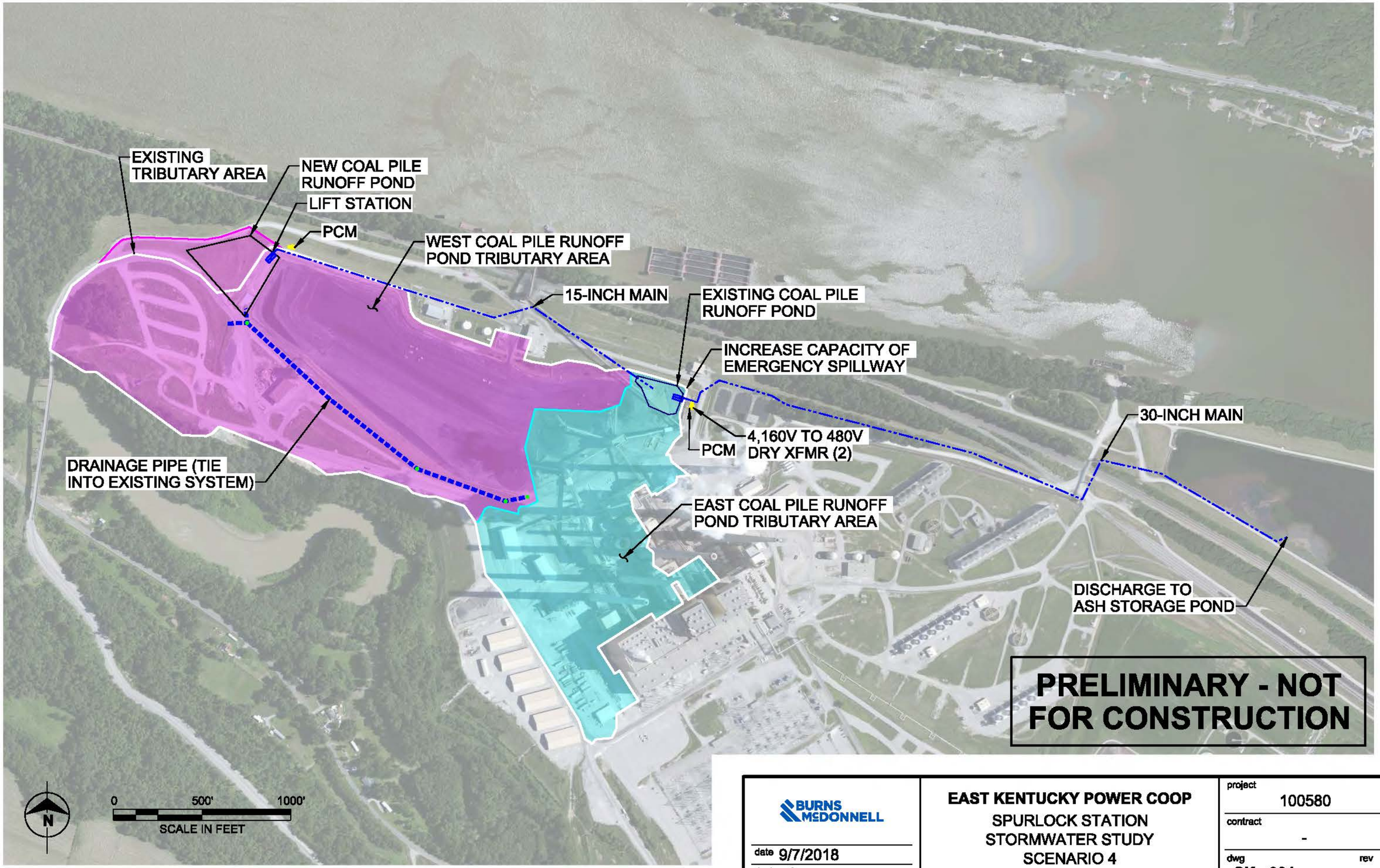

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EAST KENTUCKY POWER COOP

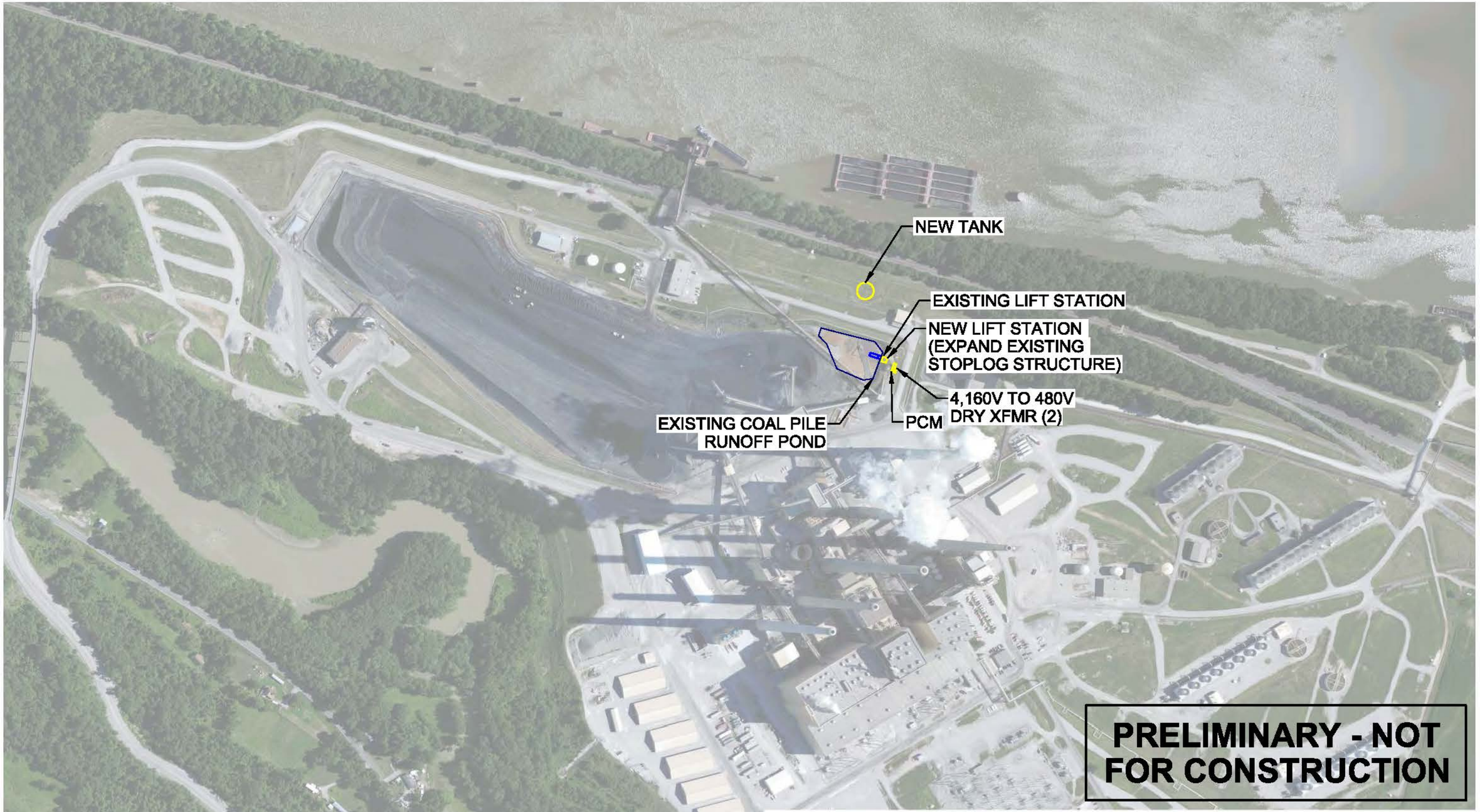
SPURLOCK STATION
STORMWATER STUDY
SCENARIO 4

project 100580

contract -

dwg SK - 004

rev -



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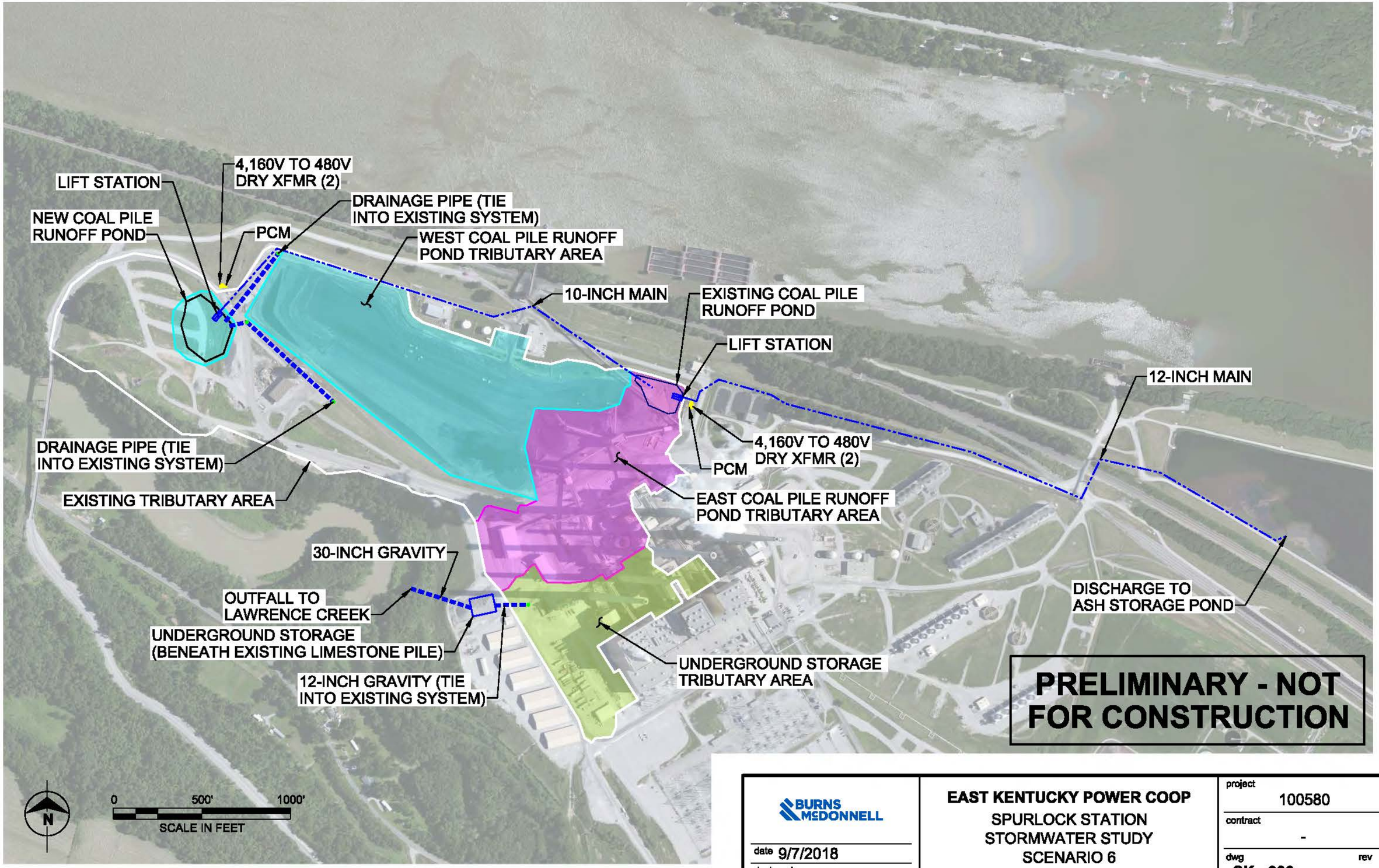
SPURLOCK STATION
STORMWATER STUDY
SCENARIO 5

project 100580

contract -

dwg SK - 005

rev -



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EAST KENTUCKY POWER COOP
SPURLOCK STATION
STORMWATER STUDY
SCENARIO 6

project 100580

contract -

dwg **SK - 006**

rev -

9/14/2018

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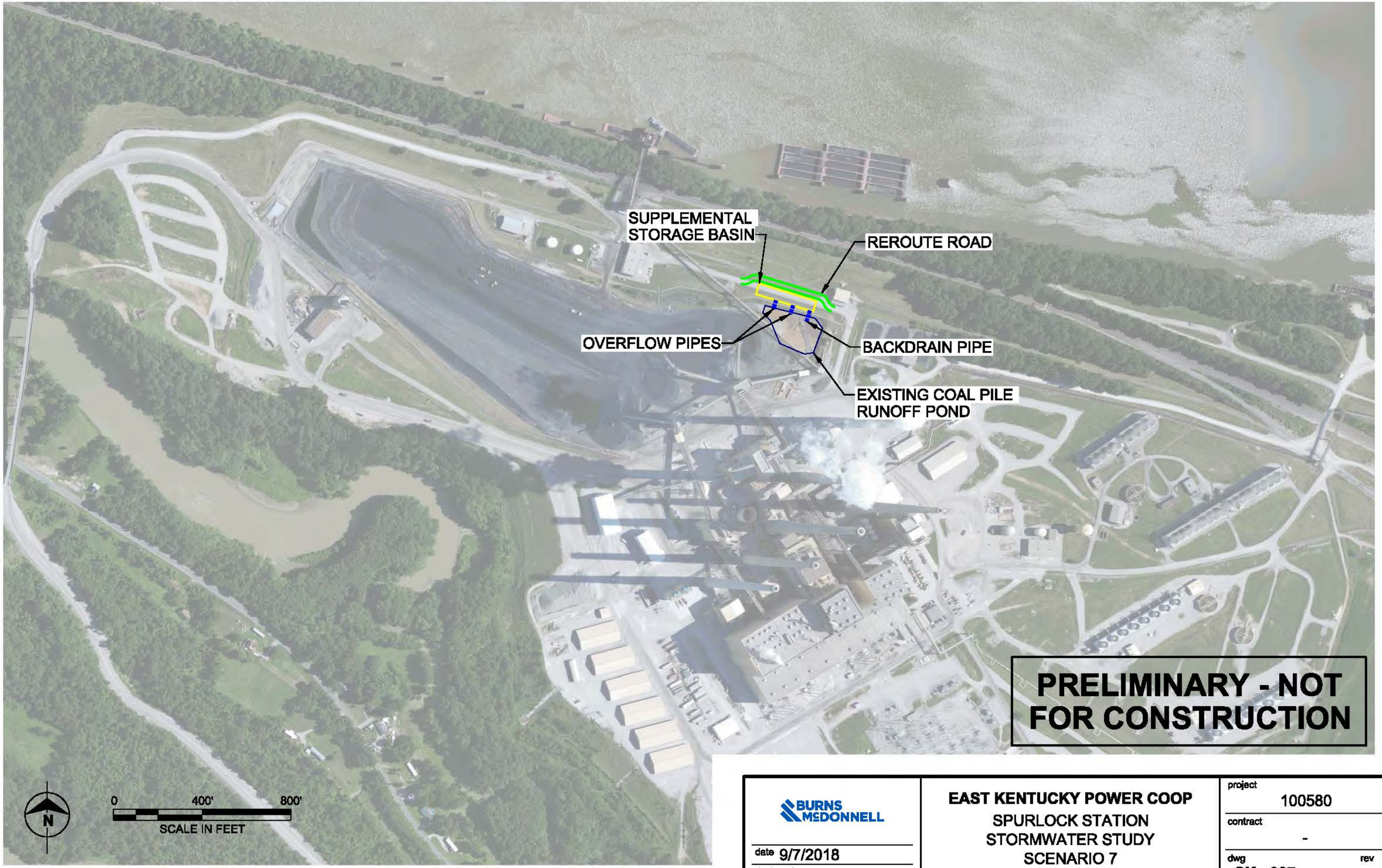

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EAST KENTUCKY POWER COOP

SPURLOCK STATION
STORMWATER STUDY
SCENARIO 7

project 100580

contract -

dwg SK - 007

rev -

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 3
RESPONSIBLE PARTY: Jerry B. Purvis

Request 3. Reference the Mosier testimony at pp. 14-15, wherein he states KDOW has issued a draft revised KPDES permit for Spurlock Station. Provide a copy of that draft permit.

Response 3. The draft permit was attached to the Application.

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 4
RESPONSIBLE PARTY: Jerry B. Purvis

Request 4. Reference the Purvis testimony generally. Will the construction of the proposed CPR project in any way alter or modify the layout of EKPC's CCR monitoring wells?

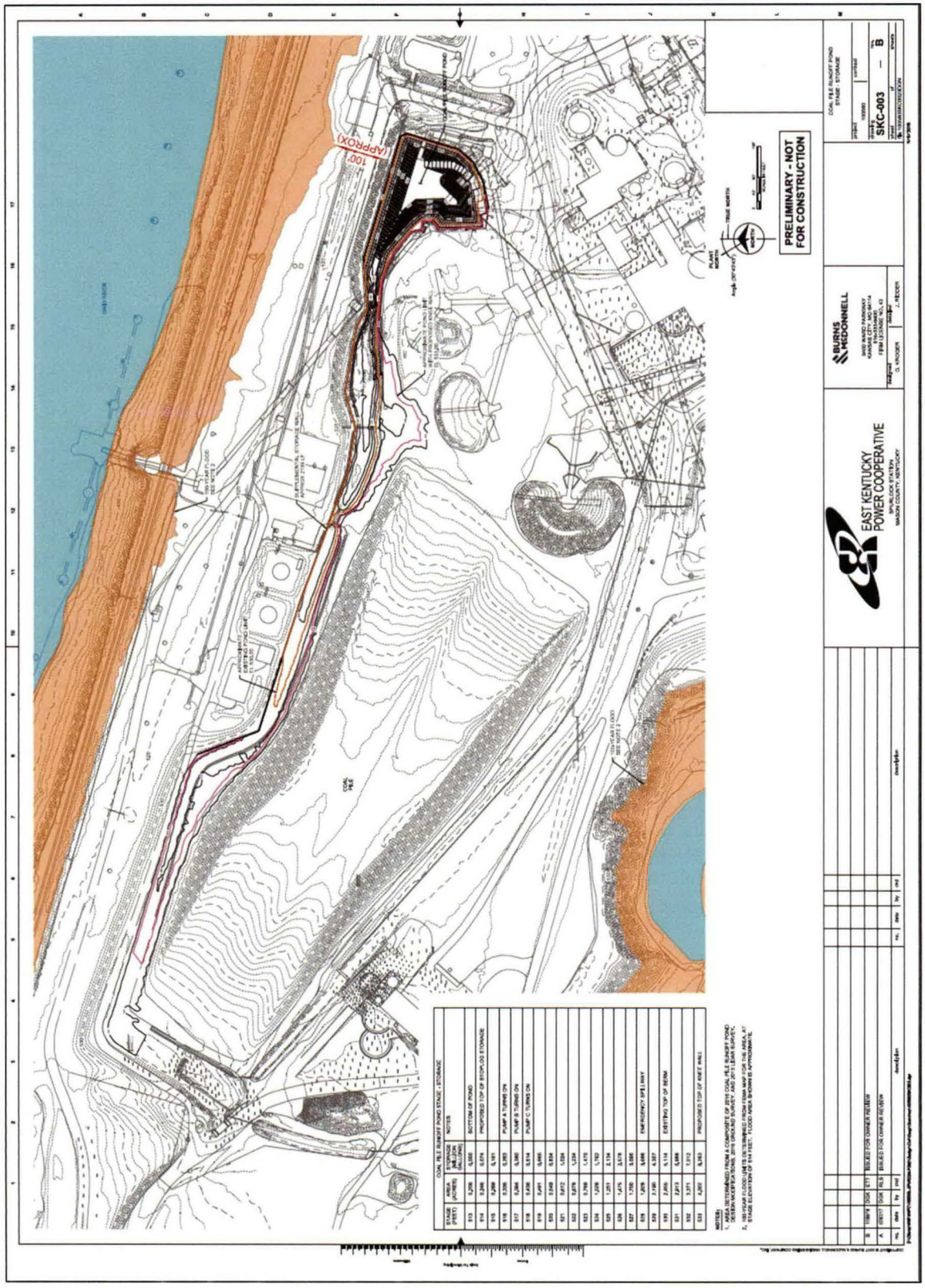
Response 4. The construction of the CPR pond modification will not modify the layout of EKPC's CCR monitoring wells. The monitoring wells are in place around the Spurlock Station ash pond, and the CCR landfill.

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 5
RESPONSIBLE PARTY: Craig A. Johnson

Request 5. Reference the Purvis testimony, p. 24. Explain if the CPR pond is located along the banks of the Ohio River. If so, will the height of the CPR pond's dike have to be increased?

Response 5. Please refer to the sketch below for additional detail. The existing CPR pond is approximately 100 feet away from the closest southern bank of the Ohio River during the 100-year flood stage. The proposed dike, or wall, is not to protect the CPR pond from flood stages of the Ohio River. The proposed construction of the dike, or wall, is designed to control the 100-year, 24-hour design storm by containing the storm water until it can be discharged through a combination of the principal and the emergency spillways. The additional freeboard is necessary to allow the storm water to discharge without overtopping the crest of the dam and threatening its structural stability. The planned wall elevation, and existing CPR pond berm, are not impacted by the flood stage and proximity to the Ohio River.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EAST KENTUCKY POWER COOPERATIVE
SPURLOCK STATION
MASON COUNTY, KENTUCKY
BURNS MCDONNELL
SKC-003
B
100' (APPROX)

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 6
RESPONSIBLE PARTY: Jerry B. Purvis

Request 6. Reference the Purvis testimony, p. 25, lines 7-23, wherein he states EKPC "expects" the KDOW's revision to the Spurlock Station KPDES Permit will require the Company to insure that the CPR facilities will need to accept 4 to 5 inches of rainfall to meet the Total Suspended Solids daily maximum level, as well as the required pH range. State all facts upon which EKPC relies for this expectation.

Response 6. KDOW provided a draft permit on September 10, 2018, that contained the limitations for TSS and pH for the near term, recognizing that EKPC's current CPR has insufficient storage, and indicating the removal of TSS limitations when the CPR can be modified to contain a 10-year, 24-hour storm event for outfall 005. KDOW used the EPA regulatory language from 40 CFR 423.12 as the basis for this approach. KDOW produced the draft permit for public notice, and subsequently the language for outfall 005 remained the same in the final permit and Fact Sheet issued on October 23, 2018.

Request 6a. When does the Company expect the draft revision of its KPDES permit to be renewed and finalized?

Response 6a. EKPC received the final KPDES water permit and fact sheet on October 23, 2018, which becomes effective January 1, 2019.

Request 6b. If the finalization of the KPDES permit occurs during the course of this docket, will EKPC file a copy into the record of this docket?

Response 6b. Yes. Please see the enclosed CD.

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

FACT SHEET

KPDES No.: KY0022250

AI No.: 3004

EKPC H.L. Spurlock Power Station

1301 West Second Street

Maysville, Mason County, Kentucky

Date: October 23, 2018

Public Notice Information

Public Notice Start Date: September 10, 2018

Comment Due Date: October 10, 2018

General information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address: http://water.ky.gov/Pages/PublicNotices.aspx.

Public Notice Comments

Comments must be received by the Division of Water no later than 4:30 PM on the closing date of the comment period. Comments may be submitted by e-mail at: DOWPublicNotice@ky.gov or written comments may be submitted to the Division of Water at 300 Sower Blvd, Frankfort, Kentucky 40601.

Reference Documents

A copy of this proposed fact sheet, proposed permit, the application, other supporting material and the current status of the application may be obtained from the Department for Environmental Protection's Pending Approvals Search Webpage:
http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30.

Open Records

Copies of publicly-available documents supporting this fact sheet and proposed permit may also be obtained from the Department for Environmental Protection Central Office. Information regarding these materials may be obtained from the Open Records Coordinator at (502) 782-6849 or by e-mail at EEC.KORA@ky.gov.

THIS KPDES FACT SHEET CONSISTS OF THE FOLLOWING SECTIONS:

SECTION 1

FACILITY SYNOPSIS

1. FACILITY SYNOPSIS

1.1. Name and Address of Applicant

East Kentucky Power Cooperative, Inc.
4775 Lexington Road
Winchester, Kentucky 40391

1.2. Facility Location

EKPC H.L. Spurlock Power Station
1301 West Second Street
Maysville, Mason County, Kentucky

1.3. Description of Applicant's Operation

The H.L. Spurlock Generating Station is a four-unit coal-fired electric generating facility located on approximately 2,791 acres adjacent to the Ohio River in Maysville, Kentucky. The unit with individual generating capacities in megawatts (MW) and dates of service appear below in Table1:

TABLE 1.		
Unit No.	**Net Capacity (MW)**	**Date of Service**
Spurlock 1	300	1977
Spurlock 2	510	1981
Gilbert 3	268	2005
Spurlock 4	268	2009

1.4. Wastewaters Collected and Treatment

The following table lists the flow, wastewater types collected, and treatment type for each outfall:

TABLE 2.			
Outfall No.	**Average Flow**	**Wastewater Types Collected**	**Treatment Type**
001	3.88	Non-Domestic Process Water Non-Process Stormwater	Sedimentation Discharge to Surface Water
002	0.50	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination
003	0.67	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination
004	0.0	Non-Domestic Process Water	Chemical Precipitation
005	0.0	Stormwater	Sedimentation Discharge to Surface Water
006	Varies	Stormwater	Discharge to Surface Water
007	0.25	Non-Domestic Process Water	Discharge to Surface Water
008	0.30	Non-Domestic Process Water Stormwater	Sedimentation Discharge to Surface Water
009	8.43	Plant Intake	None
010	0.46	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination
011	0.009	Landfill Stormwater Non-Domestic Process Water	Sedimentation Discharge to Surface Water
012	0.55	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination

TABLE 2.			
Outfall No.	**Average Flow**	**Wastewater Types Collected**	**Treatment Type**
013	Not yet constructed	Non-Domestic Process Water	Chemical Precipitation Mixing Neutralization
00A	Varies	Stormwater	Discharge to Surface Water
00B	Varies	Stormwater	Discharge to Surface Water
00C	Varies	Stormwater	Discharge to Surface Water
00D	Varies	Stormwater	Discharge to Surface Water
00E	Varies	Stormwater	Discharge to Surface Water
00F	Varies	Stormwater	Discharge to Surface Water
00G	Varies	Stormwater	Discharge to Surface Water
00H	Varies	Stormwater	Discharge to Surface Water
00I	Varies	Stormwater	Discharge to Surface Water
00J	Varies	Stormwater	Discharge to Surface Water
00K	Varies	Stormwater	Discharge to Surface Water
00L	Varies	Stormwater	Discharge to Surface Water

The design flow of the facility is 47.17 MGD. The average annual flow is 15.05 MGD.

1.5. Permitting Action

This is a reissuance of a major KPDES permit for an existing coal-fired electric generating facility [SIC Code 4911].

SECTION 2

RECEIVING/INTAKE WATERS

2. RECEIVING / INTAKE WATERS

2.1. Receiving Waters

All surface waters of the Commonwealth have been assigned stream use designations consisting of one or more of the following designations: Warmwater Aquatic Habitat (WAH), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), Domestic Water Supply (DWS), Coldwater Aquatic Habitat (CAH) or Outstanding State Resource Water (OSRW)[401 KAR 10:026].

All surface waters of the Commonwealth are assigned one of the following antidegradation categories: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality Water (HQ)[401 KAR 10:030].

Surface waters categorized as an IW are listed in Kentucky's most recently approved Integrated Report to Congress on the Condition of Water Resources in Kentucky - Volume II. 303(d) List of Surface Waters.

The following table lists the stream use classifications associated with this permit.

TABLE 3.

Receiving Water Name	Use Designation	Antidegradation Category	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River[1]	WAH PCR SCR DWS	IW	10,600	42,100
UT to Lawrence Creek	WAH PCR SCR DWS	HQ	0.0	0.0
UT to Lawrence Creek	WAH PCR SCR DWS	HQ	0.0	0.0

[1]This segment of Ohio River (mile point 388.0 to 437.2) is listed as impaired in the 2014 303(d) List of Waters for Kentucky. Impaired uses are Fish Consumption (Partial Support). The pollutants of concern are Dioxin and Polychlorinated biphenyls (PCBs). The suspected sources are unknown. Facility in compliance with KPDES permit will not contribute to this impairment.

2.2. Intake Waters – Nearest Downstream Intake

TABLE 4.

Intake Water Name	Public Water Supply Name	Latitude (N)	Longitude (W)	Miles Downstream	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River	Greater Cincinnati Water Works	39°04'2.2"	84°26'10"	49	10,600	45,300

SECTION 3

OUTFALL 001

3. OUTFALL 001

3.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 5.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'9.1"	83°48'52.8"	Ohio River	Current - Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, FGD wastewater, low volume waste, ash sluice water, chemical and nonchemical metal cleaning wastewater, and stormwater
				Ash Pond Dewatering-The Secondary Lagoon discharge will contain all the flows mentioned above and the decanted and pumped water from the ash pond.
				Future - Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, treated FGD wastewater, low volume waste, chemical and nonchemical metal cleaning wastewater, stormwater and new water mass balance pond

3.2. Reported Values

The following table summarizes the reported values for Outfall 001:

TABLE 6.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	3.74	7.41	N/A	N/A	N/A	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	12.76	13.06	N/A
Oil & Grease	mg/l	N/A	N/A	N/A	BDL	BDL	N/A
Temperature	°F	N/A	N/A	N/A	78.88	80.87	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	1437	1455	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.066	0.068	N/A
pH	SU	N/A	N/A	7.11	N/A	N/A	8.2

TABLE 6.							
Reported Parameters	Units	EFFLUENT					
		Loadings (lbs./day)		Concentrations			
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	<1.00
[1]WET – Whole Effluent Toxicity							
The abbreviation BDL means Below Detection Level							

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

3.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001 unless Tables 8 or 9 are in effect:

TABLE 7.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001 once Ash Pond dewatering commences. Permittee shall notify the Division of Water (DOW), Surface Water Permits Branch at least 30 days prior to commencement of dewatering operations. These requirements will remain in effect until Ash Pond dewatering operations cease discharge through Outfall 001:

TABLE 8.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Month	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([4])	([4])
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Antimony[1]	mg/l	N/A	N/A	N/A	9.27	Report	N/A	1/Month	Grab
Total Recoverable Arsenic[1]	mg/l	N/A	N/A	N/A	0.31	0.31	N/A	1/Month	Grab
Total Recoverable Beryllium[1]	mg/l	N/A	N/A	N/A	6.60	Report	N/A	1/Month	Grab
Total Recoverable Cadmium[1]	mg/l	N/A	N/A	N/A	0.0081	0.0081	N/A	1/Month	Grab
Total Recoverable Chromium[1]	mg/l	N/A	N/A	N/A	164.4	Report	N/A	1/Month	Grab
Total Recoverable Copper[1]	mg/l	N/A	N/A	N/A	0.047	0.047	N/A	1/Month	Grab
Total Recoverable Lead[1]	mg/l	N/A	N/A	N/A	0.020	0.020	N/A	1/Month	Grab
Total Recoverable Mercury[1]	mg/l	N/A	N/A	N/A	0.000046	0.0013	N/A	1/Month	Grab
Total Recoverable Nickel[1]	mg/l	N/A	N/A	N/A	1.37	1.37	N/A	1/Month	Grab
Total Recoverable Silver[1]	mg/l	N/A	N/A	N/A	Report	0.037	N/A	1/Month	Grab
Total Recoverable Thallium[1]	mg/l	N/A	N/A	N/A	0.40	0.40	N/A	1/Month	Grab
Total Recoverable Zinc[1]	mg/l	N/A	N/A	N/A	0.35	0.35	N/A	1/Month	Grab
Acute WET[2]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Month	([3])

TABLE 8.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[1]The Monthly Average and Daily Maximum concentrations for these pollutants are not effluent limitations, but water quality triggers that, if exceeded for two (2) consecutive months, require permittee action. See the Best Management Practices Plan Section - Additional BMP Conditions Subsection for additional requirements related to these triggers.									
[2]WET – Whole Effluent Toxicity									
[3]Two (2) discrete grab samples shall be collected 12 hours apart									
[4]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001 which will take effect once Ash Pond dewatering operations cease and water mass balance pond is operational:

TABLE 9.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	66.7	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	6.0	8.0	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

3.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

3.4.1. Facility Changes

This facility will continue to operate as a coal fired steam electric power generation and transmission facility. The facility will undergo major changes in response to the recently updated federal regulations concerning Coal Combustion Residuals (CCR) and Steam Electric Power Generating Effluent Limitation Guidelines (ELG). New treatment equipment, redirection of flows, cessation of ash sluicing flows, and impoundment construction will significantly change this site. A comprehensive discussion of all the facility changes can be found in the Cover Letters, and in the EKPC Spurlock KPDES application. A major change effecting this outfall includes plans to close their ash pond that discharges to the secondary lagoon and through outfall 001. A lined water mass balance pond will replace the ash pond in the overall water mass balance for Spurlock Station.

3.4.2. Legacy Wastewater

Once the facility converts to sending some of the waste streams that were contributing to the bottom ash pond to the new lined water mass balance pond, these sources will no longer be contributing to the ash pond surface impoundment. The wastewater that these operations were contributing to will still be in the impoundment until it has been closed. The overall volumes of legacy wastewater will continue to decrease dramatically over time as the facility closes out the pond, and the water redirected to water mass balance pond and legacy wastewater from the ash pond will be combined and discharged through the secondary lagoon, outfall 001. Therefore, the Division will continue to apply the same limitations for TSS and Oil & Grease that applied before to outfall 001, since there is no change to the contributing operations to this outfall.

3.4.3. Dewatering of Ash Pond

In order for the ash pond to be closed, it must be decanted and dewatered. During dewatering, mechanical equipment may be required to remove interstitial water from the ash in the Ash Pond. While dewatering occurs, the facility will be required to monitor for the metals listed in Table 8 at a frequency of once per month and toxicity testing at a frequency of once per month. All discharges from the ash pond are sent to secondary lagoon and mixed with cooling water from the primary lagoon cooling water flow prior to discharge to the Ohio River. Also, the Ohio River can provide further dilution of effluent if necessary. For these reasons, monthly toxicity testing and monitoring of metals, with baseline water quality triggers during dewatering, will be required in place of metals limitations.

3.4.4. No Discharge of Ash Transport Water Compliance

This facility currently sluices bottom ash from two of their coal-fired operations to the Ash Pond, which discharges through Outfall 001. The Ash Pond currently settles and neutralizes bottom ash sluice flows, plants low volume wastes, FGD wastewater, coal storage yard drainage, direct rainfall, and stormwater runoff. If needed fly ash from Units 1 and 2 can be sluiced to the ash pond if ash transfer station is not operational.

40 CFR 423.13(h)(1) and 423.13(k)(1) require that there be no discharge of pollutants in fly ash and bottom ash transport waters, unless the ash transport waters are used in the FGD scrubbers. The permittee must

meet this requirement by a date determined by the permitting authority. For fly ash transport water, the date has to be as soon as possible beginning November 1, 2018 but no later than December 31, 2023. For bottom ash transport water, the date has to be as soon as possible beginning November 1, 2020 but no later than December 31, 2023.

The definition for the phrase "as soon as possible" can be found in 40 CFR 423.11(t). The permittee provided the Division of Water information to determine as soon as possible ELG compliance applicability dates. EKPC requested a compliance date of December 31, 2023 for compliance with the no-discharge requirements for bottom ash transport waters. EKPC needs until that date to: request Public Service Commission CPCN Approval, and design, procure and install equipment for conversion of bottom ash system on Units 1 & 2 from 'wet' system to a 'dry' system.

The DOW grants EKPC's requested compliance date. There shall be no discharge of pollutants in bottom and fly ash transport waters generated on and after December 31, 2023.

3.4.5. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

Certain technology-based effluent limitations and compliance deadlines included in this permit are based upon effluent limitation Guidelines ("ELGs") that are under reconsideration by the United States Environmental Protection Agency ("EPA"). 82 Fed. Reg. 43494 (September 18, 2017).

3.4.5.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (3)

The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 10.		
BPT Effluent Requirements – Low Volume Waste		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (4)

The quantity of pollutants discharged in fly ash and bottom ash transport water shall not exceed the quantity determined by multiplying the flow of fly ash and bottom ash transport water times the concentration listed in the following table:

TABLE 11.		
BPT Effluent Requirements – Fly and Bottom Ash Transport Water		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (9)

Subject to the provisions of paragraph (b)(10) of this section, the following effluent limitations shall apply to the point source discharges of coal pile runoff:

TABLE 12.		
BPT Effluent Requirements – Coal Pile Runoff		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	50 mg/l	-

40 CFR 423.12(b) (10)

Any untreated overflow from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event shall not be subject to the limitations in paragraph (b)(9) of this section

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 13.		
BPT Effluent Requirements – combustion residual leachate		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.12(b)(13)

In the event that waste streams from various sources are combined for treatment to be discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (b)(1) through (b)(12) of this section attributable to each controlled waste source shall not exceed the specified limitations for that waste source.

40 CFR 423.13(a)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.13(g)(ii)

For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concertation listed for TSS in 423.12(b)(11).

40 CFR 423.13(k)(1)(i)

Except for those discharges to which paragraph (k)(2) of this section applies, or when the bottom ash transport water is used in the FGD scrubber, there shall be no discharge of pollutants in bottom ash transport water. Dischargers must meet the discharge limitation in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2020, but no later than December 31, 2023. This limitation applies to the discharge of bottom ash transport water generated on and after the date determined by the permitting authority for meeting the discharge limitation, specified in this paragraph. Whenever bottom ash transport water is used in any other plant process or is sent to a treatment system at the plant (except when it is used in the FGD scrubber), the resulting effluent must comply with the discharge limitation in this paragraph. When the bottom ash transport water is used in the FGD scrubber, the quantity of pollutants in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration listed in the table in paragraph (g)(1)(i) of this section.

40 CFR 423.13(k)(1)(ii)

For discharges of bottom ash transport water generated before the date determined by the permitting authority, as specified in paragraph (k)(1)(i) of this section, the quantity of pollutants discharged in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration listed for TSS in 423.12(b)(4).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.13(n)

In the event that wastestreams from various sources are combined for treatment or discharged, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (m) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a) (3)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 14.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(11)

Subject to the provisions of paragraph (a)(12) of this section, the quantity or quality of pollutants or pollutant parameters discharged in coal pile runoff shall not exceed the standards specified below:

TABLE 15.	
NSPS Effluent Requirements – Coal Pile Runoff	
Effluent Characteristic	**NSPS for any time**
TSS	Not to exceed 50 mg/l

40 CFR 423.15(a)(12)

Any untreated overflow from facilities designed, constructed, and operated to treat the coal pile runoff which results from a 10 year, 24 hour rainfall event shall not be subject to the standards in paragraph (a)(11) of this section.

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)(14)

In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a)(1) through (13) of this section attributable to each wastes source shall not exceed the specified limitation for that waste source.

3.4.5.2. Best Professional Judgment (BPJ)

Coal Pile Runoff

In accordance with 401 KAR 5:080, Section 2(3) – 40 CFR 125.3 in the absence of promulgated technology based standards, the cabinet may develop appropriate technology based standards utilizing its 'Best Professional Judgment" (BPJ). The previous permit established the following BPJ limits for coal pile runoff.

TABLE 16.		
BPJ Effluent Requirements – Coal Pile Runoff		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	N/A	30.0 mg/l
Oil and Grease	5.0 mg/l	5.0 mg/l

These limits have not been changed for this permit renewal in accordance with anti-backsliding [40 CFR 122.44(l)].

Cooling Tower Blowdown

In accordance with 401 KAR 5:080, Section 2(3) – 40 CFR 125.3 in the absence of promulgated technology based standards, the cabinet may develop appropriate technology based standards utilizing its 'Best Professional Judgment" (BPJ). The previous permit established the following BPJ limits for Cooling Tower Blow.

TABLE 17.		
BPJ Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	50.0 mg/l	30.0 mg/l
Oil and Grease	0.0 mg/l	0.0 mg/l

These limits have not been changed for this permit renewal in accordance with anti-backsliding [40 CFR 122.44(l)].

Stormwater - Total Suspended Solids

The facility treats its storm water for this parameter before discharge in a holding pond. Sedimentation is a commonly used treatment technology for the removal of total suspended solids that is both efficient and cost effective. Although several factors may influence the final concentration of total suspended solids in the discharge, it has been the experience of the Division that ponds that retain wastewater for 6 hours or more can achieve a total suspended solids concentration of 30 mg/l as a monthly average and 60 mg/l as a daily maximum.

Stormwater -Oil & Grease

The facility does not treat its stormwater for this parameter before discharge. If treatment were to be necessary, an adequately sized oil /water separator with ample retention time would provide appropriate treatment. Flotation or gravity separation of lighter petroleum based products from water is a common and cost effective method for the removal of oil & grease. It has been the experience of the Division that this treatment method can achieve an oil & grease concentration of 10 mg/l as a monthly average and 15 mg/l as a daily maximum.

3.4.6. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 18.	
Pollutant or Pollutant Characteristic	**Basis**
Whole Effluent Toxicity	The facility is rated as a "major discharger".

	The facility's discharge is a complex wastewater.
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc	While the facility did not show reasonable potential to violate the State Water Quality Standards for these pollutants at this outfall, the facility is undergoing major changes during this permit cycle. The facility will be dewatering the ash pond through this outfall. Therefore, it is the Division of Waters Best Professional Judgement to continue monitoring for these parameters during dewatering.
Chloride and Total Recoverable: Selenium and Thallium	A Mixing Zone has granted for these parameters. Because a Mixing Zone has been granted there is no reasonable potential for this parameter to violate the State Water Quality Standard. However, since the facility would show reasonable potential if not for the Mixing Zone it's the Division of Waters Best Professional Judgement to continue monitoring for these parameters.
Temperature	Thermal pollution or heat loads are typically associated with industrial facilities where large volumes of cooling water are utilized. Therefore, DOW has determined that reasonable potential for this pollutant does exist.

3.4.7. Mixing Zone (MZ)

The Kentucky Water Quality Standards (KYWQS) allow the assignment of a MZ for chronic aquatic life (Chronic) and human health fish consumption (Fish) WQBELs and thermal discharges [401 KAR 10:029, Section 4]. The pollutants and/or the pollutant characteristics for which DOW has granted a MZ are listed as follows: Whole Effluent Toxicity, Chloride, Selenium, and Thallium

3.5. Limitation Calculations

3.5.1. Calculations for Technology-Based Effluent Limitations

The DOW has developed flow-weighted limitations for Outfall 001 effluent to insure compliance with the federal effluent limitation guidelines for the various types of waters comingled in the Ash Pond.

Current Operations

The following calculations produce the TSS, and oil and grease limitations which will remain in effect until dewatering of the ash pond ceases.

Source	Flow	TSS				Oil & Grease			
Ash Pond	Flow GPM	AVG ELG	MAX ELG	Cal Avg	Max ELG	AVG ELG	MAX ELG	Cal Avg	Max ELG
Unit 2 FGD Scrubber	184	30	100	5520	18400	15	20	2760	3680
Unit 1 FGD Scrubber	113	30	100	3390	11300	15	20	1695	2260
Dewatering Sump	28	30	100	840	2800	15	20	420	560
Coal pile runoff	147	30	50	4410	7350	5	5	735	735
Ash Sluice Water	1177	30	100	35310	117700	15	20	17655	23540
Solids Contact Unit 3	24	30	100	720	2400	15	20	360	480
Water Treatment Building	0	30	100	0	0	15	20	0	0
Solids Constact Unit 4	24	30	100	720	2400	15	20	360	480
Pre-Treatment Building	26	30	100	780	2600	15	20	390	520
Solids Contact Unit 2	24	30	100	720	2400	15	20	360	480
RO Neut Basin	5	30	100	150	500	15	20	75	100
rainfall	48	30	60	1440	2880	10	15	480	720
Total	1800			54000	170730			25290	33555
	Limit			30	94.85			14.05	18.64167
Primary lagoon									
U1 Cooling Tower Blowdown	346	30	50	10380	17300	0	0	0	0
U2 Cooling Tower Blowdown	462	30	50	13860	23100	0	0	0	0
U3 Cooling Tower Blowdown	316	30	50	9480	15800	0	0	0	0
U4 Cooling Tower Blowdown	383	30	50	11490	19150	0	0	0	0
Boiler Blowdowns	454	30	100	13620	45400	15	20	6810	9080
Water Service Building	100	30	100	3000	10000	15	20	1500	2000
Fly Ash Transfer Bldg	100	30	100	3000	10000	15	20	1500	2000
Reboilers	57	30	100	1710	5700	15	20	855	1140
Total	2218			66540	146450			10665	14220
	Limit			30	66.02795			4.808386	6.411181
Primary lagoon Effluent	2218	30	66	66540	146388	4.8	6.4	10646.4	14195.2
Ash Pond Effluent	1800	30	94.8	54000	170640	14	18.6	25200	33480
Total	2009			60270	158514			17923.2	23837.6
	Limit:			30	78.90194			8.921453	11.86541

3.5.2. Dewatering Operations

No new flows will enter the Ash Pond during dewatering operations. The Ash Pond discharge will be similar in composition to the effluent resulting from current conditions. The TSS and oil and grease limitations applied at Outfall 001 during current operations will remain in effect until dewatering of the Ash Pond ceases.

3.5.3. Future Operations

The Ash Pond will slowly decrease in size until it is closed. The Ash Pond will decrease and eventually be replaced with the water mass balance pond. The following calculations produce the TSS, and oil and grease limitations which will take effect once Ash Pond dewatering activities cease.

Source	Flow	TSS				Oil & Grease			
Ash Pond	Flow GPM	AVG ELG	MAX ELG	Cal Avg	Max ELG	AVG ELG	MAX ELG	Cal Avg	Max ELG
Unit 2 FGD Scrubber	0	30	100	0	0	15	20	0	0
Unit 1 FGD Scrubber	0	30	100	0	0	15	20	0	0
Dewatering Sump	28	30	100	840	2800	15	20	420	560
Coal pile runoff	147	30	50	4410	7350	5	5	735	735
No Ash Sluice Water	0	30	100	0	0	15	20	0	0
Solids Contact Unit 3	24	30	100	720	2400	15	20	360	480
Water Treatment Building	0	30	100	0	0	15	20	0	0
Solids Constact Unit 4	24	30	100	720	2400	15	20	360	480
Pre-Treatment Building	26	30	100	780	2600	15	20	390	520
Solids Contact Unit 2	24	30	100	720	2400	15	20	360	480
RO Neut Basin	5	30	100	150	500	15	20	75	100
rainfall	48	30	60	1440	2880	10	15	480	720
Total	326			9780	23330			3180	4075
		Limit		30	71.56442			9.754601	12.5
Primary lagoon									
U1 Cooling Tower Blowdown	346	30	50	10380	17300	0	0	0	0
U2 Cooling Tower Blowdown	462	30	50	13860	23100	0	0	0	0
U3 Cooling Tower Blowdown	316	30	50	9480	15800	0	0	0	0
U4 Cooling Tower Blowdown	383	30	50	11490	19150	0	0	0	0
Boiler Blowdowns	454	30	100	13620	45400	15	20	6810	9080
Water Service Building	100	30	100	3000	10000	15	20	1500	2000
Fly Ash Transfer Bldg	100	30	100	3000	10000	15	20	1500	2000
Reboilers	57	30	100	1710	5700	15	20	855	1140
Total	2218			66540	146450			10665	14220
		Limit		30	66.02795			4.808386	6.411181
Primary lagoon Effluent	2218	30	66	66540	146388	4.8	6.4	10646.4	14195.2
Ash Pond Effluent	326	30	71.56442	9780	23330	14	18.6	4564	6063.6
Total	1272			38160	84859			7605.2	10129.4
		Limit:		30	66.71305			5.978931	7.963365

3.5.4. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	121	YES	121.4568582	NO	N/A	N/A

Effluent Characteristic	Units	Reported Avg	Reported Max	Average Limitation	Maximum Limitation	Average Discharge %	Maximum Discharge %	Data Source
Antimony	µg/L	1.075	1.075	10258.69091	N/A	0.01	N/A	DMR
Arsenic	µg/L	10.63	10.63	340	340	3.13	3.13	DMR
Beryllium	µg/L	0.17	0.17	7327.636364	N/A	0.00	N/A	DMR
Cadmium	µg/L	0.608	0.608	8.731374985	8.731374985	6.96	6.96	DMR
Chloride	µg/L	686000	686000	1200000	1200000	57.17	57.17	APP
Chromium	µg/L	3.43	3.43	183190.9091	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	3.43	3.43	5611.7027	5611.7027	0.06	0.06	DMR
Chromium (VI)	µg/L	3.43	3.43	16	16	21.44	21.44	DMR
Copper	µg/L	5.87	5.87	51.68449826	51.68449826	11.36	11.36	DMR
Cyanide, Free	µg/L	0.5	0.5	22	22	2.27	2.27	DMR
Iron	µg/L	379	379	4000	4000	9.48	9.48	APP
Lead	µg/L	0.36	0.36	476.8177624	476.8177624	0.08	0.08	DMR
Mercury	µg/L	0.013	0.013	0.051	1.4	25.49	0.93	DMR
Nickel	µg/L	14.9	14.9	1515.921838	1515.921838	0.98	0.98	DMR
Nitrate (as N)	µg/L	3	3	18319090.91	N/A	0.00	N/A	APP
Selenium	µg/L	19.1	19.1	307	N/A	0.63	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	1359000	1359000	457977272.7	N/A	0.30	N/A	APP
Thallium	µg/L	1.98	1.98	439.6581818	N/A	0.45	N/A	DMR
Zinc	µg/L	11.96	11.96	387.8303147	387.8303147	3.08	3.08	DMR
Ammonia (as N)	mg/l	0.267	1	4906.285314	N/A	0.01	N/A	APP
Nitrite-nitrogen Ohio River	mg/l	3	3	610.6927273	N/A	0.49	N/A	APP
Temperature	˚F	78.89	80.86	0	110	71.72	73.51	DMR

3.5.5. WET Limit Calculation

In addition to chemical-specific criteria, 401 KAR 10:031 contains whole effluent toxicity (WET) criteria that necessitate the evaluation of complete effluents. The WET criterion is divided into two categories – acute and chronic. WET criteria are not measured in pollutant concentrations, but rather in toxicity units (TUs). The units TU represent the percentage of effluent that represents a toxic effect.

Pursuant to 401 KAR 10:029, Section 4(2) and 401 KAR 10:031, Section 4(j), the allowable instream concentration of toxic substances or whole effluent containing toxic substances shall not exceed a TU_C of 1.00, utilizing the IC25, at the edge of the assigned regulatory Mixing Zone and shall not exceed a TU_A 0f 1.00, utilizing the LC50, within the assigned mixing unless a Zone of Initial Dilution has been assigned. To determine the maximum TU_C that can be discharged to ensure a 1.00 TU_C is meet at the edge of the assigned mixing zone, the following equation is used:

$$C_T = \frac{\left[C_D\left(Q_T + (MZF)(Q_U)\right) - C_U(MZF)(Q_U)\right]}{Q_T} = \frac{\left[1.00\left(5.79 + (0.333)(10600)\right) - 0(.333)(10600)\right]}{5.79}$$
$$= 611$$

Where:

- C_T = the end of pipe effluent limit
- C_D = the pollutant water quality standard meet at edge of mixing zone (1.00 TU)
- C_U = the pollutant background concentration, assumed to be 0 if no data available
- Q_T = the discharge flow (in cfs)
- Q_U = the receiving stream critical flow (7Q10 in cfs)
- MZF = mixing zone factor, not to exceed 0.333 for streams and rivers or not to exceed 0.1 for lakes

In order to translate between TU_A and TU_C, a relationship between TU_A and TU_C must be defined. This relationship is known as the acute to chronic ratio and is defined as the ratio of acute toxicity, expressed as an LC50, of an effluent to its chronic toxicity. It is used as a factor to estimate chronic toxicity from acute toxicity data. DOW has defined two ratios, one for bioaccumulative or persistent, and one for non-accumulative or non-persistent effluents.

For discharges containing:

- Bioaccumulative or persistent constituents, 1.00 TU_C = 0.01 TU_A (401 KAR 10:031, Section 4(1)(j)(2))
- Non-bioaccumulative or non-persistent constituents, 1.00 TU_C = 0.1TU_A (401 KAR 10:031, Section 4(1)(j)(1))

Since mercury, a bioaccumulative in accordance with 401 KAR 10:029, 4(1)(h)(2)(b), is in the discharge from this outfall the acute to chronic ratio is 0.01

Using the above calculated TU_C limit of 611 and the acute to chronic ratio of 0.01, results in a TU_A limit of 6.10. This result represents that 16% of the facilities effluent can't not produce an acute toxic effect. Therefore, there is enough mixing within the assigned mixing zone and TU_A can be used in place of TU_C, and 1.00 TU_A limit is placed on the permit.

3.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

3.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

3.6.2. Temperature

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031 Section 6 and 401 KAR 10:029 Section 4]. A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

3.6.3. Total Suspended Solids

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for low volume waste [40 CFR 423.12(b)(3)] and [40 CFR 423.15(a)(3)], representative of BPT, BAT, and NSPS requirements for bottom ash transport water [40 CFR 423.12(b)(4)], [40 CFR 423.13(k)], and [40 CFR 423.15(a)(6)], representative of BPT and NSPS requirements for coal pile runoff [40 CFR 423.12(b)(9)] and[40 CFR

423.15(a)(11)], representative of BPT, BAT, and NSPS requirements for FGD wastewater {40 CFR 423.12(b)(11)], [40 CFR 423.13(g)], and [40 CFR 423.15(a)(3)], representative of BPT and NSPS requirements for metal cleaning waste [40 CFR 423.12(b)(5)], [40 CFR 423.15(a)(4)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

3.6.4. Oil and Grease

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for low volume waste [40 CFR 423.12(b)(3)] and [40 CFR 423.15(a)(3)], representative of BPT, BAT, and NSPS requirements for bottom ash transport water [40 CFR 423.12(b)(4)], [40 CFR 423.13(k)], and [40 CFR 423.15(a)(6)], representative of BPT, BAT, and NSPS requirements for FGD wastewater {40 CFR 423.12(b)(11)], [40 CFR 423.13(g)], and [40 CFR 423.15(a)(3)], representative of BPT and NSPS requirements for metal cleaning waste [40 CFR 423.12(b)(5)], [40 CFR 423.15(a)(4)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

3.6.5. pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)], and state water quality standards [401 KAR 10:031, Sections 4(1)(b) and 7].

3.6.6. Hardness and Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc

The monitoring requirements for these pollutants are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

3.6.7. Chloride and Total Recoverable Thallium

The monitoring requirements for these pollutants are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

3.6.8. Total Recoverable Selenium

A mixing zone has been granted for this pollutant that allows the chronic aquatic life criterion to be met at the edge of the mixing zone. The monthly average effluent limitation for this parameter is consistent with the requirements of 401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)] and 401 KAR 10:031, Section 4. The monthly average concentration of 3053 µg/l serves both as a trigger for the collection of adequate number of fish to conduct selenium residue in fish tissue testing and as a limitation in the event the permittee is unable to collect the required number of fish. These limitations are consistent with Kentucky's water quality standards for total recoverable selenium. The incorporation of Appendix A on the collection and handling requirements established in "Methods for Collection of Selenium Residue in Fish Tissue Used

to Determine KPDES Permit Compliance" is consistent with the requirements of 401 KAR 5:070, Section 3[40 CFR 122.48(a)].

3.6.9. BMP Triggers

Permits shall include BMPs to control or abate the discharge of pollutants when numeric effluent limitations are infeasible and/or when the practices are reasonably necessary to achieve effluent limitations and standards to carry out the purposes and intent of the Clean Water Act (CWA). To determine the effectiveness of the BMPs during dewatering triggers have been established that if exceeded require the permittee to evaluate the currently employed BMPs and make necessary modifications.

3.6.10. Whole Effluent Toxicity

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Sections 4(1)(j)].A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

SECTION 4

OUTFALL 002

4. OUTFALL 002

4.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 19.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'59.4"	83°48'46.3"	Outfall 001	Unit #1 Cooling Tower Blowdown

4.2. Reported Values

The following table summarizes the reported values for Outfall 002:

TABLE 20.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.383	0.701	N/A	N/A	N/A	N/A
Free Available Chlorine	mg/l	N/A	N/A	N/A	0.04	0.06	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.11	0.14	N/A
Time of Chlorine Addition	Minutes/Day/Unit	N/A	N/A	N/A	0	0	N/A
Priority Pollutants	mg/l	N/A	N/A	N/A	0.033	0.033	N/A
Total Chromium	mg/l	N/A	N/A	N/A	0.001	0.001	N/A
Total Zinc	mg/l	N/A	N/A	N/A	0.009	0.009	N/A

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

4.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 002:

TABLE 21.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.

[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.

4.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

4.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

4.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (7)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown sources times the concentration listed in the following table:

TABLE 22.		
BPT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l

40 CFR 423.12(b) (8)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(d) (1)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 23.		
BAT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**

Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.13(d) (2)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.13(d) (3)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

4.4.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.13(d)(2) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.13(b)(1) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

4.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

4.5.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

4.5.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

4.5.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BPT and BAT, requirements for cooling tower blowdown [40 CFR 423.12(b)(7)] and [40 CFR 423.13(d)(1)].

4.5.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for cooling tower blowdown [40 CFR 423.13(d)(1)].

4.5.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

4.5.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1)

and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 5

OUTFALL 003

5. OUTFALL 003

5.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 24.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'59.6"	83°48'46.3"	Outfall 001	Unit #2 Cooling Tower Blowdown

5.2. Reported Values

The following table summarizes the reported values for Outfall 003:

TABLE 25.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.66	1.17	N/A	N/A	N/A	N/A
Free Available Chlorine	mg/l	N/A	N/A	N/A	0.036	0.052	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.103	0.135	N/A
Time of Chlorine Addition	Minutes/Day/Unit	N/A	N/A	N/A	0	0	N/A
Priority Pollutants	mg/l	N/A	N/A	N/A	0.045	0.045	N/A
Total Chromium	mg/l	N/A	N/A	N/A	0.005	0.005	N/A
Total Zinc	mg/l	N/A	N/A	N/A	0.009	0.009	N/A

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

5.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 003:

TABLE 26.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.

[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.

5.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

5.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

5.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (7)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown sources times the concentration listed in the following table:

TABLE 27.		
BPT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l

40 CFR 423.12(b) (8)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(d) (1)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 28.		
BAT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**

Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.13(d) (2)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.13(d) (3)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

5.4.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.13(d)(2) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.13(b)(1) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

5.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

5.5.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

5.5.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

5.5.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BPT and BAT, requirements for cooling tower blowdown [40 CFR 423.12(b)(7)] and [40 CFR 423.13(d)(1)].

5.5.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for cooling tower blowdown [40 CFR 423.13(d)(1)].

5.5.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

5.5.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1)

and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 6

OUTFALL 004

6. OUTFALL 004

6.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 29.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	Varies	Varies	Outfall 001	Chemical Metal Cleaning Wastewater

6.2. Reported Values

The following table summarizes the reported values for Outfall 004:

TABLE 30.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	ND	ND	N/A	N/A	N/A	N/A
Total Recoverable Copper	mg/l	N/A	N/A	N/A	ND	ND	N/A
Total Recoverable Iron	mg/l	N/A	N/A	N/A	ND	ND	N/A
pH	SU	N/A	N/A	ND	N/A	N/A	ND
The abbreviation ND means “No Discharge” during the last five years.							

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 12/31/2016.

6.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 004:

TABLE 31.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Batch[1]	Instantaneous
Total Recoverable Copper	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab

TABLE 31.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Recoverable Iron	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab
[1]Monitoring shall be conducted once per metal cleaning operation.									

6.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

6.4.1. Jordan Memorandum

According to 40 CFR 423.11(c) the term chemical metal cleaning waste means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning. According to 40 CFR 423.11(d) the term metal cleaning waste means any wastewater resulting from cleaning [with or without chemical compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

There are air heater wash waters, boiler fireside wash waters, boiler tube cleaning, draft fan cleaning, and precipitator wash water discharged to the ash pond. These waters are not a result of cleaning with chemical compounds and they do not flow through Outfall 004. In the past these wastewaters were permitted to discharge directly to the ash pond without limitations or monitoring requirements. That permitting action was done pursuant to the Jordan Memorandum. The memorandum is from J. William Jordan, US EPA Permit Assistance and Evaluation Division, to Bruce P. Smith, US EPA Enforcement Division Region III, concerning interpretation of the metal cleaning wastes guidelines in the federal effluent limitation guidelines for steam electric power generating point sources. In the memorandum, Mr. Jordan explains that "All water washing operations are 'low volume' while any discharge from an operation involving chemical cleaning should be included in the metal cleaning category." With that in mind, it makes sense that the limitations for chemical metal cleaning wastes do not apply to the air heater wash waters and boiler fireside wash waters at this facility.

It is the BPJ of the DOW to place low volume waste requirements on these wastewaters. The DOW has developed flow-weighted limitations at Outfall 001 to insure compliance with the federal effluent limitation guidelines for low volume wastes, chemical metal cleaning wastes, and other process wastewaters.

6.4.2. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

6.4.2.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b)(5)

The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table:

TABLE 32.		
BPT Effluent Requirements – Metal Cleaning Wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

Copper, Total	1.0 mg/l	1.0 mg/l
Iron, Total	1.0 mg/l	1.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(e)

The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

TABLE 33.		
BAT Effluent Requirements – Chemical Metal Cleaning Wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Copper, Total	1.0 mg/l	1.0 mg/l
Iron, Total	1.0 mg/l	1.0 mg/l

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a) (4)

The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

TABLE 34.		
NSPS Effluent Requirements – Chemical Metal Cleaning Wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l
Copper, Total	1.0 mg/l	1.0 mg/l
Iron, Total	1.0 mg/l	1.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

6.4.3. Total Suspended Solids, and Oil and Grease

Since Outfall 004 effluent is directed to the ash pond, and will be discharged through the future secondary lagoon, the limitations for these pollutants has been applied at Outfall 001 after commingling with other waters. The DOW has developed flow-weighted limitations to insure compliance with the federal effluent limitation guidelines.

6.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

6.5.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

6.5.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

6.5.3. Total Copper and Total Iron

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT, BAT and NSPS requirements for metal cleaning wastes [40 CFR 423.12(b)(5)] ,[40 CFR 423.13(e)], and[40 CFR 423.15(a)(10)].

SECTION 7

OUTFALL 005

7. OUTFALL 005

7.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 35.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'9.8"	83°48'59.3"	Ohio River	Emergency Coal Pile Runoff

7.2. Reported Values

The following table summarizes the reported values for Outfall 005:

TABLE 36.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.125	0.173	N/A	N/A	N/A	N/A
Precipitation	inches	N/A	N/A	N/A	2.76	3.30	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	25.8	27.2	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	592.2	604.8	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.301	0.313	N/A
pH	SU	N/A	N/A	3.08	N/A	N/A	9.73

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

7.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 005:

TABLE 37.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Discharge	Instantaneous

TABLE 37.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	50	N/A	1/Discharge	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Discharge	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Lead,	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
The monitoring frequency for this outfall is once per discharge, but no more frequent than once per quarter. Should more than one discharge occur during a given quarter the permittee will be responsible for collection at least one of those discharges.									

7.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

7.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

7.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (9)

Subject to the provisions of paragraph (b)(10) of this section, the following effluent limitations shall apply to the point source discharges of coal pile runoff:

TABLE 38.		
BPT Effluent Requirements – Coal Pile Runoff		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	50 mg/l	-

40 CFR 423.12(b) (10)

Any untreated overflow from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event shall not be subject to the limitations in paragraph (b)(9) of this section

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

7.4.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 39.	
Pollutant or Pollutant Characteristic	**Basis**
Total Recoverable Metals	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the DMR data indicates the concentrations of these pollutants did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. However, the facility is going through major changes in response to the new steam electric ELG's. Therefore, it is the best professional judgement of the Division to continue monitoring for the metals that have an acute water quality criteria.

7.5. Limitation Calculations

7.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	121	NO	N/A	NO	N/A	N/A
Effluent Characteristic	**Units**	**Reported Avg**	**Reported Max**	**Average Limitation**	**Maximum Limitation**	**Average Discharge %**	**Maximum Discharge %**	**Data Source**
Antimony	µg/L	0	0	640	N/A	0.00	N/A	DMR
Arsenic	µg/L	3.2	3.2	150	340	2.13	0.94	DMR
Barium	µg/L	30.4	30.4	54781800	N/A	0.00	N/A	APP
Beryllium	µg/L	2.1	2.1	219127.2	N/A	0.00	N/A	DMR
bis(2-ethylhexyl)phthalate	µg/L	5	5	2.2	N/A	227.27	N/A	APP
Cadmium	µg/L	0.23	0.23	0.755841246	8.731374985	30.43	2.63	DMR
Chloride	µg/L	30900	30900	600000	1200000	5.15	2.58	APP
Chromium	µg/L	0	0	5478180	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	0	0	268.2205163	5611.7027	0.00	0.00	DMR
Chromium (VI)	µg/L	0	0	11	16	0.00	0.00	DMR
Copper	µg/L	2.43	2.43	30.49938305	51.68449826	7.97	4.70	DMR
Cyanide, Free	µg/L	0	0	5.2	22	0.00	0.00	APP
Iron	µg/L	890	890	3500	4000	25.43	22.25	APP
Lead	µg/L	0	0	18.58090366	476.8177624	0.00	0.00	DMR
Mercury	µg/L	0.00867	0.00867	0.051	1.4	17.00	0.62	DMR
Nickel	µg/L	24.43	24.43	168.5409938	1515.921838	14.49	1.61	DMR
Nitrate (as N)	µg/L	300	300	547818000	N/A	0.00	N/A	APP
Selenium	µg/L	6.9	6.9	5	N/A	138.00	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	266000	266000	13695450000	N/A	0.00	N/A	APP
Thallium	µg/L	0.47	0.47	0.47	N/A	100.00	N/A	DMR
Zinc	µg/L	51	51	387.8303147	387.8303147	13.15	13.15	DMR
Ammonia (as N)	mg/l	0.6	0.6	146718.602	N/A	0.00	N/A	APP
Nitrite-nitrogen Ohio River	mg/l	0.3	0.3	1	N/A	30.00	N/A	APP

7.5.2. Non-continuous discharge

The discharge from this outfall is not a continuous discharge, and only discharges as result of stormwater. Therefore, only the acute water quality standards apply to the discharge.

7.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

7.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

7.6.2. Total Suspended Solids

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6)

– 40 CFR 122 Appendix A], representative of BPT and NSPS requirements for coal pile runoff [40 CFR 423.12(b)(9)] and [40 CFR 423.15(a)(11)].

7.6.3. pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)].

7.6.4. Hardness and Total Recoverable: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

7.6.5. Total Recoverable: Antimony, Beryllium, Selenium, and Thallium

Based on the last five years of DMR data, the facility does not show reasonable potential for these parameters at this outfall. Therefore, the decision to remove these parameters from the permit is based on the Division of Water's EPA-Approved "Permitting Procedures For Determining Reasonable Potential" and 40 CFR 122.44(d).

7.6.6. Precipitation

The removal of this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. DOW has determined that precipitation data for this facility does not provide any additional insight into determining compliance with the effluent limitations.

SECTION 8

OUTFALL 006

8. OUTFALL 006

8.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 40.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'7.9"	83°48'50.4"	Ohio River	Stormwater Runoff

8.2. Reported Values

The following table summarizes the reported values for Outfall 006:

TABLE 41.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	1.22	1.33	N/A	N/A	N/A	N/A
Precipitation	Inches	N/A	N/A	N/A	0.84	1.41	N/A
Settleable Solids	mg/l	N/A	N/A	N/A	0.14	0.14	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	184.4	236.5	N/A
pH	SU	N/A	N/A	7.45	N/A	N/A	8.18

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 09/30/2017.

8.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 006:

TABLE 42.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Settleable Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

TABLE 42.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Oil & Grease	mg/l	N/A	N/A	N/A	10	15	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

8.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

8.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

8.4.1.1. Best Professional Judgement

Oil & Grease

The facility does not treat its stormwater for this parameter before discharge. If treatment were to be necessary, an adequately sized oil /water separator with ample retention time would provide appropriate treatment. Flotation or gravity separation of lighter petroleum based products from water is a common and cost effective method for the removal of oil & grease. It has been the experience of the Division that this treatment method can achieve an oil & grease concentration of 10 mg/l as a monthly average and 15 mg/l as a daily maximum.

8.5. Limitation Calculations

8.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	184.4	121	NO	N/A	NO	N/A	N/A
Effluent Characteristic	**Units**	**Reported Avg**	**Reported Max**	**Average Limitation**	**Maximum Limitation**	**Average Discharge %**	**Maximum Discharge %**	**Data Source**
Antimony	µg/L	0	0	640	N/A	0.00	N/A	APP
Arsenic	µg/L	2.9	2.9	150	340	1.93	0.85	APP
Beryllium	µg/L	0.1	0.1	22455.14754	N/A	0.00	N/A	APP
Cadmium	µg/L	0.8	0.8	0.425859758	3.973754209	187.86	20.13	APP
Chromium	µg/L	3.2	3.2	561378.6885	N/A	0.00	N/A	APP
Chromium (III)	µg/L	3.2	3.2	142.2535299	2976.224672	2.25	0.11	APP
Chromium (VI)	µg/L	3.2	3.2	11	16	29.09	20.00	APP
Copper	µg/L	3.8	3.8	15.73705618	24.9172045	24.15	15.25	APP
Iron	µg/L	170	170	3500	4000	4.86	4.25	APP
Lead	µg/L	0	0	6.933589241	177.9277568	0.00	0.00	APP
Nickel	µg/L	9.8	9.8	87.53798253	787.3499282	11.20	1.24	APP
Selenium	µg/L	8	8	5	N/A	160.00	N/A	APP
Silver	µg/L	0	0	N/A	10.8419685	N/A	0.00	APP
Thallium	µg/L	0.7	0.7	0.47	N/A	148.94	N/A	APP
Zinc	µg/L	50.4	50.4	201.2313064	201.2313064	25.05	25.05	APP

8.5.2. Non-continuous discharge

The discharge from this outfall is not a continuous discharge, and only discharges as result of stormwater. Therefore, only the acute water quality standards apply to the discharge.

8.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

8.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

8.6.2. Settleable Solids

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

8.6.3. Oil & Grease

The limitations for this parameter are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

8.6.4. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

8.6.5. Precipitation and Hardness

The removal of these parameters is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. DOW has determined that precipitation data for this facility does not provide any additional insight into determining compliance with the effluent limitations. Since none of the remaining parameters are hardness dependent the monitoring requirements for hardness has also been removed.

SECTION 9

OUTFALL 007

9. OUTFALL 007

9.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 43.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'0.2"	83°48'46.9"	Ohio River	Reverse Osmosis Reject

9.2. Reported Values

The following table summarizes the reported values for Outfall 007:

TABLE 44.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.16	0.17	N/A	N/A	N/A	N/A
Dissolved Solids	mg/l	N/A	N/A	N/A	1140	1143	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	737.2	752.3	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.007	0.008	N/A
pH	SU	N/A	N/A	7.67	N/A	N/A	8.07

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 09/30/2017.

9.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 007:

TABLE 45.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Quarter	Grab

TABLE 45.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

9.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

9.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

Certain technology-based effluent limitations and compliance deadlines included in this permit are based upon effluent limitation Guidelines ("ELGs") that are under reconsideration by the United States Environmental Protection Agency ("EPA"). 82 Fed. Reg. 43494 (September 18, 2017).

9.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (3)

The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 46.
BPT Effluent Requirements – Low Volume Waste

Effluent Characteristic	Maximum for any one day	Maximum for monthly average
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

9.4.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 47.

Pollutant or Pollutant Characteristic	Basis
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium,	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium,

Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc	Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the DMR data indicates the concentrations of these pollutants did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. Therefore, DOW is removing the monitoring requirement for these parameters.
Total Recoverable Thallium	A Mixing Zone has granted for these parameters. Because a Mixing Zone has been granted there is no reasonable potential for this parameter to violate the State Water Quality Standard. However, since the facility would show reasonable potential if not for the Mixing Zone it's the Division of Waters Best Professional Judgement to continue monitoring for these parameters.

9.4.3. Mixing Zone (MZ)

The Kentucky Water Quality Standards (KYWQS) allow the assignment of a MZ for chronic aquatic life (Chronic) and human health fish consumption (Fish) WQBELs and thermal discharges [401 KAR 10:029, Section 4]. The pollutants and/or the pollutant characteristics for which DOW has granted a MZ are listed as follows: Total Recoverable Thallium

9.5. Limitation Calculations

9.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	121	YES	121.0195754	NO	N/A	N/A
Effluent Characteristic	**Units**	**Reported Avg**	**Reported Max**	**Average Limitation**	**Maximum Limitation**	**Average Discharge %**	**Maximum Discharge %**	**Data Source**
Antimony	µg/L	0.09	0.09	239671.6	N/A	0.00	N/A	DMR
Arsenic	µg/L	1.98	1.98	340	340	0.58	0.58	DMR
Beryllium	µg/L	0	0	171194	N/A	0.00	N/A	DMR
Cadmium	µg/L	0	0	8.731374985	8.731374985	0.00	0.00	DMR
Chloride	µg/L	109000	109000	1200000	1200000	9.08	9.08	APP
Chromium	µg/L	0	0	4279850	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	0	0	5611.7027	5611.7027	0.00	0.00	DMR
Chromium (VI)	µg/L	0	0	16	16	0.00	0.00	DMR
Copper	µg/L	0	0	51.68449826	51.68449826	0.00	0.00	DMR
Iron	µg/L	0	0	4000	4000	0.00	0.00	APP
Lead	µg/L	0.09	0.09	476.8177624	476.8177624	0.02	0.02	DMR
Mercury	µg/L	0	0	0.051	1.4	0.00	0.00	DMR
Nickel	µg/L	0.8	0.8	1515.921838	1515.921838	0.05	0.05	DMR
Nitrate (as N)	µg/L	1100	1100	427985000	N/A	0.00	N/A	APP
Selenium	µg/L	0.92	0.92	71262.8375	N/A	0.00	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	243000	243000	10699625000	N/A	0.00	N/A	APP
Thallium	µg/L	0.28	0.28	10271.64	N/A	0.00	N/A	DMR
Zinc	µg/L	1.88	1.88	387.8303147	387.8303147	0.48	0.48	DMR
Ammonia (as N)	mg/l	0	0	114624.4937	N/A	0.00	N/A	APP
Nitrite-nitrogen Ohio River	mg/l	1.1	1.1	14252.5675	N/A	0.01	N/A	APP

9.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

9.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

9.6.2. Total Suspended Solids & Oil Grease

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT requirements for low volume waste [40 CFR 423.12(b)(3)].

9.6.3. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

9.6.4. Total Recoverable Thallium

The monitoring requirements for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

9.6.5. Hardness and Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc

Based on the last five years of DMR data the facility does not show reasonable potential for these parameters at this outfall. Therefore the decision to remove this parameter from the permit is based on the Division of Water's EPA approved "Permitting Procedures For Determining Reasonable Potential" and 40 CFR 122.44 (d). Since none of the remaining parameters are hardness dependent the monitoring requirements for hardness has also been removed.

SECTION 10

OUTFALL 008

10. OUTFALL 008

10.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 48.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°41'9.01"	83°49'46.76"	UT to Lawrence Creek	Coal Combustion Residual Landfill Leachate and Stormwater Runoff

10.2. Reported Values

The following table summarizes the reported values for Outfall 008:

TABLE 49.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.155	0.199	N/A	N/A	N/A	N/A
Precipitation	Inches	N/A	N/A	N/A	0.73	0.73	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	14.23	16.76	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.024	0.025	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	853.95	864.80	N/A
pH	SU	N/A	N/A	7.39	N/A	N/A	11.68

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 09/30/2017.

10.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 008:

TABLE 50.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous

TABLE 50.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	Report	1/Year	([1])
[1]See Section 5.11 of the permit for additional requirements.									

10.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

10.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

10.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 51.		
BPT Effluent Requirements – combustion residual leachate		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(a)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.13(l)

The quantity of pollutants discharged in combustion residual leachate shall not exceed the quantity determined by multiplying the flow of combustion residual leachate times the concertation for TSS listed in 423.12(b)(4).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a) (3)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 52.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

10.4.1.2. Best Professional Judgment (BPJ)

Landfill – Stormwater Runoff

This facility utilizes a sedimentation basin it its operation which provides for the settling of suspended solids. Sedimentation is a commonly used treatment technology for the removal of total suspended solids from non-contaminated stormwater runoff associated with landfill operations. Sedimentation is both efficient and cost effective. Although several factors may influence the final concentration of total suspended solids in the discharge, it has been the experience of the Division that ponds that retain landfill-related stormwater for six hours or more can achieve a total suspended solids concentration of 100 mg/l as a daily maximum.

10.4.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 53.

Pollutant or Pollutant Characteristic	Basis
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc.	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the DMR data indicates the concentrations of these pollutants, except Selenium and Thallium, did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. Therefore, DOW is removing the monitoring requirement for these parameters.
Total Recoverable Selenium	The discharge concentration of this pollutant exceeds 90% of the calculated chronic water quality-based effluent limitations (WQBELs) for this pollutant. However, in accordance with 401 KAR 10:031 Section 6 footnote 9 "If fish tissue data are available, fish tissue data shall take precedence over water column data. Based on fish tissue data provided there is not reasonable potential to violate the Selenium fish tissue Water Quality Criteria. Due to limited results at this time it is Division's Best Professional Judgment to monitor selenium and fish tissue selenium at this outfall.
Total Recoverable Thallium	The discharge concentration of this pollutant exceeds 90% of the calculated chronic water quality-based effluent limitations (WQBELs) for this pollutant. However, EKPC has provided data to show that this was due to an anomaly that occurred in April 2015. Therefore, only monitoring will be required at this time.

10.5. Limitation Calculations

10.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	100	NO	N/A	NO	N/A	N/A
Effluent Characteristic	**Units**	**Reported Avg**	**Reported Max**	**Average Limitation**	**Maximum Limitation**	**Average Discharge %**	**Maximum Discharge %**	**Data Source**
Antimony	µg/L	0.35	0.35	640	N/A	0.05	N/A	DMR
Arsenic	µg/L	11.6	11.6	150	340	7.73	3.41	DMR
Beryllium	µg/L	0	0	163379.4839	N/A	0.00	N/A	DMR
Cadmium	µg/L	0.45	0.45	0.755841246	8.731374985	59.54	5.15	DMR
Chloride	µg/L	14900	14900	600000	1200000	2.48	1.24	APP
Chromium	µg/L	0.92	0.92	4084487.097	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	0.92	0.92	268.2205163	5611.7027	0.34	0.02	DMR
Copper	µg/L	0.22	0.22	30.49938305	51.68449826	0.72	0.43	DMR
Iron	µg/L	137	137	3500	4000	3.91	3.43	APP
Lead	µg/L	0.085	0.085	18.58090366	476.8177624	0.46	0.02	DMR
Mercury	µg/L	0.0029	0.0029	0.051	1.4	5.69	0.21	DMR
Nickel	µg/L	0.085	0.085	168.5409938	1515.921838	0.05	0.01	DMR
Nitrate (as N)	µg/L	1.6	1.6	408448709.7	N/A	0.00	N/A	APP
Selenium	µg/L	5.12	5.12	5	N/A	102.40	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	206000	206000	10211217742	N/A	0.00	N/A	APP
Thallium	µg/L	0.515	0.515	0.47	N/A	109.57	N/A	DMR
Zinc	µg/L	1.59	1.59	387.8303147	387.8303147	0.41	0.41	DMR
Ammonia (as N)	mg/l	0.06	0.06	4.220347834	N/A	1.42	N/A	APP

10.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

10.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

10.6.2. Total Suspended Solids and Oil and Grease

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT, BAT, and NSPS requirements for combustion residual leachate [40 CFR 423.12(b)(11)], [40 CFR 423.13(l)], and [40 CFR 423.15(a)(3)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3]..

10.6.3. pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122

Appendix A], representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)], and state water quality standards [401 KAR 10:031, Sections 4(1)(b) and 7].

10.6.4. Total Recoverable Selenium and Selenium Fish Tissue

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

10.6.5. Total Recoverable Thallium

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

10.6.6. Hardness and Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc

Based on the last five years of DMR data the facility does not show reasonable potential for these parameters at this outfall. Therefore the decision to remove this parameter from the permit is based on the Division of Water's EPA approved "Permitting Procedures For Determining Reasonable Potential" and 40 CFR 122.44 (d). Since none of the remaining parameters are hardness dependent the monitoring requirements for hardness has also been removed.

SECTION 11

OUTFALL 009

11. OUTFALL 009

11.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 54.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'9.6"	83°48'23.5"	Plant Intake from Ohio River	Raw Water Intake

11.2. Reported Values

The following table summarizes the reported values for Outfall 009:

TABLE 55.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	6.43	9.41	N/A	N/A	N/A	N/A
Temperature	°F	N/A	N/A	N/A	61.9	67.4	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	59.77	60.84	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	130.1	132.1	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.019	0.019	N/A
pH	SU	N/A	N/A	7.5	N/A	N/A	8.1

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

11.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 009:

TABLE 56.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Daily	Grab
Temperature	°F	N/A	N/A	N/A	Report	Report	N/A	Daily	Grab
[1]Cooling Water Intake Inspection	Fail=1 Pass=0	N/A	N/A	N/A	N/A	N/A	Report[2]	1/Week	Inspection[3]
[1]Weekly monitoring of the cooling water intake system shall be performed, during the period the cooling water intake structure is in operation, to ensure that the design and construction technology required by §125.94 (i.e., intake flow commensurate with closed cycle cooling) is functioning as designed and is being appropriately maintained and operated.									
[2]If the intake flow through the screen is not commensurate with closed cycle cooling a "1" is to be reported. If intake flow is commensurate with closed cycle cooling "0" is to be reported.									
[3]This inspection may take the form of either visual inspections or the use of remote monitoring devices.									

11.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

11.4.1. Cooling Water Intake

11.4.1.1. Colling Water Intake Description

Spurlock Station Cooling Water Intake Structure is located at N 38°42'09" W 83°48'23" on the south bank of the Ohio River, which has a $7Q_{10}$ flow of 10,600 cfs. The cooling water intake structure is a single wet well that houses five pumps, three for the Spurlock Station and two for the adjacent International Paper facility. The wet well has two independent cylindrical wedge wire screen assemblies mounted to a bulkhead on the northern face of the structure. The screens are each located at the end of separate 15-foot intake pipelines. The screen elevation is approximately 473 feet and the normal pool depth of the Ohio River is that area is approximately 485 feet, indicating that screens remain submerged at all times. Water withdrawn from the cooling water intake structure by Spurlock Station is used for makeup to the station's four cooling towers. Spurlock Station has three raw water pumps in the intake structure that provide the makeup water. Each pump has a design capacity of 5,000 gpm, resulting in a 15,000 gpm maximum design capacity for makeup. International Paper has two 2,000 gpm constant–speed pumps. Under normal operations, one of the raw water makeup pumps will run continuously. Spurlock Station has four mechanical draft cooling towers with drift eliminators. Units 1, 3, and 4 are currently operated at 7 cycles of concentration on average, and Unit 2 is operated at 7.5 cycles of concentration on average. Well water from the facility groundwater wells can also be used for makeup on cooling tower unit 1. Approximately 50 percent of the cooling tower unit 1 makeup comes from the intake structure and the remaining 50 percent is well water. The maximum design intake flow (for both facilities combined) is 27.4 MGD (42.41 cfs), which is equivalent to 0.4% of the $7Q_{10}$. This is based upon all five of the intake pumps capacity. The through-screen design intake velocity at the point of withdrawal is 0.41 ft/s (with one screen out of service). The actual intake flow (for both facilities combined) is 8.83 MGD (13.67 cfs), which is equivalent to 0.13% of the $7Q_{10}$. The actual intake velocity is 0.13 ft/s (with one screen out of service). These figures are based on the annual average withdrawal rate during January 2015 – June 2017. Approximately 70 percent of all water withdrawn from the Ohio River is used for non-contact cooling, which is being used for makeup at the Spurlock Station cooling towers. There is no emergency intake at the facility.

11.4.1.2. Current Technologies

Closed-Cycle Cooling System

The closed-cycle cooling system, already in place at Spurlock Station, significantly reduces cooling water demand compared to an equivalent once-through cooling system. The resulting reduction to impingement is assumed to be directly proportional to this reduction in flow. As documented in the 2014 Phase II rule, USEPA estimates that facilities using freshwater cooling towers achieve flow reduction, and therefore associated entrainment and impingement mortality reductions, of 98 percent.

Cylindrical Wedge Wire Screens

The two screens are designed to minimize the impingement and entrainment of debris and aquatic organisms continually. The wedge wire tee-screens installed have a slot size of 0.125 inch (3.175 millimeter). Wedge wire screens have been demonstrated to minimize entrainment with excessive

handling that may occur with more traditional traveling water screens, and have been shown to reduce entrainment even in organisms smaller than the slot size by inducing an avoidance response in the organism. The design through-screen velocity for both screen assemblies is lower than 0.5 ft/s, even when one screen is out of service. Both screens use an airburst system to remove debris and organisms, and maintain maximum open surface area, thereby minimizing through screen velocities. The airburst system is operated automatically every 5 minutes to maintain clear screens and low differential pressure. Additionally, alarms on the pumps in the intake structure alert operators to any operational issues

Cooling Water Intake Pumps

Under normal operating conditions, only one of the three Spurlock Station pumps runs continuously, and one of the two International Paper pumps runs continuously. Two 5,000-gpm, constant-speed makeup pumps for Spurlock Station were installed initially along with two 2,000-gpm constant-speed pumps for International Paper. A third 5,000-gpm constant-speed pump for Spurlock Station was added in 2002, for a total of five pumps in the Cooling Water Intake Structure.

Alternative Cooling Water Source

Spurlock Station uses well water for process water and to supplement cooling tower makeup and decrease the total demand for withdrawal required from the Ohio River. This well water supply of approximately 400 gpm effectively reduces withdrawal at the Ohio River Cooling Water Intake Structure by that same amount. Approximately 50 percent of the cooling tower Unit 1 makeup comes from the intake structure and the remaining 50 percent is well water. Well water represents approximately 8 percent of the total cooling tower makeup demand.

11.4.1.3. Impingement Mortality BTA Determination

The permittee has selected to comply with the impingement mortality standard in 40 CFR 125.94(c)(1) by implementing a closed cycle recirculating system. This intake structure feeds into a cooling system that meets the definition of a closed-cycle recirculating system in 40 CFR 125.92(c), as demonstrated by the following: Spurlock Station has four mechanical draft cooling towers with drift eliminators. Units 1, 3 and 4, are currently operated at 7 cycles of concentration on average, and Unit 2 is operated at 7.5 cycles of concentration on average. The cycles of concentrations are reasonable set points that minimize water withdrawal while being able to control cooling tower water chemistry.

11.4.1.4. Entrainment BTA Determination

The current technology and operations for the cooling water intake structure have been identified by the Division as the best technology available for minimizing entrainment at this intake structure. Since the facility already operates with closed-cycle recirculating system and wedge wire screens the following additional technologies were evaluated: (1) fine mesh screens with a mesh size of 2mm or smaller with a safe return mechanism, (2) variable speed pumps, and (3) water reuse or alternate sources of cooling water. Each technology was evaluated using the criteria listed in 40 CFR 125.98(f)(2) and, where relevant, the criteria listed in 40 CFR 125.98(f)(3). See the tables below for analyses:

Fine Mesh Screens with a Mesh Size of 2 mm or smaller	
Numbers and Types of organisms entrained	The facility does not have historical, relevant entrainment data that can be compared with data for this technology. In order for any entrainment reductions to be seen a screen with a mesh size of <2.0 mm should be used, as nearly 100% of eggs are still pass through a 2.0 mm mesh screen. Through EPA's review of control technologies, the Agency found that the survival of "converts" on fine mesh screen

	was very poor, and in some extreme cases comparable to the extremely low survival of entrained organisms that are allowed to pass entirely through the facility.
Particulate emissions or other pollutants	None expected other than increase in solids clogging the mesh slot size.
Land availability	The size of the screen face may need to be increased to maintain current flow rates. As EPA noted in the 316(b) existing facilities rule technical development document, in order to equip fine mesh screen and maintain a through-screen velocity of 0.5 fps, as many as 68% of facilities would need to expand their intake screen area by more than five times.
Remaining useful plant life	There are currently no plans to decommission or replace Units 1 through 4 at Spurlock Station. This was not considered a critical factor.
Quantified and qualitative social benefits	The permittee is not required to provide Cost Evaluation Study (40 CFR 122.21(r)(10)) or Benefits Evaluation (40 CFR 122.21(r)(11)) because AIF is less than 125 MGD. The permittee provided no estimate of cost. The data that is available for this factor is not of sufficient rigor to allow the Division to preclude this technology.
Conclusion	The use of a fine mesh screen is not required, in part, because the main entrainment reduction expected from the use of fine mesh screens with a mesh size of 2 mm or smaller as opposed to the 3 mm screens already in installed is early life stage organisms (i.e. nursery areas). Since the facilities intake screens are already 150 feet from the banks of the Ohio River the Division does not expect this technology to provide a significant reduction to entrainment. Additionally, the use of fine mesh screens would have the potential to clog more frequently thereby increasing the through screen velocity.

Variable Speed Pumps	
Numbers and Types of organisms entrained	Proper use of variable frequency drives can reduce entrainment mortality by decreasing the volume of water withdrawn. However, using less cooling water increases in-plant and discharge temperatures, lowering the survival rate of entrained. This technology is estimated to provide only minor reductions to entrainment. This is because the facility already cycles pumps to meet water demands. Also, opportunities for flow reduction are expected to be greater during cooler months because of ambient water temperatures. To the extent that this is true and entrainment impacts are less probable during conditions with cooler water temperatures, the reductions achieved will be low.
Particulate emissions or other pollutants	There would probably be both trivial increases and trivial decreases in pollution as part of slight energy penalties caused by increased temperature of condensers and slightly decreased pump energy use, respectively. Lower flow rates in cooling tubes may require use of more chemicals or energy to control scaling.
Land availability	Not typically an issue.

Remaining useful plant life	There are currently no plans to decommission or replace Units 1 through 4 at Spurlock Station The pumps can pay for themselves within a few years. This was not considered a critical factor.
Quantified and qualitative social benefits	The permittee is not required to provide Cost Evaluation Study (40 CFR 122.21(r)(10)) or Benefits Evaluation (40 CFR 122.21(r)(11)) because AIF is less than 125 MGD. The permittee provided no estimate of cost. The data that is available for this factor is not of sufficient rigor to allow the Division to preclude this technology.
Thermal Discharge Impacts	The use of variable speed pumps would not reduce thermal loads but would probably increase temperature and decrease flow so temperature impacts would be variable and probably slight. But the current thermal impact from the facility is not a concern. This was not considered a significant factor.
Conclusion	Use of variable speed pumps is not required, in part, because the intake already uses 5 pumps. Under normal operating conditions, one of the three Spurlock Station pumps runs continuously, and one of the two International Paper pumps runs continuously. This technology is estimated to provide only minor reductions to entrainment. This is because the facility already cycles pumps to meet water demands.

Water Reuse or Alternate Sources of Cooling Water
This is typically not an option for steam electric power plants due to the high volume of cooling water that is required. The facility already uses approximately 400 gpm of well water as cooling water makeup which only represents approximately 8 percent of the total cooling tower makeup water demand. Recent cooling water withdraw flows average around 6.5 MGD.

11.4.2. Intake Structure Standard Requirements

11.4.2.1. Future BTA Determination

This is a Final BTA determination made in accordance with the requirements of the federal regulations in 40 CFR 125.90-98, based upon the materials submitted by the permittee through 40 CFR 122.21(r). Future BTA determinations will be re-confirmed under the same regulations, but the permittee may request that some application materials be waived under 40 CFR 125.95(c) and 40 CFR 125.98(g).

In addition, the Division is requiring the submittal of an Alternatives Analysis Report for compliance with the entrainment BTA requirements. This additional submittal is required because, in making an entrainment BTA determination in future permit issuances, the Division must consider the factors listed in 40 CFR 125.98(f)(2) and may consider the criteria considered in 40 CFR 125.98(f)(3). Even after receiving the application materials required in 40 CFR 122.21(r), the Division does not expect to have sufficient information necessary to make an entrainment determination. Therefore, the Division requires the permittee an Alternatives Analysis Report, in which the permittee:

1) Addresses narratively, at least, the criteria in 40 CFR 125.98(f)(2),
2) May address the criteria in 40 CFR 125.98(f)(3), and
3) Propose a technology, management practice, operational measure, or some combination thereof as a candidate for the Division's entrainment BTA Determination.

The analysis must evaluate, at a minimum, closed-cycle recirculation systems, fine mesh screens with a mesh size of 2mm or smaller, variable speed pumps, water reuse or alternate sources of cooling water, and any additional technology identifies by the Division at a later date.

11.4.2.2. Visual or Remote Inspections

The permittee is required to conduct visual or remote inspections of the intake structure at least weekly during periods of operation, pursuant to 40 CFR 125.96(e).

11.4.2.3. Reporting Requirements

The permittee is required to submit an annual certification statement and report, pursuant to 40 CFR 125.97(c).

11.4.2.4. Endangered Species Act

40 CFR 125.98(b)(1) requires the inclusion of this provision in all permits subject to 316(b) requirements. Contact the state Natural Heritage Inventory (NHI) staff with inquiries regarding incidental take of state-listed threatened and endangered species and the US Fish and Wildlife Service with inquiries regarding incidental take of federally-listed threatened and endangered species.

11.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

11.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for monitoring cooling water withdraws [40 CFR 1125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

11.5.2. Temperature

The monitoring requirements for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

11.5.3. Total Suspended Solids, Hardness, pH, and Total Recoverable Metals

The removal of this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. DOW has determined that effluent results for this parameter does not provide any additional insight into determining compliance with the effluent limitations at the final dischargers.

11.5.4. Cooling Water Intake Inspection

The monitoring requirements for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for visual or remote inspections [40 CFR 125.96 (e)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

SECTION 12

OUTFALL 010

12. OUTFALL 010

12.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 57.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'59.5"	83°48'47.9"	Outfall 001	Unit #3 Cooling Tower Blowdown

12.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 010:

TABLE 58.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic									

TABLE 58.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

12.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

12.3.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

12.3.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.15(a) (1)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

In the case of Cooling Tower Blowdown BAT limits in 423.13 are the same as the NSPS limits.

40 CFR 423.15(a) (10)(i)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 59.		
NSPS Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.15(a)(10)(ii)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.15(a)(10)(iii)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (a)(10)(i) of this section may be determined by

engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

12.3.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.15(a)(10)(ii) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.15(a)(9)(i) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

12.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

12.4.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

12.4.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065,

Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

12.4.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT, and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)(i)].

12.4.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)], and consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 6].

12.4.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and [40 CFR 423.15(a)(10)(ii)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

12.4.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 13

OUTFALL 011

13. OUTFALL 011

13.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 60.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°41'43.15"	83°50'16.77"	UT to Lawrence Creek	Tier 1 - Coal Combustion Residual Landfill Stormwater Runoff
				Tier 2- Coal Combustion Residual Landfill Leachate and Stormwater Runoff

13.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 011 unless Table 61 is in effect:

TABLE 61.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	100.0	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

The following table summarizes the effluent limitations and monitoring requirements for Outfall 011 once landfill leachate and stormwater are being discharged through this outfall:

TABLE 62.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab

TABLE 62.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Antimony	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Beryllium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

13.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

13.3.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

13.3.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 63.		
BPT Effluent Requirements – combustion residual leachate		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(a)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.13(l)

The quantity of pollutants discharged in combustion residual leachate shall not exceed the quantity determined by multiplying the flow of combustion residual leachate times the concertation for TSS listed in 423.12(b)(4).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a) (3)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 64.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

13.3.1.2. Best Professional Judgment (BPJ)

Landfill – Stormwater Runoff

This facility utilizes a sedimentation basin it its operation which provides for the settling of suspended solids. Sedimentation is a commonly used treatment technology for the removal of total suspended solids from non-contaminated stormwater runoff associated with landfill operations. Sedimentation is both efficient and cost effective. Although several factors may influence the final concentration of total suspended solids in the discharge, it has been the experience of the Division that ponds that retain landfill-related stormwater for six hours or more can achieve a total suspended solids concentration of 100 mg/l as a daily maximum.

13.3.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 65.	
Pollutant or Pollutant Characteristic	**Basis**
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc.	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the current data indicates the concentrations of these pollutants, did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. However, the facility is going through major changes in response to the new steam electric ELG's. Therefore, it is the best professional judgement of the Division to monitor for the metals once the landfill leachate being discharged through this outfall.

13.4. Limitation Calculations

13.4.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	100	NO	N/A	NO	N/A	N/A
Effluent Characteristic	**Units**	**Reported Avg**	**Reported Max**	**Average Limitation**	**Maximum Limitation**	**Average Discharge %**	**Maximum Discharge %**	**Data Source**
Antimony	µg/L	0.398	0.398	640	N/A	0.06	N/A	APP
Arsenic	µg/L	1.67	1.67	150	340	1.11	0.49	APP
Beryllium	µg/L	0	0	28140.88889	N/A	0.00	N/A	APP
Cadmium	µg/L	0	0	0.755841246	8.731374985	0.00	0.00	APP
Chloride	µg/L	27500	27500	600000	1200000	4.58	2.29	APP
Chromium	µg/L	2.47	2.47	703522.2222	N/A	0.00	N/A	APP
Chromium (III)	µg/L	2.47	2.47	268.2205163	5611.7027	0.92	0.04	APP
Chromium (VI)	µg/L	2.47	2.47	11	16	22.45	15.44	APP
Copper	µg/L	0.463	0.463	30.49938305	51.68449826	1.52	0.90	APP
Iron	µg/L	201	201	3500	4000	5.74	5.03	APP
Lead	µg/L	0	0	18.58090366	476.8177624	0.00	0.00	APP
Mercury	µg/L	0	0	0.051	1.4	0.00	0.00	APP
Nickel	µg/L	0.325	0.325	168.5409938	1515.921838	0.19	0.02	APP
Nitrate (as N)	µg/L	330	330	70352222.22	N/A	0.00	N/A	APP
Selenium	µg/L	5.9	5.9	5	N/A	118.00	N/A	APP
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	APP
Sulfate	µg/L	358000	358000	1758805556	N/A	0.02	N/A	APP
Thallium	µg/L	0.34	0.34	0.47	N/A	72.34	N/A	APP
Zinc	µg/L	1.16	1.16	387.8303147	387.8303147	0.30	0.30	APP
Ammonia (as N)	mg/l	0	0	4.220347834	N/A	0.00	N/A	APP

13.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

13.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

13.5.2. Tier 1 - Total Suspended Solids

The limitations for this parameter are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

13.5.3. Tier 1 - pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

13.5.4. Tier 2 - Total Suspended Solids and Oil and Grease

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT, BAT, and NSPS requirements for combustion residual leachate [40 CFR 423.12(b)(11)], [40 CFR 423.13(l)], and [40 CFR 423.15(a)(3)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3]..

13.5.5. Tier 2 - pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)], and state water quality standards [401 KAR 10:031, Sections 4(1)(b) and 7].

13.5.6. Tier 2 - Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Thallium, Silver, and Zinc

The monitoring requirements for these pollutants are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

SECTION 14

OUTFALL 012

14. OUTFALL 012

14.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 66.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'51.5"	83°48'39.56"	Outfall 001	Unit #4 Cooling Tower Blowdown

14.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 012:

TABLE 67.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic									

TABLE 67.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

14.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

14.3.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

14.3.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.15(a) (1)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

In the case of Cooling Tower Blowdown BAT limits in 423.13 are the same as the NSPS limits.

40 CFR 423.15(a) (10)(i)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 68.		
NSPS Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.15(a)(10)(ii)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.15(a)(10)(iii)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (a)(10)(i) of this section may be determined by

engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

14.3.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.15(a)(10)(ii) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.15(a)(9)(i) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

14.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

14.4.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

14.4.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and

requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

14.4.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT, and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)(i)].

14.4.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)], and consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 6].

14.4.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and [40 CFR 423.15(a)(10)(ii)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

14.4.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 15

OUTFALL 013

15. OUTFALL 013

15.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 69.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°42'06.7"	83°49'22.3"	Outfall 001	FGD Wastewater

15.2. Effluent Limitations and Monitoring Requirements

This outfall shall not become effective till December 1, 2023. The following table summarizes the effluent limitations and monitoring requirements for Outfall 013:

TABLE 70.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Recoverable Arsenic	µg/l	N/A	N/A	N/A	8	11	N/A	1/Month	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	356	788	N/A	1/Month	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	12	23	N/A	1/Month	Grab
Nitrate/nitrite as N	mg/l	N/A	N/A	N/A	4.4	17.0	N/A	1/Month	Grab

15.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

15.3.1. FGD ELG Compliance Date

This facility currently sends FGD wastewater from their coal-fired operations to the ash pond, which discharges through Outfall 001 and in the future will any treated FGD wastewater to the new water mass balance pond.

40 CFR 423.13(g)(1)(i) require that the quantity of pollutants in FGD wastewater shall not exceed the quantity determined by 40 CFR 423.13(g)(1)(i). The permittee must meet this requirement by a date determined by the permitting authority. For FGD wastewater, the date has to be as soon as possible beginning November 1, 2020 but no later than December 31, 2023.

The definition for the phrase "as soon as possible" can be found in 40 CFR 423.11(t). The permittee provided the Division of Water information to determine as soon as possible ELG compliance applicability dates. EKPC requested a compliance date of December 31, 2023 for compliance with the FGD discharge limits. EKPC needs until that date to: receive Public Service Commission CPCN approval, Design, procure and install equipment for FGD physical/chemical wastewater treatment, and initial commissioning of FGD treatment system to optimize performance- once FGD WWT equipment is installed and shakedown, EKPC will need to evaluate its performance to ensure the design and installation of the equipment are performing as anticipated and is in compliance.

The DOW grants EKPC's requested compliance date. The discharge requirements for FGD waste water shall become effective on December 31, 2023.

15.3.2. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

Certain technology-based effluent limitations and compliance deadlines included in this permit are based upon effluent limitation Guidelines ("ELGs") that are under reconsideration by the United States Environmental Protection Agency ("EPA"). 82 Fed. Reg. 43494 (September 18, 2017).

15.3.2.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 71.		
BPT Effluent Requirements – FGD wastewater		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l

Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(g) (1)(i)

Except for those discharges to which paragraph (g)(2) or (g)(3) of this section applies, the quantity of pollutants in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed in the table following this paragraph (g)(1)(i). Discharges must meet the effluent limitations for FGD wastewater in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2020, but no later than December 31, 2023. These effluent limitations apply to the charge of FGD wastewater generated on and after the date determined by the permitting authority for meeting the effluent limitations, as specified in this paragraph.

TABLE 72.		
BAT Effluent Requirements – FGD wastewater		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Arsenic, total	11 µg/l	8 µg/l
Mercury, total	788 ng/l	356 ng/l
Selenium, total	23 µg/l	12 µg/l
Nitrate/nitrite as N	17.0 mg/l	4.4 mg/l

40 CFR 423.13(g) (1)(ii)

For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed for TSS in 423.12(b)(11).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (2)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 73.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

15.3.3. Total Suspended Solids, and Oil and Grease

The Ash Pond, and the future water mass balance pond, treats many waste streams. Since Outfall 013 effluent will be directed to the future water mass balance pond, the limitations for these pollutants will be applied at Outfall 001 after commingling with other waters. The Division of Water will develop flow-weighted limitations to insure compliance with the federal effluent limitation guidelines.

15.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

15.4.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

15.4.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

15.4.3. Total Arsenic, Total Mercury, Total Selenium, and Nitrate/nitrite

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT and NSPS requirements for FGD wastewater [40 CFR 423.13(g)(1)(i)] and [40 CFR 423.15(a)].

SECTION 16

OUTFALLS 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L

16. OUTFALLS 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, AND 00L

16.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 74.			
Outfall Number[1]	**Outfall Type**	**Receiving Water**	**Description of Outfall**
00A	External	Ohio River	Stormwater from Road west of Coal Storage Area
00B	External	Ohio River	Stormwater from area around Fuel Oil Tanks
00C	External	Ohio River	Stormwater from area around Waste Water Treatment
00D	External	Ohio River	Stormwater from Unit 1 and 2 Cooling Towers
00E	External	Ohio River	Stormwater from Unit 3 and 4 Cooling Towers and Acid storage tanks
00F	External	Ohio River	Stormwater from area between Ash Pond and Railroad tracks and road west of Ash Pond
00G	External	Lawrence Creek	Stormwater from main Entrance Road
00H	External	Lawrence Creek	Stormwater from Road south Coal Storage Area
00I	External	UT to Lawrence Creek	Stormwater from north Haul Road drainage
00J	External	Lawrence Creek	Stormwater from east Haul Road drainage
00K	External	UT to Lawrence Creek	Stormwater from landfill access road
00L	External	UT to Lawrence Creek	Stormwater from landfill access road
[1]These outfall represent drainage areas for stormwater that are to be covered under BMP's. Plant Drainage Area Map can be found in the KPDES application			

16.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfalls 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L:

TABLE 75.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Due to the absence of any industrial processes, equipment or storage areas being located within the areas served by theses outfalls, the DOW has determined that implementation of BMPs would be the most effective approach for controlling pollutants from these areas. The BMP Plan shall specifically mention controls and practices used to control or abate the discharge of pollutants in stormwater discharges from these outfalls.									

16.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

16.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

16.4.1. Best Management Practices (BMPs)

The use of BMPs for the control of drainage from the non-industrial portions of the facility are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(k)].

SECTION 17

OTHER CONDITIONS

17. OTHER CONDITIONS

17.1. Schedule of Compliance

The permittee is required to comply with all effluent limitations by the effective date of the permit unless a compliance schedule is included with the permit.

17.2. Antidegradation

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. The facility dischargers to waters categorized as "Impaired Waters" pursuant to 33 U.S.C. 1315(b). Therefore pursuant to 401 KAR 10:030, Section 1(4), further review is not required.

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. This permitting action is a reissuance of a KPDES permit that does not authorize an expanded discharge.

17.3. Standard Conditions

The conditions listed in the Standard Conditions Section of the permit are consistent with the conditions applicable to all permits [401 KAR 5:065, Section 2(1) – 40 CFR 122.41].

17.4. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)].

17.5. Certified Laboratory

All environmental analysis to be performed by a certified laboratory is consistent with the certified wastewater laboratory requirements [401 KAR 5:320, Section 3].

17.6. BMP Plan

Permits are to include BMPs to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under Section 402(p) of the CWA for the control of stormwater discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(k)]

17.7. Ohio River Outfall Signage

Kentucky is a member of the Ohio River Valley Water Sanitation Compact (ORSANCO) [KRS 224.18-760]. Article I of the Compact pledges faithful cooperation between the signatory states. Article IV authorizes the Commission to adopt, prescribe and promulgate rules, regulations and standards for administering and enforcing the Compact. The ORSANCO pollution control standards for discharges to the Ohio River require that holders of an individual NPDES permit post and maintain a permanent marker having specific dimensions at each Ohio River outfall. The permittee shall comply with the permanent marker requirements of ORSANCO's Pollution Control Standards.

17.8. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to

the commencement of use of said biocides or chemicals to the Division of Water for review and establishment of appropriate control parameters.

17.9. Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.12(b) (2), there shall be no discharge, from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this section.

16.11 ORSANCO's Mercury Variance

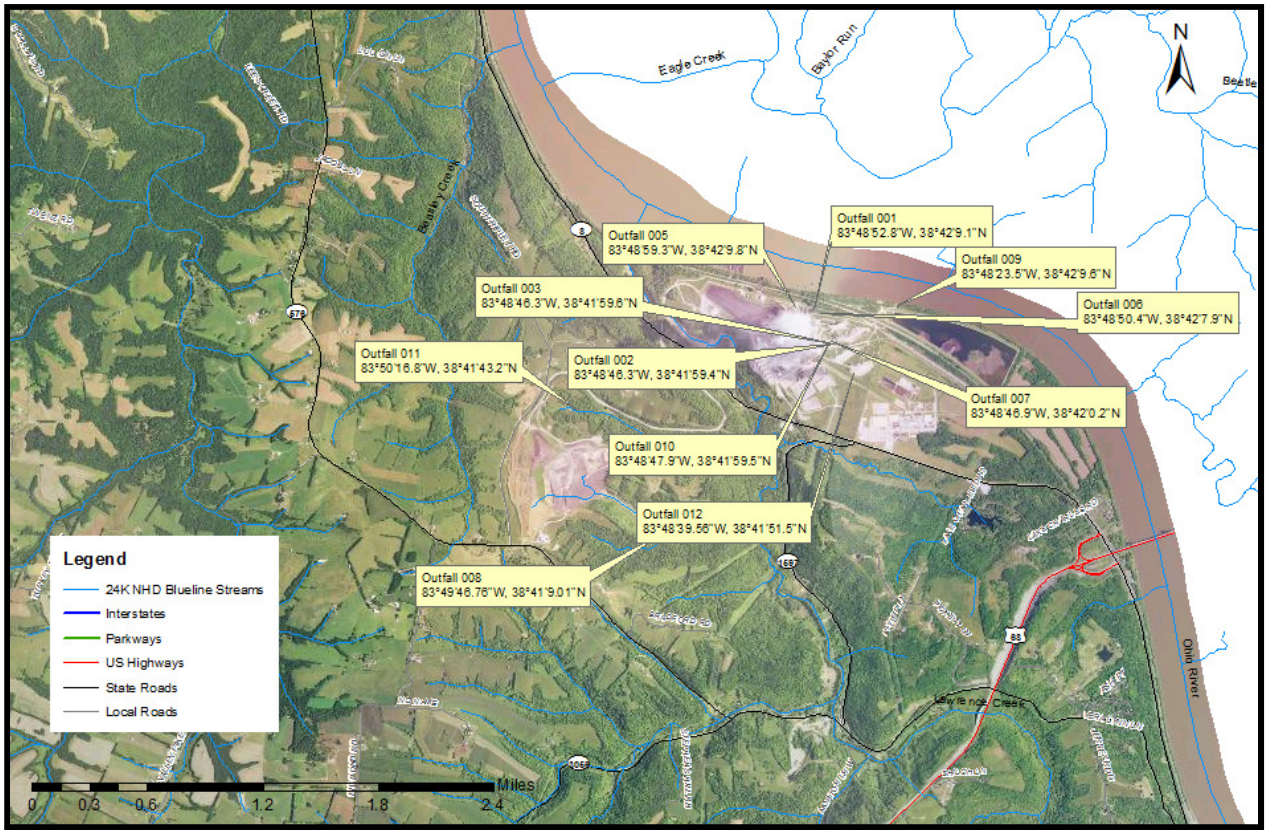
The permittee requested a variance from ORSANCO's mercury standard of 0.000012 mg/l for effluent from this site which discharges to the Ohio River. The permittee is currently meeting Kentucky's water quality criteria for mercury. Mercury is a pollutant believed to be present in FGD wastewaters. The permittee is installing a new treatment system for FGD wastewaters in order to achieve compliance with new federal effluent limitation guidelines. Effluent from Outfall 001 will be partially comprised of treated FGD wastewaters, and the permittee believes the effluent will be able to continue meeting Kentucky's water quality criteria for mercury once the new treatment system is operational. The permittee is doubtful the effluent will consistently meet ORSANCO's mercury standard. Given these circumstances, the DOW granted the variance ORSANCO's mercury standard and will apply Kentucky's water quality criteria for mercury for discharges to the Ohio River.

6.12 Combustion Residual Leachate

Pursuant to 40 CFR 423.11(r), the term combustion residual leachate ("leachate") means "leachate from landfills or surface impoundments containing combustion residuals. Leachate is composed of liquid, including any suspended or dissolved constituents in the liquid, that has percolated through waste or other materials emplaced in a landfill, or that passes through the surface impoundment's containment structure (*e.g.,* bottom, dikes, berms). Combustion residual leachate includes seepage and/or leakage from a combustion residual landfill or impoundment unit. Combustion residual leachate includes wastewater from landfills and surface impoundments located on non-adjoining property when under the operational control of the permitted facility."

This permit authorizes the discharge of leachate from outfall 008 and outfall 011. For newly discovered leachate seeps from a CCR surface impoundment or a CCR landfill, as defined at 40 CFR 257.53, to the surface that discharge or have a potential to discharge to a water of the commonwealth other than through outfall 008 or outfall 011, the permittee shall develop and implement a plan to address such surface seeps. The plan shall be included as part of the on-site BMP Plan and shall address, at a minimum, (1) scheduled inspections for identifying surface leachate seeps, (2) maintenance of CCR landfills and/or impoundments to minimize the potential for surface leachate seeps, and (3) corrective measures that will be implemented upon the discovery of a surface leachate seep that is not being controlled by a permitted outfall authorized for discharge of leachate. The permittee shall notify the DOW Surface Water Permits Branch and the appropriate DOW Field Office of planned corrective measures for any identified surface seeps of leachate as soon as feasible after discovery of such a leachate seep, but no later than ten (10) days after the discovery. Such corrective measures may include: (1) plans to reduce or eliminate the leachate seep to the surface; (2) actions to route the surface leachate seep (via a conveyance designed to contain the flow or eliminate the possibility of infiltration) to an outfall permitted to discharge leachate; and (3) combinations of actions to eliminate or, if elimination is not feasible, reduce and control a surface leachate seep and ensure any discharge to a receiving stream is authorized by the permit. Please note that this does not exempt the permittee from 24-hour reporting Section 2.12 of the permit.

16.13 Location Map



KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

AUTHORIZATION TO DISCHARGE UNDER THE
KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT NO.: KY0022250

AGENCY INTEREST NO.: 3004

Pursuant to Authority in KRS 224,

East Kentucky Power Cooperative, Inc.
4775 Lexington Road
Winchester, Kentucky 40391

is authorized to discharge from a facility located at

EKPC H.L. Spurlock Power Station
1301 West Second Street
Maysville, Mason County, Kentucky

to receiving waters named

Ohio River

UT to Lawrence Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit shall become effective on January 1, 2019.

This permit and the authorization to discharge shall expire at midnight, December 31, 2023.

October 23, 2018

Date Signed

Peter T. Goodmann, Director

Division of Water

THIS KPDES PERMIT CONSISTS OF THE FOLLOWING SECTIONS:

SECTION 1

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. Compliance Monitoring Locations (Outfalls)

The following table lists the outfalls authorized by this permit, the location and description of each, and the DOW assigned KPDES outfall number:

TABLE 1.

Outfall No.	Outfall Type	Latitude (N)	Longitude (W)	Receiving Water	Description of Outfall
001	External	38°42'9.1"	83°48'52.8"	Ohio River	Current - Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, FGD wastewater, low volume waste, ash sluice water, chemical and nonchemical metal cleaning wastewater, and stormwater
					Ash Pond Dewatering-The ash pond will be decanted and pumped to the Secondary Lagoon. The discharge will contain all the flows mentioned above.
					Future - Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, treated FGD wastewater, low volume waste, chemical and nonchemical metal cleaning wastewater, stormwater and new water mass balance pond
002	Internal	38°41'59.4"	83°48'46.3"	Outfall 001	Unit #1 Cooling Tower Blowdown
003	Internal	38°41'59.6"	83°48'46.3"	Outfall 001	Unit #2 Cooling Tower Blowdown
004	Internal	Varies	Varies	Outfall 001	Chemical Metal Cleaning Wastewater
005	External	38°42'9.8"	83°48'59.3"	Ohio River	Emergency Coal Pile Runoff
006	External	38°42'7.9"	83°48'50.4"	Ohio River	Stormwater Runoff
007	External	38°42'0.2"	83°48'46.9"	Ohio River	Reverse Osmosis Reject
008	External	38°41'9.01"	83°49'46.76"	UT to Lawrence Creek	Coal Combustion Residual Landfill Leachate and Stormwater Runoff
009	External	38°42'9.6"	83°48'23.5"	Plant Intake from Ohio River	Raw Water Intake
010	Internal	38°41'59.5"	83°48'47.9"	Outfall 001	Unit #3 Cooling Tower Blowdown
011	External	38°41'43.15"	83°50'16.77"	UT to Lawrence Creek	Tier 1 - Coal Combustion Residual Landfill Stormwater Runoff
					Tier 2- Coal Combustion Residual Landfill Leachate and Stormwater Runoff
012	Internal	38°41'51.5"	83°48'39.56"	Outfall 001	Unit #4 Cooling Tower Blowdown
013	Internal	38°42'06.7"	83°49'22.3"	Outfall 001	FGD Wastewater
00A	External	N/A[1]	N/A[1]	Ohio River	Stormwater from Road west of Coal Storage Area
00B	External	N/A[1]	N/A[1]	Ohio River	Stormwater from area around Fuel Oil Tanks
00C	External	N/A[1]	N/A[1]	Ohio River	Stormwater from area around Waste Water Treatment

TABLE 1.					
Outfall No.	**Outfall Type**	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
00D	External	N/A[1]	N/A[1]	Ohio River	Stormwater from Unit 1 and 2 Cooling Towers
00E	External	N/A[1]	N/A[1]	Ohio River	Stormwater from Unit 3 and 4 Cooling Towers and Acid storage tanks
00F	External	N/A[1]	N/A[1]	Ohio River	Stormwater from area between Ash Pond and Railroad tracks and road west of Ash Pond
00G	External	N/A[1]	N/A[1]	Lawrence Creek	Stormwater from main Entrance Road
00H	External	N/A[1]	N/A[1]	Lawrence Creek	Stormwater from Road south Coal Storage Area
00I	External	N/A[1]	N/A[1]	UT to Lawrence Creek	Stormwater from north Haul Road drainage
00J	External	N/A[1]	N/A[1]	Lawrence Creek	Stormwater from east Haul Road drainage
00K	External	N/A[1]	N/A[1]	UT to Lawrence Creek	Stormwater from landfill access road
00L	External	N/A[1]	N/A[1]	UT to Lawrence Creek	Stormwater from landfill access road
[1]These outfall represent drainage areas for stormwater that are to be covered under BMP's. Plant Drainage Area Map can be found in the KPDES application					

1.2. Effluent Limitations and Monitoring Requirements

1.2.1. Outfall 001

Outfall 001 will undergo operational changes as the facility transitions from existing conditions of an active ash pond to proposed conditions of a process water basin. To accomplish this, the ash pond will be dewatered and closed. To capture the transition, effluent limitations tables have been developed for three phases. Please note that the permittee shall notify the Division of Water, Surface Water Permits Branch at least 30 days prior to commencement of dewatering operations. The permittee shall also notify the Division of Water, Surface Water Permits Branch at least 30 days prior to when dewatering operations are complete.

Beginning on the effective date and lasting through the term of this permit or commencement of Ash Pond dewatering, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 2.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab

TABLE 2.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

Upon commencement of Ash Pond dewatering and lasting through the term of this permit or completion of Ash Pond dewatering, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 3.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Month	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([4])	([4])
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Antimony[1]	mg/l	N/A	N/A	N/A	9.27	Report	N/A	1/Month	Grab
Total Recoverable Arsenic[1]	mg/l	N/A	N/A	N/A	0.31	0.31	N/A	1/Month	Grab
Total Recoverable Beryllium[1]	mg/l	N/A	N/A	N/A	6.60	Report	N/A	1/Month	Grab
Total Recoverable Cadmium[1]	mg/l	N/A	N/A	N/A	0.0081	0.0081	N/A	1/Month	Grab
Total Recoverable Chromium[1]	mg/l	N/A	N/A	N/A	164.4	Report	N/A	1/Month	Grab
Total Recoverable Copper[1]	mg/l	N/A	N/A	N/A	0.047	0.047	N/A	1/Month	Grab
Total Recoverable Lead[1]	mg/l	N/A	N/A	N/A	0.020	0.020	N/A	1/Month	Grab
Total Recoverable Mercury[1]	mg/l	N/A	N/A	N/A	0.000046	0.0013	N/A	1/Month	Grab
Total Recoverable Nickel[1]	mg/l	N/A	N/A	N/A	1.37	1.37	N/A	1/Month	Grab
Total Recoverable Silver[1]	mg/l	N/A	N/A	N/A	Report	0.037	N/A	1/Month	Grab
Total Recoverable Thallium[1]	mg/l	N/A	N/A	N/A	0.40	0.40	N/A	1/Month	Grab
Total Recoverable Zinc[1]	mg/l	N/A	N/A	N/A	0.35	0.35	N/A	1/Month	Grab
Acute WET[2]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Month	([3])

TABLE 3.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[1]The Monthly Average and Daily Maximum concentrations for these pollutants are not effluent limitations, but water quality triggers that, if exceeded for two (2) consecutive months, require permittee action. See the Best Management Practices Plan Section - Additional BMP Conditions Subsection for additional requirements related to these triggers.									
[2]WET – Whole Effluent Toxicity									
[3]Two (2) discrete grab samples shall be collected 12 hours apart									
[4]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

Upon completion of Ash Pond dewatering and water mass balance pond is operational and lasting through the term of this permit, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 4.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	66.7	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	6.0	8.0	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									

TABLE 4.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

1.2.2. Outfall 002

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 002 shall comply with the following effluent limitations:

TABLE 5.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									

TABLE 5.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

1.2.3. Outfall 003

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 003 shall comply with the following effluent limitations:

TABLE 6.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency “Occurrence” means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type ‘Multiple Grab’ means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									

TABLE 6.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

1.2.4. Outfall 004

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 004 shall comply with the following effluent limitations:

TABLE 7.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Batch[1]	Instantaneous
Total Recoverable Copper	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab
Total Recoverable Iron	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab
[1]Monitoring shall be conducted once per metal cleaning operation.									

1.2.5. Outfall 005

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 005 shall comply with the following effluent limitations:

TABLE 8.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Discharge	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	50	N/A	1/Discharge	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Discharge	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Lead,	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
The monitoring frequency for this outfall is once per discharge, but no more frequent than once per quarter. Should more than one discharge occur during a given quarter the permittee will be responsible for collection at least one of those discharges.									

1.2.6. Outfall 006

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 006 shall comply with the following effluent limitations:

TABLE 9.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Settleable Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	10	15	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

1.2.7. Outfall 007

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 007 shall comply with the following effluent limitations:

TABLE 10.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Quarter	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

1.2.8. Outfall 008

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 008 shall comply with the following effluent limitations:

TABLE 11.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	Report	1/Year	([1])

[1]See Section 5.11 of the permit for additional requirements.

1.2.9. Outfall 009

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 009 shall comply with the following effluent limitations:

TABLE 12.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Daily	Grab
Temperature	°F	N/A	N/A	N/A	Report	Report	N/A	Daily	Grab
[1]Cooling Water Intake Inspection	Fail=1 Pass=0	N/A	N/A	N/A	N/A	N/A	Report[2]	1/Week	Inspection[3]

[1]Weekly monitoring of the cooling water intake system shall be performed, during the period the cooling water intake structure is in operation, to ensure that the design and construction technology required by §125.94 (i.e., intake flow commensurate with closed cycle cooling) is functioning as designed and are being appropriately maintained and operated.

TABLE 12.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[2]If the intake flow through the screen is not commensurate with closed cycle cooling a "1" is to be reported. If intake flow is commensurate with closed cycle cooling "0" is to be reported									
[3]This inspection may take the form of either visual inspections or the use of remote monitoring devices.									

1.2.10. Outfall 010

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 010 shall comply with the following effluent limitations:

TABLE 13.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic									

TABLE 13.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

1.2.11. Outfall 011 Tier 1

Beginning on the effective date and lasting through the term of this permit or until land leachate starts discharging through this outfall, discharges from Outfall 011 shall comply with the following effluent limitations:

TABLE 14.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	100.0	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

1.2.12. Outfall 011 Tier 2

Once landfill leachate starts discharging through this outfall and lasting through the term of this permit, discharges from Outfall 011 shall comply with the following effluent limitations. The permittee shall notify the Division of Water, Surface Water Permits Branch at least 30 days prior to commencement of land fill leachate discharging through outfall 011 requesting to switch to the Tier 2 limits

TABLE 15.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Antimony	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Beryllium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

1.2.14. Outfall 012

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 012 shall comply with the following effluent limitations:

TABLE 16.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.

[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.

1.2.15. Outfall 013

Beginning on December 1, 2023 and lasting through the term of this permit, discharges from Outfall 013 shall comply with the following effluent limitations:

TABLE 17.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Recoverable Arsenic	µg/l	N/A	N/A	N/A	8	11	N/A	1/Month	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	356	788	N/A	1/Month	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	12	23	N/A	1/Month	Grab
Nitrate/nitrite as N	mg/l	N/A	N/A	N/A	4.4	17.0	N/A	1/Month	Grab

1.2.16. Outfalls 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L

Beginning on the effective date and lasting through the term of this permit, discharges from Outfalls 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L shall comply with the following effluent limitations:

TABLE 18.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Due to the absence of any industrial processes, equipment or storage areas being located within the areas served by theses outfalls, the DOW has determined that implementation of BMPs would be the most effective approach for controlling pollutants from these areas. The BMP Plan shall specifically mention controls and practices used to control or abate the discharge of pollutants in stormwater discharges from these outfalls.									

1.3. Standard Effluent Requirements

The discharges to Waters of the Commonwealth shall not produce floating solids, visible foam or a visible sheen on the surface of the receiving waters.

SECTION 2

STANDARD CONDITIONS

2. STANDARD CONDITIONS

The following conditions apply to all KPDES permits.

2.1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of KRS Chapter 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Any person who violates applicable statutes or who fails to perform any duty imposed, or who violates any determination, permit, administrative regulation, or order of the Cabinet promulgated pursuant thereto shall be liable for a civil penalty as provided at KRS 224.99.010.

2.2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit.

2.3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

2.5. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2.6. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

2.7. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

2.8. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

2.9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

2.10. Monitoring and Records

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 401 KAR 5:065, Section 2(10) [40 CFR 503]), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

(3) Records of monitoring information shall include:

a) The date, exact place, and time of sampling or measurements;
b) The individual(s) who performed the sampling or measurements;
c) The date(s) analyses were performed;
d) The individual(s) who performed the analyses;
e) The analytical techniques or methods used; and
f) The results of such analyses.

(4) Monitoring must be conducted according to test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136] unless another method is required under 401 KAR 5:065, Section 2(9) or (10) [40 CFR subchapters N or O].

(5) KRS 224.99-010 provides that any person who knowingly violates KRS 224.70-110 or other enumerated statutes, or who knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall be guilty of a Class D felony and, upon conviction, shall be punished by a fine of not more than $25,000, or by imprisonment for not less than one (1) year and not more than five (5) years, or by both fine and imprisonment for each separate violation.. Each day upon which a violation occurs shall constitute a separate violation..

2.11. Signatory Requirement

(1) All applications, reports, or information submitted to the Director shall be signed and certified pursuant to 401 KAR 5:060, Section 4 [40 CFR 122.22].

(2) KRS 224.99-010 provides that any person who knowingly provides false information in any document filed or required to be maintained under KRS Chapter 224 shall be guilty of a Class D felony and upon conviction thereof, shall be punished by a fine not to exceed twenty-five thousand dollars ($25,000), or by imprisonment, or by fine and imprisonment, for each separate violation. Each day upon which a violation occurs shall constitute a separate violation.

2.12. Reporting Requirements

2.12.1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in KRS 224.16-050 [40 CFR 122.29(b)]; or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under KRS 224.16-050 [40 CFR 122.42(a)(1)].

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2.12.2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

2.12.3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under KRS 224 [CWA; see 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory].

2.12.4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136], or another method required for an industry-specific waste stream under 401 KAR 5:065, Section 2(9) or (10) [40 CFR subchapters N or O], the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

2.12.5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

2.12.6. Twenty-four-Hour Reporting

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within twenty-four (24) hours under this paragraph.

a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See §122.41(g))
b) Any upset which exceeds any effluent limitation in the permit.
c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.

(3) The Director may waive the written report on a case-by-case basis under 40 CFR 122.41 (l), if the oral report has been received within twenty-four (24) hours.

2.12.7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Sections 2.12.1, 2.12.4, 2.12.5 and 2.12.6, at the time monitoring reports are submitted. The reports shall contain the information listed in Section 2.12.6.

2.12.8. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

2.13. Bypass

2.13.1. Definitions

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

2.13.2. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Section 2.13.3 and 2.13.4.

2.13.3. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section 2.12.6.

2.13.4. Prohibition of Bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
c) The permittee submitted notices as required under Section 2.13.3.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three (3) conditions listed above in Section 2.13.4

2.14. Upset

2.14.1. Definition

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2.14.2. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Section 2.14.3 are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2.14.3. Conditions Necessary for a Demonstration of Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in Section 2.12.6; and

(4) The permittee complied with any remedial measures required under Section 2.4.

2.14.4. Burden of Proof

In any enforcement preceding the permittee seeking to establish the occurrence of an upset has the burden of proof.

SECTION 3

BEST MANAGEMENT PRACTICES PLAN (BMPP) REQUIREMENTS

3. BEST MANAGEMENT PRACTICES PLAN (BMPP) REQUIREMENTS

The permittee shall develop and implement a Best Management Practices Plan (BMPP) consistent with 401 KAR 5:065, Section 2(4).

3.1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.1-010(35) and who have operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.1-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

3.2. Plan

The permittee shall develop and implement a BMPP consistent with 401 KAR 5:065, Section 2(4) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage.

3.3. Implementation

The permittee shall implement the BMPP upon of the commencement of regulated activity. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be implemented as soon as possible.

3.4. General Requirements

The BMPP shall:

(1) Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

(2) Establish specific objectives for the control of toxic and hazardous pollutants.

   a. Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

   b. Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants", the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

(3) Establish specific BMPs to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants".

(4) Include any special conditions established in part b of this section.

(5) Be reviewed by engineering staff and the site manager.

3.5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document", and shall include the following baseline BMPs as a minimum:

(1) BMP Committee

(2) Reporting of BMP Incidents
(3) Risk Identification and Assessment
(4) Employee Training
(5) Inspections and Records
(6) Preventive Maintenance
(7) Good Housekeeping
(8) Materials Compatibility
(9) Security
(10) Materials Inventory

3.6. SPCC Plans

The BMPP may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMPP by reference.

3.7. Hazardous Waste Management

The permittee shall assure the proper management of solids and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

3.8. Documentation

The permittee shall maintain a copy of the BMPP at the facility and shall make the plan available upon request to EEC personnel.

3.9. BMP Plan Modification

The permittee shall modify the BMPP whenever there is a change in the facility or change in the operation of the facility that materially increases the potential for the release of "BMP pollutants".

3.10. Modification for Ineffectiveness

The BMPs and the BMPP shall be reviewed and appropriate modifications implemented to utilize other practicable measures if any of the following events occur:

(1) As a result of either a fixed or episodic event-driven evaluation, the permittee determines the selected BMPs are not achieving the established performance benchmarks;

(2) As a result of a notice of deficiency from an evaluation or inspection by Cabinet personnel; or

(3) A release to the environment/beyond secondary containment of any petroleum-based product, toxic or hazardous substance.

3.11. Periodically Discharged Wastewater Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

3.12. Additional BMP Conditions during Dewatering

3.12.1. BMP Evaluation Triggers

Water Quality Trigger: The monthly average and daily maximum discharge concentrations for the listed metals in table 3 are triggers that once exceeded for two (2) consecutive months requires the permittee to initiate an evaluation of the currently employed BMP's related to dewatering.

WET Trigger: The permittee shall review the BMPs currently employed, related to dewatering, when the findings of a Toxicity Reduction Evaluation (TRE) indicates that one or more of the pollutants monitored was the toxicant.

3.12.2. Evaluation of BMPs

The permittee shall notify DOW within five (5) days that a BMP evaluation trigger has occurred and within forty five (45) days shall complete a BMP evaluation.

At a minimum, the findings of this evaluation shall include:

1) A list of known, practicable control measures;
2) The order of implementing identified control measures;
3) Monitoring plans and schedules to support evaluating the effectiveness of each control measure;
4) A description of decision-making criteria and timelines for evaluating whether a particular measure has been effective and whether additional or different measures are required;
5) Identification of a process for revising the BMP Plan (BMPP) should data obtained from monitoring the effectiveness of particular control measures warrant such revisions; and
6) Any proposed changes to the BMPP shall be implemented within 90 days of the finalization of evaluation.

SECTION 4

WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

4. WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

The permittee shall initiate, within thirty (30) days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfall 001.

4.1. Sampling Requirements

Tests shall be conducted on each of two grab samples collected over the period of discharge,(i.e., discrete sample #1 taken at commencement of discharge, sample #2 taken approximately 12 hours later, sooner if discharge is expected to cease). The elapsed time between the collection of each grab sample and the initiation of each test shall not exceed 36 hours.

4.2. Test Requirements

The Acute WET test requirements consists of two 48-hour static non-renewal toxicity tests with water flea (Ceriodaphnia dubia, Daphnia magna, or Daphnia pulex) and two 48-hour static non-renewal toxicity tests with fathead minnow (Pimephales promelas) performed on discrete grab samples of 100% effluent (1.00 TU_A) at the frequency specified. Testing of each sample shall begin within 36 hours of the collection of that sample.

4.3. Serial Dilutions

Effluent concentrations for the tests must include the percent effluent required by the permit and at least four additional effluent concentrations.

For a required percent effluent of 100%, test concentrations shall be 20%, 40%, 60%, 80% and 100%.

For a required percent effluent less than 100% but greater than or equal to 75%, the test concentrations shall include the required percent effluent, two (2) concentrations below that are based on a 0.5 dilution factor, and two (2) concentrations above: one (1) at mid-point between 100% and the required percent effluent, and one (1) at 100% effluent.

For a required percent effluent less than 75%, test concentrations shall include the required percent effluent, two (2) concentrations below on a 0.5 dilution factor, and two (2) concentrations above the required percent effluent based on a 0.5 dilution factor, if possible; otherwise, one (1) at mid-point between 100% and the required percent effluent, and one (1) at 100% effluent.

Selection of different effluent concentrations must be approved by DOW prior to testing. Controls shall be conducted concurrently with effluent testing using synthetic water.

4.4. Controls

Control tests shall be conducted concurrent with effluent testing using synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met.

Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period.

Within 30 days prior to initiating an effluent toxicity test, a reference toxicant test must be completed for the method used; alternatively, the reference toxicant test may be run concurrent with the effluent toxicity test.

Control survival is 90% or greater in test organisms held in synthetic water.

4.5. Test Methods

All test organisms, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-

821-R-02-012 (5th edition), the most recently published edition of this publication, or as approved in advance by DOW.

4.6. Reduction to Single Species Testing

After at least six (6) consecutive passing toxicity tests using both, the water flea and the fathead minnow, a request for testing with only the most sensitive species may be submitted to DOW. Upon approval, the most sensitive species may be considered as representative and all subsequent compliance tests may be conducted using only that species unless directed at any time by DOW to change or revert to both.

4.7. Reporting Requirements

Results of all toxicity tests conducted with any species shall be reported according to the most recent format provided by DOW (See the Section for Submission of DMRs of this permit). Notification of failed test shall be made to DOW within five days of test completion. Test reports shall be submitted to DOW within thirty (30) days of completion. A control chart including the most recent reference toxicant test endpoints for the effluent test method (minimum of 5, up to 20 if available) shall be part of the report.

4.8. Test Results

If noncompliance occurs in an initial test, the permittee shall repeat the test using new samples. Results of this second round of testing will be used to evaluate the persistence of the toxic event and the possible need for a Toxicity Reduction Evaluation (TRE).

Noncompliance is demonstrated if the LC_{50} is less than 100% effluent. If noncompliance occurs in an initial test, the permittee shall repeat the test using new grab samples collected approximately twelve (12) hours apart. Sampling must be initiated within ten (10) days of completing the failed test. The second round of testing shall include both species unless approved for only the most sensitive species by DOW.

4.9. Accelerated Testing

If the second round of testing also demonstrates noncompliance, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional rounds of testing to evaluate the frequency and degree of toxicity within sixty (60) days of completing the second failed round of testing. Results of the initial and second rounds of testing specified above plus the four (4) additional rounds of testing will be used in deciding if a TRE shall be required.

If results from any two (2) of six (6) rounds of testing show a significant noncompliance with the Toxicity limit, i.e., ≥1.2 times the TU, or results from any four of the six tests show toxicity as defined above, a TRE will be required.

The permittee shall provide written notification to DOW within five (5) days of completing the accelerated testing, stating that: (1) toxicity persisted and that a TRE will be initiated; or (2) that toxicity did not persist and normal testing will resume.

Should toxicity prove not to be persistent during the accelerated testing period, but reoccur within twelve (12) months of the initial failure at a level ≥ 1.2 times the TU, then a TRE shall be required.

4.10. WET TRE

Having determined that a TRE is required, the permittee shall initiate and/or continue at least monthly testing with both species until such time as a specific TRE plan is approved by DOW. A TRE plan shall be developed by the permittee and submitted to DOW within thirty (30) days of determining a TRE is required.

The plan shall be developed in accordance with the most recent Environmental Protection Agency (EPA) and DOW guidance. Questions regarding this process may be submitted to DOW.

The TRE plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE plan will establish an implementation schedule to begin immediately upon approval by DOW, to have duration of at least six (6) months, and not to exceed twenty-four (24) months. The implementation schedule shall include quarterly progress reports being submitted to DOW, due the last day of the month following each calendar quarter.

Upon completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and actions taken or to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed one-hundred-eighty (180) days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the planned conclusion of the TRE, the permittee will notify DOW within five (5) days of making that determination and take appropriate actions to implement the solution within one-hundred-eighty (180) days of that notification.

SECTION 5

OTHER CONDITIONS

5. OTHER CONDITIONS

5.1. Schedule of Compliance

The permittee shall attain compliance with all requirements of this permit on the effective date of this permit unless otherwise stated.

5.2. Other Permits

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

5.3. Continuation of Expiring Permit

This permit shall be continued in effect and enforceable after the expiration date of the permit provided the permittee submits a timely and complete application in accordance with 401 KAR 5:060, Section 2(4).

5.4. Antidegradation

For those discharges subject to the provisions of 401 KAR 10:030 Section, 1(3)(b)5, the permittee shall install, operate, and maintain wastewater treatment facilities consistent with those identified in the SDAA submitted with the KPDES permit application.

5.5. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved in accordance with 401 KAR 5:050 through 5:080, if the effluent standard or limitation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

(2) Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

5.6. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals to the Division of Water for review and establishment of appropriate control parameters.

5.7. Outfall Signage

Ohio River

The permittee shall comply with the permanent marker requirements of ORSANCO's Pollution Control Standards.

Other Waterbodies

This KPDES permit establishes monitoring points, effluent limitations, and other conditions to address discharges from the permitted facility. In an effort to better document and clarify these locations the permittee should place and maintain a permanent marker at each of the monitoring locations.

5.8 Cooling Water Intake Requirements

5.8.1 Authority to Operate

The permittee shall at all times properly operate and maintain all water intake facilities. The permittee shall give advance notice to the Division of any planned changes in the location, design, operation, or capacity of the intake structure. The permittee is authorized to use the cooling water intake system which consists of the following:

Spurlock Station Cooling Water Intake Structure is located at N 38°42'09" W 83°48'23" on the south bank of the Ohio River, which has a $7Q_{10}$ flow of 10,600 cfs. The cooling water intake structure is a single wet well that houses five pumps, three for the Spurlock Station and two for the adjacent International Paper facility. The wet well has two independent cylindrical wedge wire screen assemblies mounted to a bulkhead on the northern face of the structure. The screens are each located at the end of separate 15-foot intake pipelines. The screen elevation is approximately 473 feet and the normal pool depth of the Ohio River is that area is approximately 485 feet, indicating that screens remain submerged at all times. Water withdrawn from the cooling water intake structure by Spurlock Station is used for makeup to the stations four cooling towers. Spurlock Station has three raw water pumps in the intake structure that provide the makeup water. Each pump has a design capacity of 5,000 gpm, resulting in a 15,000gpm maximum design capacity for makeup. International Paper has two 2,000-gpm constant –speed pumps. Under normal operations, one of the raw water makeup pumps will run continuously. Spurlock Station has four mechanical draft cooling towers with drift eliminators. Units 1, 3, and 4 are currently operated at 7 cycles of concentration on average, and Unit 2 is operated at 7.5 cycles of concentration on average. Well water from the facility groundwater wells can also be used for makeup on cooling tower unit 1. Approximately 50 percent of the cooling tower unit 1 makeup comes from the intake structure and the remaining 50 percent is well water. The maximum design intake flow (for both facilities combined) is 27.4 MGD (42.41 cfs), which is equivalent to 0.4% of the $7Q_{10}$. This is based upon all five of the intake pumps capacity. The through-screen design intake velocity at the point of withdrawal is 0.41 ft/s (with one screen out of service). The actual intake flow (for both facilities combined) is 8.83 MGD (13.67 cfs), which is equivalent to 0.13% of the $7Q_{10}$. The actual intake velocity is 0.13 ft/s (with one screen out of service). These figures are based on the annual average withdrawal rate during January 2015 – June 2017. Approximately 70 percent of all water withdrawn from the Ohio River is used for non-contact cooling, which is being used for makeup at the Spurlock Station cooling towers. There is no emergency intake at the facility.

5.8.2. Best Technology Available (BTA) Determination

The cooling water intake is approved as BTA for minimizing adverse environmental impact in accordance with the requirements in 40 CFR 125 Subpart J and section 316(b) of the Clean Water Act. The chosen impingement method of compliance is the closed-cycle recirculating system of 40 CFR 125.94(c)(1).

5.8.3. Intake Structure Standard Requirements

5.8.3.1. Future BTA Determinations for Cooling Water Intake Structure(s)

BTA determinations for entrainment mortality and impingement mortality at cooling water intake structures will be re-confirmed in each permit reissuance, in accordance with 40 CFR 125.90-98. In subsequent permit reissuance applications, the permittee shall provide all the information required in 40 CFR 122.21(r).

Also include an alternatives analysis report for compliance with the entrainment BTA requirements with the permit application. This alternatives analysis report for entrainment BTA shall examine the options for compliance with the entrainment BTA requirement and propose a candidate entrainment BTA to the Division for consideration during its next BTA determination. The analysis must, at least, narratively, address and consider the factors listed in 40 CFR 125.98(f)(2) and may consider the factors listed in 40 CFR 125.98(f)(3). The analysis must evaluate, at a minimum, closed cycle recirculation systems, fine mesh screens with a mesh size of 2mm or smaller, variable speed pumps, water reuse or alternate sources of cooling water, and any additional technology identified by the Division at a later date.

Exemptions from some permit application requirements are possible in accordance with 40 CFR 125.95(c) and 125.98(g), where information already submitted is sufficient. If an exemption is desired, a request for reduced application material requirements must be submitted at least 2 years and 6 months prior to permit expiration. Past submittals and previously conducted studies may satisfy some or all of the application material requirements.

5.8.3.2. Visual or Remote Inspection

The permittee shall conduct a weekly visual inspection or employ a remote monitoring device during periods when the cooling water intake is in operation. The inspection frequency shall be weekly to ensure the intakes are maintained and operated to function as designed.

5.8.3.3. Reporting Requirements for Cooling Water Intake

The permittee shall adhere to the reporting requirements listed below:

Discharge Monitoring Reports (DMRs)

The monitoring requirements for units at existing facilities under 40 CFR 125.96 for cooling water withdrawals, blowdown volume, and visual or remote inspections have been established at the appropriate outfalls and shall be reported on the DMR for those outfalls.

Annual certification Statement and Report

Submit an annual certification statement signed by the authorized representative with information on the following, no later than January 31st for the previous year:

- Certification that water intake structure technologies are being maintained and operated as set forth in this permit, or a justification to allow a modification of the practices.
- If there are substantial modifications to the operation of any unit that impacts the cooling water withdrawals or operation of the water intake structure, provide a summary of those changes.
- If the information contained in the previous year's annual certification is still applicable, the certification may simply state as such.

Reporting Records Retention

In accordance with 40 CFR 125.97 (d) records of all submissions that are part of the permit application and reporting requirements must be retained until the subsequent permit is issued to document compliance. Additionally, all records supporting the determination of BTA for entrainment under 40 CFR 125.98(f) or (g) must be retained until such time the determination of BTA for entrainment in the permit is revised.

5.8.3.4. Endangered Species Act

Nothing in this permit authorizes take for the purpose of a facility's compliance with the Endangered Species Act. Refer to 40 CFR 125.98(b)(1) and (2).

5.9. Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.12(b) (2), there shall be no discharge, from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this section.

5.10. Outfall 001 Additional Requirements for Total Recoverable Selenium

The monthly average discharge concentration for total recoverable selenium of 0.307 mg/l is a trigger that once exceeded, requires the permittee to collect and analyze fish tissue for selenium residue, and is not a permit violation if the fish tissue confirms compliance.

5.10.2. Tissue Collection and Analysis

The following requirements apply:

(1) Collection and analysis shall be performed within the calendar month following the calendar month the 0.307 mg/l monthly average trigger was exceeded;
(2) Fish tissue collection and analysis shall be performed in accordance with the DOW protocols specified in "Methods for the Collection of Selenium Residue in Fish Tissue Used to Determine KPDES Permit Compliance" **http://water.ky.gov/Pages/SurfaceWaterSOP.aspx**;
(3) Results of the analysis shall be reported as Total Recoverable Selenium (Fish Tissue) on the Discharge Monitoring Report (DMR) for the month during which the analysis were performed.

5.10.3. Results of Analysis

The results of the fish tissue shall be interpreted as follows:

(1) less than or equal to 8.6 mg/Kg dry weight selenium residue there is no permit violation;
(2) greater than 8.6 mg/Kg dry weight selenium residue there is a permit violation; and
(3) unable to obtain fish tissue, the 0.307 mg/l trigger becomes the effluent limitation and there is a permit violation

5.11. Outfall 008 Additional Requirements for Total Recoverable Selenium

5.11.1. Tissue Collection and Analysis

The following requirements apply:

(1) Collection and analysis shall be performed on an annual basis.
(2) Fish tissue collection and analysis shall be performed in accordance with the DOW protocols specified in "Methods for the Collection of Selenium Residue in Fish Tissue Used to Determine KPDES Permit Compliance" **http://water.ky.gov/Pages/SurfaceWaterSOP.aspx**. Due to the nature of the receiving steam the facility is permitted to begin the fish sampling at the first suitable permanent fish habitat in the Outfall 008 receiving stream. This would be the pool located below the manmade wetland diversion structure, approximately 725 m downstream from the outfall.

5.12. ORSANCO's Mercury Variance

The permittee requested a variance from ORSANCO's mercury standard of 0.000012 mg/l for effluent from this site which discharges to the Ohio River. The permittee is currently meeting Kentucky's water quality criteria for mercury. Mercury is a pollutant believed to be present in FGD wastewaters. The permittee is installing a new treatment system for FGD wastewaters in order to achieve compliance with new federal effluent limitation guidelines. Effluent from Outfall 001 will be partially comprised of treated FGD wastewaters, and the DOW believes the effluent will be able to continue meeting Kentucky's water quality criteria for mercury once the new treatment system is operational. The permittee is concerned the effluent will consistently meet ORSANCO's mercury standard. Given these circumstances, the DOW granted the variance ORSANCO's mercury standard and will apply Kentucky's water quality criteria for mercury for discharges to the Ohio River.

5.13. Combustion Residual Leachate

Pursuant to 40 CFR 423.11(r), the term combustion residual leachate ("leachate") means "leachate from landfills or surface impoundments containing combustion residuals. Leachate is composed of liquid, including any suspended or dissolved constituents in the liquid, that has percolated through waste or other materials emplaced in a landfill, or that passes through the surface impoundment's containment structure (*e.g.,* bottom, dikes, berms). Combustion residual leachate includes seepage and/or leakage from a combustion residual landfill or impoundment unit. Combustion residual leachate includes wastewater from landfills and surface impoundments located on non-adjoining property when under the operational control of the permitted facility."

This permit authorizes the discharge of leachate from outfall 008 and outfall 011. For newly discovered leachate seeps from a CCR surface impoundment or a CCR landfill, as defined at 40 CFR 257.53, to the surface that discharge or have a potential to discharge to a water of the commonwealth other than through outfall 008 or outfall 011, the permittee shall develop and implement a plan to address such surface seeps. The plan shall be included as part of the on-site BMP Plan and shall address, at a minimum, (1) scheduled inspections for identifying surface leachate seeps, (2) maintenance of CCR landfills and/or impoundments to minimize the potential for surface leachate seeps, and (3) corrective measures that will be implemented upon the discovery of a surface leachate seep that is not being controlled by a permitted outfall authorized for discharge of leachate. The permittee shall notify the DOW Surface Water Permits Branch and the appropriate DOW Field Office of planned corrective measures for any identified surface seeps of leachate as soon as feasible after discovery of such a leachate seep, but no later than ten (10) days after the discovery. Such corrective measures may include: (1) plans to reduce or eliminate the leachate seep to the surface; (2) actions to route the surface leachate seep (via a conveyance designed to contain the flow or eliminate the possibility of infiltration) to an outfall permitted to discharge leachate; and (3) combinations of actions to eliminate or, if elimination is not feasible, reduce and control a surface leachate seep and ensure any discharge to a receiving stream is authorized by the permit. Please note that this does not exempt the permittee from 24-hour reporting Section 2.12 of the permit.

SECTION 6

MONITORING AND REPORTING REQUIREMENTS

6.1 MONITORING AND REPORTING REQUIREMENTS

6.1.1 KPDES Outfalls

Discharge samples and measurements shall be collected at the compliance point for each KPDES Outfall identified in this permit. Each sample shall be representative of the volume and nature of the monitored discharge.

6.1.2 Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit, i.e. the Method Minimum Level shall be at or below the effluent limit. In the instance where an EPA-approved method does not exist that has a Method Minimum Level at or below the established effluent limitation, the permittee shall:

(1) Use the method specified in the permit; or

(2) The EPA-approved method with an ML that is nearest to the established effluent limit.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

6.1.3 Certified Laboratory Requirements

All laboratory analyses and tests required to demonstrate compliance with the conditions of this permit shall be performed by a laboratory holding the appropriate general or field-only certification issued by the Cabinet pursuant to 401 KAR 5:320.

6.1.4 Submission of DMRs

The completed DMR for each monitoring period must be entered into the DOW approved electronic system no later than midnight on the 28th day of the month following the monitoring period for which monitoring results were obtained.

For more information regarding electronic submittal of DMRs, please visit the Division's website at: http://water.ky.gov/permitting/Pages/netDMRInformation.aspx or contact the DMR Coordinator at (502) 564-3410.

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 7
RESPONSIBLE PARTY: Jerry B. Purvis

Request 7. Reference the Purvis testimony, p. 27, lines 8-11, wherein he states, "Often, however; the same control equipment used to meet ELGs will ensure compliance with WQBELs." Will the proposed CPR project in fact allow EKPC to attain compliance with the requirements of both such regulations?

Response 7. Yes. The CPR pond will collect storm water from the coal pile, and after settling, the coal fines will be removed from the pond mechanically as needed and returned to the coal pile. In addition, the CPR pond contents will be decanted, and pumped forward to the WMB pond where the pH, as needed, will be adjusted before discharging to EKPC's primary and secondary lagoons and out to the Ohio River. Essentially, EKPC's new Flue Gas Desulfurization waste water system will satisfy the ELG rule, and combine with the stormwater runoff from the CPR pond in the WMB system to control and meet the Kentucky Water Quality-Based Effluent Limits ("WQBEL") before discharging to the Ohio River.

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 8
RESPONSIBLE PARTY: Craig A. Johnson

Request 8. Reference the Johnson testimony, p. 13, line 9. Identify EKPC's design engineer for the CPR Project.

Response 8. Burns & McDonnell was selected for development of the Project Scoping Report for this project. A contract for the detailed design of the facility has not been awarded.

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 9
RESPONSIBLE PARTY: Craig Johnson and Sam Yoder

Request 9. Reference the Burns & McDonnell ("BMcD") Scoping Report ("the Report") attached as Exhibit SY-2 to the Yoder testimony. In the Report's Executive Summary, p. 1-1, the statement is made that, "The design storm chosen for analysis was the 10-year, 24- hour event."

Request 9a. Identify who "chose" the design storm, including the names and titles of the individuals involved in the decision, and whether they are employed by EKPC or BMcD.

Response 9a. EKPC chose the 10-year, 24-hour design storm. The individuals involved in the decisions to choose the design storms are listed below:

Patrick Bischoff, P.E. – Sr. Engineer (EKPC)

Matt Clark, P.E. – Sr. Engineer (EKPC)

Craig Johnson, P.E – Sr. Vice President (EKPC)

Jerry Purvis – Vice President (EKPC)

Request 9b. Identify any and all alternatives BMcD considered to the design storm referenced in the Report.

Response 9b. A more conservative 25-year, 24-hour design storm was considered by EKPC for design of the principal spillway but found to be unnecessary and cost prohibitive.

Request 9c. At p. 1-2, the Report states, "Prior to the development of this Project Scoping Report (PSR), a stormwater model was developed by BMcD and utilized to provide a screening level Stormwater Management Report for Spurlock." Identify precisely where in the application this stormwater model can be found. If it is not included, provide copies.

Response 9c. The stormwater model is a licensed software application named XPSWMM that cannot be provided.

Request 9d. Provide any documentation EKPC may have of volumes discharged through outfalls from the existing CPR pond after heavy rain events that would not have been discharged had the additional design enhancements as proposed in the current application been in place.

Response 9d. Below is a list of overflow events for the existing CPR pond since it was last modified in 2016. This is public information from EKPC's Discharge Monitoring Report. It is reasonable to assume that these events would not have resulted in discharges through the emergency overflow had the proposed facility been in service, with the exception of the July 17, 2017 event.

Date	Flow (MGD)
Sep-18	0.063
Feb-18	0.126
Jul-17	0.2535
Jun-17	0.063
Mar-17	0.042
Dec-16	0.127

Request 9e. Reference the Report's Table 1-1, at p. 1-1, the optional "CPR Pond Supplemental Wall." Is the price of this three-foot high concrete Supplemental Wall included in the project's estimate, or would construction of this optional Supplemental Wall require additional sums?

(i) If additional sums would be required, provide the amount of those additional sums.

(ii) Has EKPC decided to build the optional Supplemental Wall? If so, does it plan to amend its CPCN application? If EKPC decides to build the optional Supplemental Wall at a later date, will it file a new CPCN application?

Response 9e. EKPC has elected to construct the three-foot wall atop the earthen embankment as part of this project to provide the required amount of free board to meet the design criteria described above. The cost of the Supplemental Wall is included in the project estimate and therefore is considered part of this CPCN Application.

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2018-00270
RESPONSE TO INFORMATION REQUEST

ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 10
RESPONSIBLE PARTY: Jerry B. Purvis

Request 10. Reference the Report, pp. 1-1 through 1-2, where it is stated, "Additionally, the scope does not include chemical treatment of the coal pile runoff or other on-Chemical Metal Cleaning (NCMC) wastes which may come from air heater washes, boiler washes, precipitator washes, or similar."

Request 10a. Under what circumstances does EKPC anticipate that chemical treatment of the coal pile runoff or of Non-Chemical Metal Cleaning wastes would be required? Identify the federal or state regulation(s) that would require any such treatment.

Response 10a. The EPA's ELG Rule discussed Non-Chemical Metal Cleaning ("NCMC") wastes briefly and left its regulatory status as "reserved" citing that it did not have enough data to provide guidance, regulation or effluent limitations. As a result, until the EPA sets an ELG standard, states are authorized and encouraged by the EPA to regulate NCMC wastes on a case-by-case basis using "best professional judgment." See 80 Fed. Reg. 67884 (Nov. 3, 2015). Under the ELG provisions, regulated waste streams must meet established effluent limitations before

commingling with other waste streams, unless a combined waste stream formula can be applied. If NCMC wastes become subject to any future case-by-case limits or promulgated ELGs, EKPC would have to file an application with KDOW and possibly seek recovery under the Environmental Surcharge for the required treatment system. The same is true if more stringent ELGs are established for CPR.

Request 10b. Has EKPC produced a cost estimate for any such treatment? If so, identify where that estimate is included in the application. If not, provide copies of the estimate.

Response 10b. No estimated costs for pH or metal control of NCMW wastes have been developed.

Request 10c. Would EKPC file a new CPCN application if any such treatment becomes necessary?

Response 10c. Yes. A permit modification may be required to include the exemption for the TSS limit for 10-year storm events after the CPR pond improvements are completed. EKPC would seek a CPCN for such modifications if required to do so by Kentucky law. If any material cost to control NCMC wastes or coal pile runoff for the CPR results or becomes necessary, EKPC would consider filing it as a supplemental environmental project under the environmental surcharge for recovery.

EAST KENTUCKY POWER COOPERATIVE, INC.
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ATTORNEY GENERAL'S INITIAL REQUEST FOR INFORMATION DATED 11/05/18
REQUEST 11
RESPONSIBLE PARTY: Craig A. Johnson

Request 11. Reference the Commission Staff's first data requests, question numbers 3 and 11. Does EKPC have any other environmental projects underway at either its Spurlock or Cooper stations, or both, that have not been identified in the instant application?

Response 11.

Yes. Please refer to the list below for projects not currently included in the Environmental Compliance Plan.

Project Name	Completion (A) Actual (E) Estimated	Project Costs (A) Actual (E) Estimated
Cooper Treatment Plant pH Adjustment	Fall 2019 (E)	$51,750 (E)
Cooper Inlet Hopper Discharge Modification	June 12, 2018 (A)	$359,592 (A)
Spurlock Unit 2 SCR Sonic Horns	December 9, 2017 (A)	$224,529 (A)
Spurlock Backup Limestone Conveyor	November 30, 2019 (E)	$3,420,000 (E)
Total All Projects		**$4,055,871**

Request 11a. If so: (i) Do any such projects, require the filing of a CPCN application?

(ii) Are any such projects incurring costs?

Response 11a. (i) No, EKPC believes the environmental projects listed above will not require CPCN application to be filed.

(ii) Yes, the projects are in various stages of development, design, procurement, and execution.