State Permit Number WPCC 3256D/74
NPDES Permit Number DE0000256
Effective Date: August 1, 2018
Expiration Date: July 31, 2023

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

AND THE LAWS OF THE

STATE OF DELAWARE

In compliance with the provisions of the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251 et seq.) (hereinafter referred to as "the Act"), and pursuant to the provisions of 7 Del. C., 6003

Delaware City Refining Company LLC
4550 Wrangle Hill Road
Delaware City, Delaware 19706

is authorized to discharge from its facilities (Point Sources 001, 002, 003A, 003B, 004, 005, 006, 007, 008, 009, 010, 011, 016, 017, 031, 032, 033, 034, 035, 036, 043, 044, 045, 046, 053, 054, 055, 101, 201, 301, 401, 501a, 501b, 601, and 701) located at

Delaware City, Delaware

to receiving waters named

Delaware River (Points Sources 001, 002, 003A, 009, 011, 016, 017, 031, 032, 033, 034, 035, 036, 101, 201, 301, 401, and 601)
Cedar Creek (Point Sources 003B, 004, 008, 501a, and 701)
Dragon Run Creek (Point Sources 005, 007, 053, 054, 055, and 501b)
Red Lion Creek (Point Sources 006, 043, 044, 045, and 046)

The effluent limitations, monitoring requirements and other permit conditions are set forth in Part I, II and III hereof.

Bryan A. Ashby

Bryan A. Ashby, Manager
Surface Water Discharges Section
Division of Water
Department of Natural Resources
and Environmental Control

7/13/18
Date Signed

Part I

A. General Description of Discharges and Facilities

1. Permitted Discharges

Outfall	Outfall Description
001	Combined total discharge to the Delaware River. Consists of discharge 101 (which is out of service, as of the permit effective date); discharge 201 (including the discharge from Outfall 601); discharge 301; and discharge 401.
002	Storm water runoff from the Piers area.
003A	Storm water runoff from vegetated areas between the railways and tank farms, raw material railcar unloading areas, and pipeline to the Pipeline Booster Station. Storm water collects in basins within the drainage area and is periodically released using a Dunphy Valve to control the flow to the cooling water discharge channel.
003B	Storm water runoff from the downslope portion of the WWTP.
004	Storm water runoff from the southeast WWTF area, the former Frozen Earth Storage area, and equipment laydown area.
005	Storm water runoff from west of the southern refinery process areas (the process areas include rail lines, the Air Liquide CO2 facility, parking lots, equipment storage, and shop areas), and undeveloped areas within the refinery and public roads.
006	Storm water runoff from west of the northern refinery process areas, including rail lines; the south side of the closed industrial waste landfill and surrounding swales; the closed fly ash pond; the coke storage and loading area; the former SGS loading area; and parking lots and run-on from public roads.
007	Storm water runoff from parking lot, gatehouse, public roads, and truck scales.
008	Storm water runoff from the River Water Pump Station area.
009	Storm water runoff from plant areas south of railroad tracks, from west of Route 9, and from public roads.
011	Combined discharge to Outfall 401 prior to noncontact cooling water. The discharge is divided into the following discharges: a. clarifier and filter sampling taps, b. zeolite regeneration, c. neutralization basin effluent, and d. boiler blowdown to the flash drum.
016	Discharges from the east side of the power plant area including floor drains within the east side of the building; fire hydrant flushes; equipment wash water; steam condensate; equipment drainage water; and storm water from the east side of the power plant area, power plant roof drains, substation, two buildings, and parking lots.
017	Discharges from floor drains within the west side of the power plant building.

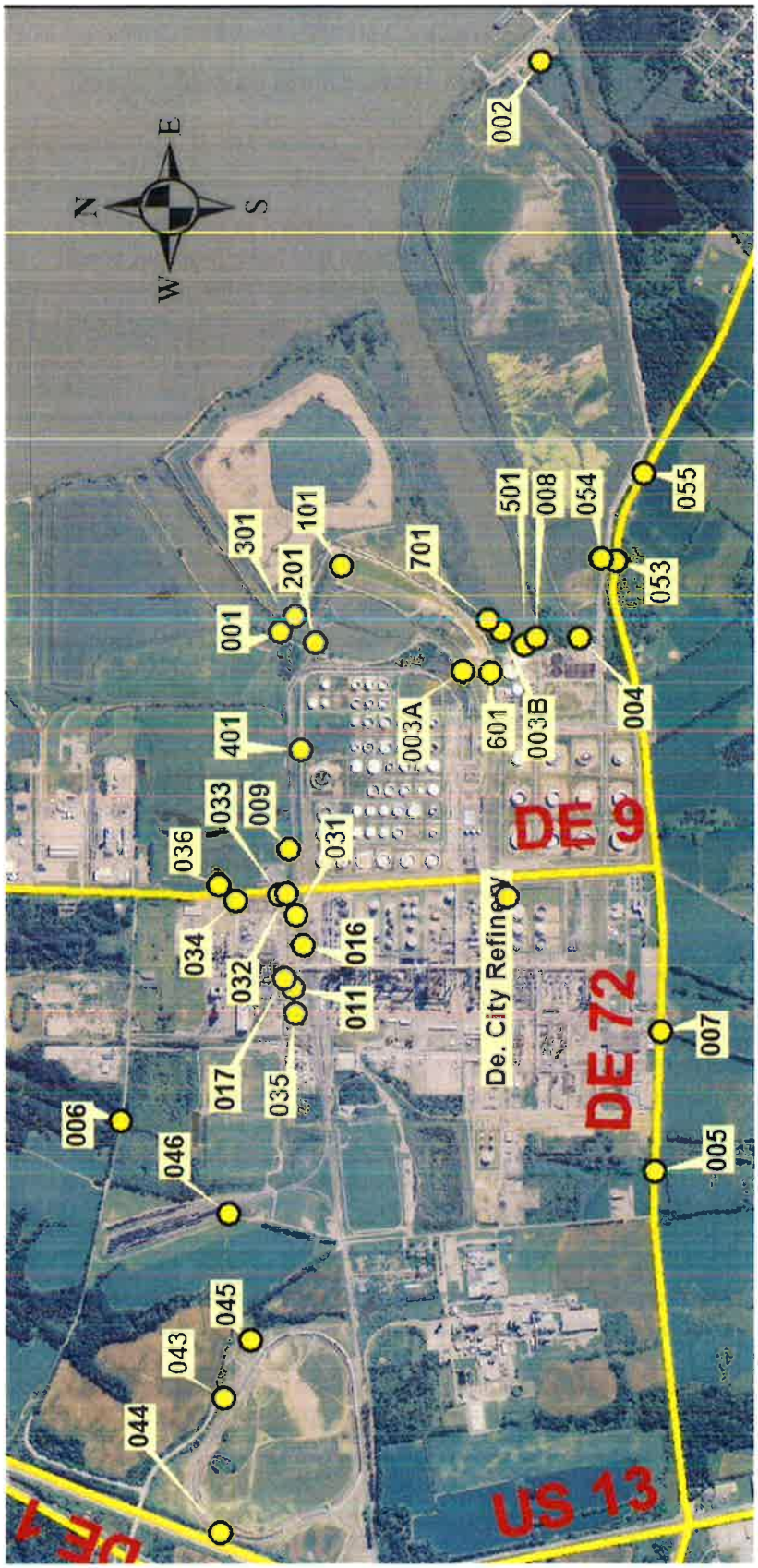
A. General Description of Discharges and Facilities

1. Permitted Discharges (Continued)

Outfall	Outfall Description
031	Storm water runoff from non-operational lay down area; grassed areas south of T Street.
032	Storm water runoff from the former main entrance guard house.
033	Storm water runoff from southern section of Reybold substation, grassed area, and paved parking lot.
034	Storm water runoff employee parking lot, peaking unit switch gear, contractors work area, non-impacted storm water from Power Plant oil tank impoundment, northern area of Reybold substation, grassed area, River Road entrance and guard house and coke drop-out box
035	Concentrate from the mobile Reverse Osmosis Units prior to discharge to 401 at two locations.
036	Discharge from settling Pond #3 which receives storm water runoff from the Air Separation Unit (process no longer in service), Star Switch Station, Power Block Area, and Coke Gasification Area (process no longer operational).
043	Overflow from storm water infiltration basin spillway on north side of Rail Loop.
044	Storm water discharge via overland flow from west side of Rail Loop.
045	Storm water discharge via overland flow from east side of Rail Loop.
046	Storm water run-off from Rail "Storage In Transit" (SIT) Yard.
053	Storm water run-off from pipe rack that runs from the piers to the refining area.
054	Storm water run-off from pipe rack that runs from the piers to the refining area.
055	Storm water run-off from pipe rack that runs from the piers to the refining area.
101	Weir underflow from Guard Basin No. 4. The only water entering Guard Basin 4, at this time, is rainwater that falls onto the footprint of the basin and storm water from the immediately adjacent and contiguous remediation cell of the former sediments from Guard Basin 4 and from the remediation area of the former "Oily spoils area". Both of these remediation sites are under the control of a former owner of the facility. WWTF effluent is currently bypassed from Guard Basin 4 to Guard Basins 5 and 6 until a final completion of remedy determination is issued for the remediation activity of Guard Basin 4. Additionally, all storm water that would have previously been directed to Guard Basin 4 from refinery drainage areas is being redirected to Guard Basins 5 and 6 until final remediation of Guard Basin 4.
201	Weir underflow from Guard Basins 5 and 6 consisting of non-contact cooling water, WWTF effluent (Outfall 601) and storm water that, as of the permit effective date, are bypassed away from Guard Basin 4.
301	Discharge from API Separator No. 2 used to treat skimmings from Guard Basins 5 and 6. This Separator will also treat the skimmings from Guard Basin 4 if it is returned to service.
401	Includes discharges from Outfalls 011, 016, 017, 031, 032, 033 and 035; once-through noncontact cooling water from condensers serving the electric generating unit, water treatment plant degasifiers topping turbine and DuPont Acid Plant; fire hydrant flushes; equipment wash water; steam condensate and equipment drainage water from the west side of the power plant area and water treatment plant; Storm water from the west side of the power plant area, water treatment plant area, power plant and water treatment plant roof drains, former Stack Gas Scrubber area; as well as an intermittent discharge from the DuPont Acid Plant storm water pond which consists of boiler blowdown water, condensate and storm water.
501a	Intake screen wash water return to intake channel.
501b	The discharge point of the new fish return system to be located in Dragon Run Creek.
601	Effluent from WWTF. The WWTF provides treatment for process wastewater and contaminated storm water runoff from process and surrounding area, tank farms, and the landfill / land treatment areas.
701	Effluent cooling water recycles into the intake channel for deicing the intake screens during severe cold weather and to increase intake volume during periods of low flow in the intake channel.

A. General Description of Discharges and Facilities (continued)

2. Site and Outfalls Locations Map

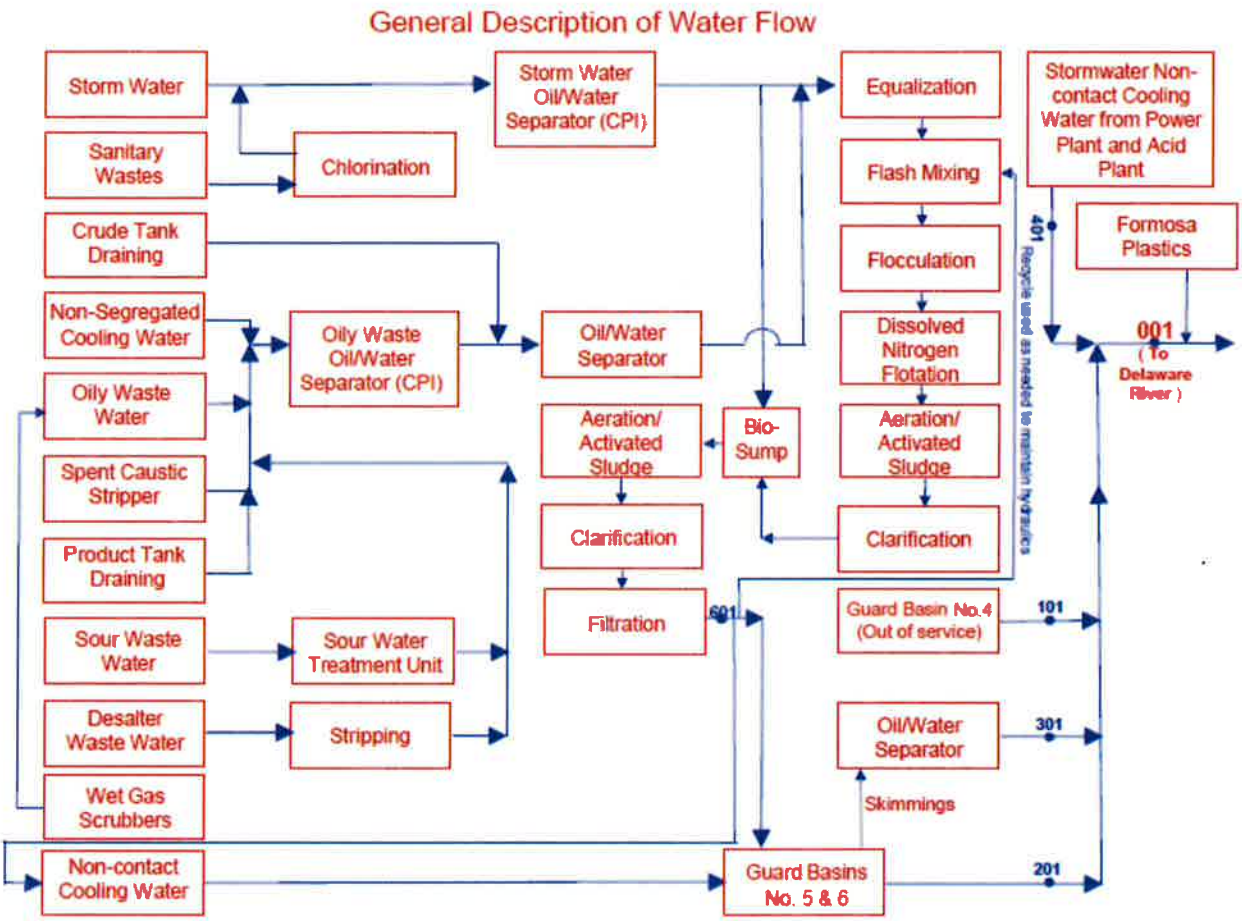


Outfall	Coordinates (Decimal Degrees)	
	Latitude	Longitude
001	39.59303809	-75.61909321
002	39.58433534	-75.59436852
003A	39.58691457	-75.62077198
003B	39.58564883	-75.6190051
004	39.58300607	-75.61934221
005	39.58047336	-75.64238913
006	39.59836116	-75.64030575
007	39.58027774	-75.63636127
008	39.58447214	-75.61933314
009	39.59273144	-75.62851383
011	39.59260718	-75.63454223
016	39.59225796	-75.63265837
017	39.59289253	-75.63410739
031	39.59250347	-75.63136156
032	39.5928236	-75.63042373
033	39.59305624	-75.63049387
034	39.59451373	-75.63073532
035	39.59252897	-75.63564108
036	39.59508634	-75.63008194
043	39.59487224	-75.65226063
044	39.59496967	-75.65805473
045	39.59400277	-75.64971412
046	39.59474234	-75.64429968
053	39.58182987	-75.61598807
054	39.58229487	-75.61590762
055	39.58089731	-75.61221221
101	39.59100043	-75.61625311
201	39.59188835	-75.61958329
301	39.59255547	-75.61841602
401	39.59233267	-75.62416776
501a	39.58486087	-75.61963884
501b*	39.58303055	-75.59495555
601	39.58599208	-75.62084387
701	39.5860743	-75.61853276

*Coordinates listed as based on design drawings. Exact coordinates to be provided following installation and completion of "as-built" drawings.

A. General Description of Discharges and Facilities (continued)

3. General Description of Water Flows – Refinery



B. Effluent Limitations and Monitoring Requirements

1. Outfall 001 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 001[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow[2]	452		mgd	---	---	---	Once per day	Pump Curves
Flow	The twelve-month rolling average flow shall be not more than 303 mgd.						Monthly	Pump Curves
pH	The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units.						Once per day	Grab
Oil & Grease	---	---	lbs/day	7.0	10.0	mg/L	Once per week	Multiple Grabs[3]
Total Residual Chlorine	---	---	---	---	0.2	mg/L	Once per week while chlorinating	Multiple Grabs[4]
Temperature	---	---	---		110	°F	Continuous	Recording
Biomonitoring	See Part III.A., Special Conditions Nos. 8, 9, and 10, beginning on page 48 of this permit.						Once per quarterly	Composite
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: final outfall to the river, in the sluiceway.

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1 Combined final discharge to the Delaware River. See detailed discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 001 in the monthly Discharge Monitoring Report (DMR).

3 See Part III.A., Special Conditions Nos. 14 and 16.

4 See Part III.A., Special Conditions No. 16.

B. Effluent Limitations and Monitoring Requirements (continued)

2. Outfalls 002, 003A, 003B 004, 005, 006, 007, 008, 009, 031, 032, 033, 034, 036, 043, 044, 045, 046, 053, 054, and 055 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point sources 002, 003A, 003B 004, 005, 006, 007, 008, 009, 031, 032, 033, 034, 036, 043, 044, 045, 046, 053, 054, and 055[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow		---	GPM	---	---	---	Once per year	Estimate
Nitrogen, Total (as N)	---	---	---		---	mg/L	Once per year	Grab
Phosphorus, Total (as P)	---	---	---		---	mg/L	Once per year	Grab
Enterococcus	---	---	---		---	Col/ 100mL	Once per year	Grab
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								
Only storm water may be discharged from these Outfalls.								
See Part III.A., Special Condition No. 20.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

The monitoring requirements in the Table above apply only to storm water Outfalls 005, 006, 007, 043, 044, 045, 046, 053, 054, and 055. Some Outfalls listed on this page may be sampled as substantially identical to and representative of other Outfalls, but only if approved by the Department in writing. Samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches and at least seventy-two (72) consecutive hours from the previously measurable (greater than 0.1 inch rainfall) storm event. All samples shall be taken within thirty (30) minutes after discharge starts, or as soon as practicable. No sample shall be taken under circumstances that have potential to endanger the person taking the sample.

Outfalls 053, 054, and 055 discharge into onsite depresssional storage. Sampling and monitoring is only required if discharge occurs from the depressional storage to offsite conveyances.

See Part III.A., Special Conditions Nos. 3 and 11.

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1 See discharge descriptions beginning on page 2.

B. Effluent Limitations and Monitoring Requirements (continued)

3. Outfall 011(a) through (d) – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 011(a) through (d)[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow[2]	0.675		mgd	---	---	---	Once per month	Calculate
pH	The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units.						Once per month	Grab
Total Suspended Solids	112	203	lbs/day	22	40	mg/L	Once per quarter	Composite[3]
Oil & Grease	50	101	lbs/day	10	20	mg/L	Once per quarter	Multiple Grabs[3]
Iron, Total	11.3	17.0	lbs/day	2	3	mg/L	Once per quarter	Composite[3]
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: at the individual discharge points of 011a through 011d for all parameters except pH. The pH sample shall be taken at the discharge of the south demineralizer basin.

1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows in the monthly Discharge Monitoring Report (DMR).

3 Grab samples shall be taken once per quarter for 011a and d; 24-hour composite samples shall be taken once per quarter for 011b and c. Except for oil & grease, these samples shall be blended into one sample in proportion to their individual flow volumes. The combined sample shall then be tested for total suspended solids and total iron. For oil & grease, see Part III.A., Special Conditions Nos. 14 and 16.

B. Effluent Limitations and Monitoring Requirements (continued)

4. Outfall 016 and 017 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point sources 016 and 017[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow[2]			mgd	---	---	---	Once per month	Estimate
Total Suspended Solids			lbs/day	30.0	100.0	mg/L	Once per year	Grab
Oil & Grease			lbs/day	10.0	13.0	mg/L	Once per year	Grab
pH	The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units.						Once per year	Grab
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: for point source 016, the storm water catchment in the east side of the parking lot; and for point source 017, the manhole at the southern portion of the power plant building (near the lab) prior to its mixing with other wastewater streams.

See Part III.A., Special Condition No. 11.

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1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily dry weather flows for point sources 016 and 017 on the Discharge Monitoring Reports. The Department will review flow data, to be submitted with the Discharge Monitoring Reports, to determine the need for flow and mass load limits.

B. Effluent Limitations and Monitoring Requirements (continued)

5. Outfall 035 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 035[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow[2]			mgd	---	---	---	Once per month	Estimate
Total Suspended Solids			lbs/day	30.0	100.0	mg/L	Once per month	Grab
Oil & Grease			lbs/day	10.0	20.0	mg/L	Once per month	Multiple Grabs[3]
pH	The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units.						Once per week	Grab
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Outfall 035 is an intermittent discharge. Samples are required during a monitoring period only if a discharge occurs during that monitoring period. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at the discharge of Mobile Reverse Osmosis Units, prior to mixing with the other wastewater streams.

1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 035 in the monthly Discharge Monitoring Report (DMR).

3 See Part III.A., Special Condition Nos. 14 and 16.

B. Effluent Limitations and Monitoring Requirements (continued)

6. Outfall 101 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 101[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration			Measurement Frequency	Sample Type
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units		
Flow[2]			mgd	---	---	---	Continuous	Recording
The following limits and monitoring requirements apply while Guard Basin 4 is in service*								
Total Suspended Solids	---	---	lbs/day	29.0	65.0	mg/L	Once per week	Grab
Oil & Grease	---	---	lbs/day	10.0	15.0	mg/L	Once per week	Multiple Grab[3]

* As of the permit effective date, Guard Basin 4 is "out-of-service". The only water flowing into Guard Basin 4 is storm water that falls directly onto the footprint of the basin and storm water from the immediately adjacent and contiguous remediation cell of the former sediments from Guard Basin 4 and from the remediation area of the former "Oily spoils area". The flow from Outfall 601 is re-routed away from Guard Basin 4, and into Guard Basins 5 and 6.

Guard Basin 4 shall be considered "in service" if any water enters Guard Basin 4 other than storm water that falls onto the footprint of the basin and storm water from the immediately adjacent and contiguous remediation cell of the former sediments from Guard Basin 4, or from the remediation area of the former "Oily spoils area".

The permittee shall notify the Department, in accordance with requirements under Part II.A.2 "Notification" beginning on page 37 below, if Guard Basin 4 will be returned to service.

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the discharge of Guard Basin 4, if Guard Basin 4 has been returned to service.

See Part III.A., Special Conditions Nos.11 and 13.

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1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 101 in the monthly Discharge Monitoring Report (DMR).

3 See Part III.A., Special Conditions Nos. 14 and 16.

B. Effluent Limitations and Monitoring Requirements (continued)

7. Outfall 201 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 201[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Flow[2]	398.0		mgd	---	---	---	Once per day	Pump Curves
Total Organic Carbon	---	---	lbs/day	---	5[3]	mg/L	Three times per week	Composite

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at Outfall 201 prior to mixing with combined discharge to Outfall 001.

1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 201 on the Discharge Monitoring Reports.

3 This limitation of 5 mg/L of total organic carbon (TOC) is a net limitation which shall be obtained by subtracting the TOC concentration of the intake river water from the corresponding TOC concentration of discharge 201.

B. Effluent Limitations and Monitoring Requirements (continued)

8. Outfall 301 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 301[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration				
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units	Measurement Frequency	Sample Type
Oil & Grease	---	---	---	10.0	15.0	mg/L	Once per week	Multiple Grabs[2]

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at Outfall 301 prior to mixing with combined discharge to Outfall 001.

1 See discharge descriptions beginning on page 2.

2 See Part III.A., Special Conditions Nos. 14 and 16.

B. Effluent Limitations and Monitoring Requirements (continued)

9. Outfall 401 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 401[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration			Measurement Frequency	Sample Type
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units		
Flow[2]			mgd	---	---	---	Once per week	Measured
Turbine Heat Rejected	703×10^6	995×10^6	BTU/hr	---	---	---	Once per month	Calculate
Aluminum, Total			lbs/day			mg/L	Once per month	Composite[3]
BOD_5			lbs/day			mg/L	Once per month	Composite[3]
Iron, Total			lbs/day			mg/L	Once per month	Composite[3]
Total Organic Carbon			lbs/day		23	mg/L	Once per week	Grab
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at Outfall 401 prior to mixing with combined discharge to Outfall 001.

1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 401 on the Discharge Monitoring Reports.

3 Monitor both effluent and intake for aluminum, BOD_5, and iron. The intake shall be monitored at the point of water withdrawal from Cedar Creek.

B. Effluent Limitations and Monitoring Requirements (continued)

10. Outfall 501a and 501b– EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 501a[1] and 501b with a combined quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration			Measurement Frequency	Sample Type
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units		
Flow[2]	9.0		mgd	---	---	---	Once per week when discharging	Calculated
Total Residual Chlorine	Chlorination of this discharge is prohibited.							
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.								
Debris removed from the trash racks shall not be returned to the surface waters.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 501 in the monthly Discharge Monitoring Report (DMR).

B. Effluent Limitations and Monitoring Requirements (continued)

11. Outfall 601 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 601[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations[2]							Monitoring Requirements	
	Load			Concentration				Measurement Frequency	Sample Type
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Maximum Instantaneous	Units		
Flow[3]	13.0		mgd	---	---	---	---	Continuous	Recording
BOD_5	1867.0	3326.0	lbs/day	25.0	44.0	66.0	mg/L	Three per week	Composite
Total Suspended Solids	2198.0	3218.0	lbs/day	29.0	43.0	65.0	mg/L	Three per week	Composite
Oil & Grease	528.0	994.0	lbs/day	7.0	13.0	20.0	mg/L	Three per week	Multiple grabs[4]
Ammonia (as N)	864.0	1901.0	lbs/day	12.0	25.0	38.0	mg/L	Three per week	Composite
Total Organic Carbon	3174.0	5655.0	lbs/day	42.0	75.0	113.0	mg/L	Three per week	Composite
Sulfides	8.4	18.7	lbs/day	0.11	0.25	0.38	mg/L	Once per week[5]	Multiple Grabs6
Total Kjeldahl Nitrogen (as N)			lbs/day			---	mg/L	Once per month	Composite
Nitrates, Total (as N)			lbs/day			---	mg/L	Once per month	Composite
Nitrites, Total (as N)			lbs/day			---	mg/L	Once per month	Composite
Nitrogen, Total (as N)			lbs/day			---	mg/L	Once per month	Composite
Cyanide, Free			lbs/day			---	mg/L	Once per month	Composite
Iron, Total	218	328	lbs/day	2	3	---	mg/L	Once per month	Composite
Selenium, Total	2.2	3.3	lbs/day	0.02	0.03	---	mg/L	Once per month	Composite
Vanadium, Total			lbs/day			---	mg/L	Once per month	Composite
Phenolic Compounds	10.9	24.0	lbs/day	0.15	0.32	0.48	mg/L	Once per year	Composite
Chromium, Total	12.9	37.0	lbs/day	0.17	0.49	0.74	mg/L	Once per year	Composite
Chromium, Hexavalent	1.13	2.5	lbs/day	0.015	0.03	0.05	mg/L	Once per year	Composite
The discharge shall be free from floating solids, sludge deposits, debris, oil, and scum.									
Use of caustic produced using the mercury cell chlor-alkali process **is prohibited.**									

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: outfall of the wastewater treatment facility.

1 See discharge descriptions beginning on page 2.

2 Based upon a monthly average effluent flow of 9.0 mgd.

3 Report both average and maximum daily flows for Outfall 601 in the monthly Discharge Monitoring Report (DMR).

4 See Part III.A., Special Conditions Nos.14 and 16.

5 See Part III.A., Special Condition No.15.

6 See Part III.A., Special Condition No.16.

B. Effluent Limitations and Monitoring Requirements (continued)

12. Outfall 701 – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from point source 701[1] the quantity and quality of effluent specified below:

Parameter	Effluent Limitations						Monitoring Requirements	
	Load			Concentration			Measurement Frequency	Sample Type
	Daily Average	Daily Maximum	Units	Daily Average	Daily Maximum	Units		
Flow[2]			mgd	---	---	---	Once per day when discharging	Estimate
Temperature	---	---	---			°F	Once per day when discharging	I/S
Chlorination of this discharge is prohibited.								

Note: In the table above, a blank box indicates that a value must be reported, but there is no effluent limitation.

Other than flow and temperature, monitoring results for Outfall 201 are substantially identical to and representative of the quality of Outfall 701. Samples taken in compliance with the monitoring requirements specified above shall represent the discharge at the following location: discharge to the intake channel (Cedar Creek), prior to mixing with the intake channel.

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1 See discharge descriptions beginning on page 2.

2 Report both average and maximum daily flows for Outfall 701 in the monthly Discharge Monitoring Report (DMR). The permittee may open return valve 100%. The return valve is a gravity-fed recycle of warm effluent water; when the valve is 100% open, the best estimate is that the flow is 33 mgd.

C. Schedule of Compliance

1. The permittee shall comply with the requirements herein as soon as possible, but in no event later than the dates set forth in the following schedule:

   All submittals under this Schedule of Compliance, including formats of the submittals, shall be to the Department and are subject to the review by the Department. Upon request from the Department, the permittee shall provide information, including data collected to date in spreadsheet format (or other format deemed acceptable by the Department in writing), no later than 14 days after the request.

   No later than six (6) months after the permit effective date, the permittee shall submit plans detailing a projected schedule of milestones and how it will effectuate the studies, reports, and monitoring requirements below. Any studies involving aquatic life shall be for spawning years. Within these plans the permittee shall identify proposed peer reviewer(s) for studies conducted under §122.21(r)(10) through (12) of the 316(b) Rule for Department approval.

   a. Due on March 1 of each year after the effective date of this permit, the permittee shall submit an "Annual Report" for the activities of the previous calendar year ending December 31. The "Annual Report" shall update the progress towards completion of the installation of the chosen compliance path for impingement mortality and update the progress towards the completion of interim entrainment Best Technology Available (BTA) requirements to include the studies and other information required for the submittal of the next reapplication.

      The Annual Reports shall include, but are not limited to, the following:

      1) An update on the progress towards completion of the upgraded fish return system; including any updates on engineering work, construction and operating permit procurement, and installation and commissioning of the system.

      2) An update on the performance optimization study. The update will include the operational parameters that are being monitored to determine the optimal running conditions and the range of operation for each parameter that is being studied and any conclusions that have been made to date.

      3) An update on the progress towards completion on all of the studies required by 40 CFR 122.21(r). This update must include

         a) A list of all of the contractors, consultants, and laboratories that are being utilized for this work.

         b) A status update on each of the individual studies, this update will contain a detailed list of work completed, a list of work in progress, a list of work yet to begin, and projected schedules for that work.

         c) A list of sampling events, samples acquired, and analysis performed. If there are any results that indicate a need to alter the original study protocol, the results and a description of the change in the protocol will be included in the Annual Report.

d) Any determination that a change in protocol is needed will be accompanied by a report from the peer reviewer detailing their review of the results and whether or not they agree with the proposed change in protocol.

e) Each annual report will contain a review by the peer reviewer and a statement of whether the work is progressing as planned and predicted or if changes to the plan are recommended.

Nothing in this permit authorizes take for the purpose of a facility's compliance with the Endangered Species Act. DNREC and National Marine Fisheries Service (NMFS) completed the technical assistance process and it was determined that no incidental take permit is needed at this time. If the permittee identifies an impinged Atlantic or Shortnose sturgeon at the Modified Traveling Screens, then the permittee must contact NMFS within 24 hours to report the observation of impinged sturgeon. At that time, the permittee may be required to seek incidental take coverage under either a Section 10 permit or under the Biological Opinion for the final section 316(b) rule dated May 19, 2014.

b. Best Technology Available (BTA) for Cooling Water Intake Structures[1]

In accordance with Section 316(b) of the Clean Water Act, the location, design, construction, and capacity of the cooling water intake structures shall reflect the BTA for minimizing adverse environmental impact.

1) Application requirements regarding cooling water intake structures

All submittals below shall account for the effects of both impingement and entrainment on organisms from the Cooling Water Intakes through to their return to the source water, to a place that meets the regulatory definition to avoid reimpingement. For the purposes of this Schedule of Compliance, "Source Water" and "Source Waterbody" are considered to be the Delaware River; and the Cedar Creek inlet channel. The Cedar Creek inlet channel is considered to be part of the source water because it is functioning as an inlet of the Delaware River and it shares a common ecosystem with the Delaware River.

a) The permittee must submit to the Department for review the information required below. If the permittee intends to comply with the BTA (best technology available) standards for entrainment using a closed-cycle recirculating system as defined at 40 CFR 125.92(c), the Department may reduce or waive some or all of the information required under paragraphs i) through m) of this section.

i. *Additional information.* The permittee must also submit such additional information as the Department determines is necessary pursuant to 40 CFR 125.98(i).

ii. The permittee must also submit with its permit application all information received as a result of any communication with a Field Office of the Fish and Wildlife Service and/or Regional Office of the National Marine Fisheries Service.

b) *Source water physical data.* These include:

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

[1] See Part III.A., Special Condition No. 22.

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

iii. Locational maps.

c) *Cooling water* intake *structure data.* These include:

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

ii. Latitude and longitude in degrees, minutes, and seconds for each of the cooling water intake structures;

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

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

v. Engineering drawings of the cooling water intake structure.

d) *Source water baseline biological characterization data.* This information is required to characterize the biological community in the vicinity of the cooling water intake structure and to characterize the operation of the cooling water intake structures. This supporting information must include existing data, if available. The permittee may supplement the data using newly conducted field studies if the permittee chooses to do so.

The *Source Water Baseline Biological Characterization Data* must include following:

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

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

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

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

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

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

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

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

x. A list of fragile species, as defined at 40 CFR 125.92(m), at the facility. The permittee need only identify those species not already identified as fragile at 40 CFR 125.92(m).

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

e) *Cooling Water System Data.* The permittee must submit the following information for each cooling water intake structure used or intended to be used:

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

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

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

f) *Chosen Method(s) of Compliance with Impingement Mortality Standard.*

For purposes of requirements regarding impingement, all studies and submittals shall include assessments for re-impingement, as well as impingement.

The permittee must identify the chosen compliance method for the entire facility; alternatively, the permittee must identify the chosen compliance method for each cooling water intake structure at its facility. The permittee must identify any intake structure for which a BTA determination for Impingement Mortality under 40 CFR 125.94 (c)(11) or (12) is requested. In addition, the owner or operator that chooses to comply via 40 CFR 125.94 (c)(5) or (6) must also submit an *Impingement Technology Performance Optimization Study* as described below:

i. If the permittee chooses to comply with 40 CFR 125.94(c)(5), subject to the flexibility for timing provided in 40 CFR 125.95(a)(2), the *Impingement Technology Performance Optimization Study* must include two years of biological data collection measuring the reduction in impingement mortality achieved by the modified traveling screens as defined at 40 CFR 125.92(s) and demonstrating that the operation has been optimized to minimize impingement mortality. A complete description of the modified traveling screens and associated equipment must be included, including, for example, type of mesh, mesh slot size, pressure sprays and fish return mechanisms. A description of any biological data collection and data collection approach used in measuring impingement mortality must be included:

A) Collecting data no less frequently than monthly. The Department may establish more frequent data collection;

B) Biological data collection representative of the impingement and the impingement mortality at the intakes subject to this provision;

C) A taxonomic identification to the lowest taxon possible of all organisms collected;

D) The method in which naturally moribund organisms are identified and taken into account;

E) The method in which mortality due to holding times is taken into account;

F) If the facility entraps fish or shellfish, a count of entrapment, as defined at 40 CFR 125.92(j), as impingement mortality; and

G) The percent impingement mortality reflecting optimized operation of the modified traveling screen and all supporting calculations.

ii. If the permittee chooses to comply with 40 CFR 125.94(c)(6), the *Impingement Technology Performance Optimization Study* must include biological data measuring the reduction in impingement mortality achieved by operation of the system of technologies, operational measures and best management practices, and demonstrating that operation of the system has been optimized to minimize impingement mortality. This system of technologies, operational measures and best management practices may include flow reductions, seasonal operation, unit closure, credit for intake location, and behavioral deterrent systems. The permittee must document how each system element contributes to the system's performance. The permittee must include a minimum of two years of biological data measuring the reduction in impingement mortality achieved by the system. The permittee must also include a description of any sampling or data collection approach used in measuring the rate of impingement, impingement mortality, or flow reductions.

A) *Rate of Impingement.* If the demonstration relies in part on a credit for reductions in the rate of impingement in the system, the permittee must provide an estimate of those reductions to be used as credit towards reducing impingement mortality, and any relevant supporting documentation, including previously collected biological data, performance reviews, and previously conducted performance studies not already submitted to the Department. The submission of studies more than ten (10) years old must include an explanation of why the data are still relevant and representative of conditions at the facility and explain how the data should be interpreted using the definitions of impingement and entrapment at 40 CFR 125.92(n) and (j), respectively. The estimated reductions in rate of impingement must be based on a comparison of the system to a once-through cooling system with a traveling screen whose point of withdrawal from the surface water source is

located at the shoreline of the source waterbody. For impoundments that are waters of the United States in whole or in part, the facility's rate of impingement must be measured at a location within the cooling water intake system that the Department deems appropriate. In addition, the permittee must include two years of biological data collection demonstrating the rate of impingement resulting from the system. For this demonstration, the permittee must collect data no less frequently than monthly. The Department may establish more frequent data collection.

B) *Impingement Mortality.* If the demonstration relies in part on a credit for reductions in impingement mortality already obtained at the facility, the permittee must include two years of biological data collection demonstrating the level of impingement mortality the system is capable of achieving. The permittee must submit any relevant supporting documentation, including previously collected biological data, performance reviews, and previously conducted performance studies not already submitted to the Department. The permittee must provide a description of any sampling or data collection approach used in measuring impingement mortality. In addition, for this demonstration the permittee must:

(1) Collect data no less frequently than monthly. The Department may establish more frequent data collection;

(2) Conduct biological data collection that is representative of the impingement and the impingement mortality at an intake subject to this provision. In addition, the permittee must describe how the location of the cooling water intake structure in the waterbody and the water column are accounted for in the points of data collection;

(3) Include a taxonomic identification to the lowest taxon possible of all organisms to be collected;

(4) Describe the method in which naturally moribund organisms are identified and taken into account;

(5) Describe the method in which mortality due to holding times is taken into account; and

(6) If the facility entraps fish or shellfish, a count of the entrapment, as defined at 40 CFR 125.92(j), as impingement mortality.

C) *Flow reduction.* If the demonstration relies in part on flow reduction to reduce impingement, the permittee must include two years of intake flows, measured daily, as part of the demonstration, and describe the extent to which flow reductions are seasonal or intermittent. The permittee must document how the flow reduction results in reduced impingement. In addition, the permittee must describe how the reduction in impingement has reduced impingement mortality.

D) *Total system performance.* The permittee must document the percent impingement mortality reflecting optimized operation of the total system of technologies, operational measures, and best management practices and all supporting calculations. The total system performance is the combination of the impingement mortality performance reflected in paragraphs f)(ii)(A), (B), and (C) of this Schedule.

iii. During the course of the *Impingement Technology Performance Optimization Study*, the permittee will evaluate the interim results and make changes to the technology or

operating conditions if and as needed to ensure optimal performance of the screens and fish return. The final *Impingement Technology Performance Optimization Study* will identify observable operational measures that will ensure continued optimal performance of the screens and fish return. The permittee shall implement these optimization measures, as developed, and shall monitor the screens and fish return system, to ensure that the equipment is operating within the parameters set forth in the *Impingement Technology Performance Optimization Study*. DNREC may require modifications to the operational measures identified in the *Impingement Technology Performance Optimization Study*.

g) *Entrainment* Performance *Studies*. The permittee must submit any previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies. Any such submittals must include a description of each study, together with underlying data, and a summary of any conclusions or results. Any studies conducted at other locations must include an explanation as to why the data from other locations are relevant and representative of conditions at the facility. In the case of studies more than ten (10) years old, the permittee must explain why the data are still relevant and representative of conditions at the facility and explain how the data should be interpreted using the definition of entrainment at 40 CFR 125.92(h).

h) *Operational Status*. The permittee must submit a description of the operational status of each generating, production, or process unit that uses cooling water, including but not limited to:

i. For power production or steam generation, descriptions of individual unit operating status including age of each unit, capacity utilization rate (or equivalent) for the previous five (5) years, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, including identification of any operating unit with a capacity utilization rate of less than eight (8) percent averaged over a 24-month block contiguous period, and any major upgrades completed within the last fifteen (15) years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type;

ii. Descriptions of completed, approved, or scheduled updates and Nuclear Regulatory Commission relicensing status of each unit at nuclear facilities;

iii. For process units that use cooling water other than for power production or steam generation, if the permittee intends to use reductions in flow or changes in operations to meet the requirements of 40 CFR 125.94(c), descriptions of individual production processes and product lines, operating status including age of each line, seasonal operation, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, any major upgrades completed within the last 15 years, and plans or schedules for decommissioning or replacement of process units or production processes and product lines;

iv. For all manufacturing facilities, descriptions of current and future production schedules; and

v. Descriptions of plans or schedules for any new units planned within the next five (5) years.

i) *Entrainment Characterization Study*. The permittee must develop for submission to the Department an *Entrainment Characterization Study* that includes a minimum of two years of entrainment data collection.

For purposes of requirements regarding entrainment, all studies and submittals shall include assessments for re-impingement of converts, as well as entrainment.
The *Entrainment Characterization Study* must include the following components:

i. *Entrainment Data Collection Method.* The study should identify and document the data collection period and frequency. The study should identify and document organisms collected to the lowest taxon possible of all life stages of fish and shellfish that are in the vicinity of the cooling water intake structure(s) and are susceptible to entrainment, including any organisms identified by the Department, and any species protected under Federal, State, or Tribal law, including threatened or endangered species with a habitat range that includes waters in the vicinity of the cooling water intake structure. Biological data collection must be representative of the entrainment at the intakes subject to this provision. The owner or operator of the facility must identify and document how the location of the cooling water intake structure in the waterbody and the water column are accounted for by the data collection locations;

ii. *Biological Entrainment Characterization.* Characterization of all life stages of fish, shellfish, and any species protected under Federal, State, or Tribal law (including threatened or endangered species), including a description of their abundance and their temporal and spatial characteristics in the vicinity of the cooling water intake structure(s), based on sufficient data to characterize annual, seasonal, and diel variations in entrainment, including but not limited to variations related to climate and weather differences, spawning, feeding, and water column migration. This characterization may include historical data that are representative of the current operation of the facility and of biological conditions at the site. Identification of all life stages of fish and shellfish must include identification of any surrogate species used, and identification of data representing both motile and non-motile life-stages of organisms;

iii. *Analysis and Supporting Documentation.* Documentation of the current entrainment of all life stages of fish, shellfish, and any species protected under Federal, State, or Tribal law (including threatened or endangered species). The documentation may include historical data that are representative of the current operation of the facility and of biological conditions at the site. Entrainment data to support the facility's calculations must be collected during periods of representative operational flows for the cooling water intake structure, and the flows associated with the data collection must be documented. The method used to determine latent mortality along with data for specific organism mortality or survival that is applied to other life-stages or species must be identified. The owner or operator of the facility must identify and document all assumptions and calculations used to determine the total entrainment for that facility together with all methods and quality assurance/quality control procedures for data collection and data analysis. The proposed data collection and data analysis methods must be appropriate for a quantitative survey.

j) *Comprehensive Technical Feasibility and Cost Evaluation Study.* The permittee must develop for submission to the Department an engineering study of the technical feasibility and incremental costs of candidate entrainment control technologies. In addition, the study must include the following:

i. *Technical feasibility.* An evaluation of the technical feasibility of closed-cycle recirculating systems as defined at 40 CFR 125.92(c), fine mesh screens with a mesh size of 2 millimeters or smaller, and water reuse or alternate sources of cooling water. In addition, this study must include:

A) A description of all technologies and operational measures considered (including alternative designs of closed-cycle recirculating systems such as natural draft

cooling towers, mechanical draft cooling towers, hybrid designs, and compact or multi-cell arrangements);

B) A discussion of land availability, including an evaluation of adjacent land and acres potentially available due to generating unit retirements, production unit retirements, other buildings and equipment retirements, and potential for repurposing of areas devoted to ponds, coal piles, rail yards, transmission yards, and parking lots;

C) A discussion of available sources of process water, grey water, waste water, reclaimed water, or other waters of appropriate quantity and quality for use as some or all of the cooling water needs of the facility; and

D) Documentation of factors other than cost that may make a candidate technology impractical or infeasible for further evaluation.

ii. *Other entrainment control technologies.* An evaluation of additional technologies for reducing entrainment may be required by the Department.

iii. *Cost evaluations.* The study must include engineering cost estimates of all technologies considered in paragraphs j)(i) and (ii) of this Schedule. Facility costs must also be adjusted to estimate social costs. All costs must be presented as the net present value (NPV) and the corresponding annual value. Costs must be clearly labeled as compliance costs or social costs. The permittee must separately discuss facility level compliance costs and social costs, and provide documentation as follows:

A) Compliance costs are calculated as after-tax, while social costs are calculated as pre-tax. Compliance costs include the facility's administrative costs, including costs of permit application, while the social cost adjustment includes the Department's administrative costs. Any outages, downtime, or other impacts to facility net revenue, are included in compliance costs, while only that portion of lost net revenue that does not accrue to other producers can be included in social costs. Social costs must also be discounted using social discount rates of 3 percent and 7 percent. Assumptions regarding depreciation schedules, tax rates, interest rates, discount rates and related assumptions must be identified;

B) Costs and explanation of any additional facility modifications necessary to support construction and operation of technologies considered in paragraphs j)(i) and (ii) of this Schedule, including but not limited to relocation of existing buildings or equipment, reinforcement or upgrading of existing equipment, and additional construction and operating permits. Assumptions regarding depreciation schedules, interest rates, discount rates, useful life of the technology considered, and any related assumptions must be identified; and

C) Costs and explanation for addressing any non-water quality environmental and other impacts identified in paragraph l) of this section. The cost evaluation must include a discussion of all reasonable attempts to mitigate each of these impacts.

k) *Benefits Valuation Study.* The must develop for submission to the Department an evaluation of the benefits of the candidate entrainment reduction technologies and operational measures evaluated in paragraph j) of this section including using the Entrainment Characterization Study completed in paragraph i) of this section. Each category of benefits must be described narratively, and when possible, benefits should be quantified in physical or biological units and monetized using appropriate economic valuation methods. The benefits valuation study must include, but is not limited to, the following elements:

i. Incremental changes in the numbers of individual fish and shellfish lost due to impingement mortality and entrainment as defined in 40 CFR 125.92, for all life stages of each exposed species;

ii. Description of basis for any estimates of changes in the stock sizes or harvest levels of commercial and recreational fish or shellfish species or forage fish species;

iii. Description of basis for any monetized values assigned to changes in the stock size or harvest levels of commercial and recreational fish or shellfish species, forage fish, and to any other ecosystem or non use benefits;

iv. A discussion of mitigation efforts completed prior to October 14, 2014 including how long they have been in effect and how effective they have been;

v. Discussion, with quantification and monetization, where possible, of any other benefits expected to accrue to the environment and local communities, including but not limited to improvements for mammals, birds, and other organisms and aquatic habitats;

vi. Discussion, with quantification and monetization, where possible, of any benefits expected to result from any reductions in thermal discharges from entrainment technologies.

l) *Non-water Quality Environmental and Other Impacts Study.* The permittee must develop for submission to the Department a detailed facility-specific discussion of the changes in non-water quality environmental and other impacts attributed to each technology and operational measure considered in paragraph j) of this Schedule, including both impacts increased and impacts decreased. The study must include the following:

i. Estimates of changes to energy consumption, including but not limited to auxiliary power consumption and turbine backpressure energy penalty;

ii. Estimates of air pollutant emissions and of the human health and environmental impacts associated with such emissions;

iii. Estimates of changes in noise;

iv. A discussion of impacts to safety, including documentation of the potential for plumes, icing, and availability of emergency cooling water;

v. A discussion of facility reliability, including but not limited to facility availability, production of steam, impacts to production based on process unit heating or cooling, and reliability due to cooling water availability;

vi. Significant changes in consumption of water, including a facility-specific comparison of the evaporative losses of both once-through cooling and closed-cycle recirculating systems, and documentation of impacts attributable to changes in water consumption; and

vii. A discussion of all reasonable attempts to mitigate each of these factors.

m) *Peer Review.* If the applicant is required to submit studies under paragraphs j), k) and l) of this schedule the applicant must conduct an external peer review of each report to be submitted with the permit application. The applicant must select peer reviewers and notify the Director in advance of the peer review. The Director may disapprove of a peer reviewer or require additional peer reviewers. The Director may confer with EPA, Federal, State and

Tribal fish and wildlife management agencies with responsibility for fish and wildlife potentially affected by the cooling water intake structure, independent system operators, and state public utility regulatory agencies, to determine which peer review comments must be addressed. The applicant must provide an explanation for any significant reviewer comments not accepted. Peer reviewers must have appropriate qualifications and their names and credentials must be included in the peer review report.

2) Interim BTA Requirements for Impingement

a) The Modified Traveling Screens in the first bay of the intake structure were installed and began operating prior to May 31, 2015.

b) The Modified Traveling Screens in the second bay of the intake structure were installed and began operating prior to June 30, 2016.

c) The Modified Traveling Screens in the third bay of the intake structure were installed and began operating prior to June 30, 2017.

d) The permit requires that the Fish Return System will satisfy the provisions of Section 125.94(c) of the 316(b) Rule (as promulgated on August 15, 2014). The Delaware City Refining Company, LLC, submitted a design for the Fish Return System on June 24, 2016 for proposed compliance with this standard. The design includes a fish friendly Hidrostol pump to move fish from a large sump into the pressurized pipe. The pipe travels approximately 6,500 feet and discharges in the near-by Dragon Run Creek. This discharge location in Dragon Run Creek is near and directly connected to the source water body, and in a location protective of the fish being returned. DNREC approves this alternate discharge location. The permittee will ensure that the Fish Return System has sufficient water flow to return the fish to Dragon Run Creek in a manner that does not promote predation or re-impingement of the fish, or require a large vertical drop. The Fish Return System will be installed within 18 months following issuance of all necessary approvals from applicable governmental authorities.

e) The permittee shall provide access to and work cooperatively with DNREC to allow DNREC and/or DNREC's agent/contractor to install two acoustic monitoring stations at a mutually agreeable location that are capable of identifying the presence within Cedar Creek of fish that have been tagged by DNREC. The permittee will also provide access to DNREC and/or DNREC's agent/contractor to range test, collect data from, and maintain the acoustic monitoring stations. The permittee will reimburse DNREC for the costs of installing, operating, and maintaining the acoustic monitoring stations.

f) The Permittee has demonstrated that the stream flow in the Cedar Creek at low tide and maximum pumping conditions is below one foot per second on average. The Permittee shall calculate average daily stream velocity at the trash racks, considering the maximum daily intake flow and the maximum daily tidal in-flow, relative to the average 1 foot per second (ft/sec) stream velocity demonstration. The maximum daily tidal in-flow shall be calculated using the HEC-RAS hydraulic model, as outlined in the Fact Sheet. The permittee shall report the calculated maximum daily flow velocity monthly as supplemental data to the Discharge Monitoring Report.

3) Final BTA Requirements for Impingement

The permittee must comply with the impingement mortality standard specified below as soon as practicable following issuance of a final permit that establishes the entrainment requirements under 40 CFR § 125.94(d). The Secretary may establish interim compliance milestones in the permit.

a) *BTA Standards for Impingement Mortality.* The permittee must comply with one of the alternatives in paragraphs (c)(1) through (7) of 40 CFR §125.94, except as provided in paragraphs (c)(11) or (12) of §125.94, when approved by the Department. In addition, a facility may also be subject to the requirements of paragraphs (c)(8), (c)(9), or (g) of §125.94 if the Department requires such additional measures.

(1) *Closed-cycle recirculating system.* A facility must operate a closed-cycle recirculating system as defined at §125.92(c). In addition, the permittee must monitor the actual intake flows at a minimum frequency of daily. The monitoring must be representative of normal operating conditions, and must include measuring cooling water withdrawals, make-up water, and blow down volume.; or

(2) *0.5 Feet Per Second Through-Screen Design Velocity.* A facility must operate a cooling water intake structure that has a maximum design through-screen intake velocity of 0.5 feet per second. The permittee of the facility must submit information to the Department that demonstrates that the maximum design intake velocity as water passes through the structural components of a screen measured perpendicular to the screen mesh does not exceed 0.5 feet per second. The maximum velocity must be achieved under all conditions, including during minimum ambient source water surface elevations (based on best professional judgment "BPJ" using hydrological data) and during periods of maximum head loss across the screens or other devices during normal operation of the intake structure; or

(3) *0.5 Feet Per Second Through-Screen Actual Velocity.* A facility must operate a cooling water intake structure that has a maximum through-screen intake velocity of 0.5 feet per second. The permittee of the facility must submit information to the Department that demonstrates that the maximum intake velocity as water passes through the structural components of a screen measured perpendicular to the screen mesh does not exceed 0.5 feet per second. The maximum velocity must be achieved under all conditions, including during minimum ambient source water surface elevations (based on BPJ using hydrological data) and during periods of maximum head loss across the screens or other devices during normal operation of the intake structure. The Department may authorize the permittee of the facility to exceed the 0.5 fps velocity at an intake for brief periods for the purpose of maintaining the cooling water intake system, such as backwashing the screen face. If the intake does not have a screen, the maximum intake velocity perpendicular to the opening of the intake must not exceed 0.5 feet per second during minimum ambient source water surface elevations. In addition, the permittee must monitor the velocity at the screen at a minimum frequency of daily. In lieu of velocity monitoring at the screen face, the permittee may calculate the through-screen velocity using water flow, water depth, and the screen open areas; or

(4) *Existing offshore velocity cap.* A facility must operate an existing offshore velocity cap as defined at §125.92(v) that was installed on or before October 14, 2014. Offshore velocity caps installed after October 14, 2014 must make either a demonstration under paragraph (c)(6) of 40 CFR §125.94 or meet the performance standard under paragraph (c)(7) of 40 CFR §125.94. In addition, the permittee must monitor intake flow at a minimum frequency of daily; or

(5) *Modified traveling screens.* A facility must operate a modified traveling screen that the Department determines meets the definition at §125.92(s) and that, after review of the information required in the *impingement technology performance optimization study* at 40 CFR 122.21(r)(6)(i), the Department determines is the best technology available for impingement reduction at the site. As the basis for the Department's determination, the permittee of the facility must demonstrate the technology is or will be optimized to minimize impingement mortality of all non-fragile species. The Department must include verifiable and enforceable permit conditions that ensure the technology will perform as demonstrated; or

(6) *Systems of technologies as the BTA for impingement mortality.* A facility must operate a system of technologies, management practices, and operational measures, that, after review of the information required in the *impingement technology performance optimization* study at 40 CFR 122.21(r)(6)(ii), the Department determines is the best technology available for impingement reduction at the cooling water intake structures. As the basis for the Department's determination, the permittee of the facility must demonstrate the system of technology has been optimized to minimize impingement mortality of all non-fragile species. In addition, the Department's decision will be informed by comparing the impingement mortality performance data under 40 CFR 122.21(r)(6)(ii)(D) to the impingement mortality performance standard that would otherwise apply under paragraph (c)(7) of 40 CFR §125.94. The Department must include verifiable and enforceable permit conditions that ensure the system of technologies will perform as demonstrated; or

(7) *Impingement mortality performance standard.* A facility must achieve a 12-month impingement mortality performance standard of all life stages of fish and shellfish of no more than 24 percent mortality, including latent mortality, for all non-fragile species together that are collected or retained in a sieve with maximum opening dimension of 0.56 inches and kept for a holding period of 18 to 96 hours. The Department may, however, prescribe an alternative holding period. The permittee must conduct biological monitoring at a minimum frequency of monthly to demonstrate impingement mortality performance. Each month, the permittee must use all of the monitoring data collected during the previous 12 months to calculate the 12-month survival percentage. The 12-month impingement mortality performance standard is the total number of fish killed divided by the total number of fish impinged over the course of the entire 12 months. The permittee of the facility must choose whether to demonstrate compliance with this requirement for the entire facility, or for each individual cooling water intake structure for which paragraph (c)(7) 40 CFR §125.94 is the selected impingement mortality requirement.

(8) *Additional measures for shellfish.* The permittee must comply with any additional measures, such as seasonal deployment of barrier nets, established by the Department to protect shellfish.

(9) *Additional measures for other species.* The permittee must comply with any additional measures, established by the Department, to protect fragile species.

(10) *Reuse of other water for cooling purposes.* This impingement mortality standard does not apply to that portion of cooling water that is process water, gray water, waste water, reclaimed water, or other waters reused as cooling water in lieu of water obtained by marine, estuarine, or freshwater intakes.

4) Interim BTA Requirements for Entrainment

a) The permittee has submitted plans, received approval, completed construction and begun implementation of its "Effluent Recycle Project".

b) No later than fifty-four (54) months after the permit effective date, the permittee shall submit the results of the Impingement and Entrainment Studies, including all milestones and deliverables.

b. Compliance with Final Limits for Selenium for Outfall 601

1) No later than the effective date of the permit, the permittee shall begin trackdown of selenium sources for Outfall 601.

2) No later than twelve (12) months after the effective date of the permit, the permittee shall submit a "Report of Progress" to the Department regarding trackdown findings thus far, as well as options being considered to achieve compliance with the final limits for selenium for Outfall 601.

3) No later than twenty-four (24) months after the effective date of the permit, the permittee shall complete its evaluation and develop a compliance plan for selenium. The permittee shall submit a report to the Department for review; the report shall include the results of the trackdown efforts, the results of its evaluation, and a plan to achieve compliance with the final limits for selenium for Outfall 601.

4) No later than twenty-seven (27) months after the effective date of the permit, the permittee shall submit any applications needed for implementation of its compliance plan.

5) No later than thirty-six (36) months after the effective date of the permit, the permittee shall begin construction and operational changes to achieve compliance with the final limits for selenium for Outfall 601.

6) No later than forty-eight (48) months after the effective date of the permit, the permittee shall submit to the Department a Report of Progress towards achieving compliance with the final limits for selenium for Outfall 601.

7) No later than fifty-nine months after the permit effective date, the permittee shall achieve compliance with the final selenium limits for Outfall 601.

2. No later than fourteen (14) calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a Report of Progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

D. Monitoring and Reporting

1. Representative Sampling

   Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

   Monitoring results obtained during the previous one (1) month shall be summarized for each month and reported via the Department approved Electronically Generated Discharge Monitoring Report (eDMR).

   a. The permittee shall submit results via the eDMR. The eDMR must be electronically signed and submitted no later than the 28th day of the month following the completed reporting period. All other reports required herein, shall be submitted to the Department via email or by regular mail. The Department mailing address is:

      State of Delaware – DNREC
      Division of Water – Surface Water Discharges Section
      R & R Building
      89 King Highway
      Dover, DE 19901
      Telephone: (302) 739-9946

b. In the event of a catastrophic "electronic system failure", the permittee may submit/may be required to submit, results on a signed hard copy DMR (EPA Form No. 3320-1 or approved equivalent). This hard copy DMR must be postmarked no later than the 28th day of the month following the completed reporting period. SPECIAL NOTE: Departmental approval must be obtained prior to sending in any hard copy DMR, as the eDMR process is the only reporting method meeting the eReporting Federal reporting requirements.

3. Definitions

a. "Average daily loading" means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

b. "Average monthly discharge" or "daily average discharge" is the arithmetic mean of all daily discharges during a calendar month, calculated as the sum of all daily discharges sampled and/or measured during the month divided by the number of daily discharges sampled or measured during such month.

c. "Average monthly effluent limitation" or "daily average effluent limitation" means the highest allowable average of daily discharges over a calendar month.

d. "Best Management Practices" or "BMP's" means schedules of activities, prohibitions of practices, maintenance procedures and other management practices or measures to prevent or reduce the discharge of pollutants. BMP's include, but are not limited to: structural and nonstructural controls; treatment requirements; operating procedures and practices to control spills or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs can be applied before, during and after pollution generating activities to reduce or eliminate the introduction of pollutants into receiving waters.

e. "Biosolids" refers to the biomass or biological sludge generated or produced by biological wastewater treatment processes.

f. "Bypass" means the intentional diversion of wastes from any portion of a treatment facility.

g. "Composite sample" means a combination of individual samples obtained at specified intervals over a given time period, generally twenty-four (24) hours.

In collecting a composite sample of a discharge other than a discharge of storm water or storm runoff (a non-storm water discharge), either: a) the volume of each individual sample is proportional to the discharge flow rate or b) the sampling interval is proportional to the discharge flow rate and the volume of each individual sample is constant. For a continuous non-storm water discharge, a minimum of twenty-four (24) individual grab samples shall be collected and combined to constitute a twenty-four (24) hour composite sample. For intermittent non-storm water discharges four (4) hours or more in duration, the number of individual grab samples collected and combined to constitute a composite sample shall at a minimum be equal to the duration of the discharge in hours but not less than twelve (12). For intermittent non-storm water discharges of less than four (4) hours, the minimum number of individual grab samples collected and combined to constitute a composite sample shall be equal to the duration of the discharge in hours times three (3) but not less than three (3) samples.

h. "Daily discharge" means the total discharge measured during a calendar day or any twenty-four (24) hour period that reasonably represents the calendar day for sampling purposes. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of a pollutant discharged over a calendar day or the equivalent twenty-four (24) hour period. For pollutants with limitations expressed in other units of measurement, the daily discharge is

calculated as the average measurement of the pollutant over a calendar day or the equivalent twenty-four (24) hour period.

i. "Daily maximum effluent limitation" is the highest total mass of a pollutant allowed to be discharged during a calendar day or, in the case of a pollutant limited in terms other than mass, the highest average concentration or other measurement of the pollutant specified during the calendar day, or any twenty-four (24) hour period that reasonably represents the calendar day for sampling purposes.

j. "Daily maximum temperature" is the highest arithmetic mean of the temperature observed for any two (2) consecutive hours during a twenty-four (24) hour day, or during the operating day if flows are of shorter duration.

k. "Direct Responsible Charge" or "DRC" means on-location accountability for, and on-location performance of, active daily operation (including Technical Supervision, Administrative Supervision, or Maintenance Supervision) for a Wastewater Facility, an operating shift of a system or a facility, or a major segment of a system or facility.

l. "Estimate" is that based on a technical evaluation of the sources contributing to the discharge including, but not limited to, pump capabilities, water meters and batch discharge volumes.

m. "Grab sample" is an individual sample collected in less than fifteen (15) minutes.

n. "Immersion Stabilization" or "I/S" means the immersion of a calibrated device in the effluent stream until the reading is stabilized.

o. "Maximum instantaneous concentration" or "MIC" is the highest allowable measured concentration of a pollutant, obtained by analyzing a grab sample of the discharge.

p. "Measured flow" is any method of liquid volume measurement the accuracy of which has been previously demonstrated in engineering practice, or for which a relationship to absolute volume has been obtained.

q. "Method Detection Limit" or "MDL" means the lowest concentration of a substance which can be measured with ninety-nine (99%) percent confidence that the analyte concentration is greater than zero (0) and is determined from analysis of a sample in a given matrix containing the analyte.

r. "Minimum Analytical Level" or "MAL" means the lowest concentration of a substance that can be quantified within specified limits of interlaboratory precision and accuracy under routine laboratory operating conditions in the matrix of concern. When there is insufficient interlaboratory study data, the "MAL" may be determined through the use of a multiplier of five (5) to ten (10) times the Method Detection Limit or "MDL".

s. "Monthly average temperature" is the arithmetic mean of temperature measurements made on an hourly basis, or the mean value plot of the record of a continuous automated temperature recording instrument, either during a calendar month, or during the operating month if flows are of shorter duration.

t. "Non-contact cooling water" is that which is contained within a leak-free system, i.e. has no contact with any gas, liquid or solid other than the container used for transport.

u. "Nuisance condition" is any condition that, as a result of pollutant addition to a surface water, causes unreasonable interference with the designated uses of the waters or the uses of the adjoining land areas.

v. "Operator" means any person employed or appointed by any owner, and who is designated by such owner to be the person controlling the operations of the treatment works, including direct actions,

decisions or evaluations which affect the quality of the discharge, and whose duties include testing or evaluation to control treatment works operations.

w. "Pollution prevention" means any practice which results in a lesser quantity of emissions released or discharged prior to out-of-process recycling, treatment or control, as measured on a per-unit-of-production basis.

x. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause 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.

y. "Sewage" means the water-carried human or animal wastes from septic tanks, water closets, residences, buildings, industrial establishments or other places together with such ground water infiltration, subsurface water, storm inflow, admixture of industrial wastes, or other wastes as may be present.

z. "Sewage sludge" means any solid, semi-solid or liquid residue removed during the treatment of municipal wastewater or domestic sewage including, but not limited to, solids removed during primary, secondary or advanced wastewater treatment, scum, septage, portable toilet pumpings and sewage sludge products.

aa. "Sludge" means the accumulated semi-liquid suspension, settled solids, or dried residue of these solids removed by any surface water or ground water treatment facility or any liquid waste treatment facility or works, whether or not such solids have undergone treatment.

bb. "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. The basis for specific effluent limitations can be found in this permit's Fact Sheet. 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.

cc. "Whole Effluent Toxicity" or "WET" means the aggregate toxic effect of an effluent or discharge measured directly by a toxicity test.

4. Test Procedures

Test procedures for the analysis of pollutants shall conform to the applicable test procedures identified in 40 C.F.R., Part 136, unless otherwise specified in this permit.

5. Quality Assurance Practices

The Permittee is required to show the validity of all data by requiring its laboratory to adhere to the following minimum quality assurance practices:

a. Duplicate[1] and spiked[2] samples must be run for each constituent in the permit on five (5%) percent of the samples, or at least on one (1) sample per month, whichever is greater. If the analysis frequency is less than one (1) sample per month, duplicate and/or spiked samples must be run for each analysis.

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1 Duplicate samples are not required for the following parameters: color, temperature, and turbidity.

2 Spiked samples are not required for the following parameters: acidity, alkalinity, bacteriological, benzidine, chlorine, color, dissolved oxygen, hardness, pH, oil & grease, radiological, residues, temperature, turbidity, BOD_5, and total suspended solids. Procedures for spiking samples are available through the EPA Regional Quality Assurance Coordinator.

b. For spiked samples, a known amount of each constituent is to be added to the discharge sample. The amount of constituent added should be approximately the same amount present in the unspiked sample, or must be approximately that stated as maximum or average in the discharge permit.

c. The data obtained in a and b shall be summarized in an annual report in terms of precision, percent recovery, and the number of duplicate and spiked samples run, date and laboratory log number of samples run, and name of analyst. The report shall cover the calendar year, January 1 through December 31, and shall be submitted to the Department, postmarked no later than the February 15 following the fourth quarter of reporting.

d. Precision shall be calculated by the formula, standard deviation $s = (\sum d^2/k)^{1/2}$, where d is the difference between duplicate results, and k is the number of duplicate pairs used in the calculations.

e. Percent recovery shall be reported on the basis of the formula $R = 100\ (F-I)/A$, where F is the analytical result of the spiked sample, I is the result before spiking of the sample, and A is the amount of constituent added to the sample.

f. The percent recovery, R, in e above shall be summarized yearly in terms of mean recovery and standard deviation from the mean. The formula, $s = (\sum(x-\bar{x})^2/(n-1))^{1/2}$, where s is the standard deviation around the mean $\bar{x}$, x is an individual recovery value, and n is the number of data points, shall be applied.

g. The Permittee or its contract laboratory is required to annually analyze an external quality control reference sample for each pollutant. These are available through the EPA Regional Quality Assurance Coordinator, or other EPA-approved supplier. Results shall be included in the Annual Report, required in paragraph c above.

h. The Permittee and/or its contract laboratory is required to maintain an up-to-date and continuous record of the method used, of any deviations from the method or options employed in the reference method, of reagent standardization, of equipment calibration and of the data obtained in a, b and f above.

i. If a contract laboratory is utilized, the Permittee shall report the name and address of the laboratory and the parameters analyzed together with the monitoring data required.

6. Records

a. For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information:

1) The date, exact place and time of sampling or measurements;

2) The person(s) who performed the sampling or measurements;

3) The date(s) and time(s) analyses were performed;

4) The individual(s) who performed each analysis;

5) The analytical techniques or methods used;

6) The results of each analysis; and

7) The quality assurance information as stated above.

b. An operator log must be kept on site at all times. This log should include time spent at the treatment facility on any date, and the nature of operation and maintenance performed.

7. Additional Monitoring by Permittee

If the Permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report (DMR, EPA Form No. 3320-1). Such increased frequency shall also be indicated.

8. Records Retention

All records and information resulting from the monitoring activities required by this permit including hard copies of any electronically generated Discharge Monitoring Reports, all records of analyses performed, records of calibration and maintenance of instrumentation, and recording from continuous monitoring instrumentation shall be retained for three (3) years. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the Permittee, or as requested by the Department.

Part II

A. Management Requirements

1. Duty to Comply

   a. The Permittee must comply with all the terms and conditions of this permit. All discharges authorized herein shall be consistent with the terms and conditions of this permit.

   b. The discharge of any pollutant more frequently than, or at a level in excess of that identified and authorized herein, shall constitute a violation of the terms and conditions of this permit. The violation of any effluent limitation or of any other condition specified in this permit is a violation of 7 Del. C. Chapter 60, and the Act and is grounds for enforcement as provided in 7 Del. C., Chapter 60 "Enforcement; civil and administrative penalties; and expenses.", "Criminal Penalties." and "Cease and desist order." for permit termination or loss of authorization to discharge pursuant to this permit, for permit revocation and reissuance, or permit modification, or denial of a permit renewal application. The Department may seek voluntary compliance by way of warning, notice or other educational means, pursuant to 7 Del. C., Chapter 60 "Voluntary compliance." or any other means authorized by Law. However, the Law does not require that such voluntary means be used before proceeding by way of compulsory enforcement.

   c. Any person violating Sections 301, 302, 306, 307, 318, or 405 of the Clean Water Act or any permit condition or limitation implementing such sections in a permit issued under Section 402 of the Act is subject to civil, administrative, and/or criminal penalties as set forth in 40 C.F.R., Parts 122.41(a)(2) and 122.41(a)(3).

2. Notification

   a. Notification of Planned Changes

      The Permittee shall notify the Department in writing of any anticipated expansion or alteration of this permitted facility, any production increases, process modifications, or other changes which could result in new, different or increased discharges of pollutants. Notice is required only when such alteration, addition or change:

      1) may justify the application of permit conditions that are different from those specified in this permit, or

      2) may justify the application of permit conditions that are absent from this permit, or

      3) meets any one (1) of the following criteria:

         a) The alteration or addition to this permitted facility may meet one of the criteria for determining whether a facility is a new source, as defined in the Section "New Source", of the State of Delaware's *Regulations Governing the Control of Water Pollution;* or

         b) As a result of the alteration or addition, the nature of the discharge is or could be substantially different from that represented in the application originally submitted for the discharge(s) authorized herein, upon which this permit is based; or

c) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, including any uses or disposal sites not identified in the application for this permit or during this permit's issuance process; or

d) The planned change in permitted facility or activity may result in noncompliance with the requirements of this permit.

Upon notification of a planned change, the Department may require the submission of a new application. The Permittee is encouraged to notify the Department and submit any application well in advance of the scheduled date for the anticipated alteration or addition to allow sufficient time to process any modifications of this permit necessitated by the change and to avoid any resultant project delays.

b. Notification of Noncompliance

The Permittee shall report all instances of noncompliance with this permit to the Department as outlined herein:

1) If, for any reason, the Permittee does not comply with or will be unable to comply with any daily maximum effluent limitation or maximum instantaneous concentration specified in this permit, the Permittee shall report such incident within twenty-four (24) hours and provide the Department with the following information, in writing, within five (5) days of becoming aware of such conditions:

a) A description of the discharge and cause of noncompliance;

b) The period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time when the discharge will return to compliance; and

c) Actions taken or to be taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

2) If, for any reason, the Permittee does not comply with any daily average or average monthly effluent limitation or standard specified in this permit, the Permittee shall provide the information outlined above in paragraph b.1) with the Discharge Monitoring Report (DMR) submitted in accordance with Part I.D.2. of this permit.

3) In the case of any upset or unanticipated bypass that exceeds any permitted effluent or discharge limitation, the Permittee shall notify the Department within twenty-four (24) hours. If this notification is provided orally, a written report shall be submitted within five (5) days.

4) In the case of any discharge subject to any toxic pollutant effluent standard under Section 307(a) of the Act, the Permittee shall notify the Department within twenty-four (24) hours from the time the Permittee becomes aware of a noncomplying discharge. Notification shall include the information outlined above in paragraph b.1). If this information is provided orally, a written submission covering these points shall be provided within five (5) days of the time the Permittee becomes aware of the circumstances covered by this paragraph.

5) In the case of any other discharges which could constitute a threat to human health, welfare, or the environment, the information required above in paragraph b.1) shall be

provided as quickly as possible upon discovery and after activating the appropriate emergency site plan, unless circumstances exist which make such a notification impossible. A delay in notification shall not be considered a violation of this permit when the act of reporting may delay the mitigation of the discharge and/or the protection of public health and the environment. A written submission covering these points must be provided within five (5) days of the time the Permittee becomes aware of the circumstances covered by this paragraph.

6) The Permittee shall report all instances of noncompliance not otherwise reported under the preceding paragraphs at the time the Discharge Monitoring Report (DMR) is submitted. The report shall contain the information outlined above in paragraph b.1).

7) The Department may waive the written report as required herein on a case-by-case basis, if an oral report was provided within twenty-four (24) hours.

c. Notifications Specific to Manufacturing, Commercial, Mining, and Silvicultural Dischargers

All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Department as soon as they know or have reason to believe:

1) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

a) One hundred micrograms per liter (100 µg/l);

b) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

c) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or

d) The level established by this Permit.

2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

a) Five hundred micrograms per liter (500 µg/l);

b) One milligram per liter (1 mg/l) for antimony;

c) Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or

d) The level established by this Permit.

d. Reporting Discharge(s) of Pollutants Pursuant to 7 Del. C., Chapter 60, "Report of discharge of pollutant or air contaminant"

Any person who causes or contributes to the discharge of a pollutant into waters of the State or the United States either in excess of any conditions specified in this permit or in absence

of a specific permit condition shall report such an incident to the Department as required under 7 Del. C., Chapter 60, "Report of discharge of pollutant or air contaminant".

3. Facilities Operation

The Permittee shall at all times maintain in good working order and operate as efficiently as possible all collection and treatment facilities and systems (and related appurtenances) installed or used by the Permittee for water pollution control and abatement to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance (based upon the facilities' design), adequate funding, effective management, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, when necessary, to achieve compliance with the terms and conditions of this permit.

4. Adverse Impact

The Permittee shall take all reasonable steps to minimize any adverse impact to State waters resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and extent of the noncomplying discharge.

5. Failure

The Permittee, in order to maintain compliance with this permit, shall control production and all discharges as necessary upon reduction, loss, or failure of the treatment facility until the treatment facility is restored or an alternative method of treatment is provided. The need to halt or reduce the permitted activity in order to maintain compliance with this permit shall not be a defense for a Permittee in any enforcement action.

6. Alternative Power Source

In order to ensure compliance with the terms and conditions of this permit, the Department may require that the Permittee provide an alternative power supply which is sufficient to operate the Permittee's wastewater collection, conveyance and treatment facilities.

7. Removed Substances

Any solids, sludges, filter backwash, or other pollutants removed in the collection, conveyance or treatment of wastewater shall be disposed of in such manner as to prevent any pollutant from such materials from entering surface waters or ground waters.

8. Bypass

a. The Secretary may prohibit the intentional diversion or bypass of waste streams from any portion of the facility regulated herein in consideration of the adverse effect of the proposed bypass or where the proposed bypass does not meet the conditions set forth below in Part II.A.8.b.

b. The intentional diversion or bypass of waste streams from any portion of the facility regulated herein is prohibited unless:

1) The bypass is necessary to perform essential maintenance and auxiliary equipment, a redundant or back-up system or an alternate mode of operation is utilized to maintain treatment performance; or

2) The following four (4) conditions are met:

a) Bypass is unavoidable to prevent loss of human life, personal injury or severe property damage;

b) There are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, plant shutdown or maintenance during normal periods of equipment down-time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent the bypass;

c) The Permittee notifies the Department of the bypass or of the need to bypass as outlined below in Part II.A.8.c below; and

d) The Permittee is utilizing or will utilize all available alternative operating procedures or interim control measures to reduce the impact of the bypass on State waters.

c. Notice

1) If the Permittee knows in advance of the need for a bypass, the Permittee shall notify the Secretary, in writing, at least ten (10) days before the date of the bypass, if possible.

2) In the event of an unanticipated or unintentional bypass, the Permittee shall notify the Department within twenty-four (24) hours of discovery. Notice may be provided orally, but shall be followed up with submission of a written report that provides the information outlined in Part II.A.2.b.1) within five (5) days.

3) The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible.

9. Upset

a. An upset shall constitute an affirmative defense to an action brought for noncompliance with any technology based permit effluent limitations established herein, if the requirements of Part II.A.9.b below are met.

b. To establish an affirmative defense for an upset, the Permittee shall demonstrate, through properly signed and authenticated, contemporaneous operating logs, or by other relevant evidence that:

1) An upset occurred and that the Permittee can identify the specific cause(s) of the upset;

2) The permitted facility was at the time being operated in a prudent and workman like manner and in compliance with proper operation and maintenance procedures;

3) The Permittee submitted notice of the upset as required in Part II.A.2.b.3) (i.e., within twenty-for (24) hours of becoming aware of the upset); and

4) The Permittee took all reasonable measures necessary to minimize any adverse impact to State waters.

c. Burden of proof. The Permittee shall have the burden of proving an upset in any case where an upset is claimed as a defense.

B. Responsibility

1. Right of Entry

The Permittee shall allow the Secretary of the Department, the EPA Regional Administrator, or their authorized representatives, jointly and severally, upon the presentation of his or her credentials:

a. To enter upon the Permittee's premises where the regulated facility, treatment works, or discharge(s) is located or the regulated activity is conducted or where any records required to be kept under the terms and conditions of this permit are located;

b. To have access to and copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

c. To inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

d. To inspect at reasonable times any facilities, equipment, management or control practices, or operations regulated or required under this permit; and

e. To sample at reasonable times any discharge or substance at any location for the purpose of assuring compliance with this permit or otherwise determine whether a violation of the Law or these regulations exists, as provided in 7 Del. C., Chapter 60, "Right of Entry".

2. Duty to Provide Information Requested by the Department

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

3. Duty to Provide Information Found to be Missing or Inaccurate

When the Permittee discovers that it failed to submit any relevant facts in a permit application or that it submitted any incorrect information in any permit application or in any report to the Department, it shall promptly submit such facts or information.

4. Availability of Reports

Except for any data and information that is deemed to be confidential and claimed as such when submitted, and that is entitled to protection as trade secrets under State Law, all reports prepared in accordance with the terms and conditions of this permit shall be available for public inspection at the Department's offices. This permit, the permit application and any information submitted to support the application (other than information entitled to protection as trade secrets pursuant to State Law) and any effluent or discharge monitoring data shall not be deemed confidential and any claims of confidentiality will be denied. Knowingly making any false statement in any such

report may result in the imposition of criminal penalties as provided in 7 Del. C., Chapter 60, "Criminal penalties".

5. Signatory Requirements

   All applications, reports, or information submitted to the Department shall be signed and certified as required in the Section "Identity of Signatories to NPDES Forms" of the State of Delaware's *Regulations Governing the Control of Water Pollution*.

6. Permit Transfer

   a. This permit is not transferable to any person, except after notice to and with the concurrence of the Secretary.

   b. In the event of a change in ownership or control of the facilities from which the authorized discharge(s) emanate(s), this permit may be transferred if:

      1) The Permittee notifies the Department, in writing, of the proposed transfer, in advance; and

      2) The Permittee submits to the Department a written agreement signed by all parties to the transfer, containing a specific date for transfer of permit responsibility, coverage and liability to the new Permittee. The written agreement shall expressly acknowledge the current Permittee is responsible and liable for compliance with the terms and conditions of this permit up to the date of transfer and the new Permittee is responsible and liable for compliance from that date on; and

      3) The Department within thirty (30) days of receipt of the notification of the proposed transfer does not notify the current Permittee and the new Permittee of its intent to modify, to revoke and reissue or to terminate this permit and require that a new application be submitted.

   c. The Permittee is encouraged to provide as much advance notice as possible of any proposed transfer, to allow sufficient time for the Department to modify this permit to identify the new Permittee and to incorporate such other requirements as may be necessary under the Law or the Act.

7. Modification, Termination, or Revocation and Reissuance

   This permit may be modified, terminated or revoked and reissued in whole or in part, during its term, for cause as provided in the Section "Modification, Revocation and Reissuance, and Termination" of the State of Delaware's *Regulations Governing the Control of Water Pollution*. The filing of a request for permit modification, or revocation and reissuance, or termination, or a notification of any planned changes or anticipated noncompliance does not stay any permit condition.

8. Reapplication for a Permit

   a. The Permittee must apply for and obtain a new permit if the Permittee wishes to continue the activity regulated by this permit beyond its expiration date;

b. At least one hundred and eighty (180) days before the expiration date of this permit, the Permittee shall submit a new application or notify the Department of the Permittee's intent to cease discharging by the expiration date;

c. In the event that a timely and sufficient reapplication has been submitted and the Department is unable, through no fault of the Permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are continued and remain fully effective and enforceable;

9. Compliance with Effluent Standards for Toxic Pollutants

The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish such standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

10. Construction Authorization

This permit does not approve or authorize the construction, installation or modification of any wastewater/liquid waste collection, transmission or treatment facilities, system, or any other pollution control equipment or device necessary to achieve or to maintain compliance with the terms and conditions of this permit. Separate authorization for the construction, installation or modification of such pollution control facilities must be obtained from the Secretary.

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in navigable waters.

11. Property Rights

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

12. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under 7 Del. C., Chapter 60, or any other State Law or regulation.

13. Severability

The provisions of this permit are severable. If any provision of this permit is held invalid, the remainder of this permit shall not be affected. If the application of any provision of this permit to any circumstance is held invalid, its application to other circumstances shall not be affected.

Part III

A. Special Conditions

1. Supersedes Previous Permits

   This permit supersedes NPDES Permit DE0000256/State Permit WPCC 3256C/74, effective on September 1, 1997.

   NPDES permit No. DE0050601, formerly a separate permit for the Delaware City Power Plant, is subsumed into this permit. So this permit also supersedes NPDES Permit DE0050601/State Permit WPCC 3049C/76, effective on July 1, 2002 as amended through August 16, 2004.

2. Permit Re-opener Clause

   The Department or agencies under its supervision may perform or direct the performance of analyses or biosurveys on the receiving waters in the immediate vicinity of the permittee's discharge or further downstream, after the issuance of this permit. Such analyses or biosurveys may include evaluating impingement, entrainment, and thermal impacts the permittee's facility poses on its intake and receiving waters.

   If the results of these analyses or biosurveys suggest that the permittee's discharge is causing, or has the potential to cause, diminished attainment of designated protected uses (as defined by the State of Delaware's "Water Quality Standards for Streams") then this permit may be reopened and modified after notice and opportunity for a public hearing. At that time, additional effluent limitations, monitoring requirements and/or special conditions may be included in the permit. If it is determined that additional equipment is needed to meet the revised permit conditions, the permittee shall install the necessary equipment. The permit may be re-opened and modified under this Special Condition only after public notice and opportunity for comment regarding the proposed changes.

3. NPDES Applications

   a. No later than one year after the effective date of this permit, the permittee shall submit updated NPDES application forms for all Outfalls. Samples for NPDES Application Forms must be less than three years old.

   b. In addition to the standard NPDES application forms, NPDES application information shall be submitted in spreadsheet format, or in some other electronic format deemed acceptable by the Department. The format is subject to the approval of the Department.

      The hard copy shall be the document of record.

4. Sufficiently Sensitive Test Methods

   For purposes of completing Discharge Monitoring Reports (DMR) and NPDES permit applications,

   a. For both NPDES applications and DMR, report "non-detected" testing results as "<" and the applicable test method minimum level (ML). For example, if BOD_5 is "non-detected" using a test method with an ML of 2.4 mg/L, report "< 2.4 mg/L" on the DMR.

b. All required quantitative data must be collected in accordance with sufficiently sensitive analytical methods approved under 40 CFR part 136 or required under 40 CFR chapter I, subchapter N or O.

c. For reporting DMR,

1) The permittee must use sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR part 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O.

2) An EPA-approved method is "sufficiently sensitive" when –

a) The ML is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter; or

b) The method has the lowest ML of the EPA approved analytical methods, except as provided for Method 1668a below in Special Condition No. 11, for the measured pollutant or pollutant parameter.

c) In the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters.

d. For completing NPDES permit applications,

1) Except as specified in 122.21(e)(3)(ii), a permit application shall not be considered complete unless all required quantitative data are collected in accordance with sufficiently sensitive analytical methods approved under 40 CFR part 136 or required under 40 CFR chapter I, subchapter N or O.

2) An EPA-approved method is "sufficiently sensitive" when –

a) The ML is at or below the level of the applicable water quality criterion, as calculated at the monitoring location considering regulatory mixing zone effects, for the measured pollutant or pollutant parameter; or

b) The method ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or

c) The method has the lowest ML of the EPA approved analytical for the measured pollutant or pollutant parameter.

3) When there is no analytical method that has been approved under 40 CFR part 136, required under 40 CFR chapter I, subchapter N or O, and is not otherwise required by the Director, the applicant may use any suitable method but shall provide a description of the method. When selecting a suitable method, other factors such as a method's precision, accuracy, or resolution, may be considered when assessing the performance of the method. Use of the selected method is subject to the written approval of the Department.

a) The permittee has the option of providing a matrix or sample specific minimum level;

and

b) Where an applicant can demonstrate that, despite a good faith effort to use a method that would otherwise meet the definition of "sufficiently sensitive", the analytical results are not consistent with the QA/QC specifications for that method, then the Director may determine that the method is not performing adequately and the applicant should select a different sufficiently sensitive method from the remaining EPA-approved methods.

5. DRBC Load Allocation

The Delaware River Basin Commission wasteload allocation for Outfall 601 (the discharge from the process wastewater treatment plant, prior to mixing with other discharges of storm water and noncontact cooling water) of 3,270 lbs/day (1,483 kg/day) of carbonaceous (first stage) oxygen demand (FSOD) equivalent to 1,867 lbs/day (847 kg/day) of BOD5 as a daily average shall not be exceeded. The required BOD reduction in Zone 5 of the Delaware River, 87.5 percent, must be met as a monthly average.

6. New Cooling Water Treatment Chemicals

Prior to using a new cooling water treatment chemical, the facility shall notify the Department in accordance with the requirements of Part II.A.2, "Notification" of this permit. To the extent applicable and known, the information contained in the notice will include:

a. The chemical Material Safety Data Sheet (MSDS) furnished by the manufacturer.

b. A letter or other document indicating whether or not any Clean Water Act, Section 307, priority pollutants are contained in the chemical.

c. If not referenced in the MSDS, relevant toxicological data, on the chemical and/or components.

d. An estimate of the quantity of chemical to be used over a specified time period.

e. An estimate of the average and maximum concentrations of the chemical which may be present in the discharge.

f. The date when the chemical usage is planned to begin and the anticipated duration of use (i.e., days, months, continuous, etc.).

The permittee shall receive written authorization from the Department before adding any chemicals to the cooling water systems.

7. Proper Operation and Maintenance of Guard Basins 5 and 6

a. The permittee operates Guard Basins 5 and 6 in conjunction with the No. 2 API separator to capture and remove any oil that may be present in the discharge from the cooling water system, prior to discharge at Outfall 001. The permittee will maintain Guard Basins #5 and #6 in a manner such that any oil is directed to #2 API for collection and removal, and that enables and supports the deployment and proper operation of a permanent, extended curtain boom. The minimum average depth for underflow for curtain boom shall not be less than 6 inches (6 inches below bottom of curtain) to maintain compliance with the design critical velocity. In order to maintain this minimum average depth, the permittee shall:

1) Determine the average underflow depths at least once quarterly. Average depth shall be determined based on a minimum of ten (10) depth measurements determined for each curtain boom.

2) Within 18 months after a determination that the average underflow boom depth is 12 inches or less, owner/operator shall remove accumulated sediment adjacent to the current boom to a minimum depth of 2 feet below the bottom of the curtain at a distance 5 feet perpendicular to the curtain boom. If it is determined that the rate of sedimentation in the Guard Basins is such that the 18 month timeframe from sediment removal is inadequate to maintain the design critical velocity, the permittee shall submit an alternate Guard Basin maintenance methodology to the Department for review and approval.

3) Should an alternative equipment, technology or compliance method be identified, the permittee shall submit a request to the Department for review and approval.

4) The permittee shall retain all records of depth measurements and maintenance activities for the Guard Basins 5 and 6 for a period of not less than 3 years, and shall make available to the Department all such records for review and inspection upon request.

b. In addition, the permittee shall maintain the weir system to preserve at all times adequate overflow capacity to the #2 API separator. The permittee will monitor and maintain the #2 API separator as follows:

1) Measure the water depth in each of the 5 bays of the #2 API separator at least once per calendar quarter;

2) Remove accumulated sediment from any bay of the #2 API separator within twelve (12) months of a quarterly depth measurement event during which the average water depth in such bay is determined to be less than 4 feet or an alternate depth that would be mutually agreeable between the refinery and the Department in the future;

3) Maintain the skimming system of the #2 API separator to ensure its continued operation in accordance with its intended function.

4) The permittee shall retain all records of depth measurements and maintenance activities for the #2 API separator for a period of not less than 3 years, and shall make available to the Department all such records for review and inspection upon request.

8. Biomonitoring – Chronic

The permittee shall conduct chronic biomonitoring tests once per **quarter** on Outfall 001 effluent in accordance with the following requirements. Dependent on the results of the initial tests, outlined in a.a., the permittee may be required to perform additional testing as outlined in a.b. below. Dependent on the results of the additional testing, the permittee may be required to perform a Toxicity Reduction Evaluation as outlined in a.c. below.

These tests shall be performed using a dilution series made from representative composite effluent samples and laboratory control water. The dilution series shall use effluent concentrations of 28%, 38%, 53%, 73%, and 100%. Alternative dilution series concentrations may be used, if directed or approved by the Department in writing.

All testing shall be performed in accordance with the test procedure requirements under 40 CFR

136, "Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms" [Third Edition, USEPA Office of Water, EPA821-R-02-014, October 2002]. At a minimum these tests shall include the following:

a. The permittee shall simultaneously perform EPA chronic "Fathead Minnow, Pimephales Promelas, Larval Survival and Growth Test Method 1000.0" and "Daphnid, Ceriodaphnia Dubia, Survival and Reproduction Test Method 1002.0". Alternative EPA test method approved species may be used, if approved by the Department in writing. Each test shall be initiated no later than 36 hours after the collection of the representative composite effluent sample.

   The chronic toxicity testing report shall include estimates of toxicity reported in percent effluent and Toxic Units (TU) as the Inhibitory Concentration (IC_{25}) and No Observed Effect Concentration (NOEC). The report shall also include the percent minimum significant difference (PMSD) for each test.

   Within 30 days of the completion of these tests, the results shall be reported to the Department and DRBC. This report shall follow the general format and include the information listed in "Section 10 Report Preparation And Test Review", pages 47-52, of EPA-821-R-02-013.

   If the NOEC is less than 53% effluent, the permittee shall perform two (2) confirmation tests on the more sensitive species in 8.a for both the Outfall 001 effluent and influent. Both confirmation tests shall be completed within 60 days of the completion date of the testing described in 8.a.

   Within 30 days of the completion of each test, the results shall be reported to the Department in accordance with the general format and information requirements referenced in 8.a.

b. If either of the additional tests results in an NOEC less than 53% effluent and the effluent NOEC is less than the influent NOEC, the permittee shall submit a plan for reducing the effluent toxicity to the Department". This plan shall be submitted within 60 days of the completion date of the testing described in 8.a. This plan shall outline a schedule, as well as identify the test methods to be used for performing a Toxicity Reduction Evaluation.

For purposes of these tests, a representative composite sample is a 24-hour composite sample as defined in Part I.D, Section 3.g. If the instantaneous flow rate does not vary by more than +/- 15 percent of the average flow rate, a time-interval composite will be an acceptable representative sample. Otherwise, a flow-weighted composite sample must be used. All composite samples shall be representative of 24 hours of typical operations.

The Department shall be notified in writing at least thirty (30) days in advance of the day when a bioassay test is planned to commence. The permittee shall split the composite samples used to perform a bioassay test with the Department upon request. All documentation pertaining to these tests shall be maintained at the facility as required in Part I., "Monitoring and Reporting", of this permit and shall be made available for inspection, upon request.

9. Monitoring Reduction Requests

Any change in test frequency or elimination of testing under this Special Condition must be approved by the Department in writing.

For the biomonitoring tests required under Special Condition No. 7.a, the permittee may request reduced biomonitoring frequency from "quarterly" to "annually" only after successfully completing eight (8) consecutive quarterly valid biomonitoring tests in accordance with Special Condition No. 7.a. The permittee may request that the Department review the data from these tests and eliminate or modify the frequency of these tests.

If an annual biomonitoring screening result indicates an NOEC less than 53%, the permittee shall notify the Department and shall increase biomonitoring frequency from "annually" back to "quarterly".

10. Organic Pollutants Scan

Whenever the Outfall 001 effluent fails a biomonitoring test required under Special Condition No. 7.a of this permit, or at least once per calendar year, the permittee shall analyze one of the three flow-proportioned composite samples prepared for the biological toxicity tests outlined in Part III, Special Condition No. 7.a for polynuclear aromatic hydrocarbons and for acid extractable, base/neutral extractable, and purgeable organics using the procedures specified in 40 CFR 136. If the test methods used are insufficiently sensitive to demonstrate compliance with State and Federal standards and water quality criteria, the Department may direct the permittee in writing to use alternative test methods.

Test results shall be reported to the Department both in hardcopy, and in spreadsheet format. Submittal format is subject to the written approval of the Department.

11. Delaware River Basin PCB Requirements

On December 15, 2003, the U.S. EPA, Regions 2 and 3, adopted a Total Maximum Daily Loads (TMDLs) for PCBs for Zones 2, 3, 4, and 5 of the tidal Delaware River. The TMDLs require the facilities identified as discharging PCBs to these zones of the Delaware River or to the tidal portions of tributaries to these zones to conduct monitoring for 209 PCB congeners, and prepare and implement a PCB Pollutant Minimization Plan (PMP).

a. The samples shall be collected from Outfalls as specified in the Table below.

Outfall	Frequency	Wet/Dry Weather Samples	Sample Type
016	Annually	Wet	Grab
017	Annually	Wet	Grab
033	Annually	Wet	Grab
036	Annually	Wet	Grab
101**	Semi-annually	Wet	Grab
	Semi-annually	Dry	Composite
601	Annually	Dry	Composite

** Outfall 101 PCB monitoring is only required if any water enters Guard Basin 4 other than storm water that falls onto the footprint of the basin and storm water from the immediately adjacent and contiguous remediation cell of the former sediments from Guard Basin 4, or from the remediation area of the former "Oily spoils area".

b. All PCB sample analyses shall be performed using EPA Method 1668A, Revision A: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by HRGC/HRMS. EPA-821-R-00-002, December 1999 as supplemented or amended, and results for all 209 PCB congeners shall be reported. Project-specific, sample collection protocols, analytical procedures, and reporting requirements found at http://www.state.nj.us/drbc/quality/toxics/pcbs/monitoring.html shall be followed. Monitoring

information, sample data, and reports associated with PCB monitoring shall be submitted to the Department and DRBC in the form of two compact discs in the format referenced at http://www.state.nj.us/drbc/library/documents/PCB-EDD011309.pdf.

c. For purposes of calculating results of monitoring required under this Special Condition,

1) "Non-detects" are "0.0",

2) "J" values are the lab-reported values (i.e., not "0.0"), and

3) "EMPC" values are the lab-reported values (i.e., not "0.0").

d. In accordance with the U.S. EPA Regions 2 and 3 Total Maximum Daily Loads (TMDLs) for PCBs for Zones 2-5 of the Tidal Delaware River, the permittee originally submitted a "Pollutant Minimization Plan" (PMP) on October 4, 2005 to the Department and to the DRBC. The most recent submittal was a "PCB Pollutant Minimization Plan, 2013 Progress Report, Delaware City Refinery Company", dated September 2014; the DRBC provided comments on this submittal on September 23, 2014. The permittee shall continue to comply with the requirements of Section 4.30.9 of DRBC's Water Quality Regulations. Therefore, the permittee shall:

1) Continue to implement the PMP to achieve PCB loading reduction goals, and;

2) Submit an Annual Report on the yearly anniversary of the commencement of the PMP to DRBC and the Department consistent with the guidance specified at http://www.state.nj.us/drbc/programs/quality/pmp.html.

e. The PMP Annual Report and PCB data shall be submitted to the Department and DRBC at the following addresses:

1) Delaware Department of Natural Resources and Environmental Control
Division of Water
Surface Water Discharges Section
89 Kings Highway
Dover, DE 19901.

2) Delaware River Basin Commission
Modeling, Monitoring & Assessment Branch
P.O. Box 7360
25 State Police Drive
West Trenton, NJ 08628.

12. Additional PCB Requirements

In addition to those Outfalls requiring monitoring by DRBC, DNREC finds value in monitoring additional outfalls.

a. The samples shall be collected from Outfalls as specified in the Table below.

Outfall	Frequency	Wet/Dry Weather Samples	Sample Type
001*	Annually	Dry	Composite
009	Annually	Wet	Grab
* Outfall 001 samples shall be taken at both the Outfall 001 and at the Intake from the Delaware River.			

b. All PCB sample analyses shall be performed using EPA Method 1668A, Revision A: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by HRGC/HRMS. EPA-821-R-00-002, December 1999 as supplemented or amended, and results for all 209 PCB congeners shall be reported. Project-specific, sample collection protocols, analytical procedures, and reporting requirements found at http://www.state.nj.us/drbc/quality/toxics/pcbs/monitoring.html shall be followed. Monitoring information, sample data, and reports associated with PCB monitoring shall be submitted to the Department and DRBC in the form of two compact discs in the format referenced at http://www.state.nj.us/drbc/library/documents/PCB-EDD011309.pdf.

c. For purposes of calculating results of monitoring required under this Special Condition,

4) "Non-detects" are "0.0",

5) "J" values are the lab-reported values (i.e., not "0.0"), and

6) "EMPC" values are the lab-reported values (i.e., not "0.0").

d. In accordance with the U.S. EPA Regions 2 and 3 Total Maximum Daily Loads (TMDLs) for PCBs for Zones 2-5 of the Tidal Delaware River, the permittee originally submitted a "Pollutant Minimization Plan" (PMP) on October 4, 2005 to the Department and to the DRBC. The most recent submittal was a "PCB Pollutant Minimization Plan, 2013 Progress Report, Delaware City Refinery Company", dated September 2014; the DRBC provided comments on this submittal on September 23, 2014. The permittee shall continue to comply with the requirements of Section 4.30.9 of DRBC's Water Quality Regulations. Therefore, the permittee shall:

3) Continue to implement the PMP to achieve PCB loading reduction goals, and;

4) Submit an Annual Report on the yearly anniversary of the commencement of the PMP to DRBC and the Department consistent with the guidance specified at http://www.state.nj.us/drbc/programs/quality/pmp.html.

e. The additional PCB data shall be submitted as an addendum to the PMP Annual Report and PCB data shall be submitted to the Department and DRBC at the following addresses:

3) Delaware Department of Natural Resources and Environmental Control
Division of Water
Surface Water Discharges Section
89 Kings Highway
Dover, DE 19901.

4) Delaware River Basin Commission
Modeling, Monitoring & Assessment Branch
P.O. Box 7360
25 State Police Drive

West Trenton, NJ 08628.

13. Monitoring and Reporting for Dioxins and Furans

a. The permittee shall monitor Outfalls for congeners of Dioxins and Furans (DxF), as specified in the table below:

Outfall	Frequency	Wet/Dry Weather Samples	Sample Type
101*	Semi-annually	Wet	Grab
	Semi-annually	Dry	Composite
601	Annually	Dry	Composite
* Outfall 101 dioxin and furan monitoring is only required if process waste water or storm water, enters Guard Basin 4 other than storm water that falls onto the footprint of the basin and storm water from the immediately adjacent and contiguous remediation cell of the former sediments from Guard Basin 4, or from the remediation area of the former "Oily spoils area".			

All DxF samples required under this Special Condition shall be taken at the same time that samples are taken for PCBs per the requirements of Special Condition No. 11 above.

b. The Dioxin and Furan sample analyses shall be performed using EPA Method 1613B for the following congeners:

Dioxins	Furans
2,3,7,8-TCDD	2,3,7,8-TCDF
1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF
1,2,3,4,7,8-HxCDD	2,3,4,7,8-PeCDF
1,2,3,6,7,8-HxCDD	1,2,3,4,7,8-HxCDF
1,2,3,7,8,9-HxCDD	1,2,3,6,7,8-HxCDF
1,2,3,4,6,7,8-HpCDD	2,3,4,6,7,8-HxCDF
OCDD	1,2,3,7,8,9-HxCDF
Total TCDD	1,2,3,4,6,7,8-HpCDF
Total PeCDD	1,2,3,4,7,8,9-HpCDF
Total HxCDD	OCDF
Total HeptaCDD	Total PeCDF
	Total HxCDF

a. Project-specific, sample collection protocols, analytical procedures, and reporting shall be consistent with requirements found at http://www.state.nj.us/drbc/quality/toxics/pcbs/monitoring.html. Monitoring information, sample data, and reports associated with dioxins and furans monitoring shall be submitted to the Department and DRBC in the form of two compact discs in the format consistent with requirements referenced at http://www.state.nj.us/drbc/library/documents/PCB-EDD011309.pdf.

b. For purposes of calculating results of monitoring required under this Special Condition,

1) "Non-detects" are "0.0",

2) "J" values are the lab-reported values (i.e., not "0.0"), and

3) "EMPC" values are the lab-reported values (i.e., not "0.0").

c. The permittee shall submit dioxin and furan monitoring results at the same time as the Annual Report required in 11.b.2 above. The Annual Report shall include the following for each sample:

   1) Total Dioxins and Furans,

   2) Total TEQs for Dioxins and Furans,

   See Special Condition No. 11 above.

d. The Dioxin and Furan Annual Summary of Results and DxF data shall be submitted, at the a same time as the PCB PMP Annual Report, to the Department and DRBC at the following addresses:

   1) Delaware Department of Natural Resources and Environmental Control
      Division of Water
      Surface Water Discharges Section
      89 Kings Highway
      Dover, DE 19901.

   2) Delaware River Basin Commission
      Modeling, Monitoring & Assessment Branch
      25 State Police Drive
      West Trenton, NJ 08628.

14. Compliance with Limits for Oil & Grease

The permittee shall demonstrate compliance with the Oil and Grease limits using the 40 CFR 136 approved test procedure, EPA Method No. 1664A. The permittee may use "J" values as defined by this method (that is, results from 1.4 mg/L to 5 mg/L) for calculating the results for the month. The Department may approve use of an alternative test method in writing, if that alternative method is approved under 40 CFR 136.

15. Sampling and Reporting Sulfides Upstream of the Outfall 601 Wastewater Treatment Plant

Simultaneous with a discharge sampling, at least once per month the permittee shall also monitor sulfides upstream of the Wastewater Treatment Plant at the discharge points for the two sour water strippers, the spent caustic stripper, and the wet gas scrubbers. Sampling of an upstream unit will only be required if that unit is discharging to the refinery Wastewater Collection System

Results shall be maintained on-site, and shall be submitted to the Department upon request, in a format subject to the approval of the Department. The permittee shall submit the results no later than 30 days after the Department request.

16. Sampling and Reporting for "Multiple Grabs" Sample Types

a. On the sampling day, three (3) grab samples shall be taken at evenly spaced time intervals, at least over

   1) an eight (8) hour time interval for sulfides and for oil & grease and

2) a two (2) hour time interval for Total Residual Chlorine (TRC).

b. Each grab sample shall be analyzed separately; for each sampling day,

1) "daily concentration" = arithmetic mean of the three (3) grab samples.

2) "daily load" (lbs/day) = "daily concentration" (mg/L) x flow on sampling day (MGD) x 8.34 (lbs/gal)

c. For compliance purposes, results reported in the Discharge Monitoring Reports (DMR) for each reporting period shall be calculated as follows:

1) "Average Concentration" = the arithmetic mean of all the "daily concentration" values,

2) "Maximum Concentration" = the highest "daily concentration" value,

3) "Average Load" = the arithmetic mean of all the "daily load" values, and

4) "Maximum Load" = the highest "daily load" value.

17. Sludge Disposal – Requirements

The permittee shall comply with all existing Federal and State laws and regulations that apply to its sludge use or disposal practice(s) including, but not limited to, Federal regulations outlined in 40 C.F.R., Part 258, Section 28, *Liquids Restrictions,* 40 C.F.R., Part 503, *Standards for the Use and Disposal of Sludge* (February, 1993) and the Department's *Guidance and Regulations Governing the Land Treatment of Wastes*, including Part III.B., *The Regulations Governing the Use and Disposal of Wastewater Sludge* (October, 1999). If the Department determines that additional requirements or permit conditions are needed to insure compliance with the referenced regulations, or if the Federal Government promulgates new regulations under Section 405(d) of the Act governing, (a) the treatment or disposal of sludge, (b) sludge management practices, or (c) concentrations of pollutants in sludge, this permit may be reopened, and after notice and opportunity for public hearing, modified accordingly during its term.

18. Sludge Disposal – Record Keeping

The permittee shall maintain monthly sludge inventory data. This data shall include at a minimum (a) quantity of sludge generated, (b) quantity of sludge stored on site, and (c) quantity of sludge transported off site. Transportation records shall include the date, quantity, carrier used, and the final destination for each shipment. The inventory data shall be maintained at the facility and be made available to the Department in accordance with Part I.D.8. "Records Retention", of this permit, except that records shall be retained for five (5) years.

19. Sludge Disposal – Planned Changes

Prior to any planned change in the permittee's sludge use or disposal practice(s), the permittee shall notify the Department in accordance with the requirements of Part II.A.2.a, "Notification of Planned Changes" of this permit. A change in the permittee's sludge use or disposal practice(s) may be considered cause for this permit to be modified, or revoked and reissued, under Part II.B.7, "Modification, Termination, or Revocation and Reissuance" of this permit.

20. Storm Water Plan

The permittee shall continue to implement and maintain a Storm Water Plan (SWP) to minimize the discharge of contaminated storm water from its facility. The SWP shall be implemented and

maintained to be in accordance with the requirements of the *Delaware Regulations Governing the Control of Water Pollution* (RGCWP), Section 9, *The General Permit Program*, Subsection 1, *Regulations Governing Storm Water Discharges Associated with Industrial Activity*. In particular, the SWP shall address practices including good housekeeping, inspections under wet and dry weather, sediment and erosion control, facility security, and managing runoff.

No later than six months after the permit effective date, the permittee shall update the SWP to address requirements of nutrient TMDLs. In particular, the SWP shall specifically address the management practices needed to prevent or minimize the discharge of nutrients (nitrogen and phosphorus) and enterococci associated with the runoff from the site. The permittee shall update and adjust those management practices as necessary to ensure their performance is adequate to satisfy the requirements of the "Total Maximum Daily Loads (TMDLs) Regulation for Dragon Run Creek", dated December 1, 2006. Practices that maintain long term average concentrations of total nitrogen as N in the storm water runoff of 3.0 mg/L or less and long term average concentrations of total phosphorus as P in the storm water runoff of 0.2 mg/L or less shall be considered satisfactory to meet the TMDLs regulation. The SWP must be submitted for Department review upon completion of this update.

The permittee shall visually inspect and report to the Department any observations of coke dust escaping from the site via storm water discharges including, but not limited to, coke dust in storm water conveyances or non-contained areas.

21. Wastewater Treatment Plant Operator Licensing

The wastewater treatment facility shall be under the direct supervision of a Delaware licensed/certified wastewater treatment plant operator(s) in Direct Responsible Charge, whose competency is licensed by the Secretary in a classification corresponding to, or higher than, the classification of the wastewater treatment plant. All operators who perform duties of a wastewater treatment plant operator, shall be licensed by the Secretary. All activities and licensing shall comply with the *State of Delaware Regulations for Licensing Operators of Wastewater Facilities*.

22. Cooling Water Intake Structures – Application, Reporting and Recordkeeping Requirements

This Special Condition details additional regulatory requirements for the Application, Reporting and Recordkeeping that are applicable regarding Part I.C., Schedule of Compliance above.

a. *Application Regarding Cooling Water Intake Structures*

1) *Records.* The permittee must keep records of all submissions that are part of its permit application for the next permit renewal until the subsequent permit is issued to document compliance with the requirements of this section. If the Department approves a request for reduced permit application studies under §125.95(a) or (c) or §125.98(g), the permittee must keep records of all submissions that are part of the previous permit application until the subsequent permit is issued.

2) *Certification.* The permittee must certify that its permit application is true, accurate and complete *pursuant* to §122.22(d) of this chapter.

b. *Monitoring* requirements.

1) Monitoring *requirements for impingement mortality.* The Department may establish monitoring requirements in addition to those specified at §*125*.94(c), including, for

example, biological monitoring, intake velocity and flow measurements. If the Department establishes such monitoring, the specific protocols will be determined by the Department.

2) Monitoring *requirements for entrainment.* Monitoring requirements for entrainment will be determined by the *Department* on a site-specific basis, as appropriate, to meet requirements under §125.94(d).

3) Additional *monitoring requirements.* The Department may require additional monitoring for *impingement* or entrainment including, but not limited to, the following:

   a) The Department may require additional monitoring if there are changes in operating conditions at the facility or in the source waterbody that warrant a re-examination of the operational conditions identified at 40 CFR 122.21(r).

   b) The Department may require additional monitoring for species not subject to the BTA requirements for impingement mortality at §125.95(c). Such monitoring requirements will be determined by the Department on a site-specific basis.

4) *Visual or remote inspections.* The permittee must either conduct visual inspections or employ remote monitoring devices during the period the cooling water intake structure is in operation. The permittee must conduct such inspections at least weekly to ensure that any technologies operated to comply with §125.94 are maintained and operated to function as designed including those installed to protect Federally-listed threatened or endangered species.

c. Other Reporting and Recordkeeping Requirements.

Pursuant to the requirements of Part I.C., Schedule of Compliance above, the permittee is required to submit to the Department the following information:

1) *Monitoring reports.* results of all monitoring, demonstrations, and other *information* required by the permit sufficient to determine compliance with the permit conditions and requirements established under 40 CFR §125.94.

2) *Status reports.* Any reports required by the Department under 40 CFR §125.94.

3) *Annual certification* statement *and report.* An annual certification statement signed by the responsible corporate officer as defined in 40 CFR §122.22, subject to the following:

   a) If the information contained in the previous year's annual certification is still pertinent, the permittee may simply state as such in a letter to the Department and the letter, along with any applicable submission requirements specified in this section shall constitute the annual certification

   b) If the permittee has substantially modified operation of any unit at the facility that impacts cooling water withdrawals or operation of the cooling water intake structures, the permittee must provide a summary of those changes in the report. In addition, the permittee must submit revisions to the information required at §122.21(r) in the next permit application.

4) *Reporting.* The Department has the discretion to require additional reporting when necessary to establish permit compliance and may provide for periodic inspection of the

facility. The Department may require additional reporting including but not limited to the records required under §125.97(d).

5) *Records Regarding Department's Determination of BTA for Impingement and Entrainment.* All records supporting the *Department's* Determination of BTA for Impingement and Entrainment under §125.98(f) or (g) must be retained until such time as the Department revises the Determination of BTA for Impingement and Entrainment in the permit.

   Due on each annual anniversary date of the effective date of this permit, the permittee must submit reports to the Department and to the EPA Region III Office, pursuant to 40 CFR §125.97(g), for compilation and transmittal to the Fisheries Services.