

Industrial and Sanitary Outfalls 2019 NPDES Permit Re-Application Outfall 03A160 Fact Sheet

Science and Technology Operations (STO)
National High Magnetic Field Laboratory (NHMFL)
Cooling Towers



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INDUSTRIAL AND SANITARY OUTFALLS 2019 NPDES PERMIT RE-APPLICATION Outfall 03A160 Fact Sheet

1.0 OUTFALL LOCATION [Section I]

Outfall ID No.:	03A160	Outfall Location:	Technical Area 35
Category:	03A, Treated Cooling Water Discharges	Originating Structure for the Discharge:	TA-35-124, 294, 301
Flow Type:	Intermittent	Receiving Stream:	Ten Site Canyon, Tributary to Mortandad Canyon Water Quality Segment 20.6.4.128 NMAC
Longitude:	106°17'49"W	Latitude:	35°51'47"N

2.0 FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES [Section II]

Outfall 03A160 is located at TA-35 and discharges to Ten Site Canyon, A tributary to Mortandad Canyon, in Water Quality Segment 20.6.4.128 NMAC. The outfall discharges treated cooling water that originates from TA-35-124, 294 and 301 at the National High Magnetic Field Laboratory (NHMFL). Attachment A provides a location map. The cooling tower blowdown is comprised of potable water that is treated by the cooling tower water treatment system. Table 1 identifies the discharge source, the source location, and source composition.

TA	Building	Source Type	Transportation Mode (Piping, Truck etc.)	Discharge Source	Source Composition
35	124, 294, 301	Cooling	Piping	National High Magnetic Field Laboratory (NHMFL) Cooling Towers	Treated Cooling Tower Blowdown
					Potable Water Used as Makeup Water

2.1 Process Schematic and Water Balance [II.A]

A process schematic line drawing that shows the route taken by water from intake to the discharge at Outfall 03A160 is provided in Attachment B. This drawing includes all operations that contribute cooling water to the discharge at Outfall 03S160. A water balance is also provided on the process schematic with average flows for the cooling tower intakes and blowdown. The water balance is based upon actual data collected from cooling tower operations personnel and the flow meter/totalizer associated with the outfall.

2.2 Water Treatment Processes [II.B]

The cooling towers provide cooling water to a process heat exchanger which cools a 1400 Mega Watt (MW) generator (35-301) and power supplies (35-294), and Helium recovery system (35-294). These towers and the associated heat exchanger are maintained using a chemical corrosion inhibitor. The towers may be operated year round and include conductivity sensors to control blow down and the addition of makeup water. Blow down from the towers is routed to the Sanitary Wastewater System (SWWS) facility or may be discharged to Outfall 03160. Table 2 identifies the waste water treatment codes associated with the water treatment system. Attachment C provides photographs of the outfall, cooling towers, and the wastewater treatment equipment.

Treatment Code	Description	Justification
2-E	Dechlorination	Chlorine Scavenger Chemicals are Added

The water treatment processes identified in Table 2 utilize chemicals to monitor the water quality in the cooling tower, control corrosion, limit biological growth, and de-chlorinate blowdown prior to discharge. Table 3 provides a list of the chemicals used to treat the water in the cooling towers.

Source	Chemical Name	Reason for Use	Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4	
TA-35-124, 294 and 301 National High Magnetic Field Laboratory (NHMFL) Cooling Towers	Vita-D-Chlor Tablets	Dechlorination	Ascorbic Acid	NA
	Bright Dyes FLT Yellow/Green Liquid	Water Line & Drain Tracing	NA	NA
	Bright Dyes FLT Yellow/Green Tablet	Water Line & Drain Tracing	NA	NA

2.3 Discharge Rate and Frequency [II.C]

The discharge rates and frequencies for Outfall 03A160 are provided in Table 4.

Source ^a	Frequency		Flow Rates and Volumes				
	Days/Week	Months	Average (MGD)	Maximum (MGD)	Average Volume (GPD)	Maximum Volume (GPD)	Duration (days)
National High Magnetic Field Laboratory (NHMFL) Cooling Towers	2	7	0.002567	0.00647	2,567	6,470	87

- a. Calculated between June 2017 and May 2018.
MGD = million gallons per day
GPD = gallons per day

3.0 PRODUCTION [Section III]

Section III is not applicable to Outfall 03A160.

4.0 IMPROVEMENTS [Section IV]

The NHMFL is currently constructing a water treatment system for the cooling towers. This system will add corrosion inhibitor and biocide to the towers automatically using a programmable logic controller (PLC) monitoring system. A Notice of Change will be submitted for these future changes prior to their implementation and impact to the outfall. Table 5 provides an estimate for the future flow rates and frequencies of makeup water and blowdown when the new towers come online. Attachment B provides a proposed schematic and water balance for the future configuration.

Chemical Name	Reason for Use	Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4	
GC Formula 2011 LT	Corrosion Inhibitor	phosphonobutane	NA
		tricarboxylic acid	NA
		monosodium phosphate	NA
		benzotriazole	NA
		phosphinocarboxylic acid	NA
GC Formula 314-T	Biocide	1-bromo-3-chloro-5,5-dimethyl hydantoin (chlorine source)	2C-4
GC Formula 315	Biocide	5-chloro-2-methyl-4-isothiazolin-3-one (chlorine source)	2C-4
		2-methyl-4-isothiazolin-3-one	NA
		magnesium nitrate	NA
		magnesium chloride	NA
WEST R-630	Dechlorination	Sodium Bisulfite	2C-4

5.0 INTAKE AND EFFLUENT CHARACTERISTICS [Section V]

5.1 Analytical Data [V.A, B, and C]

The discharge to Outfall 03A160 was routed to SWWS on May 5, 2018. It is the intent of the facility to no longer discharge to the outfall unless there is an operational upset that prevents cooling water from being discharged to the SWWS. The current configuration of the cooling water discharges prevented the collection of a sample for this permit application. The analytical results provided for the Outfall 03A160 Permit Reapplication on the Form 2C were provided from the following sources:

- 2012 Permit Application
- Discharge Monitoring Report summary for Outfall 03A0160 from October 2014 to May 2018 (Attachment D).
- Hardness = 118 mg/L (CaCO₃)

The discharge monitoring report summary does not include data between May 2018 and September 201 because the effluent from the NHMFL was not discharged to Ten Site Canyon. Effluent from the NHMFL was routed in May 2018 to the SWWS Facility under a waste stream profile.

5.2 Potential Pollutants [V.D]

The treatment chemicals currently associated with the cooling tower water treatment system and the use of potable makeup water constitute the pollutant load of the discharge to Outfall 03A160. Table 6 identifies the Table 2C-3 and 2C-4 pollutants by discharge source.

Source	POTENTIAL Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4		Analytical Data Results
Potable Water used as Makeup in the NHMFL Cooling Towers	Chlorine	2C-4	Residual Chlorine ^a = 0

- a. This analytical result is based upon the discharge monitoring report data submitted for Outfall 03A160 between October 2014 and May 2018.

NHMFL = National High Magnetic Field Laboratory

The safety data sheets associated with the chemicals used to treat water are provided in Attachment F.

6.0 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS [Section VI]

Section VI is not applicable to Outfall 03A160.

7.0 BIOLOGICAL TOXICITY TESTING DATA [Section VII]

Section VII is not applicable to Outfall 03A160.

8.0 CONTRACT ANALYSIS INFORMATION [Section VIII]

The analytical results from the samples collected for the 2012 Permit application were used for this permit application. These samples were submitted to the independent laboratories identified in Table 7.















Laboratory Name	Address and Contact Info	Analytes
GEL Laboratories LLC	2040 Savage Road Charleston SC 29407 (843) 556-8171	Biological Oxygen Demand, General Chemistry, Pesticides, Polychlorinated Biphenyls, Radiochemistry, Semi-Volatile Organic Compounds, Total Metals, Total Suspended Solids, Volatile Organic Compounds


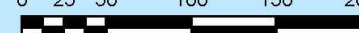
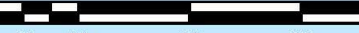
Table 7		
List of Independent Laboratories Used for NPDES Water Analysis		
Laboratory Name	Address and Contact Info	Analytes
SWRI Southwest Research Institute	Division 01 6220 Culebra Rd San Antonio TX7838	Arsenic, Selenium
New Mexico Water Testing Laboratory, Inc.	401 North Coronado Ave Española, NM 87532 (505) 929-4545	E.coli
Cape Fear Analytical LLC	3306 Kitty Hawk Road Suite 120 Wilmington, NC 28405 (910) 795-0421	TCDD (Dioxin)

ATTACHMENT A: Location Map for Outfall 03A160



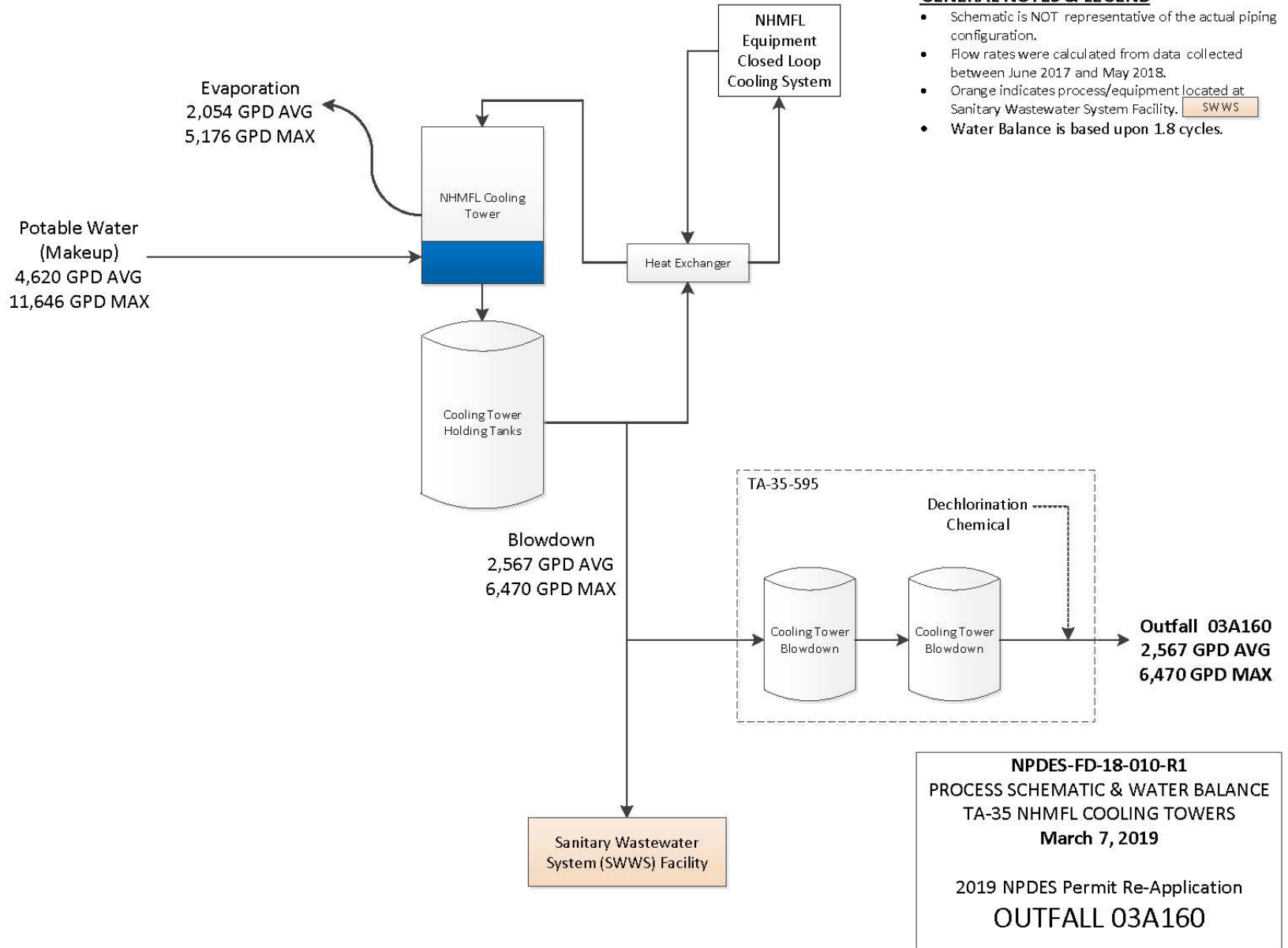
**NPDES Permit Re-Application Project
TA-35 Building 124
Outfall #03A160**

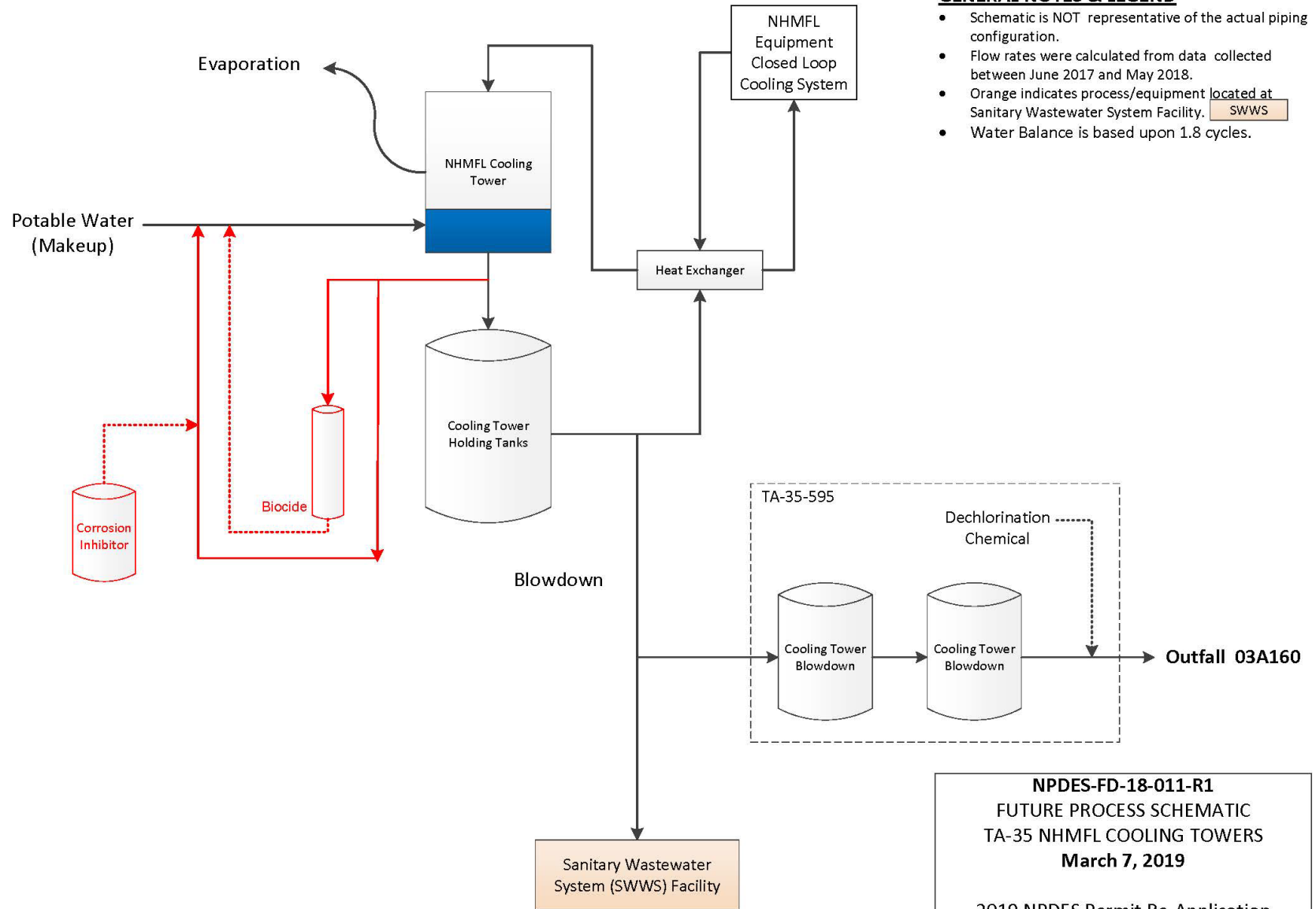
Legend	
	NPDES Outfall
	Springs
	Drainages
	100ft Contours
	20ft Contours
	10ft Contours
	Fences
	Dirt Roads
	Paved Roads
	Source Structures
	Building Served by Source
	Structures
	LANL Boundary
	Technical Areas


 Feet
 0 25 50 100 150 200

 Meters
 0 10 20 40 60 80

 1:1,144
 State Plane Coordinate System
 New Mexico, Central Zone, US Feet
 NAD 1983 Datum, NGVD 1929
 Map Updated By: Bethann McVicker, IF-PROG
 Map #18-129-02 15 November 2018

Disclaimer: This map was created for work processes associated with the Water Quality & RCRA. All other uses for this map should be confirmed with LANL EPC-RCRA staff.

ATTACHMENT B: Process Schematic and Water Balance





GENERAL NOTES & LEGEND

- Schematic is NOT representative of the actual piping configuration.
- Flow rates were calculated from data collected between June 2017 and May 2018.
- Orange indicates process/equipment located at Sanitary Wastewater System Facility. SWWS
- Water Balance is based upon 1.8 cycles.

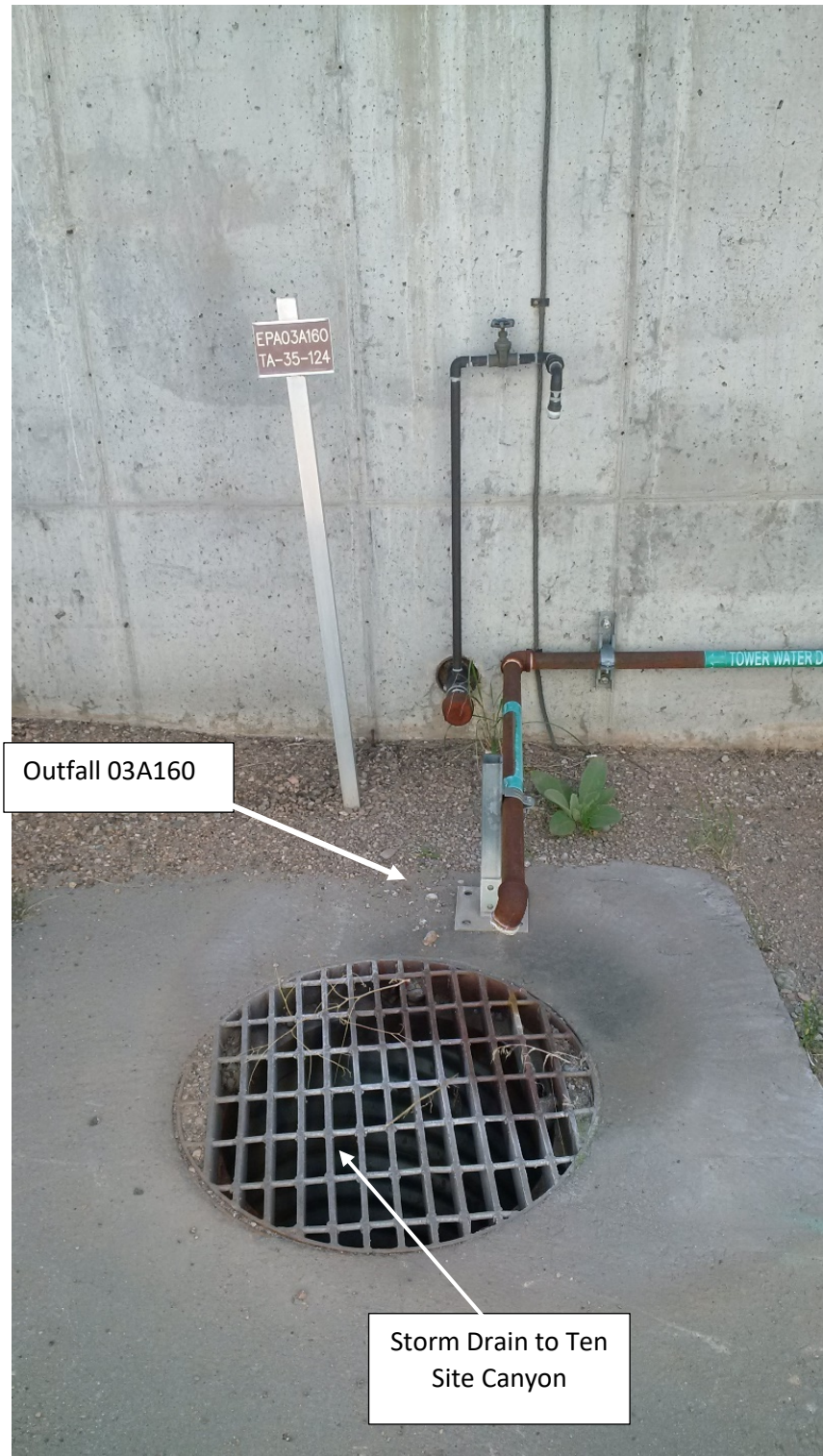
NPDES-FD-18-011-R1
 FUTURE PROCESS SCHEMATIC
 TA-35 NHMFL COOLING TOWERS
 March 7, 2019
 2019 NPDES Permit Re-Application
OUTFALL 03A160

ATTACHMENT C: Photographs

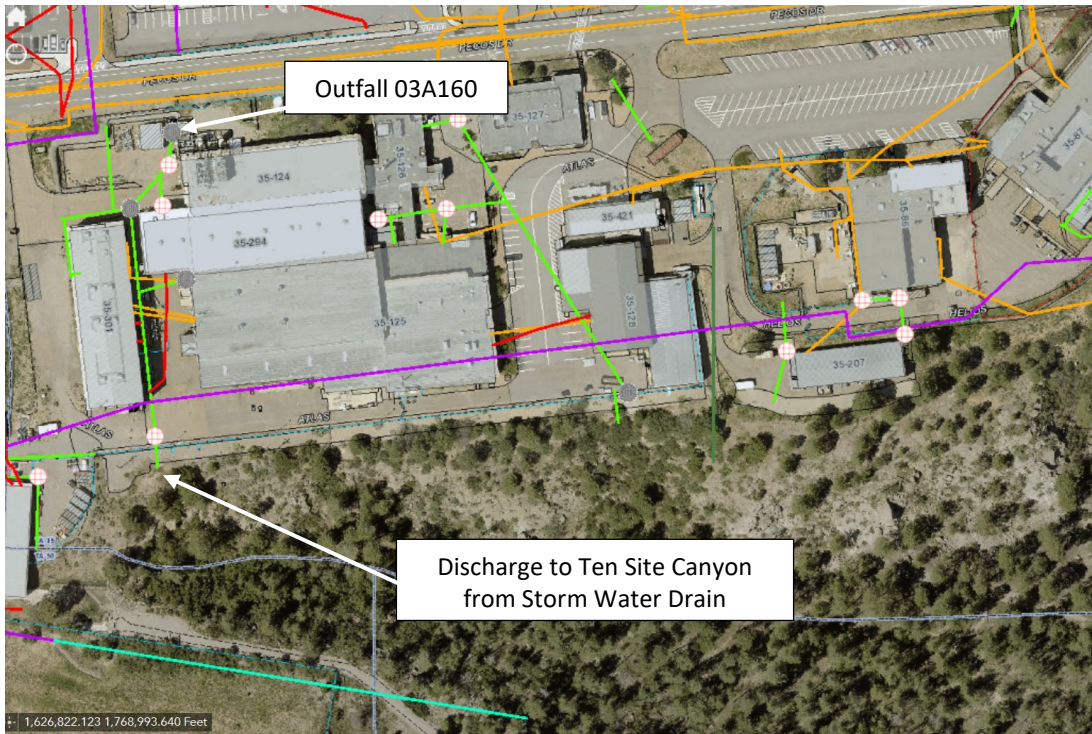
Photograph ID No.	Photograph Title
NPDES-03A160-18-001	Outfall 03A160 Location
NPDES-03A160-18-002	Outfall 03A160 Condition and Accessibility at Discharge Location
NPDES-03A160-18-003	Outfall 03A160 Receiving Stream Ten Site Canyon, Tributary to Mortandad Canyon, Water Quality Segment 20.6.4.128 NMAC
NPDES-03A160-18-004	NHMFL Cooling Tower Holding Tanks
NPDES-03A160-18-005	NHMFL Cooling Tower Blowdown Piping Connection to SWWS
NPDES-03A160-18-006	NHMFL Cooling Tower Blow Down Storage Tanks Prior to Discharge to Outfall 03A60 (inactive)



Photograph - NPDES-03A160-18-001
Outfall 03A160 Location



Photograph - NPDES-03A160-18-002
Outfall 03A160 Condition and Accessibility at Discharge Location



Photograph - NPDES-03A160-18-003
Outfall 03A160 Receiving Stream Ten Site Canyon, Tributary to Mortandad Canyon,
Water Quality Segment 20.6.4.128 NMAC



Photograph - NPDES-03A160-18-004
NHMFL Cooling Tower Holding Tanks



**Photograph - NPDES-03A160-18-005
NHMFL Cooling Tower Blowdown Piping Connection to SWWS**



**Photograph - NPDES-03A160-18-006
NHMFL Cooling Tower Blow Down Storage Tanks
Prior to Discharge to Outfall 03A60 (inactive)**

ATTACHMENT D – Discharge Monitoring Report (DMR) Summary

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration							
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency
03A160	TA35-294, 301	2014	Oct	Flow (Totalized Est.)	0.002298	0.006148	GPD							9	Daily
03A160	TA35-294, 301	2014	Nov	Flow (Totalized Est.)	0.003129	0.004527	MGD							7	Daily
03A160	TA35-294, 301	2014	Dec	Flow (Totalized Est.)	0.002979	0.004570	MGD							7	Daily
03A160	TA35-294, 301	2015	Jan	Flow (Totalized Est.)	0.002717	0.004887	MGD							4	Daily
03A160	TA35-294, 301	2015	Feb	Flow (Totalized Est.)	0.003296	0.004563	MGD							8	Daily
03A160	TA35-294, 301	2015	Mar	Flow (Totalized Est.)	0.003748	0.004232	MGD							9	Daily
03A160	TA35-294, 301	2015	Apr	Flow (Totalized Est.)	0.003359	0.005055	MGD							10	Daily
03A160	TA35-294, 301	2015	May	Flow (Totalized Est.)	0.003075	0.004322	MGD							8	Daily
03A160	TA35-294, 301	2015	Jun	Flow (Totalized Est.)	0.003969	0.005903	MGD							8	Daily
03A160	TA35-294, 301	2015	Jul	Flow (Totalized Est.)	0.003288	0.004179	MGD							8	Daily
03A160	TA35-294, 301	2015	Aug	Flow (Totalized Est.)	0.003470	0.004070	MGD							9	Daily
03A160	TA35-294, 301	2015	Sept	Flow (Totalized Est.)	0.003444	0.003832	MGD							6	Daily
03A160	TA35-294, 301	2015	Oct	Flow (Totalized Est.)	0.003007	0.003750	MGD							8	Daily
03A160	TA35-294, 301	2015	Nov	Flow (Totalized Est.)	0.002903	0.004183	MGD							7	Daily
03A160	TA35-294, 301	2015	Dec	Flow (Totalized Est.)	0.003566	0.004818	MGD							7	Daily
03A160	TA35-294, 301	2016	Jan	Flow (Totalized Est.)	0.003021	0.005100	MGD							7	Daily
03A160	TA35-294, 301	2016	Feb	Flow (Totalized Est.)	0.003769	0.004929	MGD							8	Daily
03A160	TA35-294, 301	2016	Mar	Flow (Totalized Est.)	0.003265	0.004341	MGD							9	Daily
03A160	TA35-294, 301	2016	Apr	Flow (Totalized Est.)	0.003275	0.004297	MGD							6	Daily
03A160	TA35-294, 301	2016	May	Flow (Totalized Est.)	0.003390	0.004465	MGD							6	Daily
03A160	TA35-294, 301	2016	Jun	Flow (Totalized Est.)	0.002995	0.003697	MGD							5	Daily
03A160	TA35-294, 301	2016	Jul	Flow (Totalized Est.)	0.003355	0.004504	MGD							7	Daily
03A160	TA35-294, 301	2016	Aug	Flow (Totalized Est.)	0.002759	0.004107	MGD							8	Daily
03A160	TA35-294, 301	2016	Sept	Flow (Totalized Est.)	0.003092	0.003568	MGD							7	Daily
03A160	TA35-294, 301	2016	Oct	Flow (Totalized Est.)	0.002948	0.003823	MGD							7	Daily
03A160	TA35-294, 301	2016	Nov	Flow (Totalized Est.)	0.002321	0.003130	MGD							7	Daily
03A160	TA35-294, 301	2016	Dec	Flow (Totalized Est.)	0.002873	0.003495	MGD							5	Daily
03A160	TA35-294, 301	2017	Jan	Flow (Totalized Est.)	0.001912	0.003059	MGD							6	Daily
03A160	TA35-294, 301	2017	Feb	Flow (Totalized Est.)	0.002145	0.002695	MGD							5	Daily
03A160	TA35-294, 301	2017	Mar	Flow (Totalized Est.)	0.003485	0.004430	MGD							4	Daily
03A160	TA35-294, 301	2017	Apr	Flow (Totalized Est.)	0.002270	0.003204	MGD							3	Daily
03A160	TA35-294, 301	2017	May	Flow (Totalized Est.)	0.003379	0.004068	MGD							6	Daily
03A160	TA35-294, 301	2017	Jun	Flow (Totalized Est.)	0.003479	0.004919	MGD							6	Daily
03A160	TA35-294, 301	2017	Jul	Flow (Totalized Est.)	0.002990	0.004493	MGD							8	Daily
03A160	TA35-294, 301	2017	Aug	Flow (Totalized Est.)	0.003338	0.004810	MGD							8	Daily
03A160	TA35-294, 301	2017	Sept	Flow (Totalized Est.)	0.004040	0.004573	MGD							6	Daily
03A160	TA35-294, 301	2017	Oct	Flow (Totalized Est.)	0.003451	0.006470	MGD							6	Daily
03A160	TA35-294, 301	2017	Nov	Flow (Totalized Est.)	0.003993	0.005058	MGD							6	Daily
03A160	TA35-294, 301	2017	Dec	Flow (Totalized Est.)	0.003798	0.004770	MGD							5	Daily

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration							
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency
03A160	TA35-294, 301	2018	Jan	Flow (Totalized Est.)	0.002928	0.003960	MGD							8	Daily
03A160	TA35-294, 301	2018	Feb	Flow (Totalized Est.)	0.001289	0.001600	MGD							13	Daily
03A160	TA35-294, 301	2018	Mar	Flow (Totalized Est.)	0.001243	0.001484	MGD							11	Daily
03A160	TA35-294, 301	2018	Apr	Flow (Totalized Est.)	0.001039	0.001335	MGD							8	Daily
03A160	TA35-294, 301	2018	May	Flow (Totalized Est.)	0.000873	0.001139	MGD							2	Daily
03A160	TA35-294, 301	2018	Jun	Flow (Totalized Est.)	0.000000	0.000000	MGD							0	Daily
03A160	TA35-294, 301	2018	Jul	Flow (Totalized Est.)	0.000000	0.000000	MGD							0	Daily
03A160	TA35-294, 301	2018	Aug	Flow (Totalized Est.)	0.000000	0.000000	MGD							0	Daily
03A160	TA35-294, 301	2018	Sept	Flow (Totalized Est.)	0.000000	0.000000	MGD							0	Daily
Flow (Totalized Est.)					Daily Average									308	
Flow (Totalized Est.)					Maximum 30 Day Average				0.0040					308	
Flow (Totalized Est.)					Maximum					0.0065				308	
03A160	TA35-294, 301	2014	Oct	pH				7.9	****	8.6	S.U.	6.0 - 9.0	S.U.	6.0	Weekly
03A160	TA35-294, 301	2014	Nov	pH				8.4	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2014	Dec	pH				8.5	****	8.8	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Jan	pH				8.6	****	8.8	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Feb	pH				8.4	****	8.7	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Mar	pH				8.4	****	8.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2015	Apr	pH				8.2	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	May	pH				8.2	****	8.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Jun	pH				8.3	****	8.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2015	Jul	pH				8.4	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Aug	pH				8.3	****	8.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2015	Sept	pH				8.3	****	8.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Oct	pH				8.3	****	8.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Nov	pH				7.4	****	8.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2015	Dec	pH				7.6	****	8.0	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Jan	pH				8.0	****	8.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Feb	pH				8.2	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Mar	pH				8.5	****	8.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2016	Apr	pH				8.5	****	8.7	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	May	pH				8.4	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Jun	pH				8.5	****	8.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2016	Jul	pH				8.3	****	8.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Aug	pH				8.5	****	8.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2016	Sept	pH				8.5	****	8.5	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Oct	pH				8.4	****	8.7	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2016	Nov	pH				8.4	****	8.6	S.U.	6.0 - 9.0	S.U.	5.0	Weekly
03A160	TA35-294, 301	2016	Dec	pH				8.5	****	8.7	S.U.	6.0 - 9.0	S.U.	3.0	Weekly
03A160	TA35-294, 301	2017	Jan	pH				8.2	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly
03A160	TA35-294, 301	2017	Feb	pH				8.5	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration									
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency		
03A160	TA35-294, 301	2017	Mar	pH				7.6	****	8.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2017	Apr	pH				7.8	****	8.1	S.U.	6.0 - 9.0	S.U.	3.0	Weekly		
03A160	TA35-294, 301	2017	May	pH				8.1	****	8.3	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2017	Jun	pH				8.4	****	8.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly		
03A160	TA35-294, 301	2017	Jul	pH				8.5	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2017	Aug	pH				7.6	****	8.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly		
03A160	TA35-294, 301	2017	Sept	pH				8.3	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2017	Oct	pH				8.3	****	8.7	S.U.	6.0 - 9.0	S.U.	5.0	Weekly		
03A160	TA35-294, 301	2017	Nov	pH				8.5	****	8.6	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2017	Dec	pH				8.2	****	8.6	S.U.	6.0 - 9.0	S.U.	3.0	Weekly		
03A160	TA35-294, 301	2018	Jan	pH				7.4	****	8.5	S.U.	6.0 - 9.0	S.U.	5.0	Weekly		
03A160	TA35-294, 301	2018	Feb	pH				7.2	****	8.0	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2018	Mar	pH				7.1	****	8.2	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2018	Apr	pH				7.0	****	8.4	S.U.	6.0 - 9.0	S.U.	4.0	Weekly		
03A160	TA35-294, 301	2018	May	pH				7.5	****	7.5	S.U.	6.0 - 9.0	S.U.	1.0	Weekly		
03A160	TA35-294, 301	2018	Jun	pH				****	****	****	S.U.	6.0 - 9.0	S.U.	0.0	Weekly		
03A160	TA35-294, 301	2018	Jul	pH				****	****	****	S.U.	6.0 - 9.0	S.U.	0.0	Weekly		
03A160	TA35-294, 301	2018	Aug	pH				****	****	****	S.U.	6.0 - 9.0	S.U.	0.0	Weekly		
03A160	TA35-294, 301	2018	Sept	pH				****	****	****	S.U.	6.0 - 9.0	S.U.	0.0	Weekly		
					pH	Minimum			7.0						183		
					pH	Maximum 30 Day Average				8.7						183	
					pH	Maximum					8.8					183	
03A160	TA35-294, 301	2014	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	6	Weekly		
03A160	TA35-294, 301	2014	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2014	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly		
03A160	TA35-294, 301	2015	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly		
03A160	TA35-294, 301	2015	Jul	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Aug	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly		
03A160	TA35-294, 301	2015	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2015	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2016	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2016	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		
03A160	TA35-294, 301	2016	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly		
03A160	TA35-294, 301	2016	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly		

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration							
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency
03A160	TA35-294, 301	2016	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2016	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2016	Jul	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2016	Aug	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2016	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2016	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2016	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2016	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	3	Weekly
03A160	TA35-294, 301	2017	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	3	Weekly
03A160	TA35-294, 301	2017	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Jun	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2017	Jul	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Aug	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2017	Sept	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Oct	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2017	Nov	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Dec	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	3	Weekly
03A160	TA35-294, 301	2018	Jan	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	5	Weekly
03A160	TA35-294, 301	2018	Feb	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2018	Mar	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2018	Apr	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	4	Weekly
03A160	TA35-294, 301	2018	May	Total Residual Chlorine				****	****	0	mg/L	0.011	mg/L	1	Weekly
03A160	TA35-294, 301	2018	Jun	Total Residual Chlorine				****	****	****	mg/L	0.011	mg/L	0	Weekly
03A160	TA35-294, 301	2018	Jul	Total Residual Chlorine				****	****	****	mg/L	0.011	mg/L	0	Weekly
03A160	TA35-294, 301	2018	Aug	Total Residual Chlorine				****	****	****	mg/L	0.011	mg/L	0	Weekly
03A160	TA35-294, 301	2018	Sept	Total Residual Chlorine				****	****	****	mg/L	0.011	mg/L	0	Weekly
Total Residual Chlorine					Daily Average				0.000					48	
Total Residual Chlorine					Maximum 30 Day Average				0.000					48	
Total Residual Chlorine					Maximum					0.000				48	
03A160	TA35-294, 301	2014	Oct	Cyanide, Total				****	2.9	2.9	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2014	Nov	Cyanide, Total				****	3.4	3.4	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2014	Dec	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	2	Weekly
03A160	TA35-294, 301	2015	Jan	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Feb	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Mar	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Apr	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	May	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Jun	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration							
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency
03A160	TA35-294, 301	2015	Jul	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Aug	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Sept	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Oct	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Nov	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2015	Dec	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Jan	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Feb	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Mar	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Apr	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	May	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Jun	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Jul	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Aug	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Sept	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Oct	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Nov	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2016	Dec	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Jan	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Feb	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Mar	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Apr	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	May	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Jun	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Jul	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Aug	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Sept	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Oct	Cyanide, Total				****	<11.7	21.8	mg/L	NA	NA	2	Weekly
03A160	TA35-294, 301	2017	Nov	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2017	Dec	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2018	Jan	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2018	Feb	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2018	Mar	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2018	Apr	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2018	May	Cyanide, Total				****	0.0	0.0	mg/L	NA	NA	1	Weekly
03A160	TA35-294, 301	2018	Jun	Cyanide, Total				****	****	****	mg/L	NA	NA	0	Weekly
03A160	TA35-294, 301	2018	Jul	Cyanide, Total				****	****	****	mg/L	NA	NA	0	Weekly
03A160	TA35-294, 301	2018	Aug	Cyanide, Total				****	****	****	mg/L	NA	NA	0	Weekly
03A160	TA35-294, 301	2018	Sept	Cyanide, Total				****	****	****	mg/L	NA	NA	0	Weekly
				Cyanide, Total	Daily Average				0.6					46	
				Cyanide, Total	Maximum 30 Day Average				3.4					46	

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration							
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency
Cyanide, Total					Maximum					21.8				46	
03A160	TA35-294, 301	2014	Oct	Copper, Total				****	<0.00207	0.006665	mg/L	0.021 - 0.032	mg/L	9	Weekly
03A160	TA35-294, 301	2014	Nov	Copper, Total				****	0.002	0.00364	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2014	Dec	Copper, Total				****	0.00133	0.00173	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2015	Jan	Copper, Total				****	0.000935	0.00138	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2015	Feb	Copper, Total				****	0.000655	0.000832	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2015	Mar	Copper, Total				****	<0.000635	0.000858	mg/L	0.021 - 0.032	mg/L	9	Weekly
03A160	TA35-294, 301	2015	Apr	Copper, Total				****	<0.000563	0.000735	mg/L	0.021 - 0.032	mg/L	10	Weekly
03A160	TA35-294, 301	2015	May	Copper, Total				****	<0.000522	0.000964	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2015	Jun	Copper, Total				****	<0.000571	0.00115	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2015	Jul	Copper, Total				****	<0.00054	0.000972	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2015	Aug	Copper, Total				****	<0.000498	0.000681	mg/L	0.021 - 0.032	mg/L	9	Weekly
03A160	TA35-294, 301	2015	Sept	Copper, Total				****	0.000753	0.00163	mg/L	0.021 - 0.032	mg/L	6	3/Week
03A160	TA35-294, 301	2015	Oct	Copper, Total				****	<0.000628	0.000812	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2015	Nov	Copper, Total				****	<0.00106	0.00378	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2015	Dec	Copper, Total				****	0.000538	0.000742	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2016	Jan	Copper, Total				****	0.000619	0.000784	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2016	Feb	Copper, Total				****	0.000995	0.002	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2016	Mar	Copper, Total				****	0.000784	0.00107	mg/L	0.021 - 0.032	mg/L	9	Weekly
03A160	TA35-294, 301	2016	Apr	Copper, Total				****	0.000584	0.000802	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2016	May	Copper, Total				****	0.000803	0.00126	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2016	Jun	Copper, Total				****	0.00101	0.00153	mg/L	0.021 - 0.032	mg/L	5	Weekly
03A160	TA35-294, 301	2016	Jul	Copper, Total				****	0.001647	0.00316	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2016	Aug	Copper, Total				****	0.00252	0.00341	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2016	Sept	Copper, Total				****	0.00155	0.00202	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2016	Oct	Copper, Total				****	0.00076	0.00128	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2016	Nov	Copper, Total				****	0.00106	0.00144	mg/L	0.021 - 0.032	mg/L	7	Weekly
03A160	TA35-294, 301	2016	Dec	Copper, Total				****	0.00074	0.000865	mg/L	0.021 - 0.032	mg/L	5	Weekly
03A160	TA35-294, 301	2017	Jan	Copper, Total				****	0.000856	0.00123	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2017	Feb	Copper, Total				****	0.000499	0.000569	mg/L	0.021 - 0.032	mg/L	5	Weekly
03A160	TA35-294, 301	2017	Mar	Copper, Total				****	0.00382	0.00748	mg/L	0.021 - 0.032	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Apr	Copper, Total				****	<0.000449	0.000591	mg/L	0.021 - 0.032	mg/L	3	Weekly
03A160	TA35-294, 301	2017	May	Copper, Total				****	0.000472	0.000692	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2017	Jun	Copper, Total				****	0.00161	0.00224	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2017	Jul	Copper, Total				****	0.00182	0.0022	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2017	Aug	Copper, Total				****	0.000884	0.00137	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2017	Sept	Copper, Total				****	0.00163	0.00184	mg/L	0.021 - 0.032	mg/L	4	Weekly
03A160	TA35-294, 301	2017	Oct	Copper, Total				****	0.001592	0.00221	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2017	Nov	Copper, Total				****	0.0012	0.0017	mg/L	0.021 - 0.032	mg/L	6	Weekly
03A160	TA35-294, 301	2017	Dec	Copper, Total				****	0.000762	0.00105	mg/L	0.021 - 0.032	mg/L	5	Weekly
03A160	TA35-294, 301	2018	Jan	Copper, Total				****	0.00114	0.00155	mg/L	0.021 - 0.032	mg/L	8	Weekly

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration						Number of Samples	Frequency
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units		
03A160	TA35-294, 301	2018	Feb	Copper, Total				****	<0.00145	0.00165	mg/L	0.021 - 0.032	mg/L	11	Weekly
03A160	TA35-294, 301	2018	Mar	Copper, Total				****	0.00124	0.00147	mg/L	0.021 - 0.032	mg/L	10	Weekly
03A160	TA35-294, 301	2018	Apr	Copper, Total				****	<0.00154	0.00308	mg/L	0.021 - 0.032	mg/L	8	Weekly
03A160	TA35-294, 301	2018	May	Copper, Total				****	0.00182	0.00194	mg/L	0.021 - 0.032	mg/L	2	Weekly
03A160	TA35-294, 301	2018	Jun	Copper, Total				****	****	****	mg/L	0.021 - 0.032	mg/L	0	Weekly
03A160	TA35-294, 301	2018	Jul	Copper, Total				****	****	****	mg/L	0.021 - 0.032	mg/L	0	Weekly
03A160	TA35-294, 301	2018	Aug	Copper, Total				****	****	****	mg/L	0.021 - 0.032	mg/L	0	Weekly
03A160	TA35-294, 301	2018	Sept	Copper, Total				****	****	****	mg/L	0.021 - 0.032	mg/L	0	Weekly
Copper, Total					Daily Average				0.00121					306	
Copper, Total					Maximum 30 Day Average				0.00382					306	
Copper, Total					Maximum					0.00748				306	
03A160	TA35-294, 301	2014	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Mar	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Jun	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Sept	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Mar	Total Suspended Solids				****	0.8	0.8	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Jun	Total Suspended Solids				****	1.4	1.4	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Sept	Total Suspended Solids				****	<5.7	<5.7	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2017	Mar	Total Suspended Solids				****	<0.6	<0.6	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2017	Jun	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2017	Sept	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2017	Dec	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2018	Mar	Total Suspended Solids				****	<0.57	<0.57	mg/L	30 - 100	mg/L	1	Quarterly
03A160	TA35-294, 301	2018	Jun	Total Suspended Solids				****	****	****	mg/L	30 - 100	mg/L	0	Quarterly
03A160	TA35-294, 301	2018	Sept	Total Suspended Solids				****	****	****	mg/L	30 - 100	mg/L	0	Quarterly
Total Suspended Solids					Daily Average				1.1					14	
Total Suspended Solids					Maximum 30 Day Average				1.4					14	
Total Suspended Solids					Maximum					1.4				14	
03A160	TA35-294, 301	2014	Dec	Phosphorus, Total				****	0.072	0.072	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Mar	Phosphorus, Total				****	0.0865	0.0865	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Jun	Phosphorus, Total				****	0.0741	0.0741	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Sept	Phosphorus, Total				****	0.057	0.057	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2015	Dec	Phosphorus, Total				****	<0.068	<0.068	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Mar	Phosphorus, Total				****	0.0429	0.0429	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Jun	Phosphorus, Total				****	0.0414	0.0414	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Sept	Phosphorus, Total				****	0.0894	0.0894	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2016	Dec	Phosphorus, Total				****	0.0938	0.0938	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2017	Mar	Phosphorus, Total				****	0.0451	0.0451	mg/L	20 - 40	mg/L	1	Quarterly
03A160	TA35-294, 301	2017	Jun	Phosphorus, Total				****	0.0631	0.0631	mg/L	20 - 40	mg/L	1	Quarterly

OUTFALL No.	TA - Bldg.	Year	Monitoring Period	Parameter	Quantity or Loading			Quality or Concentration								
					Average	Maximum	Units	Minimum	Average	Maximum	Units	Permit Limit	Units	Number of Samples	Frequency	
03A160	TA35-294, 301	2017	Sept	Phosphorus, Total				****	3.1	3.1	mg/L	20 - 40	mg/L	1	Quarterly	
03A160	TA35-294, 301	2017	Dec	Phosphorus, Total				****	0.366	0.366	mg/L	20 - 40	mg/L	1	Quarterly	
03A160	TA35-294, 301	2018	Mar	Phosphorus, Total				****	0.0928	0.0928	mg/L	20 - 40	mg/L	1	Quarterly	
03A160	TA35-294, 301	2018	Jun	Phosphorus, Total				****	****	****	mg/L	20 - 40	mg/L	0	Quarterly	
03A160	TA35-294, 301	2018	Sept	Phosphorus, Total				****	****	****	mg/L	20 - 40	mg/L	0	Quarterly	
Phosphorus, Total					Daily Average				0.325					14		
Phosphorus, Total					Maximum 30 Day Average				3.100						14	
Phosphorus, Total					Maximum					3.100					14	
03A160	TA35-294, 301	2015	Sept	Arsenic, Total				****	0.00174	0.00174	mg/L	0.013 - 0.018	mg/L	1	Yearly	
03A160	TA35-294, 301	2016	Sept	Arsenic, Total				****	0.00242	0.00242	mg/L	0.013 - 0.018	mg/L	1	Yearly	
03A160	TA35-294, 301	2017	Sept	Arsenic, Total				****	0.00259	0.00259	mg/L	0.013 - 0.018	mg/L	1	Yearly	
03A160	TA35-294, 301	2018	Sept	Arsenic, Total				****	****	****	mg/L	0.013 - 0.018	mg/L	1	Yearly	
					Daily Average				0.00225					4		
					Maximum 30 Day Average				0.00259					4		
					Maximum					0.00259				4		
03A160	TA35-294, 301	2015	Sept	Aluminum, Total				****	****	<0.015	mg/L	NA	NA	1	Yearly	
03A160	TA35-294, 301	2016	Sept	Aluminum, Total				****	****	<0.015	mg/L	NA	NA	1	Yearly	
03A160	TA35-294, 301	2017	Sept	Aluminum, Total				****	****	<0.0193	mg/L	NA	NA	1	Yearly	
03A160	TA35-294, 301	2018	Sept	Aluminum, Total				****	****	****	mg/L	NA	NA	1	Yearly	
					Daily Average				0.00000					4		
					Maximum 30 Day Average				0.00000					4		
					Maximum					0.00000				4		
03A160	TA35-294, 301	2015	Sept	Chromium VI				****	0.0087	0.0087	mg/L	NA	NA	1	Term	
03A160	TA35-294, 301	2016	Sept	Chromium VI				****	****	****	mg/L	NA	NA	0	Term	
03A160	TA35-294, 301	2017	Sept	Chromium VI				****	****	****	mg/L	NA	NA	0	Term	
03A160	TA35-294, 301	2018	Sept	Chromium VI				****	****	****	mg/L	NA	NA	0	Term	
					Daily Average				0.00000					1		
					Maximum 30 Day Average				0.00000					1		
					Maximum					0.00000				1		
03A160	TA35-294, 301	2015	Sept	Gross Alpha				****	****	****	pCi/L	NA	NA	0	Term	
03A160	TA35-294, 301	2016	Sept	Gross Alpha				****	0	0	pCi/L	NA	NA	1	Term	
03A160	TA35-294, 301	2017	Sept	Gross Alpha				****	****	****	pCi/L	NA	NA	0	Term	
03A160	TA35-294, 301	2018	Sept	Gross Alpha				****	****	****	pCi/L	NA	NA	0	Term	
					Daily Average				0.00000					1		
					Maximum 30 Day Average				0.00000					1		
					Maximum					0.00000				1		

ATTACHMENT E: Safety Data Sheets

LIST OF SAFETY DATA SHEETS
GC Formula 315
GC Formula 314-T
GC Formula 2010-LT
Vita-D-Chlor Tablets
Bright Dyes FLT Yellow/Green Liquid
Bright Dyes FLT Yellow/Green Tablet

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GC FORMULA 315



MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME:	FORMULA 315
PRODUCT USE:	BIOCIDE
RESTRICTIONS ON USE:	Refer to label, available technical information, and other appropriate sections of this SDS.
UN NUMBER:	3265
PROPER SHIPPING NAME:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE), 8, PG II
MANUFACTURER'S NAME:	Garratt-Callahan Company
ADDRESS:	50 Ingold Road, Burlingame, CA 94010-2206
EMERGENCY PHONE:	North America: CHEMTREC: 1-800-424-9300 Outside North America: +1-703-527-3887
BUSINESS PHONE:	Product Information: 650-697-5811
MSDS NUMBER:	SD3315
DATE OF REVISION:	5/21/2013

SECTION 2 - HAZARDS IDENTIFICATION

GHS LABELING AND CLASSIFICATION:

SIGNAL WORD: WARNING

GHS HAZARD STATEMENT:

H302: Harmful if swallowed.
H315: Causes skin irritation.
H320: Causes eye irritation.
H335: May cause respiratory irritation.



GHS PREVENTATIVE STATEMENTS:

P101: If medical advice is needed, have product container or label at hand.
P102: Keep out of reach of children.
P103: Read label before use.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P264: Wash all exposed skin/hair thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

DANGER! THIS PRODUCT IS A NON-FLAMMABLE, CLEAR YELLOW GREEN LIQUID WITH A PUNGENT ODOR. MAY CAUSE EYE AND SKIN BURNS. HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION.
ENVIRONMENTAL HAZARDS: Release of this product to the environment is expected to cause harm to plants and animals. If accidentally released, precautions must be taken to protect the environment.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of overexposure for this product are by inhalation of mists or contact with skin or eyes. The symptoms of overexposure are described in the following paragraphs.

HEALTH EFFECTS AND RISKS FROM EXPOSURE:

ACUTE: Contact with skin and eyes will cause burning and irritation. Do not wear contact lenses when using this product. Ingestion will cause gastric distress and possible depression of the central nervous system.
CHRONIC: Repeated or prolonged exposure to this product can produce target organ damage. Repeated exposure of the eyes can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation can produce varying degrees of respiratory irritation or lung damage.
TARGET ORGANS:
ACUTE: Skin, eyes, respiratory, gastrointestinal systems.
CHRONIC: Skin, eyes, respiratory, gastrointestinal systems.

WATER TREATMENT EXPERTISE SINCE 1904

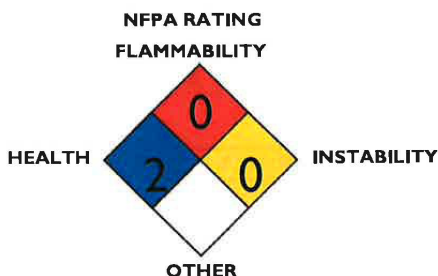
FORMULA 315

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HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD (BLUE)	2	Hazard Scale 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe *=Chronic hazard
FLAMMABILITY HAZARD (RED)	0	
REACTIVITY HAZARD (YELLOW)	0	



SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Ingredients</u>	<u>CAS#</u>	<u>EC#</u>	<u>ICSC#</u>	<u>WT %</u>
MAGNESIUM NITRATE	10377-60-3	233-826-7	1041	1-3
5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE	26172-55-4	247-500-7	NA	1-2
2-METHYL-4-ISOTHIAZOLIN-3-ONE	2682-20-4	220-239-6	NA	<1
MAGNESIUM CHLORIDE	7786-30-3	232-094-6	0764	<1

SECTION 4 - FIRST AID MEASURES

P312: Call a POISON CENTER or doctor/physician if you feel unwell. Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with contaminated individual.

SKIN EXPOSURE: P302+P352: IF ON SKIN: Wash with soap and water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek medical attention if any adverse effect occurs. P362: Take off contaminated clothing and wash before reuse.

EYE EXPOSURE: P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If vapors, mists, or sprays generated by this product enter the eyes, open contaminated individual's eyes while under gently running water. Use sufficient force to open eyelids. Have contaminated individual "roll" eyes. Minimum flushing is for 15 minutes. Contaminated individual must seek immediate medical attention. P337+P313: If eye irritation persists get medical advice/attention.

INHALATION: If vapors, mists, or sprays generated by this product are inhaled, remove contaminated individual to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers. P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

INGESTION: P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330: Rinse mouth. Routine use of this product is not expected to cause any situation which could lead to ingestion.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin and respiratory disorders, as well as conditions involving the "Target Organs" (see Section 3, Hazard Identification) may be aggravated by prolonged overexposures to this product.

NOTES TO PHYSICIAN: Treat symptoms as demonstrated by signs and distress in the patient.

SECTION 5 - FIRE FIGHTING MEASURES

SUITABLE (AND UNSUITABLE) EXTINGUISHING MATERIALS:	Use media appropriate for the surrounding fire.
SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:	Non-Flammable Liquid. Explosion hazards in Presence of Various Substances: Non-Explosive in presence of open flames and sparks, or shocks. Special Remarks on Explosion Hazards: None known
SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:	Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

WATER TREATMENT EXPERTISE SINCE 1904

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by appropriately trained personnel using pre-planned procedures. Proper protective equipment should be used.

Small Spill: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill: Corrosive liquid.

Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas, dike if needed. Ensure that the product is not at a concentration level above regulated concentration. Decontaminate the area thoroughly. Decontaminate all response equipment with soapy water before returning to service. Place all spill residue in a suitable container and seal.

SECTION 7 - HANDLING AND STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open containers slowly on a stable surface. Containers of this product must be properly labeled. Storage areas of this product should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store containers in a cool, dry location, away from direct sunlight, at temperatures between 50°F - 104°F. Keep container tightly closed when not in use. P405: Store locked up. P403+P233: Store in a well ventilated place. Keep container tightly closed.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Eyewash/safety shower station is recommended to be available near where this product is used/stored.

EXPOSURE LIMITS/GUIDELINES:

EXPOSURE LIMITS IN AIR

CHEMICAL NAME	CAS#	ACGIH TLV		OSHA PEL	OTHER
		TWA	STEL	TWA	
MAGNESIUM NITRATE	10377-60-3	NE	NE	NE	NE
5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE	26172-55-4	NE	NE	NE	NE
2-METHYL-4-ISOTHIAZOLIN-3-ONE	2682-20-4	NE	NE	NE	NE
MAGNESIUM CHLORIDE	7786-30-3	NE	NE	NE	NE

NE = Not Established

INGESTION: P270: Do not eat, drink or smoke when using this product.

RESPIRATORY PROTECTION: P261: Avoid breathing dust/fume/gas/mist/vapours/spray. P271: Use only outdoors or in a well-ventilated area. Maintain airborne contaminant concentrations below guidelines listed above, if applicable. Air-purifying respirators with dust/mist/fume filters are recommended if operations may produce mists or sprays from this product.

EYE PROTECTION: Safety glasses or safety goggles. If splashing is anticipated, a face shield is recommended. P280: Wear protective gloves/protective clothing/eye protection/face protection.

SKIN PROTECTION: **HAND PROTECTION:** P264: Wash all exposed skin/hair thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection. Use chemically-resistant gloves when handling this product.

BODY PROTECTION: Use body protection appropriate for task (e.g., lab coat, overalls, gloves).

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE and COLOR:	Clear yellow/green liquid	VAPOR PRESSURE, mm Hg @ 20°C :	Not established
ODOR :	Pungent	VAPOR DENSITY (Air=1):	Not established
ODOR THRESHOLD:	Not established	RELATIVE DENSITY@20°C (water=1):	1.0 - 1.10
pH:	3.0 - 6.5	SOLUBILITY IN WATER:	Complete
MELTING/FREEZING POINT:	NA	PARTITION COEFFICIENT (n-octanol/water)	Not established
BOILING POINT:	100°C (212°F)	AUTOIGNITION TEMPERATURE:	NA
FLASHPOINT:	Non-flammable	DECOMPOSITION TEMPERATURE:	Not established
EVAPORATION RATE (n-BuAc=1):	< 1	VISCOSITY:	Not established
FLAMMABILITY (SOLID/GAS):	NA	VOLATILE ORGANIC COMPOUNDS (%):	Not established
FLAMMABLE LIMITS (in air by volume, %):	NA		

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY: Not established

STABILITY: Stable

POSSIBILITY OF

HAZARDOUS REACTIONS: Will not occur.

CONDITIONS TO AVOID: None known.

INCOMPATIBLE MATERIALS: Oxidizing agents, reducing agents, amines, mercaptans.

HAZARDOUS

DECOMPOSITION PRODUCTS: Thermal decomposition may yield the following: Hydrogen chloride, oxides of sulfur and nitrogen.

SECTION 11 - TOXICOLOGICAL INFORMATION

Ceriodaphnia dubia (waterflea): 48hr, LC50s: 8.77 ppm
 Ceriodaphnia dubia (waterflea): 96hr, LC50s: 7.88 ppm
 Pimephales promelas (fathead minnow): 48hr, LC50s: 9.84 ppm
 Pimephales promelas (fathead minnow): 96hr, LC50s: 9.56 ppm

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, or CAL/OSHA and therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product is very irritating to skin, eyes and respiratory system.

SENSITIZATION TO THE PRODUCT: This product may cause allergic skin reactions (e.g., rashes, welts) in sensitive individuals.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product will slowly degrade under ambient environmental conditions to other organic compounds.

ECOLOGICAL DATA:

No data available

Material is considered biodegradable.

BIOLOGICAL EXPOSURE INDICES: Currently, Biological Exposure Indices (BEIs) have not been determined for the components of this product.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL: P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14 - TRANSPORTATION INFORMATION

PROPER SHIPPING NAME

DOT: UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
 (5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE), 8, PG II
 Emergency Response Guidebook, Guide No.: 153
 Passenger Aircraft Qty: 1L
 Cargo Aircraft Qty: 30L

IMDG/IMO: UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
 (5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE), 8, PG II

IATA/ICAO: UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
 (5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE), 8, PG II



ENVIRONMENTAL HAZARDS

(i.e., MARINE POLLUTANT): No data available for this product.

TRANSPORT IN BULK (according to annex II marpol 73/78 and the IBC code): Not applicable.

SPECIAL PRECAUTIONS FOR USER: None known.

PRODUCT REQUIRES CORROSIVE LABEL

SECTION 15 - REGULATORY INFORMATION

United States and International Regulations

United States Regulations: U.S. SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting as listed below, requirements of Sections 302, 304, and 313 of Title of the Superfund Amendments and Reauthorization Act:

CHEMICAL NAME

MAGNESIUM NITRATE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - YES
5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO
2-METHYL-4-ISOTHIAZOLIN-3-ONE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO
MAGNESIUM CHLORIDE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO

U.S. Regulations

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not Listed.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

SARA TITLE III Section 311/312 Hazard Category: Acute: YES; Chronic: NO; Fire: NO; Reactive: NO; Sudden Release of Pressure: NO

STATE REGULATIONS:

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the Proposition 65 List.

International Regulations

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this product are on the DSL Inventories or are exempt from listing.

CANADIAN WHMIS CLASSIFICATION: Not classified.

SECTION 16 - OTHER INFORMATION

PREPARED BY: GARRATT CALLAHAN

DATE OF REVISION: 5/21/2013 Supercedes: 6/8/2012

Formula 315 is EPA-registered; with EPA Reg. No. 8540-23. Refer to the approved label for details.

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purpose or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose.

GC FORMULA 314-T



MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME:	FORMULA 314-T
PRODUCT USE:	BIOCIDE
UN NUMBER:	1479
PROPER SHIPPING NAME:	OXIDIZING SOLID, N.O.S., 5.1, PGII, (1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN)
MANUFACTURER'S NAME:	Garratt-Callahan Company
ADDRESS:	50 Ingold Road, Burlingame, CA 94010-2206
EMERGENCY PHONE:	North America: CHEMTREC: 1-800-424-9300 Outside North America: +1-703-527-3887
BUSINESS PHONE:	Product Information: 650-697-5811
MSDS NUMBER:	SD3314
DATE OF REVISION:	3/6/2012

SECTION 2 - HAZARDS IDENTIFICATION

OXIDIZING SOLID, N.O.S. (1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN), 5.1, PGII

EU LABELING AND CLASSIFICATION: This product meets the definition of the following hazard class as defined by the European Economic Community Guidelines.

EU CLASSIFICATION: [Xn] Harmful; [C] Corrosive

EU RISK PHRASES: R8: Contact with combustible material may cause fire; R31: Contact with acids liberates toxic gas; R34: Causes burns.

EU SAFETY PHRASES: S8: Keep container dry; S17: Keep away from combustible materials; S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice; S36: Wear suitable protective clothing; S37: Wear suitable gloves; S39: Wear eye/face protection; S41: In case of fire and/or explosion do not breath fumes; S45: In case of accident or if you feel unwell, seek medical advice immediately.

DANGER! THIS PRODUCT IS A NON-FLAMMABLE, WHITE TO OFF-WHITE TABLET WITH A FAINT HALOGEN ODOR. MAY CAUSE EYE AND SKIN BURNS. HARMFUL IF INGESTED OR SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION.

HEALTH EFFECTS AND RISKS FROM EXPOSURE:

ACUTE: Contact with skin and eyes will cause burning and irritation. Do not wear contact lenses when using this product. Ingestion will cause gastric distress and possible depression of the central nervous system.

CHRONIC: Repeated or prolonged exposure to this product can produce target organ damage. Repeated exposure of the eyes can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation can produce varying degrees of respiratory irritation or lung damage.

TARGET ORGANS:

ACUTE: Skin, eyes respiratory system.

CHRONIC: Skin, respiratory system

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD (BLUE)	3
FLAMMABILITY HAZARD (RED)	0
REACTIVITY HAZARD (YELLOW)	1

Hazard Scale
 0=Minimal
 1=Slight
 2=Moderate
 3=Serious
 4=Severe
 *=Chronic hazard



SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	CAS#	EC#	ICSC#	WT %	GHS Hazard Statement
I-BROMO-3-CHLORO-5,5-DIMETHYL-HYDANTOIN	16079-88-2	240-230-0	NE	96%	HAZARD CLASSIFICATION: [Xn] HARMFUL, [C] CORROSIVE RISK PHRASES: R8, R31, R34

SECTION 4 - FIRST AID MEASURES

Exposed individuals must be taken for medical attention if any adverse effect occurs. Take a copy of this MSDS to the health professional with the individual.

SKIN EXPOSURE: If this product contaminates the skin, begin decontamination with running water and soap. Minimum flushing time is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate the eyes. The exposed individual must seek medical attention if any adverse effect occurs.

EYE EXPOSURE: If vapors, mists, or sprays are generated by this product and enter the eyes, open the exposed individual's eyes while under gently running water. Use sufficient force to open the eyelids. Have the exposed individual "roll" their eyes. Minimum flushing time is for 15 minutes. The exposed individual must seek immediate medical attention.

INHALATION: If vapors, mists, or sprays generated by this product are inhaled, remove exposed individual to fresh air. Remove or cover gross contamination to avoid exposure to rescuers.

INGESTION: Routine use of this product is not expected to cause any situation which could lead to ingestion. If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT ASSISTANCE INFORMATION. Exposed individual must seek immediate medical attention. Never induce vomiting or give diluents (milk or water) by mouth to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin and respiratory disorders, as well as conditions involving the "Target Organs" (see Section 2, Hazards Identification) which may be aggravated by prolonged exposures to this product. Exposed individual must seek immediate medical attention if any adverse effect occurs.

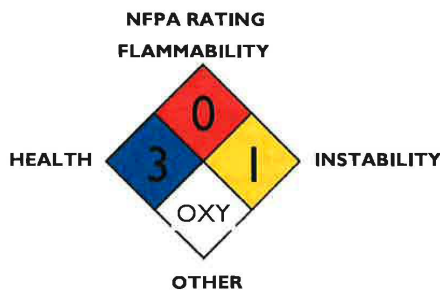
NOTES TO PHYSICIAN: Treat symptomatically. Treat symptoms as demonstrated by signs and distress in the patient.

SECTION 5 - FIRE FIGHTING MEASURES

FIRE EXTINGUISHING MATERIALS: Water spray, fog or mist. Alcohol resistant foam. Do not use ammonium-phosphate (ABC), other dry chemical extinguishers or CO2.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxidizing material. Forms explosive mixtures with combustible organic or other easily oxidizable materials. May release hydrogen bromide or bromine gas, nitrogen oxides, hydrogen chloride when wet. Fire causes formation of toxic gases.

SPECIAL FIRE-FIGHTING PROCEDURES: Wear self-contained breathing apparatus and full protective gear. Keep run-off water out of sewers and water sources. Dike for water control.



SECTION 6 - ACCIDENTAL RELEASE MEASURES

WARNING: Any drum expansion or rounding indicates pressure build-up. Use extreme caution. When opening, release pressure slowly through lifting edge of lid carefully.

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by appropriately trained personnel using pre-planned procedures. Proper protective equipment should be used.

Small Spill: Collect and place in an appropriate waste disposal container.

Large Spill: Non-flammable corrosive oxidizing solid. Restrict access to the area. Avoid contact with water. Provide adequate protective equipment and ventilation. Stop leak if without risk. Remove chemicals which can react with the spilled material. Use DRY earth sand or other non-combustible material to collect and dry product. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into surface waters, sewers, basements or confined areas, dike if needed. Decontaminate the area thoroughly. Decontaminate all response equipment with soapy water before returning to service. Place all spill residue in a suitable container and seal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations, those of Canada and its Provinces, those of Australia, Japan and EU Member States (see Section 13, Disposal Considerations), as appropriate.

SECTION 7 - HANDLING AND STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open containers slowly on a stable surface. Containers of this product must be properly labeled. Storage areas of this product should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store containers in a cool, dry location, away from direct sunlight, heat, sparks or open flame. Keep container tightly closed when not in use. Storage class: oxidizer storage.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Eyewash/safety shower station is recommended to be available near where this product is used.

EXPOSURE LIMITS/GUIDELINES:

CHEMICAL NAME	CAS#	EXPOSURE LIMITS IN AIR			
		ACGIH TLV		OSHA PEL	OTHER
		TWA	STEL	TWA	
I-BROMO-3-CHLORO-5,5-DIMETHYL-HYDANTOIN	16079-88-2	NE	NE	NE	NONE

NE = Not Established

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. Air-purifying respirators with dust/mist/fume filters are recommended if operations may produce mists or sprays from this product.

EYE PROTECTION: Chemical safety goggles. A face shield may also be necessary.

SKIN PROTECTION: Use chemically-resistant gloves (rubber, neoprene or pvc) when handling this product. Wear apron or protective clothing in case of contact.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE and COLOR:	White to off-white tablet	VAPOR PRESSURE, mm Hg @ 20°C :	NA
ODOR :	Slight odor Halogen	VAPOR DENSITY (Air=1):	NA
pH:	3.5 @ 0.15%	SPECIFIC GRAVITY@20°C (water=1):	NA
MELTING/FREEZING POINT:	145-160°C	SOLUBILITY IN WATER:	Slightly
BOILING POINT:	NA	PARTITION COEFFICIENT (n-octanol/water)	Not established
FLASHPOINT:	Non-flammable	AUTOIGNITION TEMPERATURE:	NA
EVAPORATION RATE (n-BuAc=1):	NA	DECOMPOSITION TEMPERATURE:	Not established
FLAMMABLE LIMITS (in air by volume, %):	NA	VISCOSITY:	NA
		VOLATILE ORGANIC COMPOUNDS (%)	None

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY: Not established

STABILITY: Stable under normal temperature condition. Avoid moisture.

HAZARDOUS DECOMPOSITION: Toxic gases/vapors/fumes of: Hydrogen Bromide, Bromine, Hydrogen chloride, chlorine, oxides of carbon, Nitrogen.

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBLE MATERIALS: Hydrocarbons, strong acids, strong alkalis, strong oxides, strong reducing agents.

CONDITIONS TO AVOID: Avoid contact with oxidizers or reducing agents. Avoid contact with acids and alkalis. Avoid heat, flames and other sources of ignition. Avoid moisture.

SECTION 11 - TOXICOLOGICAL INFORMATION

1-BROMO-3-CHLORO-5,5-DIMETHYL-HYDANTOIN:

Oral: LD50: rats, 578 mg/kg

Dermal: LD50: rabbits, 2000mg/kg

Toxicological Information: Ames test negative

Inhalation: May cause irritation to the respiratory system.

Carcinogenicity: None of the components of this product are listed by the NTP, IARC, or regulated by OSHA as carcinogens.

BIOLOGICAL EXPOSURE INDICES: Currently, Biological Exposure Indices (BEIs) have not been determined for the components of this product.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate:

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: Not determined

COD: 1.005 g/g. Material is expected to present a low bioaccumulation potential.

Environmental Toxicity:

ECOLOGICAL DATA:

Fish: LC50: 96 hr = .87 mg/l

Algae: No Data

Daphnia: LC50: 48 hr = .48 mg/l

Acute Toxicity : LC50: 96hours, 640 mg/l American Oyster.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada, Australia, EU Member States and/or Japan, as appropriate. Absorb in vermiculite or dry sand.

SECTION 14 - TRANSPORTATION INFORMATION

DOT

Proper Shipping Name: OXIDIZING SOLID, N.O.S., 5.1, PGII, (1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN)

Hazard Class: 5.1

UN No.: 1479

Packing Group: II

Transport Description: UN1479, OXIDIZING SOLID, N.O.S., 5.1, PGII, (1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN)
ERG 140



IMDG/IMO

Class: 5.1

Packing Group: II

UN No.: 1479

IMO Labeling and Marking: 5.1

Proper Shipping Name: UN1479, OXIDIZING SOLID, N.O.S., 5.1, PGII, (1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN)

IATA/ICAO

Class: 5.1

Packing Group: II

UN No.: 1479

IATA/ICAO Labeling: 5.1

Proper Shipping Name: UN1479, OXIDIZING SOLID, N.O.S., 5.1, PGII, (1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN)

PRODUCT REQUIRES OXIDIZER LABEL

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SECTION 15 - REGULATORY INFORMATION

United States and International Regulations

United States Regulations: U.S. SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting as listed below, requirements of Sections 302, 304, and 313 of Title of the Superfund Amendments and Reauthorization Act:

CHEMICAL NAME

I-BROMO-3-CHLORO-5,5-DIMETHYL-HYDANTOIN	SARA 302 (40CFR 355, APPENDIX A) - NO
	SARA 304 (40CFR TABLE 302.4) - NO
	SARA 313 (40CFR 372.65) - NO

U.S. Regulations

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not listed

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS:

SARA TITLE 311/312 HAZARD CATEGORY: ACUTE: YES CHRONIC: NO FIRE: YES REACTIVITY: NO

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the Proposition 65 List.

International Regulations

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are on the DSL or NDSL Inventories

CANADIAN WHMIS CLASSIFICATION: CLASS D; Div2 Material causing other Toxic effects (Very Toxic)

CLASS E: Corrosive Material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations.

This material or all of its components are listed on the Canadian Domestic Substances List (DSL).

This material or all of its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances.

Other Inventory Lists: Korea (TCCL), Australia (AISC), China (Draft), PICCS (Philippines-RA6969), Japan (ENCS METI/MOL).

SECTION 16 - OTHER INFORMATION

Formula 314-T is registered with the NSF to the NSF International Registration Guidelines for Proprietary Substances and Nonfood Compounds for category codes G5, G7, etc.; with NSF Reg. No. 113139.

PREPARED BY: Garratt Callahan

REVISION DATE: March 06, 2012 SUPERCEDES: September 14, 2010

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purpose or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose.

FORMULA 2011



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS Standards, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Directives

SECTION 1 - PRODUCT IDENTIFICATION

Product Name: FORMULA 2011
 Product Use: COOLING WATER TREATMENT
 UN NUMBER: Not applicable
 U.N. DANGEROUS GOOD CLASS/SUBSIDIARY RISK: Not applicable
 MANUFACTURER'S NAME: Garratt-Callahan Company
 ADDRESS: 50 Ingold Road, Burlingame, CA 94010-2206
 EMERGENCY PHONE: **North America: CHEMTREC: 1-800-424-9300**
Outside North America: +1-703-527-3887
 BUSINESS PHONE: Product Information: 650-697-5811
 MSDS Number: SD2011
 DATE OF REVISION: 2/22/2011

SECTION 2 - HAZARDS IDENTIFICATION

EU LABELING AND CLASSIFICATION: Components of this product have not been classified as defined by the European Economic Community Guidelines (EECC). This product has not been classified by the EECC.

EU CLASSIFICATION: Not classified.

EU RISK PHRASES: Not classified.

EU SAFETY PHRASES: Not classified.

DANGER! THIS PRODUCT IS A NON-FLAMMABLE, CLEAR LIGHT YELLOW LIQUID WITH SLIGHT ORGANIC ODOR. MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION.

HEALTH EFFECTS AND RISKS FROM EXPOSURE:

ACUTE: Contact with skin and eyes will cause burning and irritation. Do not wear contact lenses when using this product. Ingestion will cause gastric distress and possible depression of the central nervous system.

CHRONIC: Repeated or prolonged exposure to this product can produce target organ damage. Repeated exposure of the eyes can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation can produce varying degrees of respiratory irritation or lung damage.

TARGET ORGANS:

ACUTE: Skin, eyes, respiratory system.

CHRONIC: Skin, respiratory system

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD (BLUE)	1
FLAMMABILITY HAZARD (RED)	0
REACTIVITY HAZARD (YELLOW)	0

Hazard Scale
 0=Minimal
 1=Slight
 2=Moderate
 3=Serious
 4=Severe
 *=Chronic hazard



WATER TREATMENT EXPERTISE SINCE 1904

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Ingredients</u>	<u>CAS#</u>	<u>HAZARDOUS</u>	<u>EC#</u>	<u>ICSC#</u>	<u>WT %</u>	<u>Classification: Risk Phrases</u>
PHOSPHONOBUTANE TRICARBOXYLIC ACID	37971-36-1	YES	253-733-5	NE	< 5	Not classified
MONOSODIUM PHOSPHATE	7558-80-7	YES	231-449-2	NE	< 5	Not classified
BENZOTRIAZOLE	95-14-7	YES	202-394-1	1091	< 3	Not classified
PHOSPHINOCARBOXYLIC ACID	71050-62-9	YES	NE	NE	1	Not classified

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000. See Section 2 for full text of Risk Phrases and Safety Phrases.

SECTION 4 - FIRST AID MEASURES

Exposed individuals must be taken for medical attention if any adverse effect occurs. Take a copy of this MSDS to the health professional with the individual.

SKIN EXPOSURE: If this product contaminates the skin, begin decontamination with running water and soap. Minimum flushing time is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate the eyes. The exposed individual must seek medical attention if any adverse effect occurs.

EYE EXPOSURE: If vapors, mists, or sprays are generated by this product and enter the eyes, open the exposed individual's eyes while under gently running water. Use sufficient force to open the eyelids. Have the exposed individual "roll" their eyes. Minimum flushing time is for 15 minutes. The exposed individual must seek immediate medical attention.

INHALATION: If vapors, mists, or sprays generated by this product are inhaled, remove exposed individual to fresh air. Remove or cover gross contamination to avoid exposure to rescuers.

INGESTION: Routine use of this product is not expected to cause any situation which could lead to ingestion. If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT ASSISTANCE INFORMATION. Exposed individual must seek immediate medical attention. Never induce vomiting or give diluents (milk or water) by mouth to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin and respiratory disorders, as well as conditions involving the "Target Organs" (see Section 2, Hazard Identification) which may be aggravated by prolonged exposures to this product. Exposed individual must seek immediate medical attention if any adverse effect occurs.

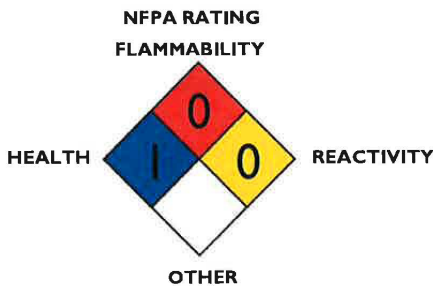
NOTES TO PHYSICIAN: Treat symptomatically. Treat symptoms as demonstrated by signs and distress in the patient.

SECTION 5 - FIRE FIGHTING MEASURES

FIRE EXTINGUISHING MATERIALS: Use media appropriate for the surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: No unusual hazards.

SPECIAL FIRE-FIGHTING PROCEDURES: In case of fire wear full positive-pressure self-contained breathing apparatus and protective suit.



SECTION 6 - ACCIDENTAL RELEASE MEASURES

WARNING: Any container expansion or rounding indicates pressure build-up. Use extreme caution. When opening, release pressure slowly through opening.

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by appropriately trained personnel using pre-planned procedures. Proper protective equipment should be used.

Small Spill: Mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill: Restrict access to the area. Provide adequate protective equipment and ventilation. Stop leak if without risk. Remove chemicals which can react with the spilled material. Add dry inert material to contain and absorb spilled material. Prevent entry into surface waters, sewers, basements or confined areas, dike if needed. Ensure that exposure to product is not at a concentration exceeding regulatory limits. Decontaminate the area thoroughly. Decontaminate all response equipment with soapy water before returning to service. Place all spill residue in a suitable container and seal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations, those of Canada and its Provinces, those of Australia, Japan and EU Member States (see Section 13, Disposal Considerations), as appropriate.

SECTION 7 - HANDLING AND STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open containers slowly on a stable surface. Containers of this product must be properly labeled. Storage areas of this product should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store containers in a cool, dry location, away from direct sunlight, at temperatures between 50°F - 100°F. Keep container tightly closed when not in use.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Ensure eyewash/safety shower station is available near where this product is used.

EXPOSURE LIMITS/GUIDELINES:

CHEMICAL NAME	CAS#	EXPOSURE LIMITS IN AIR			
		ACGIH TLV TWA	STEL	OSHA PEL TWA	OTHER
PHOSPHONOBUTANE TRICARBOXYLIC ACID	37971-36-1	NE	NE	NE	NONE
MONOSODIUM PHOSPHATE	7558-80-7	NE	NE	NE	NONE
BENZOTRIAZOLE	95-14-7	NE	NE	NE	NONE
PHOSPHINOCARBOXYLIC ACID	71050-62-9	NE	NE	NE	NONE

NE = Not Established

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132 and 1910.138) or equivalent standard of Canada, European Standard DIN EN 374, Australian Standards, relevant Japanese Standards, or EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection). If necessary, refer to appropriate Standards of Canada, EU, Australia, or Japan.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN 149, or EU member states. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under U.S. Federal OSHA's Respiratory Protection Standard (1910.134-1998) or the regulations of various U.S. States, Canada, EU Member States, or those of Japan. Air-purifying respirators with dust/mist/fume filters are recommended if operations may produce mists or sprays from this product.

EYE PROTECTION: Chemical safety goggles. A face shield may also be necessary. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian Standards, and the European Standard EN 166, Australian Standards, or relevant Japanese Standards.

SKIN PROTECTION: Use chemically-resistant, such as Butyl rubber, Nitrile or polyvinyl alcohol gloves when handling this product. If necessary, refer to U.S. OSHA 29 CFR 1910.138, the European Standard DIN EN 374, the appropriate Standards of Canada, Australian Standards, or relevant Japanese Standards. Use body protection appropriate for task (e.g. lab coat, overalls).

WATER TREATMENT EXPERTISE SINCE 1904

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE and COLOR:	Clear light yellow liquid	VAPOR PRESSURE, mm Hg @ 20°C :	Not determined
ODOR :	Slight Organic	VAPOR DENSITY (Air=10):	Not determined
pH:	2.0 - 4.0	SPECIFIC GRAVITY@20°C (water=1):	1.04 - 1.06
MELTING/FREEZING POINT:	NA	SOLUBILITY IN WATER:	Complete
BOILING POINT:	> 212 °F (100 °C)	PARTITION COEFFICIENT(n-octanol/water)	Not established
FLASHPOINT:	Non-flammable	AUTOIGNITION TEMPERATURE:	Not established
EVAPORATION RATE (n-BuAc=1):	Not established	DECOMPOSITION TEMPERATURE:	Not established
FLAMMABLE LIMITS (in air by volume, %):	Not established	VISCOSITY:	Not established

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY: Not established
 STABILITY: Stable
 HAZARDOUS DECOMPOSITION: When heated to decomposition, product may emit toxic fumes of oxides of carbon, nitrogen, phosphorous and sulfur.
 HAZARDOUS POLYMERIZATION: Will not occur.
 INCOMPATIBLE MATERIALS: Bases
 CONDITIONS TO AVOID: None known

SECTION 11 - TOXICOLOGICAL INFORMATION

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, or CAL/OSHA and therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.
 BIOLOGICAL EXPOSURE INDICES: Currently, Biological Exposure Indices (BEIs) have not been determined for the components of this product.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.
 ENVIRONMENTAL STABILITY: The components of this product will slowly degrade under ambient environmental conditions to other organic compounds. The following information is available for the main components of this product.

ECOLOGICAL DATA:
 Fish: Flathead Minnow, LC50, 5359 ppm
 Algae: No data available
 Water Flea, LC50, Daphnia magna, 7071 ppm

BOD5 and COD: Material not expected to bioaccumulate.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada, Australia, EU Member States and/or Japan, as appropriate.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT - NOT REGULATED
 ICAO/IATA - NOT REGULATED
 IMO/IMDG - NOT REGULATED

SECTION 15 - REGULATORY INFORMATION

United States and International Regulations

United States Regulations: U.S. SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title of the Superfund Amendments and Reauthorization Act, listed below:

CHEMICAL NAME

PHOSPHONOBUTANE	SARA 302 (40 CFR 355, Appendix A) - NO
TRICARBOXYLIC ACID	SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO
MONOSODIUM PHOSPHATE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO
BENZOTRIAZOLE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO
PHOSPHINOCARBOXYLIC ACID	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO

U.S. Regulations

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.U.S. CERCLA REPORTABLE QUANTITY (RQ): None

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS:

SARA Title 311/312, Hazard Category: Acute Health: NO; Chronic: YES; Fire: NO; Reactive: NO; Sudden Release of Pressure: NO

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the Proposition 65 List.

International Regulations

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are on the DSL or NDSL Inventories

CANADIAN WHMIS CLASSIFICATION: Not classified.

This material or its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances (EINECS).

Other Inventory Lists: Korea (TCCL), Australia (AISC), China (Draft), PICCS (Philippines-RA6969), Japan (ENCS METI/MOL).

SECTION 16 - OTHER INFORMATION

PREPARED BY: Garratt Callahan

Revision Date: February 22, 2011 Supercedes: June 6, 2008

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purpose or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose.

VITA-D-CHLOR TABLETS

VITA-D-CHLOR™ Tablets

Manufactured by:
Integra Chemical Co
1216 6th Ave N
Kent WA 98032
253.479.7000

SAFETY DATA SHEET

SDS Number: 26645, Revision 002
Revision date: July 7, 2017
Page 1 of 2

**24 Hour Emergency Response: CHEMTREC 800-424-9300
(Outside USA: 703-527-3887)**

1. IDENTIFICATION

Product name: Vita-D-Chlor™ Tablets
Chemical family: Organic acid
Product number: All Integra Chemical item numbers beginning with V325.50
Recommended use: Dechlorination
Restrictions on use: No information available

2. HAZARDS IDENTIFICATION

OSHA classification: Not a hazardous substance or mixture
Label elements & precautionary statements: Not applicable
Hazards not otherwise classified: None identified

3. COMPOSITION/INFORMATION ON INGREDIENTS

None of the components of this product are hazardous materials.

4. FIRST AID PROCEDURES

Skin contact: Wash with soap and water. Seek medical attention if irritation develops.
Eye contact: Flush eyes with plenty of water. If irritation persists, seek medical attention.
Inhalation: Remove to fresh air.
Ingestion: Do not induce vomiting. Rinse mouth. If adverse symptoms develop, seek medical attention.

5. FIRE-FIGHTING MEASURES

Extinguishing media: Water spray, carbon dioxide, dry chemical, or foam.
Special equipment/precautions: Use water to cool nearby containers and structures. Wear full protective equipment, including suitable respiratory protection.
Specific hazards: As with most organic solids, combustion is possible at elevated temperatures.
Hazardous combustion products: Oxides of carbon (CO, CO₂)

6. ACCIDENTAL RELEASE MEASURES

Spill procedures: Sweep or scoop into clean, dry disposal container. Wear suitable protective equipment. Flush spill area with water.

7. HANDLING AND STORAGE

Storage and handling: Store in a cool, dry, well-ventilated area away from incompatible materials. Keep containers tightly closed and protect them from physical damage. Protect from direct light and minimize contact with air. Keep material dry.
Incompatible materials: Incompatible with strong acids, strong bases, strong oxidizers.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

OSHA & ACGIH exposure limits: None established
Engineering controls: Use adequate general or local exhaust ventilation to keep fume and/or dust levels as low as possible.
Respiratory protection: None needed unless use generates annoying or irritating dusts, mists or vapors. Use a NIOSH approved respirator mask if necessary.
Skin & eye protective equipment: Safety glasses.
Facilities storing or utilizing this material should be equipped with an eyewash facility and safety shower.
Always handle material in accordance with good chemical handling, industrial hygiene, and safety practices.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	2 5/8" tablets	Boiling point:	Not available
Odor:	Slight citrus odor	Flash point:	Not available
Odor threshold:	Not available	Evaporation rate:	Not available
pH (1% aqueous solution):	2 to 3	Flammability:	Not available
Melting/freezing point:	Not available		

VITA-D-CHLOR™ Tablets

Manufactured by:
Integra Chemical Co
1216 6th Ave N
Kent WA 98032
253.479.7000

SAFETY DATA SHEET

SDS Number: 26645, Revision 002
Revision date: July 7, 2017
Page 2 of 2

**24 Hour Emergency Response: CHEMTREC 800-424-9300
(Outside USA: 703-527-3887)**

9. PHYSICAL AND CHEMICAL PROPERTIES continued

Flammable or explosive Limits (% by volume in air)	Upper: Not available Lower: Not available	Solubility:	33g/100mL water @25°C
Vapor pressure:	Not available	Partition coefficient:	Not available
Vapor density:	Not available	Auto-ignition temperature:	Not available
Relative density:	Not available	Decomposition temperature:	Not available
		Viscosity:	Not available

10. STABILITY AND REACTIVITY

Reactivity:	No information available
Stability:	Stable
Possibility of hazardous reactions:	Hazardous polymerization will not occur
Conditions to avoid:	Exposure to light, air, moisture and high temperatures
Incompatibles:	Incompatible with strong acids, strong bases, strong oxidizers
Decomposition products:	Oxides of carbon (CO, CO ₂)

11. TOXICOLOGICAL INFORMATION

Effects of overexposure:

Inhalation:	Inhalation may irritate the nose, throat and upper respiratory tract.
Skin contact:	Excessive contact may cause skin irritation.
Eye contact:	Contact may cause eye irritation.
Ingestion:	Ingestion of small amounts is not likely to produce harmful effects.
Chronic effects:	Chronic ingestion of large quantities may cause gastrointestinal effects including nausea, diarrhea, urine acidification, oxalate and uric crystallization in the bladder and kidneys, decreased reaction times, psychomotor coordination.
Target organs:	None identified
Additional effects:	No information available
Reproductive effects:	None identified
Carcinogenicity:	No listings by NTP, IARC, or OSHA
Toxicity data:	No information available

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state and federal regulations.

14. TRANSPORTATION INFORMATION

Material is not classified as a dangerous good via either ground or air transportation.

15. REGULATORY INFORMATION

All components are listed in the United States TSCA inventory.
This product is not controlled under WHMIS

16. OTHER INFORMATION

OSHA SDS #: 26645, rev 002; July 7, 2017

The information presented above is offered for informational purposes only. This SDS, and the associated product, is intended for use only by technically qualified persons, and at their own discretion and risk. Since conditions and manner of use are outside the control of Integra Chemical Company, we make no warranties, either expressed or implied, and assume no liability in connection with any use of the information.

BRIGHT DYES FLT YELLOW/GREEN LIQUID

Kingscote CHEMICALS

Safety Data Sheet

Issue Date: 04-Oct-2013

Revision Date: 06-Feb-2017

Version Number: 1.1

1. Identification

Product Identifiers

Product Name: Bright Dyes® FLT Yellow/Green Liquid

Product Number: 106001

Recommended Use & Restrictions on Use

Water tracing & leak detection dye

Manufacturer/Supplier

Kingscote Chemicals, Inc.
3334 South Tech Blvd.
Miamisburg, OH 45342
U.S.A.

Emergency Telephone Number

Company Telephone Number: (937) 886-9100
Emergency Telephone (24 hr): INFOTRAC (800) 535-5053 (North America)
+1-352-323-3500 (International)

2. Hazards Identification

Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. Composition/Information on Ingredients

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

4. First-Aid Measures

First-Aid Measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash thoroughly with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Inhalation	Remove to fresh air. If breathing is difficult, administer oxygen; seek medical attention immediately.

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

Ingestion Rinse mouth. DO NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention if large quantities were ingested or if nausea occurs.

Most Important Symptoms and Effects

Symptoms Will cause staining of the skin on contact. May cause eye irritation. Inhalation of dust may cause respiratory irritation. Ingestion may cause urine to be a yellow/green color until the dye has been washed through the system.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to Physician Treat symptomatically.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Water spray (fog). Carbon dioxide (CO₂). Dry chemical. Regular foam.

Unsuitable Extinguishing Media

Not determined

Specific Hazards Arising from the Chemical

Product is not flammable. Burning/combustion may produce oxides of carbon and nitrogen (NO_x).

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protective equipment as recommended in Section 8.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12 and Section 13.

Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Sweep up and collect into suitable containers for disposal. Flush area with water.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practices. Use personal protection recommended in Section 8. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts. Contaminated clothing should be thoroughly washed before reuse.

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

Conditions for Safe Storage, Including Incompatibilities

Storage Conditions	Keep container tightly closed and store in a cool, dry, and well-ventilated area. Keep from freezing.
Incompatible Materials	Acids.

8. Exposure Controls / Personal Protection

Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Controls

Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual Protection Measures, Such as Personal Protective Equipment:

Eye/Face Protection	Goggles.
Skin & Body Protection	Rubber gloves. Suitable protective clothing.
Respiratory Protection	No protection is ordinarily required under normal conditions of use.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practices.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Liquid	Odor	None apparent
Appearance	Yellow/green liquid	Odor Threshold	Not determined
Color	Yellow/green		

<u>Property</u>	<u>Values</u>
pH	>8.0
Melting/Freezing Point	~32° F
Boiling Point/Range	~212° F
Flash Point	Not applicable
Evaporation Rate	1.8
Flammability (solid, gas)	Liquid – not applicable
Upper Flammability Limits	Not applicable
Lower Flammability Limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	0.6
Relative Density	Not applicable
Specific Gravity	Not determined
Solubility	Highly soluble in water
Partition Coefficient	Not determined
Auto-ignition Temperature	Not determined
Decomposition Temperature	Not determined
Viscosity	Not determined

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

10. Stability and Reactivity

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Keep separated from incompatible substances. Keep out of reach of children.

Incompatible Materials

Acids. Strong oxidizing agents.

Hazardous Decomposition Products

Oxides of carbon and nitrogen (NOx).

11: Toxicological Information

Information on Likely Routes of Exposure

Inhalation	Avoid breathing vapors or mists.
Ingestion	Do not ingest.
Skin Contact	May cause an allergic skin reaction.
Eye Contact	Avoid contact with eyes.

Delayed, Immediate, and Chronic Effects from Short- and Long-Term Exposure

May cause an allergic skin reaction.

Numerical Measures of Toxicity

Not determined

Symptoms Associated with Exposure

See Section 4 of this SDS for symptoms.

Carcinogenicity

NTP	None
IARC	None
OSHA	None

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

12. Ecological Information

Ecotoxicity

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

Not available

Persistence/Degradability

Not determined

Bioaccumulation

Not determined

Mobility

Not determined

Other Adverse Effects

Not determined

13. Disposal Considerations

Waste Disposal Methods

Dispose of in accordance with federal, state, and local regulations.

Contaminated Packaging

Do not re-use empty containers. Dispose of containers in accordance with federal, state, and local regulations.

14. Transport Information

Note

See current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

DOT	Not regulated
IATA	Not regulated
OMDG	Not regulated

15: Regulatory Information

International Inventories

TASCA	This product is not subject to TSCA 12(b) reporting requirements.
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U.S. Federal Regulations

CERCLA	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund
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Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313 Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

CWA (Clean Water Act) This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

U.S. State Regulations

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know This product does not contain any substances regulated under applicable state right-to-know regulations.

16: Other Information

HMIS

Health Hazards	Flammability	Instability	Special Hazards
1	0	0	Not determined

NFPA

Health Hazards	Flammability	Physical Hazards	Personal Protection
1	0	0	B

Issue Date	04-Oct-2013
Revision Date	06-Feb-2017
Revision Note	Content Review

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

BRIGH DYES FLT YELLOW/GREEN TABLE

Kingscote CHEMICALS

Safety Data Sheet

Issue Date: 09-Nov-2013

Revision Date: 06-Feb-2017

Version Number: 2.1

1. Identification

Product Identifiers

Product Name: Bright Dyes® FLT Yellow/Green Tablet

Product Number: 101101

Recommended Use & Restrictions on Use

Water tracing & leak detection dye

Manufacturer/Supplier

Kingscote Chemicals, Inc.
3334 South Tech Blvd.
Miamisburg, OH 45342
U.S.A.

Emergency Telephone Number

Company Telephone Number: (937) 886-9100
Emergency Telephone (24 hr): INFOTRAC (800) 535-5053 (North America)
+1-352-323-3500 (International)

2. Hazards Identification

Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. Composition/Information on Ingredients

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

4. First-Aid Measures

First-Aid Measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash thoroughly with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Inhalation	Remove to fresh air. If breathing is difficult, administer oxygen; seek medical attention immediately.

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

Ingestion Rinse mouth. DO NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention if large quantities were ingested or if nausea occurs.

Most Important Symptoms and Effects

Symptoms Will cause staining of the skin on contact. May cause eye irritation. Inhalation of dust may cause respiratory irritation. Ingestion may cause urine to be a yellow/green color until the dye has been washed through the system.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to Physician Treat symptomatically.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Water spray (fog). Carbon dioxide (CO₂). Dry chemical.

Unsuitable Extinguishing Media

Not determined

Specific Hazards Arising from the Chemical

Remote possibility of dust explosion. Burning may produce oxides of carbon and nitrogen (NO_x).

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protective equipment as recommended in Section 8.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12 and Section 13.

Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Sweep up and collect into suitable containers for disposal. Flush area with water.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practices. Use personal protection recommended in Section 8. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts. Contaminated clothing should not be allowed out of the workplace.

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

Conditions for Safe Storage, Including Incompatibilities

Storage Conditions	Keep container tightly closed and store in a cool, dry, and well-ventilated area. Store away from heat, sparks, open flame or any other ignition source.
Incompatible Materials	Bromine trifluoride. Lithium. Strong acids, bases, and oxidizing agents.

8. Exposure Controls / Personal Protection

Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Controls

Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual Protection Measures, Such as Personal Protective Equipment:

Eye/Face Protection	Avoid contact with eyes.
Skin & Body Protection	Rubber gloves. Suitable protective clothing.
Respiratory Protection	Use NIOSH-approved dust mask if dusty conditions exist.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practices.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Solid	Odor	None apparent
Appearance	Orange tablet	Odor Threshold	Not determined
Color	Orange		

<u>Property</u>	<u>Values</u>
pH	Not applicable
Melting/Freezing Point	Not applicable
Boiling Point/Range	Not applicable
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability (solid, gas)	Not flammable
Upper Flammability Limits	Not applicable
Lower Flammability Limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Relative Density	Not applicable
Specific Gravity	Not applicable
Solubility	Highly soluble in water with small amounts of insoluble residue
Partition Coefficient	Not determined
Auto-ignition Temperature	Not determined
Decomposition Temperature	Not determined
Viscosity	Not determined

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

10. Stability and Reactivity

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Keep separated from incompatible substances. Keep out of reach of children.

Incompatible Materials

Bromine trifluoride. Lithium. Strong acids, bases, and oxidizing agents.

Hazardous Decomposition Products

Oxides of carbon and nitrogen (NOx).

11: Toxicological Information

Information on Likely Routes of Exposure

Inhalation	Avoid inhalation of dust.
Ingestion	Do not ingest.
Skin Contact	May cause an allergic skin reaction.
Eye Contact	Avoid contact with eyes.

Delayed, Immediate, and Chronic Effects from Short- and Long-Term Exposure

May cause an allergic skin reaction.

Numerical Measures of Toxicity

Not determined

Symptoms Associated with Exposure

See Section 4 of this SDS for symptoms.

Carcinogenicity

NTP	None
IARC	None
OSHA	None

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

12. Ecological Information

Ecotoxicity

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

Not available

Persistence/Degradability

This product is biodegradable.

Bioaccumulation

Not determined

Mobility

Not determined

Other Adverse Effects

Not determined

13. Disposal Considerations

Waste Disposal Methods

Dispose of in accordance with federal, state, and local regulations.

Contaminated Packaging

Do not re-use empty containers. Dispose of containers in accordance with federal, state, and local regulations.

14. Transport Information

Note

See current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

DOT	Not regulated
IATA	Not regulated
OMDG	Not regulated

15: Regulatory Information

International Inventories

Not determined

U.S. Federal Regulations

CERCLA	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund
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Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313 Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

CWA (Clean Water Act) This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

U.S. State Regulations

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know This product does not contain any substances regulated under applicable state right-to-know regulations.

16: Other Information

HMIS

Health Hazards	Flammability	Instability	Special Hazards
1	0	0	Not determined

NFPA

Health Hazards	Flammability	Physical Hazards	Personal Protection
1	0	0	B

Issue Date	09-Nov-2013
Revision Date	06-Feb-2017
Revision Note	Content Review

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End of Safety Data Sheet