AUTHORIZATION TO DISCHARGE UNDER
THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

Crane and Company, Inc.

is authorized to discharge from a facility located at

30 South Street
Dalton, MA 01226

to receiving water named

East Branch of the Housatonic River
Housatonic River Watershed

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

This Permit shall become effective on [*the first day of the calendar month immediately following 60 days after signature]*

This Permit expires at midnight on [*five years from the last day of the month preceding the effective date]*.

This Permit supersedes the Permit issued on February 3rd, 2012.

This Permit consists of this **cover page**, **Part I**, **Attachment A-**Freshwater Acute Toxicity Test Procedure and Protocol, February 2011 and **Attachment B-** Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013 and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of , 2021

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Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated wastewater from the paper manufacturing facility operations, stormwater, boiler blowdown, wastewater from boiler water treatment filters and softeners, brine regeneration of water softener, and process area floor drains through Outfall Serial Number 001 to East Branch of the Housatonic River. The discharge shall be limited and monitored as specified below; the receiving water shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Rolling Average Effluent Flow[6]	4.0 MGD	---	Continuous	Meter
Effluent Flow[6]	Report MGD	Report MGD	Continuous	Meter
Biochemical Oxygen Demand May 1 – October 31	600 lbs/day	900 lbs/day	2/week	Composite
Biochemical Oxygen Demand November 1 – April 30	1200 lbs/day	1800 lbs/day	2/week	Composite
Total Suspended Solids (TSS) May 1 – October 31	864 lbs/day	1260 lbs/day	2/week	Composite
Total Suspended Solids (TSS) November 1 – April 30	1200 lbs/day	1800 lbs/day	2/week	Composite
pH[7]	6.5 - 8.3 S.U.		1/week	Grab
Total Residual Chlorine (TRC)[8]	19 µg/L	30 µg/L	2/month	Grab
Dissolved Oxygen	5.0 mg/L minimum		1/week	Composite
Color[9]	Report PT-CO	Report PT-CO	1/week	Grab
Total Phosphorus, May 1 – October 31	0.2 mg/L	Report mg/L	2/week	Composite
Total Phosphorus, November 1 – April 30	1.0 mg/L	Report mg/L	1/week	Composite
Total Aluminum – Also see Part I.C.7	0.118 mg/L	1.15 mg/L	1/month	Composite
Total Copper	16 µg/L	21 µg/L	1/month	Composite
Nitrite and Nitrate Nitrogen [10]	Report mg/L	Report mg/L	1/week	Composite
Total Kjeldahl Nitrogen [10]	Report mg/L	Report mg/L	1/week	Composite

Effluent Characteristic	Effluent Limitations		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Total Nitrogen [10,11]	Report lbs/day	Report lbs/day	1/week	Composite
Perfluorohexanesulfonic acid (PFHxS)[12,13]	---	Report ng/L	1/quarter	Composite
Perfluoroheptanoic acid (PFHpA)[12,13]	---	Report ng/L	1/quarter	Composite
Perfluorononanoic acid (PFNA)[12,13]	---	Report ng/L	1/quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[12,13]	---	Report ng/L	1/quarter	Composite
Perfluorooctanoic acid (PFOA)[12,13]	---	Report ng/L	1/quarter	Composite
Perfluorodecanoic acid (PFDA)[12,13]	---	Report ng/L	1/quarter	Composite
Whole Effluent Toxicity (WET) Testing[14,15]				
LC_{50}	---	100 %	1/quarter	Composite
C-NOEC	---	59 %	1/quarter	Composite
Hardness	---	Report mg/L	1/quarter	Composite
Ammonia Nitrogen	---	Report mg/L	1/quarter	Composite
Total Aluminum	---	Report mg/L	1/quarter	Composite
Total Cadmium	---	Report mg/L	1/quarter	Composite
Total Copper	---	Report mg/L	1/quarter	Composite
Total Nickel	---	Report mg/L	1/quarter	Composite
Total Lead	---	Report mg/L	1/quarter	Composite
Total Zinc	---	Report mg/L	1/quarter	Composite

Ambient Characteristic[16]	Reporting Requirement		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Hardness	---	Report mg/L	1/quarter	Grab
Ammonia Nitrogen	---	Report mg/L	1/quarter	Grab
Total Aluminum	---	Report mg/L	1/quarter	Grab
Total Cadmium	---	Report mg/L	1/quarter	Grab
Total Copper	---	Report mg/L	1/quarter	Grab
Total Nickel	---	Report mg/L	1/quarter	Grab
Total Lead	---	Report mg/L	1/quarter	Grab
Total Zinc	---	Report mg/L	1/quarter	Grab
pH[17]	---	Report S.U.	1/quarter	Grab
Temperature[17]	---	Report °C	1/quarter	Grab

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at Outfall 001, the discharge point to the receiving water after treatment in the secondary clarifier and prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA). The Permittee shall report the results to EPA and the State of any additional testing above that required herein, if testing is done in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Measurement frequency of 1/year is defined as the sampling of one discharge event during one calendar year. Calendar quarters are defined as January through March, inclusive, April through June, inclusive, July through September, inclusive and October through December, inclusive. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least twenty-four samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Report annual average, monthly average, and the maximum daily flow in million gallons per day (MGD). The limit of 4.0 MGD is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.

7. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

8. Monitoring for total residual chlorine (TRC) is only required for discharges that have been previously chlorinated or that contain residual chlorine. For the purposes of this permit, TRC analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level of detection no greater than 30 µg/L. The compliance level for TRC is 30 µg/L.

9. Sampling for color shall be conducted during periods of pulp processing, whenever possible. Weekly color monitoring shall be conducted each week, even if pulp processing is not being conducted. The parameter "PT-CO" is platinum cobalt units.

10. Total Kjeldahl nitrogen, nitrite nitrogen, and nitrate nitrogen samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen where:

total nitrogen = total kjeldahl nitrogen + total nitrate nitrogen + total nitrite nitrogen

The total nitrogen loading values reported each month shall be calculated as follows:

Total Nitrogen (lbs/day) = [(average monthly total nitrogen concentration (mg/l) * total monthly influent flow (Millions of Gallons (MG)) / # of days in the month] *8.34

11. The total nitrogen mass loading value shall be calculated and reported as a twelve-month rolling average. The value will be calculated as the arithmetic mean of the monthly average total nitrogen loading for the reporting month and the monthly average total nitrogen of the previous eleven months. Report both the rolling annual average and the monthly average each month. The Facility is subject to nitrogen optimization requirements, see Part I.C.2.

12. This reporting requirement for the listed PFAS parameters takes effect six months after the Permittee is notified by EPA that a multi-lab validated method for wastewater is available to the public on EPA's CWA methods program website. *See* https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods.

13. After one year of monitoring, if all samples are non-detect for all six PFAS compounds using EPA's multi-lab validated method for wastewater, the Permittee may request to remove the requirement for PFAS monitoring. *See* Special Condition in Part I.C.6.

14. The Permittee shall conduct acute toxicity tests (LC_{50}) and chronic toxicity tests (C-NOEC) 4/year in accordance with test procedures and protocols specified in **Attachments A and B** of this permit. LC_{50} and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal that includes the results for that toxicity test. *See* Part I.C.5 for WET testing reduction request provision.

15. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachments A and B**, Section IV., DILUTION WATER. Even where alternate dilution water has been used, the results of the receiving water control (0% effluent) analyses must be reported. Minimum levels and test methods are specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS.

16. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachments A and B**. Minimum levels and test methods are specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS.

17. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

Part I.A. continued.

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify EPA as soon as they know or have reason to believe (40 CFR § 122.42):

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

        (1) 100 micrograms per liter (µg/L);
        (2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
        (3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
        (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

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

        (1) 500 µg/L;
        (2) One mg/L for antimony;
        (3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or

(4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall(s) listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

2. The discharge of any sludge and/or bottom deposits from any storage tank or basin at the Facility to the receiving water is prohibited.

C. SPECIAL CONDITIONS

1. On the Facility's permit renewal application, the Permittee must certify that its facilities do not use chlorophenolic-containing biocides. *See* 40 CFR §§ 430.114 and 430.124.

2. Nitrogen Optimization

   a. The Permittee shall continue to optimize the treatment facility operations relative to total nitrogen ("TN") removal through measures such as continued ammonia removal, maximization of solids retention time while maintaining compliance with BOD and TSS limits, and/or other operational changes designed to enhance the removal of nitrogen in order to minimize the annual average mass discharge of total nitrogen.

   b. The permittee shall submit an annual report to EPA and the MassDEP by **February 1st** of each year that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous calendar year. If, in any year, the treatment facility discharges of TN on an average annual basis have increased, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any changes in influent flows/loads and any operational changes. The report shall also include all supporting data.

3. Best Management Practices (BMPs)

   The Permittee shall design, install, and implement control measures to minimize the discharge of pollutants from the operations at its facilities to the receiving water. At a minimum, the Permittee must implement control measures, both structural controls (e.g., OWS, containment areas, holding tanks) and non-structural (e.g., operational procedures and operator training).

a. The Permittee must comply with the limitations described in Part 2.1.2 of EPA's 2021 Multi-Sector General Permit (MSGP), which include but are not limited to:

(1) Minimizing exposure of processing and material storage areas to stormwater discharges;
(2) Designing good housekeeping measures to maintain areas that are potential sources of pollutants;
(3) Implementing preventative maintenance programs to avoid leaks, spills, and other releases of pollutants to stormwater that is discharged to receiving water;
(4) Implementing spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur;
(5) Utilizing runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff;
(6) Conducting employee training to ensure personnel understand the requirements of this permit.

4. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution that was not reported in the application submitted to EPA or provided through a subsequent written notification submitted to EPA is prohibited. Upon the effective date of this permit, chemicals and/or additives that have been disclosed to EPA may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. Discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA unless otherwise notified by EPA. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA in accordance with Part I.D.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive;
(4) The frequency (e.g., daily), magnitude (i.e., maximum application concentration), duration (e.g., hours), and method of application for the chemical/additive;
(5) The maximum discharge concentration; and
(6) The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

b. Written rationale that demonstrates that the discharge of such chemicals and/or additives as proposed will not: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

5. Whole Effluent Toxicity (WET) Testing

The Permittee may request a reduction in toxicity testing requirements after submitting a minimum of eight (8) consecutive WET testing results, all of which must be valid tests and demonstrate compliance with the WET permit limitations. Until written notice is received from EPA indicating that the WET testing requirements have been changed, the Permittee is required to continue the WET testing specified in this permit.

6. Per- and Polyfluoroalkyl Substances (PFAS)

After one year of monitoring, if all samples are non-detect for all six PFAS compounds using EPA's multi-lab validated method for wastewater, the Permittee may request to remove the requirement for PFAS monitoring. Until written notice is received from EPA indicating that the monitoring requirements have been changed, the Permittee is required to continue the monitoring specified in this Permit. *See* Reporting Requirements in Part I.D.3.a.(4).

7. Total Aluminum Limits Compliance Schedule

The revised monthly average and daily maximum effluent limits for total aluminum shall be subject to a schedule of compliance whereby the limits take effect three years after the effective date of the permit. For the period starting on the effective date of this permit and ending three (3) years after the effective date, the permittee is required to meet the previous average monthly and daily maximum total aluminum permit limits of 0.17 mg/L and 1.35 mg/L, respectively. After this initial three (3) year period, the permittee shall comply with the final monthly average and daily maximum total aluminum limits of 0.118 mg/L and 1.15 mg/L, respectively ("final aluminum effluent limits"). The permittee shall submit an annual report due by January 15th of each of the first three (3) years of the permit that will detail its progress towards meeting the final aluminum effluent limits.

If during the three-year period after the effective date of the permit, Massachusetts adopts revised aluminum criteria, then the permittee may request a permit modification, pursuant to 40 C.F.R. § 122.62(a)(3), for a further delay of the effective date of the final aluminum effluent limits. If new criteria are approved by EPA before the effective date of the final aluminum effluent limits, the permittee may apply for a permit modification, pursuant to 40 C.F.R. § 122.62(a)(3), for a longer time to meet the final aluminum effluent limits and/or for revisions to the permit based on whether there is reasonable potential for the facility's aluminum discharge to cause or contribute to a violation of the newly approved aluminum criteria and meeting applicable anti-degradation requirements.

D. REPORTING REQUIREMENTS

Unless otherwise specified in this Permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the month following the monitoring period. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this Permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.D.5. for more information on State reporting. Because the due dates for reports described in this Permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month following the monitoring period), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this Permit.

3. Submittal of Requests and Reports to EPA Water Division (WD)

   a. The following requests, reports, and information described in this Permit shall be submitted to the NPDES Applications Coordinator in EPA WD:

      (1) Transfer of Permit notice;
      (2) Request for changes in sampling location;
      (3) Request to discharge new chemicals or additives;
      (4) Request for change in WET testing (See Part I.C.5) or discontinuation of per- and polyfluoroalkyl substances (PFAS) sampling (see Part I.A.1, footnote 13 and Part I.C.6) requirements; and
      (5) Report on unacceptable dilution water/request for alternative dilution water for WET testing.

   b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Reports in Hard Copy Form

   a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

      (1) Written notifications required under Part II, Standard Conditions. Beginning December 21, 2025, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

   b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

5. State Reporting

   Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

6. Verbal Reports and Verbal Notifications

   a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this Permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

   b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division at:

617-918-1510

   c. Verbal reports and verbal notifications shall be made to the State's Emergency Response at:

888-304-1133

E. STATE 401 CERTIFICATION CONDITIONS

1. This Permit is in the process of receiving state water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA will incorporate by reference all State water quality certification requirements (if any) into the Final Permit.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o}C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25 values and ≥ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids[6]	x		--
Total Dissolved Solids[6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon[6]	x	x	0.5
Total Metals[5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

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

condition.

3. Duty to Provide Information

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

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

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

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

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

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

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

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

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

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

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

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

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

D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

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

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

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

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

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

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

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

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: MA0000671

PUBLIC NOTICE START AND END DATES: March 19, 2021 – April 19, 2021

NAME AND MAILING ADDRESS OF APPLICANT:

Crane and Company, Inc.
30 South Street
Dalton, MA 01226

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

30 South Street
Dalton, MA 01226

RECEIVING WATER AND CLASSIFICATION:

East Branch of the Housatonic River (MA21-02)
Housatonic River Basin
Class B

SIC CODE: 2621 [Paper Manufacturing (Specialty Papers)]

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Appendices

1.0 Proposed Action

Crane and Company, Inc. (the Permittee) has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from its wastewater treatment (the Facility) into the East Branch of the Housatonic River.

The permit currently in effect was issued on February 3, 2012 with an effective date of May 1, 2012 and expired on April 30, 2017 (the 2012 Permit). The Permittee filed an original application for permit reissuance with EPA dated October 14, 2016, along with additional application information dated February 13, 2017 as required by 40 Code of Federal Regulations (CFR) § 122.6. The Permittee also submitted a revised application dated June 24, 2019. Since the permit application was deemed timely and complete by EPA on February 17, 2017, the Facility's 2012 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21(d). EPA conducted a site visit on December 2, 2020.

2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251 – 1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. *See* CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), and 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301 and 304(b); 40 CFR §§ 122, 125, and 131.

2.1 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under CWA §§ 301(b) and 402 to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control

technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. *See* 40 CFR § 125 Subpart A.

Subpart A of 40 CFR Part 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under § 301(b) of the CWA, including the application of EPA promulgated Effluent Limitation Guidelines (ELGs) and case-by-case determinations of effluent limitations under CWA § 402(a)(1). EPA promulgates New Source Performance Standards (NSPS) under CWA § 306 and 40 CFR § 401.12. *See also* 40 CFR §§ 122.2 (definition of "new source") and 122.29.

In general, ELGs for non-POTW facilities must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989. *See* 40 CFR § 125.3(a)(2). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit. In the absence of published technology-based effluent guidelines, the permit writer is authorized under CWA § 402(a)(1)(B) to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

2.2 Water Quality-Based Requirements

The CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1),122.44(d)(5), 125.84(e) and 125.94(i).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR §§ 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable State WQSs can be found in Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00).

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable

to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to monthly average limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation regulation, entitled "Antidegradation Provisions," is found in the State's WQSs at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedures for the Anti-Degradation Provisions of the State Water Quality Standards," dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses, and the level of water quality necessary to protect the existing uses of a receiving water body must be maintained and protected.

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of

all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are

stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQSs and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

2.3 Effluent Flow Requirements

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the effluent limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under CWA § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced and the calculated effluent limitations might not be sufficiently protective (i.e., might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at a lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses

and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on effluent flow is within EPA's authority to condition a permit to carry out the objectives and satisfy the requirements of the CWA. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). A condition on the discharge designed to ensure the validity of EPA's WQBELs and reasonable potential calculations that account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§402 and 301 and the implementing regulations, as WQBELs are designed to assure compliance with applicable water quality regulations, including antidegradation requirements. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Consequently, the effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges. The monitoring program is needed to

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id.* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *See In re Washington Aqueduct Water Supply Sys., 11 E.A.D. 565, 584 (EAB 2004)*.

enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a

[2] Fed. Reg. 49,001 (Aug. 19, 2014).
[3] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Conditions.

2.5 Standard Conditions

The standard conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(*l*). Anti-backsliding provisions apply to effluent limits based on technology, water quality, and/or State certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2012 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

Crane and Company, Inc., or "Crane", the "Permittee", is engaged primarily in the manufacture of banknote (United States currency) and security papers. The company also produces non-woven technical papers, such as those used for membrane filters of reverse osmosis systems. The products are produced from cotton and linen fibers recovered from cotton ginning and

[4] https://netdmr.zendesk.com/hc/en-us

manufacturing processes and selected remnants from the textile industry. The current production rate is approximately 95 tons per day.

Water for the papermaking process is drawn from a company-owned and operated well system, at a rate of about 2.5 million gallons per day (MGD) and from the municipal water supply, at a rate of about 0.5 MGD. The company operates four (4) different mills in Dalton which all send their process wastewater to a centralized wastewater treatment plant (WWTP) operated by the Permittee. The mills are located within approximately 1-2 miles of Crane's WWTP and the process wastewaters are transferred from each manufacturing facility to the WWTP via a combination of gravity and force mains.

The Byron Weston and Pioneer mills process the raw materials and the Wahconah and Bay State mills produce the final products. A fifth mill, which had formerly been owned and operated by the Permittee (Neenah Mill), was sold to another entity in 2014. Although the wastewater from this mill continued to be discharged and treated at Crane's WWTP for some time, in June 2018, the Neenah mill routed all of its wastewater to the City of Pittsfield for treatment.

Potable water purchased from the Town of Dalton is used for sanitary systems and limited manufacturing usage. Sanitary wastewater from all of the facilities is collected in the Town of Dalton's collection system and treated at the Pittsfield Publicly Owned Treatment Works (POTW). The discharge to the East Branch of the Housatonic River consists of treated process wastewater. See Figure 1 for a map of the location of the Permittee's 4 mills and WWTP, Figure 2 for a schematic of water flow through the WWTP, and Figure 3 for water balance diagram.

3.1.1 Effluent Limitation Guidelines

EPA has promulgated technology-based effluent limitation guidelines (ELGs) for Pulp, Paper and Paperboard Point Source Category (SIC 2621) in 40 CFR Subchapter N, Part 430. The operations at Crane and Company have been determined to best fit in Subpart K - Fine and Lightweight Papers from Purchased Pulp Subcategory.

3.1.2 Measure of Production

In accordance with 40 CFR § 122.45(b)(2), EPA based the calculation of effluent limitations applicable under the ELGs for BPT in 40 CFR § 430.112 and for BAT in 40 CFR § 430.114 upon a reasonable measure of actual production of the Facility. EPA determined that the measure of production appropriate for this Facility is the average tons of product produced per day. In its supplemental permit application in 2019, the Permittee listed a production rate of 95 tons per day and confirmed that this production rate is still accurate during the facility site visit in December 2020.

3.2 Location and Type of Discharge

Outfall 001 is located at Latitude 42° 28' 12.7" Longitude 75° 11' 20" on the East Branch of the Housatonic River.

The Permittee is authorized to discharge treated process wastewater. This wastewater is associated with raw material pulping operations at its Byron Weston and Pioneer mills, as well as the papermaking process operations that occur at its Wahconah and Bay State mills.

In a cover letter accompanying its revised permit application dated June 24, 2019, the Permittee noted that certain discharges which have historically been discharged to the facility WWTP had not been previously disclosed or authorized in prior NPDES permits. These include discharges of stormwater, boiler blowdown, wastewater from boiler water treatment filters and softeners, brine regeneration of water softener, and process area floor drains.

The source of stormwater is from an outdoor catch basin adjacent to the Permittee's Pioneer mill which drains an area of about 9000 square feet. There is no industrial activity performed in this drainage area. The other discharges are derived from the utility steam and power plants that support the Permittee's pulp and paper mill operations, are intermittent and average 1000 gallons per day and up to 3000 gallons per day as a maximum. The Permittee sampled the utility steam and power plant discharges from 2 of its mills for twelve (12) heavy metals and oil and grease. The only detected parameters from these samples were for total copper (54 and 37 µg/l), total zinc (21 and 13 µg/l) and oil and grease (13 mg/l). Although these discharges were not previously disclosed, they are included as authorized discharges in this Draft Permit. Since the flows from these sources are intermittent and a less than 0.1 % of the average effluent flow, there are no additional permit limits that are required based on testing results noted.

The treatment process includes primary clarification followed by a completely mixed activated sludge biological treatment. The secondary treatment process includes one lined aeration basin with four fixed and one floating aerators, one secondary clarifier with sludge recycle, and final cascade aeration prior to discharge. Sludge from secondary clarifier is transferred to the primary clarifier and the combined primary and secondary sludge is then transferred to the sludge dewatering system. Sludge dewatering includes polymer conditioning, utilizing a gravity belt filter, and a heated screw press. Dewatered sludge cake is produced at a rate of 15-30 tons per day. This processed sludge is transported to the TAM Composting company in Vermont. The WWTP receives no sanitary wastewater or septage.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittee, including Discharge Monitoring Reports (DMRs), from December 1, 2015 through October 31, 2020, is provided in Appendix A of this Fact Sheet.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The East Branch of the Housatonic River is formed from the tributaries in the towns of Peru, Windsor, and Hinsdale, and flows in a south-westerly direction until its confluence with the main stem of the Housatonic River in the City of Pittsfield. The Permittee discharges through Outfall 001 to the segment of the East Branch designated as #MA21-02 and classified as a Class B water (warm water fishery) by the Massachusetts Department of Environmental Protection (MassDEP) under the Commonwealth of Massachusetts Surface Water Quality Standards (MA SWQS).[5] This segment of the East Branch runs from the outlet of Center Pond in Dalton until its confluence with the Housatonic River's main stem in Pittsfield.

The East Branch of the Housatonic River is classified as Class B, warm water fishery in the Massachusetts WQSs, 314 Code of Massachusetts Regulations (CMR) 4.06, Table 2. Class B waters are described in the Commonwealth of Massachusetts Water Quality Standards (314 CMR 4.05(3)(b)) as follows: "designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment (Treated Water Supply). Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."

The East Branch of the Housatonic River is listed in the Massachusetts Year 2016 Integrated List of Waters ("303(d) List") as a Category 5 "Waters Requiring a TMDL.[6] The causes of impairment are listed as *Escherichia Coli,* fecal coliform, and Polychlorinated Biphenyls (PCBs) in fish tissue. To date no TMDL has been developed for this segment for any of the listed impairments. The status of each designated use is presented in Table 1.

Table 1: Summary of Designated Uses and Listing Status

Designated Use	Status
Aquatic Life	Support (Upper 6 miles, remainder unassessed)
Aesthetics	Support
Primary Contact Recreation	Impaired (Elevated fecal coliform)
Secondary Contact Recreation	Support
Fish Consumption	Impaired (PCBs)

[5] http://www.mass.gov/dep/service/regulations/314cmr04.pdf
[6] *Massachusetts Year 2016 Integrated List of Waters*. MassDEP Division of Watershed Management Watershed Planning Program, Worcester, Massachusetts;.

According to the Housatonic River Watershed 2002 Water Quality Assessment Report,[7] this water body segment is not meeting its designated uses as identified in the water quality standards.

A Housatonic River Waste Load Allocation (WLA) was developed as described in the MassDEP's publication *The Housatonic River – 1975 Part-D Water Quality Management Plan* and revised by the MassDEP in 1983. The results of this WLA still form the basis for this permit's water quality-based BOD and TSS limits.

In this 1975 document, the MassDEP identified dissolved oxygen violations in many segments of the Housatonic River. In order to address these WQS violations, the MassDEP sought to establish effluent limitations for each NPDES permitted discharge to the river. A preliminary WLA for the Housatonic River was conducted using the Streeter-Phelps equation, the outputs of which were determined to be the maximum allowable loadings for each segment of the river. It was determined from a 1969 water quality survey that the river was impacted mainly due to organic loadings from point source discharges, which typically dictates dissolved oxygen as the parameter to be modeled.

The original load allocations derived for Crane were 700 lbs/day for both BOD and TSS. These values were subsequently changed to 600 lbs/day for both parameters in a follow-up analysis conducted by MassDEP. Therefore, these loading figures formed the basis of the water quality-based limits in 2012 permit. These WQB limits will be compared to the appropriate technology-based limits and the most stringent limits will be established as the permit limits.

4.2 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQSs under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.[8]
The critical flow is some measure of the low flow of the receiving water and may stipulate the magnitude, duration, and frequency of allowable excursions from the magnitude component of criteria in order to prevent adverse impacts of discharges on existing and designated uses. State WQSs specify the hydrologic condition at which water quality criteria must be applied. For rivers and streams, the lowest flow condition at and above which aquatic life criteria must be applied is the lowest mean flow for seven consecutive days, recorded once in 10 years, or 7-day 10-year low flow (7Q10). *See* 314 CMR 4.03(3)(a).

The Massachusetts's Department of Environmental Protection calculated the 7Q10 [and harmonic mean flow] for the East Branch of the Housatonic River based on data from the United States Geological Survey (USGS) low-flow frequency statistics for the nearest USGS gauging

[7] Housatonic River Basin 2002 Water Quality Assessment Report MassDEP Division of Watershed Management, Worcester, Massachusetts; September, 2007, Report Number: 21-AC-4.
[8] EPA Permit Writer's Manual, Section 6.2.4

station to the Facility (station number **01197000** at gauge identifier[9]) for a 30-year period of record, and the USGS StreamStats for Massachusetts watershed delineation tool.[10] The 7Q10 and harmonic mean flow in the receiving water upstream of the discharge was then calculated as follows:

$$Flow_{@Facility} = Flow_{@Gauge} / Drainage\ Area_{@Gauge} * Drainage\ Area_{@Facility}$$

Where:

Average Facility Flow = 4.0 MGD = 6.2 cfs
Maximum Facility Flow = 5.0 MGD = 7.7 cfs
$Drainage\ Area_{@Gauge}$ = 57.6 square miles (mi^2)
$7Q10\ Flow_{@Gauge}$= 10.69 cubic feet per second (cfs)
$Harmonic\ Mean\ Flow_{@Gauge}$ = 47.64 cfs
$Drainage\ Area_{@Facility}$ = 55.7 mi^2

Therefore:

$7Q10_{outfall}$ = [(7Q10 $Flow_{@Gauge}$ – average flow) / drainage area at the gage] X drainage area at the outfall = (10.69 cfs – 6.2 cfs) / 57.6 mi^2 X 55.7 mi^2 = **4.34 cfs**

$HMF_{outfall}$ = [(HMF $Flow_{@Gauge}$ – average flow) / drainage area at the gage] X drainage area at the outfall = (47.64 cfs – 6.2 cfs) / 57.6 mi^2 X 55.7 mi^2 = **40.1 cfs**

Using the above-calculated 7Q10 (Q_s), the dilution factor (DF) was calculated using the permitted monthly average flow (Q_d) as follows:

$$DF = (Q_s + Q_d)/Q_d$$

Where:

Q_S = 7Q10 in million gallons per day (MGD)
Q_d = Discharge flow in MGD

DF for average flow = (4.34 cfs + 6.2 cfs) / 6.2 cfs = **1.7**

Similarly, for the estimated daily maximum flow of 5.0 MGD, or 7.75 cfs, the dilution factor at this flow rate would be:

DF for daily maximum flow = (4.34 cfs + 7.7 cfs) / 7.7 cfs = **1.6**

[9] USGS StreamStats National Data Collection Station Report for Station 01197000: http://streamstatsags.cr.usgs.gov/gagepages/html/01197000.htm
[10] USGS

StreamStats for Massachusetts Interactive Map: http://water.usgs.gov/osw/streamstats/massachusetts.html

EPA used these dilution factors (DF) in its quantitative derivation of WQBELs for pollutants in the Draft Permit, where applicable.

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQSs are described below. These proposed effluent limitations and conditions, the basis of which is discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

5.1 Effluent Limitations and Monitoring Requirements

The State and Federal regulations, data regarding discharge characteristics, and data regarding ambient characteristics described above, were used during the effluent limitations development process. Discharge data is included in Appendix A. EPA's Reasonable Potential Analyses are included in Appendices B and C and results are discussed in the applicable sections below.

5.1.1 Effluent Flow

From December 1, 2015 through October 31, 2020 (Appendix A) effluent flow has ranged from 2.6 MGD to 3.3 MGD, expressed as a rolling annual average, with a high daily maximum of 4.9 MGD. The Facility's 2012 Permit includes reporting requirements for maximum daily and an average monthly flow limit of 4.7 MGD. Since one of the mills that had formerly sent its wastewater to the Crane wastewater treatment plant is no longer doing so, the effluent flow levels have been reduced. Although flows have averaged roughly 3.0 MGD over the last few years, in a correspondence with EPA on January 13, 2021, the Permittee noted that possible increased demands of its currency paper could result in higher average flows and has requested an annual average flow limit of 4.0 MGD for the next permit term. Therefore, the Draft Permit establishes an annual average flow limit of 4.0 MGD and maintains the reporting requirements for maximum daily flow as well as continuous monitoring for flow using a recorder or similar device, when the Facility is discharging.

5.1.2 pH

The hydrogen-ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life. pH can also have an indirect effect on the toxicity of other pollutants in the water.

From December 2015 through October 2020 (Appendix A), pH has ranged from 6.4 to 8.3 S.U. The 2012 permit limited the pH range from 6.0 to 9.0 S.U. However, the Draft Permit requires a

pH range of 6.5 to 8.3 S.U., monitored weekly by grab samples. The pH limitations are based on the State WQSs for Inland Water, Class B at 314 CMR 4.05(3)(b)3, which require that the pH of the receiving water be in the range of 6.5 to 8.3 S.U. These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.3 Total Suspended Solids

Solids could include inorganic (e.g., silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g., flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids can increase turbidity in receiving waters and reduce light penetration through the water column or settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as metals, which may accumulate in settled deposits that can have a long-term impact on the water column through cycles of re-suspension.

The 2012 Permit required bi-weekly monitoring for TSS with the following limits:

	Average Monthly	**Daily Maximum**
May 1 – Oct 31	864 lbs/day	1260 lbs/day
Nov 1 – April 30	1200 lbs/day	1800 lbs/day

The warm weather monthly average TSS limits were set at a factor of 1.44 times the monthly average BOD limits in the previous permit, in order to be consistent with BOD/TSS ratio in the ELGs noted below. The warm weather daily maximum TSS limit was set at a factor of 1.4 times the daily maximum BOD limit, consistent with the ELG ratio for those limits. Refer to the Fact Sheet of the 2012 Permit for a full explanation of how the BOD and TSS limits were derived.[11] In general, cold weather limits for BOD and TSS were set at higher levels, because violations of the dissolved oxygen limit were not expected during this period.

The effluent monthly average TSS values during the monitoring period (Appendix A) ranged from 58 to 540 lbs/day during the May to October period and 76 to 906 lbs/day during November to April period, with one violation of the daily maximum limit of 1800 lbs/day.

EPA established minimum control technology requirements for the paper industry in the form of effluent limitation guidelines (ELGs) promulgated under *40 CFR 430 - Pulp, Paper, and Paperboard Point Source Category.* The facility is most closely categorized by 40 CFR 430, Subpart K - Fine and Lightweight Papers from Purchased Pulp Subcategory. The following are the limits that apply to this discharge, as the majority content of raw material for the currency paper is cotton fiber.

[11] https://www3.epa.gov/region1/npdes/permits/2012/finalma0000671permit.pdf

Subpart K

Limits for non-integrated mills where fine paper is produced from purchased pulp—cotton fiber

Pollutant or pollutant property	Kg/kkg (or pounds per 1,000 lb) of product		
	Continuous dischargers		Non-continuous dischargers (annual average)
	Maximum for any 1 day	Average of daily values for 30 consecutive days	
BOD5	17.4	9.1	5.1
TSS	24.3	13.1	7.2
pH	([1])	([1])	([1])

[1]Within the range of 5.0 to 9.0 at all times.

In the 2012 Permit, the TSS limits were based on the WLA described earlier and are water quality-based limits. The calculated TSS limits based on the technology-based factors of the fine paper (cotton fiber) subcategory of the ELGs are as follows:

MA Technology Based Limit:

13.1 lbs/1000 lbs * 95 tons/day *2000 lbs/ton = **2489 lbs/day**

DM Technology Based Limit:

24.3 lbs/1000 lbs * 95 tons/day *2000 lbs/ton = **4617 lbs/day**

The existing, water quality-based limits are well below the technology-based limits calculated above as dictated by the ELGs. Therefore, the existing TSS limits will remain in the permit as they are more stringent and are required by antibacksliding. The monitoring frequency for TSS has been maintained at two times per week.

5.1.4 Five-Day Biochemical Oxygen Demand

Five-day Biochemical Oxygen Demand (BOD_5), measures the amount of oxygen consumed by microorganisms in decomposing organic matter in water. BOD_5 also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction). The rate of oxygen consumption in a waterbody is affected by several variables: temperature, pH, the presence of microorganisms, and the type of organic and inorganic material. BOD_5 directly affects the amount of dissolved oxygen in rivers and streams. The greater the BOD_5, the

more rapidly oxygen is depleted in the stream. Depletion of the in-stream oxygen levels cause aquatic organisms to become stressed, suffocate, and die.

The BOD_5 limits were originally based on the WLA described earlier that was conducted in 1975 and revised in 1983. The lower, monthly average limit was established for the period classified as the warm weather period of May through October and the higher, daily maximum limit was applied for the cold weather period of November through April. The cold weather limits were set higher than the warm weather limits because violations of the dissolved oxygen limit were not expected during this period. The daily maximum limits were previously set at 150% of the monthly average limits. These daily maximum limits were generally established by the Agencies "to ensure compliance with the water quality standards." These daily maximum limits were based, or derived from, the WQ based limit of 600 lbs/day, so they are also characterized as water quality-based limits.

The BOD_5 readings during the monitoring period (Appendix A) ranged from 16 to 342 lbs/day during the May to October period and 19 to 814 lbs/day during November to April period, with two violations of the daily maximum limit of 1800 lbs/day.

The 2012 Permit required bi-weekly monitoring for BOD_5 with the following limits:

	Average Monthly	**Daily Maximum**
May 1 – Oct 31	600 lbs/day	900 lbs/day
Nov 1 – April 30	1200 lbs/day	1800 lbs/day

In order to determine whether these limits are still appropriate, they must be compared to the limits that would apply based on the applicable technology-based guidelines. The categorical limits for BOD_5 are calculated below using the average daily production of 95 tons/day, encompassing all of products manufactured at Crane's mills. As mentioned earlier, the production rate has dropped from the rate of 110 tons/day used in the 2012 permit, which represented the production at that time.

Monthly Average (MA) Technology Based Limit:

9.1 lbs/1000 lbs. * 95 tons/day * 2000 lbs/ton = **1729 lbs/day**

Daily Maximum (DM) Technology Based Limit:

17.4 lbs/1000 lbs * 95 tons/day *2000 lbs/ton = **3306 lbs/day**

Since the current, permitted limits are more stringent than the technology-based limits, they will remain as the limits in this permit, as required by antibacksliding.

5.1.5 Dissolved Oxygen

Dissolved oxygen (DO) is a measure of how much oxygen is available in a water body for biological use and is needed by aquatic organisms for survival. Rapidly moving water bodies tend to have higher concentrations of DO, but eutrophic conditions can occur when the DO level drops and the water body becomes oxygen deficient making it unable to support aquatic life.

Consistent with the Class B State WQS 314 CMR 4.05 (3)(b)1, a minimum DO level of 5.0 mg/L was established in the 2012 Permit. From December 2015 through October 2020 (Appendix A), DO concentrations have ranged from 5-9 mg/L. The Draft Permit maintains the 5.0 mg/L limit monitored with weekly reporting.

5.1.6 Total Residual Chlorine

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethane. Potable water sources are typically chlorinated to minimize or eliminate pathogens. 40 CFR § 141.72 stipulates that a public water system's residual disinfectant concentration in the water entering the distribution system cannot be less than 0.2 mg/L for more than four hours. The Permittee's uses an average of 0.5 MGD of municipal water supply for its manufacturing and also uses sodium hypochlorite in the bleaching process for its cotton/linen preparation and in the aeration basin influent chamber to control for filamentous microorganisms that occur during periods of low flow. The presence of these organisms negatively impacts the biological treatment process.

The 2012 Permit requires twice per month monitoring for TRC with limits of 22 µg/l and 34 µg/l, respectively, for the monthly average and daily maximum. During the monitoring period, TRC levels have averaged 2 µg/L with a maximum reading of 8 µg/L.

The *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) specifies that "Waters shall be protected from unnecessary discharges of excess chlorine." State WQSs further require the use of federal water quality criteria where a specific pollutant could reasonably be expected to adversely affect existing or designated uses. *See* 314 CMR 4.05(5)(e). EPA's *National Recommended Water Quality Criteria* for aquatic life in freshwater for TRC are as follows:

19 µg/L (0.019 mg/L) acute criterion
11 µg/L (0.011 mg/L) chronic criterion

The dilution factors multiplied by the chronic and acute criteria provide the appropriate TRC limits as shown below:

Chronic limit: 11 µg/l * 1.7 = **19 µg/**l Acute limit: 19 µg/l * 1.6 = **30 µg/l**

Therefore, these are the established Draft Permit limits, which are slightly lower than those of the 2012 Permit, reflecting the minor change in dilution factors calculated above. The permit maintains the twice monthly monitoring schedule.

5.1.7 Ammonia

Ammonia (NH3) is the unionized form of ammonia nitrogen. Elevated levels of ammonia can be toxic to aquatic life. Temperature and pH affect the toxicity of ammonia to aquatic life. The toxicity of ammonia increases as temperature increases and ammonia concentration and toxicity increase as pH increases. Ammonia can affect fish growth, gill condition, organ weights, and hematocrit levels, and can result in excessive plant and algal growth, which can cause eutrophication. Ammonia can also affect dissolved oxygen through nitrification, in which oxygen is consumed as ammonia is oxidized. Low oxygen levels can then, in turn, increase ammonia by inhibiting nitrification. Total ammonia-nitrogen concentrations in surface waters tends to be lower during summer than during winter due to uptake by plants and decreased ammonia solubility at higher temperatures. Ammonia as a component of total nitrogen will be discussed in relation to nutrient pollution in Section 5.1.8.2.

The 2012 Permit included monthly monitoring for ammonia. From December 1, 2015 to October 31, 2020, ammonia concentrations ranged from below laboratory minimum levels to 16 mg/L (Appendix A). This high value was due to a metering pump system for urea addition that failed and Crane notified the MassDEP of this release (Release Tracking # 1-20078).

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality criteria for ammonia, EPA used the mass balance equation presented in Appendix B for both warm and cold weather conditions to project the ammonia concentration downstream of the discharge. If there is reasonable potential, this mass balance equation is also used to determine the limit that is required in the permit. EPA assumed a warm weather temperature of 25° C and a cold weather temperature of 5° C. EPA used the ambient pH monitoring shown in Appendix A, which indicates that the median pH is 7.5 S.U. Additionally, since the East Branch of the Housatonic River is not within Essential Fish Habitat (EFH) for Atlantic salmon (*Salmo salar*), EPA has assumed that salmonids are not present in the receiving waters.

As shown in Appendix B, there is no reasonable potential to violate either the chronic or acute criterion for ammonia. Therefore, the Draft Permit does not include effluent limitations for ammonia. Given the low concentration of ammonia in past samples, effluent and ambient ammonia monitoring is now only required quarterly in conjunction with Whole Effluent Toxicity testing discussed below.

5.1.8 Nutrients

Nutrients, such as phosphorus and nitrogen, are necessary for the growth of aquatic plants and animals to support a healthy ecosystem. In excess, however, nutrients can contribute to fish disease, brown tide, algae blooms and low dissolved oxygen (DO). Excessive nutrients, generally phosphorus in freshwater and nitrogen in salt water, stimulate the growth of algae and aquatic

plants, which could start a chain of events detrimental to the health of an aquatic ecosystem. When these plants and algae decay, this generates strong odors and often results in lower dissolved oxygen levels in the river. This could in turn impair the benthic habitat as fish and shellfish are deprived of oxygen, while excessive algae and foul smells could decrease aesthetic value by affecting swimming and recreational uses. In order to effectively operate its biological treatment system, the Permittee doses its aeration basin with urea and ammonium phosphate, which contain nitrogen and phosphorus, respectively.

It has been documented that most reaches of the Housatonic River suffer from eutrophication, a condition caused primarily by excessive nutrients entering the river. The instream nutrients prevent attainment of the designated uses as defined in the Massachusetts SWQS. These uses include habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. There are several applicable water quality criteria which are not being met in the Housatonic River due to nutrient discharges and resulting eutrophication. They include numeric water quality criteria (e.g., dissolved oxygen), and narrative water quality criteria including aesthetics (314 C.M.R. § 4.05(5)(a)), bottom pollutants and alterations (314 C.M.R. § 4.05(5)(b)), and nutrients 314 C.M.R. § 4.05(5)(c)).

5.1.8.1 Total Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms.

As discussed above, segments of the Housatonic River downstream of the Permittee's discharge are impaired for phosphorus and excess algal growth. In addition, Lake Lillinonah, a 1,600-acre impoundment of the Housatonic River located over 50 miles downstream in Connecticut, is included as a 303(d) waterbody in the State of Connecticut's *2018 Integrated Water Quality Report to Congress.*[12] The 2018 report identified chlorophyll-*a*, excess algal growth, and nutrient/euthrophication biological indicators as causing an impairment of recreational uses in Lake Lillinonah, which suggests that the effects of upstream nutrient sources are accumulating and being observed in downstream impoundments on the Housatonic River.

The impacts of high levels of phosphorus include violations of the minimum dissolved oxygen criteria, high levels of chlorophyll *a*, and high levels of macrophyte and periphyton growth. The relationship between high levels of phosphorus and eutrophication, as measured by chlorophyll *a*, periphyton, macrophyte, and dissolved oxygen levels is well documented in scientific literature, including in guidance developed by EPA to address nutrient over-enrichment. *See*

[12] https://www.epa.gov/sites/production/files/2019-10/documents/2018-ct-integrated-rpt.pdf

Nutrient Criteria Technical Guidance Manual – Rivers and Streams, July 2000 (EPA-822-B-00-002).

In the absence of a numeric criterion for phosphorus, EPA looks to nationally recommended criteria and other technical guidance documents. *See* 40 CFR 122.44(d)(1)(vi)(B). EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The *1986 Quality Criteria for Water* ("Gold Book") recommends that, in order to control eutrophication, in-stream phosphorus concentrations of no greater than 50 ug/L in any stream entering a lake or reservoir, 100 ug/L for any stream not discharging directly to lakes or impoundments, and 25 ug/L within a lake or reservoir. The Housatonic River below Crane and Company encounters a series of impoundments before crossing the Connecticut border.

In 2001, EPA released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published ecoregion-specific criteria represent conditions in waters minimally impacted by human activities and are thus representative of water without cultural eutrophication. This facility is within Ecoregion VIII, classified as "Nutrient Poor, Largely Glaciated Upper Midwest and Northeast". Recommended criteria for this ecoregion is found in *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion VIII*, (December, 2001, EPA 822-B-01-015). The recommended aggregate total phosphorus criterion for this ecoregion is 10 ug/L.

The MA SWQS at 314 CMR § 4.00 do not contain numerical criteria for total phosphorus. They include a narrative criterion for nutrients at 314 CMR 4.05(5)(c), which provides that nutrients "[s]hall not exceed the site specific limits necessary to control accelerated or cultural eutrophication." They also include a requirement that "[a]ny existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae ... shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practicable treatment ... to remove such nutrients." See 314 CMR 4.05. MassDEP has interpreted the "highest and best practicable treatment" requirement in its standards as requiring a monthly average effluent limit of 0.2 mg/L (200 ug/L) for phosphorus.

The current monthly average phosphorus limits are 0.2 mg/L for the period of May to October and 1.0 mg/L for the period of November to April. The monthly average limit of 0.2 mg/L was based on the results of a previous optimization study conducted by the permittee which indicated that the facility was capable of achieving this limit. For the period of December 2015 to October 2020, the warm weather phosphorus readings ranged from 0.03 to 0.2 mg/L and the cold weather readings ranged from 0.05 to 0.34 mg/L.

The monthly average limit for the period of November through April was set at 1.0 mg/l, as this is the limit that has historically been applied for winter periods based on water quality considerations. A higher phosphorus limit in the winter period is appropriate because the expected predominant form of phosphorus, the dissolved fraction, lacking plant growth to absorb it, will likely remain dissolved and flow out of the system. Imposing a limit on phosphorus during the cold weather months is, however, necessary to ensure that phosphorus discharged

during the cold weather months does not result in the accumulation of phosphorus in the sediments, and subsequent release during the warm weather growing season.

The continuation of these limits and monitoring requirements is required due to the non-attainment for the downstream segments of the Housatonic River regarding eutrophication and related impacts, and variability in the effluent data. This draft permit has retained the monitoring frequency to twice per week during the period of May through October, due to the variability of past results. The frequency for the period of November to April has been reduced from twice per week to once per week as the limit for this period as the Permittee has demonstrated that it can consistently meet the 1.0 mg/L limit.

5.1.8.2 Nitrogen

Nitrogen is an essential nutrient for plant growth. However, elevated concentrations of nitrogen can result in eutrophication, where nutrient concentrations lead to excessive plant and algal growth. Respiration and decomposition of plants and algae under eutrophic conditions reduce dissolved oxygen in the water and can create poor habitat for aquatic organisms. Total Nitrogen is the sum of Total Kjeldahl Nitrogen (TKN) (ammonium, organic and reduced nitrogen) and nitrate-nitrite. It is derived by individually monitoring for organic nitrogen compounds, ammonia, nitrate, and nitrite and adding the components together.

The Facility discharges to the East Branch of the Housatonic River, which drains to Long Island Sound (LIS). In December 2000, the Connecticut Department of Energy and Environmental Protection (CT DEEP) and New York State Department of Environmental Conservation (NYSDEC) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in LIS. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont point sources discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL. At that time, this reduction represented a nitrogen loading of 212 lbs/day for Crane.

The TMDL estimated that in 1998, the baseline total nitrogen loading for out-of-basin point sources in the Housatonic River watershed was 3,286 lb/day, which includes discharges from publicly and privately owned treatment works (wastewater treatment plants or WWTPs) and industrial dischargers.[13] The 25% reduction stipulated by the TMDL would mean a target of 2464 lb/day. Based on data from 2015 through 2019, the maximum annual average total nitrogen loading for the Housatonic River from permitted non-stormwater point sources is 1707 lb/day.[14] Therefore, the TMDL target is being met, with approximately a 50% reduction from the 1998 baseline.

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[13] Estimated loading from TMDL. See Appendix 3 to CT DEEP "Report on Nitrogen Loads to Long Island Sound," April 1998.

[14] Data came from EPA's ECHO Water Pollution Search Web tool, https://echo.epa.gov/trends/loading-tool/water-pollution-search. The 2015-2019 date range was used since the annual loading for 2020 was not available at the time of Draft Permit development.

The 2012 Permit required twice per week monitoring for Total Nitrogen and all its components (total kjeldahl nitrogen, and nitrate-nitrite). In addition, to monitoring requirements, the 2012 Permit includes a special condition to optimize the Facility's biological treatment system in order to not exceed a monthly average loading of 212 lbs/day. The monthly average total nitrogen loading from the Facility ranged from 63 to 196 lbs/day from December 2015 to October 2020 with a median value of 115 lbs/day (Appendix A). The Crane discharge comprises approximately 8% of the total loading from the 10 out-of-basin point sources discharging to the Housatonic River Basin, with the Pittsfield WWTP comprising the vast majority, about 75% (1,220 lbs/day from 2015-2019). The entire out-of-basin loading figure for the period of 2015-2019 was approximately 10,750 lbs/day.

For industrial dischargers which tend to make up a small portion of the total out-of-basin load, EPA has historically relied on nutrient optimization monitoring requirements (such as the special condition cited above) rather than numeric limitations. While substantial TN out-of-basin load reductions have occurred at some facilities by means of optimization requirements alone, concerns raised in recent public comments by the downstream state (Connecticut) and concerned citizens[15] have highlighted the need for clearly enforceable, numeric, loading-based effluent limits to ensure that the annual aggregate nitrogen loading from out-of-basin point sources are consistent with the TMDL WLA of 2,464 lb/day and that current reductions in loading do not increase, given the continued impairment status of LIS.

While EPA agrees with the concerns raised by the downstream state and the public, implementation of numeric limitations for Crane's effluent poses some challenges. Baseline data from 1998 is not available to assess what a 25% reduction would be for the Facility's discharge, which had been estimated. Furthermore, the TMDL target has been met by quite some measure; and since Crane's discharge comprises a relatively small percentage of total nitrogen load, a substantial increase in load from Crane would have little impact on whether the WLA was met.

Given the success of the TMDL and the small load from the Facility, EPA has not added numeric nitrogen limitations to the Draft Permit. Instead, EPA is including a more comprehensive nitrogen optimization requirement in line with other out-of-basin sources of similar discharge magnitude. The optimization condition in the Draft Permit requires the Permittees to evaluate alternative methods of operating its treatment plant to optimize the removal of nitrogen, and to describe ongoing optimization efforts.

Specifically, the Draft Permit requires the continued evaluation of treatment facility operations to minimize nitrogen discharges, along with annual reports to summarize progress and activities related to optimizing nitrogen removal efficiencies and track trends relative to previous years. In addition to the optimization requirements, the Draft Permit has changed the monitoring requirement from twice per week to once per week for total nitrogen as this frequency is more in

[15] Connecticut Department of Energy and Environmental Protection letters to EPA dated February 7, 2018 and April 27, 2018; Connecticut Fund for the Environment letter to EPA dated February 7, 2018; and Connecticut River Conservancy letter to EPA dated February 18, 2018.

line with other dischargers to the Housatonic Basin and is adequate to characterize the ongoing nitrogen loadings from the facility.

5.1.9 Color

The 2012 permit included a weekly effluent color monitoring requirement due to the observance of a brown color in the effluent in a prior water quality assessment report. During the monitoring period, the effluent color ranged from 71 to 1739 platinum cobalt units (pcu). Although there is no numeric effluent limit for color, the MA SWQS require that the receiving water be free from color or turbidity in concentrations or combinations that are aesthetically objectionable or would impair assigned uses. This color is believed to be attributable mainly to the pulping operations at the facility. The weekly monitoring requirement has been maintained.

5.1.10 Metals

Metals are naturally occurring constituents in the environment and generally vary in concentration according to local geology. Metals are neither created nor destroyed by biological or chemical processes. However, metals can be transformed through processes including adsorption, precipitation, co-precipitation, and complexation. Some metals are essential nutrients at low levels for humans, animals, plants and microorganisms, but toxic at higher levels (e.g., copper and zinc). Other metals have no known biological function (e.g., lead). The environmental chemistry of metals strongly influences their fate and transport in the environment and their effects on human and ecological receptors. In aquatic systems, metal bioavailability refers to the concentration of soluble metal that adsorb onto, or absorb into and across, membranes of living organisms. The greater the bioavailability, the greater the potential for bioaccumulation, leading to increased toxicological effects (Magalhães, 2015). Toxicity results when metals are biologically available at toxic concentrations affecting the survival, reproduction and behavior of an organism.

The Permittee has obtained quarterly monitoring data for total recoverable aluminum, cadmium, copper, lead, nickel and zinc in the discharge and the receiving water in conjunction with Whole Effluent Toxicity testing. The current permit also includes effluent limits for total copper and aluminum due to a prior determination of reasonable potential. All six metals were detected above laboratory minimum levels for the reporting period of December 2016 through October 2020 (Appendix A). Therefore, EPA completed an analysis to determine if the discharges of cadmium, lead, nickel, and zinc cause, or have a reasonable potential to cause, or contribute to an excursion above State WQSs using EPA's 2002 *National Recommended Water Quality Criteria* for metals (Appendix B). For aluminum and copper, which have current effluent limits, an analysis was conducted to determine whether the current limits were protective of water quality.

State WQSs contain minimum criteria applicable to all surface waters for toxic pollutants, which requires the use of EPA's *National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002* where a specific pollutant is not otherwise listed in 314 CMR 4.00. *See* 314 CMR 4.05(5)(e). The applicable criteria are presented in Appendix B.

The results of EPA's analysis indicate discharges of cadmium, lead, nickel, and zinc do not cause, or have a reasonable potential to cause, or contribute to an excursion above WQSs. As a result, the Draft Permit does not include effluent limitations for these metals. However, quarterly monitoring for total recoverable cadmium, lead, nickel, and zinc in the discharge and the receiving water continues to be required in conjunction with Whole Effluent Toxicity Testing, discussed further below.

For metals with an existing limit in the 2012 Permit, copper and aluminum, a reasonable potential determination is not applicable, so the table indicates "N/A" for reasonable potential. In such cases, the same mass balance equation is used to determine if a more stringent limit would be required to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions. However, if the mass balance indicates that a less stringent effluent concentration (C_d) would meet WQS under current conditions, a case-by-case analysis must be done to determine if backsliding is allowable based on the exceptions found at 40 CFR § 122.44(l)(2)(i).

The results of this analysis for each metal are presented in Appendix B. The Draft Permit must continue to limit copper and aluminum, but with more stringent aluminum limits. The prior monthly average limit of 0.17 mg/L is being replaced by a limit of 0.118 mg/L and the prior maximum daily limit of 1.35 mg/L is being replaced by a limit of 1.15 mg/L, based on the revised dilution factors.

Aluminum sulfate is added as part of a pretreatment step in the settling beds. Therefore, there is potential that aluminum will be discharged directly to the Housatonic through this outfall. In 2018, EPA updated the 1988 national recommended ambient water quality criteria for acute and chronic aluminum exposure in freshwater.[16] The criteria recommendations are in the form of a calculator (Aluminum Criteria Calculator V.2.0 (USEPA, 2018a)), which calculates instantaneous acute and chronic total recoverable aluminum criteria values based on multiple linear regression models with three inputs: pH, total hardness, and DOC. The models are based on aluminum toxicity studies with variable pH, total hardness, and DOC concentrations. To aid water quality standards implementation, the calculator provides instantaneous criteria values that are protective of surface waters if the acute one-hour average is not exceeded more than once every three years and the chronic four-day concentration is not exceeded more than once every three years.

The Massachusetts Department of Environmental Protection (MassDEP) proposed amendments to the Massachusetts Surface Water Quality Standards (314 CMR 4.00) in 2019. The amendments to the Surface Water Quality Standards included adoption of EPA's 2018 guidance for aluminum in freshwater. However, MassDEP has not yet finalized the amendments to the State WQS. Therefore, the prior WQC for aluminum remain in effect and continue to be the basis for the effluent limits.

[16] Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018 (USEPA, 2018b).

Aluminum Compliance Schedule

The final aluminum effluent limits are based on current Massachusetts, EPA approved, aluminum criteria to protect freshwater aquatic life. As noted above MassDEP is in the process of revising the Massachusetts aluminum criteria based, at least in part, on new EPA aluminum criteria recommendations which were finalized in 2018. For three years after the effective date of the permit, MassDEP will inform EPA at reasonable intervals of its progress on the development and promulgation of new aluminum criteria.

EPA's aluminum criteria recommendations indicate that the new aluminum criteria recommendations may be higher than the current recommendations. Because MassDEP has indicated to EPA that its planned revisions to its aluminum criteria will be based on EPA's recommended criteria, EPA reasonably expects its new criteria may also be higher. EPA has therefore determined that it is appropriate to include a schedule of compliance, pursuant to 40 CFR § 122.47, in the draft permit which provides the permittee with a 3-year period to achieve compliance with the final aluminum effluent limits. Additionally, the permittee may apply for a permit modification to allow additional time for compliance if Massachusetts has adopted new aluminum criteria but has not yet submitted the criteria to EPA for review or EPA has not yet acted on the new criteria. If new aluminum criteria are adopted by Massachusetts and approved by EPA, and before the final aluminum effluent limits go into effect, the permittee may apply for a permit modification to amend the permit based on the new criteria. If warranted by the new criteria and a reasonable potential analysis, EPA may relax or remove the effluent limits to the extent consistent with anti-degradation requirements. Such a relaxation or removal would not trigger anti-backsliding requirements as those requirements do not apply to effluent limits which have yet to take effect pursuant to a schedule of compliance. *See American Iron and Steel Institute v. EPA*, 115 F.3d 979, 993 n.6 (D.C. Cir. 1997) ("EPA interprets § 402 to allow later relaxation of [an effluent limit] so long as the limit has yet become effective.")

5.1.11 Per- and polyfluoroalkyl substances (PFAS)

As explained at https://www.epa.gov/pfas, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may increase risk of adverse health effects.[17]

Although the Massachusetts WQSs do not include numeric criteria for PFAS, the Massachusetts narrative criterion for toxic substances at 314 CMR 4.05(5)(e) states that:

> [a]ll surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

[17] EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan,* EPA 823R18004, February 2019. Available at: https://www.epa.gov/pfas/epas-pfas-action-plan.

The narrative criterion is further elaborated for human health risk levels at 314 CMR 4.05(5)(e)2, which states:

> [w]here EPA has not set human health risk levels for a toxic pollutant, the human health-based regulation of the toxic pollutant shall be in accordance with guidance issued by the Department of Environmental Protection's Office of Research and Standards. The Department's goal is to prevent all adverse health effects which may result from the ingestion, inhalation or dermal absorption of toxins attributable to waters during their reasonable use as designated in 314 CMR 4.00.

On November 22, 2020, EPA issued an "*Interim Strategy for Per- and Polyfluoroalkyl Substances in Federally Issued National Pollutant Discharge Elimination System Permits*." This guidance memo sets out the EPA workgroup's recommendation for including phased-in monitoring and best management practices (as appropriate), when PFAS compounds are expected to be present in point source wastewater discharges. Facilities that have been identified as potential point sources of PFAS include:

- Platers/Metal Finishers
- Paper and Packaging Manufacturers
- Tanneries and Leather/Fabric/Carpet Treaters
- Manufacturers of parts with Polytetrafluroethlylene (PTFE) (i.e.teflon-type coatings and bearings)
- Landfill Leachate
- Centralized Waste Treatment Facilities
- Contaminated Sites
- Fire Fighting Training Facilities
- Airports

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the Facility conduct quarterly effluent sampling for PFAS chemicals, six months after EPA notifies the permittee that a multi-lab validated test method is available by EPA to the public. This monitoring requirement includes the following PFAS chemicals:

Perfluorohexanesulfonic acid (PFHxS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanoic acid (PFNA)
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the

potential development of water quality-based effluent limits on a facility-specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

> "SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—
>
> …the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require…"

Since an EPA method for sampling and analyzing PFAS in wastewater is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule that delays the effective date of this requirement until six months after EPA notifies the Permittee that a multi-lab validated method for wastewater is available to the public on EPA's CWA methods program website. *See* https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods. EPA expects this method will be available by the end of 2021 and will notify the permittee when the method is available. This approach is consistent with 40 CFR § 122.44(i)(1)(iv)(B), which states that "[i]n the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters." After one year of monitoring, if all samples are non-detect for all six PFAS compounds, using EPA's multi-lab validated method for wastewater, the Permittee may request to remove the requirement for PFAS monitoring.

5.1.12 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a) provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism, and persistence of the pollutants in the discharge do not cause toxicity, even when the individual pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQSs. Under CWA §§ 301, 303 and 402, EPA and the States may establish toxicity-based limitations to implement narrative water quality criteria calling for "no toxics in toxic amounts." *See also* 40 CFR § 122.44(d)(1). The Massachusetts WQSs at 314 CMR 4.05(5)(e) state, "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." In addition, the Massachusetts WQSs at 314 CMR 4.03(2)(a) require no lethality to organisms passing through a mixing zone.

In accordance with current EPA guidance and State policy,[18] whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the $LC_{50.}$ For a Facility with a dilution of less than 10:1, EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) recommends acute and chronic toxicity testing four times per year for two species. Both EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) and the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) require that the C-NOEC effluent limit should be greater than or equal to the receiving water concentration (RWC) and the LC_{50} limit should be greater than or equal to 100%, or a limit of 1.0 T.U.

The chronic and acute WET limits in the 2012 Permit are C-NOEC greater than or equal to 50% and LC_{50} greater than or equal to 100%, respectively, using the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*) as the test species, on an alternating basis. For the period of December 1, 2015 through October 31, 2020 (Appendix A), WET test results indicated toxicity in 3 of the 19 tests, with a NOEC ranging between 25% and 50%, with one violation of the $\geq$50% limit. All three of these values were reported during testing for the daphnid. All LC50 values were reported as $\geq$100%. EPA completed an analysis to determine if these discharges cause, or have a reasonable potential to cause, or contribute to an excursion above State WQSs using the acute criterion of 1.0 T.U. specified in the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) (Appendix C). It was determined that the effluent has the reasonable potential to violate the chronic toxicity criterion.

Therefore, in accordance with 40 CFR § 122.44(d), the Draft Permit continues the effluent limits from the 2012 Permit. Since the dilution factor has changed to 1.7, the NOEC has changed from 50% to 59% reflecting the RWC, as shown in Appendix C. Toxicity testing must be performed in accordance with EPA Region 1's test procedures and protocols specified in **Attachment A,** *Freshwater Acute Toxicity Test Procedure and Protocol* (February 2011), **and Attachment B,** *Freshwater Chronic Toxicity Test Procedure and Protocol* (March 2013) of the Draft Permit. Since the daphnid *Ceriodaphnia dubia* has been shown to be the more sensitive species, it will be the only species for which WET testing is required.

[18] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters*. February 23, 1990.

5.2 Special Conditions

5.2.1 Best Management Practices

Best management practices (BMPs) may be expressly incorporated into a permit on a case-by-case basis where it is determined that they are necessary to achieve effluent limitations and standards or to carry out the purpose and intent of the CWA under § 402(a)(1). BMPs may be necessary to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under CWA § 402(p) for the control of stormwater discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. *See* 40 CFR 122.44(k). Stormwater at the Facility has the potential to come into contact with materials stored at the Facility or contamination in soil or groundwater from historical and/or current activities.

The Draft Permit requires the selection, design, installation, and implementation of control measures for stormwater associated with the Facility operations to comply with the non-numeric technology-based effluent limits in the Draft Permit. In essence, the Draft Permit requires the Permittee to implement and continually evaluate the Facility's structural controls, operational procedures, and operator training. Proper implementation of BMPs will minimize the potential discharge of pollutants in stormwater related to inadequate treatment, human error, and/or equipment malfunction. The non-numeric limitations in the Draft Permit, listed below, have been updated based on the limitations specified in Part 2.1.2 of EPA's 2021 MSGP.[19] Non-numeric limitations include:

- Minimize exposure of processing and material storage areas to stormwater discharges;
- Design good housekeeping measures to maintain areas that are potential sources of pollutants;
- Implement preventative maintenance programs to avoid leaks, spills, and other releases of pollutants to stormwater that is discharged to receiving waters;
- Implement spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur;
- Utilize runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff; and
- Conduct employee training to ensure personnel understand the requirements of this permit.

The non-numeric effluent limitations support, and are as equally enforceable as, the numeric effluent limitations included in the Draft Permit. The purpose of these requirements is to reduce or eliminate the discharge of pollutants to waters of the United States. They have been selected

[19] The 2021 MSGP is currently available at: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities-epas-2021-msgp

on a case-by-case basis based on those appropriate for this specific facility. *See* CWA §§ 304(e), 402(a)(1); 40 CFR § 122.44(k). These requirements will also ensure that discharges from the Facility will meet State WQSs pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1). Unless otherwise stated, the Permittee may select, design, install, implement and maintain BMPs as the Permittee deems appropriate to meet the permit requirements. The selection, design, installation, implementation and maintenance of control measures must be in accordance with good engineering practices and manufacturer's specifications and must take future conditions into consideration.

5.2.2 Discharges of Chemicals and Additives

Chemicals and additives include, but are not limited to: algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, and surfactants. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittee to EPA. The following chemicals and additives were disclosed to EPA:

- Boiler Water Treatment – Chemtreat BL1258, BL1304, and BL1354
- Steam Line Treatment – Chemtreat BL1556
- Systems Cleaners
    - AC6020, AC6039F, ALK-7200, Sublime (Summit), Centerchem Limeshock
    - Nalkleen 2627, Nalstrip 1570, Nalstrip 62901B (Nalco)
- Nutrients
    - Urea
    - Ammonia Polyphosphate
- Aluminum Sulfate
- Caustic Soda 50% (Sodium Hydroxide)
- Sodium Hypochlorite (Bleach)
- Titanium Dioxide
- Glycerin
- Carbon Dioxide
- Various Dyes and Sizing Agents*

* These chemicals have been deemed as confidential business information.

However, EPA recognizes that chemicals and additives in use at a Facility may change during the term of the permit. As a result, the Draft Permit includes a provision that requires the Permittee to notify EPA in writing of the discharge a new chemical or additive; allows for EPA review of the change; and provides the factors for consideration of such changes. The Draft Permit specifies that for each chemical or additive, the Permittee must submit the following information, at a minimum, in writing to EPA:

- Product name, chemical formula, general description, and manufacturer of the chemical/additive.
- Purpose or use of the chemical/additive.

- Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive.
- The frequency (e.g., hourly, daily), magnitude (e.g., maximum and average), duration (e.g., hours, days), and method of application for the chemical/additive.
- The maximum discharge concentration; and
- The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

The Permittee must also provide an explanation that demonstrates that the discharge of such chemical or additive: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

Assuming these requirements are met, discharges of a new chemical or additive is authorized under the permit upon notification to EPA unless otherwise notified by EPA.

5.2.3 Chlorophenolic-containing biocides

The ELGs for Subpart K of the Pulp, Paper and Paperboard category include BAT limitations for pentachlorophenol and trichlorophenol when chlorophenolic-containing biocides are used in the papermaking process, *see* 40 CFR §§ 430.114 and 430.124. The Permittee has verified that these biocides are not used in any facility processes. In addition, these compounds were not detected in the Permittee's application. Therefore, the Draft Permit does not contain limitations or monitoring requirements for these compounds. The Draft Permit includes a special condition at Part I.C.1 that requires the Permittee to certify that they are not using these biocides on their permit renewal application.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that has been designated as critical (a "critical habitat").

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers § 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Crane Facility's discharges of pollutants. The Draft Permit is intended to replace the 2012 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species and initiates consultation with the Services when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the expected action area of the outfall to determine if EPA's proposed NPDES permit could potentially impact any such listed species in this section of the East Branch of the Housatonic River.

Regarding protected species under the jurisdiction of NOAA Fisheries[15], a number of anadromous and marine species and life stages are present in Massachusetts coastal waters. Various life stages of the following fish, sea turtles and whales have been documented in these near shore waters, either seasonally or year-round: adult and subadult life stages of Atlantic sturgeon (*Acipenser oxyrinchus*); adult shortnose sturgeon (*Acipenser brevirostrom*); protected sea turtles, including adult and juvenile life stages of leatherback sea turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), Kemp's ridley sea turtles (*Lepidochelys kempii*) and green sea turtles (*Chelonia mydas*), along with adult and juvenile life stages of North Atlantic right whales (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*). In addition, this coastal area has been designated as critical habitat for North Atlantic right whale feeding.

In this case, the Facility's outfall does not discharge to coastal waters or to river segments where protected sturgeon are present. Therefore, there are no known federally listed threatened or endangered species or their critical habitat under the jurisdiction of NOAA Fisheries within the vicinity of Crane's discharge.[20] Because the action area of the discharge is not expected to overlap with these threatened or endangered species or critical habitat, consultation with NOAA Fisheries under Section 7 of the ESA is not required for this federal action.

For protected species under the jurisdiction of the USFWS, the dwarf wedgemussel (*Alasmidonta heterodon*), a listed endangered species, has been documented in the Connecticut River watershed in the last 25 years. Information obtained from the USFWS indicates that the dwarf wedgemussel is not found in the East Branch of the Housatonic River within the action area resulting from Crane's discharge.

However, one terrestrial listed threatened species, the northern long-eared bat (*Myotis septentrionalis*) was identified as potentially occurring in the action area of Crane's discharge.[21]

According to the USFWS, the threatened northern long-eared bat is found in the following habitats based on seasons, "winter – mines and caves; summer – wide variety of forested habitats." This species is not considered aquatic. However, because the Facility's projected

[20] See §7 resources for NOAA Fisheries at https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper.
[21] See §7 resources for USFWS at https://ecos.fws.gov/ipac/.

action area in the East Branch of the Housatonic River and the town of Dalton area overlaps with the general statewide range of the northern long-eared bat, EPA prepared an Effects Determination Letter for the Crane NPDES Permit Reissuance and submitted it to USFWS. Based on the information submitted by EPA, the USFWS notified EPA by letter (January 25, 2021) that the permit reissuance is consistent with activities analyzed in the USFWS January 5, 2016, Programmatic Biological Opinion (PBO)[22]. The PBO outlines activities that are excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.). The USFWS consistency letter concluded EPA's consultation responsibilities for the Crane NPDES permitting action under ESA Section 7(a)(2) with respect to the northern long-eared bat. No further ESA section 7 consultation is required with USFWS.

At the beginning of the public comment period, EPA notified USFWS and NOAA Fisheries Protected Resources Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

No ESA consultation is required as a result of this permitting action. However, initiation of consultation is required and shall be requested by the EPA or by USFWS/NOAA Fisheries where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this analysis; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, initiation of consultation would be required.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 et seq., 1998), EPA is required to consult with the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat". *See* 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". *See* 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH. *See* 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

[22] USFWS Event Code: 05E1NE00-2021-E-03528, January 25, 2012.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Crane Facility, which discharges through Outfall 001 to the East Branch of the Housatonic River in Dalton, Massachusetts. The portion of the river receiving the discharge is river segment #MA21-02.

Based on available EFH information, including the NOAA Fisheries EFH Mapper,[23] EPA has determined that the East Branch of the Housatonic River is not covered by the EFH designation for coastal or riverine systems in the vicinity of the outfall. Therefore, consultation with NOAA Fisheries Habitat and Ecosystem Services Division under the Magnuson-Stevens Fishery Conservation and Management Act is not required.

At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

7.0 Public Comments, Hearing Requests, and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

George Papadopoulos
EPA Region 1
5 Post Office Square, Suite 100 (06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1579
Email: papadopoulos.george@epa.gov

Prior to the close of the public comment period, any person may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

[23] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/

8.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed on EPA's website or at EPA's Boston office by appointment, Monday through Friday, excluding holidays from George Papadopoulos, EPA Region 1, 5 Post Office Square, Suite-100 (06-1), Boston, MA 02109-3912, or via email to papadopoulos.george@epa.gov.

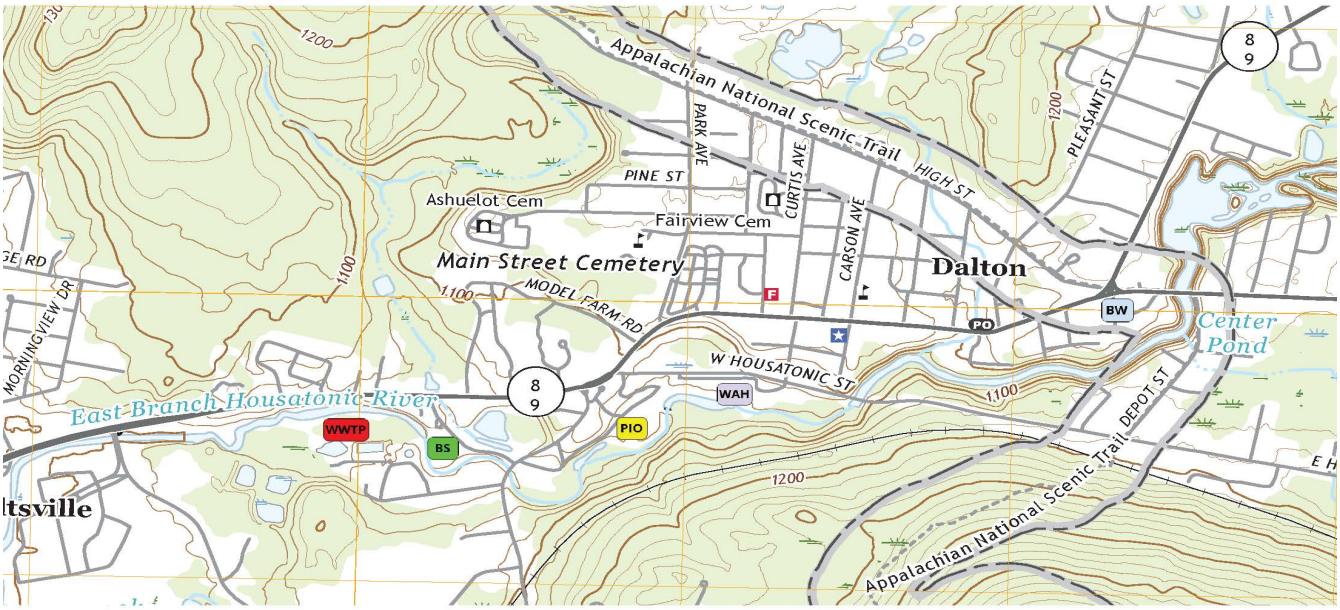
March 19, 2021

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figure 1: Location Map

Crane & Co., Inc.
Wastewater Treatment Facility - MA 0000671

Pittsfield East Massachusetts
USGS 2018



WWTP = Centralized Wastewater Treatment Plant

BS = Bay State Mill PIO = Pioneer Mill

WAH = Wahconah Mill BW = Byron Weston Mill

Figure 2: Schematic of Water Flow

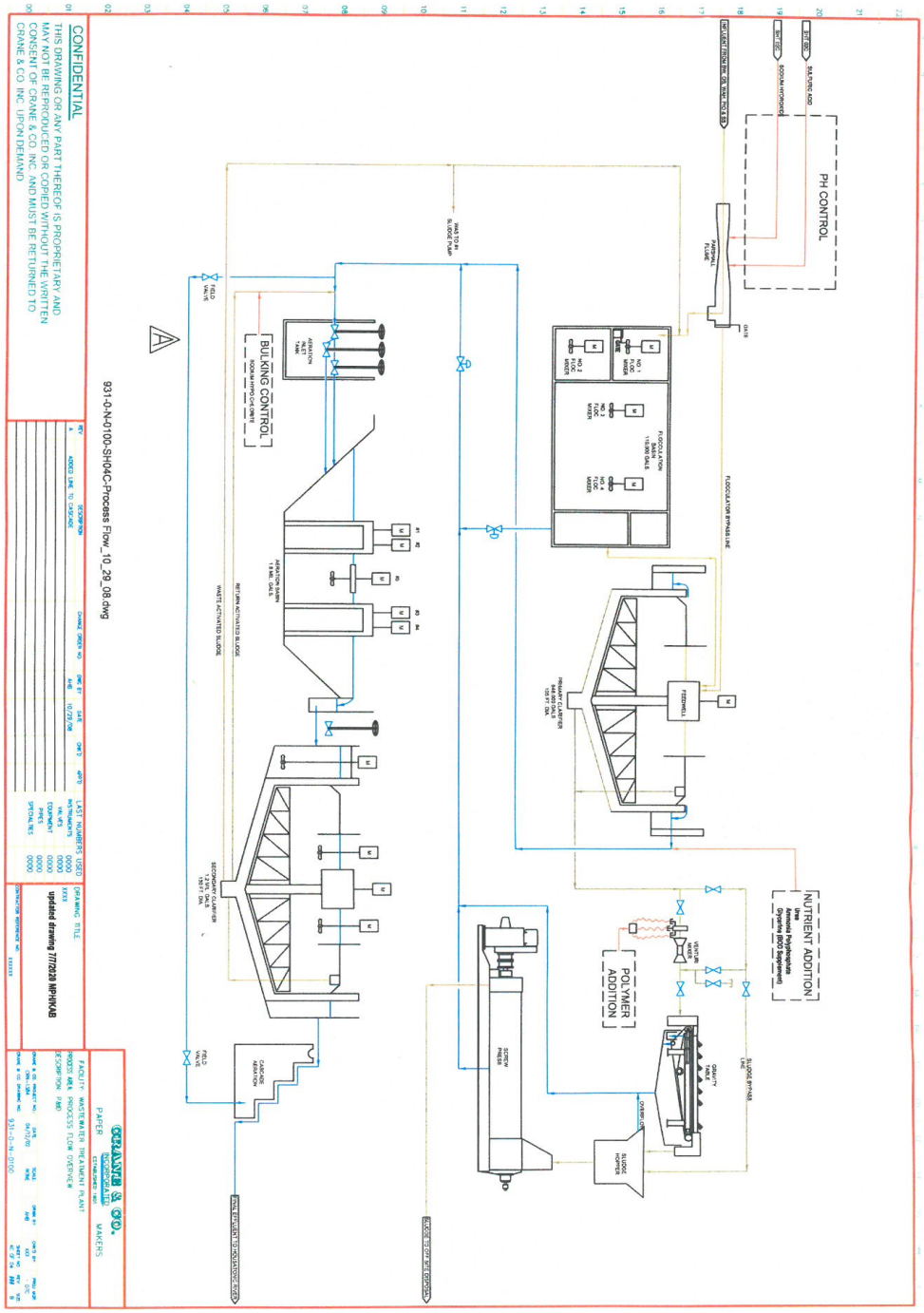
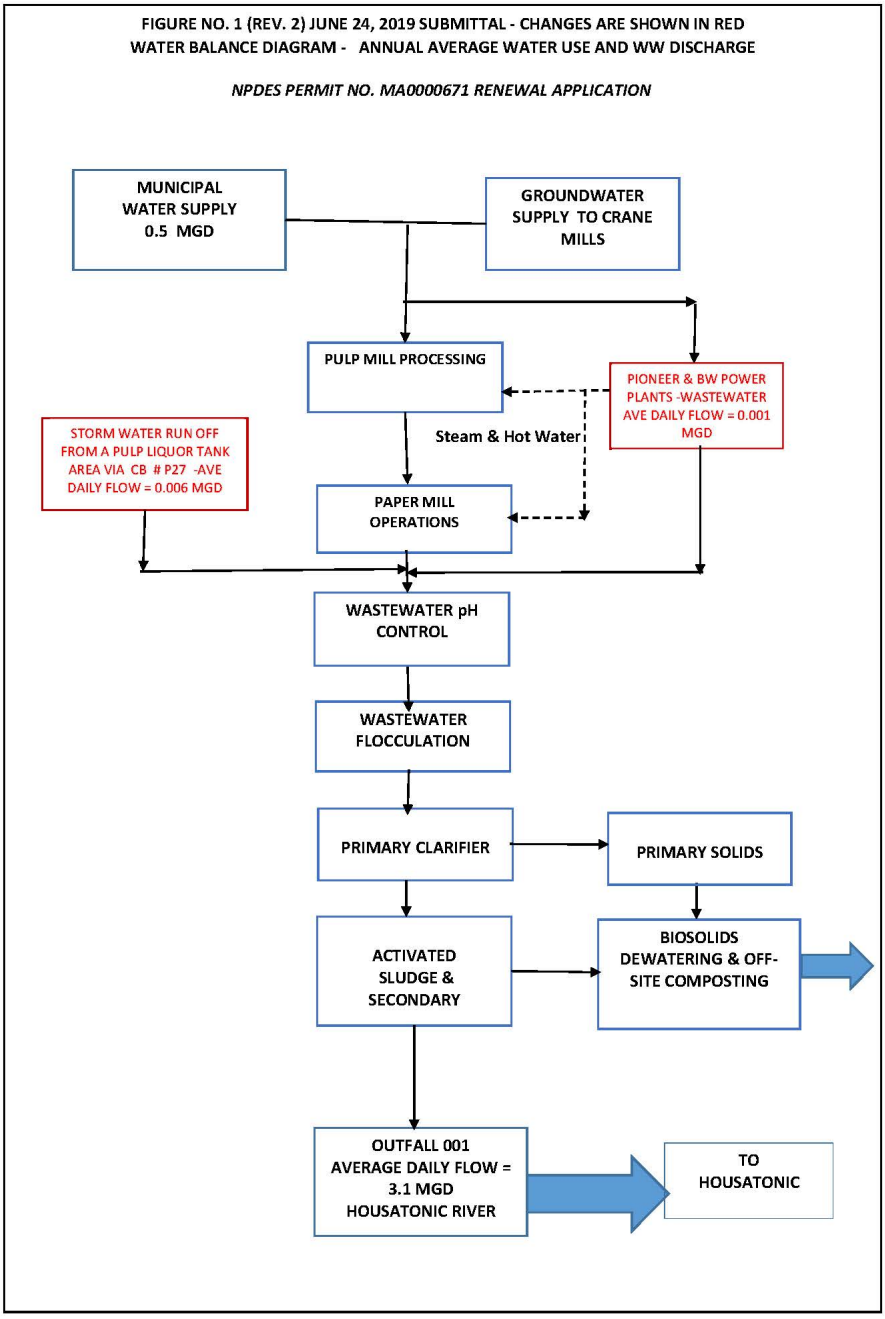


Figure 3: Water Balance Diagram



Prepared by: Woodard Curran Inc. 6/21/2019 Run Off Calcs and FIGURE 1 REV. 2 WATER

Appendix A: Discharge Monitoring Data

CRANE AND COMPANY **Outfall Serial Number 001** **Monthly Effluent Monitoring**										
Parameter	**Flow**	**Flow**	**BOD5**	**BOD5**	**BOD5**	**BOD5**	**TSS**	**TSS**	**TSS**	**TSS**
	Daily Max	**ANNL AVG**	**Monthly Avg**	**Monthly Avg**	**Daily Max**	**Daily Max**	**Monthly Avg**	**Monthly Avg**	**Daily Max**	**Daily Max**
Units	**MGD**	**MGD**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**
Effluent Limit	**Report**	**4.7**	**1200**	**600**	**1800**	**900**	**1200**	**864**	**1260**	**1800**
Minimum	**3.6**	**2.6**	**19**	**16**	**170**	**126**	**76**	**58**	**189**	**267**
Maximum	**4.9**	**3.3**	**814**	**342**	**2550**	**669**	**906**	**540**	**1236**	**2653**
Median	**4.2**	**3**	**192**	**118.5**	**342**	**273.5**	**297**	**166.5**	**374**	**582**
No. of Violations	**N/A**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**
Monitoring Period End Date										
12/31/2015	4.1	3	213		460		156			318
1/31/2016	3.7	3	346		787		228			424
2/29/2016	4.2	3	169		298		133			267
3/31/2016	4.3	2.9	162		342		107			269
4/30/2016	4.1	2.9	217		285		76			330
5/31/2016	4.8	2.9		342		561		431	1236	
6/30/2016	4.2	2.9		114		156		68	388	
7/31/2016	4.9	3		115		173		72	292	
8/31/2016	4.8	3		111		184		58	222	
9/30/2016	4.5	3		134		225		143	676	

10/31/2016	4.5	3		120		215		145	360	
11/30/2016	4.8	3.1	315		781		336			820
12/31/2016	4.7	3.2	156		291		351			797
1/31/2017	4.8	3.2	373		1049		295			425
2/28/2017	4.1	3.2	814		**2550**		906			**2653**
3/31/2017	4	3.2	335		**1813**		490			1714
4/30/2017	4.9	3.3	181		323		365			754
5/31/2017	4.2	3.3		165		461		244	527	
6/30/2017	4.6	3.3		191		456		222	421	
7/31/2017	4.8	3.3		138		195		360	639	
8/31/2017	4.5	3.3		91		151		178	306	
9/30/2017	4.4	3.3		178		425		302	542	
10/31/2017	3.9	3.3		196		387		238	432	
11/30/2017	4.1	3.2	156		288		355			658
12/31/2017	4.2	3.2	192		430		288			597
1/31/2018	4.8	3.2	184		337		404			820
2/28/2018	4.4	3.2	178		253		490			1116
3/31/2018	4.8	3.2	323		607		597			1322
4/30/2018	4.6	3.2	300		447		579			1244
5/31/2018	4.3	3.2		286		618		540	1063	
6/30/2018	4.3	3.2		210		496		246	661	
7/31/2018	4.4	3.2		151		604		137	262	
8/31/2018	4.2	3.1		117		349		151	203	
9/30/2018	4.1	3.1		93		212		127	243	
10/31/2018	4.3	3.1		128		176		280	442	
11/30/2018	3.9	3.1	135		342		285			502
12/31/2018	4.2	3.1	146		263		297			562
1/31/2019	4.3	3.1	197		421		289			582
2/28/2019	4.2	3	308		1005		323			719

3/31/2019	4.3	3	275		411		528			915
4/30/2019	4.6	3	202		315		287			469
5/31/2019	4.1	3		174		290		194	391	
6/30/2019	4.2	3		93		257		170	334	
7/31/2019	3.7	3		84		374		136	305	
8/31/2019	4.2	2.8		153		669		99	293	
9/30/2019	3.6	2.8		16		126		126	248	
10/31/2019	4.3	2.8		220		425		257	421	
11/30/2019	4.4	2.8	106		252		192			351
12/31/2019	4	2.8	130		191		214			518
1/31/2020	3.6	2.7	109		257		231			488
2/29/2020	3.9	2.7	230		390		453			805
3/31/2020	3.9	2.6	167		365		331			507
4/30/2020	3.6	2.6	19		170		157			274
5/31/2020	4.4	2.6		20		163		135	212	
6/30/2020	4.4	2.6		94		330		211	314	
7/31/2020	4	2.6		31		136		105	189	
8/31/2020	4	2.7		36		292		163	400	
9/30/2020	4.2	2.7		16		157		139	303	
10/31/2020	3.9	2.7		59		174		205	397	

Notes:

0 = parameter not detected
NA = not applicable

CRANE AND COMPANY **Outfall Serial Number 001** **Monthly Effluent Monitoring – Continued**									
Parameter	**pH**	**pH**	**TRC**	**TRC**	**DO**	**Ammonia**	**Ammonia**	**Ammonia**	**Ammonia**
	Minimum	**Maximum**	**Monthly Avg**	**Daily Max**	**Daily Min**	**Monthly Avg**	**Monthly Avg**	**Daily Max**	**Daily Max**
Units	**SU**	**SU**	**ug/L**	**ug/L**	**mg/L**	**lb/d**	**mg/L**	**lb/d**	**mg/L**
Effluent Limit	**6**	**9**	**22**	**34**	**5**	**Report**	**Report**	**Report**	**Report**
Minimum	**6.4**	**7.6**	**0**	**0**	**5**	**1**	**0**	**6**	**0.2**
Maximum	**7.9**	**8.3**	**7**	**8**	**9**	**84**	**2.7**	**519**	**16**
Median	**7.7**	**7.9**	**2**	**3**	**7**	**20**	**0.7**	**51**	**1.9**
No. of Violations	**0**	**0**	**0**	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**
Monitoring Period End Date									
12/31/2015	7.7	7.9	3	6	6	17	0.6	36	1.3
1/31/2016	7.8	7.9	1	2	6	33	1.2	73	2.5
2/29/2016	7.6	7.8	2	3	6	15	0.6	28	1.1
3/31/2016	7.6	8.1	3	3	6	9	0.3	20	0.6
4/30/2016	7.7	7.9	4	6	6	12	0.4	35	1.1
5/31/2016	7.7	8	3	5	6	9	0.2	24	0.7
6/30/2016	7.6	7.9	2	4	6	23	0.9	101	4
7/31/2016	7.6	7.9	5	5	6	23	0.9	67	2.9
8/31/2016	7.6	7.8	1	2	5	12	0.3	34	0.9
9/30/2016	7.6	7.7	4	5	6	84	2.7	519	16
10/31/2016	7.6	7.7	4	7	6	6	0.2	36	1.2
11/30/2016	7.6	7.8	6	6	6	6	0.2	33	1
12/31/2016	7.6	7.9	2	4	6	11	0.6	35	2.6

1/31/2017	7.5	7.8	1	1	6	15	0.5	70	2.7
2/28/2017	7.5	7.6	3	3	6	13	0.5	73	2.8
3/31/2017	6.4	8	7	8	7	26	1.2	67	2.8
4/30/2017	7.9	7.9	3	3	7	20	0.6	58	1.8
5/31/2017	7.8	7.9	0	0	7	53	1.9	116	4.1
6/30/2017	7.4	7.9	2	3	7	27	0.9	89	3
7/31/2017	7.7	7.9	3	5	7	35	1.4	95	5.5
8/31/2017	7.7	7.8	5	6	6	10	0.3	47	1.5
9/30/2017	7.7	7.8	2	3	6	9	0.3	41	1.7
10/31/2017	7.6	7.8	4	4	7	15	0.5	68	2.2
11/30/2017	7.7	7.8	4	4	6	15	0.5	43	1.5
12/31/2017	7.7	7.7	2	3	6	7	0.2	33	1
1/31/2018	7.6	7.8	2	2	7	23	0.7	64	1.7
2/28/2018	7.6	7.8	2	3	7	8	0.2	41	1.2
3/31/2018	7.6	7.9	3	3	8	1	0	6	0.2
4/30/2018	7.7	7.8	0	0	7	7	0.2	43	1.3
5/31/2018	7.7	7.9	0	0	7	42	1.4	67	2.5
6/30/2018	7.8	8	6	6	6	63	1.9	159	4.5
7/31/2018	7.8	8.1	1	2	7	16	1.1	51	4.3
8/31/2018	7.8	8	0	0	6	33	1.1	60	2
9/30/2018	7.9	8	0	0	6	39	1.4	123	4.2
10/31/2018	7.7	7.9	1	2	6	22	0.7	71	2.4
11/30/2018	7.7	7.8	0	0	7	24	1	67	2.2
12/31/2018	7.7	7.9	0	0	7	17	0.7	38	1.2
1/31/2019	7.7	7.9	0	0	7	19	0.7	13	1.3
2/28/2019	7.8	8	0	0	7	38	1.3	62	2
3/31/2019	7.7	7.8	5	8	7	58	1.8	118	3.5
4/30/2019	7.8	7.9	0	0	7	27	0.8	51	1.6
5/31/2019	7.9	7.9	3	6	7	42	1.4	99	4

6/30/2019	7.7	8	3	6	6	36	1.5	73	3.5
7/31/2019	7.8	8	2	3	7	7	0.5	35	2.7
8/31/2019	7.8	8.1	4	7	7	9	0.3	26	0.9
9/30/2019	7.9	8.1	0	0	8	16	0.6	51	1.9
10/31/2019	7.9	8.3	0	0	7	28	0.9	57	1.7
11/30/2019	7.8	7.9	0	0	7	19	0.6	43	1.3
12/31/2019	7.7	8	1	1	7	22	1	36	1.9
1/31/2020	7.8	7.9	2	2	9	21	0.9	67	2.7
2/29/2020	7.6	8	0	0	7	9	0.3	32	1.1
3/31/2020	7.8	7.9	0	0	7	20	0.7	43	1.5
4/30/2020	7.8	7.9	1	2	8	20	0.8	43	1.8
5/31/2020	7.8	7.9	2	3	8	19	0.7	39	1.2
6/30/2020	7.7	7.9	2	4	6	39	1.3	106	3.1
7/31/2020	7.8	7.9	0	0	7	20	1.2	59	2.7
8/31/2020	7.7	7.9	0	0	6	12	0.5	45	1.7
9/30/2020	7.7	7.9	3	5	6	25	0.8	49	1.7
10/31/2020	7.8	8.3	3	4	7	29	1	60	2

CRANE AND COMPANY
Outfall Serial Number 001
Monthly Effluent Monitoring – Continued

Parameter	TKN	TKN	TKN	TKN	TN	TN	Nitrite+Nitrate	Nitrite+Nitrate	Nitrite+Nitrate	Nitrite+Nitrate
	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Monthly Avg	Daily Max	Monthly Avg	Monthly Avg	Daily Max	Daily Max
Units	lb/d	mg/L	lb/d	mg/L	lb/d	lb/d	lb/d	mg/L	lb/d	mg/L
Effluent Limit	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report
Minimum	**56**	**2.4**	**88**	**2.9**	**63**	**90**	**0**	**0.01**	**2**	**0.06**
Maximum	**191**	**6.2**	**312**	**9.3**	**196**	**312**	**46**	**2.07**	**148**	**5.2**
Median	**98**	**3.3**	**151**	**4.9**	**115**	**175**	**8**	**0.27**	**18**	**0.6**
No. of Violations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Monitoring Period End Date										
12/31/2015	103	3.5	190	5.8	138	209	36	1.31	86	2.7
1/31/2016	138	4.9	221	7.3	155	238	17	0.61	33	1.2
2/29/2016	96	3.5	130	4.7	141	217	46	1.62	110	3.7
3/31/2016	88	2.9	195	5.6	121	203	33	1.19	61	2.5
4/30/2016	90	3	125	3.7	102	131	11	0.39	35	1.1
5/31/2016	137	3.9	172	4.6	147	201	10	0.27	32	0.87
6/30/2016	91	3.3	157	6.2	97	159	6	0.21	28	0.99
7/31/2016	78	2.7	115	3.7	82	116	4	0.18	16	0.7
8/31/2016	92	2.7	123	3.4	93	123	1	0.04	7	0.17
9/30/2016	88	2.9	258	8.4	90	261	2	0.07	4	0.12
10/31/2016	75	2.4	104	2.9	76	107	2	0.05	8	0.27
11/30/2016	102	3	164	4.4	104	164	2	0.05	8	0.22
12/31/2016	83	2.8	130	3.3	85	130	1	0.08	4	0.33

1/31/2017	95	3	127	3.9	97	128	2	0.07	11	0.43
2/28/2017	143	4.7	303	8.8	143	303	0	0.02	2	0.09
3/31/2017	103	4.2	297	9	107	297	4	0.18	8	0.38
4/30/2017	108	3.1	141	4	113	146	6	0.16	14	0.35
5/31/2017	127	4.4	181	5.7	135	185	8	0.27	15	0.48
6/30/2017	105	3.3	146	4.9	111	155	6	0.18	10	0.32
7/31/2017	101	3.4	140	6	111	149	9	0.32	28	0.89
8/31/2017	83	2.5	133	3.7	90	137	8	0.24	20	0.56
9/30/2017	78	2.6	110	4.4	118	175	40	1.39	70	2.9
10/31/2017	90	3.1	132	4.3	133	170	43	1.49	77	2.5
11/30/2017	81	2.9	131	4.6	116	178	35	1.45	95	4.1
12/31/2017	76	2.5	178	5.2	122	220	46	1.69	148	5.2
1/31/2018	116	3.3	174	4.9	138	197	22	0.65	38	1.2
2/28/2018	92	2.7	116	3.3	97	116	6	0.16	12	0.36
3/31/2018	82	2.4	132	3.7	82	132	0	0.01	2	0.06
4/30/2018	112	3.2	146	3.9	115	146	3	0.09	11	0.35
5/31/2018	119	3.9	174	5.9	128	177	9	0.3	16	0.58
6/30/2018	161	4.8	233	6.6	164	236	3	0.08	6	0.2
7/31/2018	56	2.6	88	4.8	63	90	7	0.34	18	0.98
8/31/2018	96	3	117	3.5	101	117	5	0.17	13	0.36
9/30/2018	94	3.3	151	5	81	159	6	0.27	18	1.1
10/31/2018	108	3.4	217	7.1	111	229	3	0.11	13	0.41
11/30/2018	113	4	192	6.3	117	192	4	0.14	20	0.66
12/31/2018	79	2.7	108	3.4	86	118	8	0.31	17	0.57
1/31/2019	121	4	189	5.4	129	191	8	0.29	18	0.6
2/28/2019	191	6.2	312	9.3	196	312	5	0.22	10	0.54
3/31/2019	189	5.7	275	8.7	194	280	5	0.15	13	0.4
4/30/2019	152	4.7	203	6.4	166	221	14	0.44	29	0.88
5/31/2019	164	5.3	227	6.9	180	245	17	0.54	23	0.7

6/30/2019	138	4.9	194	6.4	147	198	9	0.33	15	0.58
7/31/2019	69	3	133	4.5	107	209	37	1.75	75	2.56
8/31/2019	84	3.2	178	6.4	126	226	42	2.07	66	3.14
9/30/2019	64	2.5	126	4.3	97	140	33	1.34	55	1.96
10/31/2019	159	5	191	5.6	168	222	9	0.3	30	0.89
11/30/2019	140	4.6	229	7.8	152	242	12	0.39	20	0.6
12/31/2019	91	3.6	149	4.5	102	162	11	0.45	21	0.69
1/31/2020	83	3.4	119	5.3	94	129	11	0.47	19	0.68
2/29/2020	146	5	240	7.4	152	245	6	0.22	14	0.5
3/31/2020	106	4	127	4.7	113	133	7	0.27	15	0.55
4/30/2020	79	3	133	4.7	82	133	3	0.14	10	0.4
5/31/2020	73	2.5	109	3.7	78	120	5	0.17	12	0.39
6/30/2020	114	3.7	182	5.3	120	182	5	0.19	18	0.52
7/31/2020	67	3	106	4.3	88	127	21	0.89	56	1.85
8/31/2020	98	3.6	143	5.6	117	147	19	0.65	52	1.76
9/30/2020	117	3.8	157	4.5	137	172	20	0.67	35	1.12
10/31/2020	137	4.6	173	5.9	146	182	9	0.3	22	0.72

CRANE AND COMPANY **Outfall Serial Number 001** **Monthly Effluent Monitoring – Continued**									
Parameter	**TP**	**TP**	**TP**	**Copper**	**Copper**	**Aluminum, total (as Al)**	**Aluminum, total (as Al)**	**Color (PT-CO units)**	**Color (PT-CO units)**
	Monthly Avg	**Monthly Avg**	**Daily Max**	**Monthly Avg**	**Daily Max**	**Monthly Avg**	**Daily Max**	**Monthly Avg**	**Daily Max**
Units	**mg/L**	**mg/L**	**mg/L**	**ug/L**	**ug/L**	**mg/L**	**mg/L**	**col unit (pc)**	**col unit (pc)**
Effluent Limit	**0.2**	**1**	**Report**	**16**	**21**	**0.17**	**1.35**	**Report**	**Report**
Minimum	**0.03**	**0.05**	**0.05**	**0**	**0**	**0**	**0**	**71**	**108**
Maximum	**0.2**	**0.34**	**1.6**	**14.7**	**44**	**0.25**	**0.45**	**770**	**1739**
Median	**0.07**	**0.09**	**0.15**	**3**	**3**	**0**	**0**	**184**	**317**
No. of Violations	**0**	**0**	**N/A**	**0**	**1**	**1**	**0**	**N/A**	**N/A**
Monitoring Period End Date									
12/31/2015		0.06	0.15	3.4	3.4	0	0	166	522
1/31/2016		0.09	0.22	7.2	7.2	0.13	0.13	220	317
2/29/2016		0.09	0.35	5.8	5.8	0	0	148	275
3/31/2016		0.06	0.09	4.2	4.2	0.14	0.14	126	159
4/30/2016		0.06	0.11	4.5	4.5	0	0	179	381
5/31/2016	0.2		1.6	5.2	5.2	0.1	0.1	280	453
6/30/2016	0.07		0.22	3.2	3.2	0.12	0.12	123	191
7/31/2016	0.05		0.06	0	0	0	0	152	238
8/31/2016	0.04		0.09	0	0	0	0	160	267
9/30/2016	0.04		0.05	3.3	3.3	0	0	183	296
10/31/2016	0.03		0.09	2.5	2.5	0.1	0.1	141	179
11/30/2016		0.11	0.22	0	0	0.11	0.11	205	567

12/31/2016		0.09	0.19	4	4	0.11	0.11	215	324
1/31/2017		0.14	0.27	4.9	4.9	0	0	232	348
2/28/2017		0.34	0.65	0	0	0.08	0.08	770	1739
3/31/2017		0.27	0.55	11	11	0.1	0.1	304	697
4/30/2017		0.23	0.36	0	0	0.1	0.1	128	170
5/31/2017	0.12		0.19	2.3	2.3	0	0	192	313
6/30/2017	0.07		0.11	2.4	2.4	0	0	184	317
7/31/2017	0.2		0.73	3.4	3.4	0.12	0.23	239	379
8/31/2017	0.09		0.14	3.7	3.7	0	0	239	428
9/30/2017	0.13		0.2	2.4	2.6	**0.25**	0.45	161	281
10/31/2017	0.13		0.26	3	3	0.07	0.07	202	435
11/30/2017		0.14	0.28	3.8	3.8	0	0	251	364
12/31/2017		0.15	0.33	3.7	3.7	0.17	0.25	252	341
1/31/2018		0.15	0.22	3.4	3.4	0.16	0.26	253	370
2/28/2018		0.16	0.24	8.1	8.1	0.07	0.07	295	396
3/31/2018		0.15	0.25	3.8	3.8	0.08	0.08	181	295
4/30/2018		0.22	0.84	4.5	4.5	0.07	0.07	271	585
5/31/2018	0.08		0.16	4.4	4.4	0.06	0.06	173	255
6/30/2018	0.05		0.08	6.8	6.8	0.09	0.18	261	525
7/31/2018	0.09		0.32	1.6	1.6	0	0	71	108
8/31/2018	0.05		0.1	4.5	4.5	0.07	0.07	178	342
9/30/2018	0.04		0.07	3	3	0	0	237	490
10/31/2018	0.06		0.14	4.4	4.4	0	0	207	299
11/30/2018		0.09	0.2	5.4	5.4	0	0	372	491
12/31/2018		0.07	0.11	6	6	0	0	124	168
1/31/2019		0.07	0.15	5.2	5.2	0	0	197	346
2/28/2019		0.07	0.16	0	0	0	0	302	480
3/31/2019		0.11	0.17	5.8	5.8	0	0	292	382
4/30/2019		0.09	0.14	4.6	4.6	0	0	243	460

5/31/2019	0.07		0.11	0	0	0	0	114	172
6/30/2019	0.07		0.12	0	0	0	0	105	145
7/31/2019	0.11		0.42	0	0	0.09	0.09	126	376
8/31/2019	0.04		0.14	0	0	0	0	132	367
9/30/2019	0.05		0.12	0	0	0	0	71	137
10/31/2019	0.08		0.15	0	0	0	0	161	293
11/30/2019		0.05	0.1	0	0	0.05	0.05	181	306
12/31/2019		0.07	0.12	0	0	0	0	120	203
1/31/2020		0.07	0.13	0	0	0	0	126	149
2/29/2020		0.09	0.15	14.7	**44**	0	0	183	232
3/31/2020		0.09	0.14	0	0	0	0	199	281
4/30/2020		0.09	0.14	0	0	0	0	220	436
5/31/2020	0.08		0.12	0	0	0	0	126	199
6/30/2020	0.09		0.18	0	0	0	0	258	348
7/31/2020	0.1		0.56	0	0	0	0	88	135
8/31/2020	0.06		0.1	0	0	0	0	249	336
9/30/2020	0.08		0.13	0	0	0	0	148	293
10/31/2020	0.07		0.11	0	0	0	0	190	309

CRANE AND COMPANY **Outfall Serial Number 001** **Quarterly WET Testing**						
Parameter	**LC50 Acute Ceriodaphnia**	**Noel Static 7Day Chronic Ceriodaphnia**	**LC50 Acute Pimephales**	**Noel Static 7Day Chronic Pimephales**	**Hardness**	
					Effluent	**Ambient**
	Daily Min	**Daily Min**	**Daily Min**	**Daily Min**		
Units	**%**	**%**	**%**	**%**	**mg/L $CaCO_3$**	**mg/L $CaCO_3$**
Effluent Limit	**100**	**50**	**100**	**50**	**N/A**	**N/A**
Minimum	**100**	**25**	**100**	**100**	**176**	**33**
Maximum	**100**	**100**	**100**	**100**	**242**	**178**
Median	**100**	**100**	**100**	**100**	**191**	**73**
No. of Violations	**0**	**1**	**0**	**0**	**N/A**	**N/A**
Monitoring Period End Date						
1/31/2016			≥100	100	191	36
4/30/2016	≥100	100			185	56
7/31/2016			≥100	100	176	123
10/31/2016	≥100	100			242	178
1/31/2017			≥100	100	208	81.5
4/30/2017	≥100	50			184	33
7/31/2017			≥100	100	201	71
10/31/2017	≥100	50			204	138
1/31/2018			≥100	100	189	108

4/30/2018	≥100	100				
7/31/2018			≥100	100	194	135
10/31/2018	≥100	100			187	66
1/31/2019			≥100	100	181	52.5
4/30/2019	≥100	100			178	45
7/31/2019			≥100	100	201	111
10/31/2019	≥100	100			221	73
1/31/2020			≥100	100	190	54
4/30/2020	≥100	100			202	54
7/31/2020			≥100	100	216	135
10/31/2020	≥100	25			181	153
10/31/2020*	≥ 100	100			----	----

* retesting conducted due to test failure

Appendix B: Reasonable Potential Analysis

Methodology

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of the *Technical Support Document for Water Quality-based Toxics Control* (TSD)[1] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory minimum levels). EPA used this methodology to calculate the 95th percentile.

EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$Q_s C_s + Q_e C_e = Q_d C_d$$

Where:

C_d = downstream concentration
C_s = upstream concentration (median value of available ambient data)
C_e = effluent concentration (95th percentile of effluent concentrations)
Q_s = upstream flow (7Q10 flow upstream of the outfall)
Q_e = effluent flow of the Facility (permitted maximum daily flow)
Q_d = downstream flow (Q_s + Q_e)

Solving for the receiving water concentration downstream of the discharge (C_d) yields:

[1] USEPA, *Technical Support Document for Water Quality-Based Toxics Control*, Office of Water, Washington, D.C., March 1991.

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

EPA uses the calculated upper bound of the effluent data and a concentration representative of the parameter in the receiving water outside of the zone of influence of the discharge to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$C_s(DF - 1) + C_e = C_d(DF)$$

Where:

C_d = downstream concentration
C_e = effluent concentration (95th percentile of effluent concentrations)
DF = dilution factor (See Available Dilution section of the Fact Sheet)

Solving for the receiving water concentration downstream of the discharge (C_d) yields:

$$C_d = \frac{C_s(DF - 1) + C_e}{DF}$$

When the downstream concentration exceeds the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above WQSs. *See* 40 CFR § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. The limitation is calculated by rearranging the above mass balance equation to solve for the effluent concentration using the applicable criterion as the downstream concentration. *See* 40 CFR § 122.44(d)(1)(iii).

Determination of Applicable Criteria

State water quality criteria are derived from EPA's *National Recommended Water Quality Criteria: 2002*, which are incorporated into the state WQSs by reference at 314 CMR 4.05(5).

Freshwater aquatic life criteria for total metals (aluminum, cadmium, copper, lead, nickel, and zinc) are established in terms of dissolved metals and are converted to total recoverable using published conversion factors. Additionally, the criteria for cadmium, copper, lead, nickel and zinc are hardness-dependent. EPA calculated hardness-dependent chronic and acute criteria for metals detected in the effluent using a flow-weighted average of the downstream hardness determined using the hardness values measured in the Facility's discharge and receiving water from WET testing (149 mg/L), see Appendix A. The applicable criteria are summarized in the table below.

Summary of Applicable Criteria

Parameter	Applicable Criteria[1,2]	
	Acute Criteria (CMC)	Chronic Criteria (CCC)
Units	**µg/L**	**µg/L**
Aluminum	750	87
Cadmium	3.2	0.4
Copper	20.3	13.1
Lead	135.2	5.3
Nickel	656.1	72.9
Zinc	167.6	167.6
Ammonia (warm)[3]	19.9	2.2
Ammonia (cold)[3]	19.9	7.1

[1] For hardness-dependent criteria, see *National Recommended Water Quality Criteria, Appendix B - Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent*: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm

[2] For dissolved to total recoverable metal conversion, see *Appendix A - Conversion Factors for Dissolved Metals:* http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#appendxa; Required by 314 CMR 4.05(5)(e).

[3] Ammonia data was divided between warm weather months (April – October) and cold weather months (November – March). Ammonia criteria are calculated based on the temperature and pH of the receiving water. A temperature of 25°C was assumed for calculating warm weather criteria and a temperature of 5°C for cold weather criteria. A receiving water pH of 7.5 S.U. was calculated based on pH data from quarterly WET tests.

Calculation of Reasonable Potential

EPA first calculated the upper bound of expected effluent concentrations for each parameter. EPA then used the calculated upper bound of expected effluent concentrations, the median value of the available ambient data, the permitted daily maximum effluent flow and the upstream 7Q10 flow to project the in-stream concentration downstream from the discharge. When this resultant in-stream concentration (C) exceeds the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above water quality standards. The results are summarized in the table below.

Summary of Reasonable Potential Results

Parameter	Ambient Concentration[1]	Effluent Concentration[2]	Downstream Acute Concentration[3]	Downstream Chronic Concentration[3]	Acute Criterion	Chronic Criterion	Acute Reasonable Potential[4]	Chronic Reasonable Potential[4]
Units	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**—**	**—**
Aluminum	43	1350	880.8	117.7	750	87	N/A	N/A
Cadmium	0	0.1	0.1	0.1	3.2	0.4	N	N
Copper	0	21	13.5	9.4	20.3	13.1	N/A	N/A
Lead	0	1.0	0.6	0.6	135.2	5.3	N	N
Nickel	0	1.9	1.2	1.1	656.1	72.9	N	N
Zinc	1.5	9.3	6.5	6.1	167.6	167.6	N	N
Ammonia (cold)	0.07	1.8	1.2	1.1	19.9	7.1	N	N
Ammonia (warm)	0.025	2.3	1.5	1.4	19.9	2.2	N	N

[1] Values represent the median receiving water concentration from Whole Effluent Toxicity testing. For cadmium through nickel, the value of "0" represents a median value of non-detect.
[2] Values represent the 95th percentile concentration calculated using the monitoring data reported by the Facility (*See* Appendix A).
[3] Values are calculated as described above, using the maximum daily flow of 5 MGD for acute criteria and monthly average flow limitation of 4 MGD for chronic criteria.
[4] 'Y' indicates there is a reasonable potential, 'N' indicates there is no reasonable potential.

Because regulations at 40 CFR § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals, effluent limitations are expressed as total recoverable metals. *See* EPA-823-B96-007, *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion:*1996.

Calculation of Effluent Limitations

There were no parameters for which reasonable potential were determined. However, the analysis confirmed that the chronic and acute total copper limits and acute aluminum limit were to be maintained and the chronic aluminum limit was required to be made more stringent. The effluent limits results are summarized in the table below.

Summary of Effluent Limitations

Parameter	Acute Criterion	Chronic Criterion	Daily Max Effluent Limitation	Monthly Avg Effluent Limitation
Units	**µg/L**	**µg/L**	**mg/L**	**mg/L**
Copper	20.3	13.1	0.021	0.016
Aluminum	750	87	0.118	1.15

Appendix C: Whole Effluent Toxicity Reasonable Potential Analysis

Acute Toxicity Reasonable Potential Analysis

The dilution factor determined for the Facility is 1.7, equivalent to approximately 59% effluent at the edge of the mixing zone. For discharges with dilution less than 10, For a facility having a dilution factor less than 10, EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) the C-NOEC effluent limit should be greater than or equal to the receiving water concentration and the LC_{50} limit should be greater than or equal to 100%. Both EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) and the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) recommended criterion to prevent acutely toxic effects is 1.0 T.U. To determine whether discharges from the Facility have reasonable potential to cause or contribute to an excursion above this level of toxicity, EPA converted the LC50 results for the Facility to toxic units, defined as 100 divided by the LC50C, as shown below.

Monitoring Period End Date	LC50 Static 48Hr Acute	Toxic Units Equivalent
	%	T.U.
1/31/2016	100	1
4/30/2016	100	1
7/31/2016	100	1
10/31/2016	100	1
1/31/2017	100	1
4/30/2017	100	1
7/31/2017	100	1
10/31/2017	100	1
1/31/2018	100	1

4/30/2018	100	1
7/31/2018	100	1
10/31/2018	100	1
1/31/2019	100	1
4/30/2019	100	1
7/31/2019	100	1
10/31/2019	100	1
1/31/2020	100	1
4/30/2020	100	1
7/31/2020	100	1
10/31/2020	100	1
10/31/2020	100	1

Using the toxic unit equivalents calculated above, EPA then determined the 95th percentile projected effluent concentration following the methodology described in the *Technical Support Document* above. Based on a dataset where n>10, the 95th percentile was calculated as 1.0 toxic units, or a **LC_{50} of 100 %**. The projected downstream toxicity was calculated as **0.59 toxic units**, determined by multiplying the 95th percentile projected effluent concentration by the percent effluent at the edge of the mixing zone (or dividing the 95th percentile by the dilution factor, i.e., 1.0 T.U. / 1.7 = 0.59 T.U.).

The estimated downstream toxicity does not exceed the in-stream criterion of 1.0 T.U. Therefore, discharges from the Facility do not have a reasonable potential to cause or contribute to an excursion above State WQSs; however, since the dilution factor is less than 10 an acute toxicity of 1.0 T.U. or a LC_{50} of 100% is required and is continued from the 2012 permit.

In addition, using the methodology employed for POTWs in Massachusetts, EPA compared the measured toxicity values from the table above with the percent reciprocal of the dilution factor:

$$Toxicity\ Threshold = \frac{1}{Dilution\ Factor} * 100$$

$$Toxicity\ Threshold = \frac{1}{1.7} * 100$$

$$Toxicity\ Threshold = 59\%$$

No values fell below 59%; therefore, discharges from the Facility do not have reasonable potential to cause or contribute to an excursion above State WQSs. However, since the dilution factor is less than 10, an acute toxicity of 1.0 T.U. or a LC_{50} of 100% is required and is continued from the 2012 permit.

Chronic Toxicity Reasonable Potential Analysis

The dilution factor determined for the Facility is 1.7, equivalent to approximately 59% effluent at the edge of the mixing zone. For discharges with dilution less than 10, For a facility having a dilution factor less than 10, EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) the C-NOEC effluent limit should be greater than or equal to the receiving water concentration and the LC_{50} limit should be greater than or equal to 100%. Both EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) and the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) recommended criterion to prevent acutely toxic effects is 1.0 T.U. To determine whether discharges from the Facility have reasonable potential to cause or contribute to an excursion above this level of toxicity, EPA converted the C-NOEC results for the Facility to toxic units, defined as 100 divided by the C-NOEC, as shown below.

Monitoring Period End Date	Noel Static 7 Day Chronic Ceriodaphnia	Toxic Units Equivalent
	%	T.U.
1/31/2016	100	1
4/30/2016	100	1
7/31/2016	100	1
10/31/2016	100	1
1/31/2017	100	1
4/30/2017	50	2
7/31/2017	100	1

10/31/2017	50	2
1/31/2018	100	1
4/30/2018	100	1
7/31/2018	100	1
10/31/2018	100	1
1/31/2019	100	1
4/30/2019	100	1
7/31/2019	100	1
10/31/2019	100	1
1/31/2020	100	1
4/30/2020	100	1
7/31/2020	100	1
10/31/2020	25	4
10/31/2020	100	1

Using the toxic unit equivalents calculated above, EPA then determined the 95th percentile projected effluent concentration following the methodology described in the *Technical Support Document* above. Based on a dataset where n>10, the 95th percentile was calculated as 2.05 toxic units, or a **C-NOEC of 48.8%**. The projected downstream toxicity was calculated as **1.21 toxic units**, determined by multiplying the 95th percentile projected effluent concentration by the percent effluent at the edge of the mixing zone (or dividing the 95th percentile by the dilution factor, i.e., 2.05 T.U. / 1.7 = 1.21 T.U.).

The estimated downstream toxicity does exceed the in-stream criterion of 1.0 T.U. Therefore, discharges from the Facility does have a reasonable potential to cause or contribute to an excursion above State WQSs and a limitation for chronic toxicity of 1.0 T.U. and a C-NOEC limit is required.

In addition, using the methodology employed for POTWs in Massachusetts, EPA compared the measured toxicity values from the table above with the percent reciprocal of the dilution factor:

$$Toxicity\ Threshold = \frac{1}{Dilution\ Factor} * 100$$
$$Toxicity\ Threshold = \frac{1}{1.7} * 100$$
$$Toxicity\ Threshold = 59\%$$

Three values fell below 59%; therefore, discharges from the Facility do have a reasonable potential to cause or contribute to an excursion above State WQSs and a limitation for chronic toxicity of 1.0 T.U. Therefore, a C-NOEC limit of 59% is required, which is calculated as equal to or greater than the receiving water concentration (RWC), or 1/dilution factor as shown above.

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MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP)
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED, AND MASSDEP PUBLIC NOTICE OF EPA REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CWA.

PUBLIC NOTICE PERIOD: **March 19, 2021 – April 19, 2021**

PERMIT NUMBER: **MA0000671**

PUBLIC NOTICE NUMBER: **MA-11-21**

NAME AND MAILING ADDRESS OF APPLICANT:

Crane and Company, Inc.
30 South Street
Dalton, MA 01226

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Crane and Company, Inc.
30 South Street
Dalton, MA 01226

RECEIVING WATER AND CLASSIFICATION:

East Branch of the Housatonic River (Class B)

PREPARATION OF THE DRAFT PERMIT AND EPA REQUEST FOR CWA § 401 CERTIFICATION:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Crane and Company, Inc., which discharges wastewater from the manufacturing of banknote (United States currency) and security papers, as well as non-woven technical papers, such as those used for membrane filters of reverse osmosis systems. The effluent limits and permit conditions imposed have been drafted pursuant to, and assure compliance with, the CWA, including EPA-approved State Surface Water Quality Standards at 314 CMR 4.00. MassDEP cooperated with EPA in the development of the Draft NPDES Permit. MassDEP retains independent authority under State law to issue a separate Surface Water Discharge Permit for the discharge, not the subject of this notice, under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53.

In addition, EPA has requested that MassDEP grant or deny certification of this Draft Permit pursuant to Section 401 of the CWA and implementing regulations. Under federal regulations governing the NPDES program at 40 Code of Federal Regulations (CFR) § 124.53(e), state certification shall contain conditions that are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law, including any conditions more stringent than those in the Draft Permit that MassDEP finds necessary to meet these requirements. In addition,

MassDEP may provide a statement of the extent to which each condition of the Draft Permit can be made less stringent without violating the requirements of State law.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits or by contacting:

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EPA Region 1
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Telephone: (617) 918-1579
Email: papadopoulos.george@epa.gov

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by April 19, 2021**,** which is the close of the public comment period. Comments, including those pertaining to EPA's request for CWA § 401 certification, should be submitted to the EPA contact at the address or email listed above. Upon the close of the public comment period, EPA will make all comments available to MassDEP.

Any person, prior to the close of the public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

Due to the COVID-19 National Emergency, if comments are submitted in hard copy form, please also email a copy to the EPA contact above.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY – REGION 1

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION