STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

February 7, 2020

Mr. Jeffrey C. Weida
Location Manager
e-copy: jeffrey.weida@arconic.com
2300 North Wright Road
Alcoa, TN 37701

Subject: **Modified NPDES Permit No. TN0065081**
Arconic Tennessee LLC
Alcoa, Blount County, Tennessee

Dear Mr. Weida:

In accordance with the provisions of "The Tennessee Water Quality Control Act" (Tennessee Code Annotated, Sections 69-3-101 through 69-3-120) the above referenced NPDES Permit is hereby modified by the Division of Water Resources. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

This minor modification transfers the permit from Arconic, Inc. to Arconic Tennessee, LLC.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application. Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment. Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

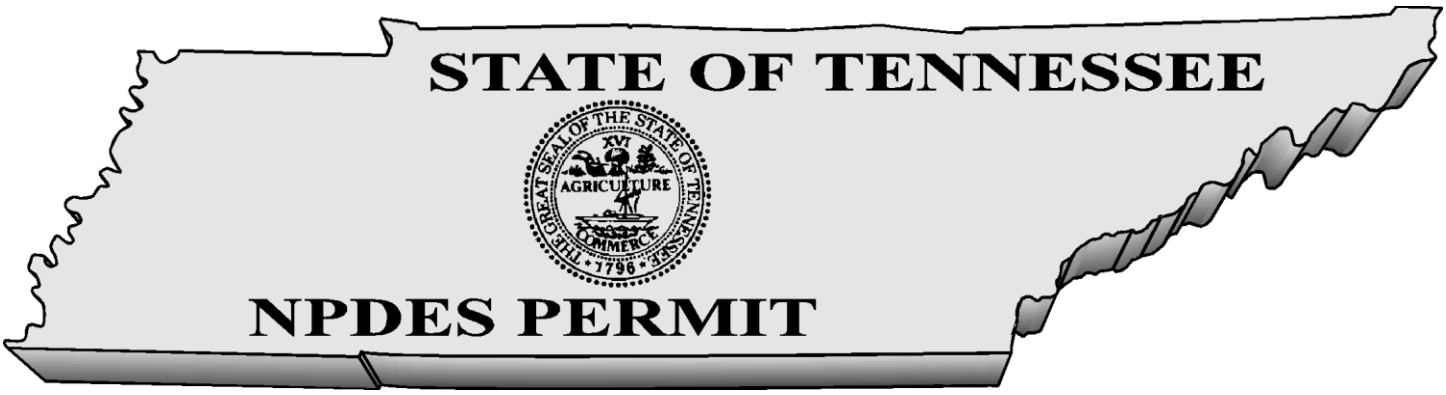
If you have questions, please contact the Knoxville Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Miss Julie Harse, P.E. at (615) 532-0682 or by E-mail at *Julie.Harse@tn.gov*.

Sincerely,

Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Permit File
Knoxville Environmental Field Office
NPDES Permit Section, EPA Region IV, r4npdespermits@epa.gov
Mr. Devin Belleau, Arconic Inc., devin.belleau@arconic.com
Mr. Shane C. Strickland, EHS Manager, Arconic Inc., shane.strickland@arconic.com



Minor Modified
No. TN0065081

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger:	**Arconic Tennessee LLC (formerly Alcoa, Inc. - South Plant)**
is authorized to discharge:	**industrial wastewater from Outfall 006 and industrial storm water runoff from Outfalls SW4, SW6 and S03**
from a facility located at:	**300 North Hall Road, Alcoa, Blount County, Tennessee**
to receiving waters named:	**Pistol Creek at mile 4.7 (006 and SW6), Pistol Creek at mile 7.0 (SW4), an unnamed pond on Arconic property (S03)**

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

This permit shall become effective on: **February 1, 2020**

This permit shall expire on: **December 31, 2022**

Issuance date: **January 31, 2020**

for Jennifer Dodd
Director

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Arconic Tennessee LLC (formerly Alcoa, Inc. - South Plant) is authorized to discharge industrial wastewater from Outfall 006 and industrial storm water runoff from Outfalls SW4, SW6 and S03 to Pistol Creek at mile 4.7 (006 and SW6), Pistol Creek at mile 7.0 (SW4), and an unnamed pond on Arconic property (S03). These discharges shall be limited and monitored by the permittee as specified below:

Internal Monitoring Point 06A and 06E

Process wastewater discharged through Internal Monitoring Point (IMP) 06A is regulated by 40 CFR Part 421. IMP 06A's final discharge point is through Outfall 006. Appendix 2 of the Rationale lists the applicable best available technology (BAT) and best practicable technology (BPT), currently available, effluent limitations guidelines for Subpart B – Primary Aluminum Smelting Subcategory, (q) Direct Chill Casting Contact Cooling. The process water includes discharge from South Ingot cooling tower blow down and filter backwash water. In previous permits, limits for IMP 06A were based on a tiered format because the production levels in the facility varied. The need for multiple tiered limits for Internal Monitoring Point 06A is not applicable because data previously presented does not show an appreciable difference from the cumulative average. However, because Arconic Tennessee LLC anticipates a variable production schedule based on economic indicators, the division has established a single variable table of effluent limits for this internal monitoring point.

Internal Monitoring Point 06A - South Ingot Cooling Tower, Blowdown and Filter Backwash (Tiered Limits: <= 3.110 mmlb/day<=3.456 mmlb/day< 3.8 mmlb/day)

Description : External Outfall, Number : 06A, Monitoring : Effluent Gross, Season : All Year

CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	6.0	SU	Grab	Weekly	Minimum
00400	pH	<=	9.0	SU	Grab	Weekly	Maximum
00530	Total Suspended Solids (TSS)	<=	5184	lb/d	Grab	Once Every 2 Months	Monthly Average
00530	Total Suspended Solids (TSS)	<=	10368	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	273	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	121	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	1.71	lb/d	Grab	Once Every 2 Months	Monthly Average

01067	Nickel, total (as Ni)	<=	2.53	lb/d	Grab	Once Every 2 Months	Daily Maximum
01097	Antimony, total (as Sb)	<=	3.95	lb/d	Grab	Once Every 2 Months	Monthly Average
01097	Antimony, total (as Sb)	<=	8.86	lb/d	Grab	Once Every 2 Months	Daily Maximum
01105	Aluminum, total (as Al)	<=	28.06	lb/d	Grab	Twice Per Month	Daily Maximum
01105	Aluminum, total (as Al)	<=	12.45	lb/d	Grab	Twice Per Month	Monthly Average
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average

Description : External Outfall, Number : 06A, Monitoring : Instream Monitoring, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Monthly Average
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Daily Maximum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.

In addition to this single variable table of effluent limits for this internal monitoring point, the Division is including an “emergency tier” of effluent limits to be applied in the event of production outages at the [Arconic Inc.] North Plant's ingot casting facility. These limits shall be applicable only when the North Plant is non-operational and production at the [Arconic Tennessee LLC] South Plant is increased to facilitate maintaining their production schedule. Those limits are included below and labeled as “Emergency Outfall 06E”. For all times that production at the South Plant is operating at normal capacity the DMR for Emergency Outfall 06E shall be reported as “no-discharge” for that months’ reporting requirements.

Emergency Outfall 06E – Emergency - South Ingot Cooling Tower, Blowdown and Filter Backwash These limits are only to be applied when the North Plant is non-operational. (Emergency Tier: <= 3.810 mmlb/day<=4.140 mmlb/day< 4.500 mmlb/day)

Description : External Outfall, Number : 06E, Monitoring : Effluent Gross, Season : All Year

CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	6.0	SU	Grab	Weekly	Minimum
00400	pH	<=	9.0	SU	Grab	Weekly	Maximum
00530	Total Suspended Solids (TSS)	<=	6210	lb/d	Grab	Once Every 2 Months	Monthly Average
00530	Total	<=	12420	lb/d	Grab	Once Every 2	Daily

	Suspended Solids (TSS)					Months	Maximum
00951	Fluoride, total (as F)	<=	327	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	145	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	2.05	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	3.03	lb/d	Grab	Once Every 2 Months	Daily Maximum
01097	Antimony, total (as Sb)	<=	4.73	lb/d	Grab	Once Every 2 Months	Monthly Average
01097	Antimony, total (as Sb)	<=	10.62	lb/d	Grab	Once Every 2 Months	Daily Maximum
01105	Aluminum, total (as Al)	<=	33.62	lb/d	Grab	Twice Per Month	Daily Maximum
01105	Aluminum, total (as Al)	<=	14.91	lb/d	Grab	Twice Per Month	Monthly Average
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Monthly Average
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Daily Maximum

Description : External Outfall, Number : 06E, Monitoring : Instream Monitoring, Season : All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.

Outfall 006 - South Ingot Cooling Tower, Water Softener Regeneration and Non-Contact Cooling Water Dry Weather Flow Only

Description : External Outfall, Number : 006, Monitoring : Effluent Gross, Season : All Year

CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	6.0	SU	Grab	Weekly	Minimum
00400	pH	<=	9.0	SU	Grab	Weekly	Maximum
00530	Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Once Every 2 Months	Daily Maximum
00556	Oil & Grease	<=	10	mg/L	Grab	Once Every 2 Months	Monthly Average

00556	Oil & Grease	<=	15	mg/L	Grab	Once Every 2 Months	Daily Maximum
00950	Fluoride, dissolved (as F)	Report	-	mg/L	Composite	Once Every 2 Months	Daily Maximum
01105	Aluminum, total (as Al)	<=	33.8	mg/L	Composite	Once Every 2 Months	Daily Maximum
34247	Benzo(a)pyrene	<=	.0021	mg/L	Grab	Once Every 2 Months	Monthly Average
34247	Benzo(a)pyrene	<=	.0042	mg/L	Grab	Once Every 2 Months	Daily Maximum
50050	Flow	Report	-	Mgal/d	Recorder	Continuous	Monthly Average
50050	Flow	Report	-	Mgal/d	Recorder	Continuous	Daily Maximum
50060	Chlorine, total residual (TRC)	<=	0.11	mg/L	Grab	Weekly	Daily Maximum
50060	Chlorine, total residual (TRC)	<=	0.19	mg/L	Grab	Weekly	Monthly Average
TRP3B	IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>	10.3	%	Composite	Quarterly	Minimum
TRP6C	IC25 Static Renewal 7 Day Chronic Pimephales promelas	>	10.3	%	Composite	Quarterly	Minimum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection, as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.
**** See Part III for methodology.

Outfall SW4 and SW6 - Storm Water Runoff

Note: The sampling for Outfall S06 in NPDES permit number TN0082007 shall occur at the same time as the sampling for Outfall SW6 under this permit.

Description : External Outfall, Number : SW4, Monitoring : Effluent Gross, Season : All Year

CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	Report	-	SU	Grab	Semiannual	Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00556	Oil & Grease	Report	-	mg/L	Grab	Semiannual	Maximum
00610	Nitrogen, Ammonia total (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00630	Nitrite plus Nitrate (as N)(Outfall SW4)	Report	-	mg/L	Grab	Semiannual	Daily Maximum

00720	Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00927	Magnesium, total (as Mg)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00950	Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01042	Copper, total (as Cu) (Outfall SW6)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01092	Zinc, total (as Zn)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01105	Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
50050	Flow	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
50060	Chlorine, total residual (TRC)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Grab	Semiannual	Daily Maximum
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	Report	-	mg/L	Grab	Once in the final year of the permit	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	Report	-	mg/L	Grab	Once in the final year of the permit	Minimum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH and TRC analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection, as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.

**** See Part III for methodology.
The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).

Outfall S03 – Storm Water Runoff

Description : External Outfall, Number : S03, Monitoring : Effluent Gross, Season : All Year							
CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	Report	-	SU	Grab	Semiannual	Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00556	Oil & Grease	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum

00720	Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00927	Magnesium, total (as Mg)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00950	Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01045	Iron, total (as Fe)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01105	Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
50050	Flow	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	Report	-	%	Grab	Once in the final year of the permit	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	Report	-	%	Grab	Once in the final year of the permit	Minimum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
**** See Part III for methodology.
The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).

Unless elsewhere specified, summer months are May through October; winter months are November through April.

Additional monitoring requirements and conditions applicable to all outfalls include:

There shall be no distinctly visible floating solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner, which prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

For Outfall 006, total residual chlorine (TRO) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in 40 CFR, Part 136. The method Detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL, and shall have that

documentation available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit.

Analytical results reported as "Not detected at or below the quantitation limit" are considered to be in compliance with the permit limit, provided the method quantitation limit achieved is equal to or less than the minimum detection levels specified in Chapter 1200-4-3-.05(8) unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed. The acceptable methodology for sampling results applies to both permit and application sampling. A non-detect value that is higher than the permit limit will be in compliance if an acceptable method is utilized to process the sample.

Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act." (40 C.F.R. 125.98(b)(1))

B. MONITORING PROCEDURES

1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge, and shall be taken after treatment and prior to mixing with uncontaminated storm water runoff or the receiving stream. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

2. Sampling Frequency

If there is a discharge from a permitted outfall on any given day during the monitoring period, the permittee must sample and report the results of analyses accordingly, and the permittee should not mark the 'No Discharge' box on the Discharge Monitoring Report form.

3. Test Procedures

a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.

b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

c. The sampling for total mercury (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR 136 with a maximum detection limit of 5 ng/L.

In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using the detection limits described in the TN Rules, Chapter 0400-40-03-.05(8).

4. Recording of Results

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

a. The exact place, date and time of sampling;

b. The exact person(s) collecting samples;

c. The dates and times the analyses were performed;

d. The person(s) or laboratory who performed the analyses;

e. The analytical techniques or methods used, and;

f. The results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

C. DEFINITIONS

For the purpose of this permit, ***Annually*** is defined as a monitoring frequency of once every twelve (12) months beginning with the date of issuance of this permit so long as the following set of measurements for a given 12 month period are made approximately 12 months subsequent to that time.

A ***bypass*** is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A ***calendar day*** is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

For the purposes of this permit, a **Composite Sample** for non-storm water discharges is a sample collected continuously over a period of 24-hours at a rate proportional to the flow.

Continuous monitoring, for the purposes of this permit, is the measurement of flow, that will accurately characterize the nature of discharges from the site and water in the receiving stream. Samples collected continuously shall be at a frequency of not less than once every fifteen minutes for flow.

Cooling water means water used for contact or non-contact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises.

Cooling water intake structure means the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the United States. The cooling water intake structure extends from the point at which water is first withdrawn from waters of the United States up to, and including the intake pumps***.***

Actual Intake Flow (AIF) means the average volume of water withdrawn on an annual basis by the cooling water intake structures over the past three years.

Design intake flow (DIF) means the value assigned during the cooling water intake structure design to the maximum instantaneous rate of flow of water the cooling water intake system is capable of withdrawing from a source waterbody.

Entrainment- means the incorporation of all life stages of fish and shellfish with intake water flow entering and passing through a cooling water intake structure and into a cooling water system.

Impingement- means the entrapment of all life stages of fish and shellfish on the outer part of an intake structure or against a screening device during periods of intake water withdrawal.

The ***Daily Maximum Amount***, is a limitation measured in pounds per day (lb/day), on the total amount of any pollutant in the discharge by weight during any calendar day.

The ***Daily Maximum Concentration*** is a limitation on the average concentration, in milligrams per liter (mg/L), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

"Degradation" means the alteration of the properties of waters by the addition of pollutants, withdrawal of water, or removal of habitat, except those alterations of a short duration.

"***De Minimis***" - Degradation of a small magnitude, as provided in this paragraph.

(a) Discharges and withdrawals

1. Subject to the limitation in part 3 of this subparagraph, a single discharge other than those from new domestic wastewater sources will be considered de minimis if it uses less than five percent of the available assimilative capacity for the substance being discharged.

2. Subject to the limitation in part 3 of this subparagraph, a single water withdrawal will be considered de minimis if it removes less than five percent of the 7Q10 flow of the stream.

3. If more than one activity described in part 1 or 2 of this subparagraph has been authorized in a segment and the total of the authorized and proposed impacts uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be de minimis. Where the total of the authorized and proposed impacts uses 10% of the assimilative capacity, or 7Q10 low flow, additional degradation may only be treated as de minimis if the Division finds on a scientific basis that the additional degradation has an insignificant effect on the resource.

(b) Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the Division finds that the impacts, individually and cumulatively are offset by impact minimization and/or in-system mitigation, provided however, in ONRWs the mitigation must occur within the ONRW.

Discharge or "discharge of a pollutant" refers to the addition of pollutants to waters from a source.

Dry Weather Flow shall be construed to represent discharges consisting of process and/or non-process wastewater only.

An ***ecoregion*** is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The ***geometric mean*** of any set of values is the n^{th} root of the product of the individual values where "n" is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A ***Grab Sample***, for the purposes of this permit, is defined as a single effluent sample of at least 100 milliliters (sample volumes <100 milliliters are allowed when specified per standard methods, latest edition) collected at a randomly selected time over a period not exceeding 15 minutes. The sample(s) shall be collected at the period(s) most representative of the total discharge.

The ***Instantaneous Concentration*** is a limitation on the concentration, in milligrams per liter (mg/L), of any pollutant contained in the discharge determined from a grab sample taken at any point in time.

The ***monthly average amount***, 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.

The ***monthly average concentration***, other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A ***one week period*** (or ***calendar-week***) is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

Pollutant means sewage, industrial wastes, or other wastes.

A **Qualifying Storm Event** is one which is greater than 0.1 inches and that occurs after a period of at least 72 hours after any previous storm event with rainfall of 0.1 inches or greater.

For the purpose of this permit, a ***Quarter*** is defined as any one of the following three month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, or October 1 through December 31.

A ***rainfall event*** is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A ***rationale*** (or “fact sheet”) is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency’s permit decision.

A ***reference site*** means least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A ***reference condition*** is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

For the purpose of this permit, ***Semi-annually*** means the same as "once every six months." Measurements of the effluent characteristics concentrations may be made anytime during a 6 month period beginning from the issuance date of this permit so long as the second set of measurements for a given 12 month period are made approximately 6 months subsequent to that time, if feasible.

A ***subecoregion*** is a smaller, more homogenous area that has been delineated within an ecoregion.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term, ***washout*** is applicable to activated sludge plants and is defined as loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

Waters means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property

in single ownership which do not combine or effect a junction with natural surface or underground waters.

The ***weekly average amount***, shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The ***weekly average concentration***, is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

Wet Weather Flow shall be construed to represent storm water runoff which, in combination with all process and/or non-process wastewater discharges, as applicable, is discharged during a qualifying storm event.

D. ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval
30Q5 – 30-day minimum, 5-year recurrence interval
7Q10 – 7-day minimum, 10-year recurrence interval
BAT – best available technology economically achievable
BCT – best conventional pollutant control technology
BDL – below detection level
BOD_5 – five day biochemical oxygen demand
BPT – best practicable control technology currently available
$CBOD_5$ – five day carbonaceous biochemical oxygen demand
CEI – compliance evaluation inspection
CFR – code of federal regulations
CFS – cubic feet per second
CFU – colony forming units
CIU – categorical industrial user
CSO – combined sewer overflow
DMR – discharge monitoring report
D.O. – dissolved oxygen
E. coli – Escherichia coli
EFO – environmental field office
LB(lb) - pound
IC_{25} – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms
IU – industrial user
IWS – industrial waste survey
LC_{50} – acute test causing 50% lethality
MDL – method detection level
MGD – million gallons per day
MG/L(mg/l) – milligrams per liter
ML – minimum level of quantification
ml – milliliter

MLSS – mixed liquor suspended solids
MOR – monthly operating report
NODI – no discharge
NPDES – national pollutant discharge elimination system
PL – permit limit
POTW – publicly owned treatment works
RDL – required detection limit
SAR – semi-annual [pretreatment program] report
SIU – significant industrial user
SSO – sanitary sewer overflow
STP – sewage treatment plant
TCA – Tennessee code annotated
TDEC – Tennessee Department of Environment and Conservation
TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation
TMDL – total maximum daily load
TRC – total residual chlorine
TSS – total suspended solids
WQBEL – water quality based effluent limit

E. REPORTING

1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using NETDMR. Submittals shall be no later than 15 days after the completion of the reporting period. If NETDMR is not functioning, a completed DMR with an original signature shall be submitted to the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT SECTION
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

If NETDMR is not functioning, a copy of the completed and signed DMR shall be mailed to the Knoxville Environmental Field Office (EFO) at the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Knoxville Environmental Field Office
3711 Middlebrook Pike
Knoxville, Tennessee 37921

A copy should be retained for the permittee's files. In addition, any communication regarding compliance with the conditions of this permit must be sent to the two offices listed above.

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMR data will be accepted only if formally approved beforehand by the division. For purposes of determining compliance with this permit, data approved by the division to be submitted electronically is legally equivalent to data submitted on signed and certified DMR forms.

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

4. Outlier Data

Outlier data include analytical results that are probably false. The validity of results is based on operational knowledge and a properly implemented quality assurance program. False results may include laboratory artifacts, potential sample tampering, broken or suspect sample containers, sample contamination or similar demonstrated quality control flaw.

Outlier data are identified through a properly implemented quality assurance program, and according to ASTM standards (e.g. Grubbs Test, 'h' and 'k' statistics). Furthermore, outliers should be verified, corrected, or removed, based on further inquiries into the matter. If an outlier was verified (through repeated testing and/or analysis), it should remain in the preliminary data set. If an outlier resulted from a transcription or similar clerical error, it should be corrected and subsequently reported.

Therefore, only if an outlier was associated with problems in the collection or analysis of the samples and as such does not conform with the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR §136), it can be removed from the data set and not reported on the Discharge Monitoring Report forms (DMRs). Otherwise, all results (including monitoring

of pollutants more frequently than required at the location(s) designated, using approved analytical methods as specified in the permit) should be included in the calculation and reporting of the values required in the DMR form. You are encouraged to use “comment” section of the DMR form (or attach additional pages), in order to explain any potential outliers or dubious results.

F. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit.

PART II

A. GENERAL PROVISIONS

1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of the Division of Water Resources (the "Director") no later than 180 days prior to the expiration date. Such applications must be properly signed and certified.

2. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

4. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and/or other technology-based effluent limitations such as those in State of Tennessee Rule 0400-40-05-.09.

5. Treatment Facility Failure

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

7. Severability

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

8. Other Information

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

B. CHANGES AFFECTING THE PERMIT

1. Planned Changes

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

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

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

2. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.

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

c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.

d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

a. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), “Signatories to permit applications”; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

C. NONCOMPLIANCE

1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate regional Field Office within 24-hours from the time

the permittee becomes aware of the circumstances. (The regional Field Office should be contacted for names and phone numbers of environmental response personnel).

A written submission must be provided within five calendar days of the time the permittee becomes aware of the circumstances, unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

i. A description of the discharge and cause of noncompliance;

ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.a. above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Sanitary Sewer Overflow

a. "***Sanitary Sewer Overflow***" means the discharge to land or water of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls.

b. Sanitary Sewer Overflows are prohibited.

c. The permittee shall operate the collection system so as to avoid sanitary sewer overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic sanitary sewer overflows (greater than 5 events per year) or would otherwise overload any portion of the system.

d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment

to a Monthly Operating Report submitted to the regional TDEC Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

e. In the event that more than five (5) sanitary sewer overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Resources field office staff to petition for a waiver based on mitigating evidence.

4. Upset

a. "***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the permittee can identify the cause(s) of the upset;

ii. 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;

iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and

iv. The permittee complied with any remedial measures required under "Adverse Impact."

5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

6. Bypass

a. "***Bypass***" is the intentional diversion of wastewater away from any portion of a treatment facility. "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.

b. Bypasses are prohibited unless the following 3 conditions are met:

i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There are not feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, 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 a bypass, which occurred during normal periods of equipment down-time or preventative maintenance;

iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate environmental assistance center within 24-hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the Director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 6.b.iii, above.

7. Washout

a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate regional Field Office within 24-hours by telephone. A written submission must be provided within 5 days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

D. LIABILITIES

1. Civil and Criminal Liability

Except as provided in permit conditions for "**Bypass,**" "**Overflow,**" and "**Upset,**" nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

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 established pursuant to any applicable State law or the Federal Water Pollution Control Act, as amended.

PART III

OTHER REQUIREMENTS

A. TOXIC POLLUTANTS

The permittee shall notify the Division of Water Resources as soon as it knows or has 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 substance(s) (listed at 40 CFR 122, Appendix D, Table II and III) 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 ug/l);

    b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/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(s) in the permit application in accordance with 122.21(g)(7); or

    d. The level established by the Director in accordance with 122.44(f).

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 ug/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 in accordance with 122.21(g)(7); or

   d. The level established by the Director in accordance with 122.44(f).

B. REOPENER CLAUSE

If an applicable standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(B)(2), and 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked and reissued to conform to that effluent standard or limitation.

C. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream or from the nearest public property/right-of-way, if applicable. The minimum sign size should be two feet by two feet (2' x 2') with one inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following is given as an example of the minimal amount of information that must be included on the sign:

TREATED INDUSTRIAL WASTEWATER
Arconic Inc.(formerly Alcoa, Inc. - South Plant)
(Permittee's Phone Number)
NPDES Permit NO. TN0065081
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Knoxville

INDUSTRIAL STORM WATER RUNOFF
Arconic Inc.(formerly Alcoa, Inc. - South Plant)
(Permittee's Phone Number)
NPDES Permit NO. TN0065081
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Knoxville

D. ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06, titled "Tennessee Antidegradation Statement," which prohibits the degradation of exceptional Tennessee waters and the increased discharges of substances that cause or contribute to impairment, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

E. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow *(Pimephales promelas)* Larval Survival and Growth Test on the same samples of final effluent from Outfall 006.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction (IC25) in survival, reproduction, or growth of the test organisms. The IC25 shall be determined based on a 25% reduction as compared to the controls. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
4 X PL	**2 X PL**	**Permit Limit (PL)**	**0.50 X PL**	**0.25 X PL**	**Control**
% effluent					
41.2	**20.6**	**10.3**	**5.2**	**2.58**	**0**

The dilution/control water used will be a moderately hard water as described in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition). Results from a chronic

standard reference toxicant quality assurance test for each species tested shall be submitted with the discharge monitoring report. Reference toxicant tests shall be conducted as required in EPA-821-R-02-013 (or the most current edition). Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC25 is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent (e.g., collected on days 1, 3 and 5). If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within 30 days of the date the initial test is invalidated. Furthermore, if the results do not meet the acceptability criteria of section 4.9.1, EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted quarterly (1/Quarter) for Outfall 006 and begin no later than 60 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation which must also be reported.**

In the event of 2 consecutive test failures or 3 test failures within a 12 month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being**

investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address:

Environmental Field Office - Knoxville
Division of Water Resources
3711 Middlebrook Pike
Knoxville, TN 37921

F. BIOMONITORING REQUIREMENTS, ACUTE (STORM WATER)

The permittee shall conduct a 48-hour static acute, definitive, toxicity test on two test species on the same samples of final effluent from storm water Outfalls SW4, SW6, and S03. The test species to be used are Water Fleas (*Ceriodaphnia dubia)* and Fathead Minnows *(Pimephales promelas*). **One (1) separate grab sample shall be taken during the first 24-hours of a storm event, as practicable, then recombined and tested as a single composite sample. The first sample should be obtained within the first thirty (30) minutes of the initiation of flow, or as soon thereafter as practicable. Tests should be conducted using serial dilutions and a control.** If in any control, more than 10% of the test organisms die in 48 hours, the test (control and effluent) is considered invalid and the test shall be repeated within 30 days of the date the initial test is invalidated, or as soon thereafter as practicable during a qualifying storm event. The toxicity tests specified herein shall be conducted at the monitoring frequency provided in the permit tables.

Test procedures, quality assurance practices and determination of effluent lethality values will be made in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analysis shall be compiled in a report. The report shall be written in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to

Freshwater and Marine Organisms, EPA-821-R-02-012, or the most current edition. The analysis of multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address:

Environmental Field Office - Knoxville
Division of Water Resources
3711 Middlebrook Pike
Knoxville, TN 37921

The reasonable potential to cause toxicity in the receiving stream will be evaluated based on the results of the WET testing. At that time, should the results so dictate, the division maintains the authority to institute specific numeric biomonitoring limitations.

PART IV

BEST MANAGEMENT PRACTICES CONDITIONS

A. GENERAL CONDITIONS

For purposes of this part, the terms "pollutant" or "pollutants" refer to any substance listed as toxic under Section 307(a)(1) of the Clean Water Act, oil, as defined in Section 311(a)(1) of the Act, and any substance listed as hazardous under Section 311 of the Act. The permittee shall develop and implement a Best Management Practices (BMP) plan which prevents, or minimizes the potential for, the release of pollutants (including oil and grease) from *ancillary activities*, including material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas, to the waters of the State of Tennessee through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

B. GENERAL REQUIREMENTS

The BMP program shall:

1. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps;

2. Establish specific objectives for the control of toxic and hazardous pollutants:

   a. Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants

to waters of the State of Tennessee due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.;

b. Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance;

3. Establish specific best management practices to meet the objectives identified under section B.2. contained herein, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the State of Tennessee;

4. The BMP program:

a. May reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and Title 40 CFR part 112, and may incorporate any part of such plans into the BMP program by reference;

b. Shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. §6901, et. seq.). Management practices required under RCRA regulations shall be expressly incorporated into the BMP program; and,

c. Shall address the following points for the ancillary activities listed in section A.1.:

i. Statement of policy;
ii. Spill Control Committee: responsible for BMP program implementation and subsequent review and updating;
iii. Material inventory: identification of all sources and quantities of toxic and hazardous substances handled or produced, including plant drawings and plot plans, materials flow diagrams, physical, chemical, toxicological, and health information on toxic and hazardous substances, and investigation and evaluation of new materials;
iv. Material compatibility: evaluation of process changes or revisions for materials compatibility, review of properties of chemicals handled and materials of construction, evaluation of means of chemical disposal and incompatibility, cleansing of vessels and transfer lines, and use of proper coatings and cathodic protection on buried pipelines if required;
v. Employee training: meetings to be held at frequent intervals, spill drills, adequate job training, transmission of information on past spills

and causes, informing employees of BMP program components, training in cleanup procedures, and review and interface with safety program;

vi. Reporting and notification procedures: maintenance of records of spills through formal reports for internal review, notification as required by law to governmental and environmental agencies in the event of a spill, and procedures for notifying the appropriate plant personnel;

vii. Visual inspections: routine inspections with visual observations of storage facilities, transfer pipelines, and loading and unloading areas, detailed inspections of pipes, pumps, valves, fittings, tank corrosion, tank support and foundation deterioration, etc.;

viii. Preventive maintenance: identification of equipment and systems to which the preventive maintenance program should apply, periodic inspection and testing of such equipment and systems, appropriate adjustment, repair, or replacement of parts, and maintenance of preventive maintenance records;

ix. Good housekeeping: neat and orderly storage of chemicals, prompt removal of small spillage, regular garbage pickup, maintenance of dry and clean floors, proper pathways and walkways, minimum accumulation of liquid and solid chemicals on the ground or floor in a building, and stimulation of employee interest in good housekeeping;

x. Security: plant patrols, fencing, good lighting, traffic control, controlled access where appropriate, visitor passes, locked entrances, locks on drain valves and pumps for chemical storage tanks, and television monitoring.

Note: Additional technical information on BMPs and the elements of a BMP program is contained in EPA publications entitled "Guidance Manual for Developing Best Management Practices (BMP)" (EPA 833-B-93-004) and "Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices" (EPA 832-R-92-006).

C. DOCUMENTATION

The permittee shall maintain the BMP plan at the facility and shall make the plan available to the permit issuing authority upon request.

D. BMP PLAN MODIFICATION

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility, which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

E. MODIFICATION FOR INEFFECTIVENESS

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of pollutants to surface waters and the specific objectives and requirements under section B, the permit shall be subject to modification pursuant to 40 CFR 122.62 or 122.63 to incorporate revised BMP requirements. Any such permit modification shall be subject to review in accordance with the procedures for permit appeals set forth in accordance with 69-3-110, Tennessee Code Annotated.

F. COMPLIANCE SCHEDULE

Unless the permittee is otherwise authorized by the division in writing, the BMP Plan shall be completed as follows:

1. The plan shall be updated from the previous permit within 45 days after permit effective date. The changes shall be implemented within 90 days after the permit effective date.

PART V

STORM WATER POLLUTION PREVENTION PLAN

The discharger will develop, document and maintain a storm water pollution prevention plan (SWPPP) pursuant to the requirements as set forth in the Tennessee Multi-Sector General Permit for Industrial Activities, Sector F, “Storm Water Discharges Associated With Industrial Activity From Primary Metals Facilities”, Part 3, “Storm Water Pollution Prevention Plan Requirements”, applicable to Primary Metals Facilities. The plan shall be signed by either a principal executive officer of a corporation, the owner or proprietor of a sole proprietorship, or a partner or general partner of a partnership. The SWPPP developed and implemented shall contain, in addition to the requirements listed in the Tennessee Multi-Sector SWPPP guidelines for Primary Metals Facilities, the following items:

A. PLAN IMPLEMENTATION

The plan should be developed and available for review within 30 days after permit coverage. Facilities should implement the management practices as soon as possible, but not later than one year after permit coverage. Where new construction is necessary to implement the management plan, a construction schedule should be included. Construction should be completed as soon as possible.

B. PLAN AVAILABILITY

The plan will be maintained by the discharger on the site or at a nearby office. Copies of the plan will be submitted to the Division of Water Resources within ten business days of any request.

C. PLAN MODIFICATION

The plan will be modified as required by the director of the Division of Water Resources.

D. MONITORING PLAN

The storm water discharges will be monitored as required in Part I. Section A., Effluent Limits and Monitoring Requirements, applicable to storm water outfalls. For each outfall monitored, the surface area and type of cover, for example, roof, pavement, grassy areas, gravel, will be identified.

ATTACHMENT I

Arconic Inc./Alcoa Business Park LLC (formerly Alcoa, Inc. - South Plant)
NPDES Permit TN0065081

Storm Water Pollution Prevention Plan Requirements

Storm Water Pollution Prevention Plan Requirements

Contents of Plan. The plan shall include, at a minimum, the following items:

Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team that are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources that may reasonably be expected to add significant amounts of pollutants to storm water discharges or that may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials that may potentially be significant pollutant sources. Each plan shall include, at a minimum:

Drainage

A site map indicating an outline of the portions of the drainage area of each storm water outfall that are within the facility boundaries, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations where significant materials are exposed to precipitation, locations where major spills or leaks identified under Part 3.a.(2)(c) (Spills and Leaks) of this permit have occurred, and the locations of the following activities where such activities are exposed to precipitation: fueling stations, vehicle and equipment maintenance and/or cleaning areas, loading/unloading areas, locations used for the treatment, storage or disposal of wastes such as spent solvents or baths, sand, slag or dross, liquid storage tanks or drums, processing areas including pollution control equipment such as baghouses, and storage areas of raw materials such as coal, coke, scrap, sand, fluxes, refractories, or metal in any form. The map shall also indicate areas of the facility where accumulation of significant amounts of particulate matter from operations such as furnace or oven emissions or losses from coal/coke handling operations, etc., is likely, and could result in a discharge of pollutants to waters of the State. The map must indicate the outfall locations and the types of discharges contained in the drainage areas of the outfalls.

For each area of the facility that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants that are likely to be present in storm water discharges associated with industrial activity. Factors to consider include the toxicity of a chemical; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified.

Inventory of Exposed Materials — An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective

date of this permit; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives. This description should also include areas with the potential for deposition of particulate matter from process air emissions or losses during material handling activities. The description shall be updated whenever there is a significant change in the type or quantity of exposed materials, or material management practices, that may affect the exposure of materials to storm water.

Spills and Leaks — A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.

Sampling Data — A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.

Risk Identification and Summary of Potential Pollutant Sources — A narrative description of the potential pollutant sources from the following activities: loading and unloading operations; outdoor storage activities; outdoor manufacturing or processing activities; significant dust or particulate generating processes occurring indoors or out, with or without pollution control equipment in place to trap particulates; and onsite waste disposal practices. The description shall specifically list any significant potential source of pollutants at the site and for each potential source, any pollutant or pollutant parameter (e.g., chemical oxygen demand, oil and grease, copper, lead, zinc, etc.) of concern, shall be identified.

Measures and Controls. Each facility covered by this permit shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:

Good Housekeeping — Good housekeeping requires the maintenance of areas that may contribute pollutants to storm water discharges in a clean, orderly manner. The pollution prevention plan should consider implementation of the following measures, or equivalent measures, where applicable.

Establish a cleaning or maintenance program for all impervious areas of the facility where particulate matter, dust, or debris may accumulate, particularly areas of material loading/unloading, material storage and handling, and processing.

Pave areas of vehicle traffic or material storage where vegetative or other stabilization methods are not practical. Institute sweeping programs in these areas as well.

For unstabilized areas of the facility where sweeping is not practical, storm water management devices such as sediment traps, vegetative buffer strips, filter fabric fence,

sediment filtering boom, gravel outlet protection, or other equivalent measures, that effectively trap or remove sediment should be considered.

Source Controls — The permittee shall consider preventive measures to minimize the potential exposure of all significant materials (as described in Part 3.a.(3) of this section) to precipitation and storm water runoff. The permittee should consider the implementation of the following measures, or equivalent measures, to reduce the exposure of all materials to storm water:

Relocating all materials, including raw materials, intermediate products, material handling equipment, obsolete equipment, and wastes currently stored outside to inside locations.

Establishment of a schedule for removal of wastes and obsolete equipment to minimize the volume of these materials stored onsite that may be exposed to storm water.

Substitution of less hazardous materials, or materials less likely to contaminate storm water, or substitution of recyclable materials for nonrecyclables wherever possible.

Constructing permanent or semipermanent covers, or other similar forms of protection over stockpiled materials, material handling and processing equipment. Options include roofs, tarps, and covers. This may also include the use of containment bins or covered dumpsters for raw materials, waste materials and nonrecyclable waste materials.

Dikes, berms, curbs, trenches, or other equivalent measures to divert runon from material storage, processing, or waste disposal areas.

Preventive Maintenance — A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

A schedule for inspection and maintenance of all particulate emissions control equipment should be established to ensure proper operation. Inspections should be conducted as described in Section 3.a.(3)(e) below. Detection of any leaks or defects that could lead to excessive emissions shall be repaired as soon as practicable. Where significant settling or deposition from process emissions are observed during proper operation of existing equipment, the permittee shall consider ways to reduce these emissions including but not limited to: upgrading or replacing existing equipment; collecting runoff from areas of deposition for treatment or recycling; or changes in materials or processes to reduce the generation of particulate matter.

Structural Best Management Practices (BMPs) will be visually inspected for signs of washout, excessive sedimentation, deterioration, damage, or overflowing, and shall be repaired or maintained as soon as practicable.

Spill Prevention and Response Procedures — Areas where potential spills that can contribute pollutants to storm water discharges may occur, and their accompanying drainage

points shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures for cleaning up spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a clean up should be available to personnel.

Inspections — Qualified facility personnel shall be identified to inspect designated equipment and areas of the facility at appropriate intervals, but no less frequently than once during each of the following periods: January through March; April through June; July through September; and October through December. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. Inspections shall be conducted on a quarterly basis and address, at a minimum, the following areas where applicable:

Air pollution control equipment such as baghouses, electrostatic precipitators, scrubbers, and cyclones, should be inspected on a routine basis for any signs of disrepair such as leaks, corrosion, or improper operation that could limit their efficiency and lead to excessive emissions. The permittee should consider monitoring air flow at inlets and outlets, or equivalent measures, to check for leaks or blockage in ducts. Visual inspections shall be made for corrosion, leaks, or signs of particulate deposition or visible emissions that could indicate leaks.

All process or material handling equipment such as conveyors, cranes, and vehicles should be inspected for leaks, drips, etc. or for the potential loss of materials.

Material storage areas such as piles, bins or hoppers for storing coke, coal, scrap, or slag, as well as chemicals stored in tanks or drums, should be examined for signs of material losses due to wind or storm water runoff.

Employee Training — Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify periodic dates for such training.

Recordkeeping and Internal Reporting Procedures — A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

Non-storm Water Discharges

Certification. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed

in accordance with Part I.D.1 of this permit. Such certification may not be feasible if the facility operating the storm water discharge associated with industrial activity does not have access to an outfall, manhole, or other point of access to the ultimate conduit that receives the discharge. In such cases, the source identification section of the storm water pollution prevention plan shall indicate why the certification required by this part was not feasible, along with the identification of potential significant sources of non-storm water at the site. A discharger that is unable to provide the certification required by this paragraph must notify the Division of Water Resources in accordance with paragraph 3.a.(3)(h)(iii) (below).

Sources of non-storm water that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge. Any non-storm water discharges that are not permitted under an individual NPDES permit should be brought to the attention of the Division's local Environmental Assistance Center.

Failure to Certify — Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the Division of Water Resources 180 days after the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State that are not authorized by an NPDES permit are unlawful, and must be terminated.

Sediment and Erosion Control — The plan shall identify areas that, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion. The plan shall also contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those that control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity (see paragraph 3.a.(2) of this section (Description of Potential Pollutant Sources) shall be considered when determining reasonable and appropriate measures. Appropriate measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, and wet detention/retention devices or other equivalent measures.

Management of Runoff — Facilities shall consider implementation of the following storm water management practices or other equivalent measures to address pollutants of concern:

Vegetative buffer strips, filter fabric fence, sediment filtering boom, or other equivalent measures, that effectively trap or remove sediment prior to discharge through an inlet or catch basin.

Media filtration such as catch basin filters and sand filters.

Oil/water separators or the equivalent.

Structural BMPs such as settling basins, sediment traps, retention or detention ponds, recycling ponds or other equivalent measures.

Comprehensive Site Compliance Evaluation. Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan but in no case less than once a year. Such evaluations shall provide:

Areas contributing to a storm water discharge associated with industrial activity such as material storage and handling, loading and unloading, process activities, and plant yards shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, other structural pollution prevention measures identified in the plan, as well as process related pollution control equipment shall be observed or tested to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with paragraph 3.a.(2) of this section (Description of Potential Pollutant Sources) and pollution prevention measures and controls identified in the plan in accordance with paragraph 3.a.(3) of this section (Measures and Controls) shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph 3.a.(4)(b) (above) of the permit shall be made and retained as part of the storm water pollution prevention plan for at least 3 years from the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with Part I.D.1. of this permit.

Where compliance evaluation schedules overlap with inspections required under 3.a.(3)(e), the compliance evaluation may be conducted in place of one such inspection.

ADDENDUM TO RATIONALE
Arconic Inc.(formerly Alcoa, Inc. - South Plant)
PERMIT NO. TN0065081

August 6, 2018
Addendum prepared by: Miss Julie Harse

As part of a plant upgrade, the facility has converted one of its water cooled furnaces (Furnace #3) to an air cooled furnace. This modification has resulted in a permanent reduction of the dry weather flow at Outfall 006. The facility has requested that the permit limits for Outfall 006 be updated to reflect the significant reduction in flow. The 2017 permit issuance utilized 1.127 MGD as the average flow from the discharge monitoring reports to provide some allowance in the calculations for inflow/infiltration. The recalculated flow (0.457 MGD) will be based on 1.127 MGD minus the known dry weather flow of 0.670 MGD for non-contact cooling water. Although the resulting flow of 0.457 MGD is higher than the 0.200 MGD recorded in June 2018, it is anticipated that average winter flows will exceed 0.200 MGD. The updated permit limits will be based on a flow of 0.457 MGD. The below calculations provide the technical basis for the higher concentration limits. Permit limits that are not discussed below will remain the same for the permit modification.

Aluminum for Outfall 006

Arconic, Inc. has two aluminum manufacturing facilities (TN0065081 – South Plant, TN0067199 – North Plant) that have outfalls that discharge in dry weather to Pistol Creek. Aluminum has been limited in Outfalls 001, 005, and 006 based on a site specific study which determined that an acute dissolved water quality criteria of 0.922 mg/L would be protective of the stream's designated uses. The study was titled "One Time Assessment of Benthic Macroinvertibrate and Fish Populations in Six Sites on Pistol Creek" by Eric L. Morgan dated August 1985. The conversion to total aluminum is calculated using a dissolved effluent fraction of 0.25. The resulting total aluminum water quality criterion is 3.69 mg/L. In the permit modification for the automotive expansion, the limits were determined by analyzing the cumulative effect from all three outfalls. The facility's current total loading from Outfalls 005, 006, and 001 accounts for 72% of the stream assimilative capacity. The diagram below provides the basis for how the loadings were distributed to the various outfalls in the 2017 permit issuance. An allocation of 129 lb/day was given for Outfall 006. Calculations for the current and proposed permit limits are provided below with a proposed daily maximum limit of 33.8 mg/L for Outfall 006.

Current: 1.45 MGD X 8.34 X 10.65 mg/L = 129 lb/day

Proposed: 0.457 MGD X 8.34 X 33.8 mg/L = 129 lb/day

Total Residual Chlorine

The residual chlorine limit is derived using the mass balance formula and the EPA instream protection values for fish and aquatic life. Applying this formula yields the following calculation:

$$\frac{0.011\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.011(0.457 + 4.0)}{0.457} = 0.11 \text{ mg/l}$$

$$\frac{0.019\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.019(0.457 + 4.0)}{0.457} = 0.19 \text{ mg/l}$$

where:

0.011	=	instream protection value (chronic)
0.019	=	instream protection value (acute)
0.457	=	Qd, flow of STP (MGD)
4.0	=	Qs, 7Q10 flow of receiving stream (MGD)

The proposed permit modification will have a monthly average limit of 0.11 mg/L and the daily maximum limit of 0.19 mg/l for Total Residual Chlorine (TRC) will be retained in the new permit. The background concentration of TRC is assumed to be 0.0 mg/L.

Benzopyrene

Benzopyrene is one of the parameters that is limited in the effluent guidelines and will continue to be limited in the final outfall based on the current water quality criteria. Based on the below calculations, the proposed permit limits will be 0.0021 mg/L as a monthly average concentration and 0.0042 mg/L as a daily maximum concentration.

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 006

FACILITY: Arconic
PERMIT: TN0065081
DATE: 8/21/2017

Stream (7Q10)	Stream (30Q5)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Margin of Safety
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
4.0	5.6	0.46	10	220	90

	1	2	3	5	6	7	8	9	10	11	12	13	14
	Stream	Dectection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)					
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration		
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
BENZO(A)PYRENE	0.0	10.0	0.3					0.18			2.1		

Chronic Biomonitoring

The discharge of industrial wastewater from Outfall 006 may contain several different pollutants, the combined effect of which has a reasonable potential to be detrimental to fish and aquatic life. The Tennessee Water Quality Standards criteria stipulates that "*The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions...*".

Since the permittee discharges to a stream with low critical flow conditions, there is a concern for toxicity effects of the discharge on the receiving stream, which is relatively unknown. Biomonitoring will provide information relative to the toxicity of the discharge. Calculation of toxicity limits is as follows:

$$DF = \frac{Qs + Qw}{Qw} = \text{Dilution Factor}$$

where **Qw** is a wastewater flow (Outfall 006 Qw = 0.457 MGD) and **Qs** is a receiving stream low flow (7Q10 estimated at 4 MGD). Please refer to Appendix 1 for details regarding facility discharge and receiving stream. Therefore,

Outfall 006

$$DF = \frac{4.0 + 0.457}{0.457} = 9.8$$

Since the calculated dilution factor is less than 100:1, and assuming immediate and complete mixing, protection of the stream from chronic effects requires:

IWC $\leq$ 1.0 X IC25; or,

INHIBITION CONCENTRATION, 25% $\geq$ IWC

Where IWC is Instream Waste Concentration and is calculated using the following formula:

$$IWC = \frac{Qw}{Qs + Qw} \times 100 = \text{Instream Waste Concentration}$$

Outfall 006

$$IWC = \frac{0.457}{4.0 + 0.457} \times 100 = 10.3\%$$

Therefore, proposed WET testing will be required on 10.3% effluent for Outfall 006. If toxicity is demonstrated in any of the effluent samples specified above, this will constitute a violation of this permit. The toxicity tests specified herein shall be conducted quarterly for Outfall 006 and begin no later than 90 days from the effective date of this permit. The details regarding biomonitoring methodology can be found in Part III of the permit.

ADDENDUM TO RATIONALE
Arconic Inc.(formerly Alcoa, Inc. - South Plant)
PERMIT NO. TN0065081

January 18, 2018
Addendum prepared by: Miss Julie Harse

The monitoring requirements for copper at Outfall SW6 were inadvertently left out of the final permit. The line has been added to the limits table for SW6.

ADDENDUM TO RATIONALE
Arconic Inc.(formerly Alcoa, Inc. - South Plant)
PERMIT NO. TN0065081

January 17, 2018
Addendum prepared by: Miss Julie Harse

The facility submitted the following comments on the draft permit which was public noticed on September 26, 2017. It should also be noted that there was a typographical error in the limits for total residual chlorine. The limits should have been 0.05 mg/L monthly average and 0.09 mg/L daily maximum.

Comment #1 – The effluent limitation guidelines to continue to be based on the primary aluminum smelting guidelines.

Response – The facility has produced molten aluminum for ingot casting from both the primary and secondary aluminum processes for several decades. The primary process produces molten aluminum from raw material. The secondary process produces molten aluminum from the melting of recycled items such as aluminum cans and automotive aluminum parts. The molten aluminum from both the primary and secondary processes is sent to the same building where the casting of ingots is conducted. The casting process utilizes contact cooling water which is covered under the effluent guidelines. The primary aluminum process facilities were decommissioned and demolished during the previous permit cycle. During the permit renewal, the effluent guidelines were reassessed for applicability. In reviewing the EPA development document (EPA 440/1-89-019.2 May 1989), there were two noteworthy items relative to this facility. The wastewater characteristics of the direct chill contact casting cooling water do not differ significantly in the primary and secondary processes (Page 983). The secondary effluent guidelines did not include data from aluminum plants that had only secondary processes. Additionally, the characteristics (TSS, fluoride) of the cooling water continued to be consistent with the primary aluminum process. Therefore the primary effluent guidelines will continue to be applied in the new permit.

Comment #2 – The total residual chlorine limits are below the method reporting limit for the DPD colormetric methods.

Response – If the facility utilizes the most sensitive approved EPA method, a sampling result of non-detect that is higher than the limit will be considered to be in compliance with the permit.

Comment #3 – The aluminum, copper, and magnesium levels above the TMSP cut-off concentrations.

Response – In order to be in compliance with the permit, the facility is required to sample and report the parameters listed in the permit. If a sampled value exceeds the cut-off concentrations, a review of changes in potential pollutant sources and BMP results in compliance with the permit.

Comment #4 - Arconic is requesting that the department clarify requirements that toxicity sampling occur only during "dry weather events'* and days other than 1, 3, 5 are acceptable provided the holding times for renewal waters are met at the laboratory.

Response – The chronic toxicity test is conducted on continuous dry weather discharges to smaller streams and the acute toxicity test is conducted on continuous dry weather discharges to large rivers and on storm water discharges. The applicable EPA guidance document is Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013. The reasoning for the pulling of samples in the document is the following:

> "8.3.2 When tests are conducted off-site, a minimum of three samples are collected. If these samples are collected on Test Days 1, 3, and 5, the first sample would be used for test initiation, and for test solution renewal on Day 2. The second sample would be used for test solution renewal on Days 3 and 4. The third sample would be used for test solution renewal on Days 5, 6, and 7."[1]

Comment #5 - Arconic is requesting that the department add language that allows for the submission of acute/chronic toxicity reports via NETDMR as an alternative to manual submissions to both Nashville/Knoxville offices.

Response – The submittal to the Nashville office will be handled as an electronic attachment in NETDMR. If the Knoxville Field Office has access to NETDMR to review the data, the submittal to NETDMR can be counted as the electronic submittal to the field staff.

Comment #6 - Arconic is requesting that the current aluminum allocation calculation (2013) be reviewed/recalculated as outfall 005 is no longer an Arconic outfall within TN0065081.

Response – When a stream receives wastewater from multiple dischargers in close proximity, it is common practice to analyze the effect of all the wastewater dischargers. The current allocation provides a majority of the poundage to Outfall 006 (129 lb/day) with only 10.8 lb/day allocated to Outfall 005. The discharge from Outfall 001 under NPDES permit TN0067199 has an allocation of 26.2 lb/day which is driven by the stream loading to the smaller Duncan Creek. Since Outfall 005 still discharges some aluminum, the allocation will remain the same.

Comment #7 - Arconic finds the changes acceptable to Outfall SW4 and SW6 tables, specifically copper removed from outfall SW6 and would ask the department to comment on why nitrite plus nitrate (as N) was added for outfall SW6.

Response – The footnote that the sampling for nitrite plus nitrate (as N) should be for only Outfall SW4 was inverdently left off of the table. It has been added to the final permit.

Comment #8 - Arconic is requesting that the department comment on the required frequency of acute toxicity monitoring for outfalls SW4, SW6, and SO3 as this information is not available in the tables. The tables provide a reference to page 25 of 3 7, however this section does not specify a frequency it just states, **semi-annual or annual" and doesn't clarify that monitoring occur once in the final year of the permit as in the previous permit.

Response – The permit monitoring frequency has been corrected to match the previous permit.

[1] Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms Fourth Edition, October 2002 Page 31.

RATIONALE

Arconic Inc.(formerly Alcoa, Inc. - South Plant)

NPDES PERMIT NO. TN0065081
Alcoa, Blount County, Tennessee

Permit Writer: Miss Julie Harse

I. DISCHARGER

Arconic Inc. (formerly Alcoa, Inc. - South Plant)
300 North Hall Road
Alcoa, Blount County, Tennessee
Site Longitude: -83.977778 Site Latitude: 35.791667

Official Contact Person:
Mr. Jeffrey C.Weida
Location Manager
(865) 977-2848

Nature of Business:
The South Plant is an aluminum primary smelting and reclamation facility with related support facilities.

SIC Code(s):	**3341**
Industrial Classification:	**Primary w/ELG**
Discharger Rating:	**Major**

II. PERMIT STATUS

Issued July 31, 2012
Last modified January 07, 2004
Expired July 31, 2017
Application for renewal received

Watershed Scheduling

Environmental Field Office: Knoxville
Hydrocode: 06010201 Watershed Group: 2
Watershed Identification: Ft. Loudoun/Little River
Target Reissuance Year: 2022

III. FACILITY DISCHARGES AND RECEIVING WATERS

Arconic Inc.(formerly Alcoa, Inc. - South Plant) discharges industrial wastewater from Outfall 006 and industrial storm water runoff from Outfalls SW4, SW6 and S03 to Pistol Creek at mile 4.7 (006 and SW6), Pistol Creek at mile 7.0 (SW4), and an unnamed pond on Arconic, Inc. property (S03). Appendix 1 summarizes facility discharges and the receiving stream information for all outfalls.

IV. APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

The Standard Industrial Classification (SIC) code for Arconic, Inc. is 3334 (Primary Aluminum Smelting). Process wastewater discharged through Internal Monitoring Point 06A (via Outfall 006), is regulated by 40 CFR Part 421. Appendix 2 lists the applicable best available technology (BAT) and best practicable technology (BPT), currently available, effluent limitations guidelines for Subpart B – Primary Aluminum Smelting Subcategory, (q) Direct Chill Casting Contact Cooling. The limits are based on production data supplied by Alcoa, Inc.

V. PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

Appendix 3 lists the permit limitations and monitoring requirements as defined in the previous permit.

VI. HISTORICAL MONITORING AND INSPECTION

During the previous permit term, Arconic Inc./Alcoa Business Park LLC (formerly Alcoa, Inc. - South Plant) did not have any appreciable difficulty in meeting effluent limitations as outlined in the previous permit. A summary of the data reported on Discharge Monitoring Report forms during the previous permit term is summarized in Appendix 4.

During the previous permit term, the Division's personnel from the Knoxville Environmental Field Office performed Compliance Evaluation Inspection (CEI) of the Arconic Inc.(formerly Alcoa, Inc. - South Plant). The CEIs were performed by Woodson Smith on August 29, 2014 and March 4, 2016 . The facility was determined to be in compliance with inspection reports located on the division's public dataviewer at the following link:

http://environment-online.tn.gov:8080/pls/enf_reports/f?p=9034:34051:::NO:34051:P34051_PERMIT_NUMBER:TN0065081

VII. NEW PERMIT LIMITS AND MONITORING REQUIREMENTS

The proposed new permit limits have been selected by determining a technology-based limit and evaluating if that limit protects the water quality of the receiving stream. If the

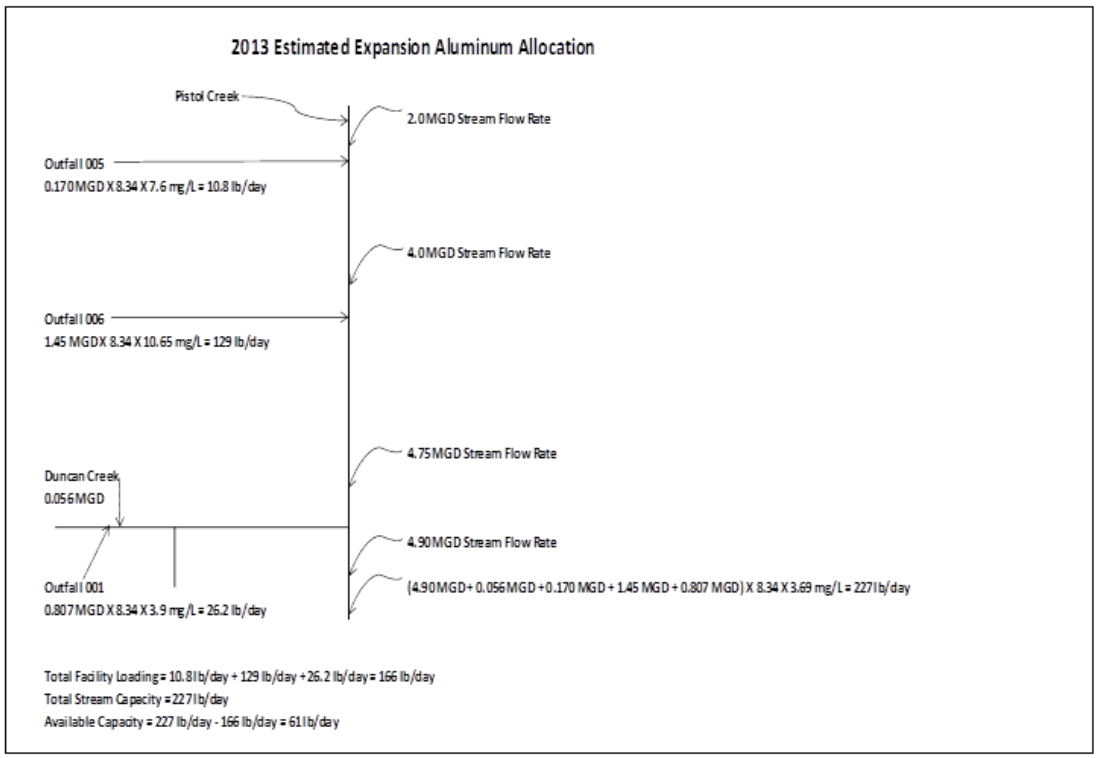
technology-based limit would cause violations of water quality, the water quality-based limit is chosen. The technology-based limit is determined from EPA effluent limitations guidelines if applicable (see Part IV); or from State of Tennessee maximum effluent limits for effluent limited segments per Rule 0400-40-05-.08. Note that in general, the term “anti-backsliding” refers to a statutory provision that prohibits the renewal, reissuance, or modification of an existing NPDES permit that contains effluents limits, permit conditions, or standards that are less stringent than those established in the previous permit.

Application Data for Outfall 006

The application data was compared to the appropriate water quality in Appendix 2a. The non-detect values for thallium was above the water quality criteria. The more sensitive method for mercury will continue to be required in the new permit (See Part I.B.3.c). The facility should document in its records that the detection limit utilized in its sampling was the most sensitive method for the approved EPA method.

Aluminum for Outfall 006

Arconic, Inc. has two aluminum manufacturing facilities (TN0065081 – South Plant, TN0067199 – North Plant) that have outfalls that discharge in dry weather to Pistol Creek. Aluminum has been limited in Outfalls 001, 005, and 006 based on a site specific study which determined that an acute dissolved water quality criteria of 0.922 mg/L would be protective of the stream’s designated uses. The study was titled “One Time Assessment of Benthic Macroinvertibrate and Fish Populations in Six Sites on Pistol Creek” by Eric L. Morgan dated August 1985. The conversion to total aluminum is calculated using a dissolved effluent fraction of 0.25. The resulting total aluminum water quality criterion is 3.69 mg/L. In the permit modification for the automotive expansion, the limits were determined by analyzing the cumulative effect from all three outfalls. The facility’s current total loading from Outfalls 005, 006, and 001 accounts for 72% of the stream assimilative capacity. The diagram below provides the basis for how the loadings were distributed to the various outfalls. The new permit will have a daily maximum limit of 10.7 mg/L for Outfall 006.



Internal Monitoring Point 06A and 06E

Process wastewater discharged through Internal Monitoring Point (IMP) 06A is regulated by 40 CFR Part 421. IMP 06A's final discharge point is through Outfall 006. Appendix 2 lists the applicable best available technology (BAT) and best practicable technology (BPT), currently available, effluent limitations guidelines for Subpart B – Primary Aluminum Smelting Subcategory, (q) Direct Chill Casting Contact Cooling. The process water includes discharge from South Ingot cooling tower blow down and filter backwash water. In previous permits, limits for IMP 06A were based on a tiered format because the production levels in the facility varied.

The need for multiple tiered limits for Internal Monitoring Point 06A is no longer applicable because data in a previous permit issuance did not show an appreciable difference in range from the 5-year cumulative average. However, because Arconic, Inc. anticipates a variable production schedule based on economic indicators, the division has established a single variable table of effluent limits for this internal monitoring point. In addition to this single variable table of effluent limits for this internal monitoring point, the Division is including an "emergency tier" of effluent limits to be applied in the event of production outages at the [Arconic Inc.] North Plant's ingot casting facility. These limits shall be applicable only when the North Plant is non-operational and production at the [Arconic, Inc.] South Plant is increased to facilitate maintaining their production schedule. Those limits are included below and labeled as "Emergency Outfall 06E". For all times that production at the South Plant is operating at normal capacity the DMR for Emergency Outfall 06E shall be reported as "no-discharge" for the months' reporting requirements.

Outfall 006

Flow

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in Million Gallons per Day (MGD) and monitored at the time of sample collection. The average flow rate on the discharge monitoring reports which includes storm water was reduced from 1.45 to 1.127 MGD.

pH

According to the State of Tennessee Water Quality Standards [Chapter 0400-40-03-.03(3)(b)], the pH for the protection of Fish and Aquatic Life shall lie within the range of 6.0 to 9.0 for wadeable streams and shall not fluctuate more than 1.0 unit in this range over a period of 24-hours. The effluent limitation for pH will be retained in a range 6.0 to 9.0 and the sample type will be grab.

Oil and Grease

According to the State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3)(c)], there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life in the receiving stream. The division has determined that an oil and grease limitation is needed for this facility because of the potential of contamination from spills, leaks and other industrial activities present at the site. The technology-based limit for oil and grease is 15 mg/l as a daily maximum concentration. This level can be accomplished where oil removal equipment is maintained, kept clean and not overloaded. There should be less reliance upon the oil/water separator as a solution and a

greater reliance upon good management, operation and housekeeping practices to restrict pollution. The permit writer is selecting technology-based limits for oil and grease of 15 mg/L as a daily maximum concentration and 10 mg/L as a monthly average concentration.

Total Suspended Solids

The State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3)(c)] state there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life in the receiving stream.

Total suspended solids is a general indicator of the quality of a wastewater and will be limited in this permit. The previous permit limit for TSS of 40 mg/l has historically been a technology based limit for this parameter. The permit writer believes the limit of 40 mg/L daily maximum concentration will provide protection of water quality in the receiving stream. Considering the nature of wastewater collection and discharge system, the sample type will be composite.

Total Residual Chlorine

The residual chlorine limit is derived using the mass balance formula and the EPA instream protection values for fish and aquatic life. Applying this formula yields the following calculation:

$$\frac{0.011\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.011(1.127 + 4.0)}{1.127} = 0.05 \text{ mg/l}$$

$$\frac{0.019\ (Qd + Qs)}{Qd} = \text{Limit (mg/l)} = \frac{0.019(1.127 + 4.0)}{1.127} = 0.09 \text{ mg/l}$$

where:

0.011	=	instream protection value (chronic)
0.019	=	instream protection value (acute)
1.127	=	Qd, flow of STP (MGD)
4.0	=	Qs, 7Q10 flow of receiving stream (MGD)

The new permit will have a monthly average limit of 0.05 mg/L and the daily maximum limit of 0.09 mg/l for Total Residual Chlorine (TRC) will be retained in the new permit. The background concentration of TRC is assumed to be 0.0 mg/L.

The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit. The reportable limit of 0.05 mg/L is higher than the monthly average limit of 0.011 mg/L and the daily maximum limit of 0.019 mg/L for TRC. Therefore, the reportable limit of 0.05 mg/L will effectively be used to

demonstrate compliance with the effluent limitations. Please note that any TRC detected at or above the detection level will constitute a violation of the permit.

Fluoride

Although Pistol Creek is not designated as a domestic water supply, Pistol Creek flows into the Little River which is designated as a domestic water supply. The previous permit limits were based on the state effluent guideline for fluoride of 20 mg/L. A review of fluoride concentrations for Outfall 006 indicate an average of 1.8 mg/L which is below the domestic water supply standard of 4.0 mg/L. Considering the size of the Little River (29 MGD), the reasonable potential to exceed the domestic water supply standard does not exist. Fluoride will remain in the new permit as report only.

Benzopyrene

Benzopyrene is one of the parameters that is limited in the effluent guidelines and will be limited in the final outfall based on the current water quality criteria. Based on the calculations in Appendix 2a, the new permit limits will be 0.0013 mg/L as a monthly average concentration and 0.0026 mg/L as a daily maximum concentration.

Storm Water Outfalls

Outfall SW6

The south plant is one which has storm water runoff associated with industrial activity, as defined in 40 CFR 122.26 (b)(14). Dry weather wastewater and storm water runoff discharged through Outfall 006 cannot be effectively segregated. In order to adequately characterize dry weather and wet weather discharges, two sets of effluent limitations will be retained in the new permit. Effluent limitations for the outfall designated as SW6 will represent wet weather discharges from the facility. It should be noted that Outfalls 006 and SW6 represent the same physical location. The definition of wet weather flow can be found in Part I., Section C of this permit.

Storm water runoff parameters to be monitored and reported were determined by comparing effluent limitations and monitoring requirements from the previous permit, the requirements from the Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP), the data submitted on Discharge Monitoring Report (DMR) forms, and the data contained in the application 2F submitted by the Arconic, Inc. facility. The parameters that exceeded the storm water cut-off concentrations are highlighted in Appendix 4. It should be noted that since the storm water samples are not collected at low flow and are intermittent discharges; therefore an exceedance of the cut-off concentration does not necessarily verify the existence of a water quality issue. Additionally, the site specific instream aluminum criterion is 3.69 mg/L. It should be noted that the biomonitoring test passed at 100%

The previous permit did not have effluent limitations for the facility's storm water runoff. All parameters were monitored on a "Report" only basis. The new permit will not establish effluent limitations, but will require reporting of effluent characteristics at Outfall SW6. Certain "cut-off concentrations" have been established in the TMSP for each of the monitored parameters (See below chart). These benchmark values (cut-off concentrations) were developed by the EPA and the State of Tennessee and are based on data submitted by similar industries for the

development of the multi-sector general storm water permit. The cut-off concentrations are target values and should not be construed to represent permit limits.

Outfalls SW4, S03

Storm water runoff parameters to be monitored and reported were determined by comparing effluent limitations and monitoring requirements from the previous permit, the requirements from the Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP), the data submitted on Discharge Monitoring Report (DMR) forms, and the data contained in the application 2F submitted by the Arconic, Inc. facility. The parameters that exceeded the storm water cut-off concentrations are highlighted in Appendix 4.
It should be noted that since the storm water samples are not collected at low flow and are intermittent discharges; therefore an exceedance of the cut-off concentration does not necessarily verify the existence of a water quality issue. Additionally, the site specific instream aluminum criterion is 3.69 mg/L. It should be noted that the biomonitoring test passed at 100%

The previous permit did not have effluent limitations for the facility's storm water runoff. All parameters were monitored on a "Report" only basis. The new permit will not establish effluent limitations, but will require reporting of effluent characteristics at these outfalls. Certain "cut-off concentrations" have been established in the TMSP for each of the monitored parameters (See below chart). These benchmark values (cut-off concentrations) were developed by the EPA and the State of Tennessee and are based on data submitted by similar industries for the development of the multi-sector general storm water permit. The cut-off concentrations are target values and should not be construed to represent permit limits.

Parameters of Concern	Cut-Off Concentration [mg/L]
Total Suspended Solids (TSS)	***150***
BOD5	***30***
COD	***120***
Aluminum, Total (pH 6.5-9)	***0.75***
Iron	***5***
Oil & Grease	***15***
pH (range)	***6.0 - 9.0***
Copper	***0.018***
Magnesium	***0.064***
Nitrate-nitrite	***0.68***
Zinc	***0.395***

VIII. BIOMONITORING REQUIREMENTS, CHRONIC

The discharge of industrial wastewater from Outfall 006 may contain several different pollutants, the combined effect of which has a reasonable potential to be detrimental to fish and aquatic life. The Tennessee Water Quality Standards criteria stipulates that "*The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions...*".

Since the permittee discharges to a stream with low critical flow conditions, there is a concern for toxicity effects of the discharge on the receiving stream, which is relatively unknown. Biomonitoring will provide information relative to the toxicity of the discharge. Calculation of toxicity limits is as follows:

$$DF = \frac{Qs + Qw}{Qw} = \text{Dilution Factor}$$

where **Qw** is a wastewater flow (Outfall 006 Qw = 0.77 MGD) and **Qs** is a receiving stream low flow (7Q10 estimated at 4 MGD). Please refer to Appendix 1 for details regarding facility discharge and receiving stream. Therefore,

Outfall 006

$$DF = \frac{4.0 + 1.127}{1.127} = 4.5$$

Since the calculated dilution factor is less than 100:1, and assuming immediate and complete mixing, protection of the stream from chronic effects requires:

IWC $\leq$ 1.0 X IC25; or,

INHIBITION CONCENTRATION, 25% $\geq$ IWC

Where IWC is Instream Waste Concentration and is calculated using the following formula:

$$IWC = \frac{Qw}{Qs + Qw} \times 100 = \text{Instream Waste Concentration}$$

Outfall 006

$$IWC = \frac{1.127}{4.0 + 1.127} \times 100 = 22\%$$

Therefore, WET testing will be required on 22% effluent for Outfall 006. If toxicity is demonstrated in any of the effluent samples specified above, this will constitute a violation of this permit. The toxicity tests specified herein shall be conducted quarterly for Outfall 006 and begin no later than 90 days from the effective date of this permit. The details regarding biomonitoring methodology can be found in Part III of the permit.

IX. ANTIDEGRADATION

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act. Stream determinations for this permit action are associated with the waterbody segment identified by the division with the following segment ID Numbers.

Outfall 006 – Pistol Creek – TN06010201026_0400

The division has made a water quality assessment of the receiving waters associated with the subject discharge(s) and has found the receiving streams to be neither an exceptional nor outstanding national resource water. Pistol Creek is partially supportive of its designated uses due to loss of biological integrity due to siltation and E.coli. The facility does not discharge sanitary wastewater and is limited for total suspended solids. The facility is also required to maintain a storm water pollution plan for all storm water outfalls. The approved TMDL for pathogens does not address ALCOA's discharge (November 21, 2005). The approved TMDL for siltation does not have specific restriction on the discharges from ALCOA (February 1, 2006).

ID305b (GIS Link) : TN06010201026_0400, Use Desc : Fish and Aquatic Life							
Water NameAscending	Location Description	Cause Name	Source Name	Attainment Desc	Assmnt Date	User Flag	Current cycle
Pistol Creek	Pistol Creek from Little River to headwaters. Ecoregion 67g Blount County	Sedimentation/Siltation	Discharges from Municipal Separate Storm Sewer Systems (MS4)	Not Supporting	25-FEB-15	-	2017
ID305b (GIS Link) : TN06010201026_0400, Use Desc : Irrigation							
Water Name	**Location Description**	**Cause Name**	**Source Name**	**Attainment Desc**	**Assmnt Date**	**User Flag**	**Current cycle**
Pistol Creek	Pistol Creek from Little River to headwaters. Ecoregion 67g Blount County	-	-	Fully Supporting	25-FEB-15	-	2017
ID305b (GIS Link) : TN06010201026_0400, Use Desc : Livestock Watering and Wildlife							
Water Name	**Location Description**	**Cause Name**	**Source Name**	**Attainment Desc**	**Assmnt Date**	**User Flag**	**Current cycle**
Pistol Creek	Pistol Creek from Little River to headwaters. Ecoregion 67g Blount County	-	-	Fully Supporting	25-FEB-15	-	2017
ID305b (GIS Link) : TN06010201026_0400, Use Desc : Recreation							
Water Name	**Location Description**	**Cause Name**	**Source Name**	**Attainment Desc**	**Assmnt Date**	**User Flag**	**Current cycle**
Pistol Creek	Pistol Creek from Little River to headwaters. Ecoregion 67g Blount County	Escherichia coli	Discharges from Municipal Separate Storm Sewer Systems (MS4)	Not Supporting	25-FEB-15	-	2017

X. ELECTRONIC REPORTING

Starting on December 21, 2016, all Individual NPDES Permit holders will be required to submit Discharge Monitoring Reports (DMRs) electronically through NetDMR. Prior to 21 December 2016, the permittee may elect to electronically submit DMRs instead of mailing paper DMRs.

EPA published the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, which will modernize Clean Water Act reporting for municipalities, industries and other facilities. The rule was published in the Federal Register on October 22, 2015 and became effective on December 22, 2015. The rule replaces most paper-based NPDES reporting requirements with electronic reporting.

More information is available at http://www.tn.gov/environment/topic/wr-netdmr-and-electronic-reporting:

- Getting Started on NetDMR,
- Electronic reporting schedule,
- Training Opportunities,
- NetDMR User Guide and other supporting information

XI. PERMIT DURATION

The proposed limitations meet the requirements of Section 301(b)(2)(A), (C), (D), (E), and (F) of the Clean Water Act as amended. It is the intent of the division to organize the future issuance and expiration of this particular permit such that other permits located in the same watershed and group within the State of Tennessee will be set for issuance and expiration at the same time. In order to meet the target reissuance date for the Ft. Loudoun/Little River watershed and following the directives for the Watershed Management Program initiated in January, 1996, the permit will be issued to expire in 2022.

APPENDIX 1

FACILITY DISCHARGES AND RECEIVING WATERS

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL S03	
LONGITUDE	LATITUDE
86-58-0	35-46-45

FLOW (MGD)	DISCHARGE SOURCE
Varies	Storm water runoff
Varies	**TOTAL DISCHARGE**

RECEIVING STREAM DISCHARGE ROUTE
unnamed pond on Arconic property

STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
	0.0	NA	0.0
(MGD)	0.0	NA	0.0

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
FISH	RECREATION	IRRIGATION	LW&W	DOMESTIC
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: None

* Reference: Tennessee Streamstats 2012

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL SW4	
LONGITUDE	LATITUDE
83-58-51	35-46-15

FLOW (GPD)	DISCHARGE SOURCE
0.190	Storm water runoff
0.190	**TOTAL DISCHARGE**

RECEIVING STREAM DISCHARGE ROUTE
unnamed tributary to Pistol Creek at mile 7.0

STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
	0.0	N/A	0.0
(MGD)	0.0	N/A	0.0

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
FISH	RECREATION	IRRIGATION	LW&W	DOMESTIC
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: None

* Reference: Tennessee Streamstats 2012

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 006/SW6/Internal Monitoring Point 06A	
LONGITUDE	LATITUDE
83-58-50	35-48-30

FLOW (MGD)	DISCHARGE SOURCE
0.098	06A treated South Ingot Tower water
0.002	South Ingot Tower water softener
0.670	Non- contact water and misc. other small flows
	(air conditioners, equipment cooling, industrial
	wash waters, Can Rec cold metal, conveyor
	scrubber water, fire protection/suppression testing)
2.860	storm water runoff
3.530	**TOTAL DISCHARGE**

RECEIVING STREAM DISCHARGE ROUTE			
Pistol Creek at mile 4.7			
STREAM LOW FLOW (CFS) *	**7Q10**	**1Q10**	**30Q5**
	6.1	NA	8.6
(MGD)	4.0	NA	5.5

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
FISH	RECREATION	IRRIGATION	LW&W	DOMESTIC
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: Dechlorination

* Reference: Tennessee Streamstats 2012

APPENDIX 2

APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

40 CFR PART 421 EFFLUENT GUIDELINES

NONFERROUS METALS MANUFACTURING
POINT SOURCE CATEGORY

Subpart B - Primary Aluminum Smelting Subcategory

	BPT §421.22		BAT §421.23	
			(q) Direct Chill Casting Contact Cooling	
EFFLUENT CHARACTERISTIC	DAILY MAXIMUM [lb/1000 lb]	MONTHLY AVERAGE [lb/1000 lb *]	DAILY MAXIMUM (lb/1000 lb)	MONTHLY AVERAGE (lb/1000 lb)
Fluoride	2.0	1.0	0.07908	0.03509
Total Suspended Solids	3.0	1.5	--	--
pH	6.0-9.0	6.0-9.0	--	--
Benzo(a)pyrene	--	--	(1)	(1)
Antimony	--	--	0.00257	0.00114
Nickel	--	--	0.00073	0.00050
Aluminum	--	--	0.00812	0.00360

(1) There shall be no discharge allowance for this pollutant.

CALCULATION OF EFFLUENT LIMITED GUIDELINES

Internal Monitoring Point 06A

40 CFR, Part 421 - Nonferrous Metals Manufacturing Point Source Category
Subpart B - Primary Aluminum Smelting Subcategory
(q) Direct Chill Casting Contact Cooling
South Plant reported production average = 3.456 mmlb/day
(Tier one: <= 3.283 mmlb/day<=3.456 mmlb/day< 3.8 mmlb/day)

EFFLUENT CHARACTERISTIC	Historical Production	Effluent Limitation			
		Monthly Average		Daily Maximum	
	[lb/day]	[lb/1000 lb]	[lb/day]	[lb/1000 lb]	[lb/day]
*Fluoride	3,456,000	0.03509	121	0.07908	273
Total Suspended Solids	3,456,000	1.5	5184	3.0	10368
pH	3,456,000	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0
Benzo(a)pyrene	3,456,000	0.000	0.0	0.000	0.0
Antimony	3,456,000	0.00114	3.95	0.00257	8.86
Nickel	3,456,000	0.00050	1.71	0.00073	2.53
Aluminum	3,456,000	0.00360	12.45	0.00812	28.06

Example = (3,456,000.03509) / 1000 = 121 lb/day

APPENDIX 2A

METALS AND TOXICS CONSIDERATIONS

Flow Rate Outfall 005	Flow Rate Outfall 006	Flow Rate Outfall 001	Total Effluent from All Outfalls	Total Stream Flow without Outfalls
[MGD]	[MGD]	[MGD]	[MGD]	[MGD]
0.123	1.127	0.576	1.83	4.900

Ttl. Susp. Solids	Hardness (as CaCO3)
[mg/l]	[mg/l]
10	220

	1	2	3	4	5	6	7
	Fish/Aqua. Life Water Quality Criteria		Effluent Fraction	Fish & Aquatic Life Water Quality Criteria (7Q10)		Human Health Water Quality Criteria (30Q5)	
				In-Stream Allowable		In-Stream Criteria	
EFFLUENT	Chronic	Acute	Dissolved	Chronic	Acute	Organisms	2 X Organisms
CHARACTERISTIC	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
Aluminum	922	922	0.250	3688.00	3688.00	NA	
Cadmium *	0.43	4.33	0.252	1.68	17.16	NA	
Copper *	17.57	28.25	0.348	50.54	81.27	NA	
Lead *	5.87	150.61	0.184	31.91	818.97	NA	
Nickel *	101.33	912.33	0.432	234.39	2110.32	4600.0	9200.0
Silver *	N/A	12.48	1.000	N/A	12.48	NA	
Zinc *	230.42	228.55	0.288	800.11	793.62	26000.0	
Mercury, (T) **	0.77	1.40	1.000	0.77	1.40	0.051	0.1
Chromium III	141.37	1086.77	0.202	698.92	5373.03	NA	
Chromium VI	11.00	16.00	1.000	11.00	16.00	NA	
Cyanide (T) **	5.20	22.00	1.000	5.20	22.00	140.0	280.0
Antimony	NA	NA	1.000	NA	NA	640.0	1280.0
Arsenic	NA	NA	1.000	150.00	340.00	10.0	20.0
Beryllium	NA	NA	1.000	NA	NA	NA	
Selenium	NA	NA	1.000	5.00	20.00	NA	
Thallium	NA	NA	1.000	NA	NA	0.5	0.9

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions. The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

** The criteria for these parameters are in the total form.

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

	8	9	10	11	12	13	14	15	16	17
	Chronic Total Capacity	**Acute Total Capacity**	**Chronic 10% Reserve**	**Acute 10% Reserve**	**Chronic Outfall 001**	**Acute Outfall 001**	**Chronic Outfall 005**	**Acute Outfall 005**	**Chronic Outfall 006**	**Acute Outfall 006**
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Cadmium *	0.09	0.96	0.01	0.10	0.017	0.168	0.007	0.073	0.061	0.625
Copper *	2.83	4.56	0.28	0.46	0.496	0.798	0.215	0.346	1.840	2.959
Lead *	1.79	45.94	0.18	4.59	0.313	8.040	0.136	3.491	1.162	29.815
Nickel *	13.15	118.38	1.31	11.84	2.301	20.716	0.999	8.997	8.533	76.827
Silver *	NA	0.70	NA	0.07	NA	0.123	NA	0.053	NA	0.455
Zinc *	44.88	44.52	4.49	4.45	7.854	7.791	3.411	3.383	29.129	28.892
Mercury, (T) **	0.0029	0.006	0.00	0.00	0.001	0.0010	0.0002	0.0004	0.002	0.004
Chromium III	39.21	301.40	3.92	30.14	6.861	52.745	2.980	22.906	25.445	195.608
Chromium VI	0.62	0.90	0.06	0.09	0.108	0.157	0.047	0.068	0.400	0.582
Cyanide (T) **	0.29	1.23	0.03	0.12	0.051	0.216	0.022	0.094	0.189	0.801
Antimony	35.90	71.80	3.59	7.18	6.283	12.565	2.728	5.457	23.300	46.599
Arsenic	0.56	1.12	0.06	0.11	0.098	0.196	0.043	0.085	0.364	0.728
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	0.28	1.12	0.03	0.11	0.049	0.196	0.021	0.085	0.182	0.728
Thallium	0.03	0.05	0.003	0.01	0.005	0.009	0.002	0.004	0.017	0.034

	18	19	20	21	22	23	24	25	26	27
	Calculated Maximum Concentration									
	Chronic Total Capacity	Acute Total Capacity	Chronic 10% Reserve	Acute 10% Reserve	Chronic Outfall 001	Acute Outfall 001	Chronic Outfall 005	Acute Outfall 005	Chronic Outfall 006	Acute Outfall 006
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Cadmium *	0.0017	0.0172	0.0002	0.0017	0.0034	0.0351	0.0070	0.0713	0.0065	0.0664
Copper *	0.0505	0.0813	0.0051	0.0081	0.1033	0.1661	0.2100	0.3377	0.1957	0.3148
Lead *	0.0319	0.8190	0.0032	0.0819	0.0652	1.6736	0.1326	3.4036	0.1236	3.1721
Nickel *	0.2344	2.1103	0.0234	0.2110	0.4790	4.3124	0.9741	8.7703	0.9079	8.1738
Silver *	NA	0.0125	NA	0.0012	NA	0.0255	NA	0.0519	NA	0.0484
Zinc *	0.8001	0.7936	0.0800	0.0794	1.6350	1.6218	3.3252	3.2982	3.0991	3.0739
Mercury, (T) **	0.0001	0.0001	0.0000	0.0000	0.0001	0.0002	0.0002	0.0004	0.0002	0.0004
Chromium III	0.6989	5.3730	0.0699	0.5373	1.4282	10.9797	2.9046	22.3298	2.7071	20.8112
Chromium VI	0.0110	0.0160	0.0011	0.0016	0.0225	0.0327	0.0457	0.0665	0.0426	0.0620
Cyanide (T) **	0.0052	0.0220	0.0005	0.0022	0.0106	0.0450	0.0216	0.0914	0.0201	0.0852
Antimony	0.6400	1.2800	0.0640	0.1280	1.3078	2.6157	2.6598	5.3196	2.4789	4.9578
Arsenic	0.0100	0.0200	0.0010	0.0020	0.0204	0.0409	0.0416	0.0831	0.0387	0.0775
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	0.0050	0.0200	0.0005	0.0020	0.0102	0.0409	0.0208	0.0831	0.0194	0.0775
Thallium	0.0005	0.0009	0.0000	0.0001	0.0010	0.0019	0.0020	0.0039	0.0018	0.0036

	Outfall 005 Application Data		Outfall 006 Application Data		Outfall 001 Application Data	
	Average	Daily Max.	Average	Daily Max.	Average	Daily Max.
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Cadmium *	0.001	0.001	0.001	0.001	0.001	0.001
Copper *	0.0062	0.0062	0.011	0.011	0.011	0.011
Lead *	0.005	0.005	0.005	0.005	0.005	0.005
Nickel *	0.01	0.01	0.01	0.01	0.01	0.01
Silver *	0.005	0.005	0.005	0.005	0.005	0.005
Zinc *	0.05	0.05	0.05	0.05	0.05	0.05
Mercury, (T) **	0.000027	0.000027	0.000000998	0.000000998	0.000000806	0.000000806
Chromium III	0.005	0.005	0.005	0.005	0.005	0.005
Chromium VI	0.005	0.005	0.005	0.005	0.005	0.005
Cyanide (T) **	0.00775	0.00775	0.01	0.01	0.01	0.01
Antimony	0.01	0.01	0.01	0.01	0.01	0.01
Arsenic	0.010	0.010	0.010	0.010	0.01	0.01
Beryllium	0.004	0.004	0.004	0.004	0.004	0.004
Selenium	0.010	0.010	0.010	0.010	0.01	0.01
Thallium	0.010	0.010	0.010	0.010	0.010	0.010

	Outfall 005 Application Data		Outfall 006 Application Data		Outfall 001 Application Data	
	Average	Daily Max.	Average	Daily Max.	Average	Daily Max.
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Cadmium *	Pass	Pass	Pass	Pass	Pass	Pass
Copper *	Pass	Pass	Pass	Pass	Pass	Pass
Lead *	Pass	Pass	Pass	Pass	Pass	Pass
Nickel *	Pass	Pass	Pass	Pass	Pass	Pass
Silver *	Pass	Pass	Pass	Pass	Pass	Pass
Zinc *	Pass	Pass	Pass	Pass	Pass	Pass
Mercury, (T) **	Pass	Pass	Pass	Pass	Pass	Pass
Chromium III	Pass	Pass	Pass	Pass	Pass	Pass
Chromium VI	Pass	Pass	Pass	Pass	Pass	Pass
Cyanide (T) **	Pass	Pass	Pass	Pass	Pass	Pass
Antimony	Pass	Pass	Pass	Pass	Pass	Pass
Arsenic	Pass	Pass	Pass	Pass	Pass	Pass
Beryllium	Pass	Pass	Pass	Pass	Pass	Pass
Selenium	Pass	Pass	Pass	Pass	Pass	Pass
Thallium	Exceed	Exceed	Exceed	Exceed	Exceed	Exceed

The following procedure is used to calculate the metals loadings for the dry weather outfalls from the Alcoa – South and North plants.

a. The most recent background conditions of the receiving stream segment are compiled. This information includes:

    * 7Q10 of receiving stream (Tennessee Streamstats)
    * Calcium hardness (220 mg/l)
    * Total suspended solids (10 mg/l)
    * Background metals concentrations

b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.

d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.

e. Division policy dictates the following procedures in establishing these permit limits:

    1. The critical low flow values are determined using USGS data:

        <u>Fish and Aquatic Life Protection</u>
        7Q10 - Low flow under natural conditions
        1Q10 - Regulated low flow conditions

        <u>Other than Fish and Aquatic Life Protection</u>
        30Q2 - Low flow under natural conditions

    2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic “In-stream Allowable” water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, then the measured background concentration is used in lieu of the chronic “In-stream Allowable” water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the “stream allocation” is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic “In-stream Allowable” water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (26) data columns. A description of each column is as follows:

Column 1: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 2: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 1200-4-3-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 3: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 4: The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 5: The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 6: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 7: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation) multiplied by two.

Column 8: The chronic loading to the stream based on the following formula:

(Min (Column 4 & 6))/1000 X 8.34 X (Total Effluent Flow + Total Stream Flow) = Chronic Loading (lb/day)

Column 9: The acute loading to the stream based on the following formula:

(Min (Column 5 & 7))/1000 X 8.34 X (Total Effluent Flow + Total Stream Flow) = Acute Loading (lb/day)

Column 10: 10% of Chronic loading as a reserve capacity

Column 11: 10% of Acute loading as a reserve capacity

Column 12: Outfall 001 Chronic Allocation of the particular metal based on flow rate with the following formula:

0.90 X (Outfall 001 Flow Rate/(Total Effluent from All Outfalls)) X Column 8

Column 13: Outfall 001 Acute Allocation of the particular metal based on flow rate with the following formula:

0.90 X (Outfall 001 Flow Rate/(Total Effluent from All Outfalls)) X Column 9

Column 14: Outfall 005 Chronic Allocation of the particular metal based on flow rate with the following formula:

0.90 X (Outfall 005 Flow Rate/(Total Effluent from All Outfalls)) X Column 8

Column 15: Outfall 005 Acute Allocation of the particular metal based on flow rate with the following formula:

0.90 X (Outfall 005 Flow Rate/(Total Effluent from All Outfalls)) X Column 9

Column 16: Outfall 006 Chronic Allocation of the particular metal based on flow rate with the following formula:

0.90 X (Outfall 006 Flow Rate/(Total Effluent from All Outfalls)) X Column 8

Column 17: Outfall 006 Acute Allocation of the particular metal based on flow rate with the following formula:

0.90 X (Outfall 006 Flow Rate/(Total Effluent from All Outfalls)) X Column 9

Column 18: Allowable instream chronic concentration based on following formula:

(Column 8 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 19: Allowable instream acute concentration based on following formula:

(Column 9 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 20: Chronic 10% reserve concentration based on following formula:

(Column 10 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 21: Acute 10% reserve concentration based on following formula:

(Column 11 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 22: Chronic Outfall 001 concentration based on following formula:

(Column 12 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 23: Acute Outfall 001 concentration based on following formula:

(Column 13 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 24: Chronic Outfall 005 concentration based on following formula:

(Column 14 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 25: Acute Outfall 005 concentration based on following formula:

(Column 15 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 26: Chronic Outfall 006 concentration based on following formula:

(Column 16 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

Column 27: Acute Outfall 006 concentration based on following formula:

(Column 17 value)/(8.34 X (Total Effluent from All Outfalls + Instream Flow Rate)) = Instream concentration

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 006

FACILITY: Arconic
PERMIT: TN0065081
DATE: 8/21/2017

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Ttl. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
4.0	5.6	0.77	10	220	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream	Dectection Levels		Fish/Aqua. Life		Calculated Effluent		Human Health Water Quality Criteria (30Q5)						Avg. daily
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria		Concentration		In-Stream Criteria			Calculated Effluent Concentration			effluent
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS	
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	ug/l
ACROLEIN	0.0	50.0	1.0					290.0			2159.2			<50
ACRYLONITRILE	0.0	50.0	1.0					2.5	0.51		18.6	3.8		<10
BENZENE	0.0	1.0	1.0					510.0			3797.2			<1
BROMOFORM	0.0	1.0	1.0					1400.0	43.0		10423.6	320.2		<1
CARBON TETRACHLORIDE	0.0	1.0	1.0					16.0			119.1			<1
CHLOROBENZENE	0.0	1.0	*					1600.0	130.0		11912.7	967.9		<1
CHLORODIBROMO-METHANE	0.0	1.0	*					130.0			967.9			<1
CHLOROETHANE	0.0	1.0	*											<1
2-CHLORO-ETHYLVINYL ETHER	0.0	1.0	*											<5
CHLOROFORM	0.0	5.0	0.5					4700.0	57.0		34993.6	424.4		2.0
DICHLOROBROMO-METHANE	0.0	1.0	1.0					170.0			1265.7			2.0
1,1-DICHLOROETHANE	0.0	1.0	1.0					NA	NA	NA	NA	NA	NA	<1
1,2-DICHLOROETHANE	0.0	1.0	1.0					370.0			2754.8			<1
TRANS 1,2-DICHLORO-ETHYLENE	0.0	1.0	*					10000	140.0	700.0	74454.5	1042.4	7444.5	<1
1,1-DICHLOROETHYLENE	0.0	1.0	1.0											<1
1,2-DICHLOROPROPANE	0.0	1.0	*					150.0	5.0	5.0	1116.8	37.2	37.2	<1
1,3-DICHLORO-PROPYLENE	0.0	1.0	1.0					210.0	3.4		1563.5			<2
ETHYLBENZENE	0.0	1.0	1.0					2100	530.0	700.0	15635.5	3946.3	5211.45	<1
METHYL BROMIDE	0.0	1.0	*					1500.0			11168.2			<1
METHYL CHLORIDE	0.0	1.0	1.0											<1
METHYLENE CHLORIDE	0.0	5.0	1.0					5900.0			43928.2			<5
1,1,2,2-TETRACHLORO-ETHANE	0.0	1.0	0.5					40.0	1.7		297.8	12.7		<1
TETRACHLORO-ETHYLENE	0.0	1.0	0.5					33.0			245.7			<1
TOLUENE	0.0	1.0	1.0					15000	1300.0	1000.0	111681.8	9679.3	7445.45	<1
1,1,1-TRICHLOROETHANE	0.0	1.0	1.0											<1
1,1,2-TRICHLOROETHANE	0.0	1.0	0.2					160.0	5.0	5.0	1191.3	43.9	37.2	<1
TRICHLORETHYLENE	0.0	1.0	1.0					300.0			2233.6			<1
VINYL CHLORIDE	0.0	1.0	2.0					24.0	0.25	2.0	178.7	1.9	14.9	<1
P-CHLORO-M-CRESOL	0.0	10.0	*											<9.5
2-CHLOROPHENOL	0.0	10.0	*					150.0	81.0		1116.8	603.1		<9.5
2,4-DICHLOROPHENOL	0.0	10.0	*					290.0			2159.2			<9.5
2,4-DIMETHYLPHENOL	0.0	10.0	*					850.0	380.0		6328.6	2826.4		<9.5
4,6-DINITRO-O-CRESOL	0.0	10.0	24.0					280.0			2084.7			<9.5
2,4-DINITROPHENOL	0.0	10.0	42.0					5300.0	69.0		39460.9	513.7		<28.4
2-NITROPHENOL	0.0	10.0	*											<9.5
4-NITROPHENOL	0.0	10.0	*											<9.5
PENTACHLOROPHENOL	0.0	10.0	5.0	15	19	83.6	105.9	30.0			223.4			<47.4
PHENOL	0.0	10.0	*					1700000	210000.0		12657272.7	1563894.8		<9.5
2,4,6-TRICHLOROPHENOL	0.0	10.0	2.7					24.0			178.7			<9.5
ACENAPHTHENE	0.0	10.0	*					990.0	670.0		7371.0	4988.5		<9.5
ACENAPHTHYLENE	0.0	10.0	2.3											<9.5
ANTHRACENE	0.0	10.0	0.7					40000	8300.0		297818.2	61787.3		<9.5

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 006

FACILITY: Arconic
PERMIT: TN0065081
DATE: 8/21/2017

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Tll. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
4.0	5.6	0.77	10	220	90

	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Stream Bckgrnd.	Dectection Levels		Fish/Aqua. Life Water Quality Criteria		Calculated Effluent Concentration		Human Health Water Quality Criteria (30Q5)						Avg. daily effluent
		Scan	WQC RDL					In-Stream Criteria			Calculated Effluent Concentration			
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS	
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	ug/l
BENZIDINE	0.0	50.0	*					0.0020			0.015			<9.5
BENZO(A)ANTHRACENE	0.0	10.0	0.3					0.18	0.038		1.3	0.3		<9.5
BENZO(A)PYRENE	0.0	10.0	0.3					0.18			1.3			<9.5
3,4 BENZO-FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		1.3	0.3		<9.5
BENZO(GHI)PERYLENE	0.0	10.0	*											<9.5
BENZO(K)FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		1.3	0.3		<9.5
BIS (2-CHLOROETHOXY) METHANE	0.0	10.0	*											<9.5
BIS (2-CHLOROETHYL)-ETHER	0.0	10.0	1.0					5.3	0.30		39.5	2.2		<9.5
BIS (2-CHLOROISO-PROPYL) ETHER	0.0	10.0	*					65000			483954.5			<9.5
BIS (2-ETHYLHEXYL) PHTHALATE	0.0	10.0	2.5					22.0	12.0	6.0	163.8	89.3	44.7	0.651
4-BROMOPHENYL PHENYL ETHER	0.0	10.0	*											<9.5
BUTYL BENZYL PHTHALATE	0.0	10.0	*					1900.0	1500.0		14146.4	11160.2		<9.5
2-CHLORONAPHTHALENE	0.0	10.0	*					1600.0			11912.7			<9.5
4-CHLORPHENYL PHENYL ETHER	0.0	10.0	*											<9.5
CHRYSENE	0.0	10.0	2.5					0.18			1.3			<9.5
DI-N-BUTYL PHTHALATE	0.0	10.0	2.5					4500.0	2000.0		33504.5	14890.9		<9.5
DI-N-OCTYL PHTHALATE	0.0	10.0	*											<9.5
DIBENZO(A,H) ANTHRACENE	0.0	10.0	*					0.18	0.038		1.3	0.3		<9.5
1,2-DICHLOROBENZENE	0.0	1.0	2.0					1300.0	420.0		9679.1			<9.5
1,3-DICHLOROBENZENE	0.0	5.0	2.0					960.0	320.0		7147.6	2382.5		<9.5
1,4-DICHLOROBENZENE	0.0	5.0	2.0					190.0	63.0		1414.6			<9.5
3,3-DICHLOROBENZIDINE	0.0	10.0	*					0.28	0.2		2.1	1.5		<9.5
DIETHYL PHTHALATE	0.0	10.0	1.9					44000			327600.0			<9.5
DIMETHYL PHTHALATE	0.0	10.0	1.6					1100000	2700000		8190000.0	20107272.7		<9.5
2,4-DINITROTOLUENE	0.0	10.0	1.0					34.0			253.1			<9.5
2,6-DINITROTOLUENE	0.0	10.0	*											<9.5
1,2 DIPHENYLHYDRAZINE	0.0	10.0	*					2.0			14.9			<9.5
FLUORANTHENE	0.0	10.0	2.2					140.0	130.0		1042.4	967.9		<9.5
FLUORENE	0.0	10.0	0.3					5300.0			39460.9			<9.5
HEXACHLOROBENZENE	0.0	10.0	1.9					0.0029	0.0029	1.0	0.022	0.0	7.4	<9.5
HEXACHLOROBUTADIENE	0.0	10.0	5.0					180.0			1340.2			<9.5
HEXACHLOROCYCLO-PENTADIENE	0.0	10.0	*					1100.0	40.0	50.0	8190.0	297.8	372.3	<9.5
HEXACHLOROETHANE	0.0	10.0	0.5					33.0			245.7			<9.5
INDENO(1,2,3-CD)PYRENE	0.0	10.0	*					0.18	0.038		1.3	0.3		<9.5
ISOPHORONE	0.0	10.0	*					9600			71476.4			<9.5
NAPHTHALENE	0.0	10.0	*											<9.5
NITROBENZENE	0.0	10.0	10.0					690.0			5137.4			<9.5
N-NITROSODI-N-PROPYLAMINE	0.0	10.0	*					5.1	0.050		38.0	0.4		<9.5
N-NITROSODI- METHYLAMINE	0.0	10.0	*					30.0			223.4			<9.5
N-NITROSODI-PHENYLAMINE	0.0	10.0	*					60.0	33.0		446.7	245.7		<9.5
PHENANTHRENE	0.0	10.0	0.7											<9.5
PYRENE	0.0	10.0	0.3					4000.0	830.0		29781.8	6179.7		<9.5
1,2,4-TRICHLOROBENZENE	0.0		*					70.0	35.0		521.2			<9.5

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

a. The most recent background conditions of the receiving stream segment are compiled. This information includes:

    * 7Q10 of receiving stream
    * Calcium hardness
    * Total suspended solids
    * Background metals concentrations
    * Other dischargers impacting this segment (none)
    * Downstream water supplies, if applicable

b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.

d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.

e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

    The following formulas are used to evaluate water quality protection:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

to protect water quality:

$$Cw \leq \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

where (S_A) is the percent "Stream Allocation".

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

   Fish and Aquatic Life Protection
   7Q10 - Low flow under natural conditions
   1Q10 - Regulated low flow conditions

   Other than Fish and Aquatic Life Protection
   30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the "stream allocation" is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic "In-stream Allowable" water quality criteria.

These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition

coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.

Column 8: The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.

Column 9: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 10: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both “Recreation” and “Domestic Water Supply.”

Column 11: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.

Column 12: The Calculated Effluent Concentration associated with Organism Consumption.

Column 13: The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

The calculated chronic water quality effluent concentrations from Column 7 should be compared, individually, to the values calculated in Columns 12, 13, and 14 in order to determine the most stringent chronic permit limitations. The calculated acute water quality effluent concentrations from Column 8 should then be compared, individually, to values equal to two (2) times the values presented in Columns 12, 13, and 14 in order to determine the most stringent acute permit limitations. These water quality based limits should then be compared to any technology based (CFR or Tennessee "Rules") effluent limitations, and/or any previous permit limitations, for final determination of the permit limits.

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

Outfall 005 - Non-contact cooling water, Bldg 70 cooling towers and package boilers, Dry Weather Flow Only

Description : External Outfall, Number : 005, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	<=	7.6	mg/L	Composite	Once Every 2 Months	Daily Maximum
Chlorine, total residual (TRC)***	<=	.14	mg/L	Grab	Weekly	Monthly Average
Chlorine, total residual (TRC)***	<=	.24	mg/L	Grab	Weekly	Daily Maximum
Flow*	Report	-	Mgal/d	Recorder	Continuous	Monthly Average
Flow*	Report	-	Mgal/d	Recorder	Continuous	Daily Maximum
Fluoride, dissolved (as F)	<=	20	mg/L	Composite	Once Every 2 Months	Daily Maximum
IC25 Static Renewal 7 Day Chronic Ceriodaphnia****	>=	7.8	%	Composite	Semiannual	Minimum
IC25 Static Renewal 7 Day Chronic Pimephales****	>=	7.8	%	Composite	Semiannual	Minimum
Oil & Grease	<=	15	mg/L	Grab	Once Every 2 Months	Daily Maximum
Oil & Grease	<=	10	mg/L	Grab	Once Every 2 Months	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Once Every 2 Months	Daily Maximum
Ph**	>=	6	SU	Grab	Weekly	Minimum
pH**	<=	9	SU	Grab	Weekly	Maximum

Description : External Outfall, Number : 005, Monitoring : Effluent Gross, Season : Summer

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Nitrogen, Ammonia total (as N)	<=	.9	mg/L	Grab	Once Every 2 Months	Monthly Average
Nitrogen, Ammonia total (as N)	<=	1.8	mg/L	Grab	Once Every 2 Months	Daily Maximum

Description : External Outfall, Number : 005, Monitoring : Effluent Gross, Season : Winter

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Nitrogen, Ammonia total (as N)	<=	2.6	mg/L	Grab	Once Every 2 Months	Daily Maximum
Nitrogen, Ammonia total (as	<=	1.3	mg/L	Grab	Once Every 2	Monthly

N)	Months	Average

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection, as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.
**** See Part III for methodology.
Note: for Ammonia, (S) means Summer and (W) means winter.

Internal Monitoring Point 06A and 06E

Process wastewater discharged through Internal Monitoring Point (IMP) 06A is regulated by 40 CFR Part 421. IMP 06A's final discharge point is through Outfall 006. Appendix 2 of the Rationale lists the applicable best available technology (BAT) and best practicable technology (BPT), currently available, effluent limitations guidelines for Subpart B – Primary Aluminum Smelting Subcategory, (q) Direct Chill Casting Contact Cooling. The process water includes discharge from South Ingot cooling tower blow down and filter backwash water. In previous permits, limits for IMP 06A were based on a tiered format because the production levels in the facility varied. The need for multiple tiered limits for Internal Monitoring Point 06A is not applicable because data previously presented does not show an appreciable difference from the cumulative average. However, because Alcoa, Inc. anticipates a variable production schedule based on economic indicators, the division has established a single variable table of effluent limits for this internal monitoring point.

Internal Monitoring Point 06A - South Ingot Cooling Tower, Blowdown and Filter Backwash (Tiered Limits: <= 3.110 mmlb/day<=3.456 mmlb/day< 3.8 mmlb/day)

Description : External Outfall, Number : 06A, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	<=	28.06	lb/d	Grab	Twice Per Month	Daily Maximum
Aluminum, total (as Al)	<=	12.45	lb/d	Grab	Twice Per Month	Monthly Average
Antimony, total (as Sb)	<=	8.86	lb/d	Grab	Once Every 2 Months	Daily Maximum
Antimony, total (as Sb)	<=	3.95	lb/d	Grab	Once Every 2 Months	Monthly Average
Flow*	Report	-	Mgal/d	Totalizer	Continuous	Daily Maximum
Flow*	Report	-	Mgal/d	Totalizer	Continuous	Monthly Average
Fluoride, total (as F)	<=	273	lb/d	Grab	Once Every 2 Months	Daily Maximum
Fluoride, total (as F)	<=	121	lb/d	Grab	Once Every 2 Months	Monthly Average
Nickel, total (as Ni)	<=	2.53	lb/d	Grab	Once Every 2 Months	Daily Maximum
Nickel, total (as Ni)	<=	1.71	lb/d	Grab	Once Every 2	Monthly

					Months	Average
Total Suspended Solids (TSS)	<=	5184	lb/d	Grab	Once Every 2 Months	Monthly Average
Total Suspended Solids (TSS)	<=	10368	lb/d	Grab	Once Every 2 Months	Daily Maximum
pH**	>=	6	SU	Grab	Weekly	Minimum
pH**	<=	9	SU	Grab	Weekly	Maximum

Description : External Outfall, Number : 06A, Monitoring : Instream Monitoring, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average

* Flow shall be reported in Million Gallons per Day (MGD).

** pH analyses shall be performed within fifteen (15) minutes of sample collection.

In addition to this single variable table of effluent limits for this internal monitoring point, the Division is including an “emergency tier” of effluent limits to be applied in the event of production outages at the [Alcoa Inc.] North Plant's ingot casting facility. These limits shall be applicable only when the North Plant is non-operational and production at the [Alcoa, Inc.] South Plant is increased to facilitate maintaining their production schedule. Those limits are included below and labeled as “Emergency Outfall 06E”. For all times that production at the South Plant is operating at normal capacity the DMR for Emergency Outfall 06E shall be reported as “no-discharge” for that months’ reporting requirements.

Emergency Outfall 06E – Emergency - South Ingot Cooling Tower, Blowdown and Filter Backwash These limits are only to be applied when the North Plant is non-operational. (Emergency Tier: <= 3.810 mmlb/day<=4.140 mmlb/day< 4.500 mmlb/day)

Description : External Outfall, Number : 06E, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	<=	33.62	lb/d	Grab	Twice Per Month	Daily Maximum
Aluminum, total (as Al)	<=	14.91	lb/d	Grab	Twice Per Month	Monthly Average
Antimony, total (as Sb)	<=	10.62	lb/d	Grab	Once Every 2 Months	Daily Maximum
Antimony, total (as Sb)	<=	4.73	lb/d	Grab	Once Every 2 Months	Monthly Average
Flow	Report	-	Mgal/d	Totalizer	Continuous	Daily Maximum
Flow	Report	-	Mgal/d	Totalizer	Continuous	Monthly Average
Fluoride, total (as F)	<=	327	lb/d	Grab	Once Every 2	Daily Maximum

					Months	
Fluoride, total (as F)	<=	145	lb/d	Grab	Once Every 2 Months	Monthly Average
Nickel, total (as Ni)	<=	3.03	lb/d	Grab	Once Every 2 Months	Daily Maximum
Nickel, total (as Ni)	<=	2.05	lb/d	Grab	Once Every 2 Months	Monthly Average
Total Suspended Solids (TSS)	<=	6210	lb/d	Grab	Once Every 2 Months	Monthly Average
Total Suspended Solids (TSS)	<=	12420	lb/d	Grab	Once Every 2 Months	Daily Maximum
pH**	>=	6	SU	Grab	Weekly	Minimum
pH**	<=	9	SU	Grab	Weekly	Maximum

Description : External Outfall, Number : 06E, Monitoring : Instream Monitoring, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Flow*	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
Flow*	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average

* Flow shall be reported in Million Gallons per Day (MGD).

** pH analyses shall be performed within fifteen (15) minutes of sample collection.

Outfall 006 - South Ingot Cooling Tower, Water Softener Regeneration and Non-Contact Cooling Water Dry Weather Flow Only

Description : External Outfall, Number : 006, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	<=	10.7	mg/L	Composite	Once Every 2 Months	Daily Maximum
Benzo(a)pyrene	<=	.0008	mg/L	Grab	Once Every 2 Months	Monthly Average
Benzo(a)pyrene	<=	.0016	mg/L	Grab	Once Every 2 Months	Daily Maximum
Chlorine, total residual (TRC)***	<=	.04	mg/L	Grab	Weekly	Monthly Average
Chlorine, total residual (TRC)***	<=	.07	mg/L	Grab	Weekly	Daily Maximum
Flow*	Report	-	Mgal/d	Recorder	Continuous	Monthly Average
Flow*	Report	-	Mgal/d	Recorder	Continuous	Daily Maximum
Fluoride, dissolved (as F)	<=	20	mg/L	Composite	Once Every 2 Months	Daily Maximum
IC25 Static Renewal 7 Day Chronic	>=	26.6	%	Composite	Quarterly	Minimum

Ceriodaphnia****						
IC25 Static Renewal 7 Day Chronic Pimephales****	>=	26.6	%	Composite	Quarterly	Minimum
Oil & Grease	<=	15	mg/L	Grab	Once Every 2 Months	Daily Maximum
Oil & Grease	<=	10	mg/L	Grab	Once Every 2 Months	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Once Every 2 Months	Daily Maximum
pH**	>=	6	SU	Grab	Weekly	Minimum
pH**	<=	9	SU	Grab	Weekly	Maximum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection, as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.
**** See Part III for methodology.

Outfalls SW4, SW5, and SW6 - Storm Water Runoff

Description : External Outfall, Number : SW4,SW5, SW6 Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
CBOD, 5-day, 20 C	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Chlorine, total residual (TRC)**,***	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Chromium, total (as Cr)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Copper, total (as Cu) (Outfall SW6)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Flow*	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
LC50 Static 48Hr Acute Ceriodaphnia****	Report	-	mg/L	Grab	Once during final year of permit	Daily Maximum
LC50 Static 48Hr Acute Pimephales****	Report	-	mg/L	Grab	Once during final year of permit	Daily Maximum
Magnesium, total (as Mg) (Outfalls SW4 & SW6)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Nitrite plus nitrate total 1 det. (as N) (Outfall SW4)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Nitrogen, Ammonia total (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum

Oil & Grease	Report	-	mg/L	Grab	Semiannual	Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Zinc, total (as Zn)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
pH**	Report	-	SU	Grab	Semiannual	Maximum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH and TRC analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection, as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.
**** See Part III for methodology.

The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).

The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted.

Outfall S01 – Storm Water Runoff

Description : External Outfall, Number : S01, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Flow*	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Iron, total (as Fe)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
LC50 Static 48Hr Acute Ceriodaphnia****	Report	-	%	Grab	Once during final year of permit	Minimum
LC50 Static 48Hr Acute Pimephales****	Report	-	%	Grab	Once during final year of permit	Minimum
Magnesium, total (as Mg)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Nitrite plus nitrate total 1 det. (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
pH**	Report	-	SU	Grab	Semiannual	Maximum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
**** See Part III for methodology.

The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).

The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted.

Outfalls S02,S03,S04 – Storm Water Runoff

Description : External Outfall, Number :S02,S03, S04 Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Flow*	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Iron, total (as Fe)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
LC50 Static 48Hr Acute Ceriodaphnia****	Report	-	%	Grab	Once during final year of permit	Minimum
LC50 Static 48Hr Acute Pimephales****	Report	-	%	Grab	Once during final year of permit	Minimum
Magnesium, total (as Mg)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Nitrite plus nitrate total 1 det. (as N) (Outfalls S02 and S03)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Oil & Grease	Report	-	mg/L	Grab	Semiannual	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
pH**	Report	-	SU	Grab	Semiannual	Maximum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
**** See Part III for methodology.

The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).

The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted.

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

Outfall S03	Flow	pH	TSS	O& G	Aluminum	Fluoride	Iron	Cyanide	Magnesium	Nitrate-Nitrite	Whole Effluent Toxicity (WET) Testing	
Date	Daily Max. MGD	Daily Max. Conc. SU	Maximum Effluent Conc. mg/L	Daily Max. Conc. mg/L	Daily Max. Conc. mg/L	Daily Max. Conc. mg/L	Daily Max. Conc. mg/L	Daily Max. Conc. mg/L	Daily Max. Conc. mg/L	Daily Max. Conc. mg/L	Ceriodaphnia %	Pimephales %
10/19/2012	0.006	7.2	28	7.8	0.54	3.69	0.27	BDL	5.32	1.72		
7/15/2013	0.040	7.5	29	BDL	1.44	3.35	1.42	BDL	5.49	2.24		
10/18/2013	0.020	8.0	7	BDL	0.16	4.09	BDL	BDL	7.68	4.03		
5/12/2014	0.001	7.9	41	BDL	1.27	2.81	0.77	BDL	4.47	0.73		
12/22/2014	0.081	7.4	13	BDL	0.51	2.21	0.32	BDL	4.82	0.36		
7/21/2015	0.012	6.6	457	BDL	1.75	0.47	1.19	BDL	3.64	2.69		
12/14/2015	0.011	7.4	17	BDL	0.52	1.94	0.24	BDL	3.22	0.33		
7/7/2016	1.724	6.8	24	BDL	1.93	2.47	1.30	BDL	3.47	0.78		
12/14/2016	0.001	7.4	3	BDL	0.3	4.41	0.12	BDL	5.71	5.24		
1/10/2017											>100	>100
5/15/2017	0.646	7.5	268	BDL	5.01	2.06	5.67	BDL	5.21	1.09		
Standard Dev.	**0.553**	**0.4**	**151**	**#DIV/0!**	**1.4**	**1.18**	**1.73**	**#DIV/0!**	**1.32**	**1.65**	**#DIV/0!**	**0.0**
Minimum	**0.001**		**3**	**7.8**	**0.2**	**0.47**	**0.12**	**0.000**	**3.22**	**0.33**	**0.0**	**0.000**
Maximum	**1.724**	**8.0**	**457**	**7.8**	**5.0**	**4.41**	**5.67**	**0.000**	**7.68**	**5.24**	**0.0**	**0.000**
Average	**0.254**	**7.4**	**89**	**7.8**	**1.3**	**2.75**	**1.26**	**#DIV/0!**	**4.90**	**1.92**	**#DIV/0!**	**#DIV/0!**
Permit Limit	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**
Count	**10**	**10**	**10**		**10**	**10**	**10**	**10**	**10**	**10**	**2**	**2**

Outfall SW4	Flow	pH	Oil and Grease	TRC	TSS	Aluminum	Chromium	Zinc	Ammonia as N	CBOD5	Cyanide	Fluoride	Magnesium	Nitrate-Nitrite	Whole Effluent Toxicity (WET) Testing	
Date	Daily Max.	Daily Max. Conc.	Daily Max. Conc.	Daily Maximum Conc.	Maximum Effluent Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Daily Max. Conc.	Ceriodaphnia	Pimephales
	MGD	SU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%
10/19/2012	0.072	7.4	BDL	BDL	19	1.600	BDL	0.030	BDL	5	BDL	3.88	3.24	0.30		
8/20/2013	0.092	7.1	BDL	BDL	13	0.795	BDL	BDL	0.849	4	BDL	2.37	4.96	0.76		
12/19/2013	0.108	7.6	BDL	BDL	15	1.440	BDL	BDL	0.218	17	BDL	4.68	5.36	0.72		
5/12/2014	0.007	7.5	BDL	BDL	117	6.850	0.007	0.110	0.169	3	BDL	7.44	15.00	0.37		
11/13/2014	0.029	8.0	BDL	BDL	44	3.510	0.009	0.098	0.377	14	BDL	1.70	4.90	1.35		
5/18/2015	0.108	7.1	BDL	BDL	58	3.990	0.005	0.063	BDL	2	0.042	1.86	4.60	0.36		
5/5/2016	0.130	7.1	BDL	BDL	36	2.850	BDL	0.066	0.227	11	BDL	2.02	4.30	0.67		
5/15/2016	0.017	7.8	BDL	BDL	58	4.850	0.006	0.123	0.473	6	BDL	1.11	4.90	0.53		
12/15/2016	0.259	7.9	BDL	BDL	29	3.400	BDL	0.073	0.834	5	BDL	1.68	4.12	0.41	>100	>100
6/9/2017	0.720	7.9	BDL	BDL	BDL	0.670	BDL	BDL	BDL	BDL	0.026	7.92	6.12	1.36		
Standard Dev.	**0.212**	**0.4**	**#DIV/0!**	**0.0**	**32**	**1.954**	**0.002**	**0.032**	**0.287**	**5**	**0.0**	**0.00**	**0.00**	**0.00**	**#DIV/0!**	**0.0**
Minimum	**0.007**		**0**	**0.0**	**13**	**0.670**	**0.005**	**0.030**	**0.169**	**2**	**0.026**	**1.11**	**3.24**	**0.30**	**0.0**	**0.000**
Maximum	**0.720**	**8.0**	**0**	**0.0**	**117**	**6.850**	**0.009**	**0.123**	**0.849**	**17**	**0.042**	**7.92**	**15.00**	**1.36**	**0.0**	**0.000**
Average	**0.154**	**7.5**	**#DIV/0!**	**0.0**	**43**	**2.996**	**0.007**	**0.080**	**0.450**	**7**	**0.034**	**3.47**	**5.75**	**0.68**	**#DIV/0!**	**#DIV/0!**
Permit Limit	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**
Count	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**1**	**1**

Outfall 06A	Effluent Flow		Stream Flow		pH		TSS		Fluoride		Aluminum		Antimony		Nickel	
Date	Monthly Average	Daily Max.	Monthly Average	Daily Max.	Daily Min. Conc.	Daily Max. Conc.	Monthly Average Amount	Daily Max. Amount	Monthly Average Amount	Daily Max. Amount	Monthly Average Amount	Daily Max. Amount	Monthly Average Amount	Daily Max. Amount	Monthly Average Amount	Daily Max. Amount
	MGD	MGD	MGD	MGD	SU	SU	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
10/19/2012	0.125	0.173	0.142	0.200	6.5	7.9	3	3	1.8	1.8	1.8	2.2	BDL	BDL	BDL	BDL
11/15/2012	0.145	0.204	0.279	0.430	6.3	7.9					3.0	3.6				
12/20/2012	0.145	0.245	0.431	0.448	7.1	7.8	2	2	0.6	0.6	0.9	1.4	BDL	BDL	BDL	BDL
1/18/2013	0.430	0.431	0.147	0.217	8.0	8.8					3.4	5.2				
2/21/2013	0.158	0.346	0.430	0.430	7.7	7.8	22	22	2.1	2.1	2.3	3.0	BDL	BDL	BDL	BDL
3/19/2013	0.107	0.117	0.430	0.430	7.7	8.2					2.6	2.6				
4/18/2013	0.097	0.107	0.429	0.430	7.7	7.9	6	6	1.2	1.2	3.0	3.2	BDL	BDL	BDL	BDL
5/20/2013	0.180	0.271	0.430	0.430	7.3	8.0					5.2	5.5				
6/20/2013	0.122	0.141	0.430	0.430	7.7	8.0	4	4	1.5	1.5	3.6	4.2	BDL	BDL	BDL	BDL
7/19/2013	0.430	0.430	0.158	0.281	7.8	8.2					6.2	9.2				
8/20/2013	0.111	0.128	0.126	0.430	8.0	8.2	9	9	1.5	1.5	3.1	3.3	BDL	BDL	BDL	BDL
9/11/2013	0.123	0.135	0.127	0.244	7.8	8.1					2.8	3.0				
10/18/2013	0.130	0.143	0.134	0.177	7.7	8.3	9	9	1.6	1.6	3.0	3.3	BDL	BDL	BDL	BDL
11/19/2013	0.125	0.132	0.127	0.244	7.8	8.1					2.9	3.2				
12/19/2013	0.120	0.137	0.111	0.226	6.1	7.9	5	5	1.1	1.1	4.3	6.8	BDL	BDL	BDL	BDL
1/22/2014	0.109	0.127	0.110	0.136	7.8	7.9					2.6	3.3				
2/18/2014	0.106	0.132	0.108	0.140	7.8	8.0	9	9	1.6	1.6	4.0	4.2	BDL	BDL	BDL	BDL
3/18/2014	0.176	0.230	0.129	0.190	7.9	8.1					6.5	9.0				
4/21/2014	0.118	0.150	0.129	0.203	7.8	8.0	5	5	1.3	1.3	4.2	4.9	BDL	BDL	BDL	BDL
5/12/2014	0.115	0.130	0.115	0.129	7.8	8.5					4.5	4.8				
6/16/2014	0.189	0.278	0.128	0.195	7.1	7.8	7	7	1.9	1.9	4.5	5.0	BDL	BDL	BDL	BDL
7/17/2014	0.158	0.190	0.136	0.192	7.9	8.1					4.0	4.6				
8/19/2014	0.121	0.168	0.128	0.195	7.9	8.1	11	11	1.0	1.0	2.3	2.3	BDL	BDL	BDL	BDL
9/19/2014	0.084	0.130	0.105	0.142	7.8	8.3					1.2	2.4				
10/20/2014	0.140	0.190	0.116	0.175	7.8	8.1	7	7	2.2	2.2	2.8	3.5	0.3	0.3	BDL	BDL
11/13/2014	0.122	0.203	0.116	0.174	7.8	8.1					3.3	3.7				
12/22/2014	0.110	0.157	0.081	0.389	7.9	8.1	7	7	1.1	1.1	1.9	3.1	BDL	BDL	BDL	BDL
1/21/2015	0.107	0.125	0.083	0.283	7.9	8.1					1.9	2.4				
2/18/2015	0.123	0.131	0.115	0.218	8.0	8.2	9	9	1.2	1.2	3.4	3.4	BDL	BDL	BDL	BDL
3/17/2015	0.055	0.081	0.092	0.178	7.9	8.1					2.3	2.9				
4/20/2015	0.059	0.094	0.108	0.142	8.0	8.1	1	1	1.2	1.2	2.0	2.9	0.3	0.3	BDL	BDL
5/18/2015	0.115	0.144	0.120	0.153	8.1	8.2					3.4	3.5				
6/18/2015	0.140	0.157	0.144	0.189	8.0	8.2	4	4	1.7	1.7	3.8	3.9	0.3	0.3	BDL	BDL
10/9/2015	0.175	0.235	0.158	0.174	8.3	8.4					4.0	4.6				
8/12/2015	0.130	0.172	0.149	0.210	8.1	8.2	6	6	1.4	1.4	3.6	4.1	0.2	0.2	BDL	BDL
9/14/2015	0.171	0.267	0.149	0.203	8.2	8.5					3.0	3.2				
10/9/2015	0.184	0.232	0.200	0.240	7.9	8.2	11	11	2.7	2.7	4.3	5.5	0.8	0.8	BDL	BDL
11/10/2015	0.117	0.189	0.128	0.171	8.0	8.3					4.4	4.9				
12/14/2015	0.084	0.171	0.147	0.220	7.1	8.1	6	6	1.3	1.3	3.2	3.6	0.6	0.6	BDL	BDL
1/8/2016	0.090	0.136	0.031	0.043	7.8	8.1					0.7	1.0				
2/12/2016	0.078	0.098	0.068	0.117	8.1	8.2	2	2	0.4	0.4	2.0	3.2	0.1	0.1	BDL	BDL
3/8/2016	0.074	0.090	0.072	0.088	8.1	8.3					3.0	3.3				
4/11/2016	0.069	0.100	0.060	0.091	7.8	8.2	2	2	0.5	0.5	3.0	4.4	0.1	0.1	BDL	BDL
5/15/2016	0.076	0.122	0.090	0.092	7.9	8.2					3.3	3.5				
6/13/2016	0.074	0.134	0.072	0.092	7.9	8.0	14	14	1.1	1.1	3.7	3.9	0.2	0.2	BDL	BDL
7/7/2016	0.109	0.143	0.106	0.166	8.0	8.5					6.1	6.8				
8/8/2016	0.119	0.153	0.112	0.170	7.8	8.4	7	7	2.5	2.5	4.5	5.8	0.03	0.03	BDL	BDL
9/12/2016	0.120	0.159	0.098	0.111	7.9	8.2					3.2	3.5				
10/10/2016	0.145	0.215	0.139	0.268	7.7	8.0	6	6	1.1	1.1	2.7	2.8	0.01	0.01	BDL	BDL
11/15/2016	0.130	0.153	0.162	0.236	7.9	8.1					5.8	9.3				
12/15/2016	0.108	0.160	0.167	0.264	7.4	8.1	23	23	1.6	1.6	4.6	6.5	0.03	0.03	BDL	BDL
1/10/2017	0.079	0.111	0.096	0.184	8.0	8.1					2.1	3.7				
2/7/2017	0.072	0.108	0.021	0.022	8.0	8.3	1	1	0.2	0.2	0.7	0.8	0.004	0.004	BDL	BDL
3/10/2017	0.075	0.103	0.094	0.148	8.2	8.3					2.8	5.0				
4/10/2017	0.075	0.102	0.063	0.092	8.2	8.5	6	6	1.2	1.2	2.5	4.1	0.02	0.02	BDL	BDL
5/12/2017	0.078	0.098	0.091	0.092	8.0	8.2					3.2	3.3				
6/9/2017	0.074	0.103	0.091	0.094	8.0	8.4	5	5	1.2	1.2	3.0	3.1	0.02	0.02	BDL	BDL
7/10/2017	0.075	0.147	0.077	0.092	8.2	8.3					3.4	3.7				
8/11/2017	0.102	0.129	0.094	0.094	7.9	8.2	3	3	1.1	1.1	3.0	3.2	BDL	BDL	BDL	BDL
Standard Dev.	**0.066**	**0.073**	**0.103**	**0.110**	**0.4**	**0.2**	**5**	**5**	**0.6**	**0.6**	**1.2**	**1.7**	**0.00**	**0.00**	**0.00**	**0.00**
Minimum	**0.055**	**0.081**	**0.021**	**0.022**	**6.1**		**1**	**1**	**0.2**	**0.2**	**0.7**	**0.8**	**0.00**	**0.00**	**0.00**	**0.00**
Maximum	**0.430**	**0.431**	**0.431**	**0.448**		**8.8**	**23**	**23**	**2.7**	**2.7**	**6.5**	**9.3**	**0.80**	**0.80**	**0.00**	**0.00**
Average	**0.125**	**0.166**	**0.148**	**0.208**	**7.8**	**8.2**	**7**	**7**	**1.4**	**1.4**	**3.3**	**4.0**	**0.00**	**0.00**	**0.00**	**0.00**
Permit Limit	**Report**	**Report**	**Report**	**Report**	**6.0**	**9.0**	**5184**	**10368**	**121**	**273**	**12.45**	**28.06**	**3.95**	**8.86**	**1.71**	**2.53**
Count	**59**	**59**	**59**	**59**	**59**	**59**	**30**	**30**	**30**	**30**	**59**	**59**	**30**	**30**	**30**	**30**

Outfall 006	Flow		pH		TSS	Oil and Grease		TRC		Fluoride	Aluminum	Benzopyrene		Whole Effluent Toxicity (WET) Testing	
Date	Monthly Average	Daily Max.	Daily Min. Conc.	Daily Max. Conc.	Maximum Effluent Conc.	Monthly Average Conc.	Daily Max. Conc.	Monthly Average Conc.	Daily Maximum Conc.	Daily Max. Conc.	Daily Max. Conc.	Monthly Average Conc.	Daily Maximum Conc.	Ceriodaphnia	Pimephales
	MGD	MGD	SU	SU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%
10/19/2012	1.768	7.819	7.0	7.8	2	BDL	BDL	BDL	BDL	BDL	0.5	BDL	BDL	> 100	> 100
11/15/2012	1.403	2.177	7.3	7.6				BDL	BDL						
12/20/2012	1.325	1.886	7.0	7.5	BDL	BDL	BDL	BDL	BDL	1.7	0.4	BDL	BDL		
1/18/2013	1.557	3.283	6.7	7.3				BDL	BDL						
2/21/2013	2.543	7.364	6.9	7.4	1.1	BDL	BDL	BDL	BDL	1	0.3	BDL	BDL		
3/19/2013	2.287	1.310	7.0	7.4				BDL	BDL						
4/19/2013	1.547	5.008	6.9	7.5	1.4	BDL	BDL	BDL	BDL	1.2	0.5	BDL	BDL	> 100	> 100
5/20/2013	1.866	6.995	6.8	7.4				BDL	BDL					> 100	> 100
6/20/2013	1.536	3.357	6.9	7.6	1.4	BDL	BDL	BDL	BDL	2	0.6	BDL	BDL		
7/19/2013	1.869	6.010	7.0	7.5				BDL	BDL						
8/20/2013	1.812	7.000	6.9	7.4	1.5	BDL	BDL	BDL	BDL	3.4	0.6	BDL	BDL	99.1	> 100
9/11/2013	1.327	1.744	7.4	7.8				BDL	BDL						
10/18/2013	1.656	5.235	7.2	7.8	11.5	BDL	BDL	BDL	BDL	1.9	0.4	BDL	BDL		
11/19/2013	1.387	1.801	7.2	7.8				BDL	BDL						
12/19/2013	1.509	6.208	7.0	7.8	1.4	BDL	BDL	BDL	BDL	1	0.4	BDL	BDL		
1/22/2014	2.104	7.723	7.0	7.6				BDL	BDL						
2/18/2014	0.382	5.987	6.9	7.5	2.4	BDL	BDL	BDL	BDL	1.4	0.8	BDL	BDL	> 100	73.7
3/18/2014	1.117	7.731	6.9	7.5				BDL	BDL						
4/21/2014	0.984	1.855	6.8	7.5	2.6	BDL	BDL	BDL	BDL	1.2	0.8	BDL	BDL		
5/12/2014	1.358	5.393	6.7	7.8				BDL	BDL					> 100	> 100
6/16/2014	1.302	4.072	7.1	7.6	1.3	BDL	BDL	BDL	BDL	1.6	0.9	BDL	BDL		
7/17/2014	1.095	2.036	6.8	7.6				BDL	BDL						
8/19/2014	1.109	3.068	6.9	7.7	1.5	BDL	BDL	BDL	BDL	1	0.6	BDL	BDL	> 100	> 100
9/19/2014	1.062	2.391	7.3	7.7				BDL	BDL						
10/20/2014	0.993	1.421	7.4	7.7	1.7	BDL	BDL	BDL	BDL	1.5	0.7	BDL	BDL		
11/13/2014	1.216	3.294	6.9	7.8				BDL	BDL					77.7	> 100
12/22/2014	0.925	2.532	7.2	7.7	BDL	BDL	BDL	BDL	BDL	0.8	0.4	BDL	BDL		
1/21/2015	1.081	2.682	7.5	7.7				BDL	BDL						
2/18/2015	0.904	2.289	7.3	7.6	BDL	BDL	BDL	BDL	BDL	1.3	0.6	BDL	BDL		
3/17/2015	1.364	2.638	7.4	7.5				BDL	BDL					> 100	> 100
4/20/2015	1.380	3.970	7.2	7.7	1.5	BDL	BDL	BDL	BDL	1.3	1	BDL	BDL		
5/18/2015	1.341	2.762	7.0	7.7				BDL	BDL						
6/18/2015	1.307	1.792	7.6	8.1	1.4	BDL	BDL	BDL	BDL	1	0.8	BDL	BDL	> 100	> 100
7/21/2015	1.147	2.259	7.2	8.1				BDL	BDL						
8/12/2015	1.096	6.997	7.2	7.8	2.1	BDL	BDL	BDL	BDL	2.8	0.9	BDL	BDL	> 100	> 100
9/14/2015	0.725	1.207	7.6	8.1				BDL	BDL						
10/9/2015	0.675	1.035	7.7	7.9	2.3	BDL	BDL	BDL	BDL	1.2	1	BDL	BDL		
11/10/2015	0.704	2.088	7.5	7.9				BDL	BDL					> 100	> 100
12/14/2015	0.970	6.802	7.2	7.8	2.4	BDL	BDL	BDL	BDL	2	0.9	BDL	BDL		
1/8/2016	1.473	9.170	7.0	7.6				BDL	BDL						
2/12/2016	0.633	2.031	7.1	7.6	1	BDL	BDL	BDL	BDL	1.4	1.3	BDL	BDL		
3/8/2016	1.463	8.077	6.9	7.5				BDL	BDL					50.3	> 100
4/11/2016	0.631	1.788	7.1	7.6	2.5	BDL	BDL	BDL	BDL	2.5	1.4	BDL	BDL		
5/15/2016	0.540	1.328	6.8	7.5				BDL	BDL						
6/13/2016	0.515	0.987	6.5	7.8	4.5	BDL	BDL	BDL	BDL	3.1	1.7	BDL	BDL	> 100	> 100
7/7/2016	0.674	2.478	7.3	7.7				BDL	BDL						
8/8/2016	0.556	1.220	7.3	7.8	2.4	BDL	BDL	BDL	BDL	6.1	1.2	BDL	BDL	> 100	> 100
9/12/2016	0.479	0.830	7.4	7.7				BDL	BDL						
10/10/2016	0.474	0.982	7.4	7.7	1.4	BDL	BDL	BDL	BDL	1.3	1	BDL	BDL		
11/15/2016	0.407	0.532	7.4	7.8				BDL	BDL					> 100	> 100
12/15/2016	0.705	7.285	7.4	8.2	1.7	BDL	BDL	BDL	BDL	1.1	0.93	BDL	BDL		
1/10/2017	0.917	4.991	6.9	7.8				BDL	BDL						
2/7/2017	0.575	1.961	6.9	8.0	BDL	BDL	BDL	BDL	BDL	1.41	0.7	BDL	BDL		
3/10/2017	0.611	0.944	6.8	7.4				BDL	BDL					> 100	> 100
4/10/2017	0.681	1.745	7.0	7.3	1.2	BDL	BDL	BDL	BDL	1.22	1	BDL	BDL		
5/12/2017	1.175	7.107	7.0	7.2				BDL	BDL					> 100	42.3
6/9/2017	0.889	5.353	7.0	7.5	1.3	BDL	BDL	BDL	BDL	2.2	0.8	BDL	BDL		
7/10/2017	0.779	2.791	7.0	7.5				BDL	BDL						
8/11/2017	0.608	0.989	7.1	7.7	1.2	BDL	BDL	BDL	BDL	1.7	1.2	BDL	BDL		
Standard Dev.	**0.488**	**2.431**	**0.3**	**0.2**	**2**	**0**	**0**	**0.00**	**0.00**	**1.1**	**0.3**	**0.000**	**0.000**	**24.5**	**22**
Minimum	**0.382**	**0.532**	**6.5**		**1**	**0**	**0**	**0.00**	**0.00**	**0.8**	**0.3**	**0.000**	**0.000**	**50.3**	**42**
Maximum	**2.543**	**9.170**		**8.2**	**11.5**	**0**	**0**	**0.00**	**0.00**	**6.1**	**1.7**	**0.000**	**0.000**	**99.1**	**74**
Average	**1.127**	**3.624**	**7.1**	**7.7**	**2**	**0**	**0**	**0.00**	**0.00**	**1.8**	**0.8**	**0.000**	**0.000**	**75.7**	**58**
Permit Limit	**Report**	**Report**	**6.0**	**9.0**	**40**	**10**	**15**	**0.03**	**0.05**	**20**	**10.7**	**0.0006**	**0.0012**	**35.9**	**35.9**
Count	**59**	**59**	**59**	**59**	**30**	**30**	**30**	**59**	**59**	**30**	**30**	**30**	**30**	**18**	**18**

Outfall 006 Form 2C Application Data

OUTFALL 006/Arconic Inc./Permit # TN0065081				Results			Flow (MGD)	
POLLUTANT	Sample Date	Sample Type		mg/L		Lbs/day	24HC	GRAB
Biochemical Oxygen Demand (BOD)	3/6/2017	24HC	<	2.000	<	9.249	0.5545	0.5328
Chemical Oxygen Demand (COD)	3/6/2017	24HC		10.900		50.407		
Total Organic Carbon (TOC)	3/6/2017	24HC		3.140		14.521		
Total Organic Carbon (TOC)	3/6/2017	GRAB		3.430		15.241		
Total Suspended Solids (TSS)	3/6/2017	24HC		1.200		5.549		
Ammonia (as N)	3/6/2017	24HC		0.060		0.278		
pH	3/6/2017	GRAB		7.900				
Bromide (24959-67-9)	3/6/2017	24HC		0.224		1.036		
Chlorine, Total Residual	3/6/2017	GRAB	<	0.020	<	0.089		
Color	3/6/2017	24HC		5.000				
Fecal Coliform	3/6/2017	GRAB		1.000		MPN/100mL		
Fluoride (16984-48-8)	3/6/2017	24HC		1.260		5.83		
Nitrate-Nitrite (as N)	3/6/2017	24HC		0.333		1.54		
Nitrogen, Total Organic (as N)	3/6/2017	24HC	<	0.250	<	1.16		
Nitrogen, Total Kjeldahl (as N)	3/6/2017	24HC	<	0.250	<	1.16		
Oil and Grease	3/6/2017	GRAB	<	4.300	<	19.11		
Phosphorus (as P), Total (7723-14-0)	3/6/2017	24HC		0.339		1.57		
Sulfate (as SO4)(14808-79-8)	3/6/2017	24HC		51.900		240.01		
Sulfide (as S)	3/6/2017	24HC		0.050		0.23		
Sulfite (as SO3)(14265-45-3)	3/6/2017	24HC	<	5.000	<	23.12		
Surfactants	3/6/2017	24HC		0.030		0.14		
Aluminum,Total(7429-90-5)	3/6/2017	24HC		1.020		4.72		
Barium, Total (7440-39-3)	3/6/2017	24HC		0.018		0.08		
Boron, Total (7440-42-8)	3/6/2017	24HC	<	0.050	<	0.23		
Cobalt, Total (7440-48-4)	3/6/2017	24HC	<	0.010	<	0.05		
Iron, Total (7439-89-6)	3/6/2017	24HC	<	0.100	<	0.46		
Magnesium,Total(7439-95-4)	3/6/2017	24HC		3.550		16.42		
Molybdenum,Total(7439-98-7)	3/6/2017	24HC		0.225		1.04		
Manganese,Total(7439-96-5)	3/6/2017	24HC		0.019		0.086		
Tin, Total (7440-31-5)	3/6/2017	24HC	<	0.050	<	0.231		
Titanium,Total(7440-32-6)	3/6/2017	24HC	<	0.050	<	0.231		
Antimony, Total (7440-36-0)	3/6/2017	24HC	<	0.010	<	0.046		
Arsenic, Total (7440-38-2)	3/6/2017	24HC	<	0.010	<	0.046		
Beryllium, Total (7440-41-7)	3/6/2017	24HC	<	0.004	<	0.018		
Cadmium, Total (7440-43-9)	3/6/2017	24HC	<	0.001	<	0.005		
Chromium, Total (7440-47-3)	3/6/2017	24HC	<	0.005	<	0.023		
Copper, Total (7440-50-8)	3/6/2017	24HC	<	0.011	<	0.049		
Lead, Total (7439-92-1)	3/6/2017	24HC	<	0.005	<	0.023		
Mercury, Total (7439-97-6) LOW LEVEL EPA 1631E	6/29/2017	GRAB		##########		0.00000433		0.5198
Mercury, Total (7439-97-6)	3/6/2017	24HC	<	0.0002	<	0.001		
Nickel, Total (7440-02-0)	3/6/2017	24HC	<	0.010	<	0.046		
Selenium, Total (7782-49-2)	3/6/2017	24HC	<	0.010	<	0.046		
Silver, Total (7440-22-4)	3/6/2017	24HC	<	0.005	<	0.023		
Thallium, Total (7440-28-0)	3/6/2017	24HC	<	0.010	<	0.046		
Zinc, Total (7440-66-6)	3/6/2017	24HC	<	0.050	<	0.231		
Cyanide, Total (57-12-5)	3/6/2017	GRAB	<	0.010	<	0.044		
Phenols, Total	3/6/2017	GRAB	<	0.050	<	0.222		
GC/MS FRACTION – VOLATILE COMPOUNDS (EPA 8260 or EPA 624)								
Accrolein (107-02-8)	3/6/2017	24HC	<	0.050	<	0.231		
Acrylonitrile (107-13-1)	3/6/2017	24HC	<	0.010	<	0.046		
Benzene (71-43-2)	3/6/2017	24HC	<	0.001	<	0.005		
Bis (Chloro- methyl) Ether (542-88-1)	3/6/2017	24HC	<	0.001	<	0.005		
Bromoform (75-25-2)	3/6/2017	24HC	<	0.001	<	0.005		
Carbon Tetrachloride (56-23-5)	3/6/2017	24HC	<	0.001	<	0.005		
Chlorobenzene (108-90-7)	3/6/2017	24HC	<	0.001	<	0.005		
Chlorodi- bromomethane (124-48-1)	3/6/2017	24HC	<	0.001	<	0.005		
Chloroethane (75-00-3)	3/6/2017	24HC	<	0.001	<	0.005		
2-Chloro- ethylvinyl Ether (110-75-8)	3/6/2017	24HC	<	0.005	<	0.023		
Chloroform (67-66-3)	3/6/2017	24HC		0.002		0.009		
Dichloro- bromomethane (75-27-4)	3/6/2017	24HC		0.002		0.010		
Dichloro- difluoromethane (75-71-8)	3/6/2017	24HC	<	0.001	<	0.005		
1,1-Dichloro- ethane (75-34-3)	3/6/2017	24HC	<	0.001	<	0.005		
1,2-Dichloro- ethane (107-06-2)	3/6/2017	24HC	<	0.001	<	0.005		
1,1-Dichloro- ethylene (75-35-4)	3/6/2017	24HC	<	0.001	<	0.005		
1,2-Dichloro- propane (78-87-5)	3/6/2017	24HC	<	0.001	<	0.005		
1,3-Dichloro- propylene(542-75-6)	3/6/2017	24HC	<	0.002	<	0.009		
Ethylbenzene (100-41-4)	3/6/2017	24HC	<	0.001	<	0.005		
Methyl Bromide (74-83-9)	3/6/2017	24HC	<	0.001	<	0.005		
Methyl Chloride (74-87-3)	3/6/2017	24HC	<	0.001	<	0.005		
Methylene Chloride (75-09-2)	3/6/2017	24HC	<	0.005	<	0.023		
1,1,2,2-Tetrachloroethane (79-34-5)	3/6/2017	24HC	<	0.001	<	0.005		
Tetrachloro- ethylene (127-18-4)	3/6/2017	24HC	<	0.001	<	0.005		
Toluene (108-88-3)	3/6/2017	24HC	<	0.001	<	0.005		
1,2-Trans-Dichloroethylene (156-60-5)	3/6/2017	24HC	<	0.001	<	0.005		
1,1,1-Trichloro- ethane (71-55-6)	3/6/2017	24HC	<	0.001	<	0.005		
1,1,2-Trichloro- ethane (79-00-5)	3/6/2017	24HC	<	0.001	<	0.005		
Trichloro- ethylene (79-01-6)	3/6/2017	24HC	<	0.001	<	0.005		
Trichloro- fluoromethane (75-69-4)	3/6/2017	24HC	<	0.001	<	0.005		
Vinyl Chloride (75-01-4)	3/6/2017	24HC	<	0.001	<	0.005		

GC/MS FRACTION – ACID COMPOUNDS (EPA 8270)								
2-Chlorophenol (95-57-8)	3/6/2017	24HC	<	0.0095	<	0.0440		
2,4-Dichloro- phenol (120-83-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
2,4-Dimethyl- phenol (105-67-9)	3/6/2017	24HC	<	0.0095	<	0.0440		
4,6-Dinitro-O- Cresol (534-52-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
2,4-Dinitro- phenol (51-28-5)	3/6/2017	24HC	<	0.0095	<	0.0440		
2-Nitrophenol (88-75-5)	3/6/2017	24HC	<	0.0095	<	0.0440		
4-Nitrophenol (100-02-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
P-Chloro-M- Cresol (59-50-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
Pentachloro- phenol (87-86-5)	3/6/2017	24HC	<	0.0095	<	0.0440		
Phenol (108-95-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
2,4,6-Trichloro- phenol (88-05-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (EPA 8270)								
Acenaphthene (83-32-9)	3/6/2017	24HC	<	0.0095	<	0.0440		
Acenaphtylene (208-96-8)	3/6/2017	24HC	<	0.0095	<	0.0440		
Anthracene (120-12-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
Benzidine (92-87-5)	3/6/2017	24HC	<	0.0095	<	0.0440		
Benzo (a) Anthracene (56-55-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
Benzo (a) Pyrene (50-32-8)	3/6/2017	24HC	<	0.0095	<	0.0440		
Benzo (a) Pyrene (50-32-8)	3/6/2017	GRAB	<	0.0020	<	0.0089		
3,4-Benzo- fluoranthene (205-99-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
Benzo (ghi) Perylene (191-24-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
Benzo (k) Fluoranthene (207-08-9)	3/6/2017	24HC	<	0.0095	<	0.0440		
Bis (2-Chloro- ethoxy) Methane (111-91-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
Bis (2-Chloro- ethyl) Ether(111-44-4)	3/6/2017	24HC	<	0.0095	<	0.0440		
Bis (2-Chloroisopropyl) Ether (102-80-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
Bis (2-Ethyl- hexyl) Phthalate (117-81-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
4-Bromophenyl Phenyl Ether(101-55-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
Butyl Benzyl Phthalate (85-68-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
2-Chloro- naphthalene (91-58-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
4-Chloro- phenyl Phenyl Ether (7005-72-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
Chrysene (218-01-9)	3/6/2017	24HC	<	0.0095	<	0.0440		
Dibenzo (a,h)Anthracene (53-70-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
1,2-Dichloro- benzene (95-50-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
1,3-Di-chloro- benzene (541-73-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
1,4-Dichloro- benzene (106-46-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
3,3-Dichloro- benzidine (91-94-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
Diethyl Phthalate (84-66-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
Dimethyl Phthalate (131 -11-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
Di-N-Butyl Phthalate (84-74-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
2,4-Dinitro- toluene (121-14-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
2,6-Dinitro- toluene (606-20-2)	3/6/2017	24HC	<	0.0095	<	0.0440		
Di-N-Octyl Phthalate (117-84-0)	3/6/2017	24HC	<	0.0095	<	0.0440		
1,2-Diphenyl- hydrazine (as Azo- benzene) (122-66-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
Fluoranthene (206-44-0)	3/6/2017	24HC	<	0.0095	<	0.0440		
Fluorene (86-73-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
Hexachloro- benzene (118-74-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
Hexachloro- butadiene (87-68-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
Hexachloro- cyclopentadiene (77-47-4)	3/6/2017	24HC	<	0.0095	<	0.0440		
Hexachloro- ethane (67-72-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
Indeno (1,2,3-cd) Pyrene(193-39-5)	3/6/2017	24HC	<	0.0095	<	0.0440		
Isophorone (78-59-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
Naphthalene (91-20-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
Nitrobenzene (98-95-3)	3/6/2017	24HC	<	0.0095	<	0.0440		
N-Nitro- sodimethylamine (62-75-9)	3/6/2017	24HC	<	0.0095	<	0.0440		
N-Nitrosodi- N-Propylamine (621-64-7)	3/6/2017	24HC	<	0.0095	<	0.0440		
N-Nitro- sodiphenylamine (86-30-6)	3/6/2017	24HC	<	0.0095	<	0.0440		
Phenanthrene (85-01-8)	3/6/2017	24HC	<	0.0095	<	0.0440		
Pyrene (129-00-0)	3/6/2017	24HC	<	0.0095	<	0.0440		
1,2,4-Tri-chlorobenzene (120-82-1)	3/6/2017	24HC	<	0.0095	<	0.0440		
GC/MS FRACTION – PCB's (EPA 608)								
PCB-1242 (53469-21-9)	3/6/2017	24HC	<	0.0005	<	0.00227		
PCB-1254 (11097-69-1)	3/6/2017	24HC	<	0.0005	<	0.00227		
PCB-1221 (11104-28-2)	3/6/2017	24HC	<	0.0005	<	0.00227		
PCB-1232 (11141-16-5)	3/6/2017	24HC	<	0.0005	<	0.00227		
PCB-1248 (12672-29-6)	3/6/2017	24HC	<	0.0005	<	0.00227		
PCB-1260 (11096-82-5)	3/6/2017	24HC	<	0.0005	<	0.00227		
PCB-1016 (12674-11-2)	3/6/2017	24HC	<	0.0005	<	0.00227		
Toxaphene (8001-35-2)	3/6/2017	24HC	<	0.002	<	0.00925		

Outfall S03 Form 2F Application Data

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall S03 **NPDES Permit No. TN0065081**

Parameter	Sample Type		Result
pH (std. units)	Grab		7.47

Parameter	Sample Type		Estimate
Flow (MGD)	Grab		0.646
	Composite		0.096

Sample Date:	**April 3, 2017**
Rain Amount:	**1.78 in**
Duration	**5.5 hrs**
Sample Date:	
Rain Amount:	
Duration	

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
Total Chlorine Residual	Grab	<	0.02	<	0.11					
Oil & Grease	Grab	<	4.4	<	23.71					
Total Cyanide	Grab	<	0.01	<	0.05					
Total Phenols	Grab	<	0.05	<	0.27					
Soluble Fluoride	Grab		2.06		11.10					
BOD5	Grab		2.90		15.62	Composite		2.21		1.77
COD	Grab		21.0		113.14	Composite		13.1		10.49
Nitrite, Nitrate Nitrogen	Grab		1.09		5.87	Composite		0.546		0.44
Total Aluminum	Grab		5.01		26.99	Composite		5.09		4.08
Total Ammonia, as Nitrogen	Grab		0.126		0.68	Composite		0.124		0.10
Total Antimony	Grab	<	0.01	<	0.05	Composite	<	0.01	<	0.01
Total Arsenic	Grab	<	0.01	<	0.05	Composite	<	0.01	<	0.01
Total Barium	Grab		0.022		0.12	Composite		0.02		0.02
Total Beryllium	Grab	<	0.004	<	0.02	Composite	<	0.004	<	0.003
Total Cadmium	Grab	<	0.001	<	0.01	Composite	<	0.001	<	0.001
Total Chromium	Grab		0.005		0.03	Composite		0.005		0.004
Total Cobalt	Grab	<	0.01	<	0.05	Composite	<	0.01	<	0.01
Total Copper	Grab		0.011		0.06	Composite		0.011		0.01
Total Fluoride	Grab		2.01		10.83	Composite		2.00		1.60
Total Iron	Grab		5.67		30.55	Composite		5.74		4.60
Total Kjehldahl Nitrogen	Grab		0.548		2.95	Composite	<	0.25	<	0.20
Total Lead	Grab		0.007		0.04	Composite		0.006		0.005
Total Magnesium	Grab		5.21		28.07	Composite		4.93		3.95
Total Manganese	Grab		0.157		0.85	Composite		0.182		0.15
Total Mercury	Grab	<	0.0002	<	0.0011	Composite	<	0.0002	<	0.0002
Total Molybdenum	Grab	<	0.05	<	0.27	Composite	<	0.05	<	0.04
Total Nickel	Grab		0.011		0.06	Composite		0.011		0.01
Total Organic Nitrogen	Grab		0.422		2.27	Composite	<	0.25	<	0.20
Total Phosphorus	Grab		0.159		0.86	Composite		0.152		0.12
Total Selenium	Grab	<	0.01	<	0.05	Composite	<	0.01	<	0.05
Total Silver	Grab	<	0.005	<	0.03	Composite	<	0.005	<	0.03
Total Suspended Solids	Grab		268.0		1444	Composite		44.7		35.79
Total Thallium	Grab	<	0.01	<	0.05	Composite	<	0.01	<	0.01
Total Zinc	Grab		0.093		0.50	Composite		0.083		0.07
Dissolved Aluminum	Grab	<	0.10	<	0.54	Composite	<	0.10	<	0.08
1,2,4-Trichlorobenzene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
1,2-Dichlorobenzene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
1,2-Diphenylhydrazine	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
1,3-Dichlorobenzene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
1,4-Dichlorobenzene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2,4,6-Tribromophenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2,4,6-Trichlorophenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2,4-Dichlorophenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2,4-Dimethylphenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2,4-Dinitrophenol	Grab	<	0.0245	<	0.132	Composite	<	0.0243	<	0.02

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall S03 **NPDES Permit No. TN0065081**

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
2,4-Dinitrotoluene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2,6-Dinitrotoluene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2-Chloronaphthalene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4,6-Dinitro-2-methylphenol	Grab	<	0.0245	<	0.132	Composite	<	0.0243	<	0.02
2-Methylphenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
2-Nitrophenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
3,3´-Dichlorobenzidine	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4-Bromophenyl-phenylether	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4-Chloro-3-methylphenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4-Chloroaniline	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4-Chlorophenyl-phenylether	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4-Methylphenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
4-Nitrophenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Acenaphthene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Acenaphthylene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Anthracene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Benzidine	Grab	<	0.098	<	0.53	Composite	<	0.097	<	0.08
Benz(a)anthracene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Benzo[a]pyrene	Grab		0.0011		0.006	Composite	<	0.0097	<	0.01
Benzo[b]fluoranthene	Grab		0.0016		0.008	Composite		0.0011		0.001
Benzo[g,h,i]perylene	Grab		0.0010		0.005	Composite	<	0.0097	<	0.01
Benzo[k]fluoranthene	Grab		0.0007		0.004	Composite	<	0.0097	<	0.01
bis(2-Chloroethoxy)methane	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Bis(2-Chloroethyl)ether	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Bis(2-chloroisopropyl)ether	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Bis(2-Ethylhexyl)phthalate	Grab	<	0.0098	<	0.05	Composite		0.003		0.002
Butylbenzylphthalate	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Chrysene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Dibenz[a,h]anthracene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Diethylphthalate	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Dimethylphthalate	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Di-n-butylphthalate	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Di-n-octylphthalate	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Fluoranthene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Fluorene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Hexachlorobenzene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Hexachlorobutadiene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Hexachlorocyclopentadiene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Hexachloroethane	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Indeno[1,2,3-cd]pyrene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Isophorone	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Naphthalene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Nitrobenzene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
N-Nitrosodimethylamine	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
N-Nitroso-di-n-propylamine	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
N-Nitrosodiphenylamine	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Pentachlorophenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Phenanthrene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Phenol	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01
Pyrene	Grab	<	0.0098	<	0.05	Composite	<	0.0097	<	0.01

Outfall SW4 Form 2F Application Data

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall SW4 **NPDES Permit No. TN0065081**

Parameter		Sample Type		Result
pH	(std. units)	Grab		7.90

Parameter		Sample Type		Result
Flow	(MGD)	Grab		0.720
		Composite		0.747

Sample Date:	**May 24, 2017**	
Rain Amount:	**0.66**	**in**
Duration	**3**	**hrs**

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
Total Chlorine Residual	Grab	<	0.02	<	0.12					
Oil & Grease	Grab	<	4.4	<	26.42					
Total Cyanide	Grab		0.026		0.16					
Total Phenols	Grab	<	0.05	<	0.30					
BOD5	Grab	<	2.00	<	12.01	Composite		2.06		12.83
CBOD5	Grab	<	2.00	<	12.01	Composite	<	2.00	<	12.46
COD	Grab		25.9		155.52	Composite		23.2		144.54
Nitrite, Nitrate Nitrogen	Grab		1.36		8.17	Composite		1.23		7.66
Total Aluminum	Grab		0.672		4.04	Composite		0.992		6.18
Total Ammonia, as Nitrogen	Grab	<	0.10	<	0.60	Composite	<	0.10	<	0.62
Total Antimony	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Total Arsenic	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Total Barium	Grab		0.058		0.35	Composite		0.057		0.36
Total Beryllium	Grab	<	0.004	<	0.02	Composite	<	0.004	<	0.02
Total Cadmium	Grab	<	0.001	<	0.01	Composite	<	0.001	<	0.01
Total Chromium	Grab	<	0.005	<	0.03	Composite	<	0.005	<	0.03
Total Cobalt	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Total Copper	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Soluble Fluoride	Grab		7.92		47.56	Composite		NA		NA
Total Fluoride	Grab		11.5		69.06	Composite		5.58		34.76
Total Iron	Grab		0.249		1.50	Composite		0.406		2.53
Total Kjehldahl Nitrogen	Grab		0.379		2.28	Composite		0.51		3.18
Total Lead	Grab	<	0.005	<	0.03	Composite	<	0.005	<	0.03
Total Magnesium	Grab		6.12		36.75	Composite		5.58		34.76
Total Manganese	Grab	<	0.015	<	0.09	Composite	<	0.015	<	0.09
Total Mercury	Grab	<	0.0002	<	0.0012	Composite	<	0.0002	<	0.00
Total Molybdenum	Grab	<	0.05	<	0.30	Composite	<	0.05	<	0.31
Total Nickel	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Total Organic Nitrogen	Grab		0.379		2.28	Composite		0.51		3.18
Total Phosphorus	Grab	<	0.10	<	0.60	Composite	<	0.10	<	0.62
Total Selenium	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Total Silver	Grab	<	0.005	<	0.03	Composite	<	0.005	<	0.03
Total Suspended Solids	Grab	<	10.0	<	60.05	Composite		20.0		124.60
Total Thallium	Grab	<	0.01	<	0.06	Composite	<	0.01	<	0.06
Total Zinc	Grab	<	0.05	<	0.30	Composite	<	0.05	<	0.31
Dissolved Aluminum	Grab	<	0.10	<	0.60	Composite		0.102		0.64
1,2,4-Trichlorobenzene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
1,2-Dichlorobenzene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
1,2-Diphenylhydrazine	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
1,3-Dichlorobenzene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
1,4-Dichlorobenzene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2,4,6-Tribromophenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2,4,6-Trichlorophenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2,4-Dichlorophenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2,4-Dimethylphenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2,4-Dinitrophenol	Grab	<	0.025	<	0.15	Composite	<	0.023	<	0.14
2,4-Dinitrotoluene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2,6-Dinitrotoluene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2-Chloronaphthalene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall SW4 **NPDES Permit No. TN0065081**

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
4,6-Dinitro-2-methylphenol	Grab	<	0.025	<	0.15	Composite	<	0.023	<	0.14
2-Methylphenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
2-Nitrophenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
3,3´-Dichlorobenzidine	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
4-Bromophenyl-phenylether	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
4-Chloro-3-methylphenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
4-Chloroaniline	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
4-Chlorophenyl-phenylether	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
4-Methylphenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
4-Nitrophenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Acenaphthene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Acenaphthylene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Anthracene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Benzidine	Grab	<	0.101	<	0.61	Composite	<	0.094	<	0.59
Benz(a)anthracene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Benzo[a]pyrene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Benzo[b]fluoranthene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Benzo[g,h,i]perylene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Benzo[k]fluoranthene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
bis(2-Chloroethoxy)methane	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Bis(2-Chloroethyl)ether	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Bis(2-chloroisopropyl)ether	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Bis(2-Ethylhexyl)phthalate	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Butylbenzylphthalate	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Chrysene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Dibenz[a,h]anthracene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Diethylphthalate	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Dimethylphthalate	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Di-n-butylphthalate	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Di-n-octylphthalate	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Fluoranthene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Fluorene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Hexachlorobenzene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Hexachlorobutadiene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Hexachlorocyclopentadiene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Hexachloroethane	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Indeno[1,2,3-cd]pyrene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Isophorone	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Naphthalene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Nitrobenzene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
N-Nitrosodimethylamine	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
N-Nitroso-di-n-propylamine	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
N-Nitrosodiphenylamine	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Pentachlorophenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Phenanthrene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Phenol	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06
Pyrene	Grab	<	0.010	<	0.06	Composite	<	0.009	<	0.06

Outfall SW6 Form 2F Application Data

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall SW6 **NPDES Permit No. TN0065081**

Parameter	Sample Type		Result
pH (std. units)	Grab		7.66

Parameter	Sample Type		Result
Flow (MGD)	Grab		0.763
	Composite		0.801

Sample Date:	**March 26, 2017**
Rain Amount:	**0.40 in**
Duration	**3 hrs**

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
Total Chlorine Residual	Grab	<	0.02	<	0.13					
Oil & Grease	Grab	<	4.30	<	27.36					
Soluble Fluoride	Grab		4.69		29.84					
Total Cyanide	Grab	<	0.01	<	0.04					
Total Phenols	Grab	<	0.05	<	0.32					
BOD5* (outside hold time)	Grab	<	2.00	<	12.73	Composite		7.05		47.10
CBOD5* (outside hold time)	Grab	<	2.00	<	12.73	Composite		7.06		47.16
COD	Grab	<	20.00	<	127.27	Composite		40.10		267.88
Nitrite, Nitrate Nitrogen	Grab		0.32		2.04	Composite		0.36		2.40
Total Aluminum	Grab		1.23		7.83	Composite		4.36		29.13
Total Ammonia, as Nitrogen	Grab	<	0.10	<	0.64	Composite		0.18		1.20
Total Antimony	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.067
Total Arsenic	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.067
Total Barium	Grab		0.015		0.095	Composite		0.028		0.187
Total Beryllium	Grab	<	0.004	<	0.025	Composite	<	0.004	<	0.027
Total Cadmium	Grab	<	0.001	<	0.006	Composite	<	0.001	<	0.0067
Total Chromium	Grab	<	0.005	<	0.032	Composite	<	0.005	<	0.033
Total Cobalt	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.067
Total Copper	Grab	<	0.010	<	0.064	Composite		0.031		0.207
Total Fluoride	Grab		4.69		29.84	Composite		3.95		26.39
Total Iron	Grab	<	0.10	<	0.64	Composite		0.50		3.33
Total Kjehldahl Nitrogen	Grab	<	0.25	<	1.59	Composite		1.02		6.81
Total Lead	Grab	<	0.005	<	0.032	Composite		0.024		0.160
Total Magnesium	Grab		3.23		20.55	Composite		4.18		27.92
Total Manganese	Grab		0.025		0.159	Composite		0.100		0.667
Total Mercury	Grab	<	0.0002	<	0.0013	Composite	<	0.0002	<	0.001
Total Molybdenum	Grab		0.26		1.64	Composite		0.21		1.42
Total Nickel	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.067
Total Organic Nitrogen	Grab	<	0.25	<	1.59	Composite		0.84		5.61
Total Phosphorus	Grab		0.28		1.77	Composite		0.37		2.48
Total Selenium	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.067
Total Silver	Grab	<	0.005	<	0.032	Composite	<	0.005	<	0.033
Total Suspended Solids	Grab		7.80		49.63	Composite		1.44		9.62
Total Thallium	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.067
Total Zinc	Grab	<	0.050	<	0.318	Composite		0.099		0.664
Dissolved Aluminum	Grab		1.06		6.75	Composite		0.92		6.11
1,2,4-Trichlorobenzene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
1,2-Dichlorobenzene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
1,2-Diphenylhydrazine	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
1,3-Dichlorobenzene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
1,4-Dichlorobenzene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2,4,6-Tribromophenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2,4,6-Trichlorophenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2,4-Dichlorophenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2,4-Dimethylphenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2,4-Dinitrophenol	Grab	<	0.025	<	0.159	Composite	<	0.024	<	0.160
2,4-Dinitrotoluene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2,6-Dinitrotoluene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2-Chloronaphthalene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall SW6 **NPDES Permit No. TN0065081**

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
4,6-Dinitro-2-methylphenol	Grab	<	0.025	<	0.159	Composite	<	0.024	<	0.160
2-Methylphenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
2-Nitrophenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
3,3´-Dichlorobenzidine	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
4-Bromophenyl-phenylether	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
4-Chloro-3-methylphenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
4-Chloroaniline	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
4-Chlorophenyl-phenylether	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
4-Methylphenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
4-Nitrophenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Acenaphthene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Acenaphthylene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Anthracene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Benzidine	Grab	<	0.100	<	0.636	Composite	<	0.096	<	0.641
Benz(a)anthracene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Benzo[a]pyrene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Benzo[b]fluoranthene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Benzo[g,h,i]perylene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Benzo[k]fluoranthene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
bis(2-Chloroethoxy)methane	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Bis(2-Chloroethyl)ether	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Bis(2-chloroisopropyl)ether	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Bis(2-Ethylhexyl)phthalate	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Butylbenzylphthalate	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Chrysene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Dibenz[a,h]anthracene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Diethylphthalate	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Dimethylphthalate	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Di-n-butylphthalate	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Di-n-octylphthalate	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Fluoranthene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Fluorene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Hexachlorobenzene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Hexachlorobutadiene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Hexachlorocyclopentadiene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Hexachloroethane	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Indeno[1,2,3-cd]pyrene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Isophorone	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Naphthalene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Nitrobenzene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
N-Nitrosodimethylamine	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
N-Nitroso-di-n-propylamine	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
N-Nitrosodiphenylamine	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Pentachlorophenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Phenanthrene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Phenol	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064
Pyrene	Grab	<	0.010	<	0.064	Composite	<	0.010	<	0.064

EPA Form 3510-2F - Part VII. Discharge Information **Arconic Inc. - South Plant**

Outfall SW6 **NPDES Permit No. TN0065081**

Sample Date:	**May 1, 2017**
Rain Amount:	**0.12 in**
Duration	**1 hr**

Parameter	Sample Type		Result
Flow (MGD)	Grab		0.328
	Composite		0.240

Parameter	Sample Type		Result (mg/L)		Result (lbs/day)	Sample Type		Result (mg/L)		Result (lbs/day)
pH	Grab		6.99							
Total Chlorine Residual	Grab	<	0.02	<	0.05					
BOD5	Grab		2.63		7.19	Composite		12.20		24.42
CBOD5	Grab		2.22		6.07	Composite		9.96		19.94

APPENDIX 5

NEW PERMIT LIMITS AND MONITORING REQUIREMENTS

Internal Monitoring Point 06A and 06E

Process wastewater discharged through Internal Monitoring Point (IMP) 06A is regulated by 40 CFR Part 421. IMP 06A's final discharge point is through Outfall 006. Appendix 2 of the Rationale lists the applicable best available technology (BAT) and best practicable technology (BPT), currently available, effluent limitations guidelines for Subpart B – Primary Aluminum Smelting Subcategory, (q) Direct Chill Casting Contact Cooling. The process water includes discharge from South Ingot cooling tower blow down and filter backwash water. In previous permits, limits for IMP 06A were based on a tiered format because the production levels in the facility varied. The need for multiple tiered limits for Internal Monitoring Point 06A is not applicable because data previously presented does not show an appreciable difference from the cumulative average. However, because Alcoa, Inc. anticipates a variable production schedule based on economic indicators, the division has established a single variable table of effluent limits for this internal monitoring point.

Internal Monitoring Point 06A - South Ingot Cooling Tower, Blowdown and Filter Backwash (Tiered Limits: <= 3.110 mmlb/day<=3.456 mmlb/day< 3.8 mmlb/day)

Description : External Outfall, Number : 06A, Monitoring : Effluent Gross, Season : All Year							
CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	6	SU	Grab	Weekly	Minimum
00400	pH	<=	9	SU	Grab	Weekly	Maximum
00530	Total Suspended Solids (TSS)	<=	5184	lb/d	Grab	Once Every 2 Months	Monthly Average
00530	Total Suspended Solids (TSS)	<=	10368	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	273	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	121	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	1.71	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	2.53	lb/d	Grab	Once Every 2 Months	Daily Maximum
01097	Antimony, total (as Sb)	<=	3.95	lb/d	Grab	Once Every 2 Months	Monthly Average
01097	Antimony, total (as Sb)	<=	8.86	lb/d	Grab	Once Every 2 Months	Daily Maximum
01105	Aluminum, total (as Al)	<=	28.06	lb/d	Grab	Twice Per Month	Daily Maximum
01105	Aluminum, total (as Al)	<=	12.45	lb/d	Grab	Twice Per Month	Monthly Average
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average
Description : External Outfall, Number : 06A, Monitoring : Instream Monitoring, Season : All Year							

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Monthly Average
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Daily Maximum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.

In addition to this single variable table of effluent limits for this internal monitoring point, the Division is including an “emergency tier” of effluent limits to be applied in the event of production outages at the [Alcoa Inc.] North Plant's ingot casting facility. These limits shall be applicable only when the North Plant is non-operational and production at the [Alcoa, Inc.] South Plant is increased to facilitate maintaining their production schedule. Those limits are included below and labeled as “Emergency Outfall 06E”. For all times that production at the South Plant is operating at normal capacity the DMR for Emergency Outfall 06E shall be reported as “no-discharge” for that months’ reporting requirements.

Emergency Outfall 06E – Emergency - South Ingot Cooling Tower, Blowdown and Filter Backwash These limits are only to be applied when the North Plant is non-operational. (Emergency Tier: <= 3.810 mmlb/day<=4.140 mmlb/day< 4.500 mmlb/day)

Description : External Outfall, Number : 06E, Monitoring : Effluent Gross, Season : All Year							
CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	6	SU	Grab	Weekly	Minimum
00400	pH	<=	9	SU	Grab	Weekly	Maximum
00530	Total Suspended Solids (TSS)	<=	6210	lb/d	Grab	Once Every 2 Months	Monthly Average
00530	Total Suspended Solids (TSS)	<=	12420	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	327	lb/d	Grab	Once Every 2 Months	Daily Maximum
00951	Fluoride, total (as F)	<=	145	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	2.05	lb/d	Grab	Once Every 2 Months	Monthly Average
01067	Nickel, total (as Ni)	<=	3.03	lb/d	Grab	Once Every 2 Months	Daily Maximum
01097	Antimony, total (as Sb)	<=	4.73	lb/d	Grab	Once Every 2 Months	Monthly Average
01097	Antimony, total (as Sb)	<=	10.62	lb/d	Grab	Once Every 2 Months	Daily Maximum
01105	Aluminum, total (as Al)	<=	33.62	lb/d	Grab	Twice Per Month	Daily Maximum
01105	Aluminum, total (as Al)	<=	14.91	lb/d	Grab	Twice Per Month	Monthly Average
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Monthly Average
50050	Flow	Report	-	Mgal/d	Totalizer	Continuous	Daily Maximum
Description : External Outfall, Number : 06E, Monitoring : Instream Monitoring, Season : All Year							

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
50050	Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.

Outfall 006 - South Ingot Cooling Tower, Water Softener Regeneration and Non-Contact Cooling Water Dry Weather Flow Only

Description : External Outfall, Number : 006, Monitoring : Effluent Gross, Season : All Year

CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	>=	6	SU	Grab	Weekly	Minimum
00400	pH	<=	9	SU	Grab	Weekly	Maximum
00530	Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Once Every 2 Months	Daily Maximum
00556	Oil & Grease	<=	10	mg/L	Grab	Once Every 2 Months	Monthly Average
00556	Oil & Grease	<=	15	mg/L	Grab	Once Every 2 Months	Daily Maximum
00950	Fluoride, dissolved (as F)	Report	-	mg/L	Composite	Once Every 2 Months	Daily Maximum
01105	Aluminum, total (as Al)	<=	10.7	mg/L	Composite	Once Every 2 Months	Daily Maximum
34247	Benzo(a)pyrene	<=	.0013	mg/L	Grab	Once Every 2 Months	Monthly Average
34247	Benzo(a)pyrene	<=	.0026	mg/L	Grab	Once Every 2 Months	Daily Maximum
50050	Flow	Report	-	Mgal/d	Recorder	Continuous	Monthly Average
50050	Flow	Report	-	Mgal/d	Recorder	Continuous	Daily Maximum
50060	Chlorine, total residual (TRC)	<=	.07	mg/L	Grab	Weekly	Daily Maximum
50060	Chlorine, total residual (TRC)	<=	.04	mg/L	Grab	Weekly	Monthly Average
TRP3B	IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	22	%	Composite	Quarterly	Minimum
TRP6C	IC25 Static Renewal 7 Day Chronic Pimephales promelas	>=	22	%	Composite	Quarterly	Minimum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection,

as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.
**** See Part III for methodology.

Outfall SW4 and SW6 - Storm Water Runoff

Description : External Outfall, Number : SW4, Monitoring : Effluent Gross, Season : All Year							
Code Ascending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	Report	-	SU	Grab	Semiannual	Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00556	Oil & Grease	Report	-	mg/L	Grab	Semiannual	Maximum
00610	Nitrogen, Ammonia total (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00720	Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00927	Magnesium, total (as Mg)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00950	Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01034	Chromium, total (as Cr)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01092	Zinc, total (as Zn)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01105	Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
50050	Flow	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
50060	Chlorine, total residual (TRC)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Grab	Semiannual	Daily Maximum
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	Report	-	mg/L	Grab	See Permit	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	Report	-	mg/L	Grab	See Permit	Minimum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH and TRC analyses shall be performed within fifteen (15) minutes of sample collection.
*** The current detection level for Total Residual Chlorine is 0.05 mg/L. The acceptable methods for detection, as specified in 40 CFR Part 136, are the amperometric titration, DPD colorimetric, and specific ion electrode.

**** See Part III for methodology.
The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).

Outfall S03 – Storm Water Runoff

Description : External Outfall, Number : S03, Monitoring : Effluent Gross, Season : All Year

CodeAscending	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00400	pH	Report	-	SU	Grab	Semiannual	Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00556	Oil & Grease	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00630	Nitrite plus Nitrate (as N)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00720	Cyanide, total (as CN)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00927	Magnesium, total (as Mg)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
00950	Fluoride, dissolved (as F)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01045	Iron, total (as Fe)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
01105	Aluminum, total (as Al)	Report	-	mg/L	Grab	Semiannual	Daily Maximum
50050	Flow	Report	-	Mgal/d	Estimate	Semiannual	Daily Maximum
TAA3B	LC50 Static 48Hr Acute Ceriodaphnia	Report	-	%	Grab	See Permit	Minimum
TAA6C	LC50 Static 48Hr Acute Pimephales promelas	Report	-	%	Grab	See Permit	Minimum

* Flow shall be reported in Million Gallons per Day (MGD).
** pH analyses shall be performed within fifteen (15) minutes of sample collection.
**** See Part III for methodology.
The permittee shall provide the date and duration (in hours) of the qualifying storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event that generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume of the discharge sampled. Flow shall be reported in Million Gallons per Day (MGD).