

**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"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Crane and Company, Inc.

is authorized to discharge from the facility located at

**30 South Street
Dalton, MA 01226**

to the receiving water named **East Branch of the Housatonic River**, a Class B water, 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 following sixty (60) days after signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 30, 2005.

This permit consists of 10 pages in Part I including effluent limitations, monitoring requirements, and state permit conditions, Attachment A – Freshwater Chronic Toxicity Test Protocol (May 2007), and 25 pages in Part II, Standard Conditions.

Signed this 3rd day of February, 2012.

/S/SIGNATURE ON FILE

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I.A. Effluent Limitations and Monitoring Requirements

1. During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge treated papermaking wastewater from outfall serial number **001**. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>	
<u>PARAMETER</u>	<u>MONTHLY AVERAGE</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE¹ TYPE</u>
Flow	4.7 MGD ²	Report MGD	Continuous	Recorder ²
Biochemical Oxygen Demand, 5 day May 1 – October 31	600 lbs/day	900 lbs/day	2/Week	24-Hour Composite ³
Biochemical Oxygen Demand, 5 day November 1 – April 30	1200 lbs/day	1800 lbs/day	2/Week	24-Hour Composite ³
Total Suspended Solids; May 1 – Oct 31	864 lbs/day	1260 lbs/day	2/Week	24-Hour Composite ³
Total Suspended Solids; Nov 1 – Apr 30	1200 lbs/day	1800 lbs/day	2/Week	24-Hour Composite ³
pH Range	6.0 – 9.0 s.u.		1/Week	Grab
Total Residual Chlorine ⁴	22 ug/l	34 ug/l	2/Month	Grab
Dissolved Oxygen	5.0 mg/l minimum		1/Week	Grab
Color ⁵	Report pcu	Report pcu	1/Week	Grab
Aluminum, Total	0.17 mg/l	1.35 mg/l	1/Month	24-Hour Composite ³
Copper, Total	16 ug/l	21 ug/l	1/Month	24-Hour Composite ³

Footnotes are listed on Pages 3, 4 and 5

<u>EFFLUENT CHARACTERISTIC</u>	<u>EFFLUENT LIMITS</u>		<u>MONITORING REQUIREMENTS</u>	
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE¹ TYPE</u>
Total Phosphorus ⁶ ; May 1 – Oct 31	0.2 mg/l	Report mg/l	2/Week	24-Hour Composite ³
Total Phosphorus ⁶ ; Nov 1 – Apr 30	1.0 mg/l	Report mg/l	2/Week	24-Hour Composite ³
Nitrite and Nitrate Nitrogen ⁶	Report mg/l & lbs/day	Report mg/l & lbs/day	2/Week	24-Hour Composite ³
Total Kjeldahl Nitrogen ⁶	Report mg/l & lbs/day	Report mg/l & lbs/day	2/Week	24-Hour Composite ³
Total Ammonia Nitrogen ⁶	Report mg/l & lbs/day	Report mg/l & lbs/day	2/Week	24-Hour Composite ³
Total Nitrogen ⁶	Report lbs/day	Report lbs/day	2/Week	Calculated
Whole Effluent Toxicity Testing ^{7,8,9}	LC ₅₀ ≥ 100% ; C-NOEC ≥ 50%		4/Year	24-Hour Composite ³

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The pH of the effluent shall be in the range of 6.0 to 9.0 standard units and not more than 0.5 s.u. outside of the naturally occurring range.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The results of sampling for any parameter above its required frequency must also be reported.

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be taken at Outfall 001 prior to mixing with any other stream. A routine sampling program shall be developed in which samples are taken at the same location, approximately the same time, and the same days of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report (DMR) that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.
2. For flow, report maximum and minimum daily rates and total flow for each operating date and attach this data to each DMR form. The 4.7 MGD flow limit is an annual average limit, which shall be reported as a twelve (12) month rolling average. The value will be calculated as the arithmetic mean of the monthly average effluent flow for the reporting month and the monthly average effluent flows of the previous eleven months.

Part I.A.1. Footnotes, continued

3. Composite samples shall be comprised of at least 24 flow-weighted individual samples taken throughout one full operational day (e.g. 0700 Monday to 0700 Tuesday).
4. The minimum level (ML) for Total Residual Chlorine (TRC) is defined as 20 ug/l using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, Method 4500 CL-E and G, or USEPA Methods for Chemical Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine TRC. The ML is not the minimum level of detection, but rather the lowest point on the curve used to calibrate the test equipment for the TRC. If EPA approves a more sensitive method of analysis for TRC, the permit may be reopened to require the use of the new method with a corresponding lower ML. When reporting sample data at or below the ML, see the latest EPA Region NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) for guidance.
5. Sampling for color shall be conducted during periods of pulp processing whenever possible. "pcu" is platinum cobalt units.
6. See Part I.C for requirements to evaluate and implement optimization of nitrogen and phosphorus removal. Total Nitrogen loading will be calculated by the addition of the components nitrite and nitrate nitrogen and total kjeldahl nitrogen. The phosphorus and nitrogen sampling shall be conducted concurrently with the BOD sampling whenever possible. The permittee shall attach a sheet to each month's DMR to show all effluent data results for phosphorus or any component of total nitrogen for sampling that is conducted that is greater than the frequency required by this permit.
7. The permittee shall conduct chronic and modified acute whole effluent toxicity (WET) tests on samples collected during the second week of January, April, July and October of each year. The permittee shall test the fathead minnow, *Pimephales promelas*, in January and July and the daphnid, *Ceriodaphnia dubia*, in April and October. The reporting of WET test results is due by the last day of the month following the month of the test. This schedule is summarized in the Table below. For example, the January toxicity test results shall be submitted no later than February 28th. The test must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit and conducted during normal operating conditions. After submitting **one year** (a minimum of four consecutive sets) of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

Test Dates: During the second week of	Submit Results by:	Test Species	LC ₅₀ Limit	Chronic Limit: C-NOEC
January and July	February 28 th August 31 st	<u>Pimephales promelas</u> (fathead minnow)	≥ 100 %	≥ 50 %
April and October	May 31 st November 30 th	<u>Ceriodaphnia dubia</u> (daphnid)	≥ 100 %	≥ 50 %

8. The LC50 is defined as the concentration of the effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than 50% mortality rate. C-NOEC is the chronic no observed effect concentration.

9. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A, Section IV**, of this permit in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in **Attachment A**, the permittee may use the EPA New England guidance document entitled Self-Implementing Alternative Dilution Water Guidance (“Guidance Document”) to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If the Guidance Document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The Guidance Document is included as Attachment G of the DMR Instructions on the EPA website at <http://www.epa.gov/region1/enforcementandassistance/dmr.html> and is not intended as a direct attachment to this permit. Any modification or revocation to the Guidance Document will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA New England directly using the approach outlined in **Attachment A**.

Part I.A. (continued):

2. Toxics Control

- a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
- b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

3. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), 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.

4. The permittee shall not add chemicals (i.e. disinfectant agents, detergents, emulsifiers, etc.) to the collection and treatment system without prior approval from EPA and MassDEP. The permittee shall notify EPA and MassDEP at the addresses in Part I.E. when it proposes to add or replace any bio-remedial agents including microbes to the collection and treatment system.
5. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
 - 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) One hundred micrograms per liter (100 ug/l)
 - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol, and one milligram per liter (1 mg/l) for antimony;
 - (3) Five (5) 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 the Director in accordance with 40 CFR §122.44(f).

- b. That any activity has occurred or will occur which could 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) Five hundred micrograms per liter (500 ug/l);
 - (2) One milligram per liter (1 mg/l) for antimony;
 - (3) Ten (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 the Director in accordance with 40 CFR §122.44(f).
- 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

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I.A.1. of this permit. Discharges of wastewater from any other point sources not authorized by this permit shall be reported in accordance with Part II Standard Conditions Section D.1.e.(1) of this permit (Twenty-four hour reporting).

C. SPECIAL CONDITIONS AND REQUIREMENTS

The permittee shall optimize its biological treatment system and operate its treatment plant in order to minimize the discharge of nitrogen and phosphorus. In conjunction with this effort, the permittee shall do the following:

1. **Within one year of the effective date of the permit**, the permittee shall complete an evaluation of the operation of the wastewater treatment facility and describe its efforts to optimize the removal of nitrogen. This report shall be submitted to EPA and MassDEP at the addresses in Part I.E. no later than **fifteen (15) months after the effective date of the permit** and shall describe any operational changes or alternative treatment methods for nitrogen removal that were evaluated. The permittee shall continue its optimization efforts in order to maintain or reduce the existing mass loading of total nitrogen. In addition, the permittee is expected to not exceed a monthly average total nitrogen effluent loading of 212 lbs/day, which is consistent with the 25% reduction target in the Long Island Sound Waste Load Allocation.
2. The permittee shall submit an annual report to EPA and MassDEP, **by February 1 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 year.

D. REOPENER CLAUSE

1. This permit shall be modified, or alternately, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - a. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - b. Controls any pollutants not limited in the permit.

E. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

- a. Submittal of Reports Using NetDMR

NetDMR is accessed from: <http://www.epa.gov/netdmr>. **Within one year of the effective date of this permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt-out request”).

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

b. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-1)
Boston, MA 02109-3912

and

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Forms (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under this permit shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following address:

MassDEP – Western Region
Bureau of Waste Prevention (Industrial)
436 Dwight Street
Springfield, MA 01103

Duplicate signed copies of all reports or notifications required above, with the exception of DMRs, shall be submitted to the State at the following address:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

Any verbal reports, if required in Parts I and/or II of this permit, shall be made to both EPA-New England and to MassDEP.

F. STATE PERMIT CONDITIONS

This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.

This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

Fact Sheet

MA0000671

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
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

DATE OF PUBLIC NOTICE: September 21, 2011 thru October 20, 2011

NAME AND ADDRESS OF APPLICANT:

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

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

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

RECEIVING WATER: East Branch of Housatonic River (Segment MA21-02)

RECEIVING WATER CLASSIFICATION: Class B (Warm Water Fishery)

LATITUDE: 42° 28' 12.7" N **LONGITUDE:** 75° 11' 20" W

SIC CODE: 2621 – Paper Manufacturing (Specialty Papers)

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Figure 1 – Facility Location

Figure 2 – Water Flow Schematic

Figure 3 – Wastewater Treatment Plant Process Flow Diagram

I. Proposed Action, Type of Facility and Discharge Location

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 manufacturing processes and selected remnants from the textile industry. The current production rate is approximately 110 tons per day.

The permittee has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge treated wastewater to the East Branch of the Housatonic River via Outfall 001. The current permit (“2005 Permit”) was issued on September 30, 2005, and expired five years from the effective date, on November 30, 2010. EPA received a completed permit renewal application from the applicant dated February 10, 2010. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued pursuant to 40 CFR § 122.6.

II. Description of Treatment System and Discharges

Water for the papermaking process is drawn from a company-owned and operated well system, at a rate of about 2 million gallons per day (MGD) and from the Town of Pittsfield water supply, at a rate of about 1 MGD. The company operates six (6) different mills in Dalton which all send their process wastewater to a centralized wastewater treatment plant. 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 Privately 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 facility location, Figure 2 for a schematic of water flow through the treatment plant, and Figure 3 for a diagram of the wastewater treatment plant process flow at the facility.

The wastewater treatment system consists of chemically assisted primary treatment and biological secondary treatment. This system includes an activated sludge process, in which sludge is thickened and dewatered using a belt thickener and screw press at an approximate rate of 10 – 12 tons per day. This processed sludge is transported to the Springfield Regional Wastewater Treatment Facility in West Springfield, MA where it is composted. A summary of recent Discharge Monitoring Reports (DMRs) data may be found in Table 1. These data comprise the period between July 2007 and July 2010, which is referred to as the “monitoring period” in this fact sheet.

III. Receiving Water Description

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).¹ 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.

Class B waters are described in the MA SWQS (314 CMR 4.05(3)(b)) as "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."

A warm water fishery is defined in the MA SWQS as a "water in which the maximum mean monthly temperature generally exceeds 68° F (20° C) during the summer months and are not capable of sustaining a year-round population of cold water stenothermal aquatic life" (314 CMR §4.02).¹ According to the *Housatonic River Watershed 2002 Water Quality Assessment Report* (MassDEP, 2007), this segment is generally not meeting its designated uses as identified in the water quality standards. The following table, reproduced from the Water Quality Assessment Report, further identifies the status and impairments for each designated use:

EAST BRANCH HOUSATONIC RIVER (Segment MA21-02) Use Summary

Designated Uses		Status
Aquatic Life		SUPPORT upper 6 miles NOT ASSESSED lower 2 miles
Fish Consumption		IMPAIRED Cause: PCBs Source: inappropriate waste disposal from General Electric Site
Primary Contact		IMPAIRED Cause: elevated fecal coliform bacteria Source: unknown Suspected sources: storm water runoff
Secondary Contact		SUPPORT
Aesthetics		SUPPORT

¹ <http://www.mass.gov/dep/service/regulations/314cmr04.pdf>

Sections 305(b) and 303(d) of the CWA require that States complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires States to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a Total Maximum Daily Load (TMDL) for each pollutant that is prohibiting a designated use(s) from being attained. In Massachusetts, these two evaluations have been combined into an Integrated List of Waters. The integrated list format provides the status of all assessed waters in a single, multi-part list.

This river segment (MA21-02) is listed on the *Final Massachusetts Year 2008 Integrated List of Waters*² and on the *Proposed Massachusetts Year 2010 Integrated List of Waters*³ as a Category 5 waterbody, which are classified as “Waters requiring a TMDL.” The pollutants and conditions contributing to this impairment are fecal coliform and Polychlorinated Biphenyls (PCBs) in fish tissue. The suspected source of fecal coliform is from storm water runoff, while the PCBs are believed to have originated from the historical discharges from the General Electric site in Pittsfield.

MassDEP is required under the CWA to develop a TMDL for a waterbody once it is identified as impaired. A TMDL is essentially a pollution budget designed to restore the health of a water body. A TMDL first identifies the source(s) of the pollutant from direct and indirect discharges in order to next determine the maximum amount of pollutant (including a margin of safety) that can be discharged to a specific water body while maintaining water quality standards for designated uses. It then outlines a plan to meet the goal. No TMDLs have been drafted or finalized for the Housatonic River watershed. However, a Waste Load Allocation (WLA) was conducted as described in the MassDEP’s publication *The Housatonic River – 1975 Part-D Water Quality Management Plan*, whose results still form the basis for water quality based BOD and TSS limits. The findings of this WLA were revised by the MassDEP in 1983.

In this 1975 document, the MassDEP identified dissolved oxygen violations in many segments of the Housatonic River. In order to eliminate 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, whose outputs are 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. This analysis formulates an expression of the material balance which exists in a stream after the discharge of waste material at a single point. The specific instream effects of a discharge may be analyzed using material balances as well as the relationship between upstream loadings and discharge loadings. The final product of this type of analysis is the determination of the maximum allowable loadings for each segment and the degree of treatment required to meet

²<http://www.mass.gov/dep/water/resources/08list2.pdf>

³<http://www.mass.gov/dep/water/resources/10list3.pdf>

water quality goals. The load allocations derived for Crane and Co. 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 would serve as appropriate water quality based limits for this permit. However, these values will be compared with the existing permit limits and the calculated technology based limits. The most stringent value for each parameter is typically established as the permit limit.

IV. Limitations and Conditions

The effluent limitations and all other requirements described herein may be found in the draft permit. The basis for the limits and other permit requirements are described below.

V. Permit Basis: Statutory and Regulatory Authority

General Requirements

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

When developing permit limits, EPA must consider the most recent technology-based treatment and water quality-based requirements. Subpart A of 40 CFR Part 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA-promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA. EPA is required to consider technology and water quality-based requirements as well as all limitations and requirements in the existing permit when developing permit limits.

Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see 40 CFR §125 Subpart A) 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.

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 for this discharge:

Subpart K

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

Pollutant or pollutant property	Kg/kg (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)

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

In general, the statutory deadline for non-POTW, technology-based effluent limitations 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 Section 402(a)(1)(B) of the CWA to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

The effluent monitoring requirements have been established to yield data representative of the discharges under the authority of Section 308(a) of the CWA, according to regulations set forth at 40 CFR § 122.41(j), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide continuous information on the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures are to be found in 40 CFR 136 unless other procedures are explicitly required in the permit.

Water Quality-Based Requirements

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards (WQS). See Section 301(b)(1)(C) of the CWA.

Receiving water requirements are established according to numerical and narrative standards adopted under state law for each water quality classification. When using chemical-specific numeric criteria to develop permit limits, both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 CFR § 122.44(d)(1) and are implemented under 40 CFR § 122.45(d).

A facility's design flow is used when deriving constituent limits for daily and monthly time periods as well as weekly periods where appropriate. Also, the dilution provided by the receiving water is factored into this process where appropriate. Narrative criteria from the state's water quality standards are often used to limit toxicity in discharges where (a) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (b) toxicity cannot be traced to a specific pollutant.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal WQS. The permit must address any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. See 40 CFR Section 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers (a) existing controls on point and non-point sources of pollution; (b) pollutant concentration and variability in the effluent and receiving water as determined from the permit application, monthly DMRs, and State and Federal Water Quality Reports; (c) sensitivity of the species to toxicity testing; (d) known water quality impacts of processes on wastewater; and, where appropriate, (e) dilution of the effluent in the receiving water.

WQS consist of three parts: (a) beneficial designated uses for a water body or a segment of a water body; (b) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (c) antidegradation requirements to ensure that once a use is attained it will not be degraded. The MA SWQS, found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and

require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site-specific criterion is established. The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain WQS.

As noted earlier, the MassDEP has established a WLA for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS). This allocation continues to serve as the basis for water quality based limits for these parameters.

Antibacksliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA [see Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. Effluent limits based on BPJ, water quality, and state certification requirements must also meet the antibacksliding provisions found at Section 402(o) and 303(d)(4) of the CWA. Since the production rate at the facility and corresponding effluent flows have been reduced since the last permit was issued, the effective dilution factor has increased slightly. Therefore, all the limits which are based on a dilution factor have been increased in the draft permit accordingly. These changes are consistent with the new information provision of the antibacksliding regulations. The permit limits which have been changed are those for total residual chlorine, total copper, total aluminum, and the chronic no observed effect concentration (C-NOEC) associated with the whole effluent toxicity testing. These limits are discussed in Part VI below.

Antidegradation

Federal regulations found at 40 CFR Section 131.12 require states to develop and adopt a statewide antidegradation policy which maintains and protects existing instream water uses and the level of water quality necessary to protect the existing uses, and maintains the quality of waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water. The Massachusetts Antidegradation Regulations are found at Title 314 CMR 4.04. There are no new or increased discharges being proposed with this permit reissuance. Therefore, EPA does not believe that the MassDEP is required to conduct an antidegradation review regarding this permit reissuance.

State Certification

Under Section 401 of the CWA, EPA is required to obtain certification from the state in which the discharge is located that all water quality standards or other applicable requirements of state law, in accordance with Section 301(b)(1)(C) of the CWA, are satisfied. EPA permits are to include any conditions required in the state's certification as being necessary to ensure compliance with state water quality standards or other applicable requirements of state law. See

CWA Section 401(a) and 40 CFR §124.53(e). Regulations governing state certification are set out at 40 CFR §124.53 and §124.55. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d).

VI. Explanation of Permit's Effluent Limitations

Flow and Dilution Factor

For the purposes of evaluating flow and dilution calculations, the average flow of 3.2 million gallons per day (MGD) will be used, which is the average flow from DMR data for the monitoring period of July 2007 to July 2010 noted earlier. The previous permit had used a monthly average flow of 4.2 MGD, which represented the flow supporting the production at that time. The maximum flow rate of 5.8 MGD, which was used in the last permit, is still appropriate and will be used for this permit, as this was the approximate high daily maximum flow during the monitoring period. Although the current permit does not have flow limits, this draft permit has established a monthly average flow limit of 3.2 MGD, which will be expressed as a twelve (12) month rolling average. Since several permit limits discussed below are based on a revised dilution factor using the lower flow of 3.2 MGD, establishing a flow limit will assure that these calculated limits remain protective.

Water quality-based effluent limitations are established based on a calculated dilution factor derived from the available dilution in the receiving water at the point of discharge. Massachusetts water quality standards require that the available effluent dilution be calculated based upon the 7Q10 flow of the receiving water (314 CMR 4.03(3)(a)). The 7Q10 flow is the statistical mean low flow over seven consecutive days, occurring every ten years. Use of the 7Q10 flow allows for the calculation of the available dilution under critical flow (worst-case) conditions, which in turn results in the derivation of conservative water quality-based effluent limitations.

The dilution factors for the existing permitted were based on the monthly average and daily maximum flows of 4.2 and 5.8 MGD and were calculated to be 1.9 and 1.6, respectively. According to the United States Geological Survey (USGS), the 7Q10 flow at the USGS gage located on the East Branch of the Housatonic River in Dalton, MA (USGS Gage No. 01197000) is 12.1 cfs and the drainage area (DA) of the gage is 57.6 square miles.⁴ The drainage area at the Facility's outfall above the gaging station is estimated at 0.3 square miles.

The proportion of the 7Q10 flow at the point of discharge to the 7Q10 flow at the USGS Gage Station (#01197000), in Dalton, is in the same proportion as the respective drainage areas. Therefore, the calculated 7Q10 and dilution factors for the facility are as follows:

⁴ <http://streamstats.usgs.gov/gagepages/HTML/01197000.htm>

Drainage Area (Gage Station #01197000)	57.6 square miles
Drainage Area (below outfall to Station)	<u>0.3 square miles</u>
Net Drainage Area @ outfall (Crane)	57.3 square miles

Average effluent flow: 3.2 MGD = 4.95 cfs ; Daily maximum flow: 5.8 MGD = 9.0 cfs
 7Q10@ Gage Station = 12.1 cubic feet per second (cfs)

Since the 7Q10 at the Dalton Gage reflects the Crane effluent, which is from water derived from other sources (not the receiving water), this source water must be subtracted from the 7Q10 figure since it is not present upstream of the discharge to get the estimated 7Q10 flow at the facility.

$$7Q10@ \text{ outfall} = (7Q10@ \text{ gage} - \text{average flow}) \times (\text{DA @ Gage} / \text{DA @ outfall})$$

$$7Q10@ \text{ outfall} = (12.1 \text{ cfs} - 4.95 \text{ cfs}) \times (57.3 \text{ mi}^2 / 57.6 \text{ mi}^2) = 7.1 \text{ cfs}$$

Because this facility derives its process water from other sources (not the receiving water), the dilution factor is calculated as follows, by adding the effluent flow to the 7Q10 flow at the facility, divided by the effluent flow.

$$\text{Dilution Factor} = (7Q10 @ \text{ Outfall} + \text{Effluent}) / \text{Effluent}$$

$$\text{Average Flow Dilution Factor} = (7.1 \text{ cfs} + 4.95 \text{ cfs}) / 4.95 \text{ cfs} = 2.4$$

$$\text{Daily maximum Dilution Factor} = (7.1 \text{ cfs} + 9.0 \text{ cfs}) / 9.0 = 1.8$$

BOD and TSS

The effluent categorical limits in 40 CFR 430, Subpart K - "Fine and Lightweight Papers from Purchased Pulp Subcategory" provide specific categorical limits for cotton fiber pulp that best characterize the production at this facility. These categorical limits are shown in Part V of this fact sheet. The existing BOD permit limits are as follows:

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

The BOD 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 "low flow" period of May through October and the higher, daily maximum limit was applied for the "high flow" period of November through April. The winter limits were set higher based on BPJ, because there was not expected to be any violation of the dissolved oxygen limit 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 average BOD readings during the monitoring period have been 244 lbs/day during the May to October period and 285 lbs/day during November to April period, with one violation of the daily maximum limit.

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 are calculated below using the average daily production of 110 tons/day, encompassing all of products manufactured at Crane’s mills. As mentioned earlier, the production rate has dropped from the rate of 200 tons/day used in the 2005 permit, which represented the production at that time.

Monthly Average (MA) Technology Based Limit:

$$9.1 \text{ lbs/1000 lbs} \cdot 110 \text{ tons/day} \cdot 2000 \text{ lbs/ton} = \mathbf{2002 \text{ lbs/day}}$$

Daily Maximum (DM) Technology Based Limit:

$$17.4 \text{ lbs/1000 lbs} \cdot 110 \text{ tons/day} \cdot 2000 \text{ lbs/ton} = \mathbf{3828 \text{ lbs/day}}$$

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.

TSS: The existing TSS permit limits are as follows:

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

The average TSS readings during the monitoring period were 253 lbs/day during the May to October period and 389 lbs/day during November to April period, with no violations of any limits.

In previous permits, the TSS limits were based on the WLA described earlier. For the permit that was issued to Crane in 1989, the TSS limits for the low flow period of May through October were adjusted higher based upon a request by the permittee to use the TSS to BOD ratio in the categorical limits to set the TSS limits. These TSS limits were originally the same as the BOD limits (i.e., 600 & 900 lbs/day). In the categorical limits shown earlier, the ratio for the monthly average TSS:BOD was 1.44:1 and the ratio for the daily maximum TSS:BOD was 1.4:1. It was determined by the EPA and the MassDEP that these categorical limit ratios should apply for this

permit and the agencies adjusted the TSS limits for the low flow period to the limits shown above in the 1989 permit. The limits during the low flow period of November 1 to April 30 were not adjusted. The following would be the technology-based limits for TSS based on the fine paper (cotton fiber) subcategory of the ELGs noted in Part V:

MA Technology Based Limit:

$$13.1 \text{ lbs/1000 lbs} * 110 \text{ tons/day} * 2000 \text{ lbs/ton} = \mathbf{2882 \text{ lbs/day}}$$

DM Technology Based Limit:

$$24.3 \text{ lbs/1000 lbs} * 110 \text{ tons/day} * 2000 \text{ lbs/ton} = \mathbf{5346 \text{ lbs/day}}$$

Although the current monthly average limits are based on the ratio in the categorical limits, they would best be categorized as water quality based limits. These limits are well below the technology based limits calculated above that would be dictated by the ELGs. Therefore, the existing TSS limits that are based on water quality will remain in the permit as they are more stringent than the technology based limits, and are required by antibacksliding. The monitoring frequency for TSS has been reduced from three times per week to two times per week to be consistent with the sampling frequency for BOD.

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, often resulting in lower dissolved oxygen levels in the river. This could in turn impair the benthic habitat as fish and shellfish are deprived of oxygen and excessive algae and foul smells could decrease aesthetic value, by affecting swimming and recreational uses.

It has been documented that most reaches of the Housatonic River (to which the East Branch flows into) 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 MA 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 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)).

Total Phosphorus

As discussed above, segments of the Housatonic River 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 *2008 Integrated Water Quality Report to Congress*.⁵ The 2008 report identified chlorophyll-*a*, excess algal growth, and nutrient/eutrophication 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 *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 Rhode Island 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

⁵ http://www.ct.gov/dep/lib/dep/water/water_quality_management/305b/2008_final_ct_integratedwqr.pdf

eutrophication.” They also include a requirement that “[a]ny existing point source discharges 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.

Recent monthly data from the DMR summary indicates the routine discharge of phosphorus as summarized below:

Table 1: Summary of Total Phosphorus Results (mg/L) from July 2007 to July 2010

	Range	Average	Permit Limit
May to October	0.01 – 0.35	0.18	0.2
November to April	0.07 – 1.1	0.41	1.0

* All values are presented as monthly averages

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. This limit was similar to the value calculated using the instream water quality criteria value of 0.10 mg/l (for discharges not directly to lakes or impoundments) multiplied by the dilution factor of 1.9, resulting in a value of 0.19 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, occasional violations of these limits, and variability in the effluent data. This draft permit has increased the monitoring frequency from weekly to twice per week, due to the variability of past results.

Nitrogen

The 2005 Permit required reporting of the daily maximum concentrations of Total Kjeldahl Nitrogen, Nitrate-Nitrogen, Nitrite-Nitrogen, and Ammonia. This Draft Permit proposes reporting of the monthly average and daily maximum concentration as well as of the mass for Total Nitrogen, Total Kjeldahl Nitrogen, Total Ammonia Nitrogen, Nitrate-Nitrogen, and Nitrite-Nitrogen. The rationale for this change is explained below.

Total Nitrogen

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. 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 wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see Table 2). The estimated 2004/2005 point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively were 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on recent data and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated 2004/2005 loadings:

**Table 2: Long Island Sound TMDL
Nitrogen Baseline Loadings, Targets, and Current Loadings**

Basin	Baseline Loading ¹ (lbs/day)	TMDL Target ² (lbs/day)	Current Loading ³ (lbs/day)
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loading from 2004 – 2005 DMR data

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met for the Housatonic River. The estimated current loading for Crane and Co. used in the above analysis was 212 lbs/day, based upon a Total Nitrogen concentration of 8.2 mg/l and the average

flow of 3.1 MGD ($8.2 \text{ mg/L} * 3.1 \text{ MGD} * 8.34$), as indicated in the Facility's 2004 through 2005 DMRs. Since that time, the facility's monthly average flow has remained about 3.1 MGD, while the total nitrogen loading has decreased as shown in Table 3 below:

Table 3: Summary of Nitrogen Results (mg/L) from July 2007 to July 2010

	Nitrogen, total Kjeldahl	Nitrogen, nitrate + nitrite, total (as N)	Nitrogen, Total
Lowest Monthly Value	1.0	0.1	----
Highest Monthly Value	11	13	----
Average	4.4	2.6	7.0

* All values are presented as monthly average minimum.

Therefore, this more recent data would indicate an average mass loading closer to 181 lbs/day ($7.0 \text{ mg/l} * 3.1 \text{ MGD} * 8.34$). In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction from baseline loadings, EPA has included a condition in the Draft Permit at Part I.C requiring the permittee to continue its optimization efforts relative to the removal of nitrogen and to evaluate alternative methods of operating its treatment plant to optimize the removal of nitrogen, if necessary. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years. The Draft Permit also sets a monthly average total effluent nitrogen loading of 212 lbs/day, to be consistent with the 25% reduction in the TMDL. This draft permit has increased the monitoring frequency for all components of total nitrogen from monthly to twice per week due to the variability of past results. As part of its optimization efforts required in Part I.C. of the permit, the permittee shall consider in-process sampling to better adjust treatment to minimize the discharge of total nitrogen.

The agencies intend to annually update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any treatment system upgrades or modifications that are envisioned for this facility consider alternatives for further enhancing nitrogen reduction.

pH

The current pH range is limited to between 6.0 – 9.0 standard units (s.u.) It had been previously determined that the East Branch and main stem of the Housatonic River had sufficient buffering capacity so that the stream biota will not be affected if the pH varied from the State WQS range of 6.5 – 8.3 s.u. This determination is still believed to be valid. During the monitoring period, the pH range has varied from 6.1 to 8.9 s.u., with no violations of the permitted range. Therefore, the pH range of 6.0 - 9.0 s.u. of the existing permit remains in the draft permit.

Dissolved Oxygen (DO)

In the 2005 permit, there was a minimum dissolved oxygen (DO) level of 5.0 mg/l required, to be monitored once per week. This limit complies with the State WQS minimum of 5.0 mg/l for warm water fisheries. DMR data since July of 2007 have shown the DO to be within the range of 5.0 to 8.4 mg/l. Therefore, this parameter will continue to be monitored with the 5.0 mg/l minimum requirement and with the weekly monitoring frequency.

Aluminum

Aluminum containing compounds are used in the wastewater treatment process and aluminum is routinely detected in the effluent. During the monitoring review period, aluminum averaged 0.06 mg/l with several high values of 0.14 mg/l and no violations of the permit limits of 0.14 mg/l as a monthly average and 1.2 mg/l as a daily maximum. The results are shown in Table 4 below.

Table 4: Aluminum Monitoring Results (mg/L) from July 2007 to July 2010

Date	concentration	Date	concentration	Date	concentration
		July 08	0.02 mg/l	August 09	0.14 mg/l
July 07	0.03 mg/l	August 08	0.03	September 09	0.14
August 07	0.04	September 08	0.02	October 09	0.04
Sept 07	0.09	October 08	0.03	November 09	0.14
October 07	0.03	November 08	0.03	December 09	0.05
November 07	0.06	December 08	0.04	January 10	0.14
December 07	0.09	January 09	0.05	February 10	0.04
January 08	0.04	February 09	0.03	March 10	0.14
February 08	0.03	March 09	0.03	April 10	0.11
March 08	0.05	April 09	0.02	May 10	0.14
April 08	0.05	May 09	0.02	June 10	0.14
May 08	0.05	June 09	0.02	July 10	0.01
June 08	0.04	July 09	0.14		

Since the average and daily maximum effluent flows from the facility have decreased, the dilution factors based on these flows have increased accordingly, as shown earlier. For total recoverable aluminum, the chronic water quality criterion for is 87 ug/l and the acute criterion is 750 ug/l as shown in *National Recommended Water Quality Criteria: 2002* (EPA-822-R-02-047). The applicable water quality based limits would be calculated as follows based on the revised dilution factors:

Chronic limit: $0.087 * 2.4 = 0.21 \text{ mg/l}$ Acute limit: $0.750 * 1.8 = 1.35 \text{ mg/l}$

The monthly average limit of 0.14 mg/l has been changed to 0.21 mg/l and the daily maximum limit of 1.2 mg/l has been changed to 1.35 mg/l. These changes are consistent with the new information provision of the antibrackish regulations.

Copper

Copper is routinely detected in the effluent and may be present in both sources of water that the permittee uses in its papermaking operations. During the DMR monitoring period, total copper averaged 6.9 ug/l with high values of 25 and 19 ug/l, with 4 violations of the permit limits of 12.3 ug/l (MA) and 18.1 ug/l (DM). The monthly average results are shown in Table 5 below.

Table 5: Copper Monitoring Results (mg/L) from July 2007 to July 2010

Date	concentration	Date	concentration	Date	concentration
		July 08	12.8 ug/l	August 09	2.2 ug/l
July 07	9.9 ug/l	August 08	5.6	September 09	4.0
August 07	11	September 08	12	October 09	4.1
Sept 07	12	October 08	5.5	November 09	5.4
October 07	1.1	November 08	6.6	December 09	5.6
November 07	4.7	December 08	7.6	January 10	12
December 07	8.6	January 09	5.3	February 10	6
January 08	11	February 09	2.7	March 10	11
February 08	6.6	March 09	2.6	April 10	9.1
March 08	6.2	April 09	4	May 10	4.5
April 08	10	May 09	2.8	June 10	4.3
May 08	12	June 09	3.4	July 10	6.1
June 08	17.5	July 09	1.9		

Water quality based copper limits are typically calculated by taking into consideration the dilution which is available to the discharge and the applicable water quality criteria. The water quality criteria for copper are shown in *National Recommended Water Quality Criteria: 2002* (EPA-822-R-02-047). The limits for copper are hardness dependent. The calculations below are based on a receiving water hardness of 80 mg/l (as CaCO₃), which is the hardness used in the 2005 permit and still appropriate based upon a review of the hardness data submitted with recent whole effluent toxicity (WET) testing results. The applicable water quality based limits would be calculated as follows based on the revised dilution factors:

Water Quality Criteria: Hardness dependent; Equation: $e^{(X [\ln(h)] + Y)}$

Where X and Y are chronic and acute coefficients for dissolved fractions of metals (National Recommended Water Quality Criteria, 2002, EPA-822-R-02-047)

	<u>Chronic</u>	<u>Acute</u>
Where: X =	0.8545	0.9422
Y =	- 1.702	- 1.70

h = Hardness = 80 mg/l as CaCO₃ ; ln = natural logarithm

Thus; for copper: $e^{(.8545 [\ln(80)] - 1.702)} = 7.7 \text{ ug/l}$; $e^{(.9422 [\ln(80)] - 1.70)} = 11.3 \text{ ug/l}$

Since these values are expressed as the dissolved fraction of copper, these values must be divided by a conversion factor and multiplied by the dilution factor to obtain the applicable total copper limits for this discharge. The chronic value corresponds to a monthly average limit and the acute to a daily maximum limit.

Applicable Effluent Limitations for Total Copper:

Chronic [7.7 ug/l / 0.96] (2.4) = **19 ug/l** Acute [11.3 ug/l / 0.96] (1.8) = **21 ug/l**

Based on these revised calculations, the 2005 permit limits of 12.3 ug/l and 18.1 ug/l have been changed to 19 ug/l and 21 ug/l, respectively. These revised limits are consistent with the new information provision of the antibacksliding regulations.

Color

The previous permit had established a weekly effluent color monitoring requirement due to the observance of a brown color in the effluent in a water quality assessment report. During the monitoring period, the effluent color ranged from 100 to 500 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 to the pulping operations at the facility. Therefore, the weekly color monitoring requirement has been maintained in the draft permit.

Total Residual Chlorine

The facility uses hypochlorite in the pulp bleaching process. Chlorine can be extremely toxic to aquatic life. Effluent limits are based on water quality criteria for total residual chlorine (TRC) which are specified in EPA water quality criteria established pursuant to Section 304(a) of the Clean Water Act. The most recent EPA recommended criteria are found in *National Recommended Water Quality Criteria: 2002* (EPA-822-R-02-047). The fresh water aquatic life criteria for TRC are 11 ug/l for protection from chronic toxicity and 19 ug/l for protection from acute toxicity. The 7Q10 dilution multiplied by the chronic and acute criteria provides the appropriate TRC limits as shown below, using the revised dilution factors:

Chronic limit: $11 \text{ ug/l} * 2.4 = 26 \text{ ug/l}$ Acute limit: $19 \text{ ug/l} * 1.8 = 34 \text{ ug/l}$

For the DMR monitoring period, TRC has been consistently not detected, with limits of 18 ug/l (MA) and 30 ug/l (DM). Although TRC has not been detected in recent monitoring, this permit has established these revised water quality based effluent limits, since the permittee continues to use chlorine to bleach some of its pulp. The monitoring frequency has been changed from once per week to twice per month with these revised limits, which are consistent with the new information provision of the antibacksliding regulations.

Whole Effluent Toxicity

Whole effluent toxicity (WET) testing is conducted to assess whether certain effluents are discharged in a combination which produces a toxic amount of pollutants in a receiving water. Toxicity testing is used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

Sections 402(a)(2) and 308(a) of the Clean Water Act provide EPA and the States the legal basis for establishing toxicity testing requirements and toxicity-based permit limits in NPDES permits. Section 308 specifically describes biological monitoring methods as techniques which may be used to carry out the objectives of the Act. Under certain narrative State water quality standards and Sections 301, 303, and 402 of the Clean Water Act, EPA and the States may establish toxicity-based limits to implement the narrative "no toxics in toxic amounts".

The regulations at 40 CFR Part 122.44(d)(ii) state, "When determining whether a discharge causes, has the reasonable potential to cause, or contribute to an instream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution...(including) the sensitivity of the species to toxicity testing..." The EPA and MassDEP

believe that the complexity of the wastewater from this discharge is such that toxicity testing and limitations are required to evaluate and address any water quality impacts.

In conducting the chronic WET tests required under the existing permit, tests using the receiving water as the diluent occasionally failed to meet the EPA minimum acceptability criterion for survival for the fathead minnow. These results indicate the receiving water has shown the existence of some toxicity which has yet to be identified. If the permittee finds continued difficulties using the receiving water as the diluent, it should follow the procedures for requesting the use of alternative dilution water that are noted in Footnote 9 on Page 5 of the Draft Permit.

The past 3 years of WET testing shows that the LC50 limit of 100% has been achieved on all occasions. The LC50 limit of 100% will be maintained for both species. The chronic no observed effect concentration (C-NOEC) was limited in the 2005 permit to a minimum effluent concentration of 63%. The C-NOEC levels have ranged from 6.25 – 100%, with one violation for each species during the last 3 years.

Pursuant to EPA Region 1 policy and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990), discharges having a dilution ratio of less than 10:1 require acute toxicity testing four times per year with an LC50 limit equal to 100%. In addition, a chronic no observed effect concentration (C-NOEC) limit must also be established using the instream waste concentration (IWC) of the effluent. The IWC is the inverse of the dilution factor (DF) and is calculated as follows:

$$\text{IWC} = 1 / 2.4 = 0.42, \text{ or a C-NOEC limit of } \geq 42\%$$

This C-NOEC limit replaces the current limit of $\geq 63\%$, which was more stringent, due to the change in dilution factor. This change is consistent with the new information provision of the antibacksliding regulations.

Other Conditions

The remaining conditions of the permit are based on the NPDES regulations, 40 CFR Parts 122 through 125, and consist primarily of management requirements common to all permits.

VII. Essential Fish Habitat Determination (EFH)

“Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA’s actions or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat, such as: waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S.C. § 1802(10)). “Adversely impact” means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 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.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (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. The Housatonic River in the vicinity of this discharge is not covered by the EFH designation for riverine systems and thus EPA has determined that EFH consultation with NMFS is not required.

VIII. Endangered Species Act (ESA)

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended grants authority to and imposes requirements upon 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"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure 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) typically administers Section 7 consultations for bird, terrestrial, and freshwater aquatic species. NMFS typically administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the listing of federal endangered or threatened species of fish, wildlife, and plants to see if any such listed species might potentially be impacted by the reissuance of this NPDES permit and has not found any such listed species. Therefore, EPA does not need to formally consult with NMFS or USFWS in regard to the provisions of the ESA. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to both NMFS and USFWS.

IX. Monitoring and Reporting

The permit's monitoring requirements have been established to yield data representative of the facility's pollutant discharges under the authority of Sections 308(a) and 402(a)(2) of the CWA and consistent with 40 C.F.R. §§ 122.41 (j), 122.43(a), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide ongoing, representative information on the levels of regulated constituents in the wastewater discharge streams. The approved analytical procedures are found in 40 C.F.R. Part 136 unless other procedures are explicitly required in the permit.

The Permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time specified within the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

The Draft Permit includes new provisions related to DMR submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the Permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt-out request”). In the interim (until one year from the effective date of the permit), the Permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit DMRs electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 C.F.R. § 122.41 and § 403.12. NetDMR is accessed from the following url: <http://www.epa.gov/netdmr>. Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

EPA currently conducts free training on the use of NetDMR, and anticipates that the availability of this training will continue to assist permittees with the transition to use of NetDMR. To participate in upcoming trainings, visit <http://www.epa.gov/netdmr> for contact information for Massachusetts.

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The Draft Permit also includes an “opt-out” request process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing to EPA, at least sixty (60) days prior to the date the facility would have otherwise been required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

X. State Certification Requirements

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection (MassDEP) certifies that the effluent limitations included in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The MA DEP has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR §124.53 and expects the draft permit will be certified.

XI. Public Comment Period, Public Hearing, and Procedures the Final Decision

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, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch, Mailcode OEP 06-1, 5 Post Office Square, Suite 100, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

XII. EPA and MassDEP Contacts

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the EPA and MassDEP contacts below:

George Papadopoulos, Industrial Permits Branch
5 Post Office Square - Suite 100 - Mailcode OEP 06-1
Boston, MA 02109-3912
Telephone: (617) 918-1579 FAX: (617) 918-0579

Kathleen Keohane, Massachusetts Department of Environmental Protection
Division of Watershed Management, Surface Water Discharge Permit Program
627 Main Street, 2nd Floor, Worcester, Massachusetts 01608
Telephone: (508) 767-2856 FAX: (508) 791-4131

September 15, 2011
Date

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Table 1 - Outfall 001 DMR Summary Data¹

Parameter	Monthly Average ²	Maximum Values ³	Permit Violations ⁴
Flow, MGD	3.2	5.81, 5.23	---
BOD ₅ , lbs/day (May to October)	244	814, 804	0
BOD ₅ , lbs/day (November to April)	285	2896, 729	1
TSS, lbs/day (May to October)	253	829, 843	0
TSS, lbs/day (November to April)	389	1509, 1143	0
Color, platinum cobalt units	Range: 100 - 500		---
pH, standard units	Range: 6.1 - 8.9		0
Aluminum, Total, mg/l	0.06	0.14, 0.14	0
Copper, Total, ug/l	6.9	25, 19	4
Total Residual Chlorine, mg/l	ND ⁵	ND	0
Temperature, effluent, °F	76	89, 88	0
Total Phosphorus, mg/l (May to October)	0.18	0.35, 0.34	4
Total Phosphorus, mg/l (November to April)	0.41	1.1, 0.82	1
Ammonia Nitrogen, mg/l	5.1	21.6, 12	---
Nitrogen, Total Kjeldahl, mg/l	2.6	13, 11	---
Dissolved Oxygen, mg/l	Range: 5.0 - 8.4		0
Nitrite + Nitrate Nitrogen, mg/l	0.40	1.9, 1.2	---
LC50, daphnid, %	100	100 ⁶	0
LC50, fathead minnow, %	100	100 ⁶	0
NOEL, daphnid, %	85	50, 63 ⁶	1
NOEL, fathead minnow, %	81	6.25, 63 ⁶	1

1. Data is from Discharge Monitoring Reports for the period of July 2007 to July 2010.
2. This value is the average of the monthly averages during the reporting period.
3. These are the maximum values during the reporting period.
4. Value provided only if parameter was limited in the permit.
5. ND = not detected
6. These are the low values during the reporting period.

Response to Public Comments

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the draft NPDES Permit, #MA0000671. The response to comments explains and supports the EPA determinations that form the basis of the final permit. From September 21, 2011 to October 20, 2011, the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") (together, the "Agencies") solicited public comments on a draft NPDES permit, #MA0000671, developed pursuant to a permit application from Crane and Company, Inc. ("Crane"), for the reissuance of a National Pollutant Discharge Elimination System ("NPDES") permit to discharge treated papermaking wastewater from outfall number 001 to the East Branch of the Housatonic River in Dalton, Massachusetts.

After a review of the comments received, EPA and MassDEP have made a final decision to issue this permit authorizing these discharges. The final permit is substantially identical to the draft permit that was available for public comment. Although EPA's decision-making process has benefitted from the comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit. EPA did, however, make certain clarifications and minor changes in response to comments. The analyses underlying these changes are explained in the responses to individual comments that follow and are reflected in the final permit. A summary of the changes made in the final permit are listed below. Where applicable, relevant sections of the response document where these changes have been discussed have been included in parentheses at the end of each change.

Copies of the final permit may be obtained by writing or calling EPA's NPDES Industrial Permits Branch (OEP 06-1), Office of Ecosystem Protection, 5 Post Office Square, Suite 100, Boston, MA 02109-3912; Telephone: (617) 918-1579.

1. The monthly average flow limit has been changed from 3.2 MGD to 4.7 MGD (**Comment 1**).
2. The monthly average concentration limits for the parameters total aluminum, total copper, total residual chlorine (TRC), and chronic no observed effect concentration (C-NOEC) have been reduced, due to the lower dilution factor associated with the higher monthly average flow limit. (**Comment 1**)
3. The requirement to report the daily production rate has been removed from the permit. (**Comment 3**)

Comments submitted by Paul Knauth, Crane and Co, Inc.:

Comment 1:

The draft permit proposes a 3.2 million gallons per day (MGD) annual flow limit, reported as a twelve (12) month rolling average. This 3.2 MGD was the average flow recorded for the July 2007- July 2010 monitoring period and reflective of the pulp and paper production output.

It is our understanding; the 3.2 MGD flow was used to evaluate flow and dilution calculations. The previous permit had used a monthly average flow of 4.2 MGD which was representative of the production at that time. The maximum 5.8 MGD flow rate was used in the last permit and we believe is consistent and appropriate for this permit as well.

We are proposing that a 4.7 MGD monthly average flow be considered as the flow rate rather than the 3.2 MGD monthly average flow. This is a 1.5 MGD flow increase that would represent growth we expect to realize in the near future in our current paper manufacturing and pulp production areas.

Response to Comment 1:

Since your estimate of future production output at Crane and Company has increased, EPA must make changes to the permit limits, which are based on the available flow dilution, which itself is derived from the effluent flow. The chronic, or monthly average limits which are based on effluent flow are those for TRC, total aluminum, total copper, and the C-NOEC, which is a component of the whole effluent toxicity (WET) testing requirement of the permit. In addition, the monthly average effluent loading target of 212 lbs/day for total nitrogen is expected to be met, as required by Part I.C of the permit.

Since the permittee does not expect the maximum effluent flow to change from the 5.8 MGD that was noted in the fact sheet and draft permit, all acute, or daily maximum limits which are based on this flow will not be changing in the final permit.

Massachusetts water quality standards require that the available effluent dilution be calculated based upon the 7Q10 flow of the receiving water (314 CMR 4.03(3)(a)). The 7Q10 flow is the statistical mean low flow over seven consecutive days, occurring every ten years. Use of the 7Q10 flow allows for the calculation of the available dilution under critical flow (worst-case) conditions, which in turn results in the derivation of conservative water quality-based effluent limitations. Because this facility derives its process water from other sources (not the receiving water), the dilution factor is calculated as follows, by adding the effluent flow to the 7Q10 flow at the facility, divided by the effluent flow.

$$\text{Dilution Factor} = (7Q_{10} @ \text{Outfall} + \text{Effluent}) / \text{Effluent}$$

$$\text{Revised monthly average effluent flow: } 4.7 \text{ MGD } (1.55) = \mathbf{7.3 \text{ cfs}}$$

$$\text{Average Flow Dilution Factor} = (7.1 \text{ cfs} + 7.3 \text{ cfs}) / 7.3 \text{ cfs} = \mathbf{2.0}$$

Revised monthly average limit for Total Aluminum:

For total recoverable aluminum, the chronic water quality criterion is 87 ug/l as shown in *National Recommended Water Quality Criteria: 2002* (EPA-822-R-02-047). The revised monthly average, water quality based limit is calculated as follows:

$$\text{Chronic limit (monthly average): } 0.087 * 2.0 = \mathbf{0.17 \text{ mg/l}} \quad (\text{draft permit limit: } 0.21 \text{ mg/l})$$

Revised monthly average limit for Total (Recoverable) Copper:

Water quality based copper limits are typically calculated by taking into consideration the dilution which is available to the discharge and the applicable water quality criteria. The water quality criteria for copper are shown in *National Recommended Water Quality Criteria: 2002* (EPA-822-R-02-047). The limits for copper are hardness dependent. The calculations below are based on a receiving water hardness of 80 mg/l (as CaCO₃), which is the hardness used in the 2005 permit and still appropriate based upon a review of the hardness data submitted with recent whole effluent toxicity (WET) testing results. The applicable water quality based limits would be calculated as follows based on the revised dilution factors:

Water Quality Criteria: Hardness dependent; Equation: $e^{(X[\ln(h)] + Y)}$

Where X and Y are chronic coefficients for dissolved fractions of metals
(National Recommended Water Quality Criteria, 2002, EPA-822-R-02-047)

$$\text{For copper, where: } X = 0.8545 \quad Y = -1.702$$

$$h = \text{Hardness} = 80 \text{ mg/l as CaCO}_3 ; \quad \ln = \text{natural logarithm}$$

$$\text{Thus: } e^{(.8545 [(\ln 80)] - 1.702)} = \mathbf{7.7 \text{ ug/l}}$$

Since this value is expressed as the dissolved fraction of copper, this value must be divided by a conversion factor and multiplied by the dilution factor to obtain the applicable chronic (monthly average) total recoverable copper limit for this discharge.

$$[7.7 \text{ ug/l} / 0.96] (2.0) = \mathbf{16 \text{ ug/l}} \quad (\text{draft permit limit: } 19 \text{ ug/l})$$

Revised monthly average limit for Total Residual Chlorine:

The fresh water aquatic life criterion for TRC is 11 ug/l for protection from chronic toxicity. The 7Q10 dilution multiplied by the chronic criterion provides the appropriate TRC limit as shown below, using the revised dilution factor:

$$\text{Chronic limit: } 11 \text{ ug/l} * 2.0 = \mathbf{22 \text{ ug/l}} \quad (\text{draft permit limit: } 26 \text{ ug/l})$$

Revised monthly average limit for Chronic-NOEC:

The C-NOEC limit is calculated using the instream waste concentration (IWC) of the effluent. The IWC is the inverse of the dilution factor (DF) and is calculated as follows:

$$\text{IWC} = 1/2.0 = 0.5, \text{ or a C-NOEC limit of } \geq \mathbf{50\%} \quad (\text{draft permit limit: } \geq \mathbf{42\%})$$

Comment 2:

Crane & Co., Inc. requests flow not to be a permit limit and remain report only. A permit limit on total flow discharge could confine immediate and future growth and product improvement opportunities.

Response to Comment 2:

The final permit has established the revised monthly average flow limit of 4.7 MGD, as an annual average, based on the permittee's expected future growth opportunities. We believe that this limit is appropriate and necessary in order to assure that the concentration based limits remain protective and is a limit that the permittee is expected to meet as it is expressed as an annual average limit.

Comment 3:

For business confidentiality, the company requests the Total Production report tons per day be removed from the NPDES permit.

Response to Comment 3:

The production rate is required in order to determine whether the Effluent Limitation Guidelines (ELGs) applicable to this facility would dictate the need to establish technology based limits for this permit. As detailed in the fact sheet, there were no limits based on ELGs, as the more stringent water quality based limits were established.

EPA will not render a decision at this time as to whether production data can be claimed as Confidential Business Information (CBI) per our regulations at 40 CFR §2.203. Since there were no limits based on ELGs in this permit, EPA has removed the requirement to report the daily production rate from this permit, but expects that the permittee will continue to collect this data and make it available to EPA during the permittee's next application for reissuance of this permit.

February 1, 2012