Industrial SPDES Permit Fact Sheet

I. SUMMARY OF PROPOSED PERMIT CHANGES

A State Pollutant Discharge Elimination System (SPDES) permit renewal is proposed. Following is a summary of the proposed changes in the draft permit as compared to the currently effective permit, the details of these changes are specified below and in the draft permit:

- Whole Effluent Toxicity (WET) testing action levels have been added to the permit.
- In accordance with TOGS 1.2.1, the Total Cyanide sample type has been changed from 24-hour composite to grab.
- Monitoring has been added for Nitrate (NO_3) as N, Nitrite (NO_2) as N, Total Nitrogen as N, Total Ammonia as N, Total Kjeldahl Nitrogen as N, Total Phosphorus, Phosphate (PO_4) as P, and Total Dissolved Solids.
- Twelve month load limits have been added for Total Nitrogen and Total Phosphorus.
- Limits have been added for Total Suspended Solids, BOD_5, Total Cadmium, Total Nickel, Total Lead, Total Silver, Total Zinc, Total Arsenic, 4-Methylphenol, Phenol, Acetone, Acetophenone, 2-Butanone (MEK), 2-Methylphenol, Pyridine, 2,4,6-Trichlorophenol, cis-1,2-Dichloroethene, Vinyl Chloride, Mercury, and Total Toxic Organics (TTO).
- Increased sampling frequency from quarterly to monthly for Toluene, Xylene and Trichlorotrifluoroethane (Freon 113).
- A Schedule of Compliance has been added to require the submittal of a Nutrient Removal Study for the reduction of Total Nitrogen in the effluent.
- A Schedule of Submittals has been added for a short term high intensity monitoring (STHIM) report for Total Coliforms. Pending the results of the STHIM, the permittee may be required to submit a report that evaluates methods to reduce the Total Coliform discharge levels.
- An influent scan of Dr. Reddy's Laboratory wastewater has been added to the Schedule of Submittals.
- Limits for Methylene Chloride, 1,1,1-Trichloroethane, and Toluene have been reduced to the best professional judgment (BPJ) limits for the respective model technology in TOGS 1.2.1 Attachment C.
- Reduced the available chronic dilution to 100:1 and acute dilution to 50:1 in accordance with TOGS 1.3.1 for large rivers.

ADDITIONAL PROPOSED PERMIT CHANGES

- During unannounced Department inspections, the Department may obtain effluent sampling or obtain samples from any portion of the treatment process. The Permittee shall be responsible for the cost of the laboratory analysis.
- The Permittee will be required to perform additional integrity assessments on all wastewater treatment tanks. Additionally, the Permittee will be required to hire an independent licensed professional NY State engineer to certify integrity of all leachate tanks.
- A footnote has been added to limit the volume of leachate that the permittee can treat to an equivalent of 80,000 gallons/day of raw leachate. When calculating compliance with this limit, the permittee is required to consider 1 gallon of Seneca Meadows leachate equivalent to 4 gallons of raw leachate.

Please note that when the Department updates a permit this typically includes updated forms incorporating the latest general conditions.

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II. BACKGROUND INFORMATION

As noted throughout this document, SPDES permits are based on both federal and state requirements including laws, regulations, policies, and guidance. These references can generally be found on the internet. Current locations include: Clean Water Act (CWA) *www.epa.gov/lawsregs/laws/index.html#env*; Environmental Conservation Law (ECL) *www.dec.ny.gov/regulations/40195.html*; federal regulations *www.gpo.gov/fdsys/browse/collectionCfr.action? collectionCode=CFR*; state environmental regulations *www.dec.ny.gov/regulations/regulations.html*; and, NYSDEC water policy, often referred to as Technical and Operational Guidance Series memos (TOGS), *www.dec.ny.gov/regulations/2654.html*.

A. Administrative History

The current SPDES permit for the facility became effective on January 1, 2010 and had an expiration date of December 31, 2014. The permit was extended under the State Administrative Procedures Act (SAPA) on January 1, 2015.

The facility currently has an EBPS score of 130 and a ranking of 44 out of 859. In response to the Department's March 19, 2014 Request for Information, the permittee provided a SPDES NY-2C permit application form and sampling data on September 29, 2014.

B. Outfall and Receiving Water Information

i3 discharges wastewater into the Susquehanna River via Outfall 001, which is located inside Building 96 along Clark Street. The outfall discharges into a 20 inch storm sewer that increases up to a 66 diameter storm sewer before discharging into the Susquehanna River at the flood wall near South Street. After flooding from Tropical Storm Lee in September 2011, the Village of Endicott cleaned and inspected the entire length of the storm sewer from Outfall 001's inlet at Robble Avenue Extension to the discharge at the Susquehanna River. Since then the Village has conducted periodic spot checks of the storm sewer with no adverse findings. Additionally, storm sewers at the flood wall are required to be inspected periodically under a program with the Army Corps of Engineers.

Treatment is provided by an organic waste treatment system and/or an inorganic waste treatment system. The organic waste stream flows through the inorganic waste treatment system before discharge. Below is a table that provides information on each wastewater type.

Wastewater Type	Origin	Transport Method	Treatment	Code of Federal Regulations
Landfill leachate	Broome County Municipal Solid Waste Landfill	Tank truck	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	40 CFR 437 Subpart C
Landfill leachate	Seneca Meadows, Inc. Solid Waste Landfill	Tank truck	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	40 CFR 437 Subpart C
Floor wash water from circuit board and computer equipment components dismantling operations	Geodis Wilson – Asset Recovery Center (on-site)	Containers transported via truck	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	NA*

Hybrid vehicle motor wash operations	BAE Systems, Inc. (on-site)	Containers transported via truck	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	NA*
Groundwater from recovery wells EN-107R and EN-114T	Historic campus groundwater remediation	Piped from on-site	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	NA
Aircraft deicing	Binghamton Regional Airport	Tank truck	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	40 CFR 437 Subpart C
Organic wastewater from printed circuit board manufacturing and assembly	i3 Electronics	On-site	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	40 CFR 433 Subpart A
Inorganic wastewater from printed circuit board manufacturing and assembly	i3 Electronics	On-site	Thermal Reduction, Chemical Reduction with Bisulfite, Equalization, pH Adjustment, Chemical Precipitation with Lime, Coagulation, Flocculation, Clarification, Neutralization, Sand Filtration, Carbon Adsorption	40 CFR 433 Subpart A
Rinse water from electronic circuits cleaning operations	BAE Systems, Inc.	Combined with i3 industrial wastewater	Equalization, pH Adjustment, Chemical Precipitation with Lime, Coagulation, Flocculation, Clarification, Neutralization, Sand Filtration, Carbon Adsorption	NA*
Water jet cutting of electronic circuit boards	BAE Systems, Inc.	Combined with i3 industrial wastewater	Equalization, pH Adjustment, Chemical Precipitation with Lime, Coagulation, Flocculation, Clarification, Neutralization, Sand Filtration, Carbon Adsorption	NA*
Laboratory and small scale pilot manufacturing research and development activities	Binghamton University Center for Advanced Microelectronics Manufacturing	Combined with i3 industrial wastewater	Equalization, pH Adjustment, Chemical Precipitation with Lime, Coagulation, Flocculation, Clarification, Neutralization, Sand Filtration, Carbon Adsorption	NA*
Air conditioning condensate, water softener regenerations, steam condensate, closed loop heating and cooling, etc.	Huron Campus buildings utilities organics	On-site	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	NA
Air conditioning condensate, water softener regenerations, steam condensate,	Huron Campus buildings utilities inorganics	On-site	Equalization, pH Adjustment, Chemical Precipitation with Lime, Coagulation, Flocculation, Clarification, Neutralization, Sand Filtration, Carbon Adsorption	NA

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closed loop heating and cooling, etc.				
Rinse water from resin columns, lab quality rinse waters and boiler blowdown.	Dr. Reddy's Laboratories in Middleburgh, NY	Trucked in	Equalization, pH Adjustment, Activated Sludge, Clarification, Sand Filtration, Chemical Precipitation with Lime, Coagulation, Flocculation, Neutralization, Carbon Adsorption	40 CFR 437 Subpart C

* Combined flow from BAE Systems, Geodis Wilson and Binghamton University CAMM represents 0.2% of total flow.

Outfall 017 is currently inactive. Wastewater from the de-ionized water plant, which once flowed through Outfall 017, is now discharged through Outfall 001.

The location of the outfall, and the name, classification, and index numbers of the receiving waters are indicated in the *Outfall & Receiving Water Location Table* at the end of this fact sheet. The classifications of individual surface waters are specified in 6 NYCRR Parts 800 – 941. The best uses and other requirements applicable to the specific water classes are specified in 6 NYCRR Part 701.

The Seven-day, Ten-year low flow (7Q10) of 315 cubic feet per second (cfs) was obtained for the Susquehanna River from Bulletin 74, 1979, at USGS gauging station number 01513500. Using the 7Q10 flow and i3's maximum discharge over the last three years of 1.35 cfs, an acute dilution of 118:1; a chronic dilution of 234:1; and a human health dilution of 281:1 were calculated. These ratios were calculated by applying the formula: $Dilution\ ratio = \frac{stream\ flow + effluent\ flow}{effluent\ flow}$. For acute dilution calculations, 50% of the 7Q10 is used, while for chronic dilutions, the entire 7Q10 flow is used for the calculation. The Thirty-day, Ten-year low flow (30Q10) of 378 cfs was estimated by applying a multiplier of 1.2 to the 7Q10 flow. The 30Q10 flow was used to calculate the human health dilution ratio. However, the Susquehanna River falls under a large flow river in TOGS 1.3.1. As such, the acute dilution will be limited to 50:1; the chronic dilution limited to 100:1; and the human health dilution limited to 100:1. Mixing zone analyses are conducted in accordance with the following documents: EPA T.S.D, entitled "Water Quality Based Toxics Control," dated March, 1991; EPA Region VIII "Mixing Zones and Dilution Policy", dated December, 1994; NYSDEC TOGS 1.3.1, entitled "Total Maximum Daily Loads and Water Quality Based Effluent Limits." Other critical receiving water data for Temperature, pH, hardness and/or salinity were based on conservative estimates. This flow information is listed in the *Pollutant Summary Table* at the end of this fact sheet together with applicable ambient water quality criteria, ambient background data (if available), and outfall pollutant data.

Impaired Waterbody Information – The CWA requires states to identify impaired waters, where designated uses are not fully supported. For these impaired waters, states must consider the development of a Total Maximum Daily Load (TMDL) or other strategy to reduce the input of the specific pollutants restricting waterbody uses. In 2007, SR (portion 4) of the Susquehanna River, was removed from the Section 303(d) list and placed on the Water Body Inventory and Priority Waterbodies List because of a completed mercury TMDL that is being implemented. The mercury impairment is caused by atmospheric deposition.

The wasteload allocation (WLA) in the Northeast Regional Mercury Total Maximum Daily Load is not specific to each particular source. Instead of allocating the WLA among sources, mercury reduction is accomplished though mercury minimization plans (MMPs). For information on New York State's MMP, refer to TOGS 1.3.10.

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Chesapeake Bay Watershed Information
i3 Electronics is located in New York's portion of the Chesapeake Bay watershed and is subject to the requirements of USEPA's Chesapeake Bay Total Maximum Daily Load (TMDL) and New York's Watershed Implementation Plan (WIP) for the TMDL. For more information on the Chesapeake Bay TMDL and WIP, see the WQBEL section of this factsheet.

C. Discharge Composition

The *Pollutant Summary Table* at the end of this fact sheet presents the existing effluent quality of the facility. Concentration and mass data are presented, based on Discharge Monitoring Report (DMR), permit application, and possibly other data submitted by the permittee for the period January 3, 2012 to December 29, 2014. The statistical methods utilized to calculate 95th and 99th percentiles are in accordance with TOGS 1.2.1 and the USEPA, Office of Water, Technical Support Document For Water Quality-based Toxics Control, March 1991, Appendix E. Statistical calculations were not performed for parameters with insufficient data. Generally, ten or more data points are needed to calculate percentiles (See TOGS 1.2.1 Appendix D). Non-detects were excluded from the statistical calculations.

D. Compliance History

A review of the facility's DMRs and other published compliance information from 01/03/2012 to 12/29/2014 indicates that the facility had zero violations in that time frame.

III. PROPOSED PERMIT REQUIREMENTS

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the CWA and Titles 5, 7, and 8 of Article 17 ECL provide the basis for the effluent limitations and other conditions in the draft permit. The NYSDEC evaluates discharges with respect to these sections of the CWA, ECL, and the relevant federal/state regulations, policy, and guidance to determine which conditions to include in the draft permit.

For existing permittees, the previous permit typically forms the basis for the next permit. Permit revisions are implemented where justified due to changed conditions at the facility and/or in response to updated regulatory requirements.

A. Effluent Limitations

If applicable, the existing permit limits are evaluated to determine if these should be continued, revised, or deleted. Generally, existing limits are continued unless there is justification to do otherwise. Other pollutant monitoring data are also reviewed to determine the presence of additional contaminants that should be included in the permit.

The Stipulation Agreement (STIP) that was accepted by i3 on November 15, 2013 is included in this permit renewal. The STIP was required for the commitment to cleanup and remove a discharge of petroleum, which occurred at the Huron Campus, 1701 North Street, Endicott, NY (Spill No. 1200307). All limits, levels, and monitoring from the STIP have been incorporated into the permit except 1,1,2,2-Tetrachloroethane, which was not present in the groundwater influent, or at Outfall 001. The SPDES permit will now act in place of the STIP.

The permit writer determines the **technology-based effluent limits (TBELs)** that must be incorporated into the permit. A TBEL requires a minimum level of treatment for industrial point sources based on currently available treatment technologies and/or Best Management Practices (BMPs). The Department then evaluates the water quality expected to result from technology controls to determine if any exceedances of water quality criteria in the receiving water might result. If there is a reasonable potential for exceedances to occur, **water quality-based effluent limits (WQBELs)** must be included in the permit. A WQBEL is designed to ensure that the water quality standards of receiving waters are being met. In general, the CWA requires that the effluent limits for a particular pollutant are the more stringent of either the TBEL or WQBEL.

1. TBELs & Anti-Backsliding:

CWA sections 301(b) and 402, ECL sections 17-0509, 17-0809 and 17-0811, and 6 NYCRR Part 750-1.11 require technology-based controls on effluents. A TBEL is set based upon an evaluation of New Source Performance Standards (NSPS), Best Available Technology Economically Achievable (BAT), Best Conventional Pollutant Control Technology (BCT), Best Practicable Technology Currently Available (BPT), and Best Professional Judgment (BPJ). BPJ limits may be set using any reasonable method that takes into consideration the criteria set forth in 40 CFR 125.3.

In many cases, BPT, BCT, BAT and NSPS limitations are based on effluent guidelines developed by USEPA for specific industries. For this facility there are effluent guidelines in the metal finishing point source category (40 CFR 433), metal finishing subcategory (40 CFR 433.10-433.17) and centralized waste treatment point source category (40 CFR 437), organics treatment and recovery subcategory (40 CFR 437.30-437.36) that apply. These regulations require the monitoring and limitation of BOD_5, total suspended solids, copper, zinc, acetone, acetophenone, 2-butanone (MEK), *o*-crestol (2-methylphenol), *p*-crestol (4-methylphenol), phenol, pyridine, 2,4,6-trichlorophenol, cadmium, chromium, lead, nickel, silver, total cyanide, amenable cyanide and total toxic organics (TTO). Specific effluent limits for these pollutants are identified below and in the *Summary Table* at the end of this fact sheet.

For facilities that are subject to effluent guidelines and have substances in their discharges that are not explicitly limited by the regulations, or for industrial sectors for which there are no applicable effluent guidelines in 40 CFR 402-471, the permit writer is authorized to use BPJ in developing TBELs. The authority for BPJ is contained in Section 402(a)(1) of the CWA, which authorizes the Department to issue a permit containing "such conditions as the Administrator determines are necessary to carry out the provisions of the Act." The NPDES regulations in 40 CFR 125.3 state that permits developed on a case-by-case basis under Section 402(a)(1) of the CWA must consider: The appropriate technology for the category class of point sources, of which the applicant is a member, based on available information; and, any unique factors relating to the applicant. Applicable state regulations include 6 NYCRR Part 750-1.11.

Anti-backsliding requirements are specified in the CWA, sections 402(o) and 303(d)(4), ECL 17-0809 and regulations at 40 CFR 122.44(l) and 6 NYCRR Part 750-1.10. These requirements are summarized in TOGS 1.2.1. Generally, the regulations prohibit the relaxation of effluent limits in reissued permits unless one of the specified exceptions applies. In practice, limits in reissued permits will generally be no less stringent than previous permit limits to ensure compliance with anti-backsliding requirements. Otherwise, the specific exceptions that allow backsliding will be cited on a case-by-case basis.

Following is the TBEL & Anti-backsliding assessment for each pollutant present in the discharge. A summary of this analysis is provided in the *Pollutant Summary Table* at the end of this fact sheet.

Pollutant-Specific TBEL & Anti-Backsliding Analysis:

Table 1 on the following page illustrates the process taken to determine the required effluent limitation guidelines (ELGs) required by the USEPA for 40 CFR 437.31 and 40 CFR 433.14. Loading limitations are being applied to account for multiple wastewater sources mixed together. The loadings were added for parameters with ELGs under both Code of Federal Regulations being applied.

The flow of 0.0804 MGD being applied to 40 CFR 437.31 was obtained by adding the maximum allowable leachate flow of 0.08 MGD and the allowable flow of 0.0004 MGD from Dr. Reddy's laboratory. Airport de-icing also falls under 40 CFR 437.31; however, the allowable flow represents 2.4% of the total flow being applied to 40 CFR 437.31 (0.002 MGD) and is intermittent, so the flow was not included in the loading calculations.

Loadings for 40 CFR 433.14 were determined using the i3 Electronics process wastewater flow of 0.35 MGD. Equation 1 below was used to determine the loading values. The current permit limits for Chromium and Cyanide are more stringent than the effluent limitation guideline limits, thus the previous limits are being rolled over. Also, the limits presented in TOGS 1.2.1 Attachment C for Cadmium, Silver and Zinc are more stringent than the calculated ELGs below, so the BPJ limits presented in Attachment C are being applied. Table 2 below shows the calculated BPJ limits that were also calculated using Equation 1.

Eq. 1 $$lb/d = 8.34 * Flow\ (MGD) * Concentration\ (mg/l)$$

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Table 1: Effluent Limitations Guidelines Calculations

Flow Rate: 0.0804 MGD
40 CFR 437.31 (Subpart C)

Parameter	Daily Max (mg/L)	Monthly Average (mg/L)	Daily Max (lb/d)	Monthly Average (lb/d)
BOD5	163	53	109	36
TSS	216	61.3	145	41
Cadmium				
Chromium				
Copper	0.865	0.757	0.58	0.51
Lead				
Zinc	0.497	0.42	0.33	0.28
Acetone	30.2	7.97	20	5.3
Acetophenone	0.114	0.0562	0.08	0.038
2-Butanone (MEK)	4.81	1.85	3.2	1.2
o-Cresol (2-Methylphenol)	1.92	0.561	1.3	0.38
p-Cresol (4-Methylphenol)	0.698	0.205	0.47	0.14
Phenol	3.65	1.08	2.4	0.7
Pyridine	0.37	0.182	0.25	0.12
2,4,6-Trichlorophenol	0.155	0.106	0.10	0.07

Flow Rate: 0.35 MGD
40 CFR 433.14 (Subpart A)

Parameter	Daily Max (mg/L)	Monthly Average (mg/L)	Daily Max (lb/d)	Monthly Average (lb/d)
Cadmium	0.69	0.26	2.0	0.76
Chromium	2.77	1.71	8.1	5.0
Copper	3.38	2.07	9.9	6.1
Lead	0.69	0.43	2.0	1.3
Zinc	2.61	1.48	7.6	4.3
Nickel	3.98	2.38	12	6.9
Silver	0.43	0.24	1.3	0.70
Cyanide, Total	1.2	0.65	3.5	1.9
TTO	2.13		6.2	
Cyanide, Amenable	0.86	0.32	2.5	0.93

Sum of ELGs

Parameter	Daily Max (lb/d)	Monthly Average (lb/d)
BOD5	109	36
TSS	145	41
Cadmium	2.0	0.76
Chromium	8.1	5.0
Copper	10	6.5
Lead	2.0	1.3
Zinc	8.0	4.6
Acetone	20	5.3
Acetophenone	0.08	0.038
2-Butanone (MEK)	3.2	1.2
o-Cresol (2-Methylphenol)	1.3	0.38
p-Cresol (4-Methylphenol)	0.47	0.14
Phenol	2.4	0.7
Pyridine	0.25	0.12
2,4,6-Trichlorophenol	0.10	0.07
Nickel	12	6.9
Silver	1.3	0.70
Cyanide, Total	3.5	1.9
TTO	6.2	
Cyanide, Amenable	2.5	0.93

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Table 2: TOGS 1.2.1 BPJ Model Technology Discharge Concentrations

		0.131 MGD (leachate + GW Remediation + Other Tenants)					0.87 MGD		
		Attachment C - Bio Treatment (Col.E)				Attachment C - Carbon (Col.H)			
Parameter		**Daily Max (ug/L)**	**Monthly Average (ug/L)**	**Daily Max (lb/d)**	**Monthly Average (lb/d)**	**Daily Max (ug/L)**	**Monthly Average (ug/L)**	**Daily Max (lb/d)**	**Monthly Average (lb/d)**
Methylene Chloride						100	10	0.73	0.073
1,1,1-Trichloroethane						10		0.073	
Benzene		50	40	0.055	0.044	5		0.036	
Toluene		50		0.055		5		0.036	

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i3 meets the technology requirements for biological treatment, and carbon absorption limits presented in TOGS 1.2.1 Attachment C. Table 2 above illustrates the process used to calculate the appropriate loadings for each parameter. The flow of 0.87 MGD used for the carbon adsorption columns represents i3's maximum discharge over the last three years. The maximum flow was applied because all flow is treated by this system. Only a portion of the flow is treated by the biological system, so the indicated flow of 0.131 MGD represents the provided flows for the leachate, groundwater remediation, and the remaining tenants that flow through the biological treatment system. These flows were provided in the submitted NY-2C Application. The limits in Table 2 have been applied when they are more stringent than both the previous permit limits and the water quality limits.

OUTFALL 001:

Flow – Monitoring is required for informational purposes.

pH range – Consistent with TOGS 1.2.1 Attachment C and the previous permit, the required effluent pH range is 6.0 to 9.0 standard units (SU).

Temperature – Consistent with NYCRR 704.2(b)(1)(i) and the previous permit, the required effluent limit is 90^{o}F.

Total Cyanide – The previous permit limits are more stringent than the calculated limits obtained from the concentrations in 40 CFR 433.14, therefore the previous permit limits will be rolled over. In accordance with TOGS 1.2.1, the sample method has been changed from 24 hour composite to grab.

Oil & Grease – The BPJ limit of 15 mg/l from the previous permit is being rolled over.

Total Organic Carbon – Detected at a level that does not justify routine monitoring.

Sum of Nitrate and Nitrite – These parameters are being addressed individually under the Chesapeake Bay requirements.

Total Ammonia – The facility accepts leachate that contains high levels of Ammonia. Monitoring of the effluent for this parameter has been added for informational purposes.

Total Solids – Routine monitoring is not justified. This was determined by analyzing the *Pollutant Summary Table* below, which shows that Total Dissolved Solids represents the majority of the Total Solids concentration.

Total Suspended Solids – In accordance with 40 CFR 437.31, a monthly average effluent limit of 41 lb/d and a daily max limit of 145 lb/d has been added to the permit.

BOD_5 – In accordance with 40 CFR 437.31, a monthly average effluent limit of 36 lb/d and a daily max limit of 109 lb/d have been added to the permit.

Total Dissolved Solids – The facility accepts leachate that contains high levels of Total Dissolved Solids. Monitoring of the effluent for this parameter has been added for informational purposes.

Total Aluminum and Total Antimony - Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Nitrite as N, Nitrate as N, Total Kjeldahl Nitrogen as N, and Phosphate – Monitoring for these parameters have been added to assess nutrient loading from the facility. Further details of the monitoring requirements can be found in the WQBEL section of this fact sheet.

Total Nitrogen and Total Phosphorus – Limits for these parameters are added for compliance with USEPA's Chesapeake Bay TMDL and New York's Watershed Implementation Plan. See Chesapeake Bay discussion in the WQBEL section of this fact sheet for more information.

Total Cadmium - In accordance with 40 CFR 433.14, effluent limits of 0.76 lb/d monthly average and 2.0 lb/d daily max have been added to the permit.

Total Chromium - The previous permit limits are more stringent than the calculated limits obtained from the concentrations in 40 CFR 433.14, therefore the previous permit limits will be rolled over.

Hexavalent Chromium – The previous permit limit is being rolled over.

Total Copper – The loading calculated by summing the ELGs in 40 CFR 433.14 and 437.31 is greater than the previous permit limit. The previous permit limit is being rolled over.

Total Nickel – The loadings of 6.9 lb/d monthly average and 12 lb/d daily max calculated from 40 CFR 433.14 are more stringent than the previous permit limits. The limits of 6.9 lb/d monthly average and 12 lb/d daily max will replace the previous permit limits of 10.1 lb/d monthly average and 20.2 lb/d daily max.

Total Iron – The previous permit limit is being rolled over.

Total Lead - In accordance with 40 CFR 433.14, effluent limits of 1.3 lb/d monthly average and 2.0 lb/d daily max have been added to the permit.

Total Mercury – See WQBEL section below.

Total Manganese and Total Selenium - Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Total Silver – In accordance with 40 CFR 433.14, effluent limits of 0.7 lb/d monthly average and 1.3 lb/d daily max have been added to the permit.

Total Tin - Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Total Zinc - In accordance with 40 CFR 433.14 and 437.31, effluent limits of 4.6 lb/d monthly average and 8.0 lb/d daily max have been added to the permit.

Total Fluoride - The previous permit limit is being rolled over.

Total Arsenic – As stated in TOGS 1.2.1, if the projected effluent quality (PEQ) is greater than one quarter to one half of the value in Attachment C of TOGS 1.2.1, that limit is to be enforced. A limit consistent with TOGS 1.2.1 Attachment C, Column D has been added to the permit.

Total Boron, Total Chlorides, Total Sulfates and Total Sulfides - Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Total Phenols – Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Methylene Chloride - The technology limits in Table 2 are more stringent than the limits in the previous permit, therefore the previous permit limits have been replaced by the limits in Table 2.

1,1,1-Trichlorlethane - The technology limits in Table 2 are more stringent than the limits in the previous permit, therefore the previous permit limits have been replaced by the limits in Table 2.

1,2-Dichloroethane – The previous permit limit is being reduced to the water quality limit. For more information see the WQBEL section below.

1,1-Dichloroethene, Trichloroethene, Tetrachloroethene, Trichlorotrifluoroethane (Freon 113) – The previous permit's mass based limits for these parameters are being rolled over. Additionally, the concentration limits from the Stipulation Agreement (STIP) are being added to the permit. The sampling frequency for Trichlorotrifluoroethane (Freon 113) has been increased from quarterly to monthly to follow the frequency set for the parameter in the Stipulation Agreement (STIP) for Huron fuel spill No. 1200307.

Benzene – The previous permit required quarterly sampling with a limit of 0.08 lb/day. Sampling for Benzene is no longer required because the parameter was not detected in the groundwater remediation influent over three samples at both recovery wells (EN-107R and EN-114T). Additionally, there have been zero detections in the effluent over the last three years of quarterly samples.

Toluene - The technology limits in Table 2 are more stringent than the limits in the previous permit, therefore the previous permit limits have been replaced by the limits in Table 2. Additionally, the monitoring frequency is being increased from quarterly to monthly to follow the frequency set for the parameters in the Stipulation Agreement (STIP) for Huron fuel spill No. 1200307.

Total Xylenes – The previous permit limit is being rolled over. The monitoring frequency is being increased from quarterly to monthly to follow the frequency set for the parameters in the Stipulation Agreement (STIP) for Huron fuel spill No. 1200307.

Total Toxic Organics (TTO) - In accordance with 40 CFR 433.14, an effluent limit of 6.2 lb/d daily max has been added to the permit.

Chloroform, Ethylbenzene, 1,1,2,2-Tetrachloroethane, Dibromochloromethane, Bromodichloromethane, Fecal Coliform - Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

cis-1,2-Dichloroethene and Vinyl Chloride – These parameters are detected in the groundwater influent from recovery wells EN-107R and EN-114T, so the limits from the STIP will be added to the permit.

Dissolved Oxygen – Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Total Coliform – The four sampling results for Total Coliform submitted in the NY-2C Application showed values of 5000, 500, 280, and 800 MPN/100 at Outfall 001. The water quality limits set in 6 NYCRR § 703.4 are a monthly median limit of 2,400 MPN/100 mL and a maximum of 20% or more of the samples being 5,000 MPN/100 mL or less. To determine if the Total Coliform effluent levels cause a reasonable potential to violate water quality, a STHIM program has been added to the permit.

Chemical Oxygen Demand, Hardness (as $CaCO_3$), Total Barium and Radium-226 – Detected at a level that does not justify routine monitoring. For more information see Pollutant Summary Table below.

Ethylene Glycol and Butoxyethoxyethanol – Indicated as being present in Outfall 001 discharge on the Industrial Chemical Survey (ICS), but no effluent data has been submitted because there is no test method indicated under 40 CFR Part 136. Therefore, routine monitoring is not required.

Total Bromides – Detected in the influent, but undetected in the effluent, so routine monitoring is not justified. For more information see the Pollutant Summary Table below.

4-Methylphenol - In accordance with 40 CFR 437.31, effluent limits of 0.14 lb/d monthly average and 0.49 lb/d daily max have been added to the permit.

Phenol – In accordance with 40 CFR 437.31, effluent limits of 0.70 lb/d monthly average and 2.4 lb/d daily max have been added to the permit.

2-Methylnaphthalene, Benzyl Alcohol, di(2-Ethylhexyl)phthalate, Butylbenzylphthlate, di-n-Octylphthlate, di-n-Butylphthlate, 1,2-Dichlorobenzene, 1,1-Dichloroethane, trans-1,2-Dichloroethene – Detected in the influent, but undetected in the effluent, so routine monitoring is not justified. For more information see the Pollutant Summary Table below.

1,2-Dichloro-1,1,2-trifluoroethane (Freon 123a) and Diesel / #2 Fuel – Detected in the groundwater influent, but was not sampled for in the effluent. There is no TBEL or WQBEL to apply, and influent concentrations are small, so routine monitoring is not justified. For more information see the Pollutant Summary Table below.

Fluorene, Naphthalene - Detected in the influent, but undetected in the effluent, so routine monitoring is not justified. For more information see the Pollutant Summary Table below.

Acetone, Acetophenone, 2-Butanone (MEK), 2-Methylphenol, Pyridine and 2,4,6-Trichlorophenol – In accordance with 40 CFR 437.31, permit limits for these parameters have been added to the permit. For more information see the Pollutant Summary table below.

Amenable Cyanide – 40 CFR 433.14(b) states that an Amenable Cyanide limit may replace the Total Cyanide limit for facilities with cyanide treatment. The facility can treat for cyanide, but since the previous permit's Total Cyanide limit is more stringent than the calculated Amenable Cyanide limit, the Total Cyanide limit will be applied.

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2. WQBELs & Anti-Degradation:

In addition to the TBELs previously discussed, the NYSDEC evaluated the discharge to determine compliance with CWA sections 101 and 301(b)(1)(C), 40 CFR 122.44(d)(1), and 6 NYCRR Parts 700-704 and 750-1.11. These require that permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." The limits must be stringent enough to ensure that water quality standards are met and must be consistent with any available wasteload allocation (WLA). These and other requirements are summarized in TOGS 1.1.1, 1.3.1, 1.3.2, 1.3.5 and 1.3.6.

The procedure for developing WQBELs includes knowing the pollutants present in the discharge(s), identifying water quality criteria applicable to these pollutants, determining if WQBELs are necessary (reasonable potential), and calculating the WQBELs. Factors also considered in this analysis include available dilution of effluent in the receiving water, receiving water chemistry, and other pollutant sources. If the expected concentration of the pollutant of concern in the receiving water may exceed the ambient water quality standard or guidance value then there is reasonable potential that the discharge may cause or contribute to a violation of the water quality, and a WQBEL or WLA for the pollutant is required.

Antidegradation Policy: New York State implements the antidegradation portion of the CWA based upon two documents: (1) Organization and Delegation Memorandum #85-40, entitled "Water Quality Antidegradation Policy," signed by the Commissioner of NYSDEC, dated September 9, 1985; and, (2) TOGS 1.3.9, entitled "Implementation of the NYSDEC Antidegration Policy – Great Lakes Basin (Supplement to Antidegradation Policy dated September 9, 1985)." A SPDES permit cannot be issued that would result in the water quality criteria being violated. The permit for the facility contains effluent limits which ensure that the existing beneficial uses of the receiving waters will be maintained.
Following is the WQBEL analysis for each pollutant present in the discharge(s). Anti-degradation analysis which justifies applying water quality standards of a higher classification is noted below, if applicable. Refer to section II.B. above for information on discharge location, receiving water information (class, dilution, chemistry), and the existence of any TMDLs. A summary of this analysis is provided in the *Pollutant Summary Table* at the end of this fact sheet.

Pollutant-Specific WQBEL & Anti-Degradation Analysis:

pH range – The dilution ratio is at least 1:1 so a limit equal to the TBEL is appropriate.

Temperature – The discharge is to non-trout waters so a limit of 90 F is specified in accordance with 6 NYCRR 704.2(b)(1)(i).

Oil & Grease – The narrative water quality standards provided in 6 NYCRR 703.2 state that the discharge of oil and floating substances shall not include residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease. The dilution ratio is at least 1:1 so a limit equal to the TBEL is appropriate.

Total Suspended Solids (TSS) – The narrative water quality standards provided in 6 NYCRR Part 703.2 state that the discharge of suspended solids shall not cause deposition or impair the receiving waters for their best usages. The dilution ratio is at least 1:1 so a limit equal to the TBEL is appropriate.

BOD_5 – Completing a dissolved oxygen sag point analysis demonstrated that this parameter does not possess a reasonable potential to cause a water quality violation. The high dilution of the river will ensure the narrative criteria in 6 NYCRR part 703.3 will be met. Therefore the TBEL will be applied.

Mercury – Mercury was detected in the effluent at a level of 300 ng/L, which exceeds the water quality standard of 0.7 ng/L. New York State's mercury multiple discharge variance (MDV) in TOGS 1.3.10 is being applied. Consequently, the permit includes a 50 ng/L daily maximum effluent limit; a mercury minimization program requirement; and routine monitoring using EPA Method 1631. Refer to TOGS 1.3.10 for further detail.

1,2-Dichloroethane – A water quality analysis indicated that a loading of 0.44 lbs/day is protective of water quality. The previous permit limit is being reduced to the water quality limit.

Whole Effluent Toxicity (WET) Testing - WET tests use small vertebrate and invertebrate species to measure the aggregate toxicity of an effluent. There are two different durations of toxicity tests: acute and chronic. Acute toxicity tests measure survival over a 96-hour test exposure period. Chronic toxicity tests measure reductions in survival, growth, and reproduction over a 7-day exposure. Per TOGS 1.3.2, WET testing may be required when any one of the following seven criteria are applicable:

1. There is the presence of substances in the effluent for which ambient water quality criteria do not exist.
2. There are uncertainties in the development of TMDLs, WLAs, and WQBELs, caused by inadequate ambient and/or discharge data, high natural background concentrations of pollutants, available treatment technology, and other such factors.
3. There is the presence of substances for which WQBELs are below analytical detectability.
4. There is the possibility of complex synergistic or additive effects of chemicals, typically when the number of metals or organic compounds discharged by the permittee equals or exceeds five.
5. There are observed detrimental effects on the receiving water biota.
6. Previous WET testing indicated a problem.
7. Treatment plants which exceed a discharge of 1 MGD. Facilities of less than 1 MGD may be required to test, e.g., POTWs < 1 MGD which are managing industrial pretreatment programs.

An evaluation of the discharge using the seven criteria noted above indicated that toxicity may be expected in the discharge. Criteria applicable to the discharge include numbers 1 and 4. Based upon this evaluation, WET testing was included in the permit in accordance with guidance in TOGS 1.3.2

WET testing action levels of 15 TUa and 100 TUc have been included in the draft permit for each species. The chronic action level is equal to the chronic dilution ratio ($100 * 1 = 100$). The acute action level is equal to 50% of the chronic dilution ration multiplied by 0.3($50 * 0.3 = 15$). Refer to the SPDES permit for details.

Chesapeake Bay Water Quality-Based Effluent Limits and Monitoring

i3 Electronics is located in New York's portion of the Chesapeake Bay watershed, which is subject to the requirements of USEPA's Chesapeake Bay TMDL and New York's Watershed Implementation Plan (WIP) for the TMDL. The WIP describes New York's contribution to the nutrient and sediment reduction goals outlined in the Chesapeake Bay TMDL. EPA's objective is for watershed jurisdictions (Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and Washington, D.C.) to implement the actions necessary to achieve the TMDL's nutrient and sediment allocations by 2025.

When DEC finalized the Phase II WIP in January 2013, i3 Electronics (aka Endicott Interconnect Technologies) was included as a "Non-Significant" facility. Since then, additional information indicates that i3's nutrient loads are greater than originally estimated and that i3 should be classified as a "Significant" facility and given the Total Phosphorus and Total Nitrogen limits described below.

A **Total Phosphorus** limit of **1,325 pounds per year** will be applied at EDP and a limit of **21,200 pounds per year Total Nitrogen** will become effective January 1, the year 2025. These limits are Water Quality based Effluent Limits based on Waste Load Allocations in the TMDL and the strategy described in the WIP. The limits were calculated using the WIP effluent concentrations of 8.0 mg/l Total Nitrogen and 0.5 mg/l Total Phosphorus and the maximum monthly discharge flow from January 3, 2012 to December 29, 2014 of 0.87 MGD. Equation 1 on page 6 was used to calculate the loading per day and that value was multiplied by 365 days/year.

An interim limit of **95,000 pounds per year Total Nitrogen** will be applied at EDP for 47 months. This limit represents the current yearly discharge from the facility. At EDP + 48 months, a 25% reduced interim limit of **60,000 pounds per year** will be applied until the January 1, 2025 limit of **21,200 pounds per year** is enforced. In accordance with **§**621.13 and §750-1.18, these permit limits are subject to revision on the basis of newly discovered material information or a change in environmental condition. If USEPA changes New York's requirements under the Chesapeake Bay TMDL, or if DEC changes its approach to managing nutrient loads from the wastewater sector, i3's nutrient limits and monitoring requirements may change as well.

The permittee is required to sample and report Phosphate (PO_4) as P, Total Phosphorus as P, Total Kjeldahl Nitrogen (TKN) as N, Nitrite (NO_2) as N, and Nitrate (NO_3) as N, to calculate **Total N**. The **Total Nitrogen, as N, 12 month load [TN 12-ML]** is defined as the current **Total Nitrogen, as N, Month Load** added to the **Total Nitrogen, as N, Month Load** from the eleven previous months. The **Total Phosphorus, as P, 12 month load [TP 12-ML]** is defined as the current **Total Phosphorus, as P, Month Load** added to the **Total Phosphorus, as P, Month Load** from the eleven previous months. The permittee shall begin calculating the 12-month loads for TP and TN at EDP + 12 months, when 12 monthly load values are available.

At EDP + 12 months, when 12 monthly load values are available, the permittee shall begin comparing the **Total Phosphorus, as P, 12 month load [TP 12-ML]** for each month to the **Total Phosphorus, as P, 12 month load limit.** The permittee then calculates the **Total Phosphorus, as P, credit [TP credit]** as [12 month load TP limit] - [actual TP 12-ML]. Should the result of this calculation be zero or less than zero (i.e., the TP 12-ML is being met or exceeded), the permittee shall report "0" for this parameter.

If the **Total Phosphorus, as P, credit** is greater than zero, the permittee may apply the **TP credit** toward the **Total Nitrogen, Adjusted** effluent limit by calculating **Total Nitrogen, available from TP credit [TNAP]**. **TNAP** is calculated as [TP credit] x [N:P ratio], where the **[N:P ratio]** for this facility is **3.97**.

The **Total Nitrogen, as N, Adjusted** load is calculated as [TN 12-ML] - [Total Nitrogen, available from TP credit]. The Total Nitrogen, as N, Adjusted load amount is used to determine compliance with the Total Nitrogen, as N, Adjusted limit, which is effective at EDP + 57 months.

The **Total Nitrogen, as N, Delivered 12-Month Load [TND 12-ML]** is the amount of nitrogen from the facility that is delivered to the Chesapeake Bay. TND 12-ML is calculated as [TN 12-ML] * [Nitrogen Delivery Factor (DF_n)] where DF_n for i3 Electronics is **0.55**.

B. Monitoring & Reporting Requirements

CWA section 308, 40 CFR 122.44(i), and 6 NYCRR Part 750-1.13 require that monitoring be included in permits to determine compliance with effluent limitations. Additional effluent monitoring may also be required to gather data to determine if effluent limitations may be required. The permittee is responsible for conducting the monitoring and for reporting results on DMRs. The permit contains the monitoring requirements for the facility. Monitoring frequency is based on the minimum sampling necessary to adequately monitor the facility's performance. For industrial facilities, sampling frequency is based on guidance provided in TOGS 1.2.1.

C. Other Conditions Specific To This Permit

Best Management Practices (BMPs): The permittee is required to implement a BMP plan that prevents, or minimizes the potential for the release of significant amounts of toxic or hazardous pollutants to state waters. The BMP plan requires annual review by the permittee. This requirement is being continued from the previous permit.

Compliance Schedule: A Schedule of Compliance has been added to require the submittal of a Nutrient Removal Study for the reduction of Total Nitrogen. The report shall evaluate new treatment technologies and adjustment of influent wastestreams.

Schedule of Submittals: A Schedule of Submittals has been added to require a short term high intensity monitoring (STHIM) report submittal for total coliforms and an influent scan of Dr. Reddy's wastewater. Pending the results of the STHIM the permittee may be required to submit a report that evaluates methods to reduce the total coliform discharge levels. The influent scan of Dr. Reddy's wastewater is needed to provide the Department with data on the parameters entering the treatment system. This is a new requirement to the permit.

Discharge Notification Act: In accordance with Discharge Notification Act (ECL 17-0815-a), the permittee is required to post a sign at each point of wastewater discharge to surface waters. The permittee is also required to provide a public repository for DMRs as required by the SPDES permit. This requirement is being continued from the previous permit.

Mercury Minimization Program: The permittee shall develop, implement, and maintain a Mercury Minimization Program (MMP). The MMP is required because the 50 ng/L permit limit exceeds the statewide water quality based effluent limit (WQBEL) of 0.70 ng/L (ng/l) for Total Mercury. The goal of the MMP will be to reduce mercury effluent levels in pursuit of the WQBEL. Note – The mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

D. General Conditions Applicable To All Permits

The permit contains standard regulatory language that is required to be in all SPDES permits. These permit provisions, based largely upon 40 CFR 122 subpart C and 6 NYCRR Part 750, include requirements pertaining to monitoring, recording, reporting, and compliance responsibilities. These "general conditions" of permits are typically specified, summarized, or referenced on the first and last pages of the permit.

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OUTFALL & RECEIVING WATER LOCATION TABLE

Outfall Number	Latitude	Longitude	Receiving Water Name	Water Class	Water Index Number	Major/Sub Basin	Hardness as $CaCO_3$
001	42° 05' 38"	76° 03' 13"	Susquehanna River	A	SR (Portion 4)	06 / 03	130
017	42° 06' 24"	76° 03' 03"	Susquehanna River	A	SR (Portion 4)	06 / 03	130

POLLUTANT SUMMARY TABLE

Outfall #	001

Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	Existing Effluent Quality				TBELs				Water Quality Data & WQBELs					Permit Basis
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Flow Rate, MGD	Average	0.58	Maximum	0.87	M / M		MA / DM		7Q10 =315 cfs, 30Q10 = 378 cfs, Dilution/Mixing = 100:1					T
pH (SU)	Minimum	6.5	Maximum	8.9	6.0 – 9.0		Range		6.5 – 8.5	Apply TBEL: Dilution Greater Than 1:1				T
Temperature (°F)	Average	68	Maximum	81		90°F	DM							T
Total Cyanide (µg/L)	27 / 34	*Detected two times in three years of data*			M / M	0.45 / 0.76	MA / DM		5.2 – C as free CN, Σ (HCN + CN)-as CN		520	3.8	MA	T
Oil & Grease (mg/L)	8.1	*Detected once in three years of data*			15	-----	DM			Narrative Std.-Part 703.2: Apply TBEL				T
Total Organic Carbon (mg/L)	17 / 52	37 / 53												NA
Sum of Nitrate and Nitrite (mg/L)	77 / 730	170 / 290			*Addressed as separate parameters under Chesapeake Bay requirements*				10		1,000		MA	NA
Total Ammonia, as N (mg/L)	3.4 / 25	15 / 29			M	M	DM		1.23-S 1.89-W		123-S 189-W	890-S 1,400-W	MA	T
Total Solids (mg/L)	2,900 / 5,200	4,300 / 5,200												NA

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	**Existing Effluent Quality**				**TBELs**				**Water Quality Data & WQBELs**					**Permit Basis**
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Total Suspended Solids (mg/L)	4.9 / 14	13 / 21			M / M	41 / 145	MA / DM			Narrative Std.-Part 703.2: Apply TBEL				T
BOD_5 (mg/L)	4.5 / 11	11 / 17			M / M	36 / 109	MA / DM		DO: 4.0		DO standard met with TBEL and 8.0 mg/l TN for the Chesapeake Bay TMDL.			T
Total Dissolved Solids (mg/L)	2400 / 2600	*Data from 9/29/2014 NY-2C Application*			M				500		500,000		DM	T
Chesapeake Bay Nutrients														
Nitrate (as N) (mg/L)	55 / 78				M	M	DM		10-HWS		Limited by Total Nitrogen TMDL below.			T
Nitrite (as N) (mg/L)	0.27 / 0.34				M	M	DM		1.0-HWS					T
Total Kjeldahl Nitrogen (as N) (mg/L)	4.5 / 27	13 / 23			M	M	DM		DO: 4.0	DO standard met with TBEL and 8.0 mg/l TN for the Chesapeake Bay TMDL.				T
Total Nitrogen (mg/L, lbs/yr)					M	M	DM		TMDL – 2025 Target		8.0	21,200	MA	WQ
Total Phosphorus (mg/L, lbs/yr)	0.17 / 0.81	0.33 / 0.50			M	M	DM		TMDL – 2025 Target		0.5	1,325	MA	WQ
Phosphate (PO_4), as P (mg/L)	*No effluent data available*				M	M	DM							T
Metals														
Total Aluminum (µg/L)	0.10 / 0.11				2.0 / 4.0		MA / DM		0.1 ionic	Apply TBEL: Receiving Water pH Greater Than 6.5				NA
Total Antimony (mg/L)	0.011 / 0.024								0.003-HWS		0.30	2.2	MA	NA
Total Cadmium (mg/L)	0.001	*Detected once in three years of data*			M / M	0.76 / 2.0	MA / DM		0.00257-C (dissolved)		0.28	2.0	DM	T
Total Chromium (µg/L)	11 / 100	52 / 85	0.062 / 0.10	0.093 / 0.17	M / M	4.0 / 8.0	DM / MA		50-HWS (dissolved)		5,000	36	MA	T

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	**Existing Effluent Quality**				**TBELs**				**Water Quality Data & WQBELs**					**Permit Basis**
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Hexavalent Chromium (µg/L)	10 / 10	*Detected two times in three years of data*			M / M	1.0 / 1.9	MA / DM		16-C (dissolved)		810	5.9	DM	T
Total Copper (µg/L)	580 / 1800	1100 / 1400	1.7 / 6.3	2.9 / 5.0	M / M	3.5 / 7.3	MA / DM		17.2-A 11.2-C (dissolved)		1,500-A 1,900-C	11	DM	T
Total Nickel (µg/L)	30 / 77	52 / 79	0.080 / 0.36	0.11 / 0.41	M / M	6.9 / 12	MA / DM		65-C (dissolved)		6,500	47	DM	T
Total Iron (µg/L)	120 / 560	150 / 270	0.15 / 1.5	0.37 / 2.1	M / M	4.4 / 6.6	MA / DM		1,000		50,000	360	DM	T
Total Lead (mg/L)	0.046 / 0.087	*Detected three times in three years of data*			M / M	1.3 / 2.0	MA /DM		0.005-C (dissolved)		0.67	4.9	DM	T
Total Mercury (ng/L)	77 / 300	*Detected four times in three years of data*			50		DM		0.7-HFC		0.7		MA	T
Total Manganese (mg/L)	0.052 / 0.18	0.07 / 0.11			1.0 / 2.0				0.3-E		300	220	MA	NA
Total Selenium (mg/L)	0.012	*Detected once in three years of data*							0.0046-C		0.46	3.3	DM	NA
Total Silver (mg/L; lb/d)	*Not Detected in Three years*				M / M	0.70 / 1.3	MA / DM		0.050-HWS (dissolved)		5.0	36	DM	T
Total Tin (mg/L)	0.37 / 0.45	*Detected Three Times in Three Years of Data*							No Std./Guidance Value					NA
Total Zinc (mg/L; lb/d)	0.086 / 1.3	0.07 / 0.13			M / M	4.6 / 8.0	MA / DM		0.15-A (dissolved)		7.5	54	DM	T
Inorganics														
Total Fluoride (mg/L; lb/d)	1.1 / 5.0	1.2 / 1.8	2.2 / 8.4	3.1 / 9.8	M / M	234 / 468	MA / DM		1.5-HWS 2.7-C		150 / 270	1,100 / 2,000	MA / DM	T
Total Arsenic (µg/L)	26 / 50	23 / 38			50 / 100		MA / DM		50-HWS		5,000	36	MA	T
Total Boron (mg/L)	1.5 / 3.0	2.8 / 3.8							10-C		1,000	7,300	DM	NA

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	**Existing Effluent Quality**				**TBELs**				**Water Quality Data & WQBELs**					**Permit Basis**
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Total Chlorides (mg/L)	930 / 2000	1400 / 1600							250		25,000		MA	NA
Total Sulfates (mg/L)	510 / 1600	1100 / 1600							250-HWS		25,000		MA	NA
Total Sulfides (mg/L)	*Not Detected in Three years*				1.0 / 2.0		MA / DM		0.002		0.2	1.5	DM	NA
Organics														
Total Phenols (µg/L)	23 / 33	*Detected Five Times in Three Years of Data*			500 / 1000		MA / DM		1.0-E		100	0.72	MA	NA
1,2-Dichloroethane (µg/L)	*Not Detected in Three Years*				M	0.50	DM		0.6-HWS		60	0.44	MA	WQ
1,1-Dichloroethene (µg/L)	*Not Detected in Three Years*				10	0.044	DM – Conc. MA - Mass		0.7-HWS		70	0.51	MA	T
Methylene Chloride (µg/L)	*Not Detected in Three Years*				M	0.073	DM		5.0-HWS		500	3.6	MA	T
Trichloroethene (µg/L)	*Not Detected in Three Years*				10	0.17	DM		5.0-HWS		500	3.6	MA	T
1,1,1-Trichloroethane (µg/L)	*Not Detected in Three Years*				M	0.17	DM		5.0-HWS		500	3.6	MA	T
Tetrachloroethene (µg/L)	*Not Detected in Three Years*				10	0.073	DM		0.7-HWS		70	0.51	MA	T
Benzene (µg/L)	*Not Detected in Three Years*				M	0.036	DM		1.0-HWS		100	0.73	MA	NA
Toluene (µg/L)	*Not Detected in Three Years*				M	0.036	DM		5.0-HWS		500	3.6	MA	T
Trichlorotrifluoroethane (Freon 113) (µg/L)	*Not Detected in Three Years*				10	0.80	DM		5.0-HWS		500	3.6	MA	T
Total Xylenes (µg/L; lb/d)	3.5		0.01	Detected once	M	0.080	DM		5.0-HWS		500	3.6	MA	T
Total Toxic Organics (TTO) (mg/l; lb/d)					M	6.2	DM							T

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	Existing Effluent Quality				TBELs				Water Quality Data & WQBELs					Permit Basis
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Chloroform (µg/L)	Average	1.3	Maximum	2.1	200	M	DM		7.0-HWS		700	5.0	MA	NA
STIP Sampling														
cis-1,2-Dichloroethene (µg/L)	17.4	*Detected once in three years of data*			10	M	DM		5.0-HWS		500	3.6	MA	T
Ethylbenzene (µg/L)	*Not detected in three years of data*				5.0	0.036	DM		5.0-HWS		500	3.6	MA	NA
Vinyl Chloride (µg/L)	*Not detected in three years of data*				10	M	DM		0.3-HWS		30	0.22	MA	T
1,1,2,2-Tetrachloroethane (µg/L)	*Not detected in three years of data*				50	M	DM		0.2-HWS		20	0.15	MA	NA
Dibromochloromethane (µg/L)	Average	1.3	Maximum	1.8					50-HWS		5,000	36	MA	NA
Bromodichloromethane (µg/L)	1.7 / 1.7	*Detected twice in three years of data*							50-HWS		5,000	36	MA	NA
RFI Sampling														
Dissolved Oxygen (mg/L)	Minimum	9.3	Average	9.6							DO standard met with TBEL and 8.0 mg/l TN for the Chesapeake Bay TMDL.			NA
Fecal Coliform (cfu/100 mL)	Average	< 4.5	Maximum	6.0	200 / 400		30-day avg. / 7-day avg.							NA
Total Coliform (MPN/100 mL)	Average	1600	Maximum	5000	2,400 / 5,000		Monthly median / More than 20% of samples							STHIM
Chemical Oxygen Demand (mg/L)	Average	58	Maximum	96										NA
Hardness (as $CaCO_3$) (mg/L)	Average	660	Maximum	720										NA
Total Barium (mg/L)	Average	0.088	Maximum	0.10	4.0 / 2.0		DM / MA		1.0-HWS		100	730	MA	NA

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	**Existing Effluent Quality**				**TBELs**				**Water Quality Data & WQBELs**					**Permit Basis**
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Radium-226 (pCi/L)	Average	0.71	Maximum	1.8					3.0-HWS		300		MA	NA
Industrial Chemical Survey														
Ethylene Glycol (µg/L)	No effluent data.								50-HWS		5,000	36	MA	NA
Butoxyethoxyethanol (µg/L)									50-HWS		5,000	36	MA	NA
Influent Sampling														
Total Bromides (mg/L)	Average	< 2.0	Maximum	< 2.0					2.0-HWS		200	1,500	MA	NA
3&4-Methylphenol (µg/L; lb/d)	Average	< 7.5	Maximum	< 10	M / M	0.14 / 0.47*	MA / DM		No Std./Guidance value					T
Phenol (µg/L; lb/d)	Average	< 5.0	Maximum	< 5.0	M / M	0.70 / 2.4	MA / DM		1.0-E		100	0.73	MA	T
2-Methylnaphthalene (µg/L)	Average	< 5.0	Maximum	< 5.0					4.7-C		470	3.4	DM	NA
Benzyl Alcohol (µg/L)	Average	< 5.0	Maximum	< 5.0					No Std./Guidance value					NA
di(2-Ethylhexyl)phthalate [previously, bis(2-Ethylhexyl)phthalate] (µg/L)	Average	< 5.0	Maximum	< 5.0	200**		DM		0.6-C		60	0.44	DM	NA
Butylbenzylphthlate (µg/L)	Average	< 5.0	Maximum	< 5.0	200**		DM		50-HWS		5,000	36	MA	NA
di-n-Octylphthlate (µg/L)	Average	< 5.0	Maximum	< 5.0	200**		DM		50-HWS		5,000	36	MA	NA
di-n-Butylphthlate (µg/L)	Average	< 5.0	Maximum	< 5.0	200**		DM		50-HWS		5,000	36	MA	NA
1,2-Dichlorobenzene (µg/L)	Average	< 5.0	Maximum	< 5.0	30				3.0-HWS		300	2.2	MA	NA
1,1-Dichloroethane (µg/L)	Average	< 2.0	Maximum	< 5.0					5.0-HWS		500	3.6	MA	NA
trans-1,2-Dichloroethene (µg/L)	Average	< 2.0	Maximum	< 5.0					5.0-HWS		500	3.6	MA	NA

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	**Existing Effluent Quality**				**TBELs**				**Water Quality Data & WQBELs**					**Permit Basis**
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
1,2-Dichloro-1,1,2-trifluoroethane (Freon 123a) (µg/L)	No effluent data. Groundwater influent avg. 12 µg/L, max. 14 µg/L.													NA
Fluorene (µg/L)	Average	< 5.0	Maximum	< 5.0	40				0.54-C		54	0.39	DM	NA
Naphthalene (µg/L)	Average	< 5.0	Maximum	< 5.0	40				10-E		1,000	7.3	MA	NA
Diesel / #2 Fuel (mg/L)	No effluent data. Groundwater influent avg. 0.93 mg/L, max. 1.2 mg/L								No Std./Guidance value					NA
Additional Categorical Parameters														
Acetone (mg/L)	0.0081 / 0.010	*Detected twice in three years of data*			M / M	20 / 5.3	MA / DM		0.05-HWS		5.0	36	MA	T
Acetophenone (µg/L; lb/d)	No effluent data				M / M	0.038 / 0.080	MA / DM		No Std./Guidance value					T
2-Butanone (MEK)	*Not detected in three years of data*				M / M	1.3 / 3.4	MA / DM		50-HWS		5,000	36	MA	T
2-Methylphenol (µg/L)	Average	< 5.0	Maximum	< 5.0	M / M	0.39 / 1.3	MA / DM		No Std./Guidance value					T
Pyridine (µg/L)	Average	< 5.0	Maximum	< 5.0	M / M	0.12 / 0.25	MA / DM		50-HWS		5,000	36	MA	T
2,4,6-Trichlorophenol (µg/L)	Average	< 5.0	Maximum	< 5.0	M / M	0.070 / 0.10	MA / DM		No Std./Guidance value					T
Amenable Cyanide (µg/L; lb/d)	No effluent data.					0.93 / 2.5	MA / DM		5.2-C		520	3.8	DM	NA
WET Testing														
WET – Acute Invertebrate (TUa)					15		AL							T
WET – Acute Vertebrate (TUa)					15		AL							T

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Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	Existing Effluent Quality				TBELs				Water Quality Data & WQBELs					Permit Basis
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
WET – Chronic Invertebrate (TUc)					100		AL							T
WET – Chronic Vertebrate (TUc)					100		AL							T

* - Effluent Limitation applies to 4-Methylphenol
** - Technology-based Effluent Limitation applies to Sum of Phthlates

Outfall #	017

Effluent Parameter (concentration in ug/l and mass in lbs/day unless otherwise specified)	Existing Effluent Quality				TBELs				Water Quality Data & WQBELs					Permit Basis
	concentration		mass					PQL	Ambient Criteria	Ambient Background	WQBEL			(T or WQ or NA)
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass	Type	
Flow Rate, GPD	Outfall not used in the last three years.				M / M		MA / DM		7Q10 =NA, 30Q10 NA, Dilution/Mixing = NA					T
pH (SU)					6.0 – 9.0		Range		6.5 – 8.5	Apply TBEL: Dilution Greater Than 1:1				T
Total Chromium (mg/L)					1.6		DM		0.05-HWS (dissolved)		See Water Quality for Outfall 001			T
Total Copper (mg/L)					0.15		DM		0.011-C (dissolved)		See Water Quality for Outfall 001			T
Total Iron (mg/L)					0.20		DM		0.30		See Water Quality for Outfall 001			T
Total Nickel (mg/L)					3.2		DM		0.043 (dissolved)		See Water Quality for Outfall 001			T

Water Quality Notes:
A – Acute; C – Chronic; HWS – Drinking Water Source; HFC – Human Consumption of Fish; E – Aesthetic

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